Vehicle Restraint
Owner's/User's Manual

Manual No. MF4-159-000 - Rev._G_January 2026

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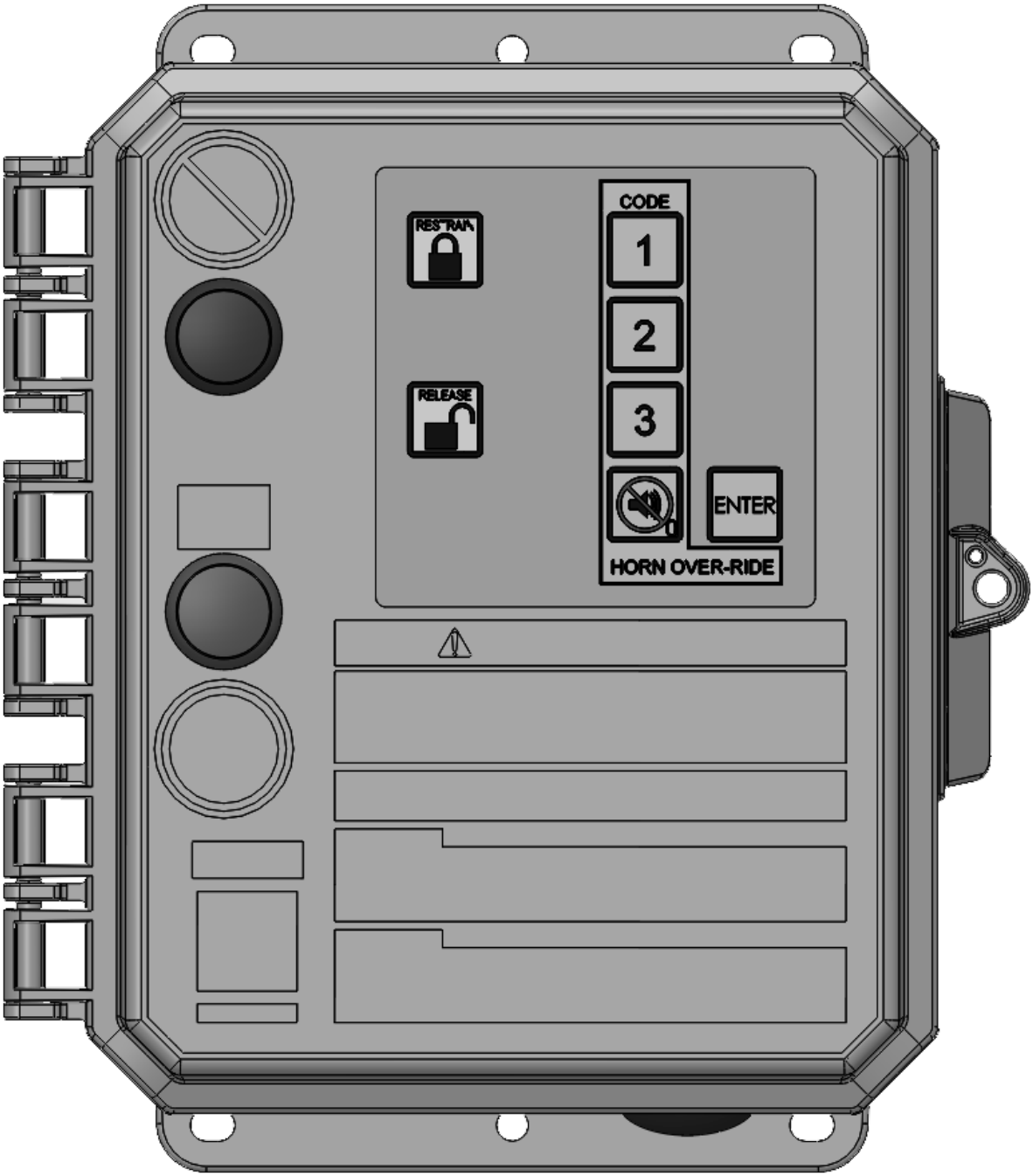
HORN OVER-RIDE FACTORY SETTING CODE

- **HORN OVER-RIDE Factory Setting code is 2213 for CB-00.**



PRECAUTIONS

Recognize Precautionary Information

Safety-Alert Symbol

The Safety- Alert Symbol is a graphic representation intended to convey a safety message without the use of words. When you see this symbol, be alert to the possibility of death or serious injury. Follow the instructions in the safety message panel.

⚠ DANGER

The use of the word DANGER signifies the presence of an extreme hazard or unsafe practice which will most likely result in death or serious injury.

⚠ WARNING

The use of the word WARNING signifies the presence of a serious hazard or unsafe practice which could result in death or serious injury.

⚠ CAUTION

The use of the word CAUTION signifies possible hazard or unsafe practice which could result in minor or moderate injury.

NOTICE

The use of the word NOTICE indicates information considered important, but not hazard-related, to prevent machine or property damage.

SAFETY INSTRUCTIONS

Indicates a type of safety sign, or separate panel on a safety sign, where safety-related instructions or procedures are described.

General Operational Precautions

Read and understand the Owner's/User's Manual and become thoroughly familiar with the equipment and its controls before operating the transport vehicle restraint.

Never operate a transport vehicle restraint while a safety device or guard is removed or disconnected.

Never remove DANGER, WARNING, or CAUTION signs, Placards, or Decals on the equipment unless replacing them.

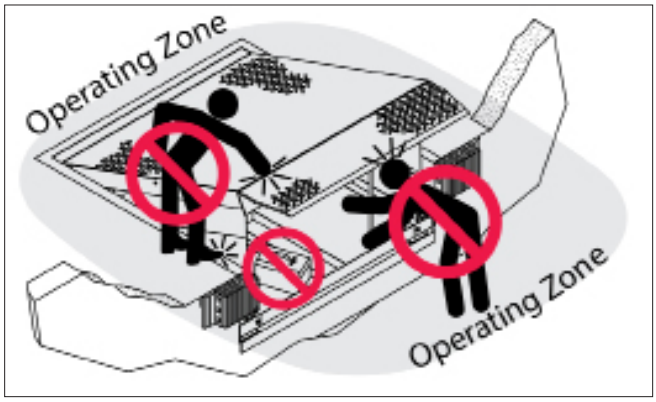


Figure A

Do not start the equipment until all unauthorized personnel in the area have been warned and have moved outside the operating zone (see Figure A).

Remove any tools or foreign objects from the operating zone before starting.

Keep the operating zone free of obstacles that could cause a person to trip or fall.

⚠ **WARNING:** This product can expose you to chemicals including lead, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

PRECAUTIONS

Operational Precautions

Learn the safe way to operate this equipment. Read and understand the manufacturer's instructions. If you have any questions, ask your supervisor.

If the NOVA Lock-Up™ vehicle restraint does not operate properly using the procedures in this manual, enter HORN OVER-RIDE mode or contact your local representative for service.

⚠DANGER

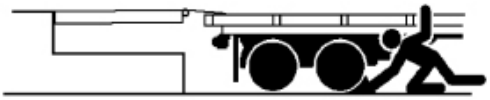
Stay clear of dock leveling device and restraint when transport vehicle is entering or leaving area.

Do not move or use the dock leveling device and restraint if anyone is under in front or near it.

Keep hands and feet clear of pinch points. Avoid putting any part of your body near moving parts.

Do not operate any equipment while under the influence of alcohol or drugs.

⚠WARNING



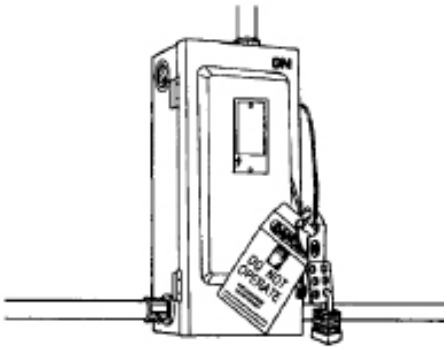
Chock/restrain all transport vehicles. Never remove the wheel chocks until loading or unloading is finished and transport vehicles driver has been given permission to drive away.

Do not use a broken or damaged restraint device. Make sure proper service and maintenance procedures have been performed before using.

PRECAUTIONS

Maintenance Precautions

⚠ DANGER



Electrical power must be OFF when servicing the equipment. For maximum protection, use an OSHA* approved locking device to lock out all power sources. Only the person servicing the equipment should have the key to unlock the device.

VEHICLE RESTRAINT SAFETY DECALS

Every 90 days (quarterly) inspect all safety labels, placards and tags to ensure they are present, easily seen and legible. Refer to the Parts section of this publication to identify the location of the safety items listed below. Call NOVA Technical Service for replacements.

Page #	Item #	Description
48	12	No Step Decal
52	2	Caution Sign
52	3	Enter on Green Sign
53	8	Decal, Arc Flash
52	4	Placard, Restraint Operation

⚠ DANGER

Arc Flash and Shock Hazard
PPE [Personal Protection Equipment] Required

De-energize equipment before working on or inside.
Do not open cover without appropriate PPE.
Refer to NFPA 70E for PPE requirements.
This panel may contain more than one power source.

MF2-202-000

Hazardous Voltage Will Result in Death or Serious Injury

⚠ WARNING

Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the unit before maintenance is complete.

ALWAYS disconnect electrical power source and ground wire before welding on restraint.

DO NOT ground welding equipment to any electrical components of the restraint. Always ground to the restraint frame.

DO NOT grind or weld if hydraulic fluid or other flammable liquid is present on the surface to be ground or welded.

DO NOT grind or weld if uncontained hydraulic fluid or other flammable liquid is present. Stray sparks can ignite spills or leaks near the work area. Always clean up the oil leaks and spills before proceeding with grinding or welding.

Always keep a fire extinguisher of the proper type nearby when grinding or welding.

* Refer to OSHA Regulation 1910.146 Confine Spaces, 1910.197 Lockout/Tagout.

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OWNER'S/USER'S RESPONSIBILITIES

1. The manufacturer shall provide to the initial purchaser and make the following information readily available to the owners/users and their agents, all necessary information regarding Safety Information, Operation, Installation and Safety Precautions, Recommended Initial and Periodic Inspections Procedures, Planned Maintenance Schedule, Product Specifications, Troubleshooting Guide, Service Parts Listing, Warranty Information, and Manufacturer's Contact Information.

2. The owner/user should recognize the inherent dangers of the interface between the loading dock and the transport vehicle. The owner/user should, therefore, train and instruct all operators in the safe operation and use of the restraining device in accordance with manufacturer's recommendations and industry standards. Effective operator training should also focus on the owner's/ user's company policies, operating conditions, and the manufacturer's specific instructions provided with the restraining device. Maintaining, updating, and retraining all operators on safe working habits and operation of the equipment, regardless of previous experience, should be done on a regular basis and should include an understanding and familiarity with all functions of the equipment. Owners/users shall actively maintain, update, and retrain all operators on safe working habits and operations of the equipment.

3. When selecting a restraining device, it is important to consider not only present requirements but also future plans and any possible adverse conditions, environmental factors, or usage. The owners/users shall provide application information to the manufacturer to receive recommendations on appropriate equipment specifications.

4. The owner/user must see all nameplates, placards, decals, instructions, and posted warnings are in place and legible and shall not be obscured from the view of the operator or maintenance personnel for whom such warnings are intended for. Contact manufacturer for any replacements.

5. Modifications or alterations of restraining devices shall be made only with prior written approval from the original manufacturer. These changes shall be in conformance with all applicable provisions of the MH30.3 standard and shall also satisfy all safety recommendations of the original equipment manufacturer of the particular application.

6. An operator training program should consist of, but not necessarily be limited to, the following:
   a. Select the operator carefully. Consider the physical qualifications, job attitude and aptitude.
   b. Assure that the operator reads and fully understands the complete manufacturer's owners/ users manual.
   c. Emphasize the impact of proper operation upon the operator, other personnel, material being handled, and equipment. Cite all rules and why they are formulated.
   d. Describe the basic fundamentals of the restraining device and components design as related to safety, e.g., mechanical limitation, stability, functionality, etc.
   e. Introduce the equipment. Show the control locations and demonstrate functions. Explain how they work when used properly and maintained as well problems when they are used improperly.
   f. Assure that the operator understands nameplate data, placards and all precautionary information appearing on the restraining device.
   g. Supervise operator practice of equipment.
   h. Develop and administer written and practical performance tests. Evaluate progress during and at completion of the course.
   i. Administer periodic refresher courses. These may be condensed versions of the primary course and include on-the-job operator evaluation.

7. It is recommended that the transport vehicle is positioned as close as practical to the dock leveling device and in contact with both bumpers. When an industrial vehicle is driven on or off a transport vehicle during the loading and unloading operation, the transport vehicle parking brakes shall be applied and wheel chocks or restraining device that provides equal or better protection of wheel chocks shall be engaged. Also, whenever possible, air-ride suspension systems should have the air exhausted prior to performing said loading and unloading operations.

OWNER'S/USER'S RESPONSIBILITIES

8. When goods are transferred between the loading dock and a trailer resting on its support legs/ landing gear instead of a tractor fifth wheel or converter dolly, it is recommended that an adequate stabilizing device or devices shall be utilized at the front of the trailer.

9. In order to be entitled to the benefits of the standard product warranty, the dock safety equipment must have been properly installed, maintained, and operated in accordance with all manufacturer's recommendations and/or specified design parameters and not otherwise have been subject to abuse, misuse, misapplication, acts of nature, overloading, unauthorized repair or modification, application in a corrosive environment, or lack of maintenance. Periodic lubrication, adjustment, and inspection in accordance with all manufacturer's recommendations are the sole responsibility of the owner/user.

10. Manufacturer's recommended maintenance and inspection of all restraining devices shall be performed in conformance with the following practices: A planned Maintenance Schedule Program must be followed, only trained and authorized personnel shall be permitted to maintain, repair, adjust, and inspect restraining devices, and only the use of original equipment manufacturer parts, manuals, maintenance instructions, labels, decals, and placards or their equivalent. Written documentation of maintenance, replacement parts, or damage should be kept. In the event of damage, notification to the manufacturer is required.

11. Restraining devices that are structurally damaged shall be removed from service, inspected by a manufacturer's authorized representative, and repaired or replaced as needed or recommended by the manufacturer before being placed back in service.

INSTALLATION INSTRUCTIONS

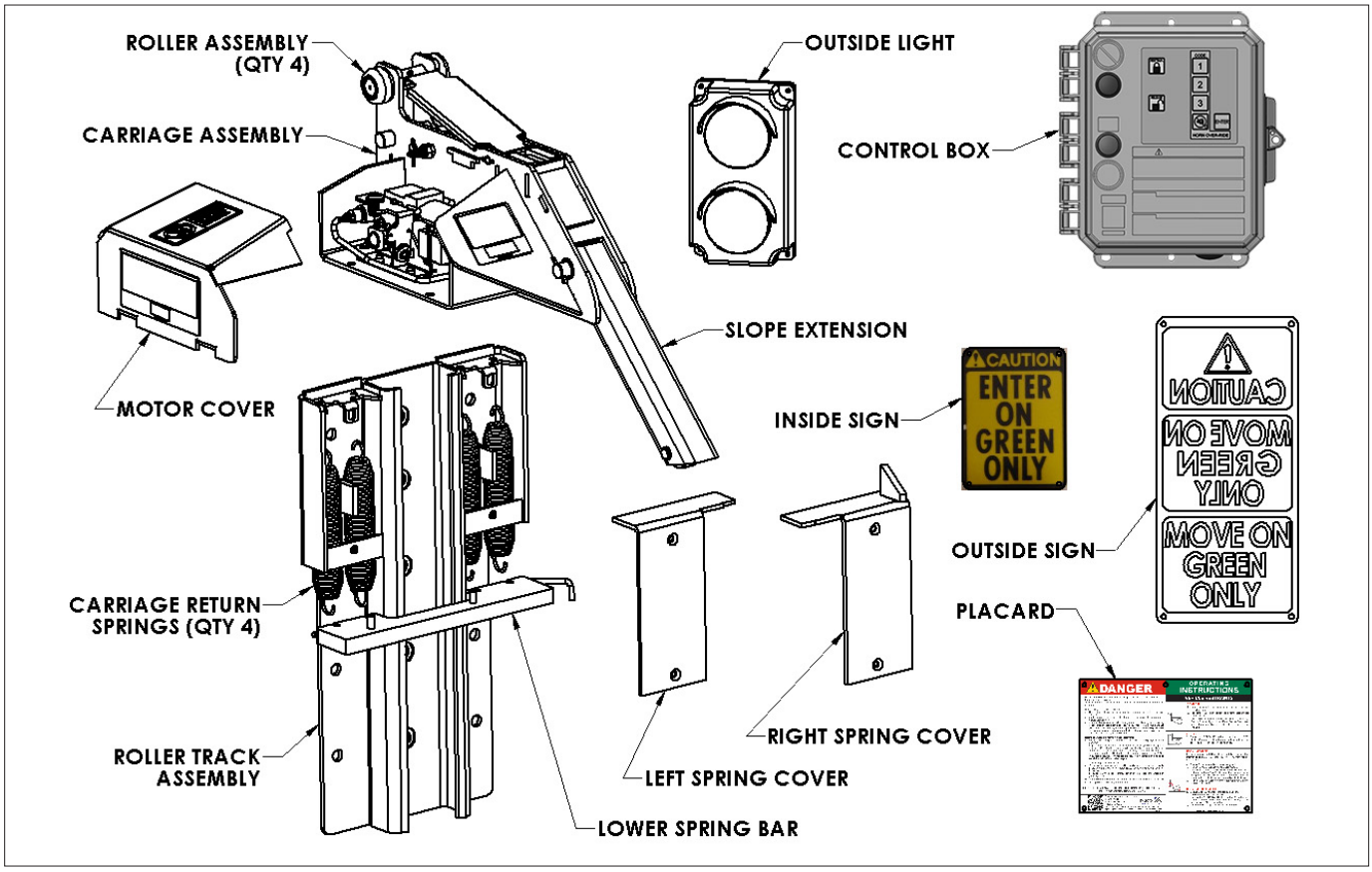


FIGURE 1—LOCK-UP COMPONENTS DESCRIPTION

NOTICE

A 4" thick bumper is required regardless of whether or not there is a leveler. DO NOT install a NOVA Lock-Up™ vehicle restraint on docks without 4" thick bumpers. For thicker bumpers consult factory.

INSPECT NOVA LOCK-UP™ PARTS

Open packaging and inspect all parts and materials—see Figure 1 above. Immediately report any damage or missing materials to factory. Review the component assemblies to determine their correct locations.

⚠ DANGER

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

INSTALLATION INSTRUCTIONS

A NOVA Lock-Up™ vehicle restraint may be installed on docks with or without levelers; consult NOVA for proper application.

Follow the simple installation procedures below:

- Inspect NOVA Lock-Up™ vehicle restraint parts.
- Install roller track.
- Install NOVA Lock-Up™ vehicle restraint into roller track.
- Install electrical components.
- Install safety & instruction signs.
- Test operation.

INSTALLATION INSTRUCTIONS

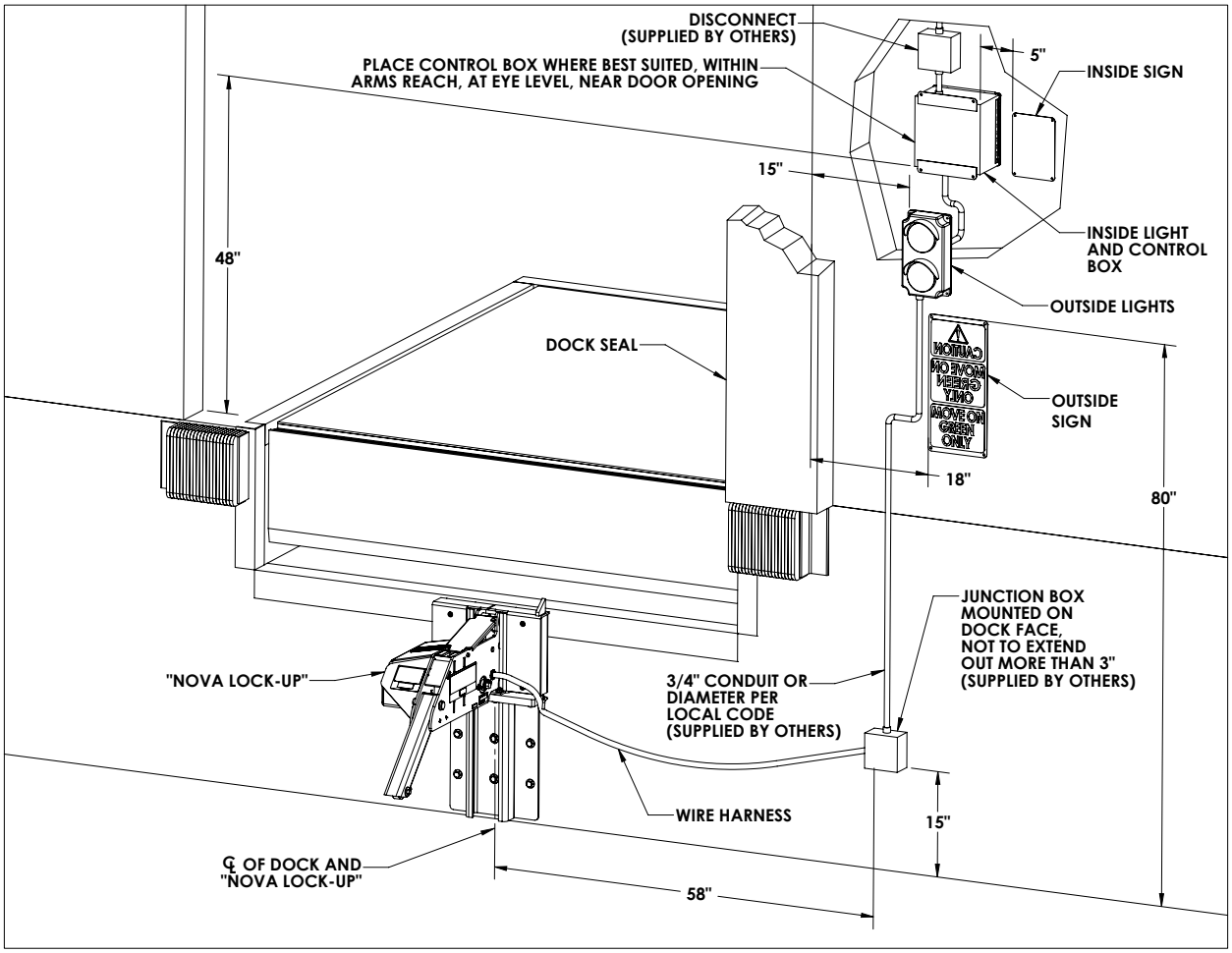


FIGURE 2—SUGGESTED COMPONENT LOCATION

There is one (1) driver caution sign and one (1) inside caution sign supplied with each NOVA Lock-Up™ vehicle restraint. (Mounting hardware supplied by others.) Mount outside sign as shown in Figure 2. Mount the inside sign next to the control box. Attach placard to control box with zip tie supplied or mount next to the control box. Install all signs provided.

NOTICE

- Some docks may have dock/truck seals or shelters which are larger than standard. The outside light, sign location, and mounting should be studied before proceeding to avoid interference.
- If necessary, signs may be trimmed for fit. However, DO NOT cut or eliminate sign letters or words.
- Attach signs and concrete anchors or screws. Do not use nails.
- NEVER put conduit in front of signs. A clear view must be maintained at all times of the exterior and interior signs.

INSTALLATION INSTRUCTIONS

INSTALL ROLLER TRACK

Install roller track onto dock face at specified location by welding to an embedded steel plate or by using the fifteen (15) concrete anchors provided in conjunction with welding to pit steel and a leveler frame. Refer to Figures 3, 4, and 5.

If you have questions, contact NOVA Technical Support at (800) 236-7325.

NOTICE

The roller track must be plumb with dock face. If not, use and weld (6) shims 2" wide x 25 5/8" long. If shims are over 1/2" thick use longer anchors. If shims need to be 1" thick or more, contact NOVA.

If the dock face is not perpendicular, contact NOVA Technical Support at (800) 236-7325.

The carriage roller track cannot be bent or deformed. Straighten or replace if necessary.

NOTICE

Trim roller track, as necessary, up to a maximum of 5" from the bottom.

Some mechanical dock levelers have an adjusting nut access hole in the leveler front subframe. If the NOVA Lock-Up™ vehicle restraint roller track interferes with the access hole, the roller track must be cut to allow access.

Some levelers are slightly recessed within the pit and thus require a shim to be inserted between the roller track and the leveler front subframe and welded in place.

⚠WARNING

Walls must be poured concrete 8" thick minimum to install wedge anchors. Block or brick wall is not acceptable.

NOTICE

Fifteen (15) concrete anchors are provided with each NOVA Lock-Up™ vehicle restraint. An anchor must be installed in each roller track hole except for those plug-welded to embedded steel.

ANCHOR INSTALLATION INSTRUCTIONS

1. Put roller track in place.
2. Drill hole of 5/8" diameter and minimum of 4-5/8" deep. Clean out hole.
3. Insert anchor and drive flush with roller track, making sure that the threaded wedge is inserted first. Do not disassemble anchor prior to installation.
4. Install all anchors and torque to 60 ft-lbs. See Figure 3.

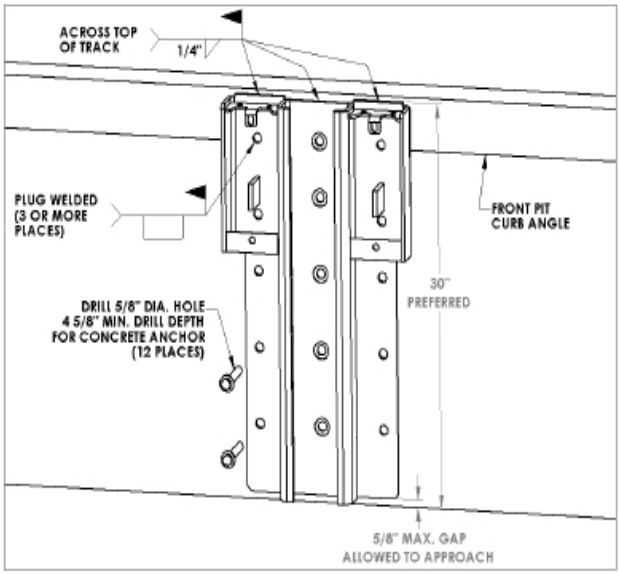


FIGURE 3—ANCHORING ROLLER TRACK

INSTALLATION INSTRUCTIONS

WELDING INSTALLATION INSTRUCTIONS

If the installation being worked on is a retrofit or replacement situation, the following electrical connections must be disconnected prior to welding.

LOCKOUT/TAGOUT the power at the fused disconnect, then remove the motor and limit switch connections from the control harness located in the outside junction box. Once all welding has been completed, reconnect all the wires.

NOTICE

Never install the NOVA Lock-Up™ vehicle restraint directly onto concrete block or brick dock face.

When welding the NOVA Lock-Up™ vehicle restraint, disconnect power and ground leads to leveler.

Due to actual conditions, total mounting height may be different.

Plug weld all holes that are in contact with the embedded mounting plate. All fifteen (15) holes must be either plug welded or anchored. See Figure 4.

Shims must be the full length of the roller track. Minimum electrode must be 1/8" 7018 or better. See Figure 5.

NOTICE

Never weld on the NOVA Lock-Up™ vehicle restraint after the motor is wired into the control box and power to the control box is on. Electrical current from the welder can loop back through the circuit and damage the motor and other components.

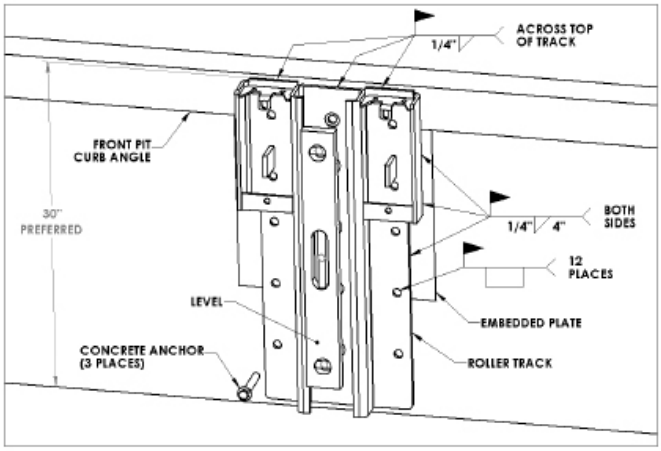


FIGURE 4—WELDING ROLLER TRACK FRONT VIEW (WITH EMBEDDED PLATE)

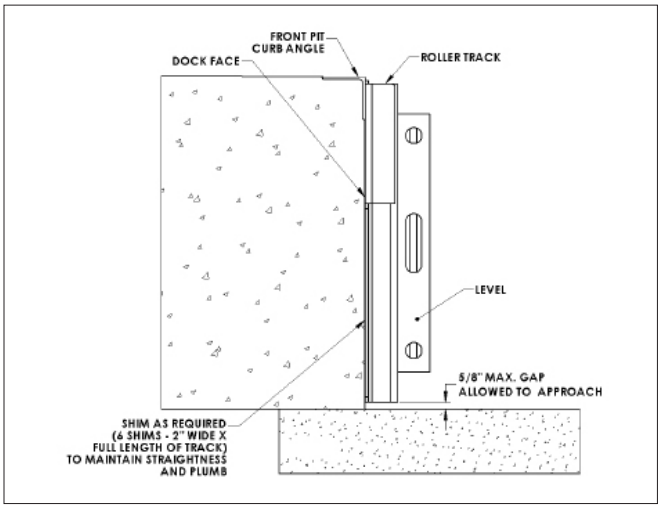


FIGURE 5—WELDING ROLLER TRACK SIDE VIEW

INSTALLATION INSTRUCTIONS

INSTALL VEHICLE RESTRAINT INTO ROLLER TRACK

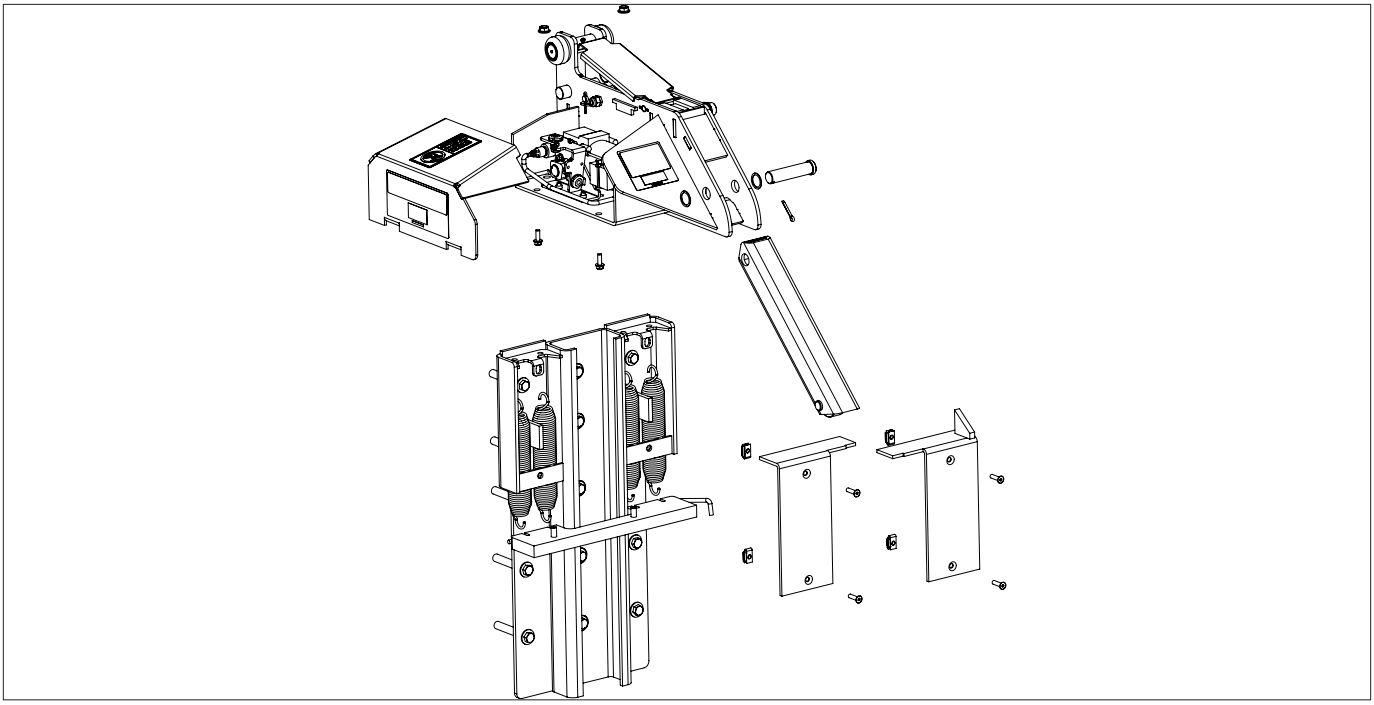


FIGURE 6—INSTALLING CARRIAGE ASSEMBLY INTO ROLLER TRACK

⚠ CAUTION

Use lifting device (e.g. crane, jack) when lifting carriage (approx. 110 lbs.). Lifting by hand may cause back injury.

- Attach the four (4) springs to the lower spring bar.
- Pull springs upward and slide over top spring mount on the track roller.
- Install roller assemblies onto carriage.
- Slide the carriage assembly into the roller track. Refer to Figure 6.
- Remove motor cover and bolt the lower spring bar to the bottom of the NOVA Lock-Up™ vehicle restraint carriage.
- Install the motor cover.
- Install right and left spring cover with clip nuts and flat head screws provided.
- Install slope extension.

INSTALLATION INSTRUCTIONS

INSTALL ELECTRICAL COMPONENTS

⚠ DANGER

Make sure that the power source has been locked out and tagged according to OSHA* regulations and approved local electrical codes.

If the incoming electrical power for the NOVA Lock-Up™ vehicle restraint is taken from a nearby electrical appliance, e.g., overhead door opener, verify that the amperage is in accordance with local and federal codes.

The NOVA Lock-Up™ vehicle restraint 1/10 HP motor requires 120V, single phase, 60 Hz power and 10 amps of current to operate properly.

Two (2) NOVA Lock-Up™ vehicle restraints can be connected into one (1) 20 amp branch circuit breaker per the 1999 National Electrical Code Paragraph 430-53.

If you have questions, contact NOVA Technical Support at (800) 236-7325.

CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and final connections to the pit junction box — must be performed by a certified electrician and conform to all local and applicable national codes.

The NOVA Lock-Up™ vehicle restraint assembly includes a 63" long flexible wiring harness, the control box with lights, and the outside signal light box. The outside junction box, conduit fittings, and wire are provided by others; be sure to use a qualified installer utilizing quality materials.

Electrical schematics for wiring information can be found inside the control box.

CONTROL BOX INSTALLATION GUIDELINES—TEMPERATURE CONTROLLED APPLICATIONS.

1. Route the conduit to enter through the side or bottom of the enclosure. If the conduit could fill with water, a drip leg may be needed.
2. Seal the conduit in any location where the conduit crosses over temperature zones that could produce condensation.
3. Install spacers between the wall and enclosure to provide temperature insulation and air flow.

NOVA NHS Motor Electrical Specifications

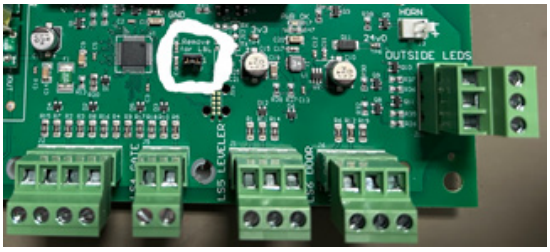
Motor Voltage	RPM	Hz	PHASE	AMP. DRAW MOTOR RUNNING	Elect. Serv. Amperage Req.
110/115/120	3450	60	1	14.4	30*
208	3450	60	1	7.1	20
220/230/240	3450	60	1	7.2	20
208	3450	60	3	3.6	10
220/240	3450	60	3	3.7	10
440-460-480	3450	60	3	1.8	10
575	3450	60	3	1.4	10

* Refer to OSHA Regulation 1910.146 Confine Spaces, 1910.197 Lockout/Tagout.

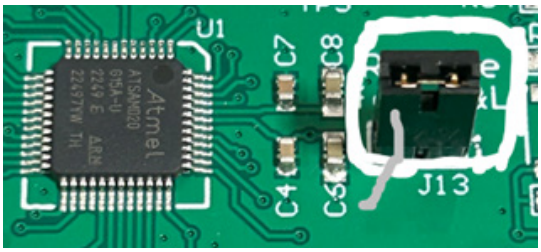
INSTALLATION INSTRUCTIONS

- **CB-00 ELECTRICAL CONNECTIONS INSTALLATION**

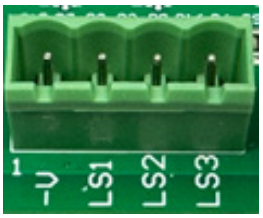
1. Locate FIRMWARE JUMPER on J13 (circled below) on Printed Circuit Board Assembly (PCBA).



   a. NOVA **Lock-Up™** Vehicle Restraint: **Do NOT Remove** JUMPER.



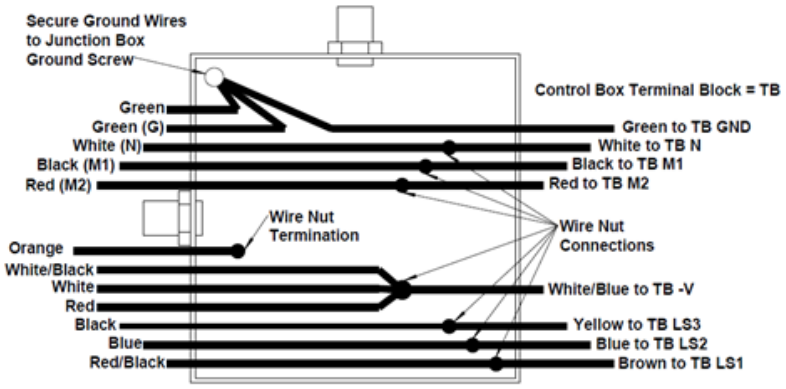
2. Connect Vehicle Restraint Communication Wires (Magnetic Sensors/Limit Switches) from page 15 Dock Face Junction Box to 4-Pole Terminal Plug.
   a. Terminal Plug Socket is labeled "-V, LS1, LS2 and LS3".
   b. LS3 is not used for Lock & Load™.



3. Connect Earth Ground and **Vehicle Restraint Gearmotor Ground** to 3-Pole Levernut.
   a. Levernut is factory secured to GREEN wire illustrated below.

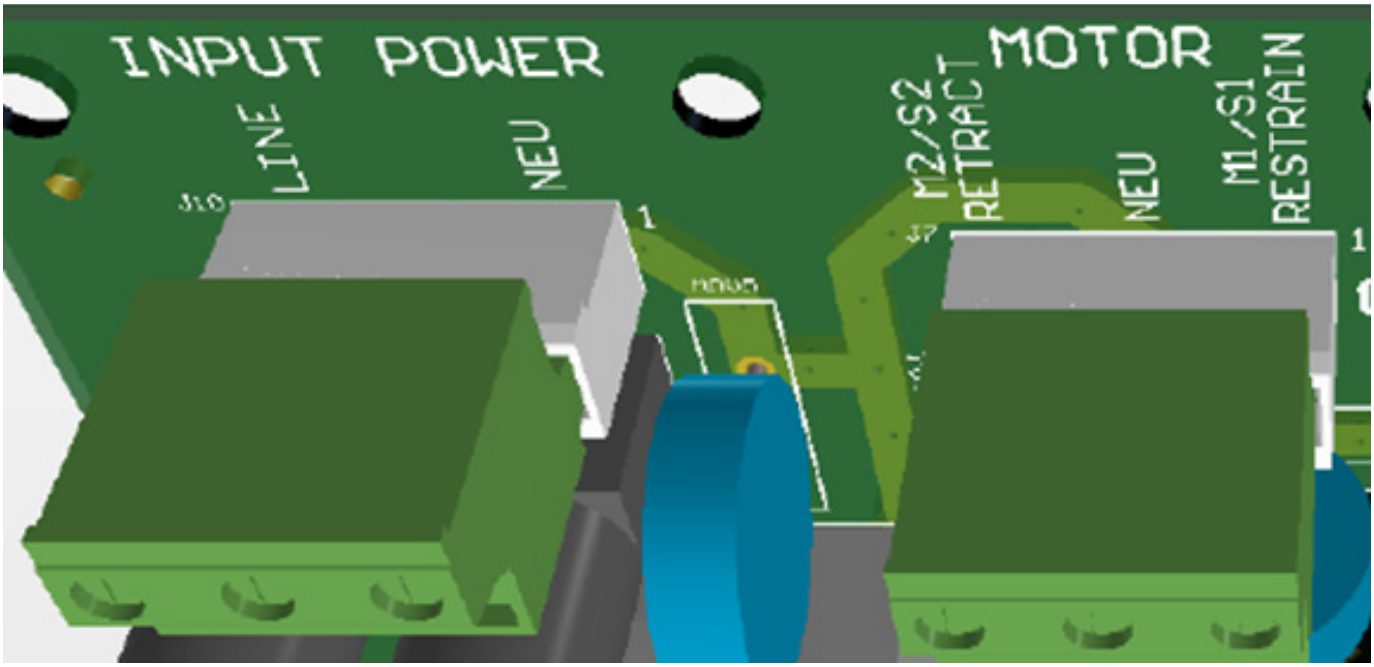
INSTALLATION INSTRUCTIONS

4. NOVA **Lock-Up™ with Magnetic Sensors** Dock Face Junction Box.



INSTALLATION INSTRUCTIONS

5. Connect Vehicle Restraint Power Wires (M1, M2 and N) from Dock Face Juction Box to 3-Pole Terminal Plug.
   a. Terminal Plug Socket is labeled MOTOR with pins listed below:
      i. M1 to M1/S1 RESTRAIN
      ii. M2 to M2/S2 RELEASE
      iii. N to NEU (neutral)



⚠ CAUTION

Electrical power must be OFF when:
- **Connecting incoming power wires to 3-Pole Terminal Plug**
- **Engaging or Disengaging Terminal Plug with PCBA socket**

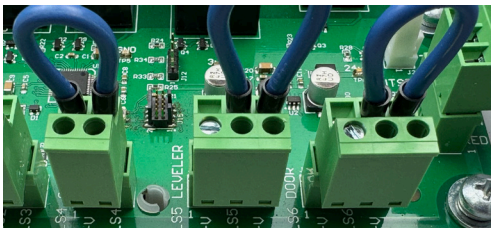
6. Connect incoming 120VAC from Electrical Disconnect to 3-Pole Terminal Plug.
   a. Terminal Plug Socket is labeled INPUT POWER with pins listed below:
      i. Line to LINE
      ii. Neutral to NEU

7. Connect 24VDC Outside Signal Lights to 3-Pole Terminal Plug with pins labeled "-V, GRN, RED".
   a. Black wire to "-V"
   b. Red wire with "GREEN LIGHT" label to "GRN"
   c. Red Wire without label to "RED"

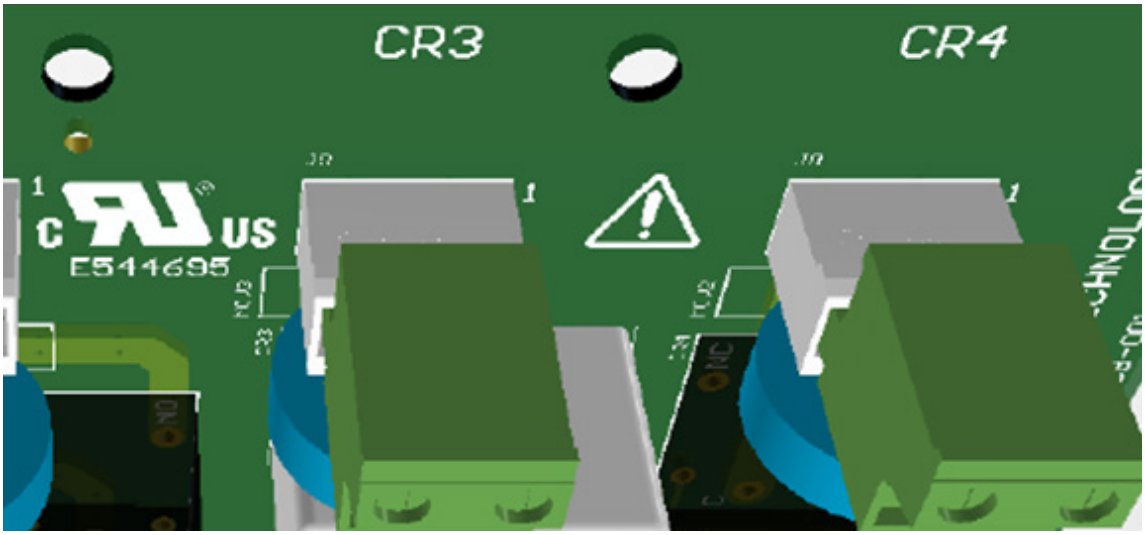
INSTALLATION INSTRUCTIONS

CB-00 ELECTRICAL CONNECTIONS INTERLOCK INSTALLATION

- CB-00 PCBA Terminal Block inputs for interlocked devices have factory installed Jumper Wires illustrated below:



- Interlock External SENSORS by replacing Jumper Wire with Sensor connection listed below:
  - NOVA **Dock Gate Sensor** (NDG-RS)
    - LS4 to White wire
    - -V to Black wire
  - NOVA **Dockleveler Lip Sensor** (CB-1032)
    - LS5 to Black wire
    - -V to Blue wire
    - +24VDC to Brown wire
  - NOVA **Dock Door Sensor** (CB-1034)
    - LS6 to White wire
    - -V to Blue wire
    - +24VDC to Brown wire
- Interlock External CONTROLS by routing Power Source through PCBA Dry Contact Relays listed below:
  - CR3 to Dockleveler Push Button Station
  - CR4 to Dock Door Push Button Station



INSTALLATION INSTRUCTIONS

SET-UP PHOTOELECTRIC SENSOR (ONLY WITH OVERHEAD DOOR OPTION)

NOTE: Installation of photoelectric sensors must be completed before wiring overhead dock door controls into combination control box.

1. Verify overhead door is fully closed. Fasten reflector bracket to stile on overhead door.
   a. See FIGURE 7.
      i. Roughly 24 to 36 inches from the floor.
      ii. Reflector must be facing the closest door track.
   b. Use the following hardware.
      i. 2 (CB-1017) No.12 X 3/4" Hex Head Self-Drilling Screw.

2. Mount photoelectric sensor bracket to door track across from reflector at lower part of door.
   a. See FIGURE 8.
   b. Line up photoelectric sensor. Clearance hole to be in line with center of reflector.
   c. Drill two Ø 5/16" clearance holes through door track for bolts to fasten bracket.
   d. Use the following hardware to mount sensor bracket to door track.
      i. 2 (CB-1018) 1/4"-20 Nyloc Nut.
      ii. 2 (CB-1019) 1/4"-20 X 5/8" Button Head Cap Screw.

3. Install photoelectric sensor into mounting bracket.
   a. See FIGURE 9.

4. Connect M12 cord (CB-1016) to photoelectric sensor and route other end of cord to control box.

5. Perform electrical connections per instructions found on page 17.

6. Once photoelectric sensors are wired and control box is powered up, verify three LEDs on photoelectric sensor are on as listed below:
   a. Green
      i. On – Power is applied.
      ii. Off – No power going to sensor, verify wiring on page 17.
   b. Red
      i. On – Output is on.
      ii. Off – No Output coming from sensor.
   c. Orange (LED will only be on if reflector is in front of sensor).
      i. On (No Flashing) – Great alignment.
      ii. Long Flashing – Good alignment.
      iii. Short Flashing – Poor alignment.

INSTALLATION INSTRUCTIONS

SET-UP PHOTOELECTRIC SENSOR (ONLY WITH OVERHEAD DOOR OPTION)

iv. Off – Out of alignment OR photoelectric sensor is out of range.

If orange LED is flashing, loosen bolts securing reflector to bracket. Move reflector to a position that causes orange LED to illuminate constantly. Secure reflector in this position.

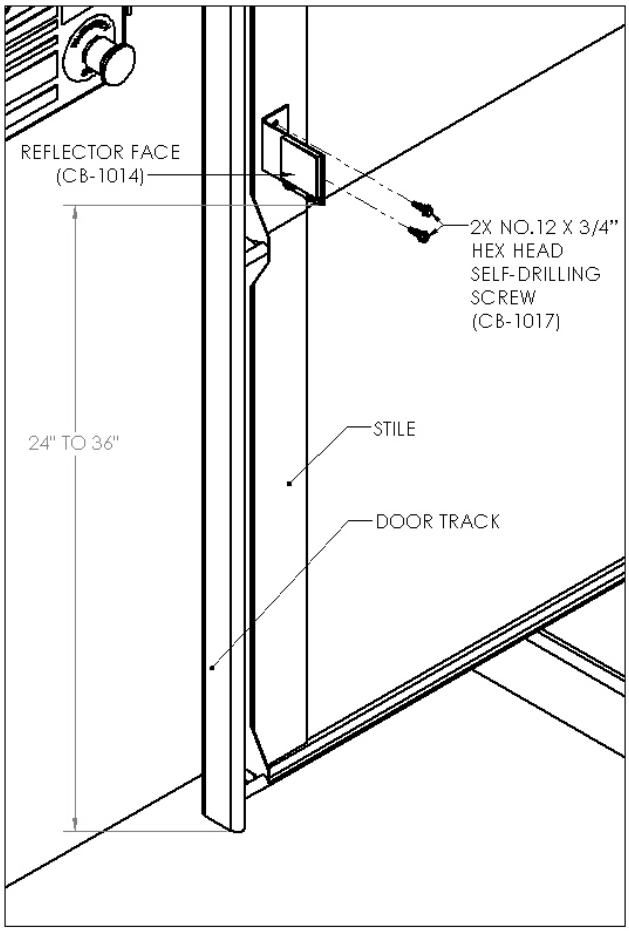


FIGURE 7—MOUNTING REFLECTOR

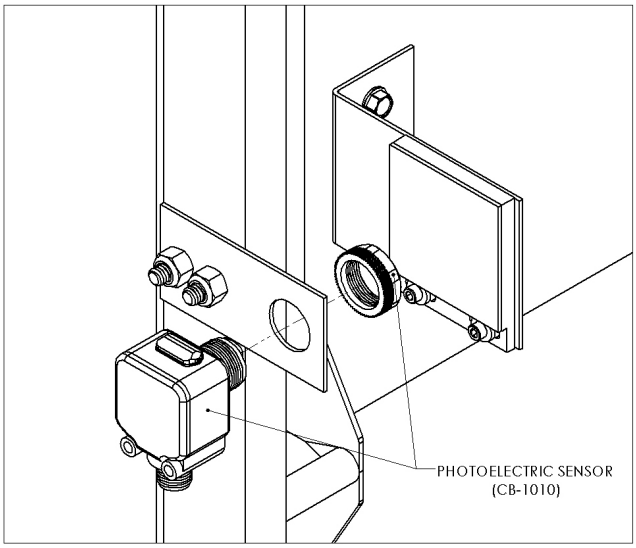


FIGURE 9—INSTALLING PHOTOELECTRIC SENSORS

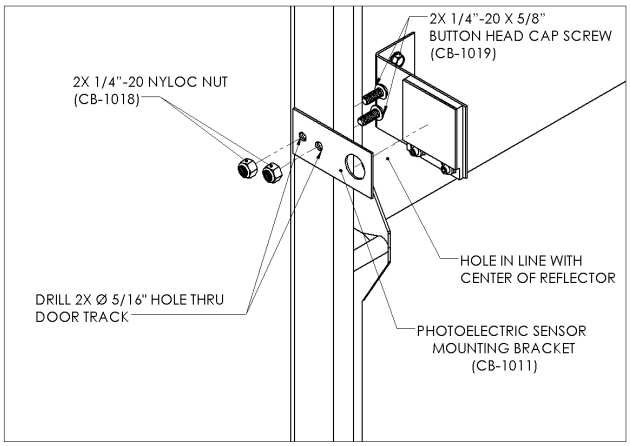


FIGURE 8—MOUNTING REFLECTOR

INSTALLATION INSTRUCTIONS

ADJUST LIP STOP BOLT(S)

⚠WARNING

Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the dock leveler before maintenance is complete.

⚠WARNING

Always stand clear of the dock leveler lip when working in front of the dock leveler.

⚠WARNING

The platform maintenance prop MUST be in the service position when working under the dock leveler. For maximum protection, use an OSHA approved locking device to lock the maintenance prop in the service position. Only the person servicing the equipment should have the key to unlock the maintenance prop.

Check that lip (E) is fully resting on lip keepers (D) and at lowest part of keeper cradle in center. If lip is not resting properly in keepers, perform the following adjustment.

1. Fully raise platform and engage maintenance prop. Manually raise lip:
   - **Air Bag Leveler:** Engage lip maintenance prop.
   - **Hydraulic Leveler:** Engage an external lip support device.

2. Loosen jam nut (B).

3. Adjust stop bolt (C) as necessary.
   - Turn stop bolt "in" (clockwise) to allow lip to fold closer to platform frame (A).

   - Turn stop bolt "out" (counterclockwise) to hold lip further away from platform frame (A).

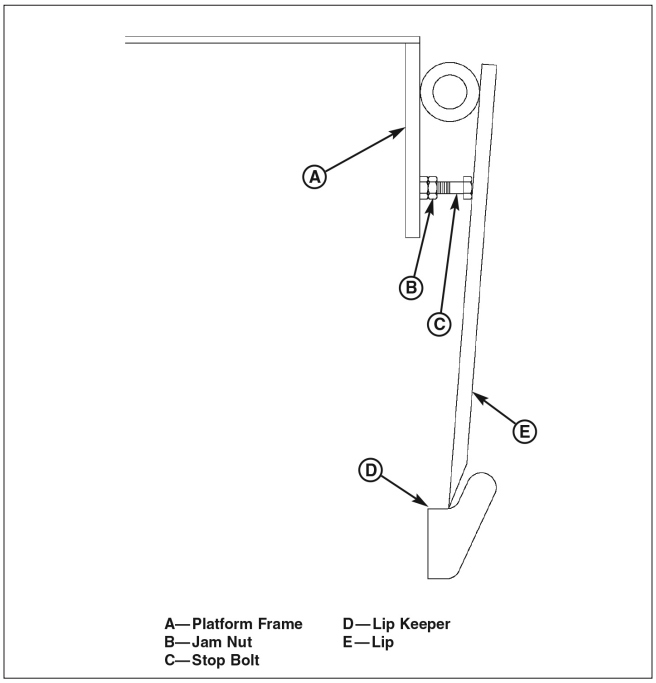
4. Tighten jam nut.

5. Disengage lip maintenance prop.

*Hydraulic levelers have two lip stop bolts.

6. Depress RAISE button, disengage maintenance prop, and allow platform to lower to cross-traffic (stored) position.

7. Check lip position in both keepers. Repeat procedure if necessary.



A—Platform Frame
B—Jam Nut
C—Stop Bolt
D—Lip Keeper
E—Lip

INSTALLATION INSTRUCTIONS

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INSTALLATION INSTRUCTIONS

SET-UP PROXIMITY SENSOR
(ONLY WITH AIR BAG OR HYDRAULIC DOCK LEVELER)

- If control box installation is with a new dock leveler installation see Section 1.
- If control box installation is with a current dock leveler see Section 2.

Section 1:
NOTE: Installation and wiring of proximity sensor must be completed before wiring dock control to and powering up interlock control box.

HYDRAULIC LEVELER

1. Read and understand the maintenance/service of section of the original equipment manufacturer (O.E.M.) owner's/user's manual for dock leveler.
2. Check that lip is fully resting on lip keepers and at lowest part of keeper cradle in center. If not, proceed to section: ADJUSTMENTS – ADJUST LIP STOP BOLT(S) on page 20.
3. Place dock leveler in maintenance/service position by following O.E.M. instructions.
4. Place Proximity Sensor Bracket Assembly (CB-1028) on sub-frame as shown in Figure 10 on page 25.
5. Fasten Proximity Sensor Bracket Assembly, with two 1/4"-20 X 1" hex head self-drilling screws, to the sub-frame as shown in Figure 11 on page 25. (If bracket assembly cannot be fastened to sub-frame, remove sensor from bracket before welding bracket to pit metal).
6. Remove end of screws to eliminate any sharp points on sub-frame and to create a flush surface as shown in Figure 12 on page 25.
7. Connect M12 cord (CB-1016 to proximity sensor and run other end of cord to pit junction box.
8. Perform electrical connections per instructions found on page 17.
9. Place dock leveler in stored position from maintenance/service position by following O.E.M. instructions.
10. Once the proximity sensor is wired and control box is powered up, verify two LEDs on the proximity sensor are illuminated as listed below by using a mechanics mirror.
    a. Green
        i. On – Power is applied
        ii. Off – No power going to sensor, verify wiring on page 17.
    b. Orange (LED will only be on if dock leveler lip is in front of sensor)
        i. On – Output is on.
        ii. Off – No Output coming from sensor.

⚠CAUTION

All electrical work — including installation of disconnect panel, control panel, and final connections to pit junction box — must be performed by a certified electrician and conform to all local and applicable national codes.

INSTALLATION INSTRUCTIONS

SET-UP PROXIMITY SENSOR
(ONLY WITH AIR BAG OR HYDRAULIC DOCK LEVELER)

Section 1:
NOTE: Installation and wiring of proximity sensor must be completed before wiring dock control to and powering up interlock control box.

AIR BAG LEVELER

1. Read and understand the maintenance/service of section of the original equipment manufacturer (O.E.M.) owner's/user's manual for dock leveler.
2. Check that lip is fully resting on lip keepers and at lowest part of keeper cradle in center. If not, refer to page 20.
3. Place dock leveler in maintenance/service position by following O.E.M. instructions.
4. Place Proximity Sensor Bracket Assembly (CB-1028) on sub-frame as shown in Figure 10 on page 25.
5. Fasten Proximity Sensor Bracket Assembly, with two 1/4"-20 X 1" hex head self-drilling screws, to the sub-frame as shown in Figure 11 on page 25. (If bracket assembly cannot be fastened to the sub-frame, remove sensor from bracket before welding bracket to pit metal).
6. Remove end of the screws to eliminate any sharp points on sub-frame and to create a flush surface as shown in Figure 12 on page 25.
7. Connect M12 cord (CB-1016 to the proximity sensor and run other end of the cord to pit junction box.
8. Perform electrical connections per instructions found on page 17.
9. Place dock leveler in stored position from maintenance/service position by following O.E.M. instructions.
10. Once proximity sensor is wired and control box is powered up, verify two LEDs on proximity sensor are illuminated as listed below by using a mechanics mirror.
    a. Green
        i. On – Power is applied.
        ii. Off – No power going to sensor, verify wiring on page 17.
    b. Orange (LED will only be on if dock leveler lip is in front of sensor)
        i. On – Output is on.
        ii. Off – No Output coming from sensor.

⚠CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and final connections to the pit junction box — must be performed by a certified electrician and conform to all local and applicable national codes.

INSTALLATION INSTRUCTIONS

SET-UP PROXIMITY SENSOR
(ONLY WITH AIR BAG OR HYDRAULIC DOCK LEVELER)

Section 2:
NOTE: Installation and wiring of proximity sensor must be completed before wiring dock control to and powering up interlock control box.

1. Read and understand the maintenance/service of section of the original equipment manufacturer (O.E.M.) owner's/user's manual for dock leveler.
2. Check that lip is fully resting on the lip keepers and at lowest part of keeper cradle in center. If not, refer to page 20.
3. Place dock leveler in the maintenance/service position by following O.E.M. instructions.
4. Place Proximity Sensor Bracket Assembly (CB-1028) on sub-frame as shown in Figure 10 on page 25.
5. Fasten Proximity Sensor Bracket Assembly, with two 1/4"-20 X 1" hex head self-drilling screws, to the sub-frame as shown in Figure 11 on page 25. (If bracket assembly cannot be fastened to sub-frame, remove sensor from bracket before welding bracket to pit metal).
6. Remove end of the screws to eliminate any sharp points on the sub-frame and to create a flush surface as shown in Figure 12 on page 25.
7. Connect M12 cord (CB-1016) to the proximity sensor and run other end of cord to pit junction box.
8. Perform electrical connections per instructions found on page 17.
9. Place the dock leveler in the stored position from maintenance/service position by following the O.E.M. instructions.
10. Once the proximity sensor is wired and the combination control box is powered up, verify the two LEDs on the proximity sensor are illuminated as listed below by using a mechanics mirror.
    a. Green
        i. On – Power is applied.
        ii. Off – No power going to sensor, verify wiring on page 17.
    b. Orange (LED will only be on if dock leveler lip is in front of sensor)
        i. On – Output is on.
        ii. Off – No Output coming from sensor.

⚠CAUTION

All electrical work — including the installation of the disconnect panel, control panel, and final connections to the pit junction box — must be performed by a certified electrician and conform to all local and applicable national codes.

INSTALLATION INSTRUCTIONS

SETUP PROXIMITY SENSOR
(ONLY WITH AIR BAG OR HYDRAULIC DOCK LEVELER)

NOTE: Sensor must target the back side of the lip.

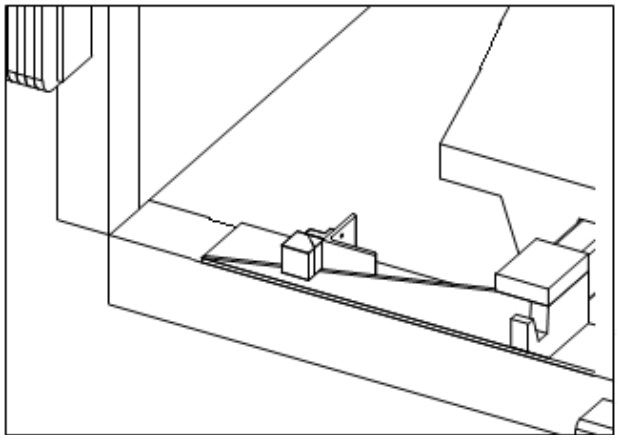


FIGURE 10—INSTALLING PROXIMITY SENSOR BRACKET

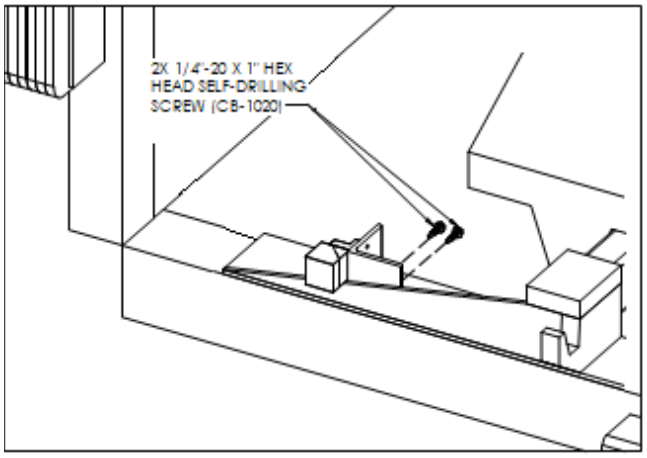


FIGURE 11—FASTEN BRACKET TO SUB-FRAME

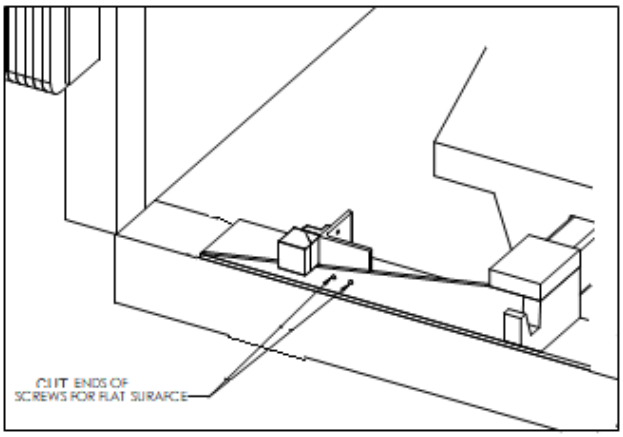
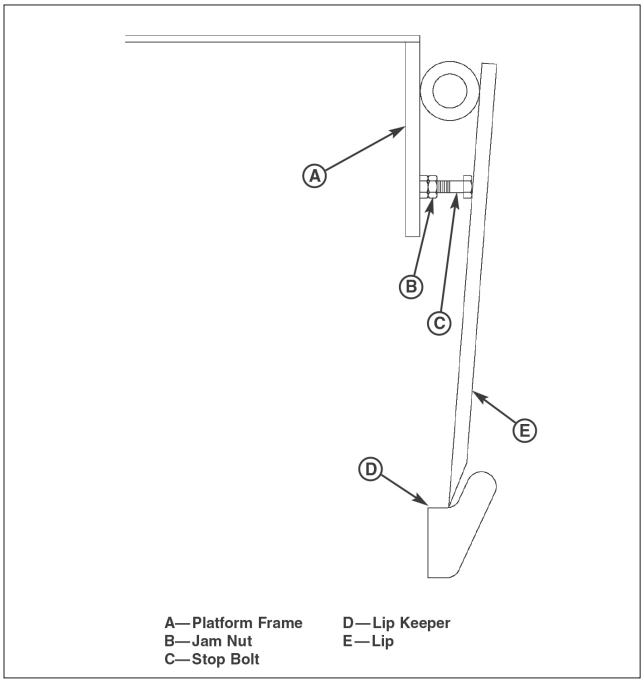


FIGURE 12—REMOVED ENDS OF SCREWS



INSTALLATION INSTRUCTIONS

TEST OPERATION: Standard Control Box (CB-00)

This test operation is specifically for installation instructions to verify NOVA Lock-Up™ Standard Control Box (CB-00) is working properly. If NOVA Lock-Up™ does not work properly, contact NOVA Technology.

⚠ CAUTION

Electrical power must be OFF when:

- **Connecting incoming power wires to 3-Pole Terminal Plug**
- **Engaging or Disengaging Terminal Plug with PCBA socket**

1. Power-Up
   a. Turn on power to CB-00 control box at Electrical Disconnect.
   b. Verify CB-00 control Box:
      i. RED light is flashing
      ii. HORN is not sounding
   c. Verify outside GREEN light is flashing.

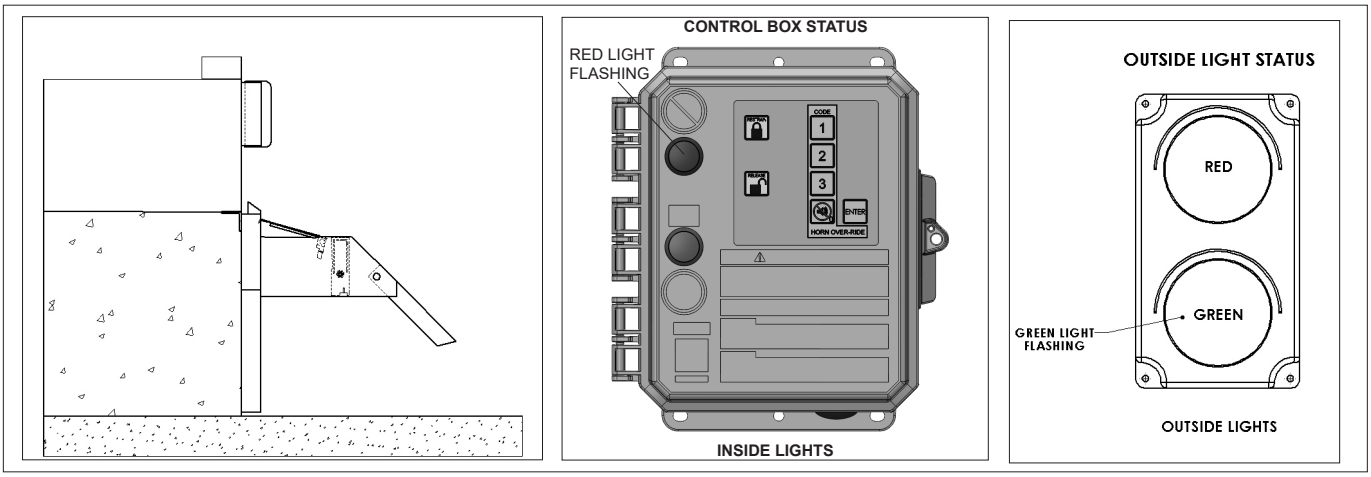


FIGURE 13—UNLOCKED POSITION/NO VEHICLE PRESENT

INSTALLATION INSTRUCTIONS

2. Test RESTRAIN/RELEASE Functions.
   a. Verify RIG sensor is in UP position.
   b. Press RESTRAIN button.
   c. Verify barrier does not raise to up position.

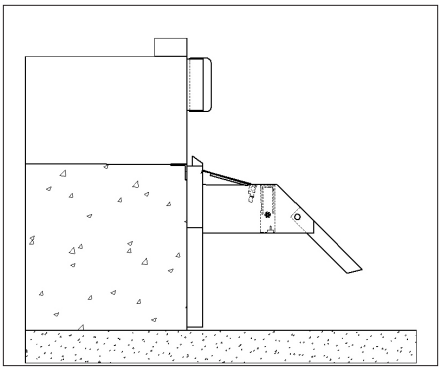


FIGURE 14—RIG SENSOR IN UP POSITION

   d. Place wheel chock or other RIG simulator onto vehicle restraint carriage.
   e. Press RESTRAIN button.
   f. Verify barrier has raised to up position.
   g. Verify conditions listed below.
      - Control Box HORN is not sounding.
      - Control Box Flashing GREEN Light.
      - Outside Signal Flashing RED Light.
   h. Press RELEASE button.
   i. Remove RIG simulator from carriage.

INSTALLATION INSTRUCTIONS

3. Test HORN OVER-RIDE Function
   a. Depress "HORN OVER-RIDE" button (#0 button).

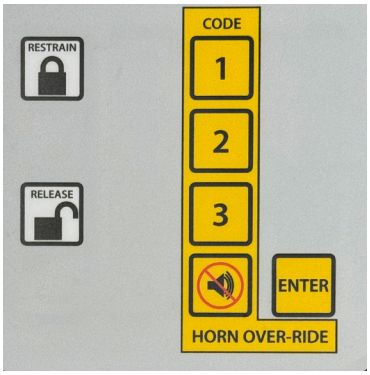


FIGURE 17—HORN OVER-RIDE INITIATION

   b. Enter Factory Set four-digit Over-Ride code listed below:
      - CB-00 code is 2213
      - CB-40/41 code is 5528 and note Display options listed below:
        - "Wrong PW: Reenter Or wait" text will appear if wrong code is entered, but
        - "L-U CB-40_..." or "L-U CB-21-..." will reappear in 30 seconds if no code is entered.

   c. Press "ENTER" button.

INSTALLATION INSTRUCTIONS

d. Verify RED and GREEN lights on control box are flashing.
e. Verify outside RED light is flashing.

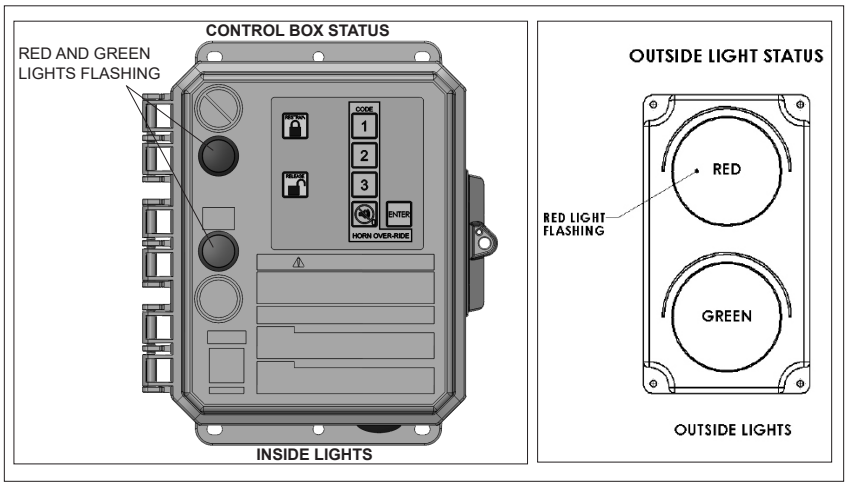


FIGURE 18—HORN OVER-RIDE LIGHT INDICATION

INSTALLATION INSTRUCTIONS

4. Turn off HORN OVER-RIDE Function
   a. Verify RED and GREEN lights on control box are flashing.
   b. Depress "HORN OVER-RIDE" button (#0 button).

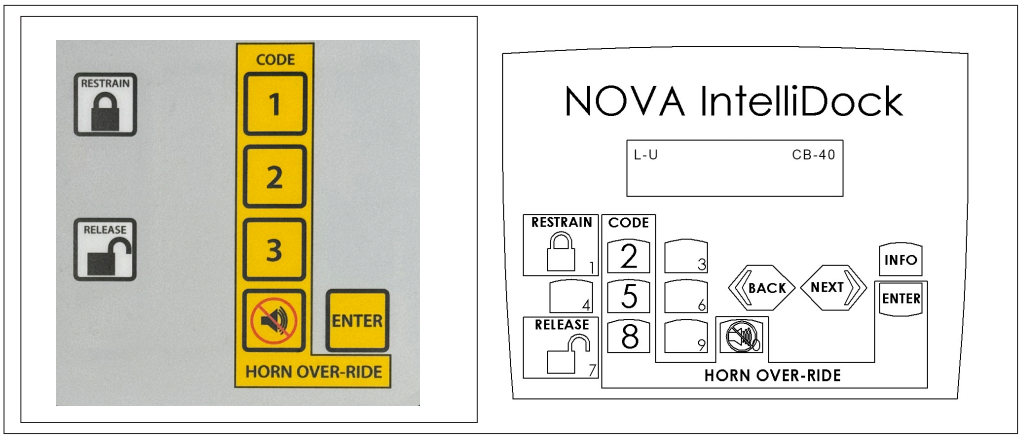


FIGURE 21—DISENGAGING HORN OVER-RIDE

   c. Enter Factory Set four-digit Over-Ride code listed below:
      - CB-00 code is 2213
      - CB-40/41 code is 5528 and note Display options listed below:
        - "Wrong PW: Reenter Or wait" text will appear if wrong code is entered, but
        - "L-U CB-40_..." or "L-U CB-21-..." will reappear in 30 seconds if no code is entered.

      Press "ENTER" button.
   d. Verify RED light on control box is flashing.
   e. No HORN should be sounding.
   f. Verify outside GREEN light is flashing.

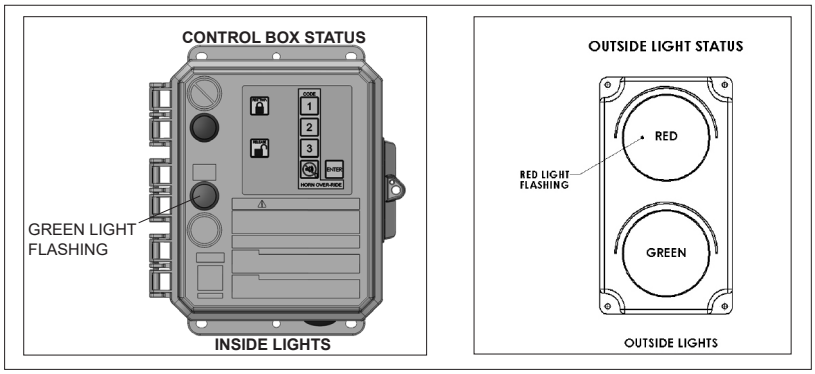


FIGURE 22—ENGAGED STATE LIGHT INDICATION

INSTALLATION INSTRUCTIONS

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INSTALLATION INSTRUCTIONS

INTERLOCK CONTROL BOX OPERATION OVERVIEW

CB-00:

- RESTRAIN/RELEASE functional only with all three conditions below:
  - Gate Closed.
  - Leveler Stored.
  - Door Closed.
- OPEN Gate functional only with one of conditions listed below:
  - Control box flashing GREEN light.
  - Control box HORN OVER-RIDE state.
- RAISE Leveler functional only with one of conditions listed below:
  - Control box flashing GREEN light.
  - Control box HORN OVER-RIDE state.
- OPEN Door functional only with one of conditions listed below:
  - Control box flashing GREEN light.
  - Control box HORN OVER-RIDE state.

CB-41-A:

- RESTRAIN/RELEASE functional only with dock door closed.
  - Control box fault requires dock door to be closed before entering HORN OVER-RIDE state.
- OPEN dock door functional only with any one of conditions listed below:
  - Control box flashing GREEN light.
  - Control box HORN OVER-RIDE state.
- HORN OVER-RIDE state enables dock door OPEN/CLOSE functionality regardless of Hook position.

CB-41-B:

- RESTRAIN functional regardless of dock door position.
- RELEASE functional only with dock door closed.
  - Control box fault requires dock door to be closed before entering HORN OVER-RIDE state.
- OPEN dock door functional only with any one of conditions listed below:
  - Control box flashing GREEN light.
  - Control box flashing RED light.
  - Control box HORN OVER-RIDE state.

CB-41-C:

- RESTRAIN/RELEASE functional only with dock leveler stored.
  - Control box fault requires dock leveler to be stored before entering HORN OVER-RIDE state.
- RAISE dock leveler functional only with any one of the conditions listed below:
  - Control box flashing GREEN light.
  - Control box HORN OVER-RIDE state.
- HORN OVER-RIDE state enables dock leveler activation regardless of Hook position.

OPERATING PROCEDURES

Stored Position / Restraint UNLOCKED / Vehicle Present

Barrier is in the stored position. Inside RED light is on constant. Outside light is flashing GREEN. Refer to Figure 26.

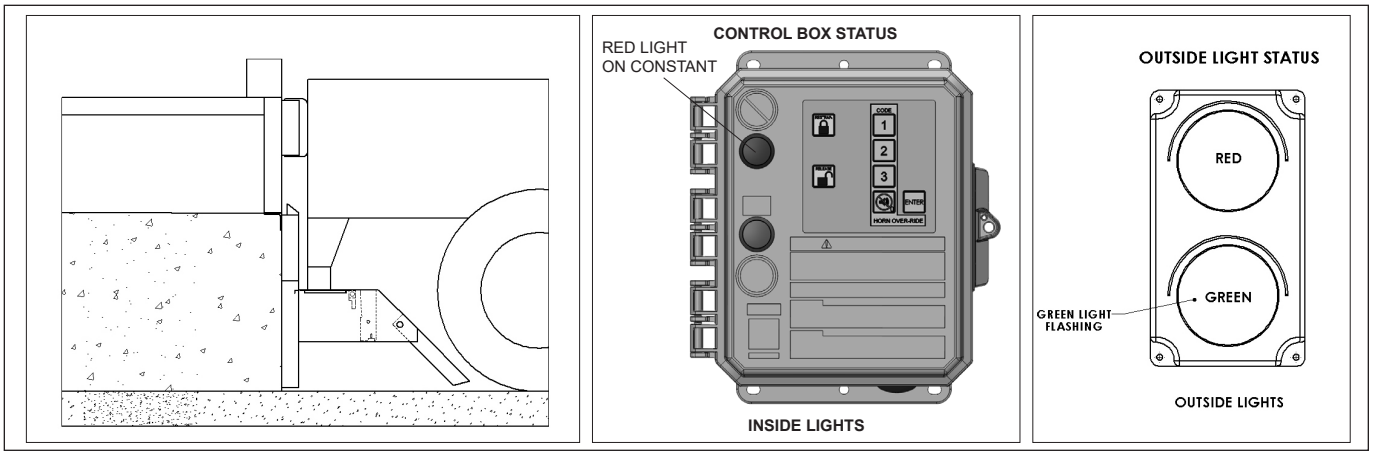


FIGURE 26—STORED POSITION/VEHICLE PRESET

Interlocked Equipment Position to Lock Restraint

Interlocked equipment must be in position listed below:

CB-41-A: Interlock Door A	Door must be closed
OR	
CB-41-B: Interlock Door B	Door could be opened or closed
OR	
CB-41-C: Interlock Leveler	Leveler must be stored

OPERATING PROCEDURES

RESTRAIN Button Pressed - Restraint LOCKING

Trailer has backed into loading dock and is parked firmly against dock bumpers.The HORN will sound while the barrier rises from stored position to engage RIG. Inside RED light is on constant. Outside light is flashing RED alterting truck driver not to move. Refer to Figure 27.

If horn continues to sound, proceed to FAULT, otherwise proceed to Restraint LOCKED.

⚠ CAUTION

If trailer can not be restrained due to a lift gate or other obstruction that could become damaged, proceed to HORN OVER-RIDE state.

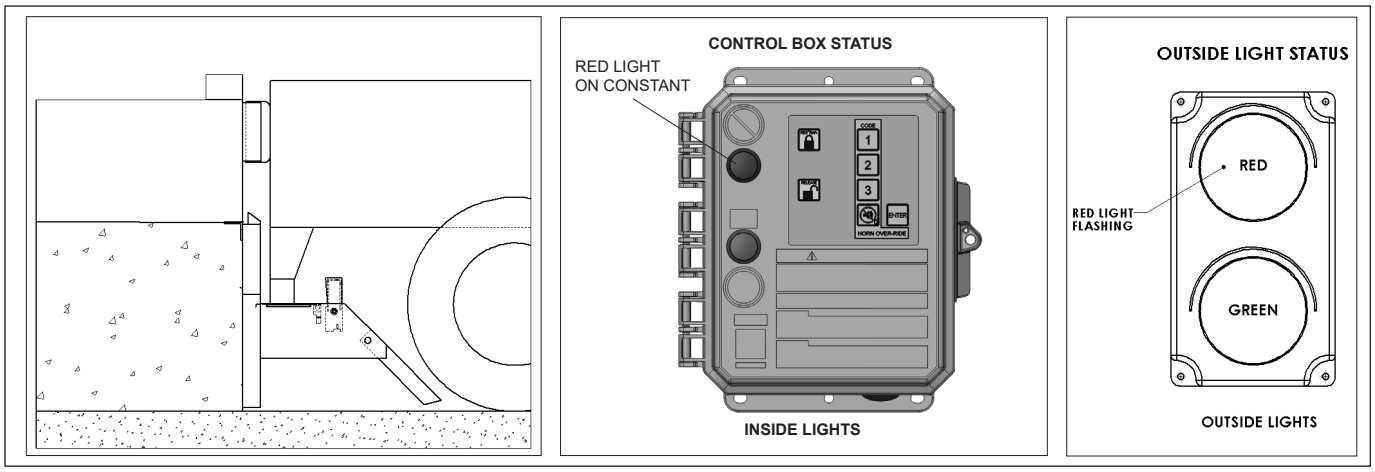


FIGURE 27—RESTRAINT LOCKING

RESTRAINT LOCKED

Once the RIG is blocked 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 dirver not to move. Refer to Figure 28.

⚠ WARNING

Visually inspect to ensure that the Lock-Up™ vehicle restraint barrier securely engages the RIG of the trailer before operating the dock leveler.

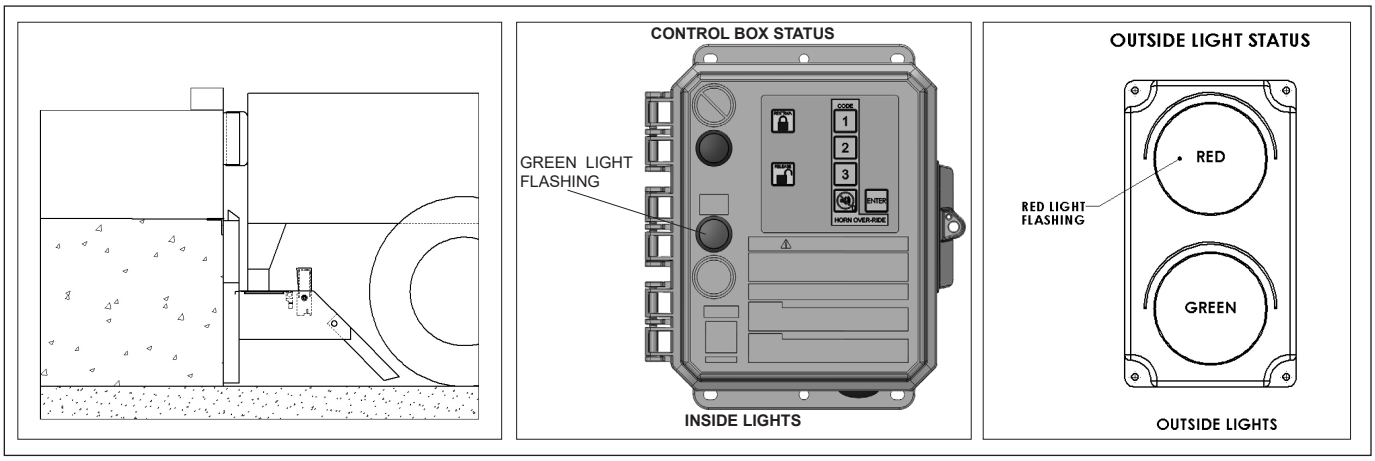


FIGURE 28—RESTRAINT LOCKED

OPERATING PROCEDURES

Interlocked Equipment is Now Active

Interlocked equipment must be in position listed below (optional):

L-U CB-41-A: Interlock Door A — Overhead door can be opened
OR
L-U CB-41-B: Interlock Door B — Overhead door can be opened or remain opened
OR
L-U CB-41-C: Interlock Door C — Leveler can be placed into back of transport vehicle

Interlocked Equipment Position to Unlock Restraint

Interlocked equipment must be in position listed below:

L-U CB-41-A: Interlock Door A — Door must be closed
OR
L-U CB-41-B: Interlock Door B — Door must be closed
OR
L-U CB-41-C: Interlock Door C — Leveler must be stored

RELEASE Button Pressed- Restraint UNLOCKING

Barrier travels from the LOCKED position to the STORED position. Inside light is RED. Outside light is flashing red alterting truck driver not to move. Refer to Figure 29. When the process is complete, the barrier is in the stored position shown in Figure 26 on page 34.

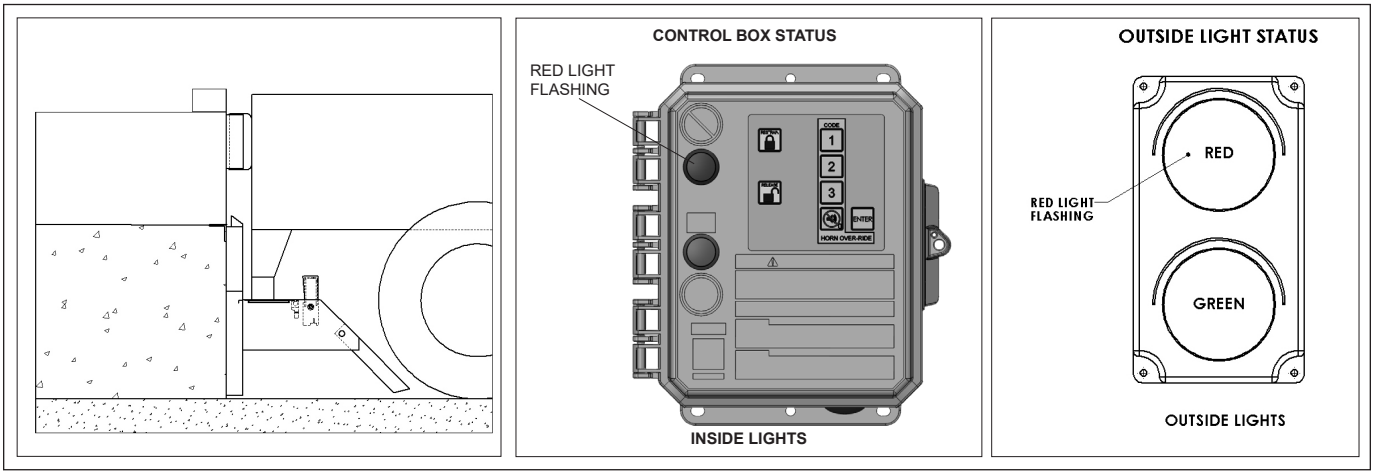


FIGURE 29—RESTRAINT UNLOCKING

OPERATING PROCEDURES

FAULT from LOCKING State

Barrier cannot block the RIG. This could be due to a RIG that is located too far toward the rear axe, 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. See Figure 30.

If the trailer is parked firmly against the dock bumpers proceed to HORN OVER-RIDE. If not, press RELEASE to clear the fault, have trailer back up and repeat Restraint LOCKING procedure.

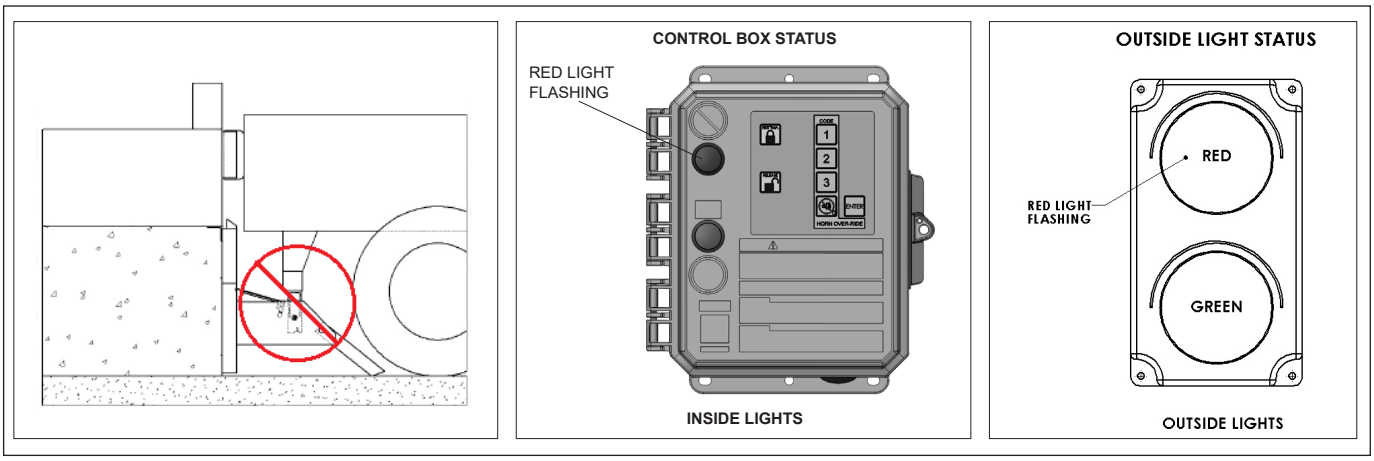


FIGURE 30—FAULT STATE

HORN OVER-RIDE

If HORN sounds and red light is on after attempting to RESTRAIN the RIG, the trailer may not be serviceable. Ensure dock leveler is in the stored position and overhead door is closed. Secure trailer by alternate means. Depress the "HORN OVER-RIDE" button (0) on the key pad, enter default over-ride code 2213 then press the "ENTER" button. Inside RED and GREEN lights are flashing; outside light is flashing RED only. Position dock leveler to service trailer and proceed with caution.

⚠ DANGER

Before activating "HORN OVER-RIDE", ensure that dock leveler is in stored position, overhead door is closed and secure trailer by other means.

HORN OVER-RIDE RESET

Ensure dock leveler is in the stored position and overhead door is closed. Unsecure the trailer. Depress the "HORN OVER-RIDE" button (0) on the key pad, enter default over-ride code 2213 then press the "ENTER" button. Press the "RELEASE" button on the key pad.

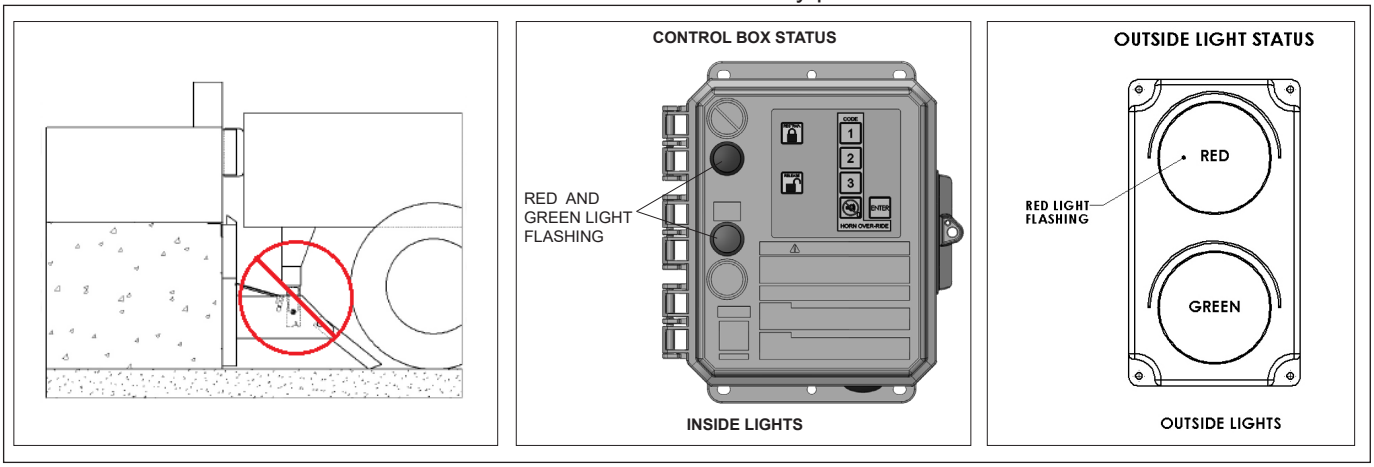


FIGURE 31—HORN OVER-RIDE STATE

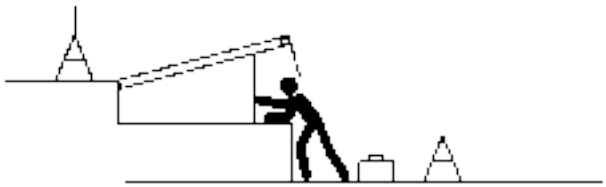
ROUTINE MAINTENANCE

⚠ 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.

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

⚠ WARNING



Always post safety warnings and barricade the work area at dock level and ground level to prevent unauthorized use of the unit before maintenance is complete.

⚠ CAUTION

Use lifting device (e.g. crane, jack) when lifting carriage (approx. 110 lbs.). Lifting by hand may cause back injury.

NOTICE

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

⚠ DANGER

Unless the dock leveler is equipped with a tethered remote, two people are required to engage the maintenance prop: one person to operate the unit, the other person to engage the maintenance prop.

In addition, it is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

DAILY

- Remove debris around NOVA Lock-up™ Vehicle restraint.
- Verify that restraint operates smoothly and inside, outside lights and HORN are working.
- Replace damaged or missing light bulbs and lenses.
- Repair, remount, or replace outside and inside, decals, signs and labels as required.
- Inspect dock bumpers. Missing or worn bumpers must be replaced.

180 DAYS

- Perform all Daily maintenance.
- Grease rollers at fittings located on the top and bottom axle with Mobilith™ SHC 220 No. 2 grease or equivalent.
- Inspect the outside electrical connections (junction box, conduit, power harness) and outside communication light. Loose or damaged components must be repaired or replaced.
- Check that all concrete anchor bolts are torqued to 60 ft-lbs.
- Perform operational test after all maintenance repairs and adjustments are complete.
- Inspect dock bumpers. A minimum of four inches (4") of protection is required. Worn, torn, loose or missing bumpers must be replaced.

360 DAYS

- Perform all Daily and 180 Day maintenance.

⚠ DANGER

It is recommended and good safety practice to use an additional means to support the dock platform and lip anytime when physically working in front of or under the dock leveler. This additional means may include, but is not limited to a boom truck, fork truck, stabilizing bar or equivalent.

* Refer to OSHA Regulation 1910.146 Confine Spaces, 1910.197 Lockout/Tagout.

ROUTINE 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.

- Verify sensors are securly fastened.

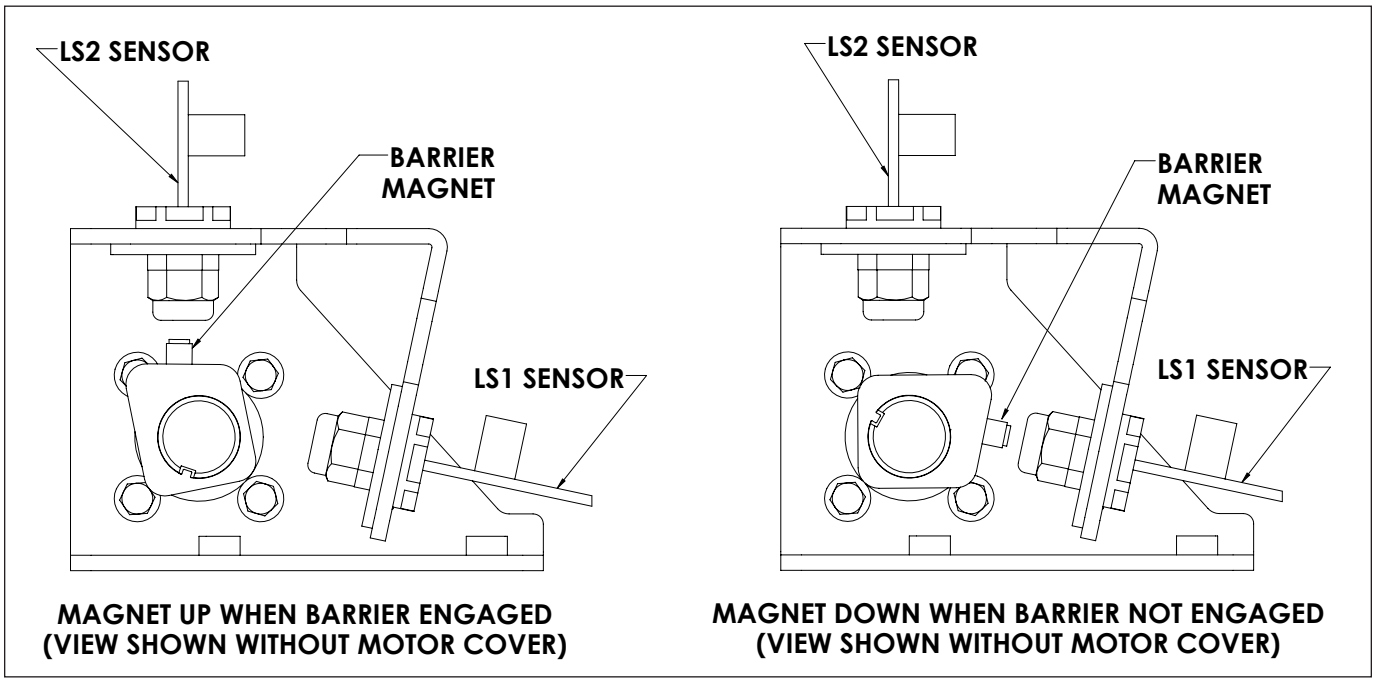


FIGURE 32—BARRIER SENSOR OPERATION

ROUTINE MAINTENANCE

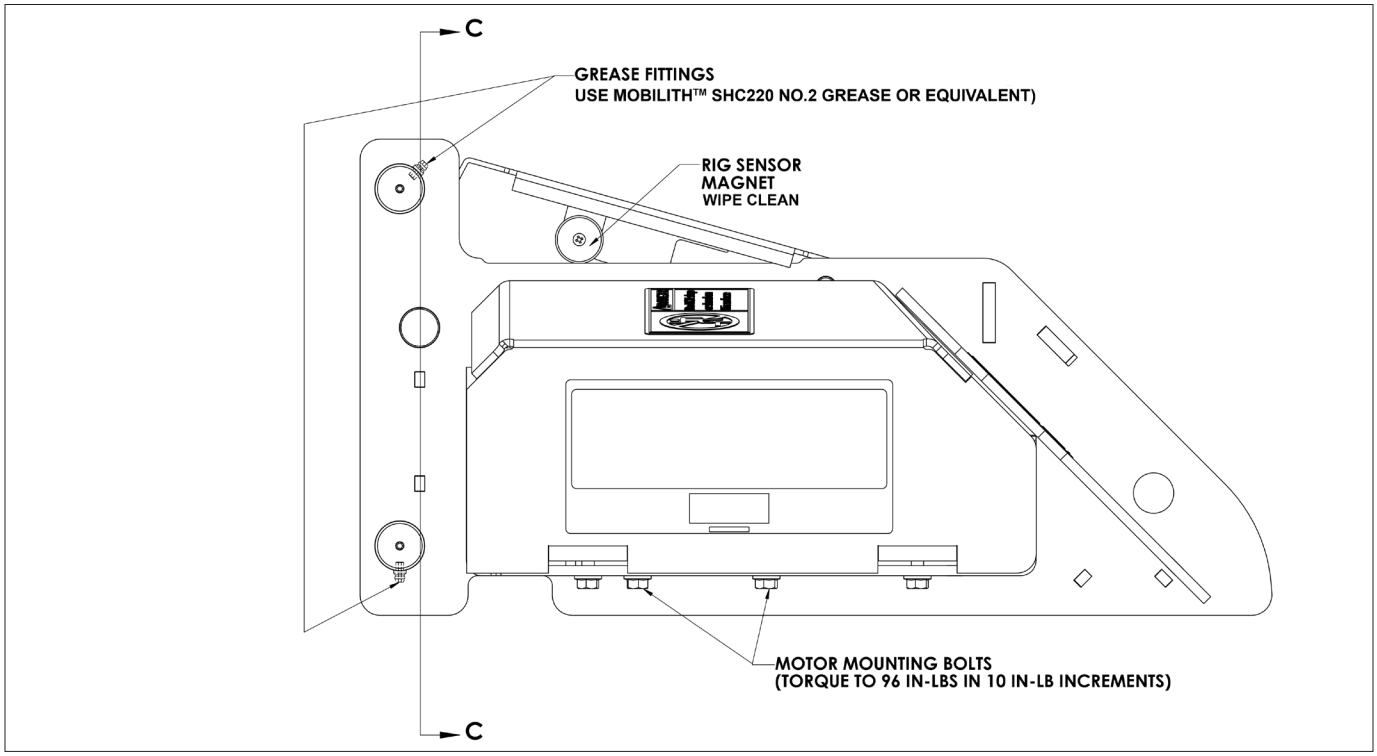


FIGURE 33—GREASE FITTING, RIG SENSOR MAGNET & MOTOR MOUNTING BOLT LOCATION

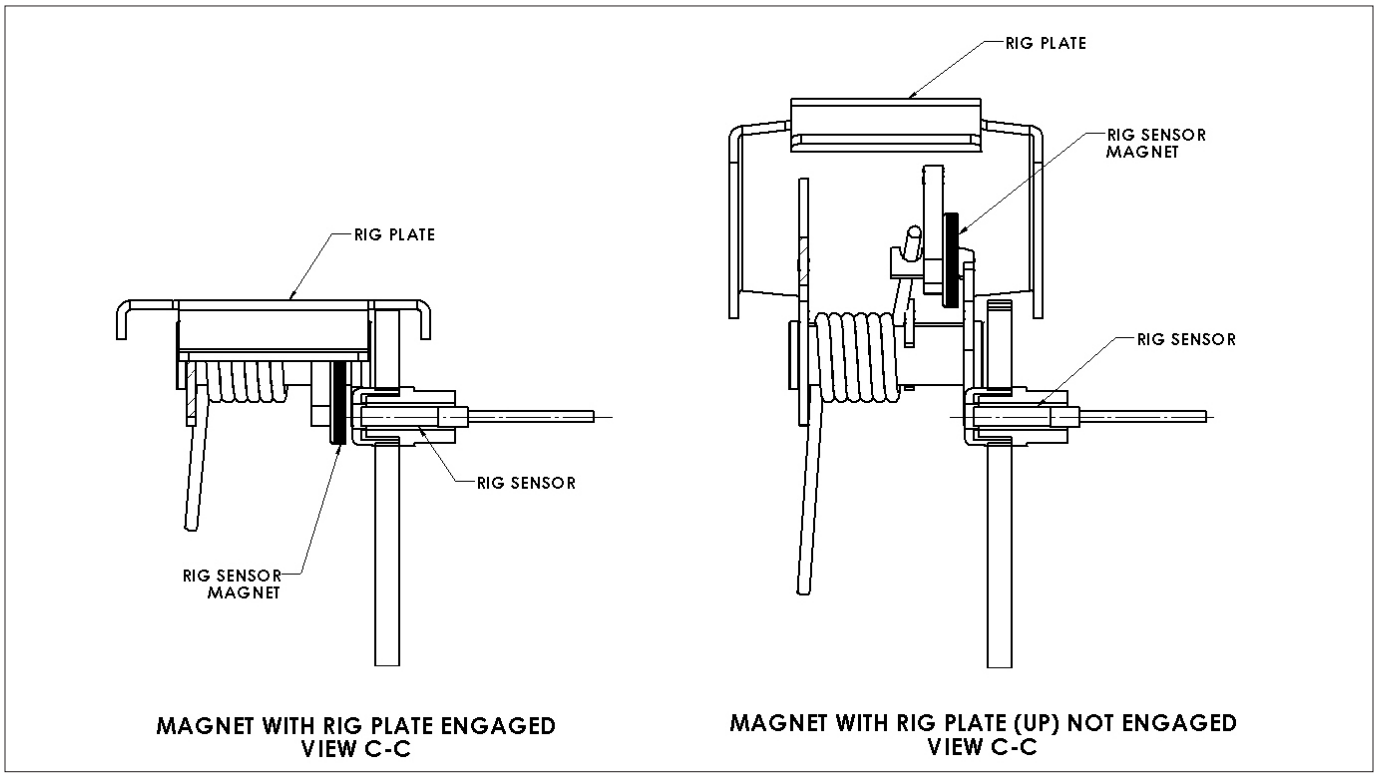


FIGURE 34—RIG SENSOR PLATE OPERATION

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TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	RESOLUTION
NOVA Lock-Up™ vehicle restraint lights do not flash and the barrier does not raise.	• Power source malfunction. • Incorrect wiring.	• Check power source, including facility circuit breaker and circuit breaker on power module. • Verify wiring.
NOVA Lock-Up™ vehicle restraint lights are flashing but the barrier does not raise or lower to full extent.	• Low incoming voltage. • Drive motor defective. • Incorrect wiring.	• Verify incoming voltage at L1 and N is a minimum of 110V. Do not power off a control transformer from other equipment unless properly sized for load. • Check motor. Repair or replace as needed. • Verify wiring.
NOVA Lock-Up™ vehicle restraint is operational but all lights are out.	• LEDs burnt out, loose or missing. • Incorrect wiring.	• Check all LEDs and replace as required. • Verify wiring.
NOVA Lock-Up™ vehicle restraint HORN does not sound but barrier and lights are operational.	• HORN is defective. • Incorrect wiring.	• Power horn using 24V DC power. If HORN does not sound, replace as required. • Verify wiring.
NOVA Lock-Up™ vehicle restraint barrier is in stored position with an inside GREEN light.	• Incorrect wiring.	• Verify wiring of LS1, LS2 and LS3 at the control box and outside junction box.
NOVA Lock-Up™ vehicle restraint carriage does not return to a full up position.	• Carriage binding in track. • Damaged roller track. • Broken or weak springs.	• Check to see if roller track is clean and rollers are clean, free of debris and lubricated. Use only approved grease to lubricate rollers. • Verify that the roller track is straight and not damaged. • Remove spring cover and replace springs as required.

TROUBLESHOOTING

1. ENTERING MAINTENANCE MODE ON THE CB-40/41 CONTROL BOX, NOT AVAILABLE ON CB-00

Key point: This step can be done on any display or operation except when in HORN OVER-RIDE.

a. Depress the "HORN OVER-RIDE" button (#0 button).
b. The RED light, on the control box, will start flashing if the GREEN light was flashing or remain a constant RED. This is normal to notify the end user that they are about to enter a new mode.
c. Enter the Maintenance code, 28252, and then press "ENTER".
   i. If the wrong code was entered, the "Wrong PW: Reenter Or wait" display will appear. On this display, repeat steps 1a through 1c to enter maintenance mode.
   ii. Or if no further input is completed within 30 seconds, the "Wrong PW: Reenter Or wait" display will clear and the screen will return to the previous display.

2. NAVIGATING THROUGH MAINTENANCE MODE

a. Use the "NEXT" and "BACK" buttons to navigate through Maintenance Mode.

Display #1 = Faults
Displays #2 - 8 = Counters
Displays #9 & 10 = Cycles
Displays #11 & 12 = Inputs & Outputs
Display #13 = Change HORN OVER-RIDE Password

#1 Display — Faults

This display shows the most current fault status. There may be more than one fault occurring at a given time but only the most recent one can be displayed. See displays #2-8 for more fault information. Also, check display #11 for proper inputs.

Key point: Counters on displays #2-8 can be reset by following the instructions below. Once on the display with the counter that needs to be reset, press and hold "ENTER" for five seconds. After five seconds, the counter display will begin to flash, release "ENTER". Next, press the "HORN OVER-RIDE" button (#0 button) to set counter back to zero. This is the only acceptable entry to reset the counters. Once the counter has been reset, press "ENTER" to successfully reset counter.

#2 Display — No LS1 No LS2

This display shows the number of times Limit Switch 1 (LSI) and Limit Switch 2 (LS2) are off at the same time.

This fault can occur if	Resolution
The barrier is unable to lock or unlock fully.	Ensure no obstruction is blocking the barrier from locking or unlocking fully.
LS1 malfunctioned when the barrier is locked or unlocked.	Ensure LS1 is tightened and working properly. Inputs can be verified on display #11 (page 35).
LS2 malfunctioned when the barrier is locked or unlocked.	Ensure LS2 is tightened and working properly. Inputs can be verified on display #11 (page 35).

If obstruction cannot be moved, enter HORN OVER-RIDE mode by following the instructions printed on the control box.

#3 Display — Both LS1 & LS2 On

This display shows the number of times LS1 and LS2 are on at the same time.

TROUBLESHOOTING

This fault can occur if	Resolution
LS1 malfunctioned when the barrier is locked or unlocked.	Ensure LS1 is tightened and working properly. Inputs can be verified on display #11 (page 35).
LS2 malfunctioned when the barrier is locked or unlocked.	Ensure LS2 is tightened and working properly. Inputs can be verified on display #11 (page 35).

#4 Display — LS1 On LS2 Off

This display shows the number of times, LS1 has been on and LS2 has been off when the barrier is up.

This fault can occur if	Resolution
The barrier is unable to lock because the carriage is not able to travel further down the roller track.	Realign trailer so RIG is not blocking barrier. If trailer cannot be realigned, enter Horn Over-Ride mode by following the instructions printed on the control box.
LS1 and LS2 are reversed.	Verify LS1 and LS2 are positioned as shown in FIGURE AJ (page 29).
LS1 malfunctioned when the barrier is locked.	Ensure LS1 is tightened and working properly. Inputs can be verified on display #11 (page 35).
LS2 malfunctioned when the barrier is locked.	Ensure LS2 is tightened and working properly. Inputs can be verified on display #11 (page 35).

#5 Display — LS1 Off LS2 On

This display shows the number of times, LS1 has been off and LS2 has been on when the barrier is down.

This fault can occur if	Resolution
The barrier is unable to unlock because RIG is pinching barrier from lowering. (Wedged)	Back up trailer slightly to relieve pressure from barrier.
LS1 and LS2 are reversed.	Verify LS1 and LS2 are positioned as shown in FIGURE AJ (page 33).
LS1 malfunctioned when the barrier is unlocked.	Ensure LS1 is tightened and working properly. Inputs can be verified on display #11 (page 35).
LS2 malfunctioned when the barrier is unlocked.	Ensure LS2 is tightened and working properly. Inputs can be verified on display #11 (page 35).

#6 Display — No RIG Present

This display shows the number of times, Limit Switch 3 (LS3) or RIG sensor has been off while the barrier is engaged.

TROUBLESHOOTING

This fault can occur if	Resolution
The RIG sensor plate is not depressed when the barrier is locked.	Realign trailer so RIG depresses RIG sensor plate. If RIG sensor plate cannot be depressed when the barrier is locked, enter Horn Over-Ride mode by following the instructions printed on the control box.
LS3 malfunctioned when the barrier is locked.	Ensure LS3 is tightened and working properly. Inputs can be verified on display #11 (page 35).
Magnet not present on RIG sensor plate.	Replace magnet or RIG sensor plate assembly.

#7 Display — DOOR NOT CLOSED

This display shows how many times the DOOR was not closed properly. Check the DOOR sensor for proper operation.

#8 Display — HORN OVER-RIDE Count

This display is to show the number of times the HORN OVER-RIDE function has been activated. The HORN OVER-RIDE function should only be used when the barrier cannot properly secure the RIG.

Key Point: The maintenance code can also be used to disable HORN OVER-RIDE in case the standard code for HORN OVER-RIDE has been over-written.

#9 Display — Total Cycles

This display shows the number of complete cycles the product has gone through. One cycle is defined as the barrier moving from the unlocked position to the locked position and back to the unlocked position.

#10 Display — Cycles 2 Service

This display shows how many cycles the Lock-Up™ can go through before service is needed for the items on the list below:

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	CB-1004	12 AMP RELAY	1
2	CB-1005	20 AMP RELAY	1

For replacement parts, contact NOVA Technology.

#11 Display — 12345678 Inputs

This display shows all inputs going to the control box. The number zero (0) means the input is off. The number one (1) means the input is on.

1. LS1
2. LS2
3. LS3
4. LS4 (CB41-only)
5. N/A
6. N/A
7. N/A
8. N/A

#12 Display — 12345678 Outputs

This display shows all outputs going to the control box. The number zero (0) means the outputs is off. The number one (1) means the outputt is on.

1. Control Box — Red Light
2. Control Box — Green Light
3. Outside — Red Light
4. Outside — Green Light
5. Motor 1 — Restrain
6. Motor 2 — Release
7. Alarm Horn
8. CR-3 (CB-41 only)

TROUBLESHOOTING

#13 Display — Enter New Override Password:

This display is for changing the password to enter and exit HORN OVER-RIDE. Once on this screen, press "ENTER" to change current password. Then enter new password. The new password can range from1 to 9999. Once the new password has been typed, press "ENTER" to successfully change the password. Any leading zeros will be eliminated. Provide the new over-ride password to authorized dock attendants.

3. EXITING MAINTENANCE MODE ON THE CONTROL BOX

Key point: This procedure can be done on any maintenance screen.

a. Depress the "HORN OVER-RIDE" button (#0 button).
b. The RED light, on the control box, will start flashing if the GREEN light was flashing or remain a constant RED. This is normal to notify the end user that they are about to enter a new mode.
c. Enter the Maintenance code, 28252, and then press "ENTER".
   i. If the wrong code was entered, the "Wrong PW: Reenter Or wait" display will appear. On this display, repeat steps 3a through 3c to exit maintenance mode.
   ii. Or if no further input is completed within 30 seconds, the "Wrong PW: Reenter Or wait" display will clear and the screen will return to last display prior to entering maintenance mode.

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PARTS

CARRIAGE ASSEMBLY DRAWING

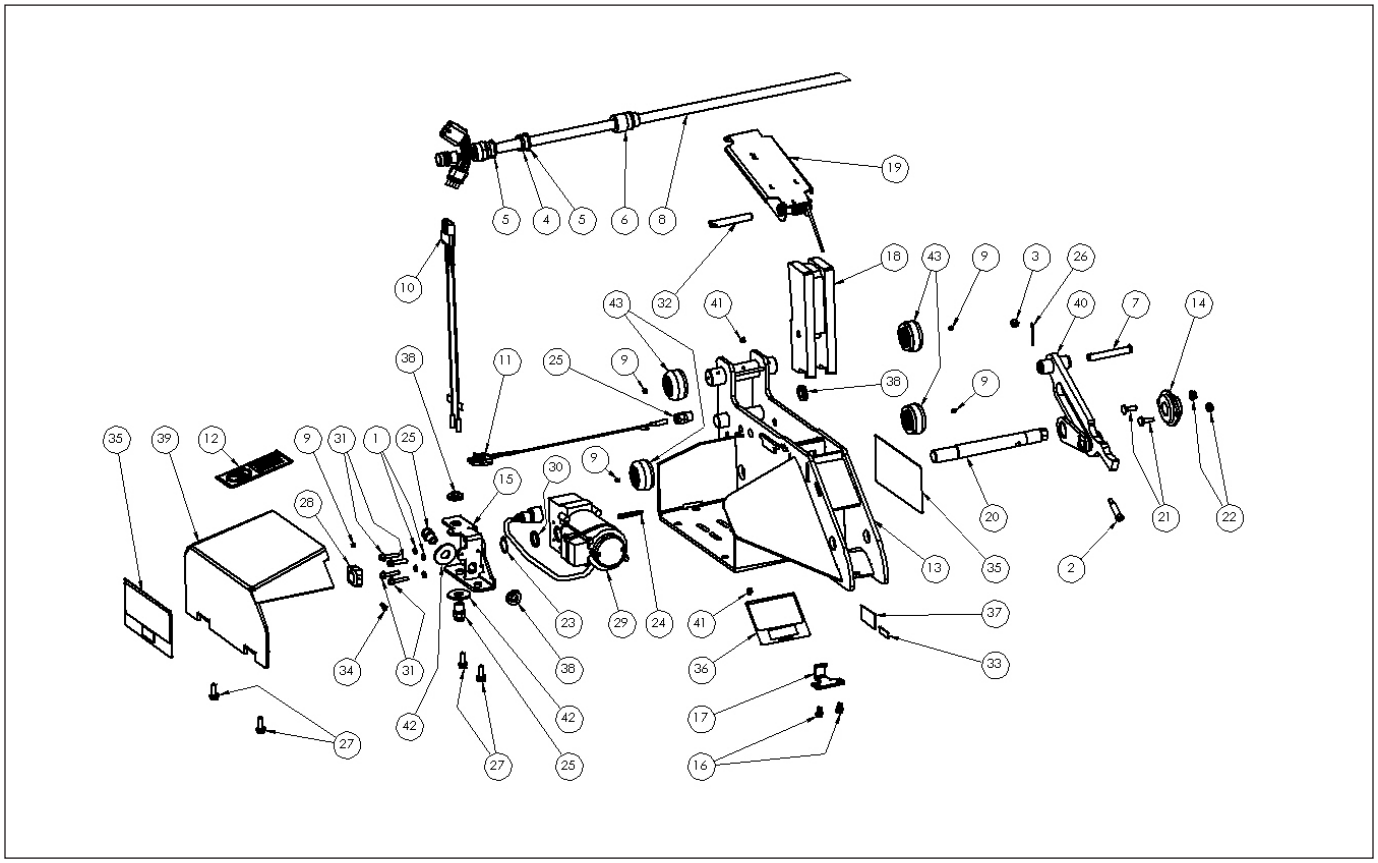

FIGURE 35—CARRIAGE ASSEMBLY

CARRIAGE ASSEMBLY PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MF2-071-000	1/4" LOCKWASHER	4
2	MF4-161-000	Ø3/8" X 1 1/4" LONG SHOULDER, 5/16-18 THREAD	1
3	MF4-125-000	5/16-18 HEX NUT, NYLOK	1
4	MF2-034-000	3/4" CONDUIT NIPPLE	1
5	MF2-037-000	3/4" CONDUIT LOCK NUT	2
6	MF2-033-000	CORD GRIP	1
7	MF4-157-000	Ø1/2" X 3 1/2" CLEVIS PIN, ZINC	1
8	MF4-184-000	WIRE HARNESS	1
9	MF2-017-002	1/4-28 X 1/4" SOCKET SET SCREW	5
10	MF4-181-000	SENSOR, LS1 & LS2	1
11	MF4-182-000	SENSOR, RIG	1
12	MF2-199-000	NO STEP DECAL	1

PARTS

CARRIAGE ASSEMBLY PARTS LIST *(continued)*

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
13	MF4-100-000	MF4 CARRIAGE WELDMENT	1
14	MF4-101-000	STAMPED STEEL FLANGE MOUNTED BALL BEARING	1
15	MF4-103-000	MOTOR MOUNT BRACKET ASSEMBLY	1
16	MF4-106-000	1/4-20 X 1/2" LNG HX HD SCRW / EXTRNL TTH LCK WSHR	2
17	MF4-107-000	BARRIER RETAINER	1
18	MF4-108-000	BARRIER ASSEMBLY	1
19	MF4-110-000	RIG SENSOR ASSEMBLY	1
20	MF4-115-000	DRIVE SHAFT	1
21	MF4-118-000	5/16-18 X 1" LONG CARRIAGE BOLT	2
22	MF4-119-000	5/16-18 SERRATED FLANGE NUT	2
23	MF4-120-000	EXTERNAL RETAINING RING FOR Ø1" OUTSIDE SHAFT	1
24	MF4-121-000	3/16" KEY, SQUARE	1
25	MF4-123-000	3/8 NPT CORD GRIP	3
26	MF4-124-000	COTTER PIN, ZINC	1
27	MF4-126-000	5/16-18 X 7/8" FLANGE HEAD SCREW	4
28	MF4-127-000	MAGNET MOUNT	1
29	MF4-129-000	MF4 MOTOR KIT (includes ITEMS 1, 15 & 31)	1
30	MF4-137-000	SPACER, DRIVE SHAFT TO MOTOR	1
31	MF4-143-000	1/4-20 X 1 1/4" LG FLNG HD CAP SCRW	4
32	MF4-144-000	RIG SENSOR PIN ASSEMBLY	1
33	MF4-179-000	LOCK-UP PATENT # DECAL	1
34	MF4-146-000	ACTUATOR MAGNET	1
35	MF4-148-000	"NOVA LOCK-UP" HORIZONTAL DECAL	2
36	MF4-149-000	"NOVA LOCK-UP" SQUARE DECAL	1
37	MF4-151-000	SERIAL NUMBER DECAL	1
38	MF4-160-000	CORD GRIP BULKHEAD NUT	3
39	MF4-165-000	MOTOR/CHAIN COVER	1
40	MF4-168-000	MF4 LIFTER/CRANK ASSEMBLY	1
41	MF2-013-000	GREASE FITTING	2
42	MF4-185-000	5/8" FLAT WASHER	2
43	MF2-047-000	ROLLER ASSEMBLY	4

PARTS

ROLLER TRACK ASSEMBLY DRAWING AND PARTS LIST

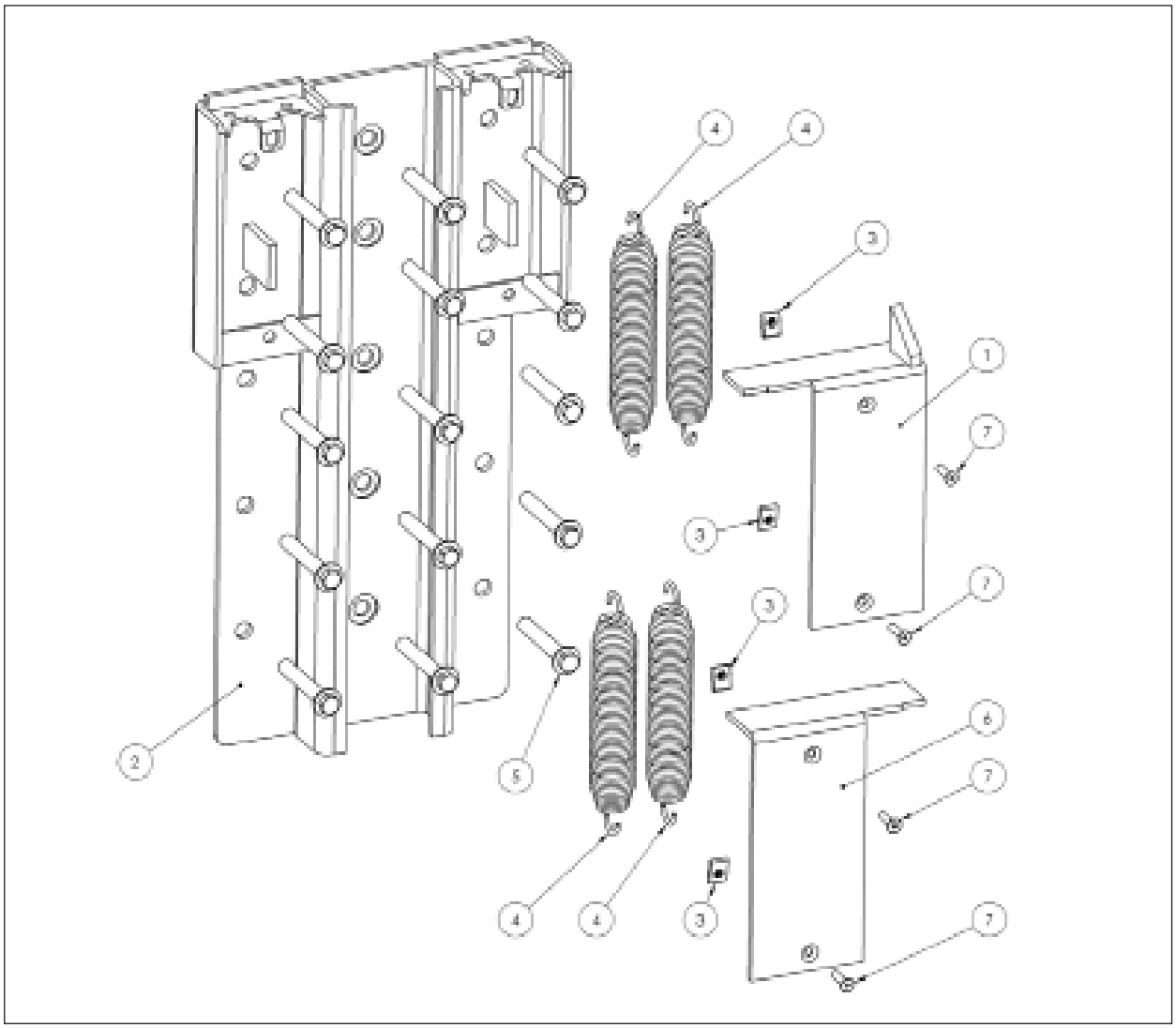

FIGURE 36—ROLLER TRACK ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MF2-052-000	SPRING COVER RIGHT HAND	1
2	MF2-048-000	ROLLER TRACK	1
3	MF2-050-000	EXTENSION SPRING	4
4	MF2-054-000	5/8" X 4" CONCRETE ANCHOR	15
5	MF2-051-000	SPRING COVER LEFT HAND	1
6	MF2-060-000	5/16-18 X 1 1/4" FLAT HEAD SOCKET SCREW	4
7	MF2-192-000	5/16-18 U-STYLE CAGE NUT	4

PARTS

SLOPE EXTENSION DRAWING AND PARTS LIST

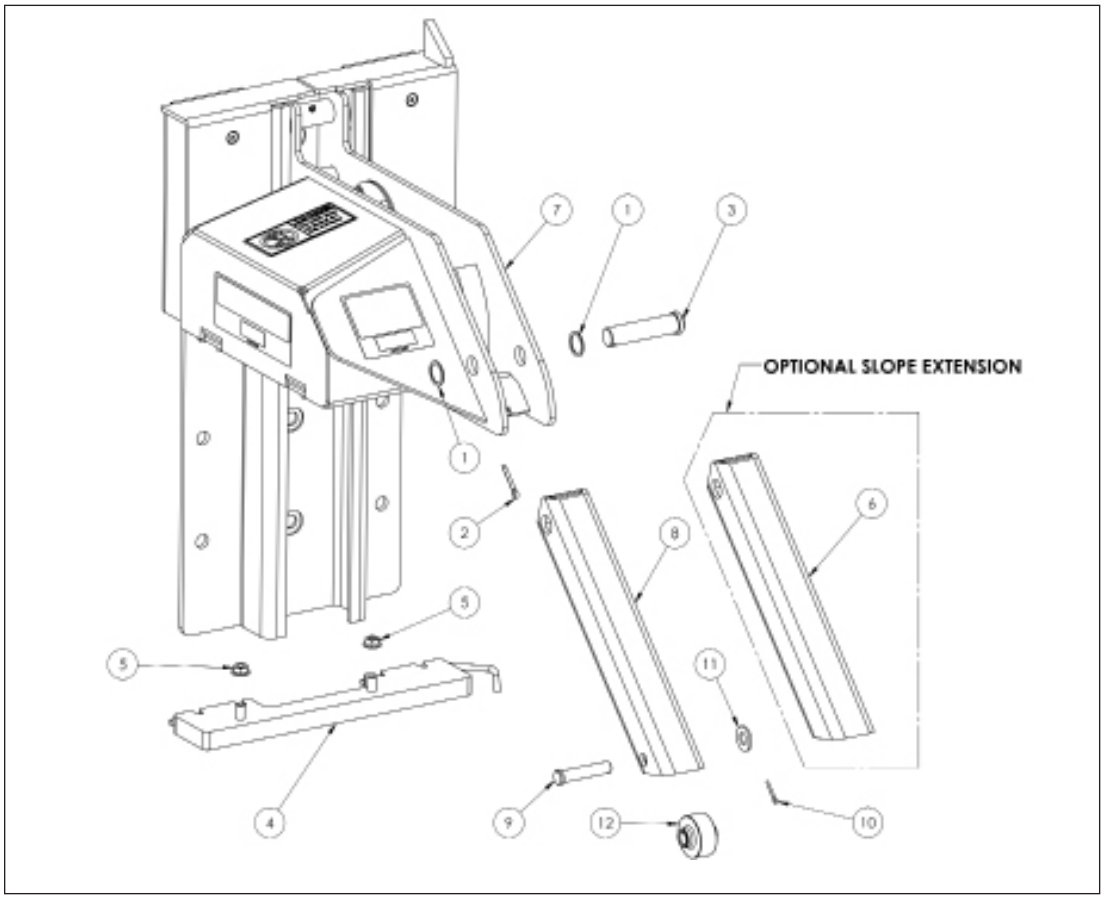

FIGURE 37—SLOPE EXTENSION ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MF2-045-000	1" X 18 GAUGE FLAT WASHER	2
2	MF2-046-000	COTTER PIN	1
3	MF2-044-000	SLOPE EXTENSION PIVOT PIN	1
4	MF2-043-000	SPRING MOUNTING PLATE ASSEMBLY	1
5	MF2-026-000	7/16-14 SERRATED FLANGE LOCK NUT	2
6	MF2-002-000	SLOPE EXTENSION OPTIONAL	1
7	MF4-136-000	CARRIAGE ASSEMBLY	1
8	MF2-132-000	ROLLER SLOPE EXTENSION	1
9	MF2-143-000	Ø5/8" X 3" CLEVIS PIN	1
10	MF2-142-000	COTTER PIN	1
11	MF2-130-000	5/8" SAE FLAT WASHER	1
12	MF2-136-000	ROLLER ASSEMBLY	1

PARTS

MISCELLANEOUS PARTS

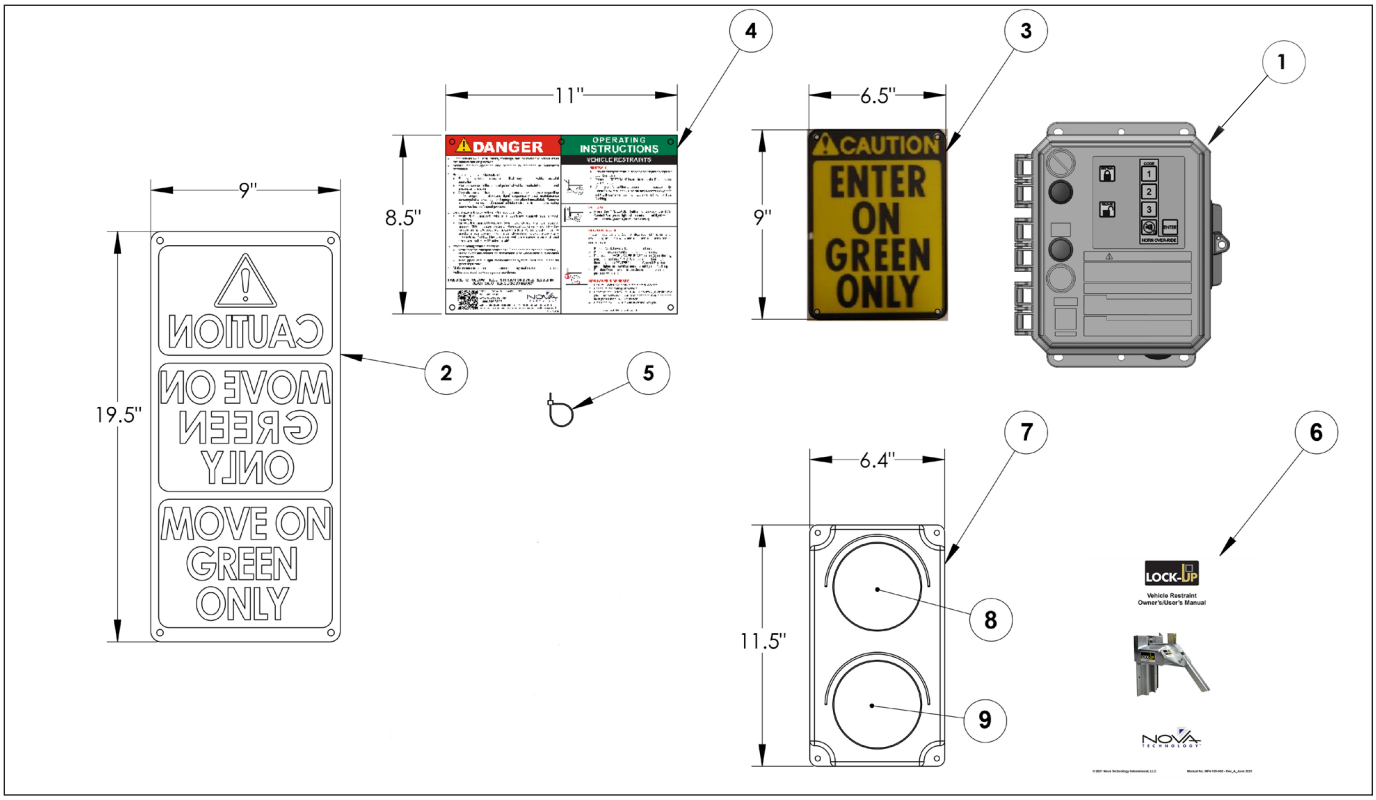

FIGURE 38—MISCELLANEOUS PARTS

MISCELLANEOUS REPLACEMENT PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	CB-00 **OR** CB-41-A **OR** CB-41-B **OR** CB-41-C	CONTROL BOX STANDARD **OR** CONTROL BOX INTERLOCKED DOOR VERSION A **OR** CONTROL BOX INTERLOCKED DOOR VERSION B **OR** CONTROL BOX INTERLOCKED LEVELER VERSION C	1
2	MF2-056-001	CAUTION SIGN	1
3	MF2-057-000	SIGN, CAUTION - ENTER ON GREEN	1
4	MF2-215-000	PLACARD - RESTRAINT OPERATION	1
5	MF2-216-000	ZIP TIE FOR CONTROL BOX PLACARD	1
6	MF4-159-000	OWNERS/USERS MANUAL	1
7	MF4-183-000	OUTSIDE LIGHT	1
8	MF4-183-001	OUTSIDE RED LED LIGHT MODULE	1
9	MF4-183-002	OUTSIDE GREEN LED LIGHT MODULE	1

For replacement parts, contact NOVA Technology.

PARTS

CONTROL BOX PARTS

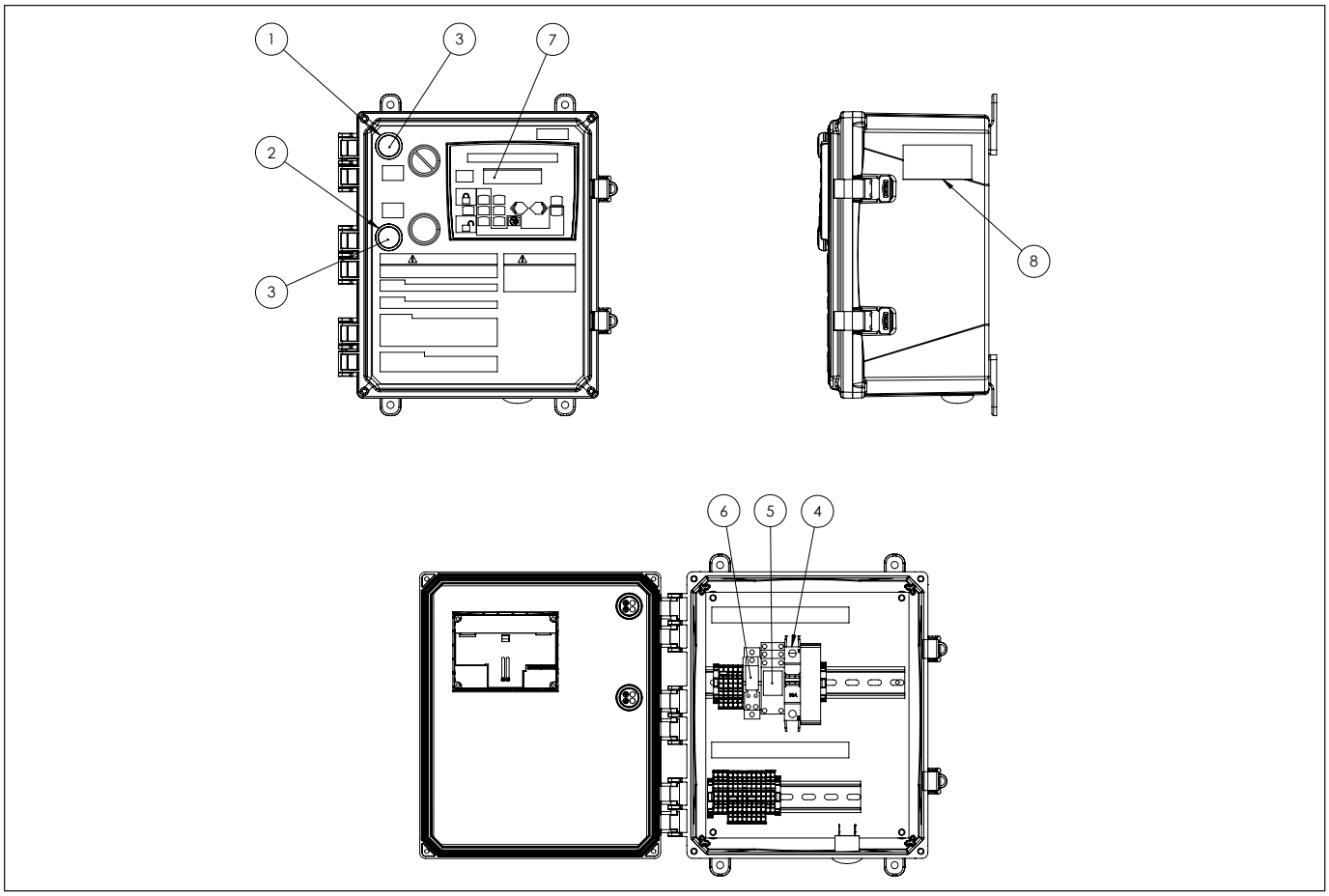

FIGURE 39—CONTROL BOX PARTS

CONTROL BOX REPLACEMENT PART LIST

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	CB-1000	LIGHT, 24 VDC LED RED PILOT	1
2	CB-1001	LIGHT, 24 VDC LED GREEN PILOT	1
3	CB-1002	COVER, WHITE	2
4	CB-1003	BREAKER, CIRCUIT	1
5	CB-1004	RELAY, 12 AMP	1
6	CB-1005	RELAY, 20 AMP	1
7	CB-PLC-01	PLC - STANDARD	1
8	MF2-202-000	DECAL, ARC FLASH	1

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WARRANTY

NOVA TECHNOLOGY INTERNATIONAL, LLC warrants that its products will be free from defects in design, materials and workmanship for a period of one (1) year 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. In no event shall any claim be made more than 30 days after this warranty has expired. In order to be entitled to the benefits of this warranty, the product must have been properly installed, maintained and operated in accordance with all manufacturer's recommendations and/or specified design parameters and not otherwise have been subject to abuse, misuse, misapplication, acts of nature, overloading, unauthorized repair or modification, application in a corrosive environment or lack of maintenance. Periodic lubrication, adjustment and inspection in accordance with all manufacturers' recommendations are the sole responsibility of the Owner/User.

In the event of a defect, as determined by NOVA TECHNOLOGY INTERNATIONAL, LLC, covered by this warranty, NOVA TECHNOLOGY INTERNATIONAL, LLC shall remedy such defect by repairing or replacing any defective equipment or parts, bearing the cost for the parts, labor and transportation. This shall be exclusive remedy for all claims whether based on contract, negligence or strict liability.

PRODUCT SPECIFIC WARRANTY
LOCK-UP™ VEHICLE RESTRAINT

In addition to the "Standard Product Warranty" provided with all Nova Products, NOVA TECHNOLOGY INTERNATIONAL, LLC guarantees materials, components and workmanship to be free of defects for the following extended periods:

- Extended 2-Year General Warranty—for a period of two (2) years from date of shipment, this warranty specifically applies to; the roller track assembly, carriage assembly, RIG sensor assembly and control box only.
- Extended 5-Year Structural Warranty—for a period of five (5) years from date of shipment, product will carry a prorated structural warranty. This warranty specifically applies to; the roller track, carriage weldment, motor/chain cover, barrier assembly and lower spring bar only.

NOT COVERED UNDER WARRANTY

- Routine maintenance, lubrication, adjustments, including initial field set-up.
- Repairs required as a result of failure to follow routine maintenance procedures specified in the owner's manual, abuse, accident, willful damage, neglect, improper installation, submersion, or shipping damage.

WARRANTY LIMITATIONS

THE ABOVE WARRANTIES ARE IN LIEU OF ANY OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NOVA TECHNOLOGY INTERNATIONAL, LLC AND ITS SUBSIDIARIES SHALL NOT IN ANY EVENT BE LIABLE TO ANYONE, INCLUDING THIRD PARTIES, FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND INCLUDING BUT NOT LIMITED TO, BREACH OF WARRANTY, LOSS OF USE, LOSS OF PROFIT, INTERRUPTION OF BUSINESS OR LOSS OF GOODWILL.

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