



Perma Tech, Inc.

"Your Single Source for ALL Your Loading Dock Needs"

PermaHOOK Electric Truck Restraint

Installation Instructions and Owner's Manual



WARNING : Do not install, operate or service this product unless you have read and understand the Safety Practices, Warnings, and Installation and Operating Instruction contained in this manual. Failure to do so could result in death or serious injury.



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SAFETY SYMBOL WORDS

You may find safety signal words such as DANGER, WARNING, or CAUTION throughout the Owners Manual. Their use is explained below.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

▲ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

▲ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

▲ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

Notice is used to address practices not related to personal injury.

LIMITED WARRANTY

This warranty provides the owner with coverage for a five (5) year period based on normal eight (8) hour working day consisting of the following conditions:

- A. Five year structural steel warranty for the complete unit.
- B. Two year Electrical warranty for motor and electrical components.

Perma Tech has manufactured their equipment with the best of material and workmanship and should any defect develop or become evident during the guaranteed periods stated above, we shall repair or replace same upon notice and inspection by our authorized dealer.

WARRANTY CLARIFICATION:

1. This warranty does not apply in respect to damage to any product or accessory or attachment thereof, caused by overloading or other misuse, neglect or accident, nor does this warranty apply to any product, or accessory or attachment thereof, which have been repaired or altered by other than the seller or its authorized representative in any way, which in transit is not applicable to warranty as stated above.
2. This warranty will only be valid if the original supplier has received full payment for the equipment and services rendered and a Semi-Annual preventive maintenance program has been established within ninety (90) days from date of installation.

WARRANTY RE: Longer operating hours

Customer's operating with a double shift up to sixteen (16) hours per day will reduce the complete warranty by half.

SAFETY PROCEDURE F9S

▲ WARNING

Read these safety practices before installing, operating or servicing the 9 @ 7 HF 7' CC? RESTRAINT. Failure to follow these safety practices could result in death or serious injury.

READ AND FOLLOW THE OPERATING INSTRUCTIONS IN THIS MANUAL BEFORE OPERATING THE PermaHOOK 9 @ 7 HF 7' RESTRAINT.

If you do not understand the instructions, ask your supervisor to teach you how to use the Vehicle Restraint.

Improper installation of the Vehicle Restraint could result in death or serious injury to dock workers or other users of the Vehicle Restraint.

Be certain to follow the installation instructions in this manual.

INSTALLATION AND OPERATION

Use of the restraint is restricted to trained operators. Use by untrained people can cause property damage, bodily injury and/or death. Your supervisor should teach you the safe and proper way to use the Vehicle Restraint. Read and follow the complete OPERATION PROCEDURE on page 6 before use. DO NOT USE THE VEHICLE RESTRAINT IF IT IS NOT WORKING PROPERLY. Tell your supervisor it needs repair.

Be certain bystanders in the driveway stand clear when the Vehicle Restraint is operated.

Do not install the Vehicle Restraint anchor bolts into aged or unsound concrete. For brick or block wall applications, call your Perma Tech distributor.

Do not load or unload any vehicle unless you make certain the Vehicle Restraint has securely hitched the vehicle's ICC bar and the vehicle has set the brakes. If the Vehicle Restraint does not hitch the vehicle ICC bar for any reason, BE CERTAIN TO CHOCK THE VEHICLE WHEELS BEFORE LOADING OR UNLOADING.

Before chocking wheels or engaging the vehicle restraint, dump the air from the air ride suspensions and set the parking brakes.

MAINTENANCE AND SERVICE

If the Vehicle Restraint does not operate properly using the procedures in this manual, BE CERTAIN TO CHOCK THE VEHICLE WHEELS BEFORE LOADING OR UNLOADING. Call your Perma Tech distributor for service.

Place barricades around pit on dock floor and driveway while installing, maintaining or repairing vehicle restraining device.

Do not stand in the driveway between the dock and a backing vehicle.

Do not use the Vehicle Restraint as a step.

Keep hands and feet clear of guide tracks and moving parts at all times.

All electrical troubleshooting and repair must be done by a qualified technician and meet all applicable codes.

Before doing any electrical work, make certain the power is disconnected and properly tagged or locked off.

If it is necessary to make troubleshooting checks inside the control box with power on, USE EXTREME CAUTION. Do not place fingers or uninsulated tools inside the control box. Touching wires or other parts inside the control box could result in electrical shock, serious injury or death.

When lifting the carriage during service or assembly, use a lifting device. Lifting by hand may result in back injury.

If you have any problems or questions, contact PermaTech at 716.854.0707

INSTALLATION

MOUNTING CONSIDERATIONS

⚠ WARNING

Before installation read and follow the Safety Practices. Failure to follow these safety practices could result in death or serious injury.

READ AND FOLLOW THE OPERATION INSTRUCTIONS IN THIS MANUAL BEFORE OPERATING THE ELECTRIC HOOK RESTRAINT.

If you do not understand the instructions, ask your supervisor to teach you how to use the Vehicle Restraint.

Improper installation of the PermaHOOK ELECTRIC RESTRAINT could result in death or serious injury to dock workers or other users of the Vehicle Restraint.

Place barricades around pit on dock floor and driveway while installing, maintaining or repairing vehicle restraining device.

Be certain bystanders in the driveway stand clear when the Vehicle Restraint is operated.

Be certain to follow the installation instructions in this manual.

Do not install the Vehicle Restraint anchor bolts into aged or unsound concrete.

1. The dock face on which the PermaHOOK ELECTRIC RESTRAINT will be mounted must be flat to prevent binding of carriage assembly. If the dock face is not flat it may be necessary to use shims or physically modify the dock face to provide a flat mounting surface. If shimming is required, it is necessary to shim behind the roller track as well as at the anchor bolts. The PermaHOOK ELECTRIC RESTRAINT requires a minimum 4" bumper projection from the front of the bumper to the rear of the roller track plate of the restraint (the mounting surface). Less than 4" of projection can allow vehicle ICC bar to damage the restraint. Some lip saddle type dock levelers may require modifications –consult Perma Tech.
2. A standard installation of the PermaHOOK ELECTRIC RESTRAINT requires a minimum dock face height of 26". Consult the factory for dock face heights under 26".

3. The standard anchors provided with this product may only be used on docks constructed of solid concrete. Docks constructed with other materials require special mounting consideration which may include special brackets and a solid concrete approach. Contact your Perma Tech distributor.
4. Do not install the Vehicle Restraint anchor bolts into aged or unsound concrete. For brick or block wall applications, contact your Perma Tech distributor.
5. If the driveway beneath the Vehicle Restraint is affected by frost, additional clearance may be required between the Vehicle Restraint and the driveway to prevent damage.
6. **For installation of Vehicle Restraints with EOD type docklevelers or any other special mounting considerations not covered in this manual, contact Perma Tech at 716.854.0707.**

TOOLS REQUIRED

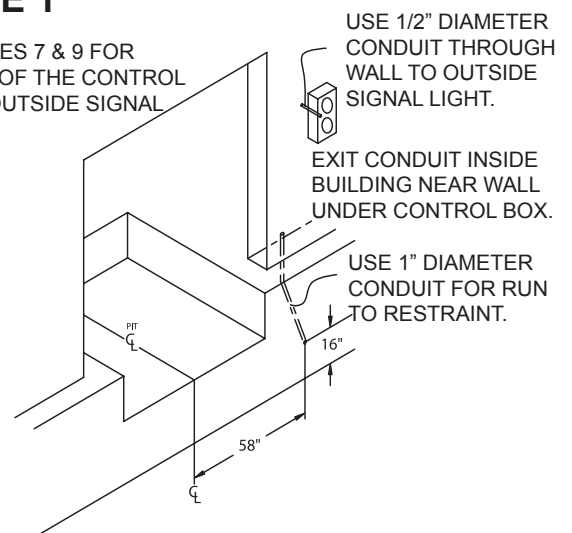
- Welder
- Impact or rotary drill with 5/8" diameter concrete drill bit
- 3/4" wrench
- General hand tools
- Touch up paint
- Torque wrench (60 ft-lb min.)

CONDUIT INSTALLATION

1. When installing conduit through building walls and floors, refer to Figure 1.

FIGURE 1

SEE FIGURES 7 & 9 FOR LOCATION OF THE CONTROL BOX AND OUTSIDE SIGNAL LIGHT.



INSTALLATION

INSTALLATION WITH PIT TYPE DOCK LEVELERS

⚠ WARNING

Do not install, operate, or service this product unless you have read and followed the Safety Practices, Warnings, and Installation and Operating Instructions contained in this manual. Failure to do so could result in death or serious injury. ALWAYS USE DOCK LEVELER SUPPORT WHEN WORKING UNDER A DOCK LEVELER RAMP OR LIP.

Place barricades around the pit on the dock floor and driveway while installing, maintaining or repairing dockleveler or vehicle restraint.

Improper installation of anchoring devices or installation into aged or unsound concrete could result in death or serious injury.

Inadequate lifting equipment or practices can cause a load to fall unexpectedly. Make sure the lifting chain or other lifting devices are in good condition and have a rated capacity of at least 500 lbs for the lifting angle used. Never allow anyone to stand on or near the restraint when it is lifted or positioned. Stand clear of the vehicle restraint when it is positioned. Failure to follow this warning can allow the restraint to fall, tip, or swing into people, causing death or serious injury.

FIGURE 2

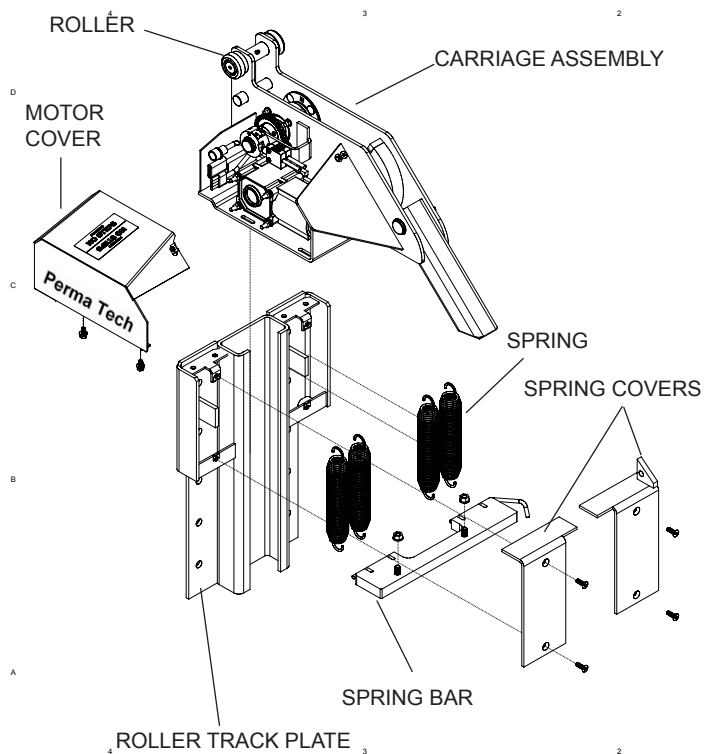
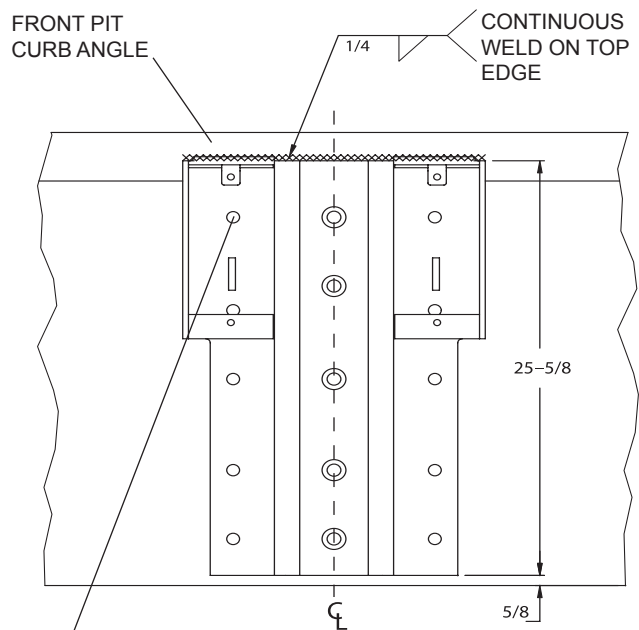


FIGURE 3



1. The carriage assembly must be removed from the roller track plate before installation. First, remove the motor cover and spring covers. Then remove springs and nuts from spring bar. Slide carriage assembly upwards out of the roller track, making sure to keep the rollers on the axles. See Figure 2.
2. Place bottom edge of the roller track plate 5/8" above the driveway and center with the pit. See Figure 3. If the driveway is susceptible to heaving from frost, modify the driveway to provide additional clearance under the ELECTRIC HOOK RESTRAINT to prevent damage from the driveway movement.
3. Drill 5/8" dia holes into pit wall a minimum of 4-5/8" deep using holes in roller track as a guide.

NOTE: ALL 15 HOLES MUST BE ANCHORED.

INSTALLATION

4. Check to see if the roller track plate is plumb and flush with dock face. If not, use (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, a bracket is required. Consult your Perma Tech distributor. See Figure 4A.

⚠ WARNING

The anchor bolts should be installed as the holes are drilled to prevent the Vehicle Restraint from shifting.

NOTICE

The anchor bolt heads must be tightly secured against the roller track plate to prevent interference with the carriage assembly.

5. Anchor the roller track plate to the dock face using the (15) 5/8" dia. x 4" long anchors provided. The anchor bolts must be torqued to 60 ft-lbs to achieve maximum holding strength. See Figure 3. If the top portion of the roller track plate is in contact with the front pit curb angle (such as installing in a deep pit) weld across the top of roller track plate to the curb angle.
6. If the PermaHOOK ELECTRIC RESTRAINT is being installed at a loading dock with a pit-style dock leveler that does not have lip storage supports (otherwise known as lip keepers), there is a bolt-on lip deflector gusset kit available. This kit must be installed to prevent a pendant dock leveler lip from moving or storing behind the original lip deflector welded to the right-hand spring cover. See Figure 4B for installation.
7. Install additional lip deflector plates, as required by the application. Materials supplied by the installer. See Figure 4A.

⚠ WARNING

Improper installation that allows a pendant dock leveler lip to be supported by the restraint could result in death or serious injury. It is sometimes necessary to install lip deflector plates as indicated in Figure 4A to avoid any chance of the pendant lip storing on top of or behind the roller track plate. Materials supplied by installer.

FIGURE 4A

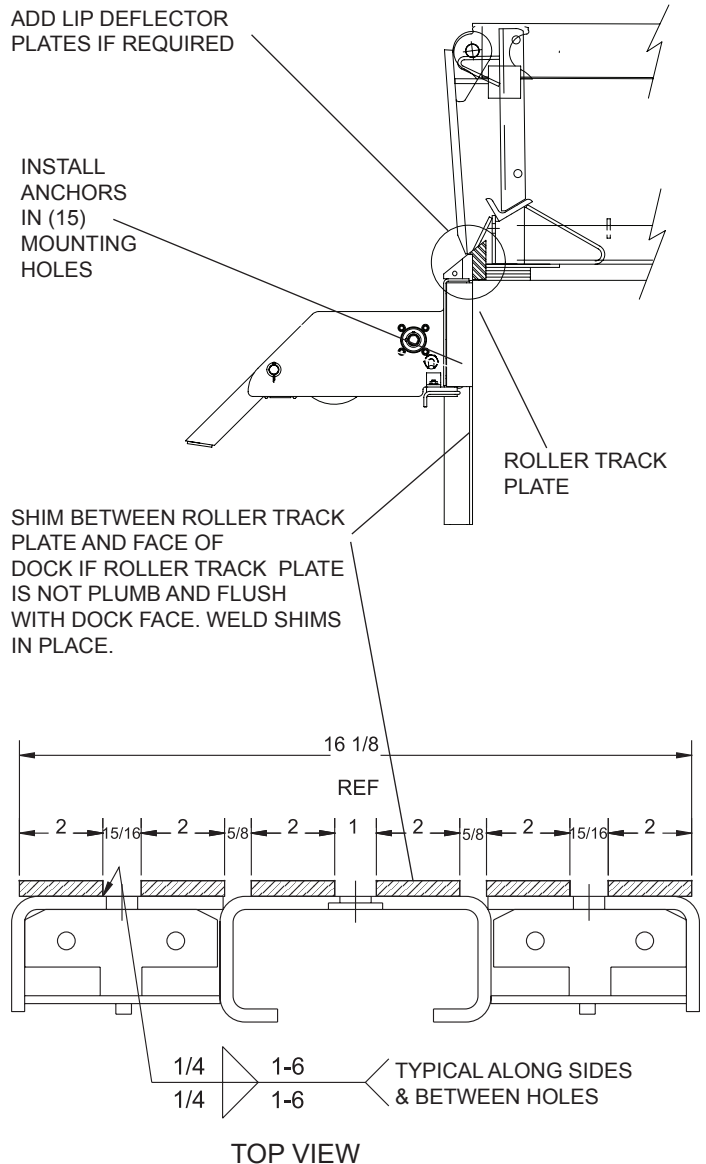
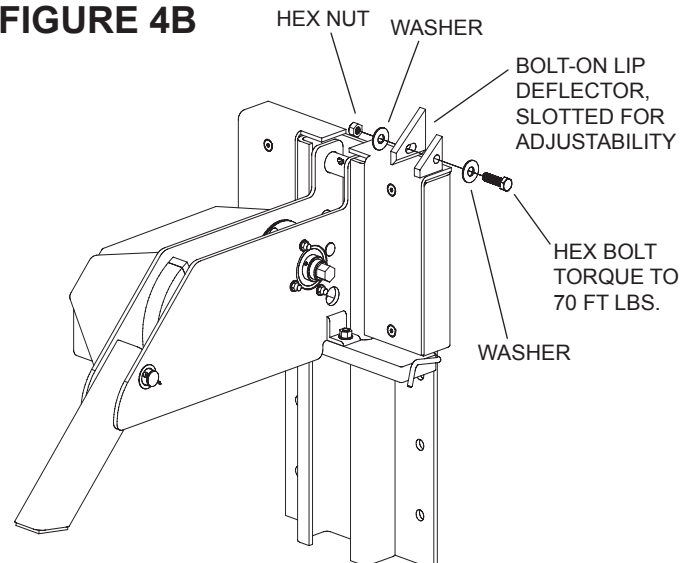


FIGURE 4B



INSTALLATION

8. (ALTERNATE MOUNTING METHOD WITH EMBEDDED PLATE).

If the pit is either new or remodeled and has an embedded mounting plate, weld the roller track plate to the embedded mounting plate. See Figure 5 for proper size and type of welds required.

NOTICE

Never weld on the PermaHOOK Electric Festraint after the motor is wired to the control box and the power is on. Damage to the controls or wiring may result.

- Reinstall the carriage assembly to the roller track plate. Attach the four springs to the spring bar and the top of the roller track plate. Slide the carriage assembly into the roller track plate. Bolt the spring bar to the bottom of the carriage assembly and install the spring and motor covers. See Figure 6.

WARNING

When lifting the carriage during service or assembly, use a lifting device. Lifting by hand may result in back injury.

Before doing any electrical work, make certain the power is disconnected and properly locked or tagged off. Failure to do so may result in death or serious injury. All electrical work must be done by a qualified technician and must meet all applicable codes.

- Mount control box inside the building approximately 4 feet above the floor, to the left of the doorway. See Figure 7.

FIGURE 5

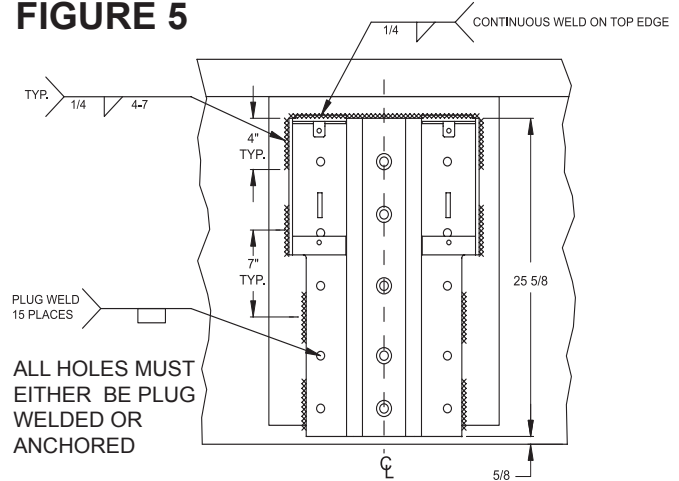


FIGURE 6

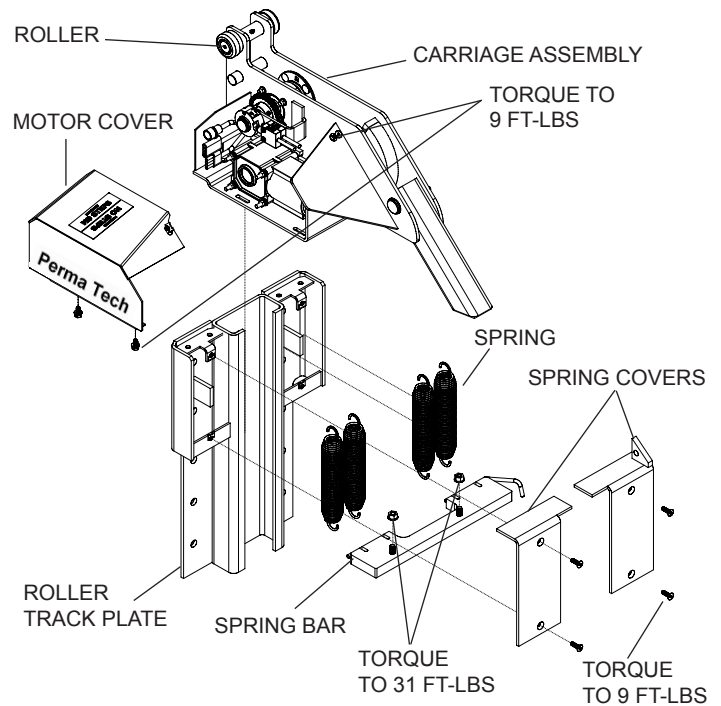
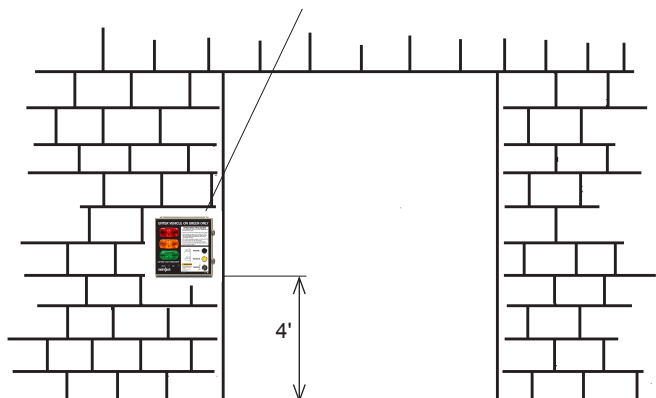


FIGURE 7

MOUNT CONTROL BOX ON LEFT SIDE OF DOOR OPENING. MOUNTING HARDWARE SUPPLIED BY OTHERS.



INSTALLATION

11. Mount and wire outside signal light assembly to the control box. See the Wiring Diagram for electrical connections. Make sure outside light assembly is mounted with the red light on top and the green light on the bottom.
12. Mount electrical junction box (not supplied) near the Vehicle Restraint. See Figure 9.
13. The Vehicle Restraint includes a wiring harness. Run the harness from the carriage to the outside junction box. Leave about 4" of slack in the wiring harness. Wire (not supplied) from the control box to the junction box. See Wiring Diagram.
14. Wire power to the control box using terminals provided in the control box. See Wiring Diagram.
15. Permanently mount the vehicle drivers instruction signs on the outside wall under the signal light, or where clearly visible by driver, when installing the Red/Green Light Assembly. See Figure 9.
16. Operate the Vehicle Restraint following the Operation instructions. Check for smooth operation and proper light operation according to the Operation instructions.
17. Instruct the dock workers how to use the Vehicle Restraint using the Operation instructions.

▲ DANGER

Be certain power is off when wiring to the control box or signal lights. Failure to do so could result in electrical shock, death or serious injury.

Do not route control wiring for any other device through this control box unless properly shielded.

FIGURE 8

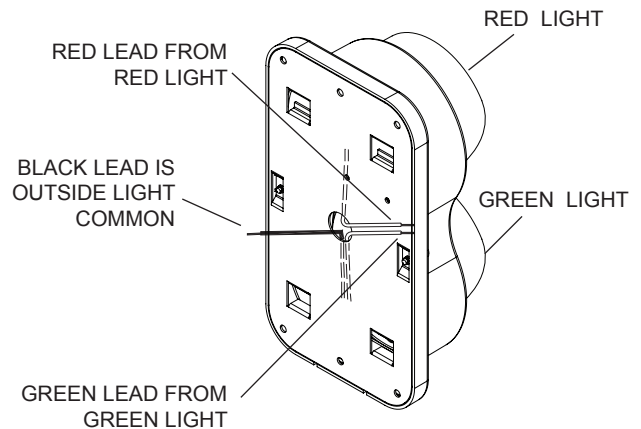
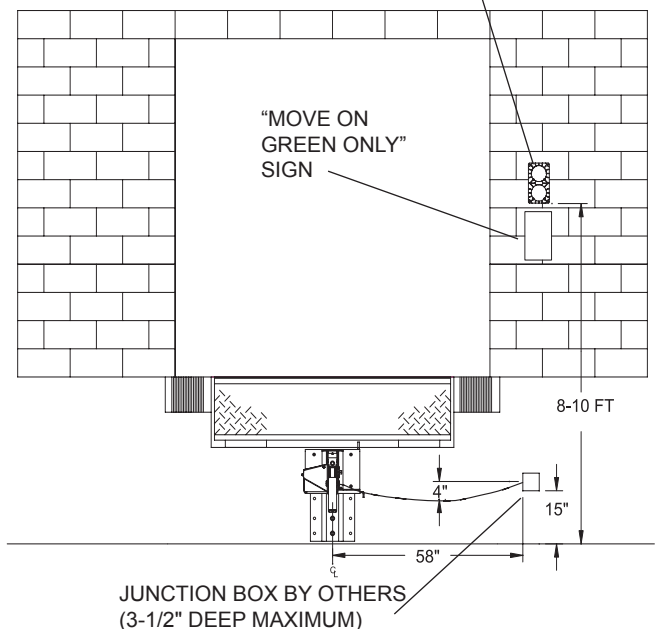


FIGURE 9

MOUNT SIGNAL LIGHT ON RIGHT SIDE OF DOOR. (VEHICLE DRIVER'S SIDE)



***MOUNTING HARDWARE SUPPLIED BY OTHERS**

***DIMENSIONS ARE REFERENCE ONLY. USE OF A STANDOFF OR OTHER MOUNTING BRACKET COULD AFFECT THE DIMENSIONS SHOWN OR THE REQUIRED CABLE LENGTH.**

OPERATION

⚠ WARNING

Use of the restraint is restricted to trained operators. Before operating the vehicle restraining device, read and follow the Safety Practices, Warnings, and Operation instructions contained in this manual. Use by untrained people could result in death or serious injury.

Before chocking the wheels or engaging the vehicle restraint, dump the air from the air ride suspensions and set the parking brake.

Do not load or unload any vehicle unless you make certain the Vehicle Restraint has securely hitched the vehicle's rear impact guard and the vehicle has set the brakes. If the Vehicle Restraint does not hitch the vehicle's ICC bar for any reason, BE CERTAIN TO CHECK THE VEHICLE WHEELS BEFORE LOADING OR UNLOADING.

Visually inspect the Vehicle Restraint to ensure proper engagement. The notch on top of the hook must wrap over the ICC bar. See Figure 10.

Enter the vehicle only when the green signal light on the control box is illuminated. You must check the green signal light each time that the vehicle is entered. If the illuminated green light goes off at any time during loading operations, immediately cease loading operations and check the Vehicle Restraint to ensure that it is securely hitched.

If power to the Vehicle Restraint is interrupted, immediately cease operations and check the unit. Consult the troubleshooting instructions to reset the lights when power resumes.

Vehicles leaving or moving when loading and unloading are in process could result in death or serious injury.

Failure to place the hook in the stored position when not in use could result in damage to the Vehicle Restraint and incoming trucks. Be certain bystanders in the driveway stand clear when the Vehicle Restraint is operated.

TO HITCH VEHICLE:

- Press "ENGAGE" button to restrain.
- Visually inspect the Vehicle Restraint to ensure proper engagement. The notch on top of the hook must wrap over the ICC bar. See Figure 10.

If vehicle cannot be hitched, red light will illuminate and the alarm will sound.

FIGURE 10

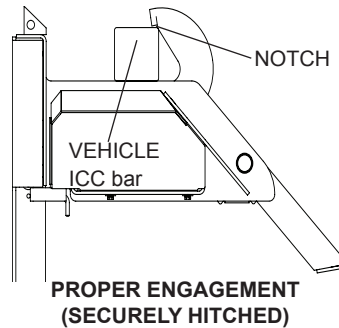


FIGURE 10A

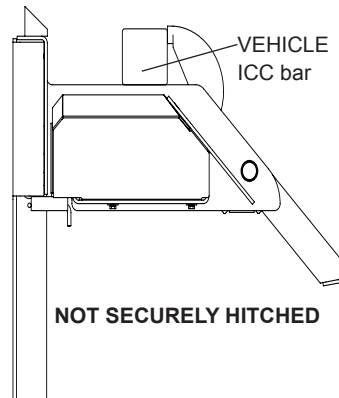


FIGURE 11



OPERATION

ENTER VEHICLE ON GREEN LIGHT ONLY:

- Be certain wheels are chocked and the vehicle brakes are set. If the vehicle cannot be hitched, and after wheels are chocked and the vehicle brakes are set:
Turn key switch from "OVERRIDE OFF" to "OVERRIDE ON". The inside lights will change from RED to RED/GREEN and the alarm will silence.

TO RELEASE VEHICLE:

- Store dock leveler.
- If the inside light is green, press "RELEASE" push-button.

If after pressing the "RELEASE" button, the inside light turns RED and the alarm sounds, the restraint is sensing it is not hitched and not properly released. Make sure trailer is parked firmly against the dock bumpers, and clear any obstructions. Turn the key switch from "OVERRIDE OFF" to "OVERRIDE ON", then turn key switch back to "OVERRIDE OFF" to release the restraint.

- If inside lights are RED/GREEN, turn key switch from "OVERRIDE ON" to "OVERRIDE OFF".

If after turning the key switch to "OFF", the inside light turns RED and the alarm sounds, the restraint is sensing it is not hitched and not properly released. Make sure trailer is parked firmly against the dock bumpers, and clear any obstructions. Turn the key switch from "OFF" to "ON", then turn key switch back to "OFF" to release the restraint.

- The vehicle may now pull out.

OPTIONAL OPERATIONAL FEATURES

The PermaHOOK ELECTRIC RESTRAINT control board has the capability to modify the operating system of the control panel. Please contact Perma Tech at 716.854.0707 for more information

PLANNED MAINTENANCE

⚠ WARNING

When lifting the carriage during service or assembly, use a lifting device. Lifting by hand may result in back injury.

Do not service this product unless you have read and followed the Safety Practices, Warnings, and Operation instructions contained in this manual. Failure to follow these safety practices could result in death or serious injury.

Check the lights to be certain they are returned to the proper display. If no vehicle is at the dock, or the vehicle is not hitched, the red inside light should be illuminated and the green outside light should be illuminated. If a vehicle is at the dock and is hitched or the wheels are chocked, the green inside light should be illuminated and the red outside light should be illuminated.

Before doing any electrical work (including changing bulbs), make certain the power is disconnected and properly tagged or locked off.

Place barricades around the pit on the dock floor and driveway while installing, maintaining or repairing the dockleveler or the vehicle restraint.

Before working on or around the Vehicle Restraint, visually confirm that the carriage assembly is at the top of its travel range. If not, STOP; do not work on or around the Vehicle Restraint. If the Vehicle Restraint is not at the top of its travel range, it may be due to an obstruction in the roller track. Under this condition the springs may be under considerable tension. Without properly securing the carriage assembly, the Vehicle Restraint is unsafe to work on.

NOTICE

Use only lubricants shown. Improper lubrication or adjustments may cause operational problems.

Legend	
Symbol	Description
	Lubricate - Oil Chain Lube
	Lubricate - Grease Lithium and synthetic oil-based moly grease. Temperature range of -40° to 170°F, or as required by service conditions
	Check Fasteners or Adjust Torque (Torque Noted)
	Cleaning (Location - Frequency)

FIGURE 16

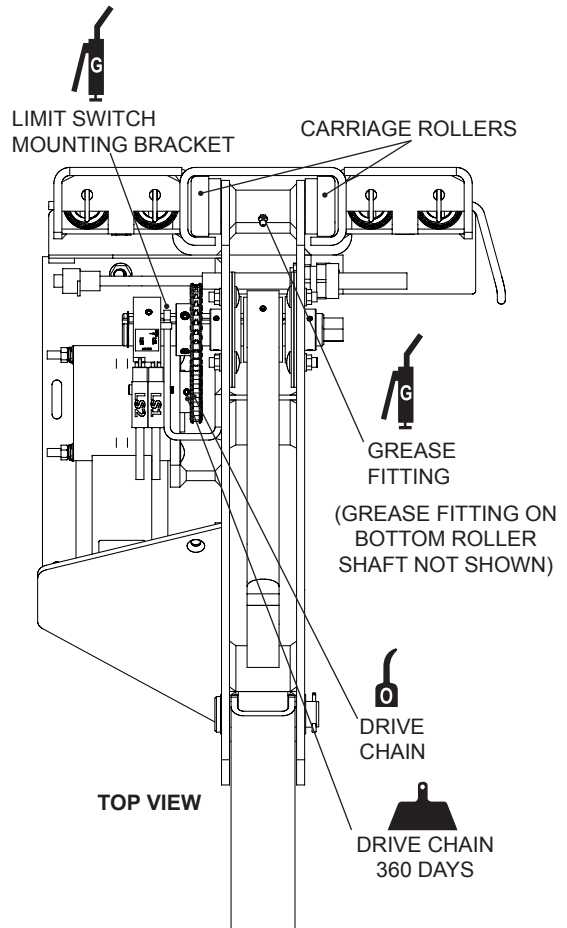
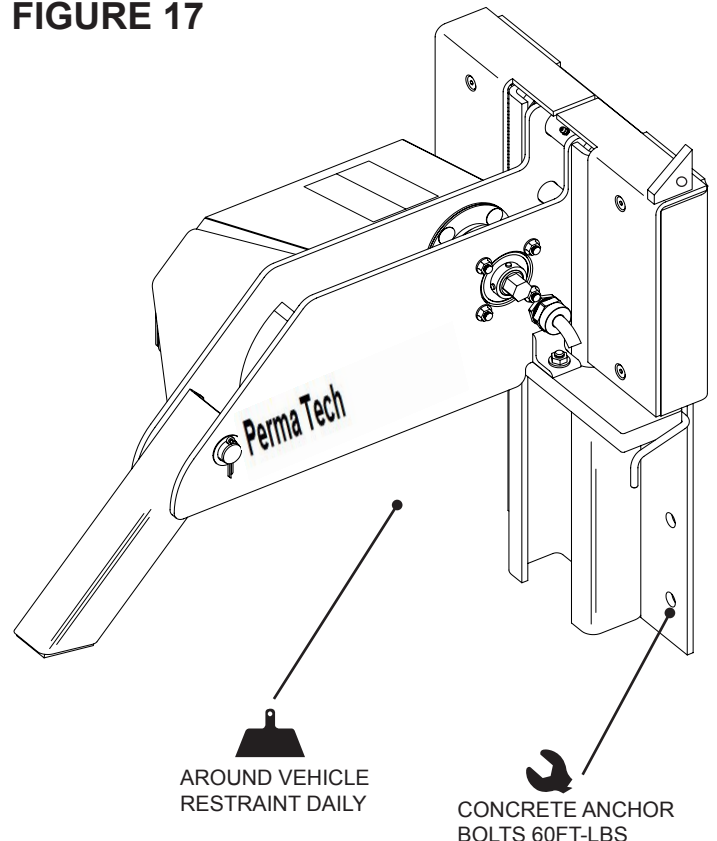


FIGURE 17



PLANNED MAINTENANCE

PLANNED MAINTENANCE SCHEDULE

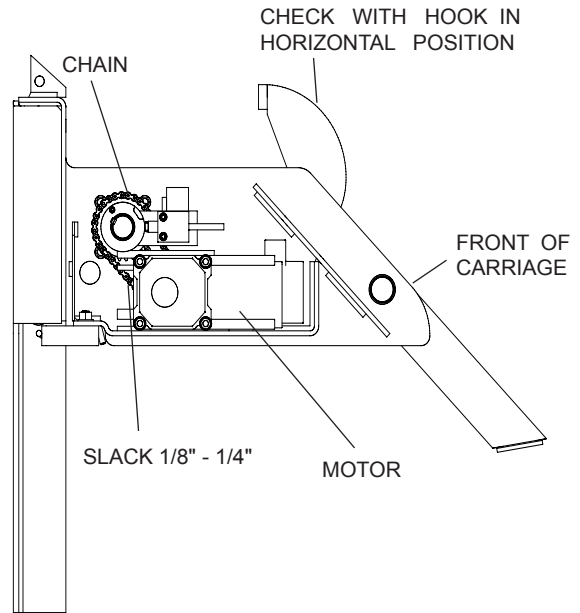
	Daily	180 Days	360 Days
Cleaning	1. As required to remove debris around the Vehicle Restraint.	1. Perform all daily cleaning.	1. Perform all daily and 180-day cleaning. 2. Clean the drive chain with solvent.
Lubrication	Not Required	1. Lubricate the drive chain thoroughly with chain lube. 2. Lubricate the four roller bearings using the grease fittings located on the top and bottom roller shafts. Use a lithium and synthetic oil-based moly grease.	1. Perform 180-day lubrication. 2. Lubricate the limit switch mounting bracket between the drive sprocket and cam. Use a lithium and synthetic oil-based moly grease.
Inspection & Adjustments	1. Inspect dock bumpers. Missing bumpers must be replaced. 2. Inspect all operating, warning, and caution labels and signs to be sure they can be read. Replace labels and signs as required. See the PARTS LIST for part numbers.	1. Perform all daily inspection and adjustments. 2. Inspect dock bumpers. 4 inches of protection is required. Worn, torn, loose or missing bumpers must be replaced. 3. Inspect the Vehicle Restraint for damage which may weaken the anchoring strength. Retighten the concrete anchor bolts to 60 ft-lbs if necessary. 4. Inspect the outside electrical connections (junction box, conduit, power harness) and outside communication light. Loose or damaged components must be repaired.	1. Perform all daily and 180-day inspection and adjustments. 2. Inspect the motor drive chain, and tighten if necessary. See "CHAIN ADJUSTMENT PROCEDURE".
Operation	1. Operate the Vehicle Restraint to assure that it operates smoothly and that the carriage moves freely up and down. 2. Verify that the horn is working properly. 3. Check the lights on the control box. The RED or GREEN light must be illuminated at all times. Push the buttons on the control box to be certain both lights are working. Replace LED modules as required. See the PARTS LIST for part numbers. 4. Check the outside communication light. The RED or GREEN light must be illuminated at all times. Push the buttons on the control box to be certain both lights are working. Replace LED modules as required. See the PARTS LIST for part numbers.	1. Perform all daily operational checks. 2. Perform operational test after servicing the Vehicle Restraint.	1. Perform all daily and 180-day operational checks. 2. Perform operational test after servicing the Vehicle Restraint.

PLANNED MAINTENANCE

CHAIN ADJUSTMENT PROCEDURE

FIGURE 18

1. Move the hook to horizontal position and remove motor cover. See Figure 18.
2. Check the drive chain slack. It should not have more than 1/4" slack. See Figure 18.
3. If the chain needs adjustment, loosen the three nuts on the motor mounting carriage bolts and move the motor toward the front of the carriage. Make sure the sprockets are in line and tighten the mounting bolts. Recheck the slack in the chain. See Figure 18.
4. Reinstall the motor cover.
5. Turn power on and press "RELEASE" push-button to store the hook.



PLANNED MAINTENANCE

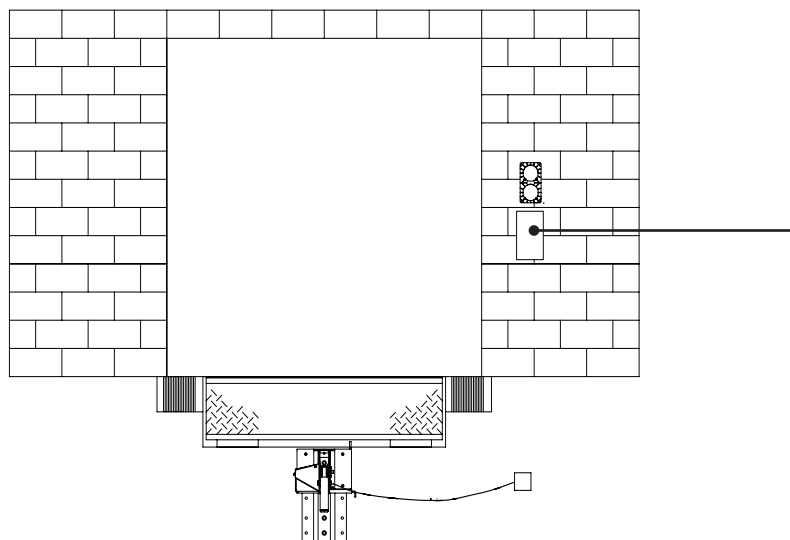
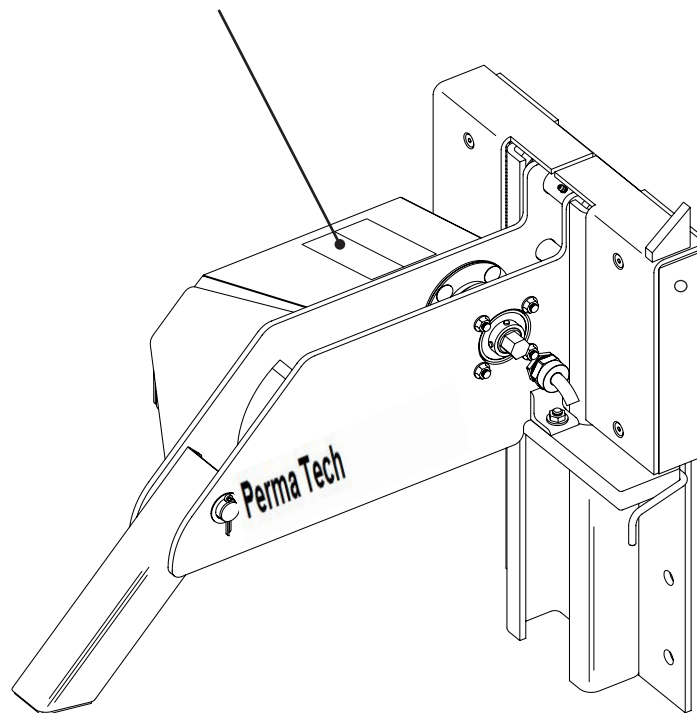
SAFETY LABELS AND SIGNS



PANEL DECAL
QTY. 1



WARNING LABEL
QTY. 1



MOVE ON GREEN ONLY SIGN

QTY. 1

TROUBLESHOOTING

▲ WARNING

Do not service this product unless you have read and followed the Safety Practices, Warnings, and Operation instructions contained in this manual. Failure to follow these safety practices could result in death or serious injury.

TROUBLESHOOTING

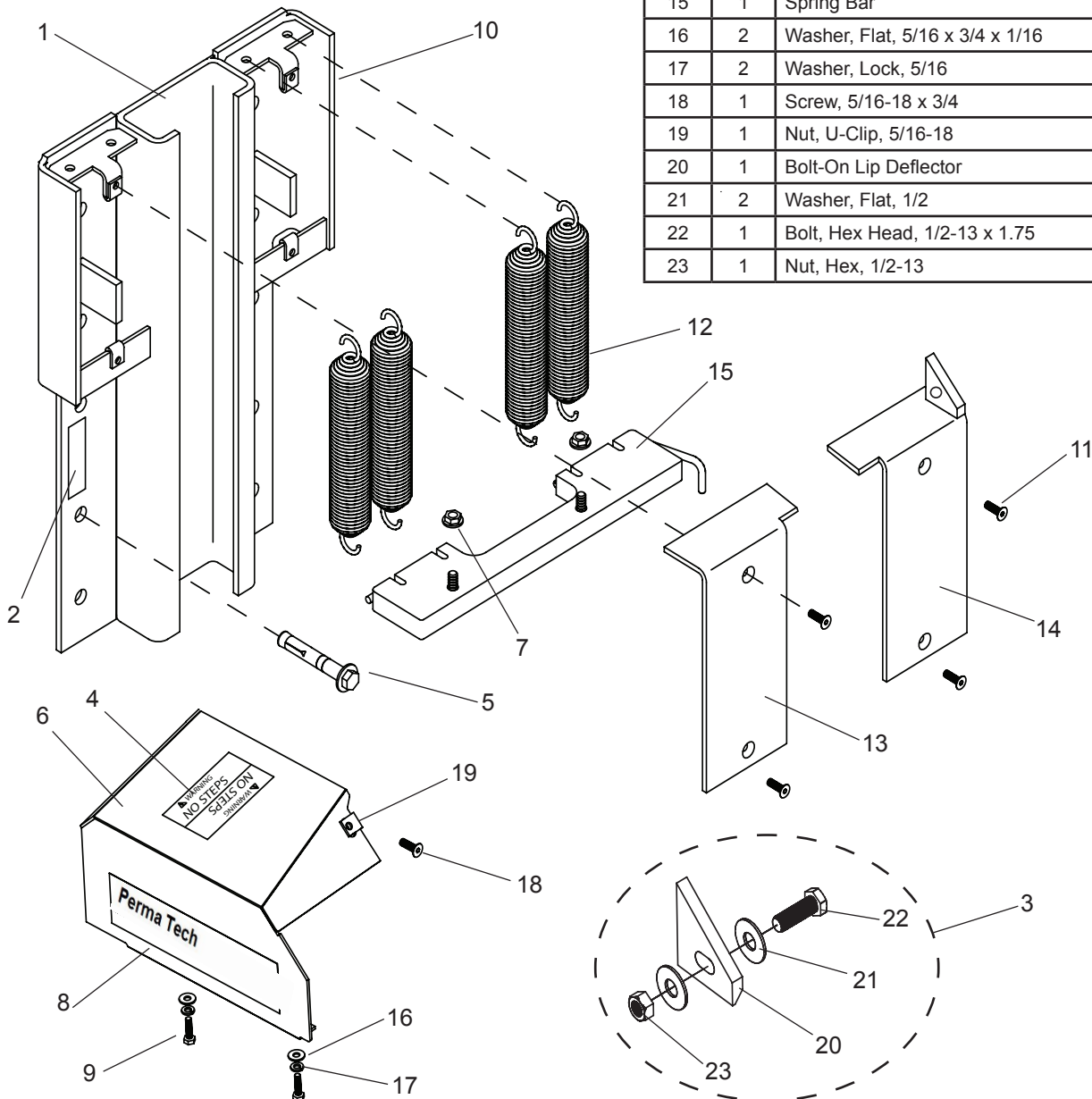
1. Lights do not work and the hook does not move.
 - 1.1 No power in control box. Check the fused disconnect and fuse block in the control box and the circuit breaker for incoming power to the control box.
 - 1.2 Not wired properly. Refer to the wiring diagram inside the control box and check all wiring and connections.
2. Lights are working but the hook does not move.
 - 2.1 Drive chain is either loose or broken. Adjust or replace as needed.
 - 2.2 No power to motor. Check all wiring connections from the control box to the motor.
 - 2.3 Drive motor not working. Replace.
 - 2.4 "ENGAGE" or "RELEASE" push-button switch not working. Replace as needed.
 - 2.5 Keyswitch is in "RESTRAINT OVERRIDE ON" position. Turn keyswitch to "OVERRIDE OFF" position.
3. Lights are working but the hook does not move all the way up or down.
 - 3.1 Incoming voltage is low. Check voltage.
 - 3.2 Motor mounting bolts are loose. Check for proper alignment between the sprockets and retighten bolts.
4. Hook moves but none of the lights work.
 - 4.1 LED modules burned out. Check LED modules and replace as needed.
 - 4.2 Bad wiring connections. Check all wiring connections. A good ground is required.
5. Hook and horn work but the lights do not change from red to green or green to red.
 - 5.1 Not wired properly. Check wiring.
 - 5.2 Limit switch LS2 not working. Replace.
6. Hook and lights work but the alarm horn does not work.
 - 6.1 Not wired properly. Check wiring.
 - 6.2 Alarm horn not working. Replace.
 - 6.3 Limit switch not working. Replace.
7. Hook and lights work but the alarm horn continuously sounds.
 - 7.1 Not wired properly. Check wiring.
 - 7.2 Limit switch LS2 not working. Replace.
8. Carriage assembly does not return to the proper stored position.
 - 8.1 Springs are either weak or broken. Replace.
 - 8.2 Roller track plate bent. Check for proper installation and replace if necessary.
 - 8.3 Carriage not moving freely up and down in the track. This may be due to an obstruction in the roller track. STOP! Do not work on or around the Vehicle Restraint. Under this condition the springs may be under considerable tension and without properly securing the carriage assembly, the Vehicle Restraint is unsafe to work on or around. Call an approved and qualified technician familiar with Perma Tech line of products. For a list of approved and qualified technicians call Perma Tech at 716.854.0707.

PARTS LIST

⚠ WARNING

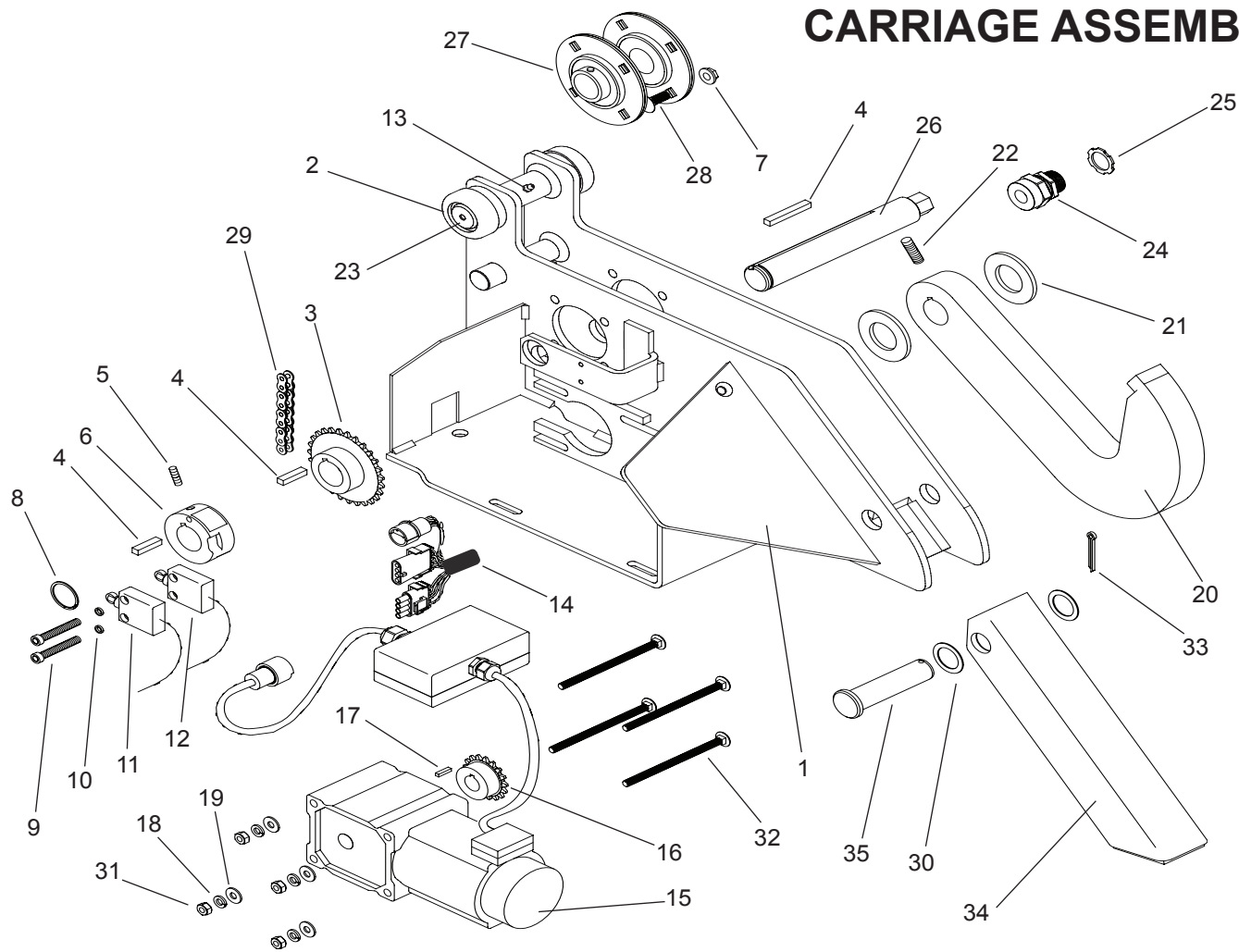
To ensure proper function, durability and safety of the product, only replacement parts that do not interfere with the safe, normal operation of the product must be used. Incorporation of replacement parts or modifications that weaken the structural integrity of the product, or in any way alter the product from its normal working condition at the time of purchase from Perma Tech, could result in product malfunction, breakdown, premature wear, death or serious injury.

ITEM	QTY	DESCRIPTION
1	1	Weldment, Roller Track
2	1	Label, Safety Products
3	1	Kit, Bolt-On Lip Deflector
4	1	Label, Warning
5	15	Bolt, Anchor, 5/8 x 4
6	1	Cover, Motor
7	2	Nut, Serrated Flange, 7/16-14
8	2	Label, METRO DOCK
9	2	Bolt, Hex Head, 5/16-18 x 3/4
10	4	Nut, Cage, 5/16
11	4	Screw, Flat Head Socket, 5/16-18 x 1
12	4	Spring, Extension
13	1	Spring Cover, Left-Hand
14	1	Spring Cover, Right-Hand
15	1	Spring Bar
16	2	Washer, Flat, 5/16 x 3/4 x 1/16
17	2	Washer, Lock, 5/16
18	1	Screw, 5/16-18 x 3/4
19	1	Nut, U-Clip, 5/16-18
20	1	Bolt-On Lip Deflector
21	2	Washer, Flat, 1/2
22	1	Bolt, Hex Head, 1/2-13 x 1.75
23	1	Nut, Hex, 1/2-13



PARTS LIST

CARRIAGE ASSEMBLY

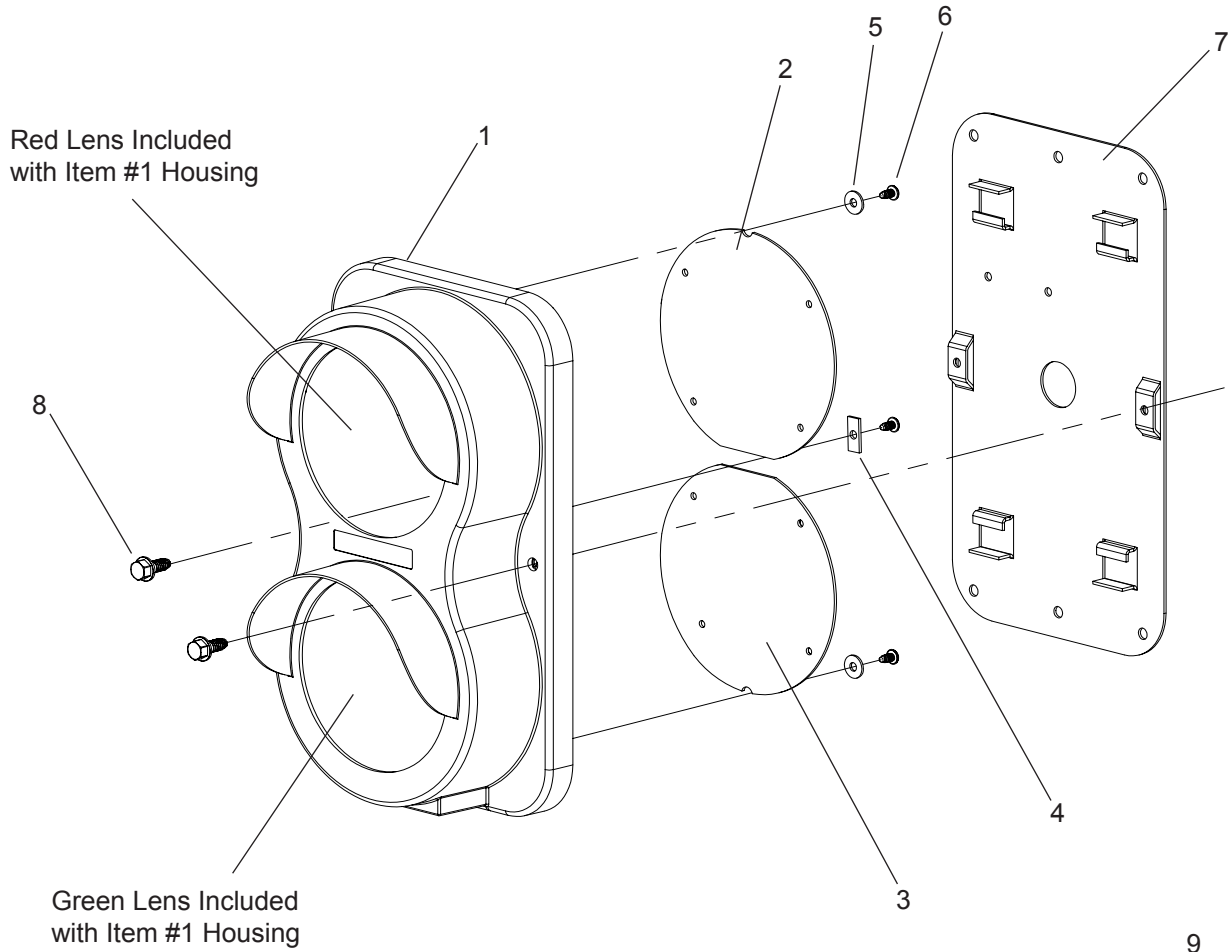


ITEM	QTY	DESCRIPTION
1	1	Weldment, 9" Restraint Carriage
2	4	Roller, Carriage
3	1	Sprocket, Drive
4	3	Key
5	1	Screw, Set, 5/16-18 x 1/2
6	1	Cam
7	8	Nut, Serrated Flange, 3/8-16
8	1	Ring, Retaining
9	2	Screw, Socket Head, 1/4-20 x 1-1/2
10	2	Washer, Lock, 1/4
11	1	Switch, Limit, LS2
12	1	Switch, Limit, LS1
13	2	Grease Fitting
14	1	Wire Harness (Includes Items 24 & 25)
15	1	Motor Assy (Includes Items 16 & 17)
16	1	Sprocket, Motor
17	1	Key, Drive Sprocket
18	4	Washer, Lock, 5/16

ITEM	QTY	DESCRIPTION
19	4	Washer, Flat, 5/16
20	1	Kit, Hook w/ Set Screw
21	2	Bushing, Machinery
22	1	Screw, Set, 5/16-18 x 3/4
23	4	Screw, Set
24	1	Cord Grip, 3/4
25	1	Locknut, Cord Grip
26	1	Hook Shaft
27	2	Bearing
28	8	Bolt, Carriage, 3/8-16 x 1
29	1	Chain, #35 w/ Master Link
30	2	Washer, Flat, 1-1/2 O.D.
31	4	Nut, Hex, 5/16-18
32	4	Bolt, Carriage, 5/16-18 x 5
33	1	Pin, Cotter, 5/32 x 1-1/2
34	1	Slope Extension
35	1	Pin, Slope Extension

PARTS LISTS

RED/GREEN LIGHT



ITEM	QTY	DESCRIPTION
-	-	Outside Light, 12-24V, LED
1	1	Housing, Complete w/ Red and Green Lenses
2	1	Red LED Board
3	1	Green LED Board
4	1	Circuit Board Retaining Clip
5	2	Washer, #8
6	3	Screw, Pan Head
7	1	Wall Mounting Plate
8	2	Bolt, Hex Head
9	1	Sign, Move On Green Only



Please direct questions to your local distributor or to Perma Tech

Your local Perma Tech distributor is:

