

INSTALLATION & OPERATION MANUAL



XP 9500 FLUSH-MOUNT LIGHTBAR



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IMPORTANT:

Read all instructions and warnings before installing and using.

INSTALLER: *This manual must be delivered to the end user of this equipment.*

Introduction

The XP9500 is an LED lightbar that contains a series of polycarbonate “pods” mounted to a strong aluminum extrusion. Angled lights in each pod project light to the intersections while forward facing lights provide a strong signal straight ahead. The PriZm™ LED lightheads provide a high intensity warning signal while drawing very little current. It is only 3" high and 7 ½" deep. Alley lights and forward clear lights round out the options for the XP 9500. Properly configured, the XP 9500 meets all SAE, California Title 13, KKK and NFPA specifications.



WARNING!

The use of this or any warning device does not insure that all drivers can or will observe or react to an emergency warning signal. Never take the right-of-way for granted. It is your responsibility to be sure you can proceed safely before entering an intersection, driving against traffic, responding at a high rate of speed, or walking on or around traffic lanes.

The effectiveness of this warning device is highly dependent upon correct mounting and wiring. Read and follow the manufacturer's instructions before installing or using this device. The vehicle operator should insure daily that all features of the device operate correctly. In use, the vehicle operator should insure the projection of the warning signal is not blocked by vehicle components (i.e.: open trunks or compartment doors), people, vehicles, or other obstructions.

This equipment is intended for use by authorized personnel only. It is the user's responsibility to understand and obey all laws regarding emergency warning devices. The user should check all applicable city, state and federal laws and regulations.

Public Safety Equipment, Inc., assumes no liability for any loss resulting from the use of this warning device.

Proper installation is vital to the performance of this warning device and the safe operation of the emergency vehicle. It is important to recognize that the operator of the emergency vehicle is under psychological and physiological stress caused by the emergency situation. The warning device should be installed in such a manner as to: A) Not reduce the output performance of the system, B) Place the controls within convenient reach of the operator so that he can operate the system without losing eye contact with the roadway.

Emergency warning devices often require high electrical voltages and/or currents. Properly protect and use caution around live electrical connections. Grounding or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.

PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO INSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.

Unpacking & Pre-Installation

Carefully remove the lightbar and place it on a flat surface, taking care not to scratch the lenses. Examine the unit for transit damage. Report any damage to the carrier and keep the shipping box.

Standard lightbars are built to operate on 12 volt D.C. negative ground vehicles. If you have an electrical system other than this and have not ordered a specially wired lightbar, contact the factory for instructions.

Test the unit before installation. To test, touch the black wire to ground and the other wires to +12VDC (an automotive battery is preferable for this test). A battery charger may be used, but please note that some electronic options may not operate normally when powered by a battery charger. If problems occur, at this point, contact the factory.

Installation & Mounting

Select the desired mounting location for the lightbar. This product is attached with 3/8" carriage bolts whose centerlines are 2" below the top of the lightbar (Figure 1).

Locate the bolts along the back of the lightbar. The number of mounting bolts varies with the length of the lightbar. Place a mounting bolt near each end of the frame. Space additional bolts evenly across the remaining length. Locate 7/16" diameter clearance holes on the vehicle to work with the bolt locations. Locate for easy access from the inside of the vehicle. Locate and drill a minimum 3/4" diameter hole for the control cable exiting as shown in Figure 2 below. Insure the cable jacket cannot be cut by sharp edges.

Route the cable and the bolts into their respective holes. Attach the washers and nuts to the bolts from the inside of the vehicle. Apply caulk to all bolts and wires at the point of entry.

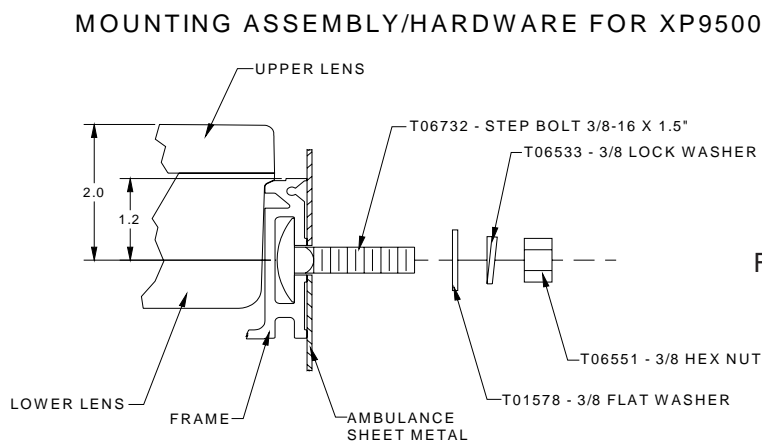


FIGURE 1

STANDARD CABLE HOLE LOCATIONS FOR XP9500 FROM CENTERLINE OF BAR

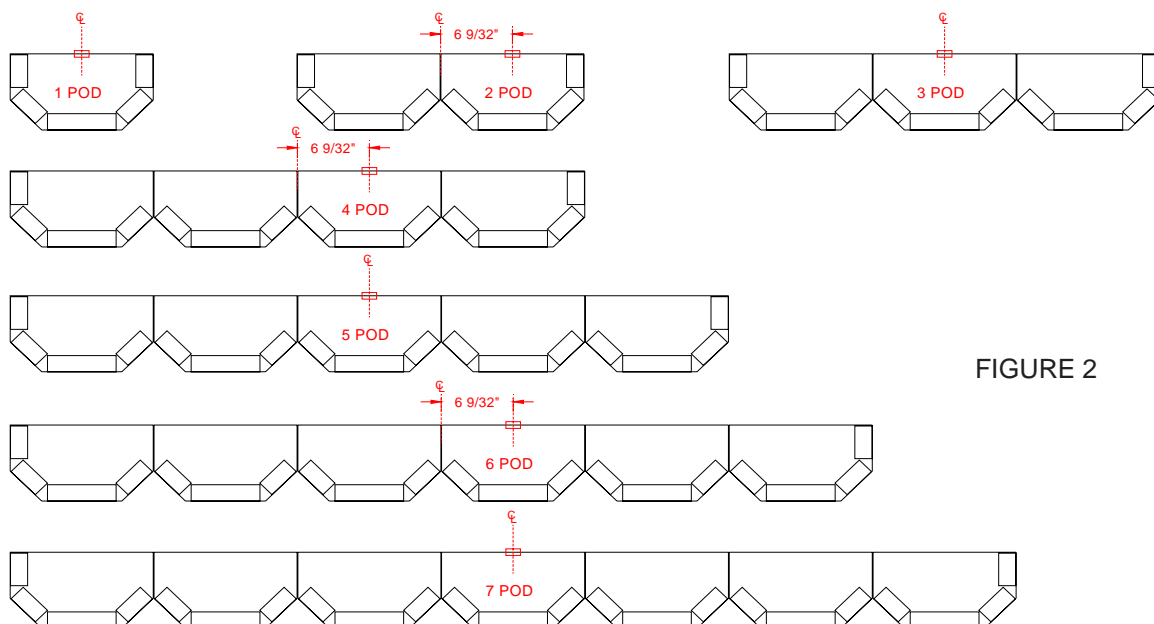


FIGURE 2

Wiring Instructions



WARNING!

Larger wires and tight connections will provide longer service life for components. For high current wires it is highly recommended that terminal blocks or soldered connections be used with shrink tubing to protect the connections. Do not use insulation displacement connectors (e.g. 3M® Scotchlock type connectors). Route wiring using grommets and sealant when passing through compartment walls. Minimize the number of splices to reduce voltage drop. High ambient temperatures (e.g. underhood) will significantly reduce the current carrying capacity of wires, fuses, and circuit breakers. Use "SXL" type wire in engine compartment. All wiring should conform to the minimum wire size and other recommendations of the manufacturer and be protected from moving parts and hot surfaces. Looms, grommets, cable ties, and similar installation hardware should be used to anchor and protect all wiring. Fuses or circuit breakers should be located as close to the power takeoff points as possible and properly sized to protect the wiring and devices. Particular attention should be paid to the location and method of making electrical connections and splices to protect these points from corrosion and loss of conductivity. Ground terminations should only be made to substantial chassis components, preferably directly to the vehicle battery. The user should install a fuse sized to approximately 125% of the maximum Amp capacity in the supply line to protect against short circuits. For example, a 30 Amp fuse should carry a maximum of 24 Amps. **DO NOT USE 1/4" DIAMETER GLASS FUSES AS THEY ARE NOT SUITABLE FOR CONTINUOUS DUTY IN SIZES ABOVE 15 AMPS.** Circuit breakers are very sensitive to high temperatures and will "false trip" when mounted in hot environments or operated close to their capacity.

Always refer to the wire tag attached to the lightbar cable to match lightbar functions with colored wire. Several items may be controlled by the same wire. Extend all control wires to switching device and make appropriate connections. The black ground wire must be securely attached to the vehicle chassis to provide reliable grounding.

LED Warning Devices

WARNING!



This Product contains high intensity LED devices. To prevent eye damage, DO NOT stare into light beam at close range.

LED Fusing Considerations

Although the average current draw per module is very low, due to the type of circuit used to power each module, the instantaneous peak current to a module can be significantly higher during low voltage conditions. To avoid prematurely blowing ATO style fuses or tripping breakers, it is recommended the following rule-of-thumb be used to size fuses or breakers. This is especially important in lightbars with many LED modules running off a single fused source.

Minimum fuse size calculation:

$$1.5 \times (\text{number of 6/8/12-up modules being fused}) + .5 \times (\text{number of 3-up modules being fused})$$

Example:

XP9500 lightbar with 7 forward facing 6-up modules and 16 angled and end facing 3-up modules

Minimum fuse requirement for single fuse: $(1.5 \times 7) + (.5 \times 16) = 18.5\text{A}$ minimum

Note:

Each 35 Watt halogen lamp requires 3A fusing. Each 55 Watt halogen lamp requires 5A fusing.

LED MODULES

The LED modules are available as “flashing” and “stationary” versions. The stationary versions can be flashed by connecting the module(s) to any flasher that does not require ground through the load (example: Code 3® 925 or 700 series relay flasher). The flashing modules will have "Cycleflash" as the standard pattern. Flash patterns can be changed by shorting the 2-pin header, J1 as shown in Figure 3, momentarily then releasing. Table 1 shows the available patterns and the order when stepping through patterns. The module can be reset to "Cycleflash" by shorting the header for greater than 5 seconds and releasing.

Directional Module Flash Pattern - Table 1

Flash Pattern	Description
Cycle Flash	Cycles through various patterns @ 70 fpm
Steady-Burn	Steady-Burn
Five Flash	Five Pulses per flash @ 70 fpm
Quad Flash	Four Pulses per flash @ 70 fpm
Triple Flash	Three Pulses per flash @ 70 fpm
Double Flash	Two Pulses per flash @ 70 fpm
Fast Double Flash	Two Pulses per flash @ 85 fpm
NFPA	Four Pulses, 70% Duty Cycle @ 75 fpm
Quad Pop Flash	Four Pulses per flash (3 equal, 1 extended) @ 70 fpm
Triple Pop Flash	Three Pulses per flash (2 equal, 1 extended) @ 70 fpm

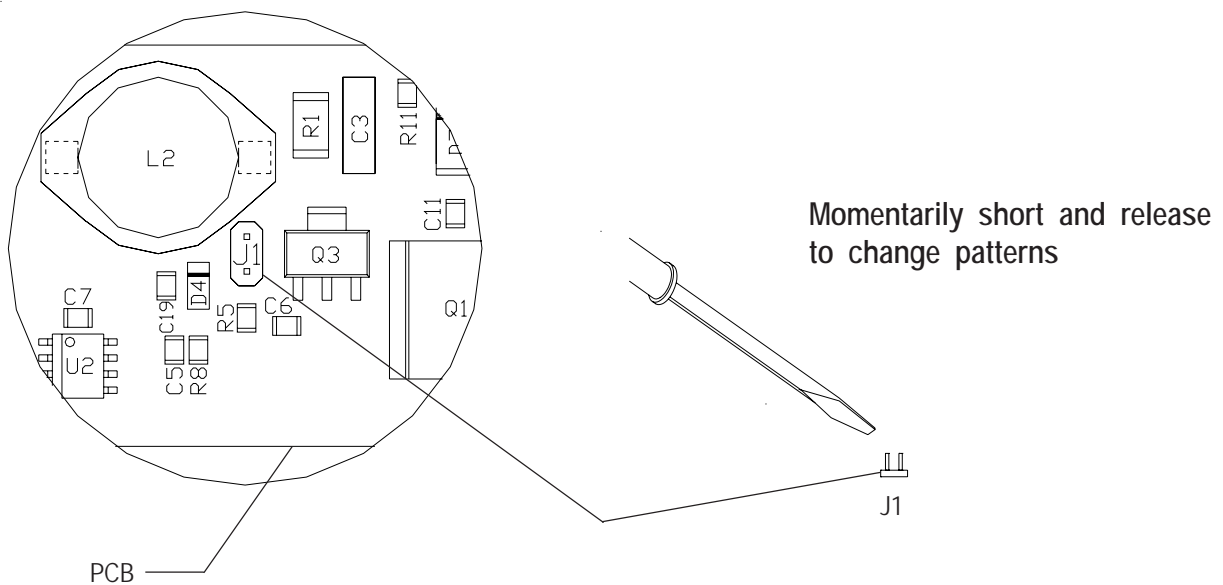


FIGURE 3

Maintenance

Make sure power is disconnected to the lightbar before servicing. Refer to Figure 4. To remove the top lens, remove the 4 screws around the perimeter. Place a blade screwdriver into the notches at the front of the top lens and twist. This should lift the lens up enough to remove the top lens by hand.

If an LED assembly is not working, refer to the troubleshooting section. If it needs to be removed, disconnect power to the module by pulling apart the red quick connect terminal and unscrewing the black ground lead. Remove the 2 sheet metal screws. Halogen assemblies are removed in the same manner.

Before reassembling the top lens, make sure the gasket is properly seated.

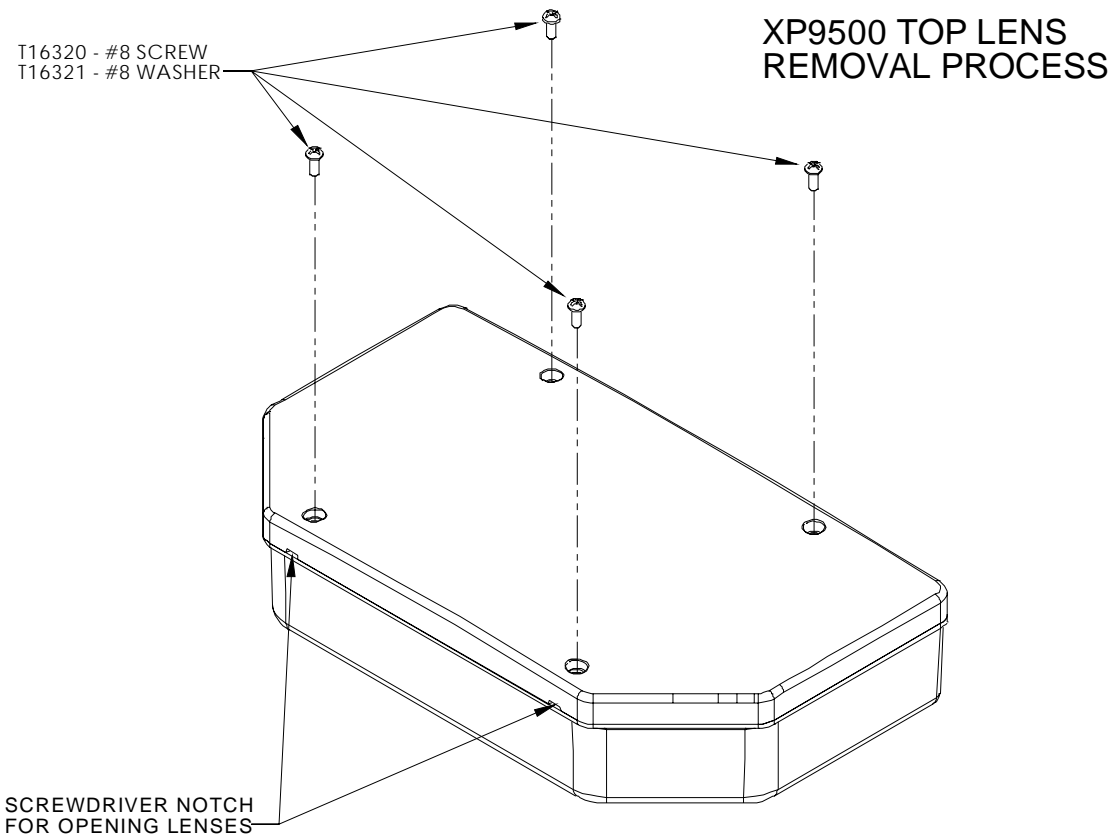


Figure 4

Troubleshooting

All XP9500 lightbars are thoroughly tested prior to shipment. However, should you encounter a problem during installation or during the life of the product, follow the guide below for information on repair and troubleshooting. Additional information may be obtained from the factory technical help line at 314-996-2800.

LED MODULE TROUBLESHOOTING GUIDE

Note: LED modules must be replaced as a module. There are no user serviceable parts.

PROBLEM	QUESTIONS	POSSIBLE CAUSE	SOLUTION
LED directional module not operating when powered.	N/A	<ul style="list-style-type: none"> a. Bad power/ground connection. b. Defective module. 	<ul style="list-style-type: none"> a. Fix connection. b. Replace module.
Lamp or LED module does not come on when it should (based on controller function)	<p>Are the controller panel LED indicators functioning properly?</p> <p>Yes</p> <p>No</p>	<ul style="list-style-type: none"> a. Bad lamp or defective LED module b. Defective wiring connection a. Control box is damaged 	<ul style="list-style-type: none"> a. Replace lamp or LED module b. Repair connection a. Return to Code 3

Ref.	Part Number	Description
1	S23995-S23998 S27000-S27003	3-up LED/Reflector Assembly
2	S24148	LED Lighthouse Mounting Plate
3	T08873	Lens Spacer
4	See Table 2	Aluminum Frame
5	T51001	Lower Lens
6	S23987-S23994	6-up LED/Reflector Assembly

Table 2

T16301	Mounting Frame (1 Pod)
T16302	Mounting Frame (2 Pod)
T16303	Mounting Frame (3 Pod)
T16304	Mounting Frame (4 Pod)
T16305	Mounting Frame (5 Pod)
T16306	Mounting Frame (6 Pod)
T16307	Mounting Frame (7 Pod)

Other 3up LED lighthouse assemblies available

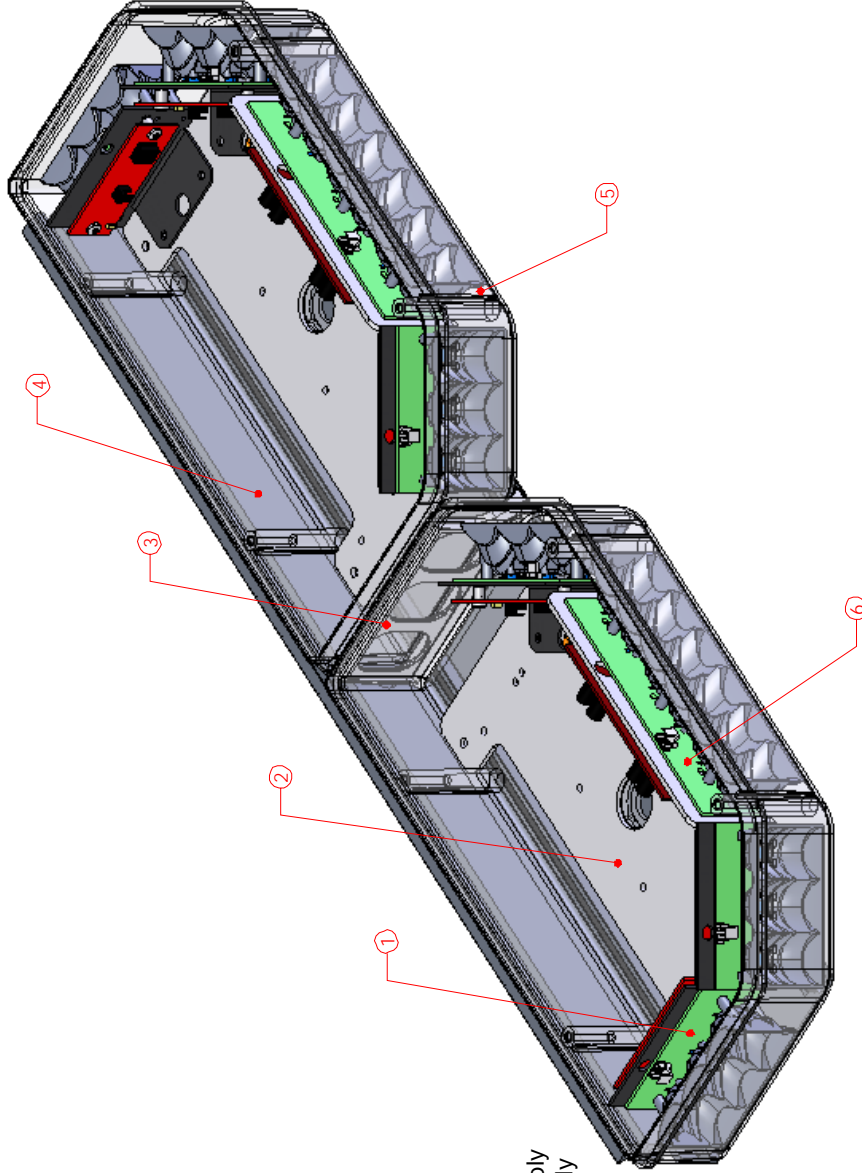
- S23957-S23962 Optix LED lighthouse assembly
- Call factory OLP Single lighthouse assembly
- Call factory OLP Dual lighthouse assembly

Other LED lighthouse assemblies available

- S27012-S27019 12-up LED/Reflector assembly
- S27004-S27011 8u-p LED/Reflector assembly
- S23963-S23986 6u-p Optix LED lighthouse assembly
- S23939-S23946 6-up OLP dual lighthouse assembly

Parts not shown

- T51011 Clear upper lens
- T08874 Right side endcap
- T08875 Left side endcap
- S27180 35 Watt Alley/Front light
- S24186 55 Watt Alley/Front light
- T16320 Lens Screw
- T16321 Lens Screw washer
- T16323 Frame/Lens gasket
- T01215 #8 Screw-module mounting
- T02946 #8 Screw-lower lens to frame



XP 9500 OVERALL DIMENSIONS

DESCRIPTION	PODS	LENGTH	DEPTH	HEIGHT
XP9512	1	12.500	7.375	3.000
XP9525	2	25.062	7.375	3.000
XP9538	3	37.625	7.375	3.000
XP9550	4	50.188	7.375	3.000
XP9563	5	62.750	7.375	3.000
XP9575	6	75.313	7.375	3.000
XP9588	7	87.875	7.375	3.000

NOTES:

NOTES:

WARRANTY

This product was tested and found to be operational at the time of manufacture. Provided this product is installed and operated in accordance with the manufacturer's recommendations, Code 3[®], Inc. guarantees all parts and components, except the halogen lamps, for a period of 1 year, LED lighthouse modules to a period of 5 years (unless otherwise expressed) from the date of purchase or delivery, whichever is later. Units demonstrated to be defective within the warranty period will be repaired or replaced at the factory service center at no cost.

Use of a lamp or other electrical load of a wattage higher than installed or recommended by the factory, or use of inappropriate or inadequate wiring or circuit protection causes this warranty to become void. Failure or destruction of the product resulting from abuse or unusual use and/or accidents is not covered by this warranty. Use of non-Code 3 components and assemblies may cause damage to the system and/or personal injury, and voids all warranties on Code 3 systems and components.

Code 3 shall in no way be liable for other damages including consequential, indirect or special damages whether loss is due to negligence or breach of warranty.

CODE 3 MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY INCLUDING, WITHOUT LIMITATION, WARRANTIES OF FITNESS OR MERCHANTABILITY, WITH RESPECT TO THIS PRODUCT.

PRODUCT RETURNS

In order to provide you with faster service, if you are going to return a product for repair or replacement*, please contact our factory to obtain a Return Goods Authorization Number (RGA number) before you ship the product to Code 3. Write the RGA number clearly on the package near the mailing label. Be sure you use sufficient packing materials to avoid damage to the product being returned while in transit.

*Code 3 reserves the right to repair or replace product at its discretion. Code 3 assumes no responsibility or liability for expenses incurred for the removal and/or reinstallation of products requiring service and/or repair.



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