



Installation and Operation Instructions


SERIES 45, 65 85 LED PERIMETER STOP/TURN TAIL

IMPORTANT! Read all instructions before installing and using. Installer: This manual must be delivered to the end user.



WARNING!

Failure to install or use this product according to manufacturer's recommendations may result in property damage, serious injury, and/or death to those you are seeking to protect!

 **Do not install and/or operate this safety product unless you have read and understood the safety information contained in this manual.**

1. Proper installation combined with operator training in the use, care, and maintenance of emergency warning devices are essential to ensure the safety of emergency personnel and the public.
2. Emergency warning devices often require high electrical voltages and/or currents. Exercise caution when working with live electrical connections.
3. This product must be properly grounded. Inadequate grounding and/or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.
4. Proper placement and installation is vital to the performance of this warning device. Install this product so that output performance of the system is maximized and the controls are placed within convenient reach of the operator so that they can operate the system without losing eye contact with the roadway.
5. Do not install this product or route any wires in the deployment area of an air bag. Equipment mounted or located in an air bag deployment area may reduce the effectiveness of the air bag or become a projectile that could cause serious personal injury or death. Refer to the vehicle owner's manual for the air bag deployment area. It is the responsibility of the user/operator to determine a suitable mounting location ensuring the safety of all passengers inside the vehicle particularly avoiding areas of potential head impact.
6. It is the responsibility of the vehicle operator to ensure daily that all features of this product work correctly. In use, the vehicle operator should ensure the projection of the warning signal is not blocked by vehicle components (i.e., open trunks or compartment doors), people, vehicles or other obstructions.
7. The use of this or any other warning device does not ensure all drivers can or will observe or react to an emergency warning signal. Never take the right-of-way for granted. It is the vehicle operator's responsibility to be sure they can proceed safely before entering an intersection, drive against traffic, respond at a high rate of speed, or walk on or around traffic lanes.
8. This equipment is intended for use by authorized personnel only. The user is responsible for understanding and obeying all laws regarding emergency warning devices. Therefore, the user should check all applicable city, state, and federal laws and regulations. The manufacturer assumes no liability for any loss resulting from the use of this warning device.

Specifications:

Size:	45	7.84"W X 3.67"H
	65	7.09"W X 4.67"H
	85	9.77"W X 7.78"H
	45BZ	9.17"W X 5.00"H
	65BZ	8.42"W X 6.00"H
	85BZ	11.10"W X 9.11"H

Input Voltage: 12-24VDC

Unpacking and Pre-Installation:

Carefully remove the light head from its protective packaging. Inspect the unit for transit damage. Report any damage to the carrier and keep the shipping carton.

Installation and Mounting:

There are three mounting options for the LED base unit:

1. Attaching the LED base unit with high strength double-sided foam tape (customer supplied). This option minimizes the piercing of the vehicle by requiring only a center wire hole.
2. Attaching the LED base unit with four #10 x ¾" sheet metal screws.
3. Attaching the LED base unit and lens together using four #6 x 1-½" sheet metal screws.

NOTE: Options 1 and 2 allow removal of the outer lens without removing the base from the vehicle. Option 3 allows removal of the entire unit from the vehicle with the removal of only four screws.

Step 1. Determine the mounting options to be used. Select the desired mounting location for the light head assembly. The installation must accommodate the base gaskets. **Note: The gaskets are flexible. Do not use them for drill templates.**

Step 2. Verify free clearance behind the mounting surface for wiring and fasteners.

Step 3. Using the appropriate template (Figures 2-4) cut the center opening for the wiring and install a grommet (customer supplied). Use a drill bit sized for the appropriate thickness of the mounting surface and a #10 sheet metal screw for drilling the screw holes. For example: for aluminum alloy sheet metal .125" thick, a #23 (.154") drill size is recommended. **Note: If the unit is to be attached with very high bond tape instead of screws then the screw holes need not be drilled. Clean the mounting surfaces of the vehicle and the light head with isopropyl alcohol and dry thoroughly prior to attaching tape.**

Step 4. Route the vehicle power wires and allow a minimum of 3 inches of slack to protrude from the center opening at each light head location. Use 18 AWG for wires up to 40 feet length, 16 AWG for wires up to 70 feet length.

Step 5. Place the light head gasket (and bezel if used) over the light head location and run the vehicle power wire slack through the center opening of the gasket. Refer to Figures 2 & 3.

Step 6. For Perimeter Lights refer to the section Flash Pattern Selection prior to finalizing the electrical connections. Prepare the vehicle power wires and the light head's wires with terminations of the customer's choice (not supplied). Waterproof connectors are recommended. Refer to the following table for appropriate wiring connections.

Step 7. At the power source end of the cable determine if the cable length is acceptable. If a shorter length is required, coil the cable and tie with an electrical tie.

Step 8. Verify proper light head operation by supplying electrical power to the system wires at the power source end of the cable.

Step 9. Verify that the O-ring is properly seated onto the LED base unit.

Step 10. Push the assembled electrical connectors through the center opening and into the vehicle.

Step 11. Push the LED base unit (and bezel if used) into the gasket. The LED base unit is symmetric and does not have a preferred top or bottom. Verify that the gasket (and bezel if used) is properly oriented. These parts are labeled with "TOP" and their part numbers at the top and have a drain slot at the bottom.

Step 12. Mount the LED base unit and gasket (and bezel if used) using four #10 x ¾" screws. Optionally the unit may be mounted with very high bond tape (customer supplied). If tape is used it should be attached to the base unit and the vehicle. Do not use tape to secure the gasket to either the LED base unit or the vehicle chassis. Follow the tape manufacturer's instructions to ensure proper adhesion.

Step 13. Verify the "TOP" lens marking is on the top and install the lens using four screws. Two screw options are supplied: four #10 x ¾" screws or four #6 x 1-½" screws. The #10 screws attach the lens to the LED base unit. The optional longer #6 screws go through the LED base unit and tap into the vehicle body. If the longer #6 screws are used then first drill an appropriate pilot hole into the vehicle body.

Wiring Instructions:

Notes:

1. 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).
2. Route wiring using grommets and sealant when passing through compartment walls. Minimize the number of splices to reduce voltage drop. 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.
3. 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.
4. 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.
5. Ground termination should only be made to substantial chassis components, preferably directly to the vehicle battery.
6. Circuit breakers are very sensitive to high temperatures and will "false trip" when mounted in hot environments or operated close to their capacity.

LED Perimeter Light Models	Wire Function		
	Red	White	Black
Models 45, 65, 85 - Perimeter Configurations	+12 or +24	Program	
45STR & 65STR - LED STT, Red	Stop or Turn	Tail	Ground
45STA & 65STA, Amber	Turn	none	

Connect the light head's black and red wires to the vehicle system's ground and positive (+12 or +24 VDC), respectively. **Note: For Perimeter Lights the white flash pattern selection wire must be protected from contact with the system ground to prevent inadvertent changes to the flash pattern. This can be accomplished by sealing or capping the end of the wire.**

Power Requirements:

LED Perimeter Lights are designed to be long life, full signal, light weight and low current draw.

The following table lists the number of LED's in each model and the average current draw for various conditions.

Part Number	#of LEDs	Average Current Draw, Amps			
		Steady Burn	Flashing	Steady Burn	Flashing
		13.8VDC	13.8VDC	24.0VDC	24.0VDC
45, 45STA, 45STR - 7X3 PERIMETER	62	1.0	0.5	0.5	0.3
65 - 6X4 PERIMETER	76	1.0	0.5	0.5	0.3
85 - 9X7 PERIMETER	124	1.5	0.8	0.8	0.4
65STR - 6X4 - RED(STOP OR TURN CONFIG.)	54	0.7	0.4	0.4	0.2
65STR - 6X4 - RED (TAIL CONFIG.)	54	0.05	N/A	0.04	N/A
65STA - 6X4 - AMBER TURN	54	0.7	0.4	0.4	0.2

Flash Pattern Selection:

The LED Perimeter Lights are equipped with one steady burn and twenty flashing patterns including ten alternating patterns, an exclusive feature of the CODE 3 LED Perimeter Light. All flash patterns are either 75 flashes per minute (FPM) or 150 FPM.

To select a different flash pattern, apply +12 or +24 VDC to the red wire and connect the black wire to the power supply ground. The unit will flash in whatever pattern was last set. Change the pattern by momentarily touching the white wire to the power supply ground. The flash pattern will change to the next pattern according to the following list:

Pattern Number	Description
-	Steady burn
1	75 FPM Single
2	75 FPM, Alternating Sides
3	150 FPM Single
4	150 FPM Single, Alternating Sides
5	75 FPM Double
6	75 FPM Double, Alternating Sides
7	75 FPM Triple
8	75 FPM Triple, Alternating Sides
9	75 FPM Quad
10	75 FPM Quad, Alternating Sides
11	150 FPM Quad
12	150 FPM Quad, Alternating Sides
13	75 FPM Hi-Low-Low-Hi
14	75 FPM Hi-Low-Low-Hi, Alternating Sides
15	150 FPM Double
16	150 FPM Double, Alternating Sides
17	150 FPM Triple
18	150 FPM Triple, Alternating Sides
19	75 FPM Hi-Low-Hi
20	75 FPM Hi-Low-Hi, Alternating Sides

Continue to cycle through the various patterns until the desired pattern is selected. The unit will retain this pattern even when power is removed. Note: For Perimeter Lights the white flash pattern selection wire must be protected from contact with the system ground to prevent inadvertent changes to the flash pattern. This can be accomplished by sealing or capping the end of the wire.

For units that are flashed with an external control system such as a multiplexer or a flasher unit, the heads should be set to steady burn. Note: Regardless of the location in the program in the flash pattern list, the unit can be forced to steady burn by permanently electrically tying the white wire to the black wire.

It is recommended that all heads be set to the desired pattern at a workbench prior to installation.

Parts & Exploded Views:

Note: All of the components illustrated are for the 45 series. They are shown for reference only. The procedures outlined within are generic procedures and are for use in the 65 & 85 series as well.

	3X7	4X6	7X9
	CZ0123	CZ0124	CZ0125
BEZEL	T07916	T07917	T07918
BEZEL GASKET	T07922	T07923	T07924

45/65/85 SERIES LIGHTS

	3X7			
	CZ0126	CZ0127	CZ0128	CZ0129
	RED	AMBER	BLUE	WHITE
LENS	T07891	T07892	T07893	T07894
O RING	T07925	T07925	T07925	T07925
LIGHT HEAD GASKET	T07919	T07919	T07919	T07919

	4X6					
	CZ0132	CZ0133	CZ0134	CZ0135	CZ0136	CZ0137
	RED	AMBER	BLUE	WHITE	STT RED	TURN AMBER
LENS	T07901	T07902	T07903	T07904	T07905	T07906
O RING	T07926	T07926	T07926	T07926	T07926	T07926
LIGHT HEAD GASKET	T07920	T07920	T07920	T07920	T07920	T07920

	7X9			
	CZ0138	CZ0139	CZ0140	CZ0141
LENS	T07911	T07912	T07913	T07914
O RING	T07927	T07927	T07927	T07927
LIGHT HEAD GASKET	T07921	T07921	T07921	T07921

* Gasket, item 4, only used for Standard Units.
 Bezel, item 5, and Bezel Gasket, item 6, only used for Bezeled Units.
 Turn Arrow Insert T04580 only used with 65STA.

Maintenance:

The lens is field removable for cleaning or replacement. Remove the lens by unscrewing the four mounting screws. Use mild detergent, warm water and a soft cloth to clean both surfaces of the lens. Use of any other chemicals may void product warranty. Thoroughly dry before reinstalling.

Because plastic scratches easily, cleaning is only recommended when necessary. Do not subject the lenses to car washes that use brushes as these will scratch the lenses. Do not use a pressure washer.

Case Products

Cases of ten units, all the same. Add suffix letter K to the model number. For example, 45BZRK is a case of ten LED perimeter lights, 7 X 3, Red, Bezel.

65F 4x6 LED for Headlamp Housing (See figure 3 below)

- 1.Slip (4) tinnerman clips onto the four corners of the lower mtg brkt #S89856
- 2.Attach the lens, gasket, and LED, to the mounting plate part #S95273.
- 3.Attach assembled LED assy to the lower mtg bracket with screws through the tinnerman clips.

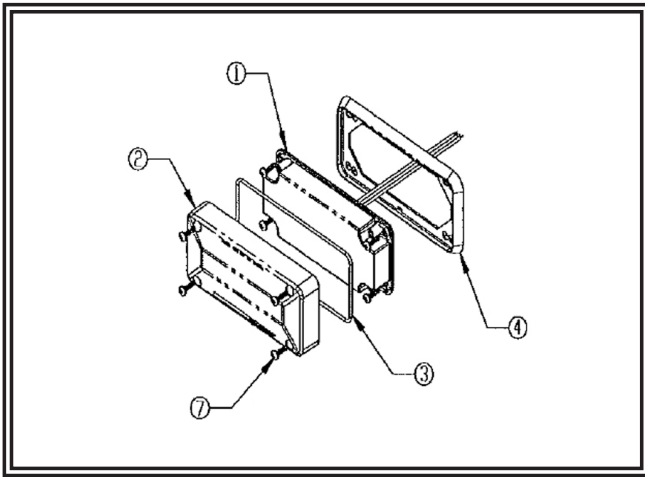


Figure 1

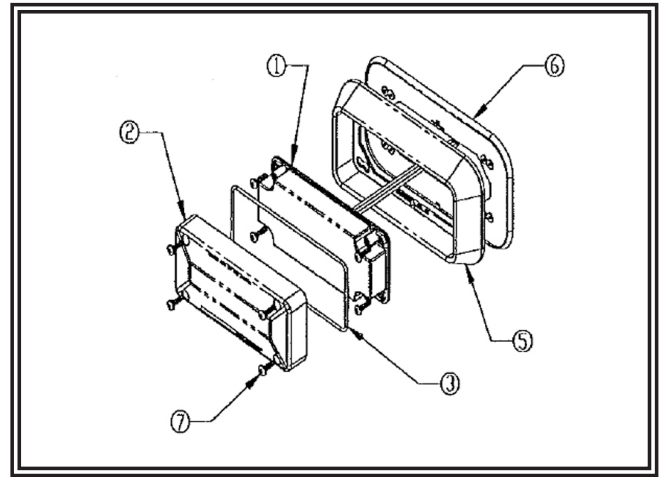


Figure 2

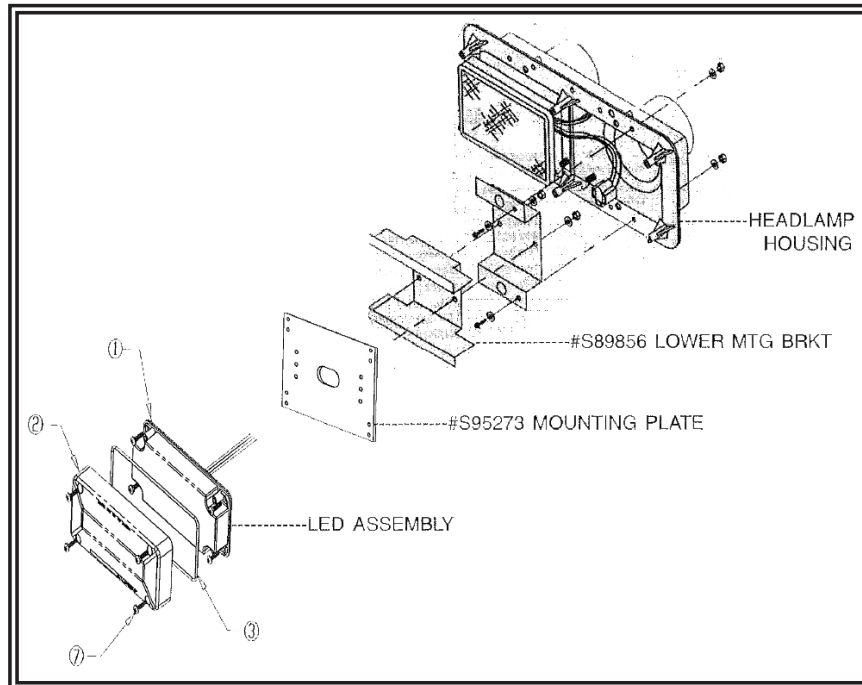


Figure 3

Notes:

Warranty:

Manufacturer Limited Warranty Policy:

Manufacturer warrants that on the date of purchase this product will conform to Manufacturer's specifications for this product (which are available from the Manufacturer upon request). This Limited Warranty extends for Sixty (60) months from the date of purchase.

DAMAGE TO PARTS OR PRODUCTS RESULTING FROM TAMPERING, ACCIDENT, ABUSE, MISUSE, NEGLIGENCE, UNAPPROVED MODIFICATIONS, FIRE OR OTHER HAZARD; IMPROPER INSTALLATION OR OPERATION; OR NOT BEING MAINTAINED IN ACCORDANCE WITH THE MAINTENANCE PROCEDURES SET FORTH IN MANUFACTURER'S INSTALLATION AND OPERATING INSTRUCTIONS VOIDS THIS LIMITED WARRANTY.

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MANUFACTURER MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. THE IMPLIED WARRANTIES FOR MERCHANTABILITY, QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, USAGE OR TRADE PRACTICE ARE HEREBY EXCLUDED AND SHALL NOT APPLY TO THE PRODUCT AND ARE HEREBY DISCLAIMED, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW. ORAL STATEMENTS OR REPRESENTATIONS ABOUT THE PRODUCT DO NOT CONSTITUTE WARRANTIES.

Remedies and Limitation of Liability:

MANUFACTURER'S SOLE LIABILITY AND BUYER'S EXCLUSIVE REMEDY IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR UNDER ANY OTHER THEORY AGAINST MANUFACTURER REGARDING THE PRODUCT AND ITS USE SHALL BE, AT MANUFACTURER'S DISCRETION, THE REPLACEMENT OR REPAIR OF THE PRODUCT, OR THE REFUND OF THE PURCHASE PRICE PAID BY BUYER FOR NON-CONFORMING PRODUCT. IN NO EVENT SHALL MANUFACTURER'S LIABILITY ARISING OUT OF THIS LIMITED WARRANTY OR ANY OTHER CLAIM RELATED TO THE MANUFACTURER'S PRODUCTS EXCEED THE AMOUNT PAID FOR THE PRODUCT BY BUYER AT THE TIME OF THE ORIGINAL PURCHASE. IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR LOST PROFITS, THE COST OF SUBSTITUTE EQUIPMENT OR LABOR, PROPERTY DAMAGE, OR OTHER SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES BASED UPON ANY CLAIM FOR BREACH OF CONTRACT, IMPROPER INSTALLATION, NEGLIGENCE, OR OTHER CLAIM, EVEN IF MANUFACTURER OR A MANUFACTURER'S REPRESENTATIVE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. MANUFACTURER SHALL HAVE NO FURTHER OBLIGATION OR LIABILITY WITH RESPECT TO THE PRODUCT OR ITS SALE, OPERATION AND USE, AND MANUFACTURER NEITHER ASSUMES NOR AUTHORIZES THE ASSUMPTION OF ANY OTHER OBLIGATION OR LIABILITY IN CONNECTION WITH SUCH PRODUCT.

This Limited Warranty defines specific legal rights. You may have other legal rights which vary from jurisdiction to jurisdiction. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages.

Product Returns:

If a product must be returned 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®, Inc. 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®, Inc. reserves the right to repair or replace at its discretion. Code 3®, Inc. assumes no responsibility or liability for expenses incurred for the removal and /or reinstallation of products requiring service and/or repair.; nor for the packaging, handling, and shipping; nor for the handling of products returned to sender after the service has been rendered.



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