



Installation and Operation Instructions

5590 Series LED Minibars

5590 Series - Reflex™ LED Minibars provide a compact yet powerful warning solution that offers the flexibility of either permanent, magnet mount or vacuum-magnet mounting. The 5590 Series features 12-24 VDC operation, combines both discrete optic and reflector technology to maximize light output, and offers multiple flash patterns including double, quad, quint, rotate and random.



REFLEX™



WARNING!

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



Do not install and/or operate this safety product unless you have read and understand 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 you and those you are trying to protect.
2. 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 are 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 s/he can operate the system without losing eye contact with the roadway.
5. It is the responsibility of the vehicle operator to ensure during use 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.
6. The use of this or any other warning device does not ensure all drivers can or will observe or react to a 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, walking on or around traffic lanes.
7. This equipment is intended for use by authorized personnel only. The user is responsible for understanding and obeying all laws regarding warning signal 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:	5590XXX	15" x 9" x 2.5"
	5590XXX-VM	15" x 9" x 3.1"
	5590XXX-MG	15" x 9" x 2.5"

Current Draw:
5590: 6.0 Amps Maximum
Maximum power consumption: 84 watts

Weight:	Permanent mount	approx. 4.0 lbs.
	Vacuum-Magnet Mount	approx. 6.3 lbs.
	Magnet Mount	approx. 6.25 lbs.

Flash Rate:
See Flash Pattern Chart

Output Power(total):
5590: 25,000 Candela Seconds Maximum
Temp. Range: -30°C to +50°C

Input Voltage: 12 to 24 VDC systems

Installation & Mounting:

Important! This unit is a safety device, and it must be connected to its own separate, fused power point to assure its continued operation should any other electrical accessory fail.

Carefully remove the Minibar and place it on a flat surface. Examine the unit for transit damage, and locate all parts. If damage is found, or parts are missing, contact the transit company or ECCO. Do not use damaged or broken parts.



Caution! When drilling into any vehicle surface, make sure that the area is free from any electrical wires, fuel lines, vehicle upholstery, etc. that could be damaged.

Permanent Mounting:

1. Select the desired location on a flat surface for the Minibar to be mounted. The visibility of the flash and ease of wiring access should be taken into consideration in the selection of the mounting location.
2. Unscrew the lens from the base of the minibar. Use the four holes in the corners of the base to mark the mounting hole locations.
3. Drill the holes using a 7/32" drill size.
4. A fifth hole may be drilled for wire access.
5. Connect the power wires as shown in the wiring section (see Figure 2).
6. Mount the minibar with M5 hardware provided.

Vacuum Mount Installation for 5590 Series:

1. Remove round black stickers for vacuum placement
2. Remove lens screws, then remove lens.
3. Unclip and remove wire harness
4. Position vacuum magnets, place, and tighten screws.
5. Insert pinned end of cable through the wire harness hole from the bottom of the base. Pull at least 6 inches of slack.
6. Turn pins crimp side up, and insert pins into connector as shown in Figure 2.
7. Place zip-tie 1.0" from base of the connectors shown in Figure 3. Zip-tie must not slide on cord.
8. Trim excess zip-tie.
9. Clip connector to the PCA board and pull slack until zip-tie touches base.
10. Install lens, reverse of removal.
11. Slide o-ring onto screw until it reaches head, before placing into lens. If o-rings are damaged, replace with new ones.

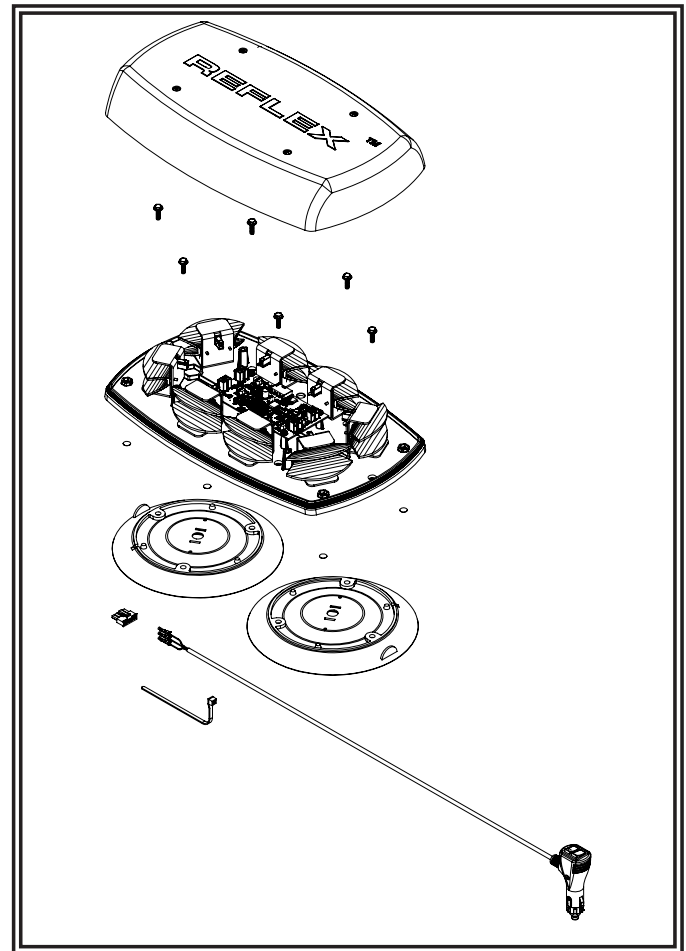


Figure 1



NOTE: Operating the vehicle without the outer lens installed on the product may result in damage that will NOT be covered under warranty.

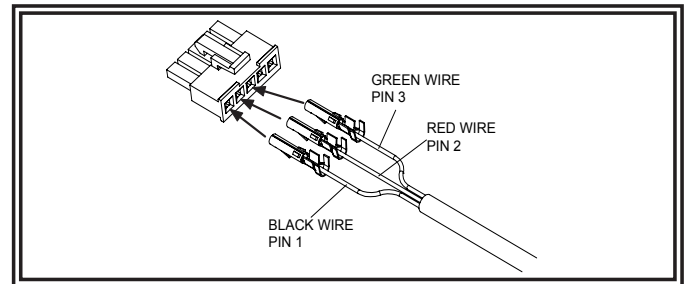


Figure 2

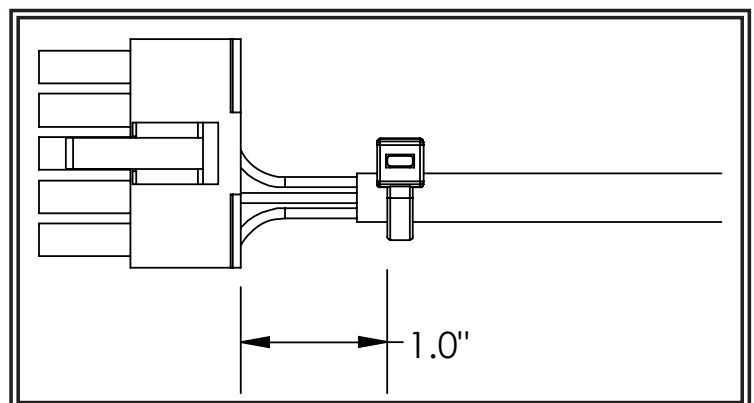


Figure 3

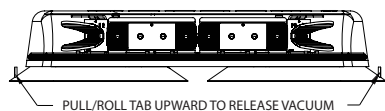
Vacuum-Magnet Mount:

The Vacuum-Magnet Mount feature includes suction cups on the bottom of the minibar, with a magnet inside the suction cup, for a secure, temporary mount. The minibar should be placed in the center of the roof where the least amount of curvature occurs. Before installing, make sure the mounting surface is clean and there is no debris on the bottom of the minibar or on the roof of the vehicle, which could reduce the holding power of the suction cup and magnet. Place and remove the minibar without sliding to avoid scratching the paint on the vehicle. After placement, the minibar should adhere firmly to the surface. If the unit slides or moves easily, a proper installation has not been obtained. To release the vacuum, lift the tab to release the airlock (see Figure 4). To protect the Vacuum-Magnet Mount assembly, return minibar to the box when not in use. **Do not attempt to attach the minibar to an ice-covered surface.**

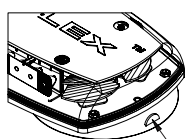


WARNING!

Maximum recommended vehicle speed for safe operation using the Vacuum Mount model is 65 mph (104 km/h), when fitted to the center of a vehicle roof of steel construction. Higher speeds could cause the mount to fail, resulting in the minibar flying off of the vehicle, which could cause damage to other vehicles, and injury or death to the passengers. The vacuum-magnet mount is not intended as a permanent mounting for the minibar. The vacuum-magnet mount unit must be mounted on a flat smooth magnetic surface (i.e. no fiberglass, ribbed style roofs, etc.). Ensure that the magnet is kept clean.



PULL/ROLL TAB UPWARD TO RELEASE VACUUM



PULL/ROLL TAB UPWARD TO RELEASE VACUUM

Figure 4

Magnet Mount Installation for 5590 Series:

1. Refer to the appropriate Vacuum Mount Installation for the 5500 series, steps 2 through 9, and the corresponding Figures for wiring instructions for the cord.
2. Place hex nut into the hex shaped retaining cavity on the inside of the minibar base.
3. Place an internal star washer onto the enclosed M5 x 20 hex bolt and insert the hex bolt through the hole in the cup magnet as shown. Hold the magnet/bolt assembly with the bolt extended through the magnet as far as possible and feed the hex nut and the shank of the bolt through one of the openings at the 4 corners of the underside of the minibar base. Maintain tension on the bolt/nut by holding onto the cup magnet while tightening the assembly. Repeat this process for all four corners.
4. Place the adhesive magnet covers over the magnets.
5. Replace the lens.

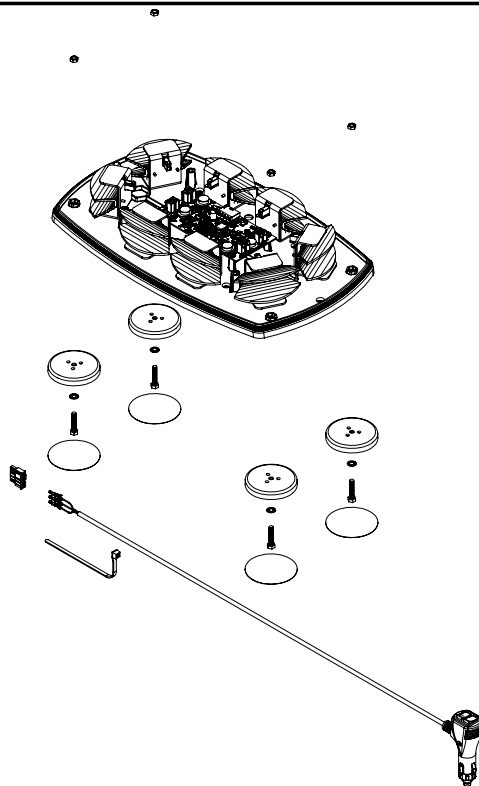


Figure 5

Note: The Magnet Mount is not recommended for use on a moving vehicle, nor is it intended as a permanent mount for the light. Long duration usage of the magnet in the presence of moisture will cause the steel to rust.



WARNING!

Failure to follow these instructions can result in fire or injury from excessive heat build up.

Operator is responsible for ensuring auxiliary plug fits correctly into auxiliary power plug outlet used.

For proper operation, verify auxiliary power outlet circuit is rated to supply a minimum of 10 amps. (See specifications section for rated current in amperes).

Do not exceed the current rating for the auxiliary power outlet recommended by vehicle manufacturer.

Keep auxiliary plug and outlet clean and free of debris.

Do not use the auxiliary plug when wet.

Insert auxiliary plug fully into the outlet for proper connection.

Grasp auxiliary plug, NOT cord, to remove from outlet.

Remove auxiliary plug completely from outlet when light is not in use.

Important! Disable power before wiring up the Minibar.

Wiring:

The wiring for the permanent mount minibar is as shown in Figure 6. All wiring should be a minimum of 18AWG. The positive line must have a 7.5 amp fuse, as shown. A switch may be used to control the on/off function.

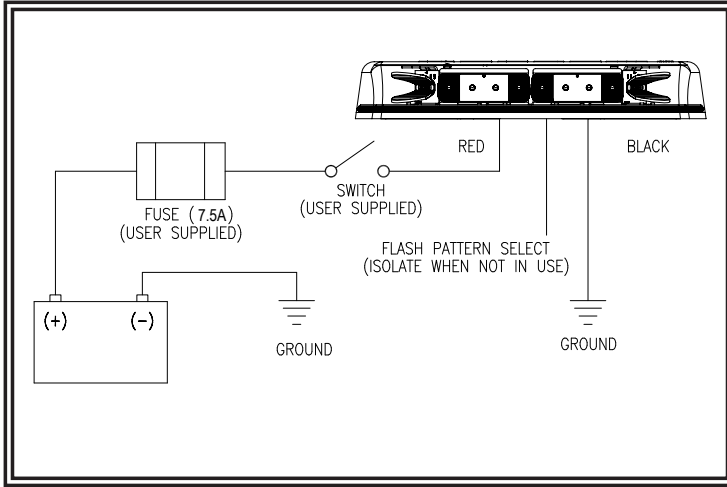


Figure 6

Flash Mode Selection:

Flash patterns can be selected on permanent mount minibars by touching the yellow wire to the red power wire for less than a second. Contacting the yellow and red wires for longer than a second toggles to the preceding flash pattern. The 5590-VM and 5590-VM models have flash pattern select via a momentary switch on the cigarette plug.

Flash Pattern Syncing:

The 5590 permanent mount models sync with other compatible ECCO products via the blue wire:

1. Determine the desired style of flash pattern for each unit and set each unit individually (without the BLUE wires connected together) to avoid confusion. It is also strongly recommended that the same style of flash pattern be used on all units to produce the most effective warning pattern. (NOTE: Phases A and B for each style of flash pattern in the table denote the relative timing between units connected in a synchronizing installation. To operate simultaneously, each unit must be set to the same phase (A + A or B + B); to operate alternately, units must be set to have the opposite phase (A + B or B + A)).
2. Connect the BLUE (SYNC) wires together and check that the units are flashing in a synchronized manner as expected. If a pattern on one module appears to be wrong, the YELLOW (PATTERN SET) wire can be used to cycle forward or backward on that individual unit until the correct pattern is selected.
Note: This will only change the pattern in the one unit and will not affect the other units connected to the BLUE (SYNC) wire.
3. If the blue wire is unused, leave unconnected and insulated.

Flash Pattern Chart					
Sequence	Description	Phase	FPM	5590	
				SAE J845 class 1	Title 13
1	Quad (Factory Default)	A	75	Yes	Yes
2	Quad	B		Yes	Yes
3	Double	A	75	Yes	Yes
4	Double	B		Yes	Yes
5	Fast Double	A	130		
6	Fast Double	B			
7	Slow Quad	A	65	Yes	Yes
8	Slow Quad	B		Yes	Yes
9	Slow Double	A	65	Yes	Yes
10	Slow Double	B		Yes	Yes
11	Quint-hold	A	75	Yes	Yes
12	Quint-hold	B		Yes	Yes
13	Burst	A	75		Yes
14	Burst	B			Yes
15	Quad, Alternate Side-to-Side		150		
16	Quad, Diagonal Alternate		150		
17	Double, Alternate Side-to-Side		150		
18	Double, Diagonal Alternate		150		
19	Quint-hold, Alternate Side-to-Side		150		
20	Quint-hold, Diagonal Alternate		150		
21	Fast Rotate		120		
22	Rotate/Quad		150/75		
23	Wave Rotate		70		
24	Random				
25	Steady				

Manufacturer Limited Warranty and Limitation of Liability:

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), and Manufacturer further warrants that this product is free from defects in materials and workmanship. This Limited Warranty extends for three (3) years from the date of purchase. Other warranties may apply, call Manufacturer for details. Manufacturer will, at its discretion, repair or replace any product found by the Manufacturer to be defective and subject to this Limited Warranty.

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