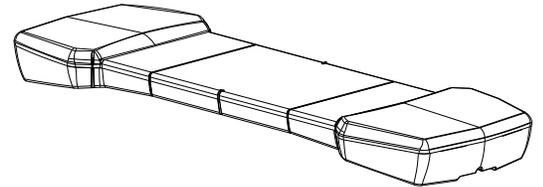




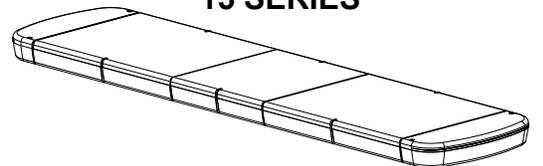
Installation and Operation Instructions

10/15/20/30 Series Lightbars

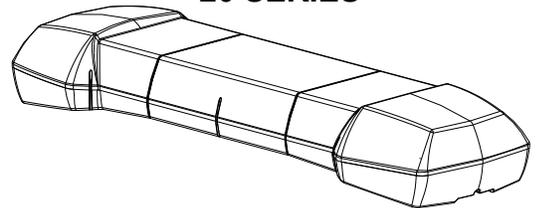
10 SERIES



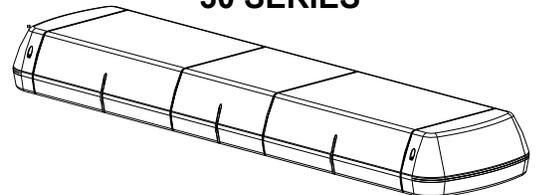
15 SERIES



20 SERIES



30 SERIES



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Options and Maintenance	7
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IMPORTANT! Read all instructions before installing and using. Installer: This manual must be delivered to the end user. This manual assumes installation by a suitably qualified Automotive Technician.



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 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 s/he can operate the system without losing eye contact with the roadway.
5. 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.
6. 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 your responsibility to be sure you can proceed safely before entering an intersection, drive against traffic, respond at a high rate of speed, or walk 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 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.
8. This product may contain high intensity LEDs staring directly into these lights could result in temporary and/or permanent vision impairment.

Introduction:

The ECCO 10, 15, 20 and 30 Series Lightbars are versatile and powerful warning devices suitable for a range of vehicle types and duties. There are numerous options and lengths available for each series of lightbar. The lightbars can either be mounted permanently to the vehicle or mounted using the vehicle roof gutters. All series also utilize a one-piece top lens set for easy opening, along with a plug-in wiring harness and access hole to allow easy removal of the lightbar without uninstalling the wiring harness.

10 Series Lightbar

The unique shape of the 10 Series Lightbar ensures a sleek, low profile body hugging fit for many vehicle applications. In addition to the long, maintenance free service life and low current draw benefits of LED technology, the single deck 10 Series also supports additional auxiliary lighting options, including the Safety Director and unique Cleversector. Featuring an aluminum base and clear, weatherproof, polycarbonate housing along with encapsulated electronic control modules, the lightbar is strong, durable and protected against the environment.

15 Series Lightbar

The 15 Series offers the long, maintenance free service life and low current draw benefits of LED technology along with increased light dispersion thanks to the unique optics of the LED light heads. This stylish, low profile single deck lightbar features an aluminum base and clear, weather-proof, polycarbonate housing along with encapsulated electronic control modules to provide strength, durability and protection against the environment.

20 Series Lightbar

The unique shape of the 20 Series Lightbar ensures a sleek, roof-hugging fit for many vehicle applications. The twin deck design features an aluminum base and hinged, polycarbonate lens for durability and ease of maintenance. In addition to allowing unobstructed light output from the primary warning lights on the upper deck, the 20 Series also supports many additional lighting options including an integral Safety Director and unique Cleversector on the lower deck.

30 Series Lightbar

The twin deck design of the 30 Series Lightbar maximizes lighting options allowing unobstructed light output of the primary warning lights on the upper deck and offering various auxiliary lighting options on the lower deck, including an integral Safety Director. Featuring an aluminum base and hinged, polycarbonate lens for durability and ease of maintenance, the 30 Series is available in a wide range of configurations.

Unpacking and Pre-Installation:

Carefully remove the lightbar 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.

Ensure the light bar voltage is compatible with the planned installation.

Installation & Mounting:

Mounting

Before proceeding with installation, plan all wiring and cable routing. Select the mounting location for the lightbar on a flat, smooth surface and center the unit across the width of the vehicle. The mounting location for the light bar should be chosen such that the light bar is level and visibility to approaching traffic is optimized. Mounting should be such that there is no less than 12mm (1/2") clearance between the roof and the lightbar at any point.

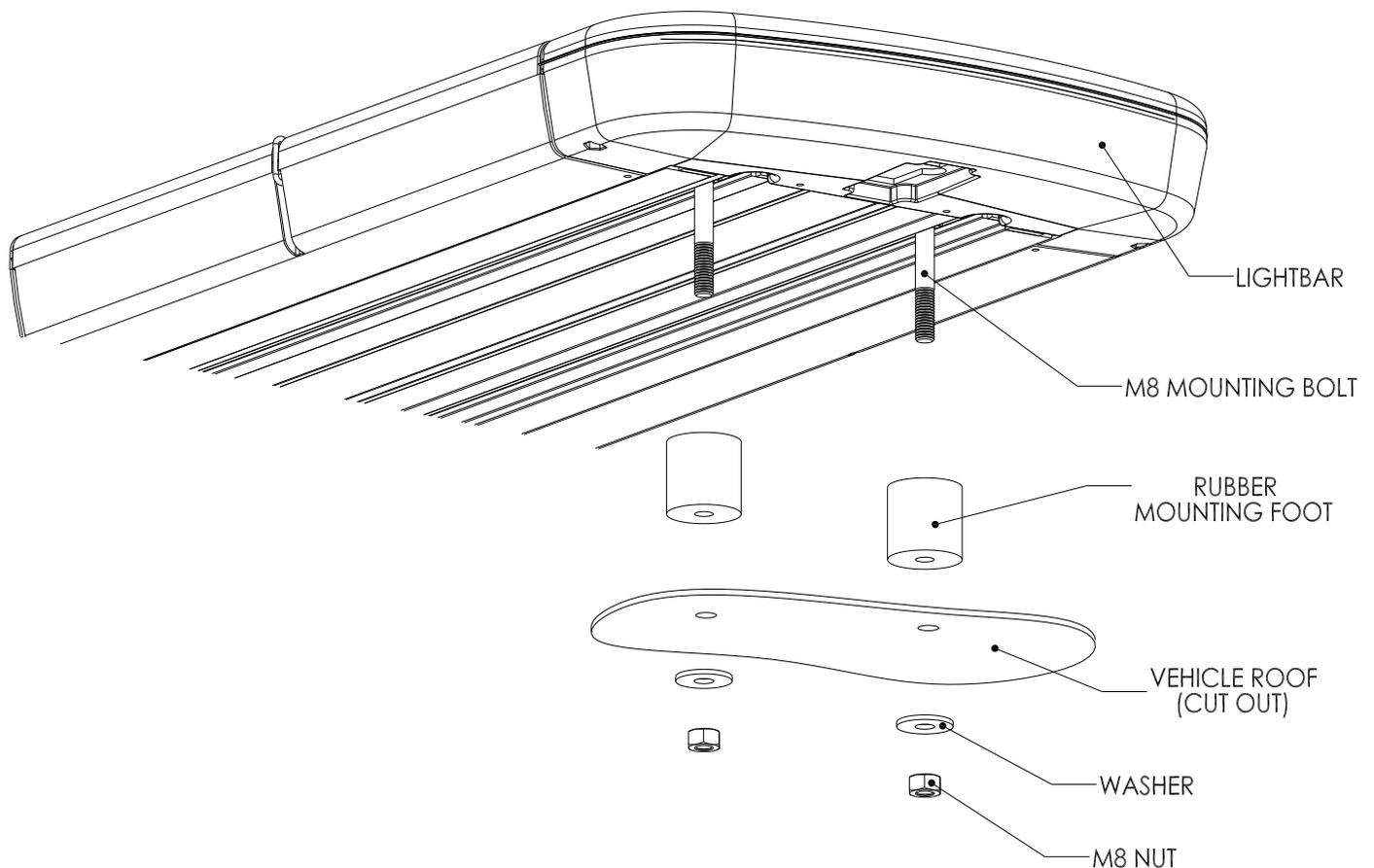


Caution:

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

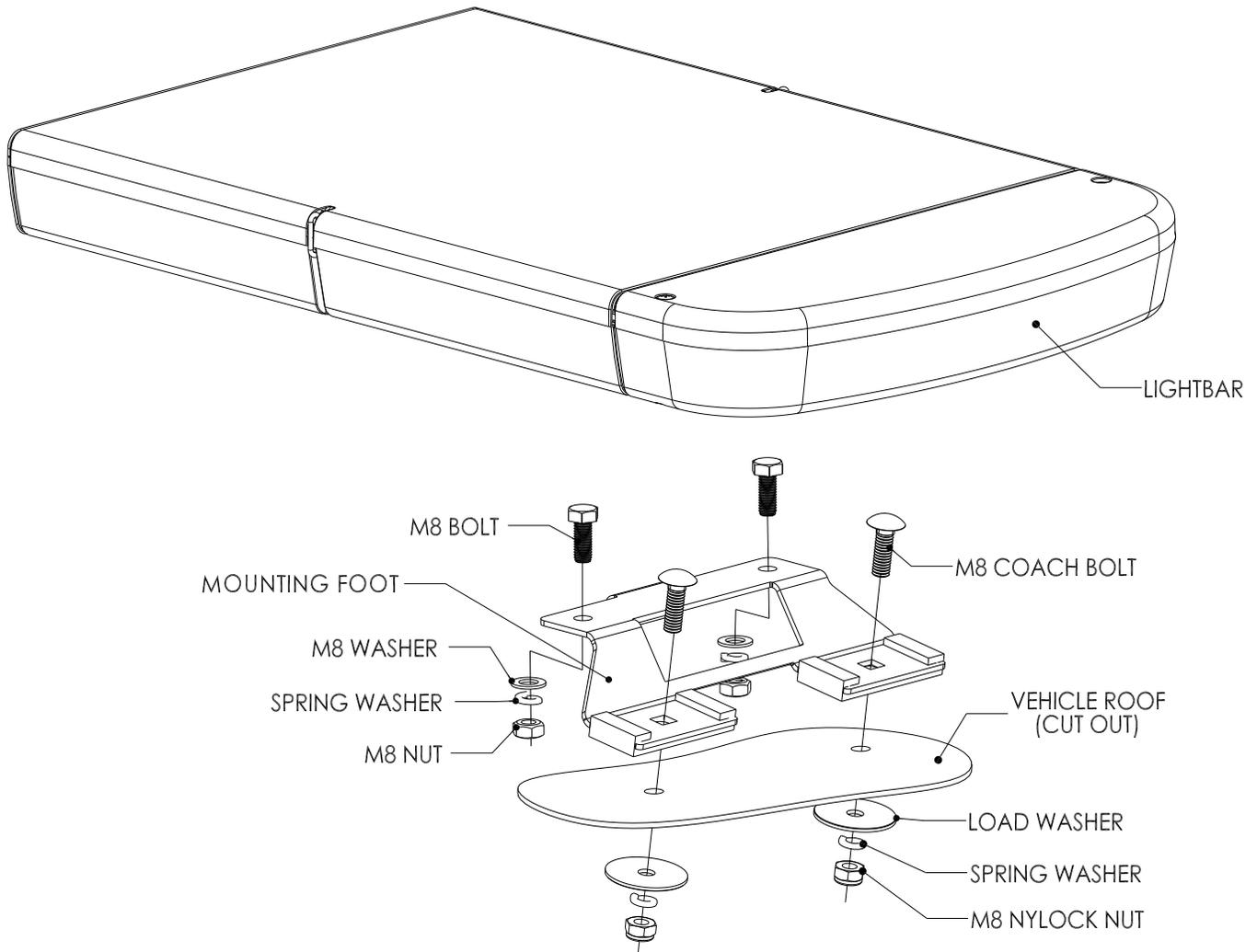
Permanent Mounting 15 & 30 Series

1. Determine the location of the lightbar, and the best route for the wiring.
2. Determine the position of the four mounting feet and drill the 8.5mm - 9.0mm diameter (11/32") mounting holes accordingly. The spacing of the mounting hardware from front to back is fixed at 120mm. The spacing of the mounting hardware from left to right is adjustable. It is suggested that the positioning of the feet be symmetrical and near the curved edges of the roof where the roof is strongest.
3. Insert the heads of the M8 mounting bolts into the opening at the end of the slots on the base of the lightbar. Push the rubber mounting feet over the bolts to hold them in position. Slide the bolts along the extrusion so they are symmetrical about the bar and line up with the holes in the roof.
4. Mount the lightbar, with the bolts going through the holes drilled in step 2, routing the wire as planned in step 1 (refer to diagram). See the Wiring section of this manual for further wiring instructions. Install washers and nuts and secure the unit. The use of thread locking compound is recommended.



Permanent Mounting – 10 & 20 Series

1. If the mounting feet are not already installed on the bar, install as follows:
Insert the heads of the M8 mounting bolts into the opening at the end of the slots on the base of the lightbar. Loosely fasten mounting feet to base extrusion using M8 nuts and spring washers (refer to diagram).
2. Determine the location of the lightbar, and the best route for the wiring.
3. Loosen the M8 nuts to allow the mounting feet to slide along the base. Place the lightbar on the vehicle in the determined location and slide the mounting feet into position. It is suggested that positioning of the feet be symmetrical and positioned near the curved edges of the roof where the roof is strongest.
4. With the feet positioned, mark the location of the mounting hole centres on the roof. Remove the bar and drill the 8.5mm - 9.0mm diameter (11/32") mounting holes as marked. Note: the centre distance between the mounting holes in a foot is 135mm (5 5/16").
5. Insert M8 Coach bolts into the mounting feet (refer to diagram) and tighten the M8 nuts holding the feet to the base of the lightbar. Note: If the mounting feet are at the extreme ends of a 10 & 20 series bar, the feet may have to be temporarily moved to allow insertion of the coach bolts.
6. Mount the lightbar, with the bolts going through the holes drilled in step 4, routing the wire as planned in step 2 (refer to diagram). See the Wiring section of this manual for further wiring instructions. Install washers and M8 Nyloc nuts, and secure the unit.

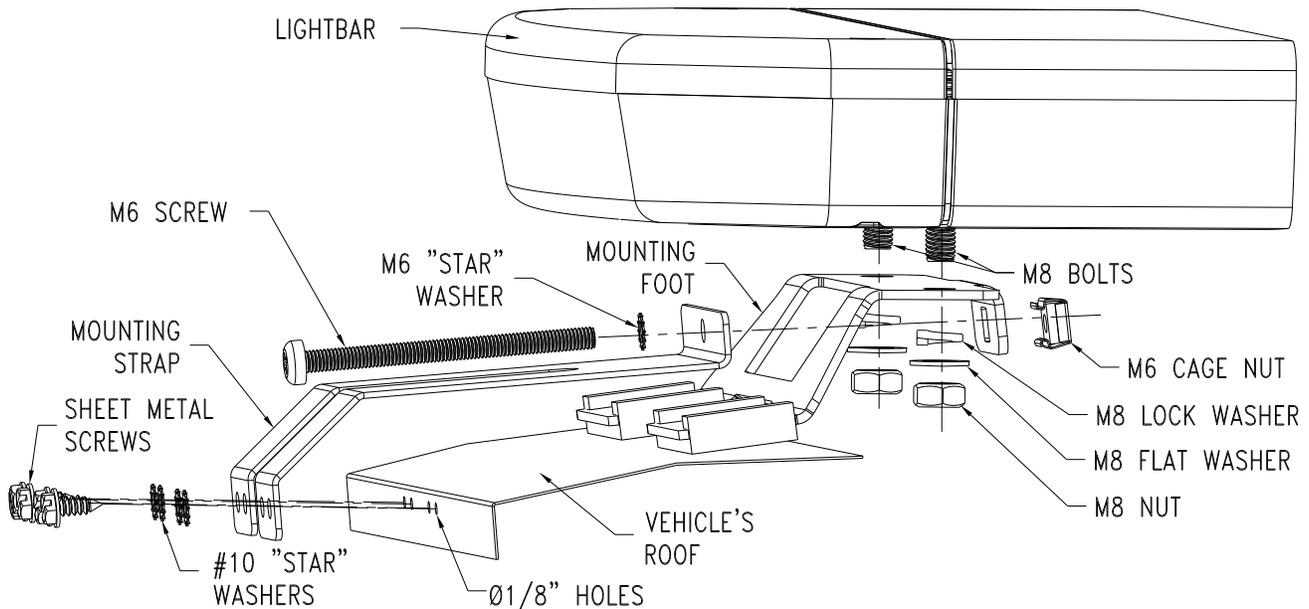


Gutter Mounting

Important!

Mounting brackets are specific to the vehicle model. Please make sure the brackets are suitable for the vehicle before installation.

1. Install the M6 cage nut to the mounting feet. Please note in the diagram below the side on which the cage nut is attached. It is the surface of the feet that is directly opposite each other.
2. Take the lightbar and place it upside down on a table. Attach the mounting feet as shown in the diagram unless they are already installed. If not installed yet, please install them by first inserting the heads of the M8 bolts into the openings at the end of the slots on the base of the lightbar. Loosely fasten the mounting feet to the base using the M8 nuts, flat washers, and lock washers. Now the spacing between the mounting feet can be adjusted so that their pads will lay flat on the roof of the vehicle. Tighten the M8 screws securely.
3. Loosely attach the mounting strap to each foot using the 6M bolts. Be careful to align the straps so that the vehicle attachment tabs will be oriented downward when the lightbar is mounted on the vehicle.
4. Identify the area where the lightbar and mounting straps will be mounted on the vehicle. Now is a good time to readjust the feet if necessary.
5. Take the mounting strap and use it as a template to mark where to drill the $\text{Ø}1/8$ " holes. These holes will go in the gutter area and it may be necessary to pull back the door-sealing gasket. See diagram below.
6. Secure the straps with the stainless steel #10 sheet metal screws and external tooth lock washers. Tighten the screws between 5 and 10 inch-pounds. Apply some silicone sealant around the screw head and washer.
7. Make any adjustments now to the alignment of the lightbar and then tighten the M6 screws with thread locking sealant at the interface with the cage nut.
8. The final step is to make sure the lightbar is properly secured to the vehicle and that the doors close completely.



Lightbar Mounting Kits

Strap Mounts	10 Series	12 Series	15 Series	60 Series
Ford Truck 1/2T 2004-2009	A1010RMK	A1210RMK	A1016RMK	
Dodge Truck 1/2T-1T 2002-2009	A1011RMK	A1211RMK	A1017RMK	
GM Truck 1/2-1T 1999-2009	A1011RMK	A1211RMK	A1017RMK	
Ford Truck 3/4-1T 1999-2009	A1012RMK	A1212RMK	A1018RMK	
Ford Crown Victoria 1998-2012	A1013RMK	A1213RMK	A1019RMK	
Ford Truck 1/2T Crew Cab 1997	A1014RMK	A1214RMK	A1020RMK	
Ford Truck 1/2T 2010-2014	A1025RMK	A1225RMK	A1022RMK	
Ford Super Duty Truck 2010-2015	A1026RMK	A1226RMK	A1023RMK	
GM Truck 1/2-1T 2010-2015	A1027RMK	A1227RMK	A1024RMK	
Dodge Charger 2007-2010	A1029RMK	A1229RMK	A1028RMK	
Dodge Charger 2011-2015	A1031RMK	A1231RMK	A1030RMK	
Ford PPV/SUV 2013-2015	A1031RMK	A1231 RMK	A1030RMK	
Chevy Caprice 2012-2015	A1031RMK	A1231RMK	A1030RMK	
Ford PPV/SUV 2013-2015	A1033RMK (pursuit rated)			
Universal Gutterless 48" - 60"				A5002RMK
Universal Gutter 48" - 60"				A5003RMK

Wiring Instructions:

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. Do not wire in parallel with any other accessory.

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. High ambient temperatures (e.g., under-hood) will significantly reduce the current carrying capacity of wires, fuses, and circuit breakers. 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.



CAUTION!

Disconnect the battery before wiring up the light bar, to prevent accidental shorting, arcing and/or electrical shock.

General Wiring Instructions

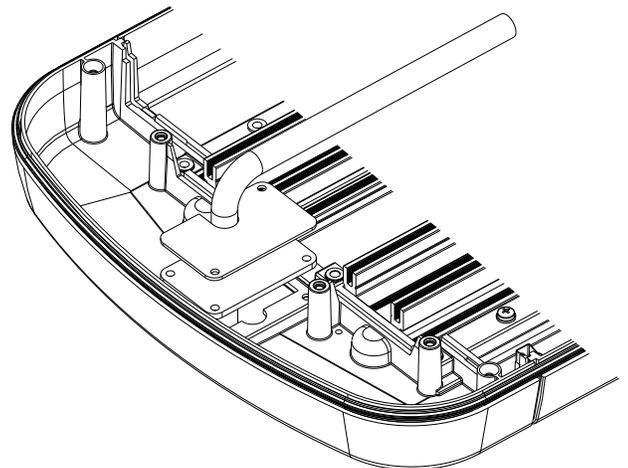
Before attempting to connect the lightbar wiring harness, refer to the insert sheet supplied with your specific lightbar for wiring detail. The insert sheet describes the function for each separate wire.

1. Route wires from the vehicle positive (battery, alternator, fuse block) to the switch panel in the cab. Use suitable high-temperature 16 AWG. wire if it passes through the engine compartment. Install a suitable fuse as close to the point of tapped power as possible. For each circuit use a fuse according to the insert sheet.
2. Connect the wires to the positive side of the control switch panel with quick-connect terminals or by soldering.
3. After the lightbar has been mounted, route the wiring harness into the vehicle to the switch panel location.
4. Connect the wires of the light bar wiring harness to the switched side of each switch. See the insert sheet for wire color/function legend.
5. Connect the lightbar cable Black wire to a solid ground connection on the vehicle (ideally, directly to the battery negative terminal).
6. Use cable ties and grommets to secure and protect all cables and wires.

Lightbar Removal

The 10/15/20/30 Series Lightbars have been designed with a unique cable access hole enabling the lightbars to be removed without uninstalling the wiring harness.

1. Remove upper lens set as described in "Lens removal and Installation" – in the Options and Maintenance section of this manual.
2. Using a No.2 point Phillips screwdriver, remove the two retaining screws from the cable exit cover and remove the screw grounding the external harness to the chassis.
3. Unplug and remove harness. If the lightbar is fitted with a director bar, the harness will also have to be removed – take care to record the connection details.
4. When reconnecting the lightbar, connect the wiring harnesses and cable cover as originally installed.



Options and Maintenance:

Occasional cleaning of the lenses will ensure optimum light output. Take care when cleaning lenses – although tough, polycarbonate scratches easily. Clean the lens and base with soap and water or a lens polish using a soft cloth. Do not use solvents as they may damage the polycarbonate. Do not subject the light bar to high-pressure washers or automatic car washers.

Lens Removal and Installation

10/15 Series

1. Remove retaining screws from both ends of the lightbar. Using a small flat blade screwdriver or similar tool, lever open the latches around the lightbar.
2. Carefully lift the lens off the seal – choose a suitable location to temporarily store the lens so as to not scratch the surface.
3. Ensure latches are captive in the lower lens before refitting the upper lens.
4. When reinstalling, gently apply pressure around the upper lens taking care not to damage the seal around the lower lens set. Push all latches back on the lens. Replace the retaining screws.

20/30 Series

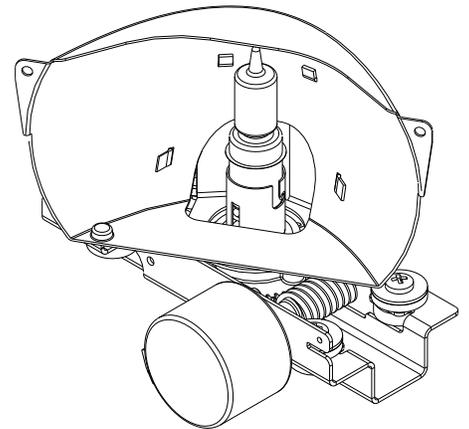
1. Remove four retaining screws from the end lenses taking care not to lose the o-rings (30 Series only). Using a small flat blade screwdriver or similar tool, lever open the latches around the lightbar.
2. 20 and 30 Series Lightbars are generally fitted with hinges at the front of the bar - if the lightbar does not have a hinge refer to step 2 in 10/15 Series lens removal. From the back of the lightbar gently lift the upper lens until it clears the seal, continue lifting the lens over the front of the bar until it rests on the hinge backstop.
3. Ensure latches are captive in the lower lens before refitting the upper lens.
4. When reinstalling, gently apply pressure around the upper lens taking care not to damage the seal around the lower lens set. Push or lever all latches back on the lens. Replace the retaining screws and o-rings as required.

Rotators

Rotating light sources are used as a primary warning system. Rotators may be installed in the upper level of both the 20 and 30 Series Lightbars, and are diagonally staggered to optimize light output through the ends of the lightbar. Rotators are available to suit either H1 or S795 (Bayonet) type bulbs, in 12V or 24V and 90 rpm or 150 rpm – these specifications are not configurable by the user.

Rotators are installed using 4 M4x16mm screws through rubber isolating feet.

Do not oil or grease rotators – they are constructed with self-lubricating material.

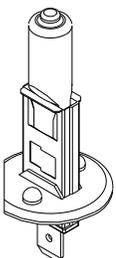


WARNING!

Halogen bulbs are extremely hot! Allow to cool completely before attempting to remove. Gloves and eye protection should be worn when handling halogen lamps as they are pressurized and accidental breakage can result in flying glass.

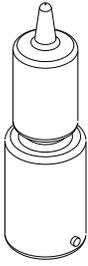
Consider changing all of a specific bulb type when one burns out. This will minimize removal and replacement of outer lenses.

H1 Bulb:



1. See “Lens Removal” for instructions on removing and replacing lenses.
2. With the rotator reflector facing the motor, undo the retaining clip.
3. Lift the globe out to reveal the spade receptacle. Slide the bulb and its holder toward the motor.
4. Grip both the bulb and receptacle and pull apart. Do not stress the wire.
5. Replace with equivalent bulb. **Do not touch the glass portion of the bulb – natural skin oils can cause premature bulb failure.**
6. Slide the bulb back into position and replace the clip.
7. Verify the rotator will spin.
8. Power up, and test the system before replacing lenses.

795 Bulb:



1. See "Lens Removal" for instructions on removing and replacing lenses.
2. Push down and turn the bulb counter clockwise to remove. (If necessary, turn the rotator reflector to allow easy access).
3. Replace with equivalent bulb. **Do not touch the glass portion of the bulb – natural skin oils can cause premature bulb failure.**
4. Verify the rotator will spin.
5. Power up, and test the system before replacing lenses.

Strobes

Strobe lights are used to provide either a primary or secondary warning system in 20 or 30 Series Lightbars. Each strobe power supply controls four strobe heads. Of those available, the standard flash pattern is alternating quad-flash, 140 flashes per minute. The flash pattern is not user-configurable. The strobe power supply is multi-voltage and will operate at both 12V and 24V.

There are three types of strobe head available – 'linear' and 'directional' for both upper level and lower level of the light bar. Strobe tubes can only be replaced on the linear and lower deck directional style heads.

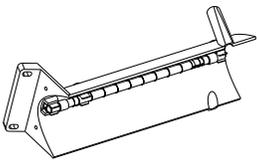
Strobe Tube Replacement



WARNING! HIGH VOLTAGE!

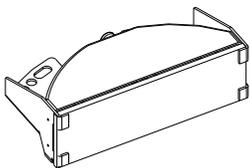
Disconnect power to the strobe unit and wait five minutes before changing any strobe tubes to ensure unit is properly discharged. The strobe tube may also be very hot. Allow to cool before attempting to remove. Gloves and eye protection should be worn when handling strobe lamps as they are pressurized and accidental breakage can result in flying glass.

Linear:



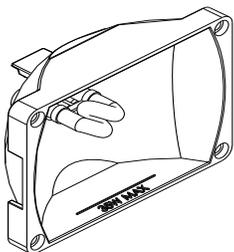
1. See "Lens Removal" for instructions on removing and replacing lenses.
2. Using a screwdriver or similar, gently lever out the old strobe tube from one end at the metal spring contacts.
3. Carefully replace with a new tube, observing correct orientation to ensure all three contacts are correctly aligned. **Do not touch the glass portion of the tube.**
4. Power up and test the system before replacing the lenses.

Lower Deck Directional:



1. See "Lens Removal" for instructions on removing and replacing lenses.
2. Disconnect the 3-way connector to the strobe head.
3. Remove the strobe head assembly (left) from the lightbar by removing the 2 x M4 screws.
4. Remove the retaining screw at the rear of the strobe tube and slide out the old tube.
5. Carefully replace with a new strobe tube, taking care not to damage the tube when inserting it through the reflector. **Do not touch the glass portion of the tube.**
6. Replace the retaining screw and screw down the strobe head assembly as originally installed.
7. Re-connect the 3-way connector to the strobe head.
8. Power up and test the system before replacing the lenses.

Upper Deck Directional:



1. See "Lens Removal" for instructions on removing and replacing lenses.
2. The strobe tube itself can not be replaced. The strobe head assembly must be replaced with new.
3. Disconnect the strobe head by unplugging the 3-way connector.
4. Remove the 2 x M4 mounting screws from the mounting bracket.
5. Replace with a new strobe head assembly as originally installed. **Do not touch the glass portion of the tube.**
6. Re-connect the 3-way connector.
7. Power up and test the system before replacing the lenses.

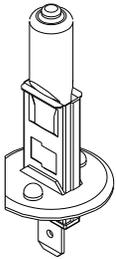


WARNING!

Halogen bulbs can be extremely hot! Allow to cool completely before attempting to remove. Gloves and eye protection should be worn when handling halogen lamps as they are pressurized and accidental breakage can result in flying glass.

Consider changing all of a specific bulb type when one burns out. This will minimize removal and replacement of outer lenses.

H1 Bulb:

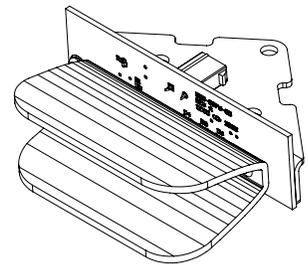
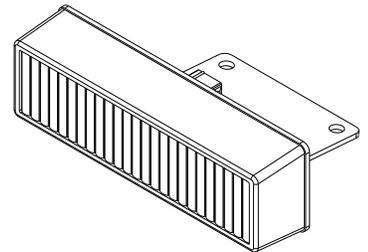


1. See "Lens Removal" section for instructions on removing and replacing the outer lightbar lenses.
2. Rotate the Cleversector to get best access to the back of the reflector.
3. Disconnect the flag terminal from the back of the bulb.
4. Release the bulb retaining spring and extract the H1 bulb.
Note orientation of globe (chamfered section of base) during removal – it will only fit one way.
5. Install new bulb, ensuring correct orientation noted above.
Do not touch the glass section of the bulb - natural skin oils can cause premature bulb failure.
6. Re-secure the retaining clip.
7. Reconnect the flag terminal to the back of the bulb.
8. Power up and test the system before reinstalling the lightbar lenses.

LED

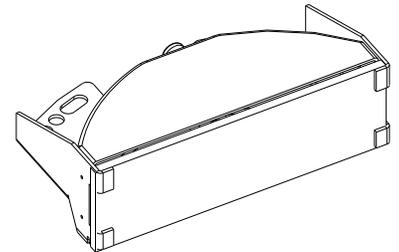
The LED lighthead has been designed to ensure long service life using high performance LEDs rated to thousands of hours of operation and having no moving parts. The modules are low profile units that have a high intensity output with low current draw. There are different types of mounting brackets to suit different locations in the lightbar. LED lighthead are not user serviceable.

LED safety directors are also available. For more information refer to the "Safety Director" section.



Halogen Flashers

Halogen flashers are used as an auxiliary warning device and are mounted in the lower level of 10, 15, 20 and 30 Series Lightbars. Each halogen flasher drives two light-heads with an alternating flash pattern operating at 54 flashes per minute. It is available in 12V and 24V versions.

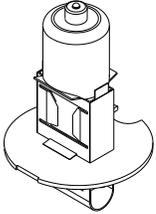


Bulb Replacement

WARNING!

Halogen bulbs are extremely hot! Allow to cool completely before attempting to remove. Gloves and eye protection should be worn when handling halogen lamps as they are pressurized and accidental breakage can result in flying glass.

H3 Bulb:

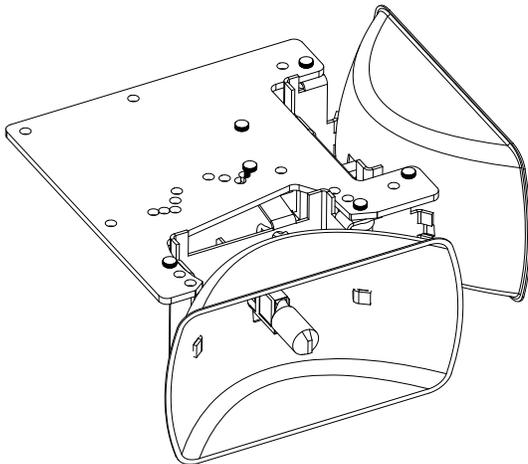


1. See "Lens Removal" for instructions on removing and replacing lenses.
2. Disconnect the spade connector on the wire connecting to the bulb.
3. Remove the retaining screw at the rear of the H3 bulb. If access to the retaining screw is limited by other components of the lightbar, remove the halogen lens but take care to replace all screws and washers as originally installed.
4. Lift the globe out and replace with an equivalent H3 bulb (35W max). **Do not touch the glass portion of the bulb – natural skin oils can cause premature bulb failure.**
5. Use the retaining screw to fix the bulb in position.
6. Reconnect the spade connector on the wire to the bulb.
7. Power up and test the system before replacing the lenses.

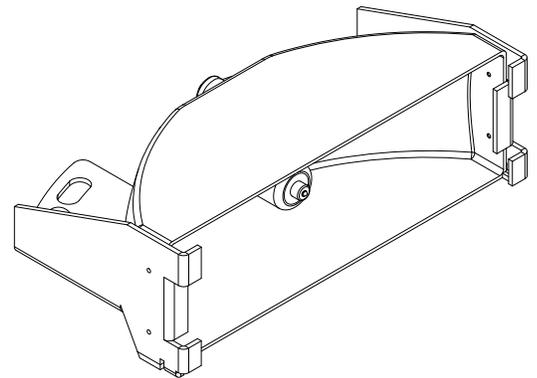
Alley / Takedown

The Alley / Takedown lights are fixed halogen lights which are mounted in the 10, 15, 20 and 30 Series Lightbars. They are available in 12V and 24V versions.

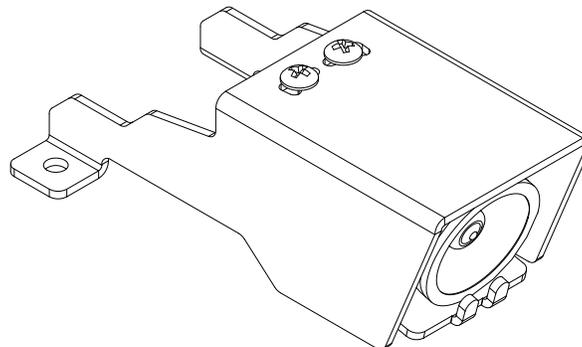
10, 20 Series (H1 Bulb)



15, 30 Series (H3 Bulb)



15, 30 Series (MR8 Bulb)



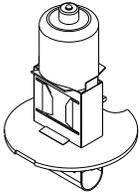


WARNING!

Halogen bulbs are extremely hot! Allow to cool completely before attempting to remove. Gloves and eye protection should be worn when handling halogen lamps as they are pressurized and accidental breakage can result in flying glass.

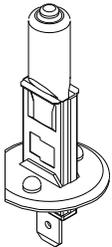
Consider changing all of a specific bulb type when one burns out. This will minimize removal and replacement of outer lenses.

H3 Bulb:



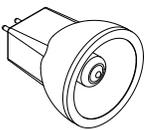
1. See "Lens Removal" for instructions on removing and replacing lenses.
2. Disconnect the spade connector on the wire connecting to the bulb.
3. Remove the retaining screw at the rear of the H3 bulb. If access to the retaining screw is limited by other components of the lightbar, remove the halogen lens but take care to replace all screws and washers as originally installed.
4. Lift the bulb out and replace with an equivalent H3 bulb (35W max). **Do not touch the glass portion of the bulb – natural skin oils can cause premature bulb failure.**
5. Use the retaining screw to fix the bulb in position.
6. Reconnect the spade connector on the wire to the bulb.
7. Power up and test the system before replacing lenses.

H1 Bulb:



1. See "Lens Removal" for instructions on removing and replacing lenses.
2. Remove the three screws fastening the mounting bracket to the chassis.
3. Disconnect the spade connector on the wire connecting to the bulb.
4. Undo the retaining clip.
5. Lift the bulb out of the reflector.
6. Replace with equivalent bulb. **Do not touch the glass portion of the bulb – natural skin oils can cause premature bulb failure.**
7. Fix the bulb in place with the retaining clip.
8. Reconnect the spade connector on the wire to the bulb.
9. Reinstall reflector mounting bracket.
10. Power up, and test the system before replacing lenses.

MR8 Bulb:



1. See "Lens Removal" for instructions on removing and replacing lenses.
2. Take out the screws that hold the main Alley Light Assembly to the aluminium chassis.
3. Remove screws that hold the MR8 Bulb bracket to the top heat shielding bracket.
4. From the rear of the MR8 Bulb bracket, loosen lockwasher nut.
5. Grip the MR8 Bulb and the ceramic MR8 Bulb socket and pull them apart.
6. Replace with equivalent bulb (20W max). **Do not touch the glass portion of the bulb – natural skin oils can cause premature bulb failure.**
7. Push the two leads on the MR8 bulb into the two corresponding holes on the front of the ceramic socket.
8. Replace all screws, tighten lockwasher nut, secure snugly, too tight and the ceramic socket may crack.
9. Make sure to secure horizontal angle of MR8 bulb bracket while assembling Alley Light to maintain proper/desired angle for light output.
10. Maintain a minimum of 1.25" [32mm] between inner lens of main lightbar and front edge of heatshielding bracket. Any closer and outer lens could become damaged.
11. Power up and test the system before replacing the lenses.

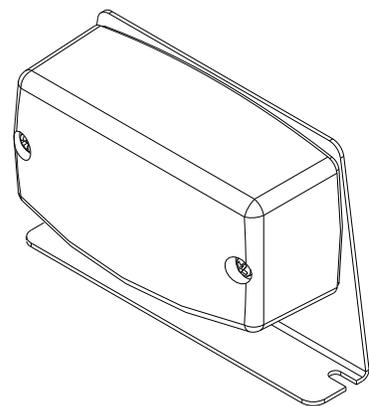
Stop / Tail / Turn – 20 & 30 Series

The Stop Tail Turn light is a fixed rear facing combination light. This light uses a 2 filament bayonet bulb; the low wattage filament is used for the tail function and the high wattage filament is used for the stop / turn function.

Bulb Replacement

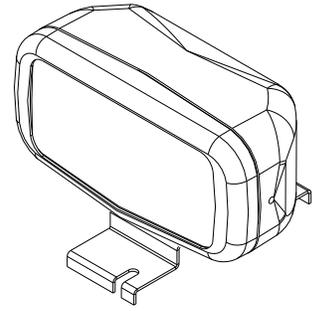
Consider changing all of a specific bulb type when one burns out. This will minimize removal and replacement of outer lenses.

1. See "Lens Removal" for instructions on removing and replacing lenses.
2. Using a #2 point Phillips screwdriver, remove the 2 screws from the front side of the stop / tail / turn light. This will cause the entire assembly to become loose.
3. Remove the red lens cover from the light.
4. Twist and remove the bulb.
5. In a reverse motion from steps 3, replace the bulb with a 12V, #1157, 32/3 CP bulb. Do not touch the glass with bare hands.
6. Replace the red lens.
7. Insert the screws into the holes and drive them all the way through the bracket. Seat the screws snugly.
8. Power up and test the system before replacing the lenses.



Work Light

The Work Light is an adjustable halogen light which is mounted in the upper level of the 20 or 30 Series Lightbar.



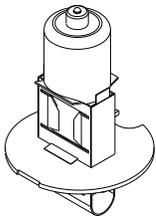
Bulb Replacement

WARNING!

Halogen bulbs are extremely hot! Allow to cool completely before attempting to remove. Gloves and eye protection should be worn when handling halogen lamps as they are pressurized and accidental breakage can result in flying glass.

Consider changing all of a specific bulb type when one burns out. This will minimize removal and replacement of outer lenses.

H3 Bulb:



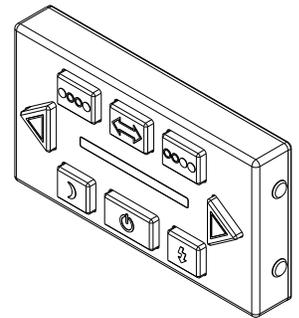
1. See "Lens Removal" for instructions on removing and replacing lenses.
2. Using a #2 point Phillips screwdriver, remove the 2 screws from both sides of the work light. Remove the black retaining cover. The internal reflector will become loose.
3. From the rear of the internal reflector, remove the bulb retaining screw. Note: Separate the bulb wire spade connector.
4. Replace with equivalent bulb. Do not touch the glass with bare hands.
5. Reverse steps 1, 2, and 3 to re-assemble the work light.
6. Power up and test the system before replacing the lenses.

Safety Director

The Safety Director System is used to provide traffic directions from the rear of the vehicle, using a number of sequenced patterns controlled from a remote keypad. The system is available in 12V or 24V Halogen or LED versions and can be installed in the lower level of 10, 15, 20 and 30 Series Lightbars. The Safety Director controls 5, 6, 7 or 8 light-heads, depending on the length of the lightbar and the number of other lower level components. A manual is supplied with each keypad detailing the operation and configuration options if required.

The Safety Director can also be used as an auxiliary warning system with flash patterns selected using either the keypad or hard-wired input wires.

The Safety Director is designed to be maintenance free with the exception of lighthouse bulb replacement. For bulb replacement, refer to the "Halogen Flashers" section.



Replacement Parts/Accessories:

Description	Part No.
Globes / Tubes	
MR8 Bulb 12V 20W for Alley Lights	RMR812
MR8 Bulb 24V 20W for Alley Lights	RMR824
H1 Bulb 12V 55W for Cleversectors	R5812BH
H1 Bulb 24V 70W for Cleversectors	R899-902
H3 Bulb 12V 35W for MH reflectors	R0002BH
H3 Bulb 24V 35W for MH reflectors	R889-904
795 Bulb 12V 55W for rotators	R5012BH
795 Bulb 24V 70W for rotators	R899-910
Sign Light Bulb 12V 20W to suit 20 and 30 Series	R899-905
Sign Light Bulb 24V 20W to suit 20 and 30 Series	R899-906
Strobe Flash Tube for lower strobes to suit 20 and 30 Series (includes gasket)	R899-913
Linear Turbo Strobe Tube to suit 20 and 30 Series	R899-914
Lenses (Includes Lens Joining Tape)	
Upper End Lens to suit 10 Series - Clear	R109-901C
Upper End Lens to suit 15 Series (x: B = Blue, C = Clear, R = Red)	R159-901x
Upper End Lens to suit 20 Series (x: A= Amber, B = Blue, D = Dark Blue, M = Magenta, R = Red)	R209-901x
Upper End Lens to suit 30 Series (x: A= Amber, B = Blue, M = Magenta, R = Red)	R309-901x
Upper Mid Lens Short to suit 10 and 15 Series 260mm (x: B = Blue, C = Clear, R = Red)	R109-904x
Upper Mid Lens Long to suit 10 and 15 Series 390mm (x: B = Blue, C = Clear, R = Red)	R109-906x
Upper Mid Lens Short to suit 20 and 30 Series 260mm (x: A= Amber, B = Blue, C = Clear, D = Dark Blue, R = Red, W = White)	R209-904x
Upper Mid Lens Long to suit 20 and 30 Series 390mm (x: A= Amber, B = Blue, C = Clear, D = Dark Blue, R = Red, W = White)	R209-906x
Lower End Lens to suit 10 and 20 Series - Clear	R209-902C
Lower End Lens to suit 15 and 30 Series - Clear	R309-902C
Lower Mid Lens Short to suit all Series 260mm - Clear	R209-905C
Lower Mid Lens Long to suit all Series 390mm - Clear	R209-907C
MH Reflector Lens (x: A = Amber, B = Blue, R= Red)	R209-918x
Halogen / Strobe Lights	
Rotator Assembly Fast 150 FPM 12V	R209-908
Alley Light MR8 set 12V 15 and 30 Series	A1530AL-12
Alley Light MR8 set 24V 15 and 30 Series	A1530AL-24
Alley Light MR8 single 12V 15 and 30 Series	R1530AL-12
Alley Light MR8 single 24V 15 and 30 Series	R1530AL-24
Rotator Assembly Slow 90 FPM 12V	R209-909
Rotator Assembly Fast 150 FPM 24V	R209-910
Rotator Assembly Slow 90 FPM 24V	R209-911
Directional Strobe Head to suit 20 and 30 Series	R909-923
Linear Strobe Head to suit 20 and 30 Series	R909-922

LEDs	
12V Front/Rear LED Lighthouse to suit all Series (x: A = Amber, B = Blue, R= Red, W= White)	R109-924x
12V Front/Rear LED Lighthouse to suit all Series (x: A = Amber, B = Blue, R= Red, W= White)	EZ0001x
12V Corner LED Lighthouse to suit 10 and 20 Series (x: A = Amber, B = Blue, R= Red, W= White)	R109-938x
12V Corner LED Lighthouse to suit 15 and 30 Series (x: A = Amber, B = Blue, R= Red, W= White)	R159-938x
12V Corner LED Lighthouse to suit all Series (x: A = Amber, B = Blue, R= Red, W= White)	EZ0002x
24V Front/Rear LED Lighthouse to suit all Series (x: A = Amber, B = Blue, R= Red, W= White)	R109-924x-24
24V Corner LED Lighthouse to suit 10 and 20 Series (x: A = Amber, B = Blue, R= Red, W= White)	R109-938x-24
24V Corner LED Lighthouse to suit 15 and 30 Series (x: A = Amber, B = Blue, R= Red, W= White)	R159-938x-24
Driver Modules / Controller / Strobe Packs	
12V/24V LED Driver Module (x: 4 = 4 Head, 8 = 8 Head, 20 = 20 Head)	R209-937-x
12V/24V Halogen Driver Module	R209-937-H
Control Panel to suit In-Bar Director all Series	R824-007
Strobe Power Supply 2 Head Quad Flash	R819-001
Strobe Power Supply 4 Head Double and Quad Flash	R819-002
Strobe Power Supply 4 Head Double, Quad and Quin Flash	R819-003
Strobe Power Supply 6 Head Double, Quad, Quin and Mega Flash	R819-004
Screws / Latches	
Lens Wire Latch to suit 10 and 15 Series Center Lenses	R109-927
Lens Wire Latch to suit 20 and 30 Series Light Bars also for 10 Series End Lens	R209-927
Centre Section Spring Clip	R209-921
Lens Screw to suit 10 Series End Lens	R109-942
Lens Screw to suit 15 Series End Lens	R159-942
Lens Screw to suit 30 Series End Lens	R309-942

Troubleshooting:

All 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 troubleshooting and repair information. If the problem cannot be rectified using the solutions given below, additional information may be obtained from the manufacturer – contact details are at the end of this document.

ROTATORS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Does not operate	Blown fuse	Check wiring, replace fuse
	No power	Check control switches
Rotates but does not illuminate	Blown bulb	Replace bulb
Illuminates but does not rotate	Failed motor	Replace rotator unit
Does not maintain correct speed	Failed motor	Replace rotator unit

STROBE LIGHTS

PROBLEM	POSSIBLE CAUSE	SOLUTION
No strobes operate	No power to power-supply	Check fuses and red/black wires to strobe power-supply.
	No control signal(s)	Check for power on colored control wires
One strobe head does not flash	Failed strobe-tube	Check strobe head by connecting to a different output from the power-supply
Fuse blows repeatedly	Failed power-supply	Replace power-supply

LED SYSTEMS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Does not function	Poor power or ground connection	Check for power on the red wire at the control module. When power is first applied, a red status led on control module should illuminate for a second and then turn off.
	Blown fuse	Check wiring, replace fuse
One LED head does not flash, but corresponding indicator LED on control module does flash.	Open circuit wiring from control module to LED head	Connect a known-good LED head to the problem output to ensure the control module is working correctly. Repair or replace.
	Poor ground connection at LED head	Tighten or replace mounting screw and star washer
	Failed LED head	Replace LED head
	24V head in 12V system	Check correct LED head.
One LED head does not flash, and corresponding indicator LED on control module does not flash when appropriate pattern selected.	Wrong flash configuration	Call factory for reconfiguration instructions
	Failed control module	Replace control module
LED head flashes dimly	24V head in 12V system	Check correct LED head
Control module runs excessively hot	12V head in 24V system	Check correct LED head
Incorrect flash patterns	Wrong flash configuration	Call factory for reconfiguration instructions
Secondary pattern does not function	Normal operation	Primary function overrides secondary function – turn off primary function

ALLEY / TAKEDOWN / WORKLIGHTS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Light does not function	Blown bulb	Replace bulb
	Blown fuse	Check wiring, replace fuse
	No power	Check control switch output
Light is dim	Wrong voltage bulb	Check bulb type

HALOGEN FLASHERS

PROBLEM	POSSIBLE CAUSE	SOLUTION
Both/all lights do not function	Blown fuse	Check wiring, replace fuse
	No power	Check control switch output
	Blown bulbs	Replace bulbs
	Failed flasher unit	Replace flasher unit
One light does not flash	Blown bulb	Replace bulb
Lights flash dimly	Wrong voltage bulbs	Check bulb types

TRAFFIC DIRECTOR

PROBLEM	POSSIBLE CAUSE	SOLUTION
All lights turn on and stay on	Reverse battery connection	Check wiring
Keypad does not operate	Blown fuse	Check wiring, replace fuse
	No power	Check power to director
	Bad connection between director and keypad	Check data cable connections
Keypad continuously flashes and won't respond to buttons	Keypad unable to communicate with director	Check data cable connections
One or more lights do not flash	Blown bulb(s)	Replace bulb(s)
	Wrong controller setup	Refer director manual for setup instructions on number of light-heads and end style
	Bad connection between light-head and driver	Check internal wiring
Lights flash dimly	Night-mode selected	Push night-mode button
	Wrong voltage bulbs	Check bulb types

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

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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 twenty-four (24) months 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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