

**INSTALLATION AND MAINTENANCE INSTRUCTIONS  
FOR  
ARJENT® S2 SERIES B LED/HALOGEN LIGHT ASSEMBLY**

**SAFETY MESSAGE TO INSTALLERS  
OF  
FEDERAL SIGNAL LIGHT SYSTEMS**



**People's lives depend on your safe installation of our products. It is important to read, understand and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow:**

- To properly install a light assembly: you must have a good understanding of automotive electrical procedures and systems, along with proficiency in the installation and use of safety warning equipment.
- When installing equipment or wiring inside air bag equipped vehicles, the installer **MUST** ensure that the equipment or wiring is installed **ONLY** in areas recommended by the vehicle manufacturer. Failure to observe this warning will reduce the effectiveness of the air bag, damage the air bag, or potentially damage or dislodge the equipment, causing serious injury or death to you or others.
- When drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged.
- A light system is a high current device. In order for it to function properly, a separate ground connection must be made. If practical, it should be connected to the negative battery terminal. At a minimum, it may be attached to a solid metal body or chassis part that will provide an effective ground path as long as the light system is to be used.
- Locate light system controls so the **VEHICLE** and **CONTROLS** can be operated safely under all driving conditions.
- This product contains high intensity LED devices. To prevent eye damage, **DO NOT** stare into the light beam at close range.
- You should frequently inspect the light system to ensure that it is operating properly and that it is securely attached to the vehicle.
- File these instructions in a safe place and refer to them when maintaining and/or reinstalling the product.

**Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death to you or others.**

**I. UNPACKING.**

After unpacking the Arjent S2 lightbar, inspect it for damage that may have occurred in transit. If the unit has been damaged, file a claim immediately with the carrier, stating the extent of damage. Carefully check all envelopes, shipping labels and tags before removing or destroying them.

**II. DESCRIPTION.**

The Arjent S2 lightbar is available in either a 36", 44" or 53" length and operates on a nominal input of 13.6 volts DC (11 volts DC minimum). Clear polycarbonate bases along with clear or colored polycarbonate domes house a multi-channel programmable (via serial interface module) circuit board assembly within the bar. The multi-channel PCB assembly is connected in turn to additional multiple circuit board panels, each having the availability of 4 to 5 maximum factory-installed options per panel. The lightbars have an operating temperature range of -30°C to +65°C (-22°F to +149°F). They may be mounted with a hook, permanent, or flat mounting kit to the vehicle. Available built to order options on the Arjent S2 include:

Panelized Solaris LED Options:

XD1LC6-A, -R, -B, -W, -G: 6-button Solaris S2 LED light head

XDALED-A, -R, -B, -W, -G: 3-button Solaris S2 LED light head, alley light position (factory default at front light cutoff)

- Flashing pattern selectability of the LED options may be specified via programming of the lightbar. See table 2.
- SignalMaster operation is accomplished via programming of the lightbar.
  - 4-pos. SignalMaster available on the 36" bar;
  - 6-pos. SignalMaster available on the 44" bar;
  - 8-pos. SignalMaster available on the 53" bar
- Steady-burn availability of 1 or 2 front LED heads must be specified via the Arjent S2 initial order entry.

Panelized Halogen Options (maximum of 6 per lightbar):

XDAHAL Alley Light, 35 watts/head (MR 11) adjustable

XDTD Takedown Light 50 watts/head

XDWL Work Light 50 watts/head

- Flashing of the halogen options is accomplished via programming of the lightbar.

Mounting Options:

XAHKN-SC, XAHK-SC Hook Mount, Neutral or Black

XAPKN-SC, XAPK-SC Permanent Mount, Neutral or Black

XAFM Flat Mount

### III. INSTALLATION.

#### NOTICE

Improper warning system and/or two-way radio system operation may result if a two-way radio antenna is installed on, or within 18-inches of, the lightbar. Before permanent installation of the lightbar or a two-way radio antenna, test the warning system and two-way radio system. DO NOT install a two-way radio antenna on the lightbar.

Some installations may require relocation of the two-way radio antenna to a trunk or fender location.

Warning system failure may result if additional holes are drilled in the lightbar, or if auxiliary devices are installed on the lightbar. DO NOT drill additional holes in the lightbar, or install auxiliary devices on the lightbar.

The lightbar is completely wired at the factory and does not require any additional internal wiring; two 10 AWG power conductors (red and black) and the CAT5 communication cable exit the lightbar. All the conductors necessary for control of any and all basic and optional functions are contained in the CAT5 cable.

The basic light functions of the unit are communicated via the CAT5 cable. The cable connects to either a compatible Federal Signal Serial control head, or, a Federal Signal Serial Interface Module.

Before proceeding, ensure that the lightbar has been installed on the vehicle roof in accordance with the instructions packed with the mounting kit.



**Light system controls must be located so that VEHICLE and CONTROLS can be operated safely under all driving conditions.**

A. See figure 1. From the lightbar, route the CAT5 control cable into the vehicle's cab or trunk near the eventual location of the compatible Federal Signal Serial control head or FSC #8583446 Interface Module. An input cable is also provided with the FSC #8583446 Serial Interface Module.



Reverse polarity may damage any power supply and prevent operation. Ensure that correct polarity is observed. Unit must be fused at the source.

B. Connect the separate 10 gauge black lead to the vehicle battery ground (-) terminal.

C. Route and connect the 10 gauge red lead through the supplied 40A fuse, fused at the source, to the BAT+ terminal.

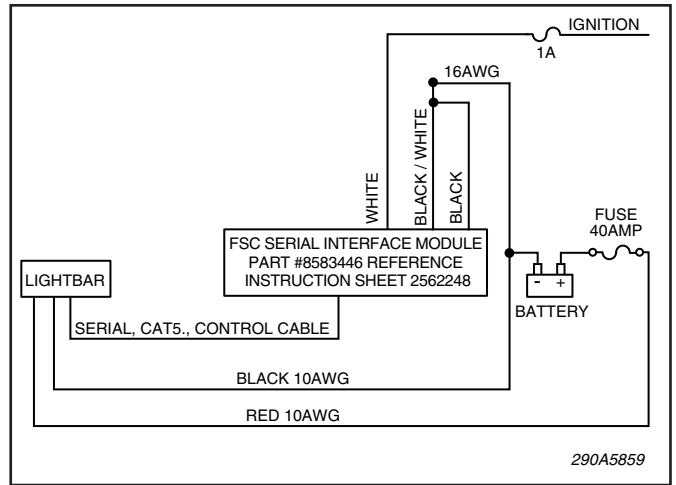


Figure 1. Block Wiring Diagram.

#### D. SignalMaster Option.

Each lightbar is equipped for SignalMaster operation via an external control unit or control leads on the Interface Module (refer to paragraph III.F.). When SignalMaster operation is not initiated, the SignalMaster heads will flash per the selected Mode for additional light indication to the rear.

The SignalMaster function is completely configured at the factory and does not require any additional wiring inside the light bar. All conductors necessary for control of the SignalMaster is via the compatible Serial communication control head or the FSC #8583446 Serial Interface Module. For wiring and operation instructions, refer to the instruction sheet packed with the applicable control head or the FSC Serial Interface Module's Instruction sheet (part number 2562248).

#### E. Light Bar Controls.

The Arjent S2 functions are communicated via the serial cable. Both the Federal Signal control head and the Serial Interface Module are capable of providing the following controls to the lightbar. For programming options, refer to the Installation Manual shipped with the Interface Module or the Federal Signal Control Head.

1. MODE 1 -
2. MODE 2 – overrides MODE 1;
3. MODE 3 – Overrides MODES 1&2;
4. STEADY BURN RED
5. FRONT CUTOFF
6. REAR CUTOFF
7. INTERSECTION
8. FLASH HALOGEN
9. LEFT ALLEY
10. RIGHT ALLEY
11. TAKEDOWN
12. LOW POWER
13. LIGHTBAR TEST

F. *Cutoff for LED Alley Light Option.*

The XDALED-A, -R, -B, -W, -G option installed in the alley position is factory set for front light cutoff of both the passenger and driver sides of the option. The cutoff may be changed to the rear by means of an on-board 2-position jumper found on the component side of the 2005395 panel. The jumper is factory set across the pair of pins justified to the front side of the lightbar. (For example: B-C for the driver's side 2005395 panel denoting front cutoff of the LED alley, and C-D for the passenger's side 2005395 panel denoting front cutoff of that LED alley.) See figure 3. The jumper may be reset for rear cutoff by placing it across the pins that are justified to the rear of the bar. If the jumper is removed completely from the pins the alley light will not function.

IV. BASIC MAINTENANCE.



**Be sure to disconnect all incoming power wiring to the lightbar before servicing the lightbar's interior. Failure to do so may result in property damage, serious injury, or death to you and others.**

Disconnect ALL power to the lightbar before any maintenance is performed.

A. *Cleaning the Plastic Domes.*

Ordinary cleaning of the plastic domes can be accomplished by using mild soap and a soft rag. Should fine scratches or a haze appear on the domes, they can ordinarily be removed with a non-abrasive, high quality automotive paste wax.

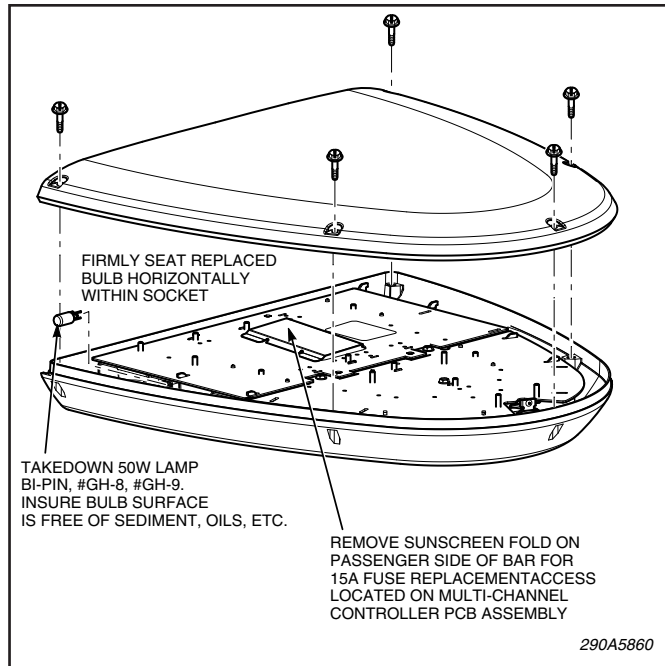


Figure 2. Takedown Halogen Lamp, Fuse Replacement.



**Crazing (cracking) of domes will cause reduced effectiveness of light system. Do not use cleaning agents (which will cause crazing) such as strong detergents, solvents, or petroleum products. If crazing of domes does occur, reliability of light for emergency warning purposes may be reduced until domes are replaced.**

B. *Halogen Lamp Replacement.*



**A serious injury may result if lamp is touched when hot. Always allow lamp to cool before removing. Halogen lamps are pressurized and if broken can result in flying glass. Always wear gloves and eye protection when handling the lamps.**



Service life of lamp will be shortened if glass portion is touched. If glass has been handled, clean carefully with a grease solvent.

See figures 2 and 4. Refer to table 1 and replace the defective lamp with an exact replacement only.

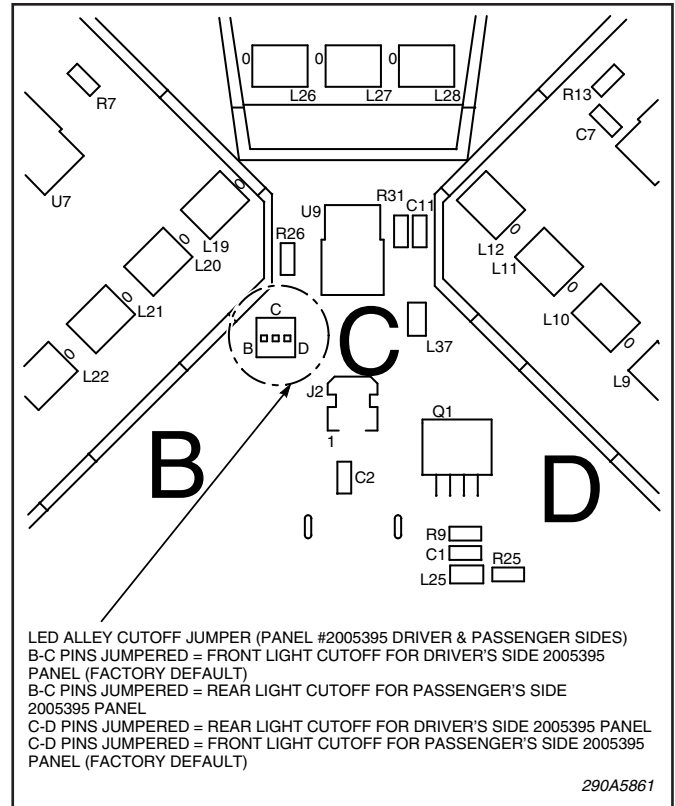


Figure 3. Cutoff for LED Alley Light Option.

Table 1.

Function	Description
Takedown, Worklight	50W Halogen, GH-8 (bi-pin) Part No. 8107169
Alley	35W Halogen MR11 Part No. 8107241
Reflector, 6 LED	6-Button, S2 (Solaris) Part No. 8653104
Reflector, 3 LED (Alley Position Option) Multi-channel circuit board	Part No. 8583462  Part No. 2005382

C. *Cleaning Reflector Assemblies.*

Use a soft tissue to clean the reflectors. Avoid heavy pressure and the use of caustic or petroleum base solvents which will scratch or dull the surface.

D. *LED Panel Replacement.*



**A serious injury may result if the LED assembly is touched when hot. Always allow the LED assembly to cool before removing.**

1. LED Reflector Replacement.

Individual LED reflectors may be replaced if needed by disassembly of the LED reflector's parent LED

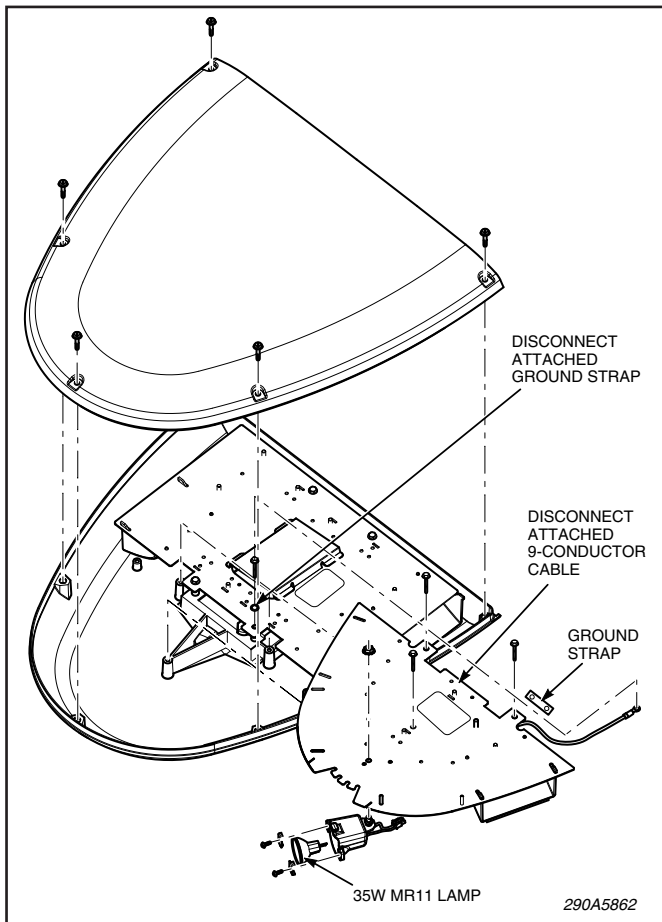


Figure 4. Alley MR11 Halogen Lamp Replacement.

panel from the lightbar. Removal of the dome above the panel, followed by removal of the screws restraining the panel and disconnection of the 9-wire cable harness (see figure 5) will allow access to the reflector's cleaning or replacement. Refer to table 1 for replacement part number.

**NOTE**

Individual LED Modules cannot be serviced. The entire LED panel is replaced.

2. LED Panel Replacement.

In the rare occurrence a LED module is found not functioning properly, the parent circuit board panel to which it belongs needs to be replaced with its equivalent. A corresponding label may be found on the topside of each of the LED panels with a 2005xxxx-xxxxxxx pc board part number and the finished model number (58300x-xxxxx) for ordering its replacement. See figures 4 and 5 for board removal/replacement.

3. 15A Fuse Replacement.

Four 15A fuses are present on the main control circuit board located on the passenger side of the lightbar. Access the fuses by removing the sunscreen fold from the top side of the panel to expose the control board (see figures 2 and 7).

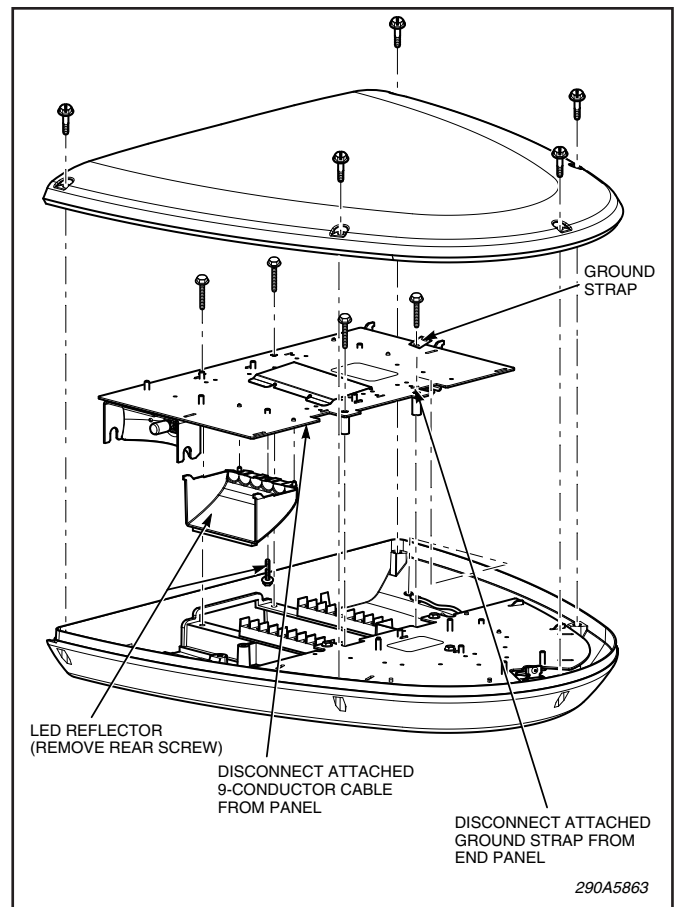


Figure 5. LED Reflector Replacement.

#### 4. Control Board Replacement.

If it is determined that the main control board (#2005382) needs to be replaced, the inboard LED panel on the passenger's side must be disconnected and removed first to gain access to the main control board. Next, disconnect the power and ground leads to the board. The Serial input cable must then be disconnected along with the associated wire harness leads to the board. Last, the four screws restraining the control board must then be removed for its replacement (see figure 6).

Copyright 2007 Federal Signal Corporation

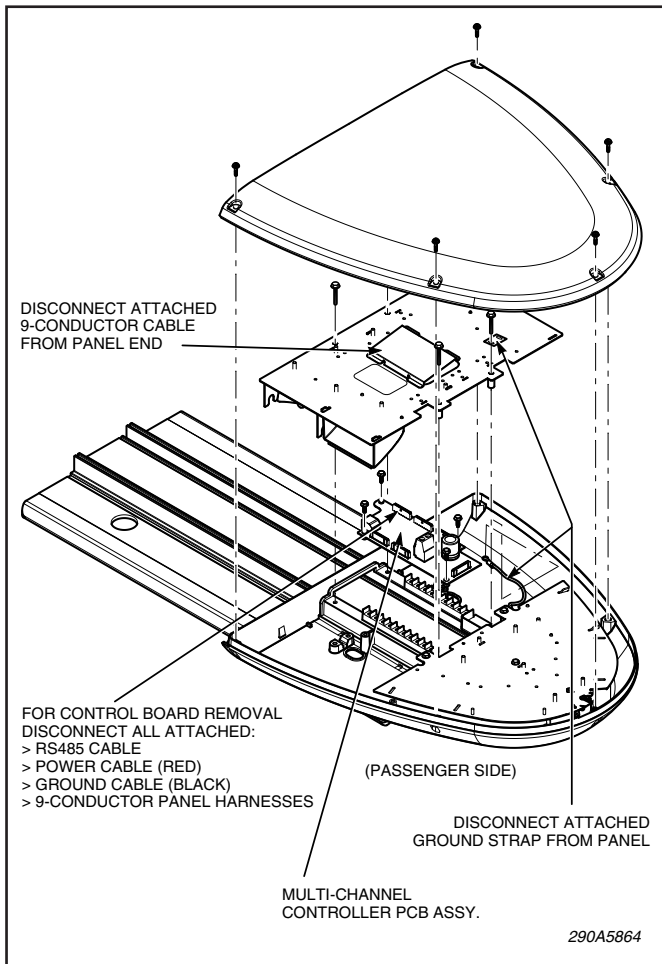


Figure 6. Multi-channel Controller Replacement.

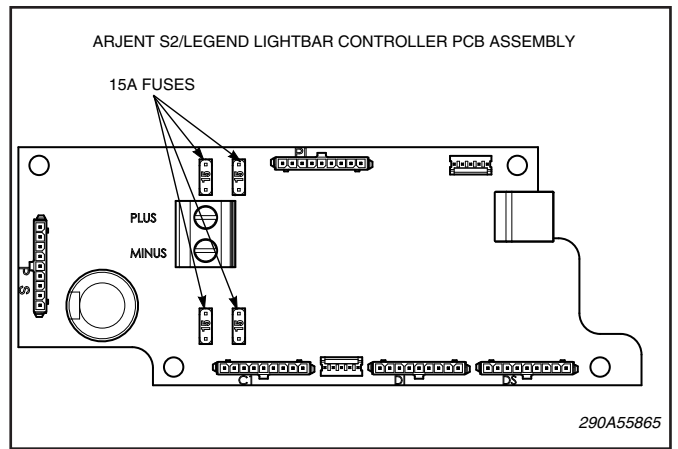


Figure 7. Internal vs External SignalMaster Configuration.

Table 2. 44" Arjent S2 Flash Pattern Lighting Standard Compliance Table (for software revision ARJM44B and higher).

Pattern Number	SAE J845 Compliant	Title 13 Compliant
1	Yes	Yes
2	Yes	Yes
3	Yes	Yes
4	Yes	Yes
5	Yes	Yes
6	Yes	Yes
7	Yes	No
8	No	No
9	Yes	No
10 Default Mode 1	Yes	Yes
11	Yes	No
12	No	No
13	Yes	No
14	Yes	No
15	Yes	No
16	No	No
17 Default Mode 2	Yes	No
18	No	No
19	Yes	No
20	Yes	No
21	No	No
22 Intersection	No	No
23	No	No
24	No	No
25	No	No
26 Default Mode 3	Yes	No
27 For testing only	No	No
28 For testing only	No	No

**NOTICE**

The table above identifies the light bar’s flash pattern compliance. (for software revision ARJM44B or higher). Patterns listed as “Yes” comply with the flash requirements and light output requirements for the identified lighting standard. Patterns listed as “No” do not comply with either the flash requirements or the light output requirements for the standard. A non-compliant pattern should only be used after those you are trying to warn have been trained to recognize the pattern as a warning signal. The end user is responsible for choosing the light patterns that meet their jurisdiction’s requirements.

**NOTE**

Pattern 27 - all lights on.  
 Pattern 28 - each light sequentially lights for 2 seconds with the exception of designated steady burn heads.