

INSTRUCTION SHEET  
FOR  
SIGNALMASTER™ MODELS 321102, 321112, 321702, AND 321712

SAFETY MESSAGE TO INSTALLERS



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 this light: 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 drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged.
- In order for the light to function properly, a separate ground connection must be made. If practical, it should be connected to the fusible link at the front fender between the negative (-) battery terminal and chassis ground. 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 control so the VEHICLE and CONTROL can be operated safely under all driving conditions.
- Do not attempt to activate or deactivate light control while driving in a hazardous situation.
- This product contains high intensity LED devices. To prevent permanent eye damage, DO NOT stare into the light beam at close range.
- You should frequently inspect the light 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. GENERAL.

The Federal SignalMaster is an economical, low wattage, directional light assembly that is designed for use in a flashing mode. Lens colors available are: amber (standard), red, blue, green, and clear.

These models provide two distinctive directional signals: left arrow and right arrow. In addition, an alternating flash pattern produces a warning signal for use when a directional signal may not be appropriate. When a directional signal is selected, the lamps

are individually illuminated in a sequential sweeping motion until all eight lamps are illuminated.

II. SPECIFICATIONS.

Input Voltage	11VDC to 16VDC (12V models). 22VDC to 28VDC (24V models).
Polarity	Negative ground only.
Operating Temperature Range	-30° C to +65° C.
Standby Current	Zero amperes.
+BAT Fuse	25 amperes (12V). 15 amperes (24V).
Output Drive Capability (Total)	8, 27 watt lamps (12V models). 8, 20 watt lamps (24V models).
Flash Rate:	
Directional	35 patterns/min.
Warn	60 patterns/min.
Dimensions:	
Height	51"                      42"
Length	2.6"                      2.6"
Depth	50.9"                    42.0"
Cable Length	3.4"                      3.4"
	35'                        15'



These lights are intended for *secondary* warning only. They are *not* intended for use as a primary warning system.

III. INSTALLATION.



The SignalMaster's circuitry can be damaged, or destroyed, by static discharge. To prevent ESD, observe anti-static procedures during installation.

A. *SignalMaster Light Assembly.*

Install the light assembly as described in the instructions packed with the mounting kit.

B. *Control Head.*



When installing equipment inside air bag equipped vehicles, the installer **MUST** ensure that the equipment 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.**

Assemble the control head as shown in figure 1. For proper operation of the unit, the switches must be installed as shown. To install the control head, proceed as follows:

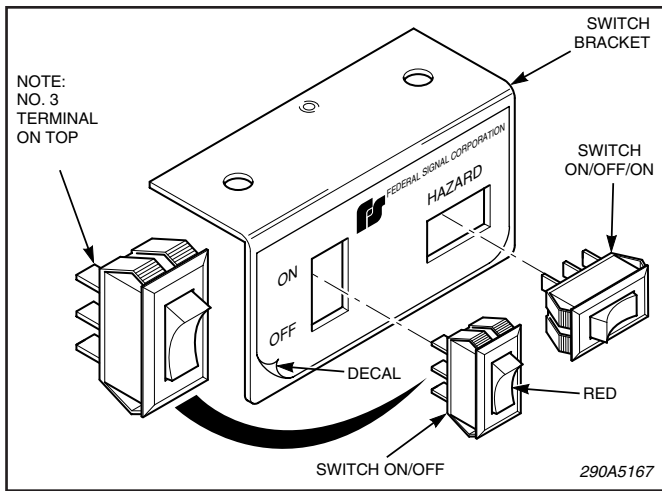


Figure 1.

**NOTE**

When selecting a mounting location for the control head, it is necessary to keep in mind the SignalMaster's cable length. Plan wiring and cable routing before installation.

1. Select a mounting location for the control head that allows the vehicle and controls to be operated safely at all times.
2. Use the control head as a template and scribe two drill position marks at the selected mounting location.

**CAUTION**

Before drilling holes in ANY part of a vehicle, be sure that both sides of the mounting surface are clear of parts that could be damaged; such as brake lines, fuel lines, electrical wiring or other vital parts.

3. Drill two holes at the previously scribed position marks.
4. Secure the control head to the mounting surface with two user-supplied sheet metal screws.

C. *Electrical Connections.*



**Failure to observe this WARNING may result in fire, burns or blindness.**

**If shorted to vehicle frame, high current conductors can cause hazardous sparks resulting in electrical fires or molten metal.**

**If additional cable length is required, splice the same gauge (or heavier) wire to the leads.**

**DO NOT connect this system to vehicle battery until ALL other electrical connections are made and mounting of all components is complete.**

**Verify that no short circuits exist, before connecting to the Positive (+) battery terminal.**

1. Power Connections.

a. Route the red and black 14-gauge wires to the power source. Ensure that the power source is capable of supplying an additional 25-amperes.

b. Connect the black wire to a known good chassis ground. This connection must be capable of supplying 25-amperes.

c. Do not connect the red wire to the positive (+) power source terminal at this time.

2. Control Head Connections.

a. Wrap the control cable's stripped wire ends with tape and route the cable to the control head mounting location.

b. See figure 2. Crimp five 1/4" straight terminals on the cable wire ends and jumper wire combination.

c. Connect the terminals on the switch as shown in figure 2.

3. Turn Signal Connections (optional).

a. Crimp the two right angle terminals on one end of two user-supplied 22-gauge wires. The wires should be long enough to route from the light assembly to the right, and left, turn signal lamp sockets.

b. Remove and retain the three screws which secure the light assembly end plate at the cable exit end.

c. Remove the end plate and slide the lens mounting plate out about six-inches.



When connecting the right angle terminals to the connectors, support the circuit board to avoid breaking the terminals or cracking the printed circuit board.

d. See figure 3. Connect the two right angle terminals to connectors H4 and H5. Note which wire is attached to H4 and to H5.

e. Slide the lens mounting plate into the extrusion. Route the 22-gauge wires through the grommet. Secure the end plate on the light assembly using the previously removed screws.

f. Route each 22-gauge wire to the appropriate turn signal lamp socket. Connect the wire from H4 to the right turn signal lamp power wire. Connect the wire from H5 to the left turn signal lamp power wire.

D. *Inspection and Final Installation.*

1. Ensure that there are no loose wire strands or other bare wires which may cause a short circuit. Also, all wires must be protected from any sharp edges which could eventually cut through the insulation.

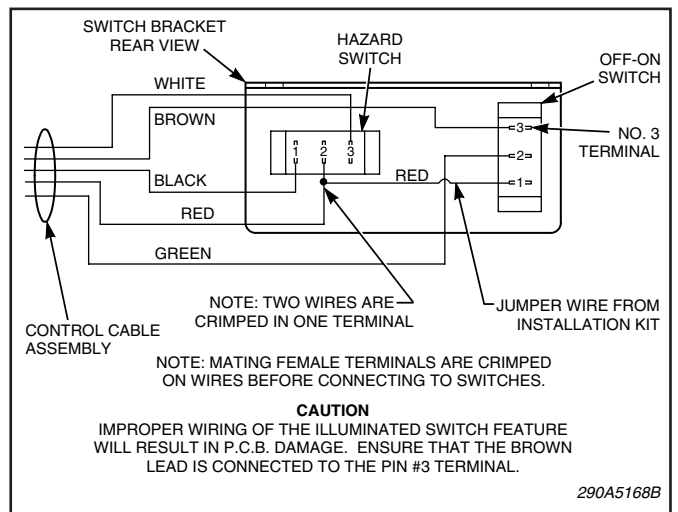


Figure 2.

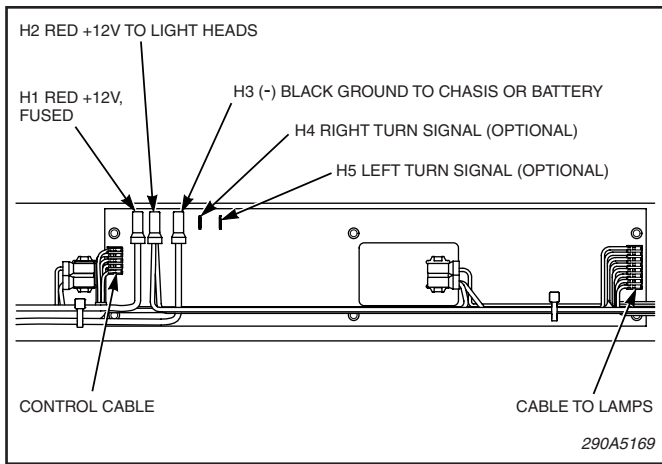


Figure 3.

2. Connect the 14-gauge red wire to the (+) positive terminal of the battery using an in-line, user-supplied fuseholder and 25A fuse (15A fuse for 24V model). Locate the fuse as near the battery as possible to protect the entire length of wire.

**NOTE**

All directional lamps will illuminate simultaneously if the power supply leads are reversed. Correct the wiring before proceeding.

3. Read and understand paragraph IV OPERATION, and test for proper operation of all functions.

**IV. OPERATION.**

**SAFETY MESSAGE TO OPERATORS**



Peoples' lives depend on your safe use of our products. Listed below are some important safety instructions and precautions you should follow:

- Although your warning system is operating properly, it may not be completely effective. People may not see or heed your warning signal. You must recognize this fact and continue driving cautiously.
- Also, situations may occur which obstruct your warning signal when natural or man-made objects are between your vehicle and others, such as: raising your hood or trunk lid. If these situations occur, be especially careful.
- This product contains high intensity LED devices. To prevent permanent eye damage, DO NOT stare into the light beam at close range.
- At the start of your shift, you should ensure that the light is securely attached and all lamps are operating properly.
- If a selected function does not perform properly or if any of the lamps remain illuminated when the control is off, disconnect the power connector from the control unit and contact the nearest service center.

Failure to follow these safety precautions may result in property damage, serious injury, or death to you, to passengers, or to others.

**RETAIN AND REFER TO THIS MESSAGE**

A. *On/Off Switch.*

1. OFF Position.

The SignalMaster is not powered and the turn signal/brake feature (if installed) is functional.

2. ON Position.

a. The switch will illuminate. If the switch does not illuminate, check the connection of the brown control wire.

b. The directional/hazard patterns will operate as selected by the Hazard Rocker Switch.

B. *Hazard Rocker Switch.*

**NOTE**

These patterns will override the turn signal/brake feature (if installed).

1. LEFT Position.

In this position, the light produces a left arrow flashing pattern, instructing traffic to move left.

2. CENTER Position.

In this position, an alternating pattern is produced. The four middle lights activate alternately with the two outside lights on each side.

3. RIGHT Position.

In this position, the light produces a right arrow flashing pattern, instructing traffic to move right.

C. *Turn Signal/Brake Option.*

1. Turn Signal.

If installed, a single end lamp flashes in sync with the vehicle turn signal.

2. Brake.

If installed and the vehicle uses a common brake/turn wire, both end lamps illuminate with the vehicle brake lights.



Damage to the directional light assembly will occur if this vehicle is jump-started when the light is "on". Ensure that the light is switched "off" before jump-starting this vehicle.

**V. MAINTENANCE.**

A. *General.*



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

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

B. Lamp Replacement.



Use of higher wattage lamps can result in damage to the colored lenses.

1. See figure 4. Remove and retain the two screws which secure the lens. Carefully pull the lens straight away from the light assembly.



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



**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.**

2. Remove the defective lamp by carefully pulling it out of the socket. Install a new lamp by aligning the pins on the lamp base with the holes in the socket, and carefully pushing the lamp into the socket.



Use of longer screws may damage the circuit board assembly. Use the previously removed screws when replacing the lens.

3. Replace the lens using the previously removed screws.

C. LED Module Replacement.



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

1. See figure 5. Remove and retain the two screws which secure the LED module assembly.

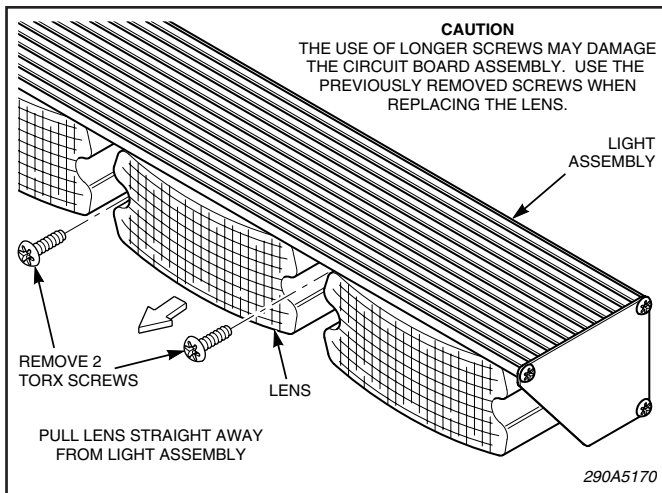


Figure 4.

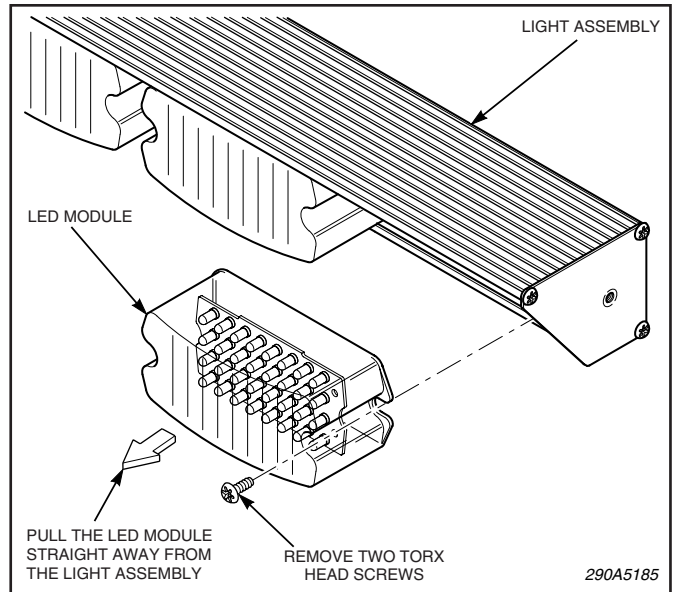


Figure 5.

2. Disconnect the right angle connectors and remove the LED module assembly.
3. Observing polarity, connect the right angle connectors to the appropriate printed circuit board connectors.
4. Install the new LED module assembly using the previously removed screws.

VI. REPLACEMENT PARTS.

Description	Part No.
Lens, Clear	8573001
Lens, Red	8573001-01
Lens, Amber	8573001-02
Lens, Blue	8573001-03
Lens, Green	8573001-04
Lamp, 27-watt halogen, G.E. GH-22, 12V	8573007
Lamp, 20-watt halogen, G4 Bi-Pin, 24V	8573085
LED Module Assy, White, 12V	8573229
LED Module Assy, Red, 12V	8573229-04
LED Module Assy, Amber, 12V	8573229-05
LED Module Assy, Blue, 12V	8573229-06
LED Module Assy, White, 24V	8573229-07
LED Module Assy, Red, 24V	8573229-08
LED Module Assy, Amber, 24V	8573229-09
LED Module Assy, Blue, 24V	8573229-10

VII. SERVICE.

Communication and shipments should be addressed to:

Service Department  
 Federal Signal Corporation  
 2645 Federal Signal Drive  
 University Park, IL 60466  
 1-800-433-9132

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