

INSTALLATION AND MAINTENANCE INSTRUCTIONS FOR MICROJET™ FLASHING LIGHT BARS

SAFETY MESSAGE TO INSTALLERS OF FEDERAL SIGNAL LIGHT SYSTEMS

WARNING

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 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 permanent 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 re-installing 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 light bar, 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. KIT CONTENTS LIST.

Qty.	Description
1	Light Assembly
1	Spacer
2	Lockwasher, Split
2	Nut, 3/8-16

III. INSTALLATION.

The basic light bar is completely wired at the factory and does not require any additional internal wiring.

The basic light functions of the unit must be controlled by a user supplied control head.

WARNING

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

WARNING

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.

A. Light Assembly Mounting.

1. Place the light assembly in the desired position on the flat mounting surface.
2. See figure 1. Scribe a drill position mark about 3-1/4" from the end of the light assembly.
3. See figure 1. Scribe another drill position mark 1-1/2" in from the previously scribed drill position mark.

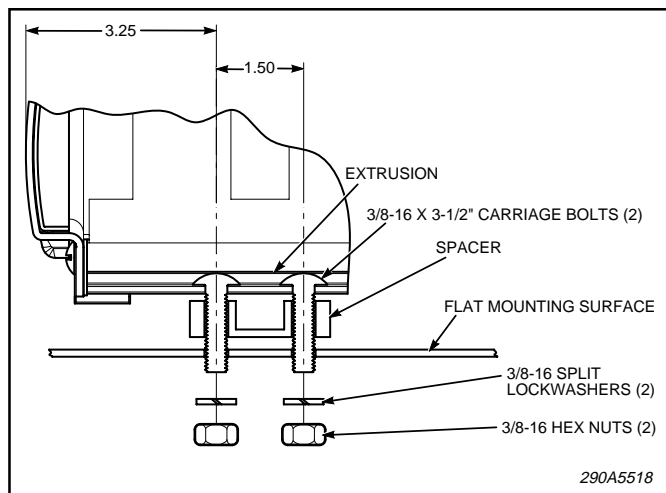


Figure 1.

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.

4. Drill two (2) 13/32" holes at the previously scribed drill position marks.
5. Secure the light assembly to the flat mounting surface using the spacer, 3/8-16 nuts and 3/8" split lockwashers as shown in figure 1.

IMPORTANT

Clean, lightly oil, and torque the mounting bolts to 150 – 175 in-lb.

B. Route the control cable into the vehicle and under the dash, near the eventual location of the user-supplied control head.

C. For proper light operation, the control cable must be properly terminated inside the user-supplied control head. table 1 shows the recommended control cable wire colors for the light bar functions. Switch current capacities should be at least 15 amps.

D. Connect the black lead to chassis ground.

Table 1.

Wire Color	Functions
BLK	Common Ground (-)
WHT	Primary Flasher Mode #1
GRN	Primary Flasher Mode #2 (Ptn. Slct.)

WARNING

If wires are shorted to the vehicle frame or each other, high current conductors can cause hazardous sparks resulting in electrical fires and molten metal.

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

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

Failure to observe this WARNING will result in fire, burns and blindness.

E. Connect the light bar's white power lead to the control head or a single switch, protected by a fuse or circuit breaker rated at 15 amperes. Connect the other side of the fuse /circuit breaker to the +12VDC supply. The Light Assembly will now operate in Mode 1 (Primary Pattern) when this switch is turned on.

F. To turn on the flasher in Mode 2 (Secondary Pattern), use a switch or control head to connect the Pattern Select connection (Green conductor) to Power (+).

G. Check for proper operation of all functions.

IV. CHANGING FLASHING PATTERNS (OPTIONAL).

A. Dome Removal.

1. See figure 2. Release the retaining band on the side of the light assembly without an LED module by loosening the screw on the band. Slide the retaining band off the light assembly.

2. See figure 2. Remove the two screws located at the identification plate of the dome on the side of the light assembly without an LED module. Retain screws, identification plate, and end dome assembly.

B. General.

The flasher has two (2) light circuits with a current capacity of up to 10-amperes (maximum) per side, 20-amperes total. The flasher is designed to operate on any 12-24VDC (negative ground) vehicle electrical system. The flasher operates as a high side switch, switching the +DC supply to the load.

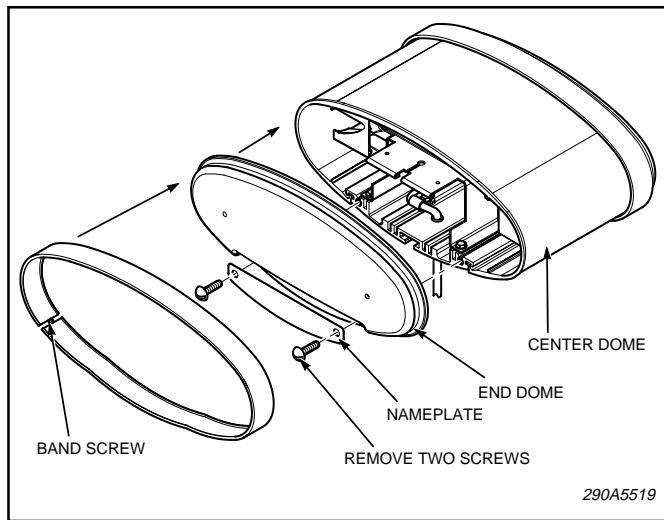


Figure 2.

CAUTION

The device WILL NOT light up or flash if improperly grounded. Be sure that the device ground is attached to a good vehicle ground. A ground termination at the flasher is provided.

Refer to figure 3 for flasher operation when performing the following procedure.

The flasher has two outputs, Out 1 and Out 2. These outputs switch the +DC source from source to the load.

WARNING

To provide safe operation, the user supplied power control switch and wiring must be capable of handling the rated current of the fuse at the source.

C. Flasher Programming (see table 2).

The flasher will provide the end user with two preselected flash patterns. The preselected flash patterns are to be chosen from the ten factory programmed patterns provided with each flasher. It is recommended that the preselected flash patterns be determined and programmed during installation.

The red/green LED as indicated in figure 3 will be illuminated green when an SAE compliant flash pattern is selected. When a Non-SAE flash pattern is selected, the LED will be illuminated red. The red/green LED may alternate between red and green for several flash patterns.

The following procedures demonstrate the programming and operating features of the flasher:

Turn on the flasher by applying Power (+) and Ground (-). The flasher will begin to flash in Mode 1 (Primary Pattern). The flasher can be programmed by either shorting the programming pins together momentarily or by connecting the program pin to ground. By

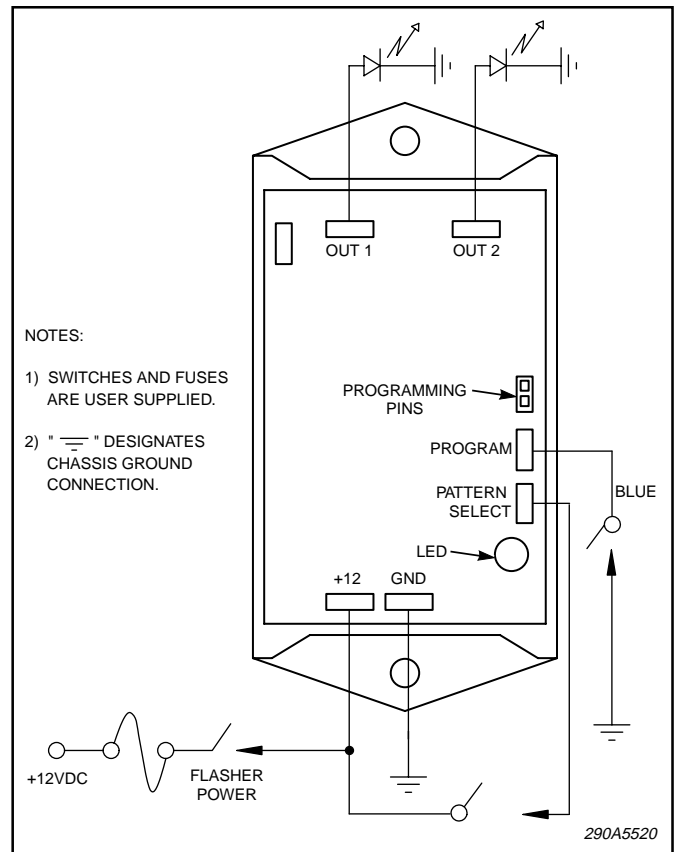


Figure 3.

shorting the PROGRAM pin to GND, the flasher will switch to the next pattern. The flasher will step through the patterns each time the program pin is shorted, returning to the top once after the tenth pattern is displayed. To lock in a chosen pattern, allow the pattern to run for 15-seconds, the flasher will retain the active pattern.

To turn on the flasher in Mode 2 (Secondary Pattern), turn the flasher system on and connect the Pattern Select connection (Green conductor) to Power (+). By shorting the PROGRAM pin to GND, the flasher will switch to the next pattern. The flasher will again step

Table 2.

Pattern Descriptions	
Pattern 1	Alternating Quad Flash 76 QFPM SAE Compliant
Pattern 2	Alternating Triple Flash 102 TFPM SAE Compliant
Pattern 3	Overlapping Penta Flash 87 PFPM SAE Compliant
Pattern 4	Alternating Single Flash 120 FPM SAE Compliant
Pattern 5	Alternating Single Flash 240 FPM SAE Compliant
Pattern 6	Simultaneous/Overlapping Triple/Nine
Pattern 7	Alternating Single
Pattern 8	Overlapping Alternate 95 Patterns/Min. SAE Compliant
Pattern 9	Steady
Pattern 10	2 @ 60 FPM 4 Pulse Alternating 2 @ 60 FPM 2 Pulse Simultaneous

through the patterns each time the program pin is shorted, returning to the top once after the tenth pattern is displayed. To lock in a chosen pattern, allow the pattern to run for 15-seconds and the flasher will retain the active pattern.

The flasher is now programmed. When power is applied to the flasher, it will flash in Mode 1 (Primary Pattern). To operate the Mode 2 (Secondary Pattern) switch +DC to the Pattern Select Pin. Releasing the switch returns the flasher to flashing Mode 1 (Primary Pattern).

D. Reinstall the end dome and the Identification Plate removed in step 2. Secure with previously removed screws.

E. Reinstall the Retaining Band removed in step 1. The portion of the band without flanges should be placed against the extrusion.

V. BASIC MAINTENANCE.

⚠WARNING

High voltages are present inside the light bar. Wait at least ten (10) minutes, after shutting off power, before servicing this unit. Failure to do so may result in property damage, serious injury, or death to you or others.

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.

⚠CAUTION

The use of other materials such as strong detergents, solvents, petroleum products, etc. can cause crazing (cracking) of the plastic domes.

B. *Cleaning Reflector Assemblies.*

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

C. *Service.*

The Federal factory will service your equipment or provide technical assistance with any problems that cannot be handled locally.

Any units returned to Federal Signal for service, inspection, or repair; must be accompanied by Return Material Authorization. This R.M.A. can be obtained from a local Distributor or Manufacturer's Representative.

At this time a brief explanation of the service requested, or the nature of the malfunction, should be provided.

Address all communications and shipments to:

Federal Signal Corporation
Emergency Products Division
Service Department
2645 Federal Signal Drive.
University Park, IL 60466-3195

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