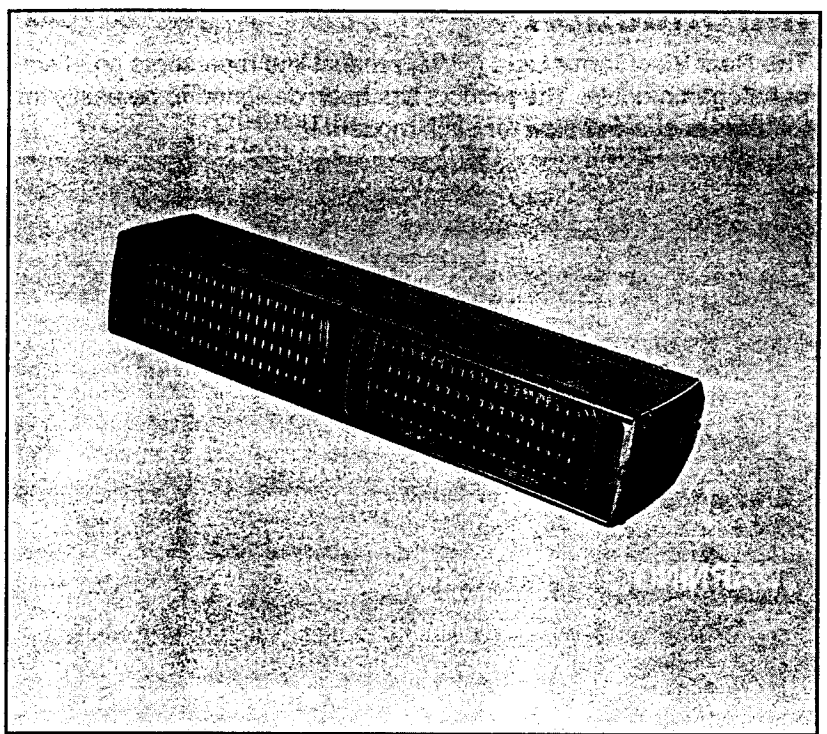


INSTALLATION & OPERATION MANUAL

REAR VIEW MIRROR LIGHTHEADS



USE ONLY

T05891 - 45⁰⁰

Code 3, Inc., a subsidiary of
Public Safety Equipment, Inc.

CODE 3[®]
PUBLIC SAFETY EQUIPMENT, INC.

RVM

REAR VIEW MIRROR STROBE & HALOGEN LIGHTHEADS

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IMPORTANT:

Read all instructions and warnings before installing and using.

INSTALLER: *This manual must be delivered to the end user of this equipment.*

Introduction

The Rear View Mirror Light (RVM) product line represents an effective warning signal device in either strobe or halogen models. The product has been designed to be easily installed and operated. A list of standard features is shown below for each model.



WARNING!

The use of this or any warning device does not insure that 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, driving against traffic, responding at a high rate of speed, or walking on or around traffic lanes.

The effectiveness of this warning device is highly dependent upon correct mounting and wiring. Read and follow the manufacturer's instructions before installing or using this device. The vehicle operator should insure daily that all features of the device operate correctly. In use, the vehicle operator should insure the projection of the warning signal is not blocked by vehicle components (i.e.: open trunks or compartment doors), people, vehicles, or other obstructions. This equipment is intended for use by authorized personnel only. It is the user's responsibility to understand and obey all laws regarding emergency warning devices. The user should check all applicable city, state and federal laws and regulations.

Public Safety Equipment, Inc., assumes no liability for any loss resulting from the use of this warning device.

Proper installation is vital to the performance of this warning device and the safe operation of the emergency vehicle. It is important to recognize that the operator of the emergency vehicle is under psychological and physiological stress caused by the emergency situation. The warning device should be installed in such a manner as to: A) Not reduce the output performance of the system, B) Place the controls within convenient reach of the operator so that he can operate the system without losing eye contact with the roadway.

Emergency warning devices often require high electrical voltages and/or currents. Properly protect and use caution around live electrical connections. Grounding or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.

PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO INSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.

Standard Features

- RVMS - 2 Head Strobe with Internal Power Supply
 - Interchangeable lenses
 - 9' power cord with cigarette plug-in provided
 - 10-30 Vdc operation
 - Reverse polarity protection
 - User selected flash patterns: double, quad, five, and cycle.

- RVMSR - 2 Head Strobe for use with Remote Power Supply (not included)
 - Interchangeable lenses
 - 15' shielded cable with drain

- RVMHA - 2 Head Halogen with Internal Flasher
 - Interchangeable lenses
 - 9' power cord with cigarette plug-in provided
 - 10-16 VDC operation.
 - Reverse polarity protection
 - User selected flashing modes with each lighthouse controlled individually. Flashing modes available: steady beam, fast and slow flash.

- RVMHAR - 2 Head Halogen Remote System
 - Interchangeable lenses
 - 15' 3 wire cable.

- RVMHS - One-head Strobe/One-head Halogen Combination with Internal Power Supply.
 - Same features as both RVMS and RVMHA contained in a single housing.

Options & Specifications

(Currents are calculated at 12.8 volts)

MODEL	H	L	D	WEIGHT	OPERATING VOLTAGE	CURRENT DRAW	FLASH RATE	ENERGY OR POWER
RVMS - strobe with internal power supply	2.6"	11.9"	3.9"	2.6 lbs	10-30 Vdc	4A	80*	20J
RVMHA - halogen with internal power supply	2.6"	11.9"	3.9"	1.8 lbs	10-16 Vdc	2.1A	80*	27W
RVMSR - strobe for remote power supply	2.6"	11.9"	3.9"	1.5 lbs	n/a	n/a	n/a	n/a
RVMHAR - halogen for remote flasher	2.6"	11.9"	3.9"	1.0 lbs	10-16 Vdc	2.1A	80*	27W
RVMHS - Combination Strobe/Halogen with internal power supply	2.6"	11.9"	3.9"	2.2 lbs	10-16 Vdc	3.0A	80*	20J/27W

* Flash rate is dependent on setting. Refer to the Wiring Instructions for more information.

Unpacking & Pre-installation

After unpacking the items, carefully inspect the contents for damage that may have occurred during transit. If any item is damaged, please contact the carrier immediately.

To test the operation of the product before installation follow the directions given below:

RVMS, RVMHA, RVMHS - Self-contained strobe and halogen units can be tested by inserting the cigarette plug-in of the power cord into an appropriate 12 volt socket. Note: if flash pattern changes are required, go to the Wiring Instructions section for directions.

RVMSR - Remote strobe units arrive with the lighthouse completely assembled and ready for installation. The units require the cables to be routed to the power supply. Please refer to the Wiring Instructions for output connections to the power supply and the power supply user manual for initial testing requirements.

RVMHAR - Remote halogen units can be tested using a battery. Route the black wire to ground (earth) and touch the red wire and white wire to the +12 Vdc source.

If the vehicle has an electrical system other +12 Vdc, contact your local representative or call the Electronics Technical Assistance HOTLINE at (314)427-2700 ext. 2131 for instructions.

Installation & Mounting



This unit must be mounted within the interior passenger compartment of the vehicle only. It is not intended for use in exterior applications. All devices should be mounted in accordance with the manufacturer's instructions and securely fastened to vehicle elements of sufficient strength to withstand the forces applied to the device. Driver and/or passenger air bags (SRS) will affect the way equipment should be mounted. This device should be mounted by permanent installation and within the zones specified by the vehicle manufacturer, if any. Any device mounted in the deployment area of an air bag will damage or reduce the effectiveness of the air bag and may damage or dislodge the device. Installer must be sure that this device, its mounting hardware and electrical supply wiring does not interfere with the air bag or the SRS wiring or sensors. Mounting the unit inside the vehicle by a method other than permanent installation is not recommended as unit may become dislodged during swerving, sudden braking or collision. Failure to follow instructions can result in personal injury.

The Rear View Mirror lights are designed to be mounted to the rear deck or headliner of your vehicle. The following instructions must be followed to insure that the unit is mounted correctly.

1. Attach the mounting hardware to the unit as shown in Figure 1. (For Ford Crown Victoria models, the center portion of the mounting bracket may not be necessary for mounting to the headliner.)

2. Place the unit against the headliner or rear deck and make adjustments with the hardware until the product is located in an area that does not obstruct the view or inflict injury to either driver or passenger. (When mounting the unit to the rear deck, the brackets will be on the bottom of the unit.) Tighten all loose hardware and mark the position of each mounting foot.

3. Remove bracket assemblies from the unit.

4. Using the marked positions, mount the brackets on the headliner or rear deck with user supplied sheet metal screws or through-bolts.

Caution: The unit must be mounted through the steel of the vehicle. Avoid mounting to plastic or other non-structural members.

5. Mount the unit to the brackets using the included acorn nuts and carriage bolts.

6. Adjust the unit to provide the most effective signal.

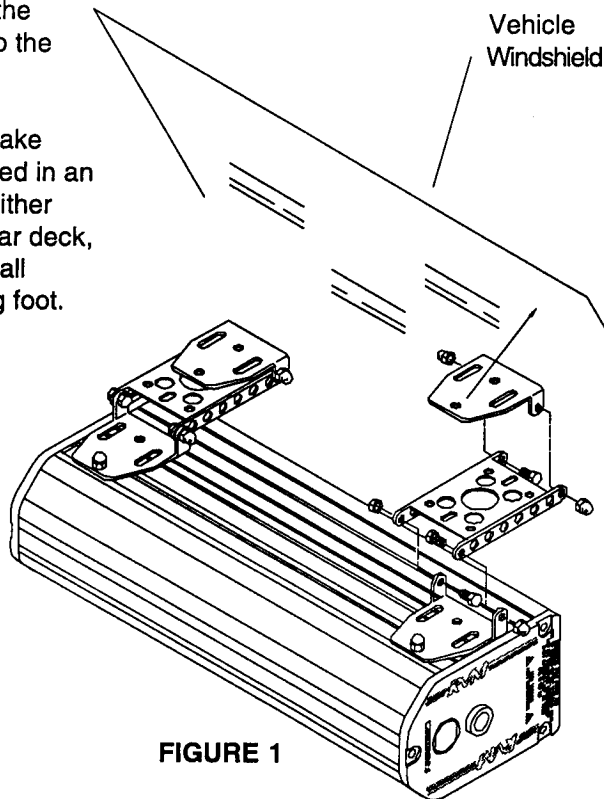


FIGURE 1

Wiring Instructions

Listed are the specific wiring instructions by model. Please read the appropriate section before final operation. Also included are the flash control options for the RVMS and RVMHA products.

Please carefully read the instructions before making changes.



WARNING!

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). Route wiring using grommets and sealant when passing through compartment walls. High ambient temperatures (e.g. under-hood) will significantly reduce the current carrying capacity of wires, fuses, and circuit breakers. Use "SXL" type wire in engine compartment. Minimize the number of splices to reduce voltage drop. 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. 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. Ground terminations should only be made to substantial chassis components, preferably directly to the vehicle battery.

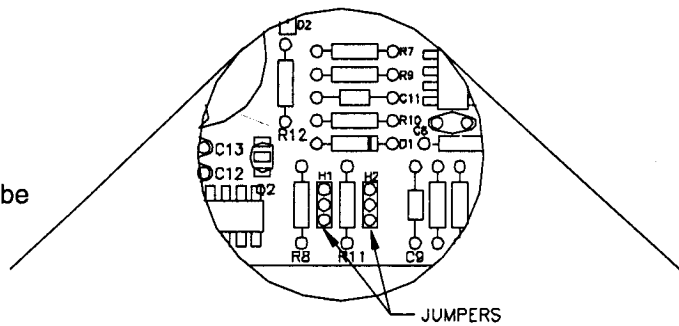
The user should install a fuse sized to approximately 125% of the maximum amp capacity in the supply line and each switched circuit to protect against short circuits. For example, a 30 Amp fuse should carry a maximum of 24 Amps. **DO NOT USE 1/4" DIAMETER GLASS FUSES AS THEY ARE NOT SUITABLE FOR CONTINUOUS DUTY IN SIZES ABOVE 15 AMPS.** Circuit breakers are very sensitive to high temperatures and will "false trip" when mounted in hot environments or operated close to their capacity.

Fuses or circuit breakers should be located as close to the vehicle power takeoff points as possible and properly sized to protect the wiring devices.

Flash Control Options

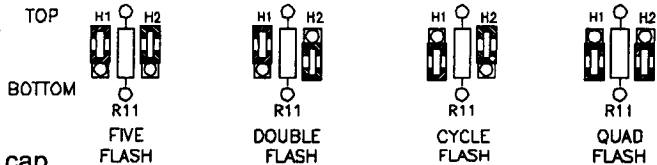
RVMS

The self-contained strobe power supply can be configured to different flash patterns by selecting a combination of jumpers located on the circuit board. The unit is shipped with the standard quad flash pattern.

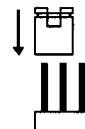


To select a flash pattern on the unit follow the directions provided below:

1. Turn power off and wait 10 minutes before opening the unit. Remove the end cap from cable exit side of the product and slide the circuit board and luminaires from the extrusion. Be careful not to damage the strobe tubes or scratch the plastic optic lenses during removal.
2. Disconnect the strobe lightheads from the circuit board at their connectors. With the component side of the circuit board facing upward, locate the jumpers. A scaled version is shown in Figure 2.
3. Select the appropriate flash configuration. Use Table 1 as a guide to select the flash pattern.
4. Reassemble the unit by reversing steps 1-2.



FLASH PATTERN JUMPER CONFIGURATION



JUMPER INSTALLATION METHOD

FIGURE 2

Strobe Flash Pattern - Table 1

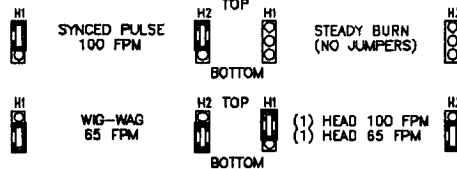
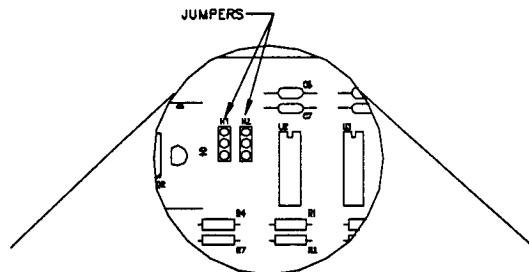
Place jumpers as shown to determine flash pattern:

Jumper Position		Flash Pattern	Strobe Flash Pattern
Bottom	Bottom	Quad	Four pulses alternating between each head
Top	Top	Five	Five pulses alternating between each head.
Bottom	Top	Cycle 2	2, 3, 4, 5 pulse sequence alternating between each head.
Top	Bottom	Double	Two pulses alternating between each head

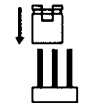
RVMHA

To select a flash pattern on the unit follow the directions provided below:

1. Turn power off and wait 10 minutes, then remove the end cap from the cable exit side of the unit and slide the circuit board assembly from the extrusion.
2. With the component side of the circuit board facing upward, locate the jumpers. A scaled version is shown in Figure 3.
3. Use Table 2 as a guide to select the flash pattern.
4. Reassemble the unit by reversing steps 1-2.



FLASH PATTERN JUMPER CONFIGURATION



JUMPER INSTALLATION METHOD

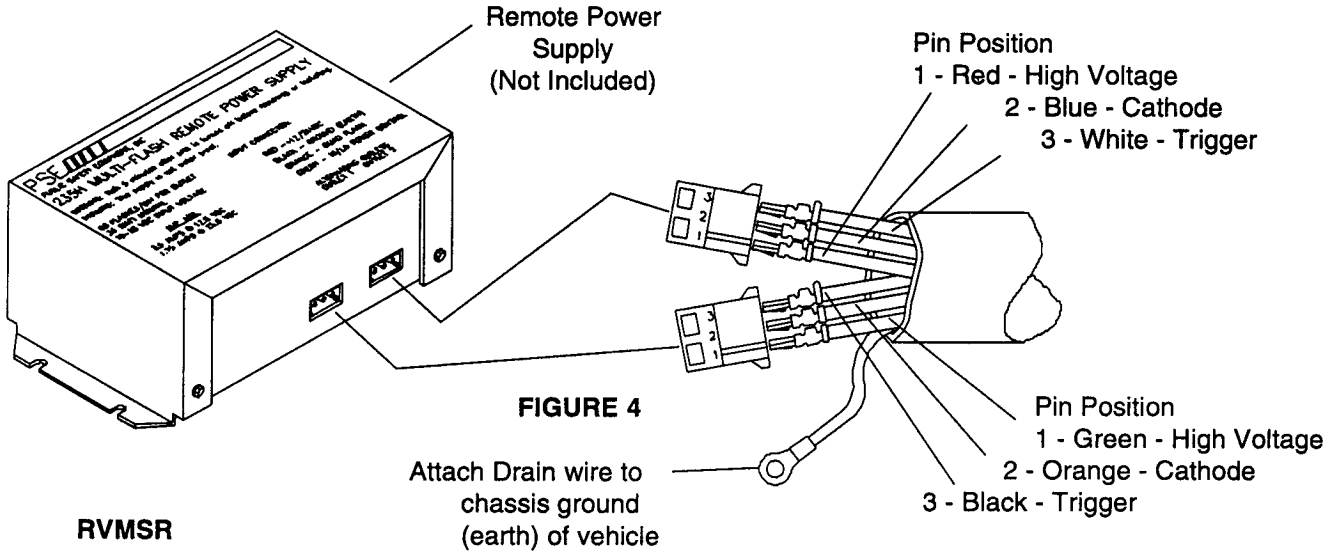
FIGURE 3

Halogen Flash Patterns

Table 2

Place jumpers as shown to determine flash pattern:

Jumper Position	Halogen Flash Pattern
Bottom-Bottom	Wig-Wag, 50% duty cycle, 65 flashes per minute
Top-Top	Synched flash, 50% duty cycle, 100 flashes per minute
No Jumper-Bottom	One head steady burn, other head 65 flashes per minute
No Jumper-Top	One head steady burn, other head 100 flashes per minute
Top-Bottom or Bottom-Top	One head 100 flashes per minute, other head 65 flashes per minute



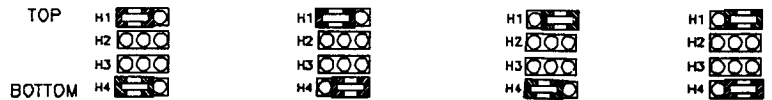
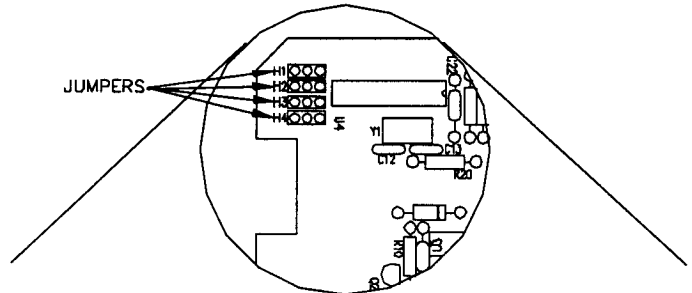
RVMSR

After installing the lighthouse and routing the cable to the power supply, use the diagram above in Figure 4. as a guide when connecting the lighthouse cable to the strobe power supply. Incorrect wiring could damage the lighthouse. To set the flash pattern, refer to the power supply user manual for instructions.

RVMHS

To select a flash pattern on the unit follow the directions provided below.

1. Turn power off and wait 10 minutes, then remove the end cap from the cable exit side of the unit and slide the circuit board assembly from the extrusion.
2. With the component side of the circuit board facing upward, locate the jumpers. A scaled version is shown in Figure 4.
3. Use Table 3 as a guide to select the flash pattern.
4. Reassembly the unit by reversing steps 1 and 2.



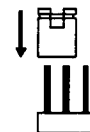
HALOGEN (H1): STEADY BURN
STROBE (H4): FOUR FLASH

STEADY BURN
CYCLE FLASH

100 FPM
FOUR FLASH

100 FPM
CYCLE FLASH

FLASH PATTERN JUMPER CONFIGURATION



JUMPER INSTALLATION METHOD

Table 3 - Strobe-Halogen Flash Patterns

Jumper Position	Strobe Flash Pattern	Halogen Flash Pattern
H1 - Left	-----	Wig-Wag, 85 flashes per minute
H1 - Right	-----	Steady burn , no flash rate.
H4 - Left	Four-flash	-----
H4 - Right	Cycle Flash (2-3-4-5 Cycle)	-----
H2, H3 - NOT USED	-----	-----

Maintenance

The product is designed for minimal maintenance and trouble free service. Periodic inspection of the product will ensure trouble free operation. However, occasional cleaning of the lenses is required to sustain maximum light output. Use plain water and a soft cloth, or Code 3 lens polish and a very soft paper towel or facial tissue.

Note: Plastic scratches easily, be careful when cleaning the optic filters.

Should problems arise during installation or during the life of the product, refer to the guide below for information on troubleshooting. In the event that the strobe power supply is at fault return the unit to the factory for service. Additional information may be obtained from the factory technical HOTLINE at (314) 426-2700 ext. 2131.



WARNING!

High voltages and temperatures are present inside the unit. Disconnect from power and wait 10 minutes prior to servicing. Use hand and eye protection when changing halogen lamps or strobe flash tubes.

Strobe Flash Tube Replacement:

Follow the directions listed below to change a flash tube.

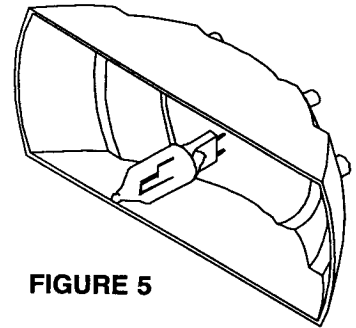


FIGURE 5

1. Disconnect power at the power source.
2. Remove the lighthouse from its mounting.
3. Remove the three (3) screws from the end cap with the cable exit.
4. Slide the circuit board and strobe tube assemblies from the extrusion.
5. Separate the luminaire from the circuit board.
6. Unplug the strobe tube from the circuit board.
7. To remove the strobe flash tube from its bracket, pull the two ends of the strobe flash tube directly from its bracket mount.
8. Exchange the tube. Ensure that the trigger wire is not pinched and fits snugly into the product.
9. Reassemble by following steps 1-6 in reverse.
10. Insure that the glass nipple on the strobe tube points directly forward.

Halogen Lamp Replacement:

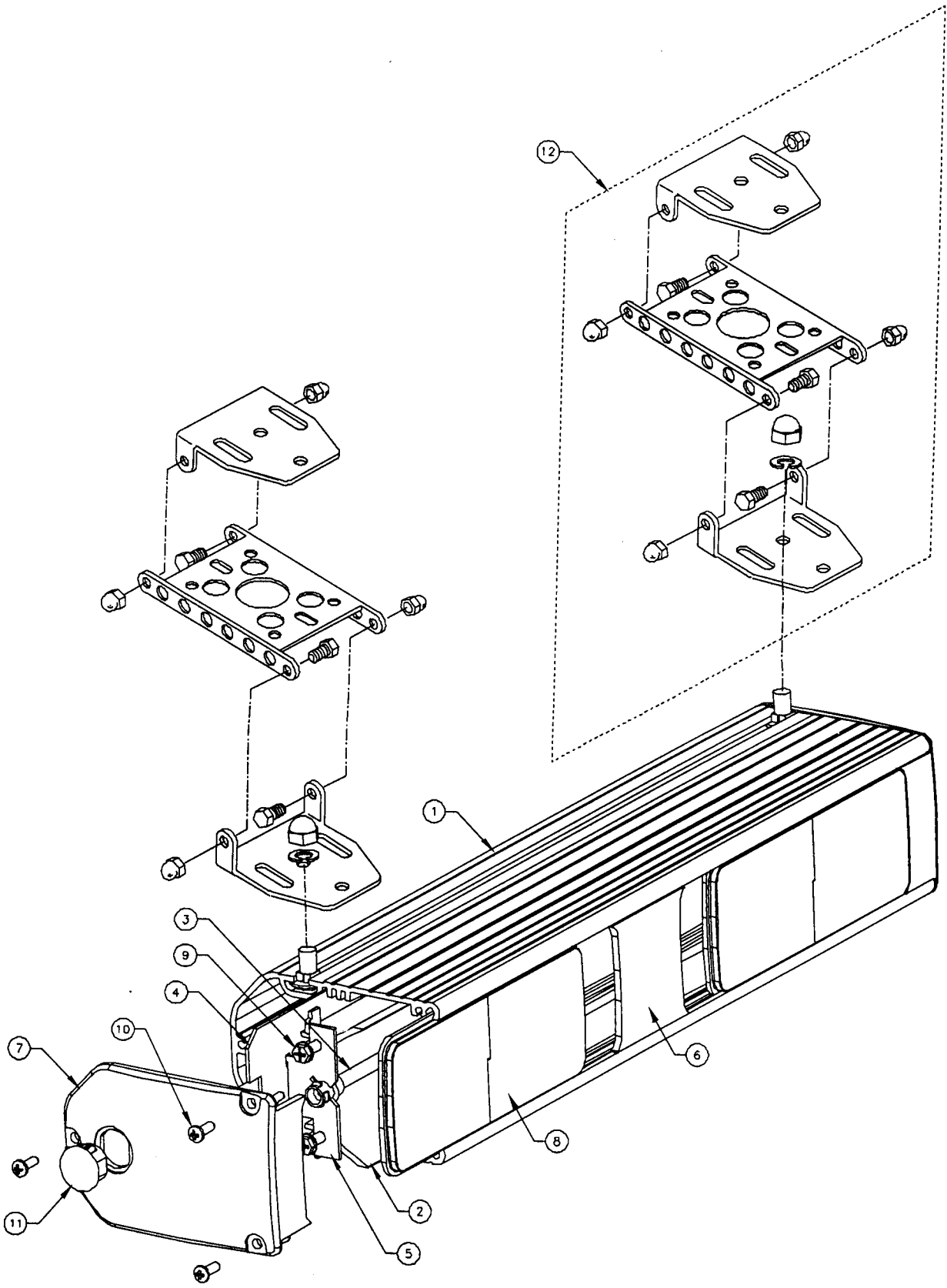
1. Disconnect power at the power source.
2. Remove the lighthouse from its mounting.
3. Remove the three (3) screws from the end cap with the cable exit.
4. Slide the circuit board from the extrusion.
5. Using hand protection, grasp the lamp and gently pull forward to remove from the reflector.
6. When reinstalling, note the orientation of the lamp filament as shown in Figure 5. Incorrect installation could result in premature failure or intermittent operation.
7. Reassemble by following steps 1-6 in reverse.

Optic Filter Replacement:

1. Disconnect power at the power source.
2. Remove the lighthouse from its mounting.
3. Remove the three (3) screws from the end cap opposite the cable exit.
4. Slide the optic filters from the extrusion track.
5. Pre-assemble the lenses before reinstalling the filters into the extrusion.
6. Reassemble by following steps 1-4 in reverse.

Parts List

Ref No.	Description	RVMS Part No.	Qty.	RVMSR Part No.	Qty.	RVMHA Part No.	Qty.	RVMHAR Part No.	Qty.	RVMHS Part No.	Qty.
1	Extrusion	T03877	1	T03877	1	T03877	1	T03877	1	T03877	1
2	Linear Strobe Reflector	S82082	2	S82082	2					S82082	1
3	Halogen Reflector (Not Shown)									T05555	1
	Strobe Tube Assembly	T05891	2	T05891	2					T05891	1
4	27W Halogen Lamp (Not Shown)	S25122	1			T03346	2	T03346	2	T03346	1
5	Power Supply	S70339	2	S70339	2	S81371	1	S81373	1		
	Tube Mntg Bracket									S70339	1
6	Extrusion Spacer	T05877	1	T05877	1						
7	Endcap	T05878	2	T05878	2	T05878	2	T05877	1	T05877	1
8	Lens Half - Red	T02022	2	T02022	2	T02022	2	T05878	2	T05878	2
	- Blue	T02023	2	T02023	2	T02023	2	T02022	2	T02022	2
	- Amber(Opt.)	T02024		T02024		T02024		T02023	2	T02023	2
	- Clear(Opt.)	T02021		T02021		T02021		T02024			
	- Green(Opt.)	T02020		T02020		T02020		T02021			
9	#8 x 3/8 SMS	T00243	8	T00243	8					T00243	4
10	#6 x 1/2 SMS	T02797	6	T02797	6	T02797	6	T02797	6	T02797	6
11	Hole Plug	T05431	1	T05431	1	T05431	1	T05431	1	T05431	1
12	RVM Mounting Kit	S81369	1	S81369	1	S81369	1	S81369	1	S81369	1
Not Shown											
	Wiring Harness - Strobe/Halogen	S93072	1	T05881	1	S93072	1	T05882	1	S93072	1
	Strain Relief Bushing	T05880	1	T05880	1	T05880	1	T05880	1	T05880	1
	Instruction Manual	T05879	1	T05879	1	T05879	1	T05879	1	T05879	1



TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Product does not activate or flashes intermittently	<ul style="list-style-type: none"> a. No power to unit b. Internal fuse blown c. Worn strobe flash tube/ halogen lamp d. Circuit board failure e. Power input wires reversed f. Damaged or shorted cabling 	<ul style="list-style-type: none"> a. Check wiring for loose connection. b. Replace fuse c. Replace flash tube/lamp d. Return unit to factory for service e. Check power connections f. Check cables for damage
Light output appears dim	<ul style="list-style-type: none"> a. Worn strobe flash tube/ halogen lamp b. Dirty lenses c. Misaligned reflector d. Worn strobe capacitor e. Voltage drop in wiring 	<ul style="list-style-type: none"> a. Replace flash tube/lamp b. Clean lenses c. Strobe models - Ensure that the strobe flash tube is seated firmly in reflector assembly. Halogen models - Ensure that the reflector is attached to circuit board d. Return product to factory for service. e. Check power wiring size
Incorrect flash rate	<ul style="list-style-type: none"> a. Flash rate jumpers are incorrectly set 	<ul style="list-style-type: none"> a. Check placement of jumpers on circuit board. Use Wiring Instructions for guidance.

INSTALLATION & OPERATION MANUAL

1992+ CROWN VICTORIA
HEADLINER MOUNTING
INSTRUCTIONS

Code 3, Inc., a subsidiary of
Public Safety Equipment, Inc.

CODE 3[®]
PUBLIC SAFETY EQUIPMENT, INC.

RECOMMENDED RVM MOUNTING INSTRUCTIONS FOR CROWN VICTORIA

Introduction

The RVM Mounting Brackets allow mounting of any 2-head RVM to the headliner of 1992+ Ford Crown Victoria vehicles.

Procedure

This installation guide is to be used in conjunction with the instructions supplied with all RVM 2-head products. Refer to the illustration while using the following instructions.

- 1) Assemble the end brackets to the RVM light head as shown, omitting the center bracket piece. Fasten both brackets to the light head using the supplied acorn nuts.
- 2) On the vehicle, swing the sun visors out of the way of the headliner and remove the sun visor clips above the rear view mirror.

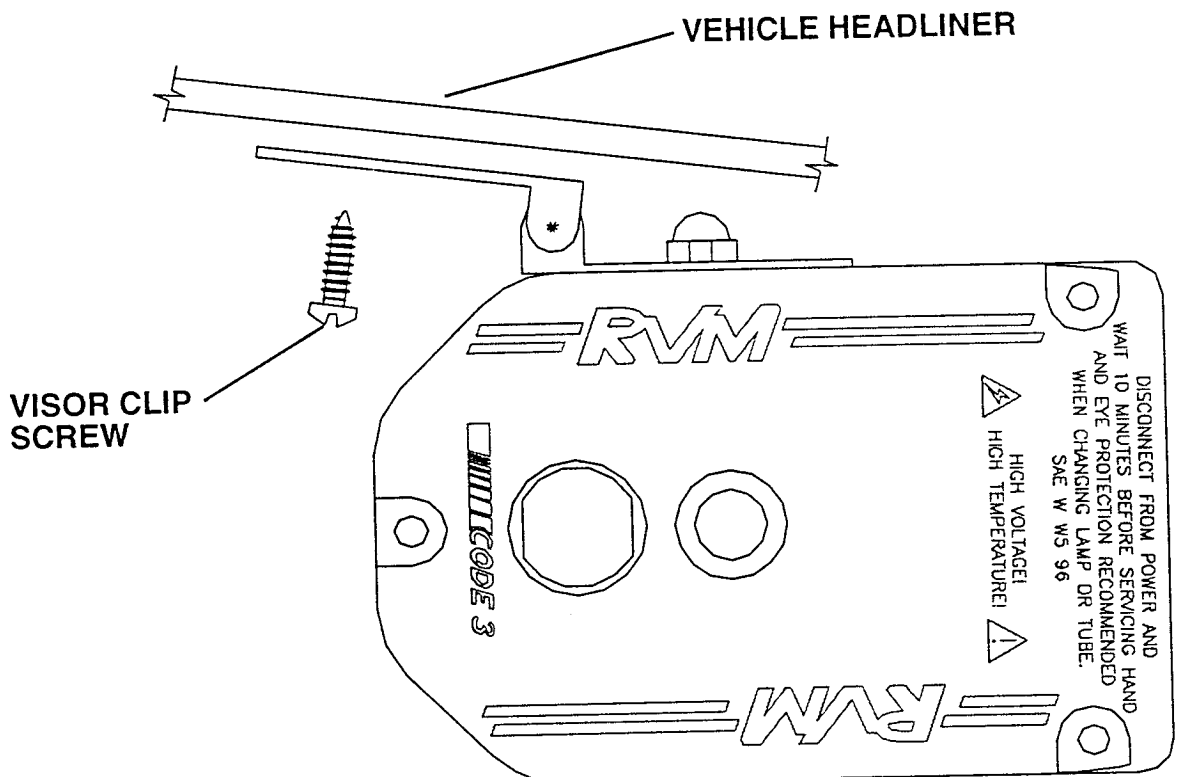


Figure 1

IMPORTANT: Read all instructions and warnings before installing and using.
INSTALLER: This manual must be delivered to the end user of this equipment.

- 3) Position the light head in the desired mounting position and manipulate the brackets so that the mounting holes line up with the holes left by the visor clips. Use a separate bracket for each side of the RVM. See Figure 2.
- 4) Using the original screws removed from the visor clips or a suitable substitute, fasten the RVM light to the holes left by the visor clips. NOTE: Insure that all fasteners are securely tightened.

If you wish to re-install the visor clips, the features on the back of the clips must be removed so that they sit flush against the RVM brackets.

- 5) Follow the Instruction Manual supplied with the RVM light for Wiring and Operating procedures.

NOTE: If it is undesirable to remove the visor clips from the headliner, the unit may be installed by drilling holes and using user-supplied screws to fasten the light head to the headliner.

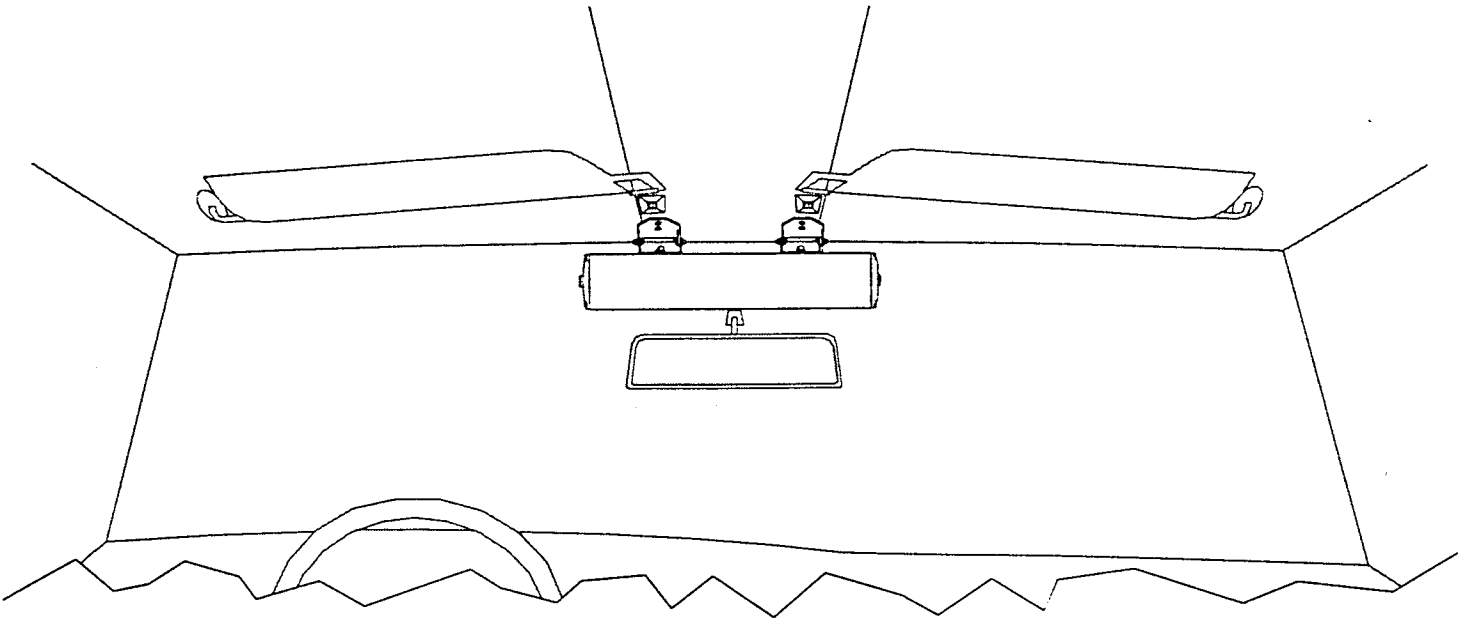


Figure 2