

INSTALLATION AND OPERATING INSTRUCTIONS
FOR
JETSONIC™ LIGHT SOUND SYSTEM
MODELS JS2, JS4 AND JC2

I. UNPACKING.

After unpacking the JetSonic, inspect both the light bar and control center for damage that may have occurred in transit. If any 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. LIGHT BAR INSTALLATION.

The light bar is completely wired at the factory and does not require any additional internal wiring. The two cables connected to the light bar contain all the conductors necessary for control of any and all basic and optional functions. The wiring diagrams, contained in this sheet, illustrate the function of each conductor in the cable.

In order to control the basic light and siren functions, the JSC control center is required. Optional lighting functions require the use of the ASM*2 Auxiliary Switch Module. Other control units are not compatible with the JetSonic light bar.

Before proceeding, insure that the light bar has been installed on the vehicle roof in accordance with the instructions packed with the mounting kit. Route the light bar cables as follows:

A. Route the two conductor cable from the light bar into the vehicle. Connect the black lead to chassis ground. DO NOT connect the red lead at this time.

B. Route the eight conductor cable into the vehicle, under the dash, near the eventual location of the JSC control center.

III. CONTROL CENTER INSTALLATION.

A. Mechanical.

The JSC control center is equipped with a right angle bracket and a selection of mounting hardware and adhesive pads. This makes it possible to mount the control center in a variety of positions using several different methods.

As indicated in figure 1A, the control center can be mounted above or below any relatively flat horizontal surface, such as the vehicle dash, with the use of the right angle bracket. If desired, the right angle bracket can be attached to the mounting surface by means of the adhesive pads in the accessory kit. The right angle bracket can also be bent for mounting on non-horizontal surfaces.

As shown in figure 1B, the unit can also be attached directly to a vertical mounting surface by means of 8-18 x 3/4" thread forming screws, 8-32 x 1-1/4" pan head screws and KEPS nuts, or the adhesive pads in the accessory kit.

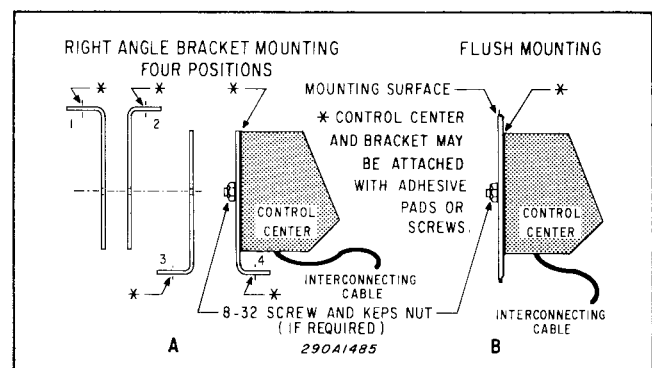


Figure 1. Attachment of Control Center to Right Angle Bracket.

If screws are to be used to mount the control center, use the back of the unit or the right angle bracket (as appropriate) as a template and scribe drill position marks on the mounting surface. Drill holes as appropriate and necessary.

CAUTION

When drilling holes in any part of the vehicle, ensure that both sides of the mounting surface are clear of parts that could be damaged such as brake lines, linkages, wiring, etc.

To mount the control center to the right angle bracket or other surface, proceed as follows:

1. Remove the plastic housing from the control head by removing the two screws at the bottom of the unit.
2. Attach the plastic housing to the mounting surface by passing the screws through the holes in back of the plastic housing.
3. If an ASM*2 Auxiliary Switch Module is not going to be installed, secure the control head to the plastic housing with the two screws removed in step 1; and disregard steps 4, 5 and 6.

NOTE

Perform steps 4, 5 and 6 only if an ASM*2 Auxiliary Control Module has been ordered.

4. Connect the plug on the ASM*2 to the 8-pin connector on the rear of the control head P.C. board. Orient the plug so that the black wire is closest to the center of the P.C. board.
5. Secure the control head to the plastic housing with the two screws removed in step 1.
6. Insert the tabs on the rear of the ASM*2 into the holes at the bottom of the control head. Snap the ball of the ASM*2 into the bottom of the control head.

If the adhesive pads (supplied) are going to be used to mount the control head, the surfaces to which the adhesive pads are applied must be clean and dry for proper adhesion. If necessary, use isopropyl alcohol (rubbing alcohol) and water to clean the mounting surfaces.

Direct sunlight causes the adhesive pads to deteriorate in a relatively short period of time. Therefore, do not use the adhesive pads to mount the control center in a location that receives continuous or intense sunlight.

A microphone jack bracket is also supplied with the control center for optional use. This bracket can be attached to the mounting surface with four 8-18 x 1/2" phillips pan head screws or adhesive pads.

Mount the microphone jack bracket, if desired, using the selected method. To install the microphone jack in the microphone jack bracket, proceed as follows (see figure 2):

1. The microphone jack is part of the interconnecting cable. Completely unscrew the sleeve from the microphone jack.
2. Insert the jack, edge first, into the wide section of the large hole in the microphone jack bracket.

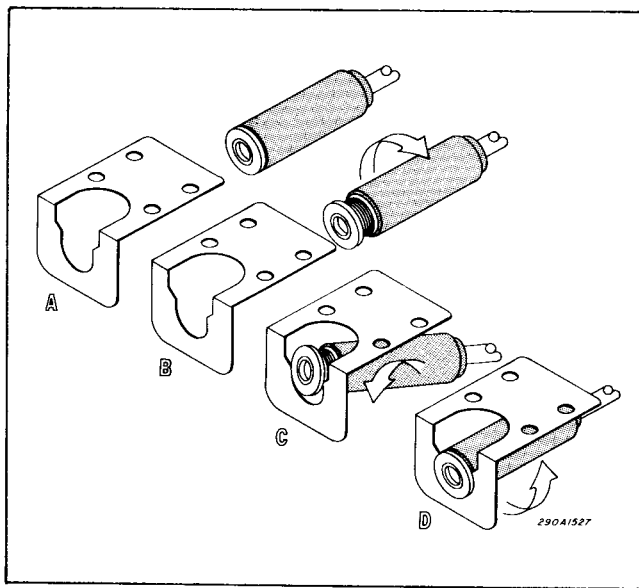


Figure 2. Installation of Microphone Jack in Microphone Jack Bracket.

3. Tilt the jack 90° and slide it until it rests in the rounded section of the jack bracket hole.

4. Replace the sleeve on the jack. Tighten the sleeve securely to ensure that the jack is held tightly in the bracket.

B. Electrical.

The light bar 8-conductor control cable and control center interconnecting cable are equipped with insulated bullet connectors. These connectors greatly simplify the splicing of the two cables and make it unnecessary for the installer to insulate the splices. In addition, the color coded wires in both cables are clearly labeled to indicate their functions. If a given wire in one cable has a counterpart in the other cable, they should be joined. The color of wire, for like functions in both cables, is the same.

The wiring diagrams, contained in this sheet, illustrate the function of each conductor in the light bar and control center cables. Locate the wiring diagram for your particular model and use it as a guide while performing the following electrical connections.

1. Connect the light bar 8-conductor control cable wires to the control center interconnecting cable wires. As previously described, function tags are located on each wire of both cables. Like functions should be connected. Example: MIC HI to MIC HI, A to A, etc.

2. Connect the fused red lead (IGN) of control center accessory cable to the switched side of the ignition switch.

3. Connect the RADIO SPKR (speaker) leads of the accessory cable across the two-way radio speaker. If necessary, splice additional two-conductor "zip" cord (installer supplied) to the RADIO SPKR leads. Insulate the splices.

4. If the horn ring will not be used to control siren operation, fold back and insulate the brown and tan wires in the control center accessory cable and disregard the following steps in this para-

graph. However, if it is desired to operate the siren by means of the horn ring, proceed as follows:

a. Locate the wire that connects the vehicle horn ring switch to the horn or horn relay. Cut this wire.

b. Splice the brown wire in the accessory cable to the horn ring side of the wire that was cut in step a. Insulate the splice with wire nuts.

CAUTION

The horn ring transfer circuit of the siren is capable of switching a maximum of 2 amperes. Some vehicles do not have a horn relay and, consequently, will draw more than 2 amperes when the vehicle horn is activated. Consult your vehicle service manual or a qualified mechanic to determine the current required to activate the horn. If it is less than 2 amperes, perform the procedure in the step c. If it is greater than 2 amperes, perform steps d. through j.

c. Splice the tan wire in the accessory cable to the horn side of the cut wire. Insulate the splice with wire nuts.

d. Obtain a SPST relay of sufficient contact current capacity to activate the vehicle horn. Refer to figure 3 while performing the following steps.

e. Mount the relay in a suitable location.

f. Connect the horn side of the wire cut in step a. to the relay contact terminal.

g. Determine the "sense" of the vehicle's horn ring activation circuit, i.e. does the horn ring require a switched positive voltage or switched ground for activation.

h. Connect the relay wiper terminal to the positive or negative potential determined in step g.

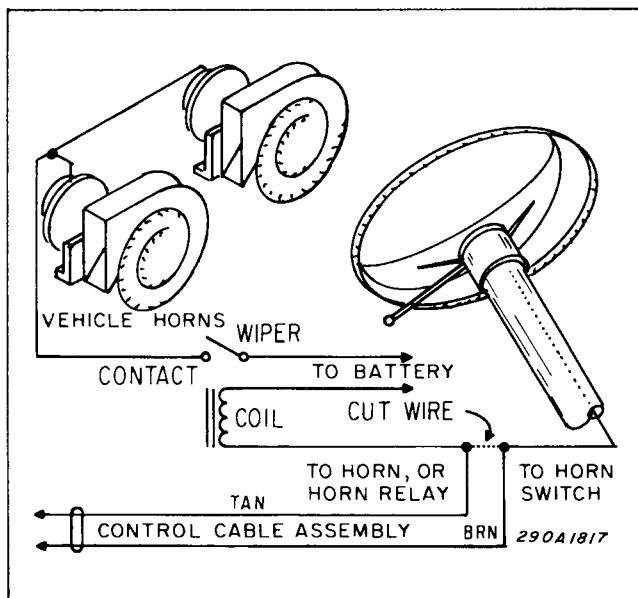


Figure 3. Horn Ring Connections.

- i. Connect the tan wire in the accessory cable to one end of the relay coil.
 - j. Connect the other end of the relay coil to the opposite potential of that connected to the wiper in step h.
5. Connect the light bar red power lead, routed in Section II, to a fuse or circuit breaker rated at 50 amperes. Connect the other side of the fuse/circuit breaker to the +12VDC supply.

IV. ADAPTER MODULE INSTALLATION.

The JetSonic sound system can be used with an optional Federal Model MNCT

Microphone or in common with the microphone included with the two-way radio installed in the vehicle. The Model MNCT Microphone is a transistorized, noise cancelling microphone that has the characteristics necessary to drive the siren audio amplifier.

In common microphone operation, an optional adapter module connects the control center to the two-way radio. The common microphone is electrically connected to the two-way radio in all control functions except PA. When the RAD/PA (Radio/Public Address) switch is set to PA, the microphone is connected to the siren amplifier so that announcements can be made over the siren speaker system.

A listing of the various types of adapter modules can be found in Table 1.

NOTE

If the control center is to be used in PA override operation with the Model MNCT Microphone, disregard the procedures in this paragraph and plug the microphone into the microphone jack. If common microphone operation or radio rebroadcast is to be used, follow the procedure in this paragraph.

If separate instructions are supplied with the adapter module, install the module following those instructions. However, if separate instructions are

Table 1. Accessories (Optional).

Model MNCT	Transistorized Noise Cancelling Microphone
Model FN1001	Federal Model MNC or MR Microphone Adapter Module
Model FN1002	Federal Model VPII Microphone Adapter Module
Model FN1003	Motorola Microphone Adapter Module
Model FN1004	Motorola Micor Microphone Adapter Module
Model FN1005	RCA Microphone Adapter Module
Model FN1006	RCA 500 Microphone Adapter Module
Model FN1007	GE Microphone Adapter Module
Model FN1008	GE Master II Microphone Adapter Module
Model FN1009	GE TPL Microphone Adapter Module
Model FN1010	Federal Duty Patrol Microphone Adapter Module
Model FN1011	Aerotron MPAC6, 7, or 8 Microphone Adapter Module
Model FN1012	RF Communications Model RF-498 Control Head Adapter Module
Model FN1013	Motorola "Converta-Com" Microphone Adapter Module
Model FN1014	Motorola Maxar 80, TMN6134B Microphone Adapter Module
Model FN1015	RCA Veetac, TAC-200, TAC-400, MCA, Series MI-594000 Microphone Adapter Module

not supplied with the module, proceed as follows:

1. Insert the phone plug, on the adapter module, into the microphone jack supplied with the control center accessory cable.
2. Connect the power lead to the switched side of the ignition switch.
3. Insert the two-way radio microphone connector into its matching receptacle on the adapter module.
4. Insert the connector, on the short length of cable attached to the adapter module, into the microphone receptacle on the two-way radio.
5. Set the RAD/PA switch to RAD and turn on the two-way radio.
6. The front panel GAIN control adjusts the audio level for both PA and radio rebroadcast. If the radio rebroadcast level is not sufficiently balanced to the PA level, follow the procedure in steps 7, 8 and 9.
7. Remove the control head from its plastic housing.
8. See figure 4. Using a very small screwdriver, adjust R1 on the circuit board for the desired listening level outside the vehicle.
9. Reassemble the control center.

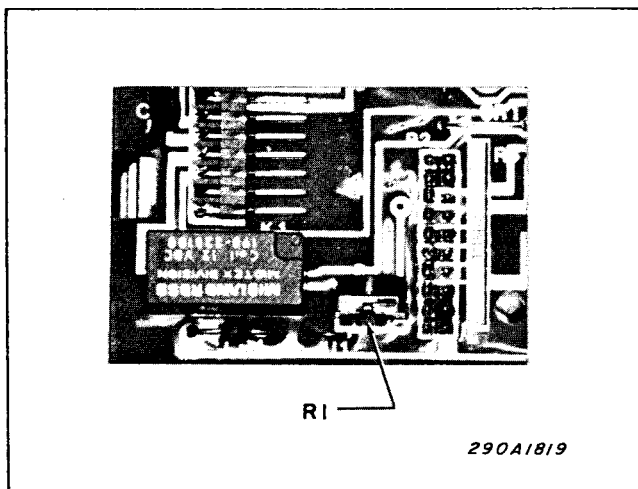


Figure 4. R1 Location.

V. OPERATION.

The control center front panel controls that are used in the operation of the light/sound system are shown in figure 5. As shown in the figure, the operating controls consist of several rocker switches, a rotary switch, and a thumbwheel control. The function of the various switch positions and controls will be described in the following paragraphs. Also refer to Table 2 for a capsulized version of the switch and control functions.

A. GAIN.

The thumbwheel GAIN control controls the output sound level (volume) of radio rebroadcast and PA audio. Rotating the thumbwheel down increases signal volume; rotating the control up, decreases volume. The GAIN control has no effect on the volume of siren signals. Also, the GAIN control has an on/off detent position. When this control is rotated fully upward into the position, the control center and light will be turned off.

B. RAD/PA Switch (Radio/Public Address).

1. RAD.

Setting the switch to the RAD position allows incoming radio messages to be amplified by the siren amplifier and rebroadcast over the siren speaker system. The level of the output sound is determined by the setting of the front panel GAIN control.

2. PA.

In common microphone operation, setting the switch to PA connects the two-way radio microphone to the siren amplifier so that announcements can be made over the siren speaker system.

3. Center-Off.

Both PA and radio rebroadcast functions are disabled in this switch position. The switch must pass through this position when being switched from

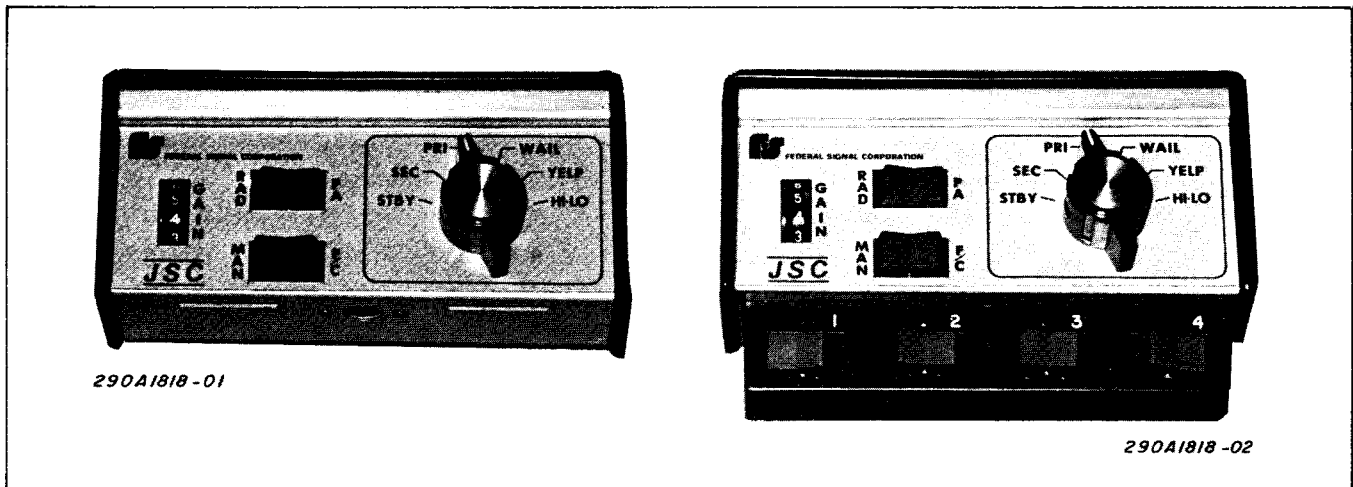


Figure 5. Model JSC Front Panel (right photo includes ASM*2).

RAD to PA or vice-versa. If the system is wired for common microphone operation, the microphone is connected to the two-way radio.

C. MAN/FC Switch (Manual/Front Cut-Off).

If the rotary selector switch is set to STBY, SEC, PRI, WAIL or YELP; moving the MAN/FC rocker switch to the left (MAN) produces a peak-and-hold signal for as long as the switch is depressed. Releasing the switch causes the siren to coast down and cut-off, when the rotary switch is set to SEC or PRI; or cut-off immediately, when the rotary switch is set to STBY. The siren will revert to its original siren sound, when the rotary switch is set to WAIL or YELP. When the rotary selector switch is set to HI-LO, activating the MAN switch produces a yelp signal.

Depressing the right side of the rocker switch will cause the front rotating lamps to turn-off when the rotary selector switch is set to SEC, PRI, WAIL, YELP or HI-LO. The front rotating lamps will remain off until the rotary switch position is changed.

D. Rotary Selector Switch.

Refer to Table 2 for a complete listing of JetSonic functions.

1. STBY (Standby).

In STBY, the siren produces no sound unless the MAN position of the

rocker switch initiates the "peak-and-hold" signal (previously described). The signal ceases immediately upon release of the MAN rocker switch.

2. SEC (Secondary).

Setting the rotary switch to SEC activates the secondary warning light or warning light circuit.

3. PRI (Primary).

The PRI position energizes the primary warning light or rotating light circuit.

4. WAIL.

The position of the rotary switch causes the siren to produce a continuous Wailing sound. Rotating lights will remain on and the directional strobe, if installed, will be activated.

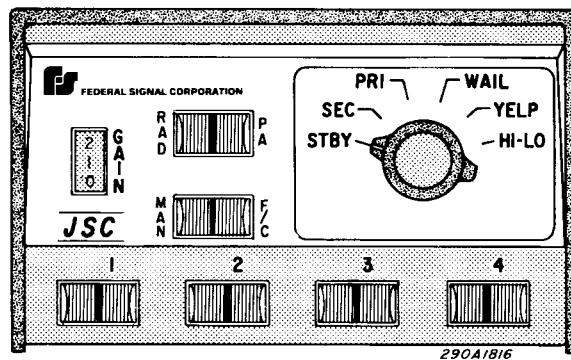
5. YELP.

The YELP position enables the siren to produce a continuous Yelping signal. Rotating lights will remain on and the directional strobe, if installed, will be activated.

6. HI-LO.

Setting the rotary switch to HI-LO causes the siren to produce a signal that alternates between two tones. Rotating lights will remain on and the directional strobe, if installed, will be activated.

Table 2. Control Center Switch and Control Functions.



SWITCH	MODEL JS2	MODEL JS4	MODEL JC2
1	Activates left alley lamp-if installed.	Activates left alley lamp-if installed.	Activates left alley lamp-if installed.
2 (left)	Activates directional strobe-if installed.	Activates directional strobe-if installed.	Activates secondary functions: steady burning red and flashing amber.
2(right)	Activates takedown-if installed.	Activates takedown-if installed.	Activates strobe or takedown-if installed.
3	Activates auxiliary sound-if installed.	Activates auxiliary sound-if installed.	Activates auxiliary sound-if installed.
4	Activates right alley lamp-if installed.	Activates right alley lamp-if installed.	Activates right alley lamp-if installed.
RAD	Turns-on radio rebroadcast circuit. Kills all other siren output.	Turns on radio rebroadcast circuit. Kills all other siren output.	Turns-on radio rebroadcast circuit. Kills all other siren output.
PA	Turns-on PA circuitry. PA is not amplified until mike button is depressed. If common microphone is installed, PA switch connects mike to PA.	Turns-on PA circuitry. PA is not amplified until mike button is depressed. If common microphone is installed, PA switch connects mike to PA.	Turns-on PA circuitry. PA is not amplified until mike button is depressed. If common microphone is installed, PA switch connects mike to PA.
MAN	<p>ROTARY SWITCH POS. SIREN SOUND</p> <p>STBY Peak and hold. No coast. SEC Peak and hold. Coast. PRI Peak and hold. Coast. WAIL Peak and hold. Coast. YELP Peak and hold. Coast. HI-LO Yelp.</p>	<p>ROTARY SWITCH POS. SIREN SOUND</p> <p>STBY Peak and hold. No coast. SEC Peak and hold. Coast. PRI Peak and hold. Coast. WAIL Peak and hold. Coast. YELP Peak and hold. Coast. HI-LO Yelp.</p>	<p>ROTARY SWITCH POS. SIREN SOUND</p> <p>STBY Peak and hold. No coast. SEC Peak and hold. Coast. PRI Peak and hold. Coast. WAIL Peak and hold. Coast. YELP Peak and hold. Coast. HI-LO Yelp.</p>
F/C	Momentary switch that turns-off front rotating lamps. Lamps remain off until rotary switch is turned.	Momentary switch that turns-off front rotary lamps. Lamps remain off until rotary switch is turned.	Momentary switch that turns-off front rotary lamps. Lamps remain off until rotary switch is turned.
Horn Ring Input	<p>ROTARY SWITCH POS. SIREN SOUND</p> <p>STBY No effect. SEC Goes to Wail. PRI Goes to Wail. WAIL Changes to Yelp. YELP Changes to Hi-Lo. HI-LO Changes to Yelp.</p>	<p>ROTARY SWITCH POS. SIREN SOUND</p> <p>STBY No effect. SEC Goes to Wail. PRI Goes to Wail. WAIL Changes to Yelp. YELP Changes to Hi-Lo. HI-LO Changes to Yelp.</p>	<p>ROTARY SWITCH POS. SIREN SOUND</p> <p>STBY No effect. SEC Goes to Wail. PRI Goes to Wail. WAIL Changes to Yelp. YELP Changes to Hi-Lo. HI-LO Changes to Yelp.</p>
STBY	Quiescent state. Power is on. but nothing activated.	Quiescent state. Power is on, but nothing activated.	Quiescent state. Power is on, but nothing activated.
SEC	Rotating lights stop in home position and flash.	Rotating lights stop in home position and flash. Unit has no rear lamps.	Steady burning red comes on-flashing amber flashes.
PRI	Rotating lights rotate.	Rotating lights rotate.	Rotating lights rotate. Steady burning red and flashing amber come on.
WAIL	Siren produces Wail sound and rotating lights rotate. Strobe activated-if installed.	Siren produces Wail sound and rotating lights rotate. Strobe activated-if installed.	Siren produces Wail sound and rotating lights rotate. Steady burning red and flashing amber remain on.
YELP	Siren produces Yelp sound and rotating lights rotate. Strobe activated-if installed.	Siren produces Yelp sound and rotating lights rotate. Strobe activated-if installed.	Siren produces Yelp sound and rotating lights rotate. Steady burning red and flashing amber remain on.
HI-LO	Siren produces Hi-Lo sound and rotating lights rotate. Strobe activated-if installed.	Siren produces Hi-Lo sound and rotating lights rotate. Strobe activated-if installed.	Siren produces Hi-Lo sound and rotating lights rotate. Steady burning red and flashing amber remain on.

E. TAP II Instant Yelp.

If the rotary selector switch is set to WAIL or HI-LO, the vehicle's horn ring or an auxiliary switch (such as a foot switch) will operate the TAP II Instant Yelp siren signal. To operate in this mode, momentarily depress the auxiliary switch or horn ring and the siren sound will be changed to Yelp. A second momentary "tap" will change the operation of the siren back to either the Wail or Hi-Lo mode, whichever is appropriate.

If the rotary selector switch is set to SEC, depressing the horn ring will initiate TAP II Wail. If set to YELP, activating the horn ring will initiate TAP II Hi-Lo.

F. ASM*2 (Optional).

NOTE

The following description is for the standard model. Refer to Table 2 for special model light bars, such as JC2.

1. Switch 1.

Switch 1 activates the left alley lamp, if installed.

2. Switch 2.

Moving Switch 2 to the left activates the directional strobe, if installed. Moving the switch to the right activates the forward facing approach lamps, if installed.

3. Switch 3.

Moving Switch 3 either left or right activates an auxiliary sound, such as air horn, if installed. Switch 3 is a momentary switch and will return to center when released.

4. Switch 4.

Switch 4 activates the right alley lamp, if installed.

NOTE

Moving any of the ASM*2 switches from their "off" position causes the red L.E.D.'s above them to light.

VI. BASIC MAINTENANCE.

WARNING

High voltages are present inside the Light Assembly when the strobe light option is installed. Wait at least ten (10) minutes, after shutting off power, before servicing this unit.

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 Federal Dome and Chrome Cleaner (Federal Part No. 8287B349A). **CAUTION:** The use of other materials such as strong detergents, solvents, petroleum products, etc. can cause crazing (cracking) of the plastic domes.

B. Lamp Replacement.

CAUTION

Always allow lamps to cool before removing.

1. Replace 50-watt halogen lamps with Federal Part Number 8107A119 and 35-watt with 8548A028.

2. Replace strobe lamps with Federal part number 8107A127.

C. Lubrication.

At least once a year, lubricate the lamp shaft bearings with a drop of SAE10 oil and apply a film of light grease to the worm.

D. Cleaning Reflectors and Mirrors.

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.

E. Service Manual.

A complete JetSonic Light/Sound System Service Manual is available and can be obtained by writing to:

Service Department
Federal Signal Corporation
2645 Federal Signal Drive
Park Forest South, IL 60466

VII. ADJUSTMENTS.

A. Alley Lights.

The alley lights may be adjusted up to 7° toward the front or rear. To adjust, loosen the center screw and rotate the reflector and socket assembly to the required angle. Tighten screw after completing adjustment.

B. Flashing Lights.

In the flashing light mode, each reflector assembly should be aimed at the center of its end mirror. This adjustment has been made at the factory and will ordinarily require no additional adjustment. However, should an adjustment be necessary, the reflector assembly may be re-aimed by performing the following procedure:

1. Operate unit in the flashing mode, to set the reflector assemblies in the initial aiming position.

2. Turn off power. Visually check each reflector, in relation to its

end mirror, to determine if adjustment is necessary.

3. If the adjustment required is 10° or less, proceed as follows:

a. Loosen the two screws which secure the reflector assembly to the gear (see figure 6).

b. Rotate the reflector assembly to the proper position and re-tighten the screws.

4. If the adjustment required is more than 10°, proceed as follows:

a. Remove the retaining ring (see figure 6). Lift the gear and reflector assembly to disengage the gear teeth.

b. Rotate the assembly to the correct aiming position. Engage the gear teeth and reinstall the retaining ring.

c. To complete the adjustment, repeat step 3.

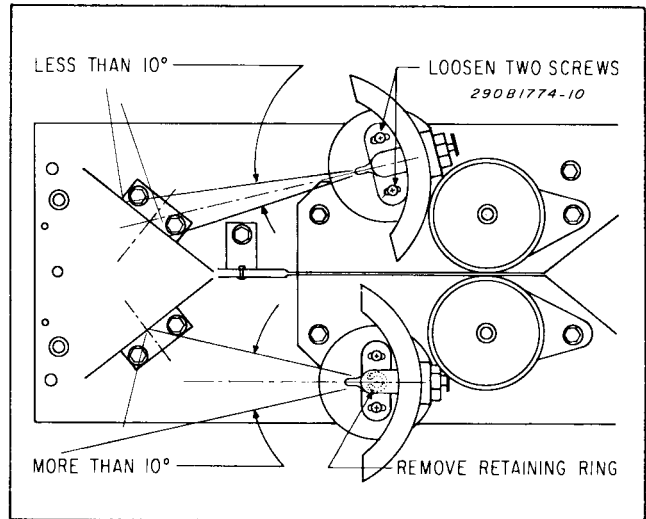


Figure 6.

