

GROUP 11 ACCESSORIES

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SECTION 11-A RADIO AND ANTENNA

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11-1 BUICK RADIO DESCRIPTION AND OPERATING INSTRUCTIONS

a. Description

Two radios are available as optional equipment -- the Sonomatic and the Wonderbar.

The Buick Sonomatic and Wonderbar radio installation consists of a receiver with separate speaker mounted at the right of the instrument panel. Both radios use the sectional antenna mounted on the left front fender, and suppression parts installed at various locations to eliminate interference. The Wonderbar radio installation also includes a foot control switch mounted on the toe panel to left of the brake pedal.

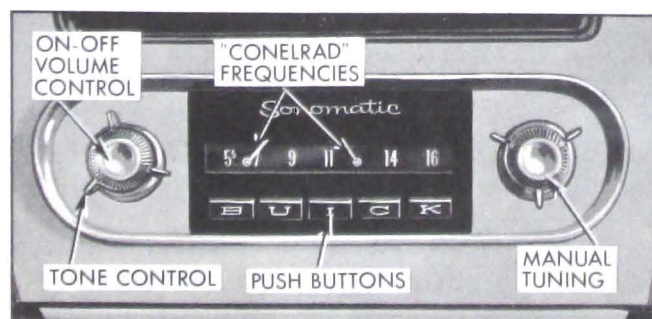


Figure 11-1—Sonomatic Radio Receiver Controls

The Sonomatic radio is an all-transistor radio which plays immediately when turned on.

The Wonderbar and Sonomatic have five push buttons for push-tuning of five pre-selected stations. In addition to the push buttons, a control knob permits manual selection of other stations.

The Wonderbar radio receiver also contains an automatic signal-seeking tuner by which the operator can change stations by merely depressing the selector bar on the receiver, or the foot control switch on the toe panel. The seeking operator is a uni-directional sweep of the broadcast band from low to high frequency with instantaneous return. The tuning mechanism is driven by a spring loaded mechanical motor which is stopped on station by a triggering circuit actuated by voltage developed from an incoming signal. The number of stations on which the tuner will stop can be regulated by use of the sensitivity control on the receiver.

A manual antenna which may be extended and retracted by hand is standard equipment.

An electrically operated antenna is available as optional equipment. In the electric antenna a motor drives a nylon tape attached to the upper section of the antenna.

A 3-position switch on the accessory panel above the radio controls the motor, which will

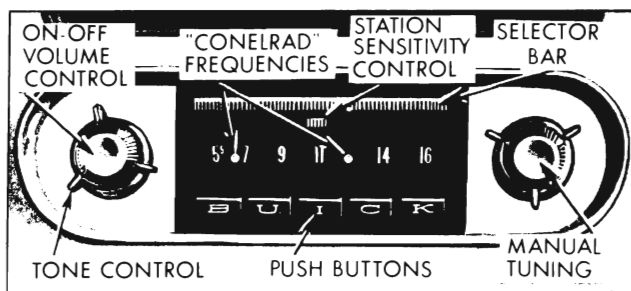


Figure 11-2—Wonder Bar Radio Receiver Controls

run in either direction. Pushing the switch to the left lowers the antenna and pushing to the right raises the antenna. When the switch is released it returns to center "Off" position.

CAUTION: Never attempt to force an electric antenna up or down by hand. This will cause permanent damage to the operating mechanism.

b. Switch, Volume, and Tone Control Operation

Clockwise rotation of the switch knob to the left of dial, turns the radio on, and further rotation increases the volume.

High fidelity (true tone) is provided when the tone control knob, behind the switch knob, is at the mid position of the tone control range. A detent in the circuit provides a method of quick location of this position. Rotation clockwise of the tone control knob will diminish bass speaker response. Rotation counterclockwise will diminish treble speaker response.

The rear seat speaker may be optionally installed at the factory or by the dealer. When rear seat speaker is installed, a separate speaker control is mounted in the accessory panel above radio.

The right position of the control turns on the rear speaker only, the midway position blends front and rear speakers together and the left position turns on the front speaker only. After the volume has been set by the radio volume control, it will remain constant regardless of the position of the rear seat speaker control.

c. Push Button Tuning Operation—Wonderbar or Sonomatic

To tune in the station for which the push button is set, simply push the button in as far

as possible. The button will move easily at start, then a slightly harder push is required to complete the travel. At end of button travel the tuner will rest at the station for which the button has previously been set as described in paragraph 11-5(b).

d. Selective Tuning Operation—Wonderbar Radio

NOTE: To insure adequate sensitivity for selective tuning of the Wonderbar radio it is best to have antenna extended at least half way.

With the radio turned on, selective tuning of available stations is accomplished by depressing either the selector bar above the dial (Figure 11-2), or the foot control switch on toe panel to left of the brake pedal.

When the bar or switch is fully depressed and released the tuner will automatically move to the right and stop, accurately tuned, when it reaches the next station having adequate strength to stop it. The tuner will stop at a station having adequate strength even though the volume control is not turned up high enough for the station to be audible.

When the tuner reaches the right end of the dial it flies back to the left end and again starts moving to the right until it reaches a station having sufficient strength to stop it. By holding the selector bar or foot control switch down, unwanted stations or areas of the dial can be quickly passed over.

The number of stations on which the tuner will stop in selective tuning is regulated by manual setting of the sensitivity control. This is a step control having three positions. This control is in the circuit only while the tuner is seeking and does not affect the "on station" sensitivity of the receiver. See Figure 11-2.

Moving the sensitivity control lever to the right position increases the number of stations that can be received. Moving the control lever to the left decreases the number of stations by eliminating those having weak signal strength in the area where the car is located. In the full left position of the control, the tuner will usually stop only on strong local stations.

If the Wonderbar tuner is operated in certain shielded localities or around buildings where an adequate signal is not available, the tuner may automatically search the band from one end to the other without stopping.

The sensitivity control should be moved to the full right position and the antenna fully extended when this condition is encountered or manual tuning should be used.

e. Manual Tuning Operation

The manual tuning knob is to the right of the dial.

On the Sonomatic radio, this knob may be used to tune in stations other than those for which the push buttons are set; it is also used when tuning to set the buttons for selected stations. On the Wonderbar radio, the tuning knob may also be used to tune in stations that are too weak to stop the electronic tuning mechanism.

When tuning manually, and particularly when setting up a station on one of the push buttons, careful adjustment of the tuning knob is essential to good radio reception.

On push button selection, if the program sounds screechy or distorted, it is probably caused by improper tuning and can be corrected by adjusting the tuning knob slightly. Since the low notes are apparently more affected by improper tuning than the high ones, it is a good plan to tune the set to a point where the low notes are heard best and high notes are clear but not screechy. This point may be most readily found by listening to the background noise and tuning for the lowest volume and pitch of this noise. Turning the control knob back and forth until the station is almost lost on either side will enable the operator to hear the difference in reception and select the intermediate position giving best results.

11-2 RADIO TROUBLE DIAGNOSIS— ON CAR

The trouble diagnosis information in this paragraph is of a non-technical nature. It is intended as an aid in locating minor faults which can be corrected without a specialized knowledge of radio and without special radio test equipment. The following information applies to the all-transistor Sonomatic as well as the Wonderbar radio. If the suggestions given here do not affect a correction, further testing should be done only by a trained radio technician having proper test equipment.

a. Radio is Inoperative or "Dead"

1. Turn radio on. The dial should light and a "thump" should be heard from the speaker.

(a) If thump is heard, go to check 2 for antenna.

(b) If no thump, check fuse.

(1) If fuse is bad, replace and try radio again. Race engine, if the fuse blows again, remove the radio and speaker for repair by a trained electronic technician.

(2) If fuse is OK, check to see that the speaker to receiver interconnecting cable is connected securely. If there is still no thump as the radio is turned on, remove receiver and speaker for repair.

(2) Check the antenna by substituting with one you hold out the car window. If radio is still dead with substitute antenna, remove the receiver and speaker for repair.

b. Radio is "Weak"

1. Check to see if antenna trimmer is peaked. With the radio tuned to a weak station, grasp antenna rod.

(a) If sound decreases considerably, the antenna trimmer is peaked.

(b) If sound remains the same or increases, peak the antenna trimmer.

(1) Raise antenna to maximum height.

(2) Tune radio to weak station between 600 and 1000 on the dial and turn volume control to maximum.

(3) Insert a screwdriver in antenna trimmer and turn for maximum volume.

(c) If the antenna trimmer does not have a definite peak, check for defective antenna by substitution as in step a 2 above.

2. Be sure the speaker connection is plugged in securely.

3. If the radio is still weak, remove the receiver and speaker assembly for repair.

c. Radio is "Noisy"

1. Complaint is "noisy" all the time:

(a) Check for noisy antenna by striking rod with hand. If antenna is noisy, replace.

(b) If antenna is OK, remove receiver and speaker for repair.

2. Noisy when jarred:

(a) Check antenna as in step c(1).

(b) Check speaker connections. If OK, remove receiver and speaker for repair.

3. Noisy with engine running:

(a) Check all noise suppression equipment.

(1) Substitute capacitors on generator, regulator, and coil with known good ones.

(2) Check to see that spark plug wires are the original resistance type (approximately 4000 ohms per foot).

(b) Check to see that antenna is mounted securely, grounding the antenna base to the fender. (Antenna lead-in wire is shielded and the shield should have good ground connection at the receiver and antenna base.)

(c) Check for other car wiring passing too close to transistor cooling fins.

(d) If engine noise is still present, take radio to a trained technician will full story on the complaint.

4. Noisy when car equipment is operated such as directional lights, brake lights, power seat or power windows.

(a) Check for defective antenna lead in wire or loose antenna mounting as in step 3(b) above.

5. Noisy only when car is moving on dry days.

(a) Wheel and tire static will occur only during warm, dry weather. To check to see if noise is wheel static or tire static, drive car down highway until noise is noticed, touch the brake; if noise disappears, it's wheel static; if noise persists, it's tire static.

(1) Wheel static is eliminated by installation of static collectors in the front wheels. It is important to make sure the button on the end of the spiral collector rides evenly on the spindle. Grease and dirt can cause poor contact between static collector and the cap which could cause wheel static even with the collectors installed.

(2) Tire static is eliminated by injecting graphite "tire static" powder in all five tires. Either a special gun or a plastic catsup bottle can be used to insert powder.

d. Electric Antenna Operates Improperly

1. If operation of antenna to full up or full down position is slower than 12 seconds check for dirty, corroded or bent antenna sections. Antenna sections must be kept clean and straight. The sections may occasionally be oiled sparingly on the surface with light machine oil.

2. If antenna sections are clean and straight and operation is still faulty, check all wiring including ground connections to cowl; also check for defective control switch.

3. If cause of faulty operation has not been found, remove antenna and check for defective tube and nylon assembly or defective motor.

e. Electric Antenna Does Not Operate

1. If antenna motor does not operate, check fuse, all wiring including ground connection. Also check for defective control switch.

2. If motor still does not operate, or new fuse blows out, either the motor or its leads are faulty and must be repaired or replaced.

3. When motor operates but antenna will not raise or lower (as evidenced by clicking of antenna clutch) check for dirty, corroded or bent antenna sections.

4. If antenna still fails to operate it will be necessary to remove antenna from car, disassemble for inspection and service.

11-3 RADIO REMOVAL AND INSTALLATION

a. Removal of Radio

1. Remove control knobs, felt washers, inner knobs and hex nuts from radio. See Figure 11-3.

2. Remove 4 screws that retain console trim and remove trim.

3. Open ash tray door and remove the two bolts holding radio to instrument panel.

4. Pull radio out and disconnect speaker, antenna, battery and foot switch wires.

5. Install radio by reversing removal procedure.

b. Installation of Interference Suppression Parts

The capacitor leads are connected to the armature ("A") terminal of generator (.3 MF) and to the "BAT" terminal of regulator (.5 MF). Capacitors must never be connected to the field ("F") terminal of either unit as this

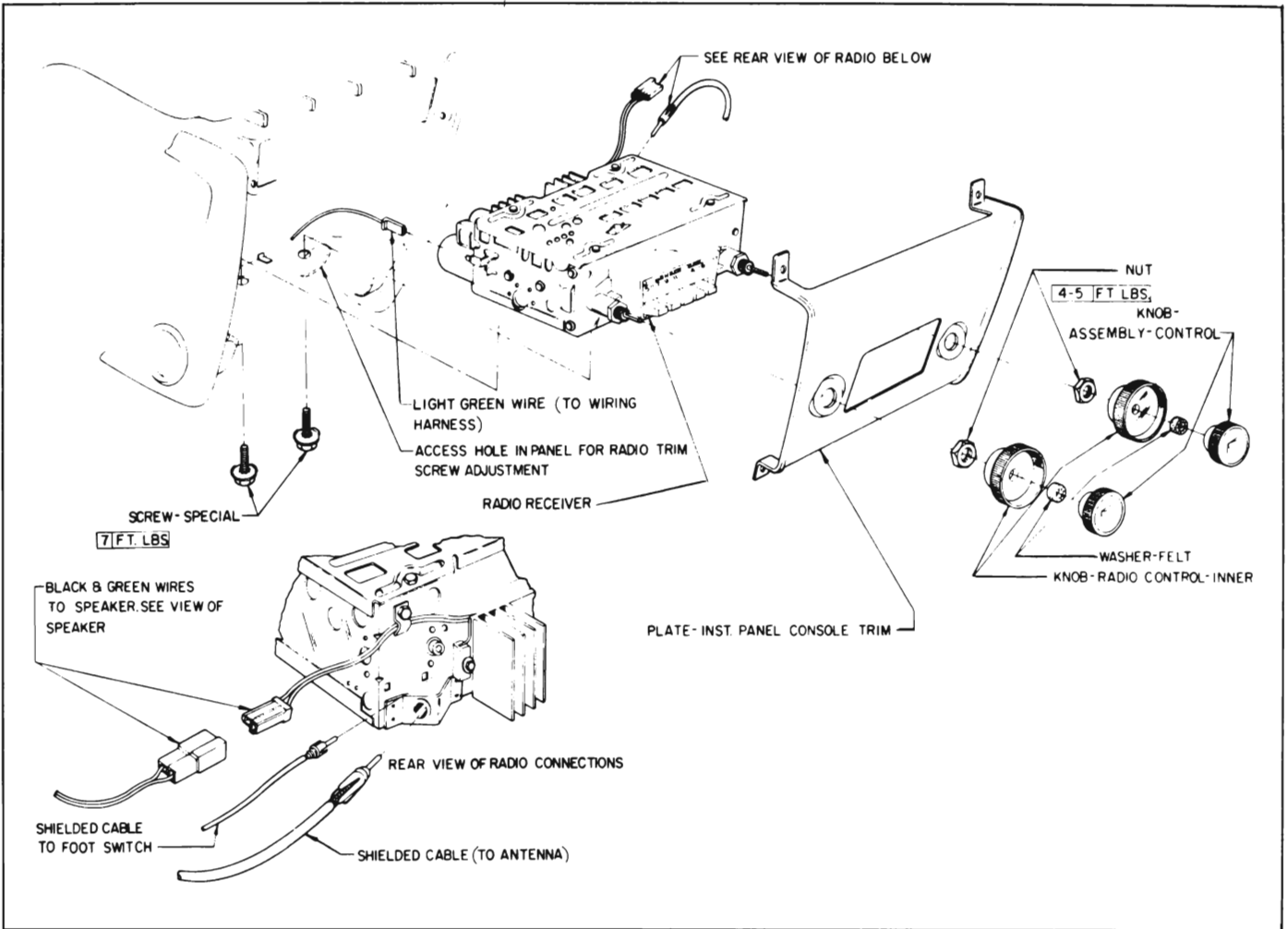


Figure 11-3—Radio Receiver Installation

will cause bad pitting of the voltage regulator points, thus preventing it from operating properly.

The built-in resistance of each spark plug wire approximates 4,000 ohms per foot.

The coil capacitor (.3 MF) is mounted on the coil bracket and the lead is connected to the battery positive (+) terminal of coil. If capacitor is connected to the distributor negative (-) terminal excessive pitting of distributor contact points will result.

A static collector is installed in each front wheel hub cup. For good results the cup and the center of steering knuckle spindle must be clean and free from grease. The center of static collector is made of self-lubricating material.

In addition to the items mentioned above, bond straps are connected between the cowl and the rear corners of the engine.

11-4 REMOVAL, INSTALLATION, DISASSEMBLY AND ASSEMBLY OF ANTENNAS

a. Removal of Antenna

1. Remove antenna nut, adapter, and pad from top of fender.
2. Disconnect lead-in from antenna. On electric antenna, disconnect motor wire connector.
3. Remove screw that retains antenna to lower bracket and loosen bracket to fender skirt screw.
4. Remove antenna.

b. Installation of Antenna

IMPORTANT: The Buick antennas are matched with the receiver within the range of the trimmer adjustment. Other antennas may not match the receiver within the range of the trimmer adjustment.

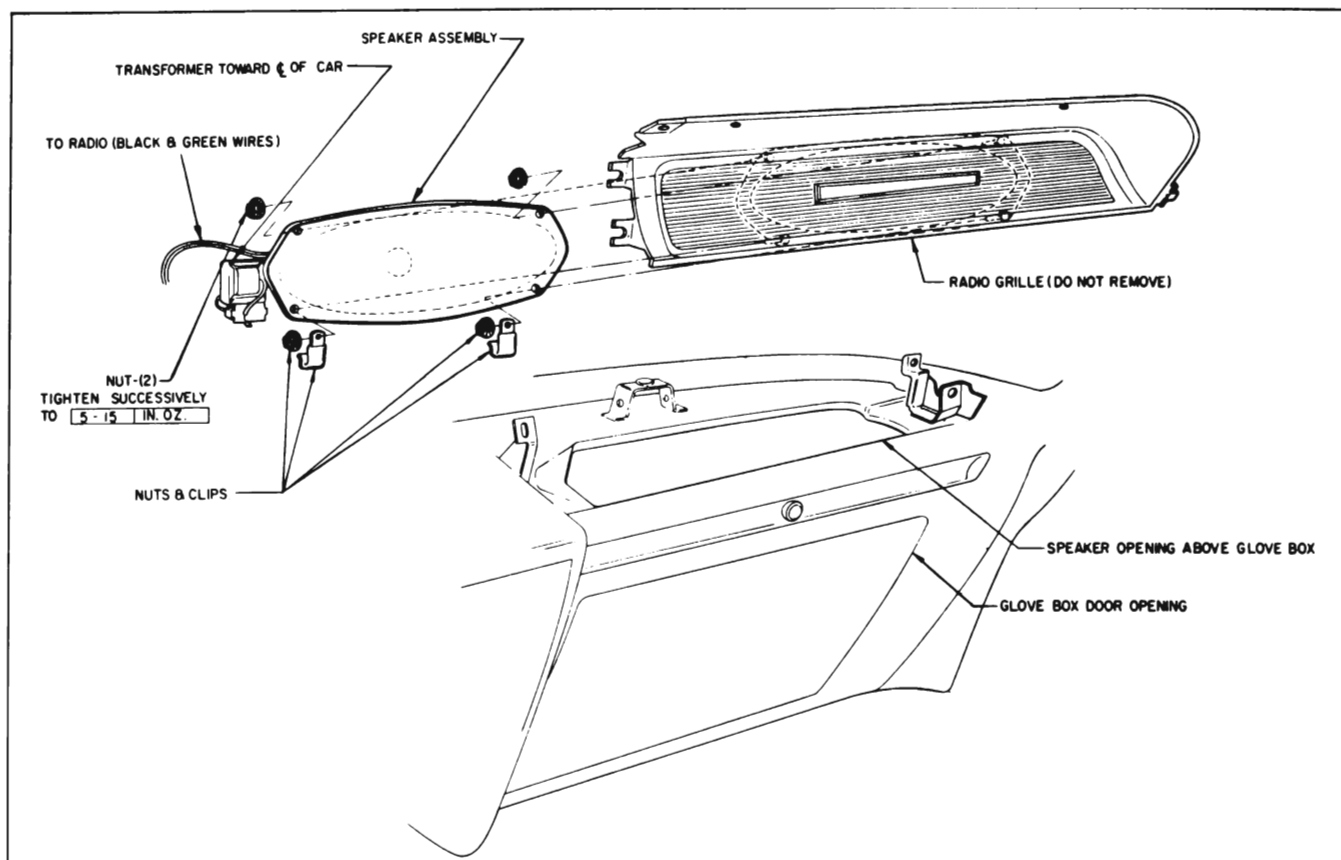


Figure 11-4—Radio Speaker Installation

1. Install antenna by reversing removal procedure.

2. On manual and electric antennas position antenna toward center and rear of car 1 to 2 degrees. Lead-in connection should be pointing forward and toward engine.

c. Disassembly of Electric Antenna (unit within warranty)

NOTE: Before work is started on the antenna, determine if the antenna is in the warranty period which is 12,000 miles or one year, whichever occurs first. If the antenna is in warranty do not attempt service on components of the Drive Assembly as it will void the warranty arrangement agreed upon by Buick and supplier. The drive assembly components must be serviced as a complete unit.

Use the following procedure to replace the drive assembly and to disassemble mast assembly body and upper insulator assembly, or support tube.

CAUTION: Before replacing any of the four major sub-assemblies listed above, the 'lead-

in wire" should be unsoldered from the .400" tube section of the mast to prevent this wire from being broken at the "pin and insulator assembly." To unsolder the 'lead-in wire' from the tube section proceed as follows:

1. Remove the 3 screws holding the body and upper insulator assembly to support tube.

2. While applying a back and forth rotary motion, carefully pull the body upper insulator assembly out of the support tube and continue to slide it over the .400" tube section of the mast until the solder joint is accessible.

3. Unsolder hook-up wire at the .400" tube section.

4. Remove the body and upper insulator assembly from the mast assembly.

Proceed as follows if replacement of drive assembly support tube or mast assembly is indicated.

5. Remove the 3 screws which hold the support tube to drive assembly.

6. Holding the drive assembly in one hand and support tube in other hand, pull with a

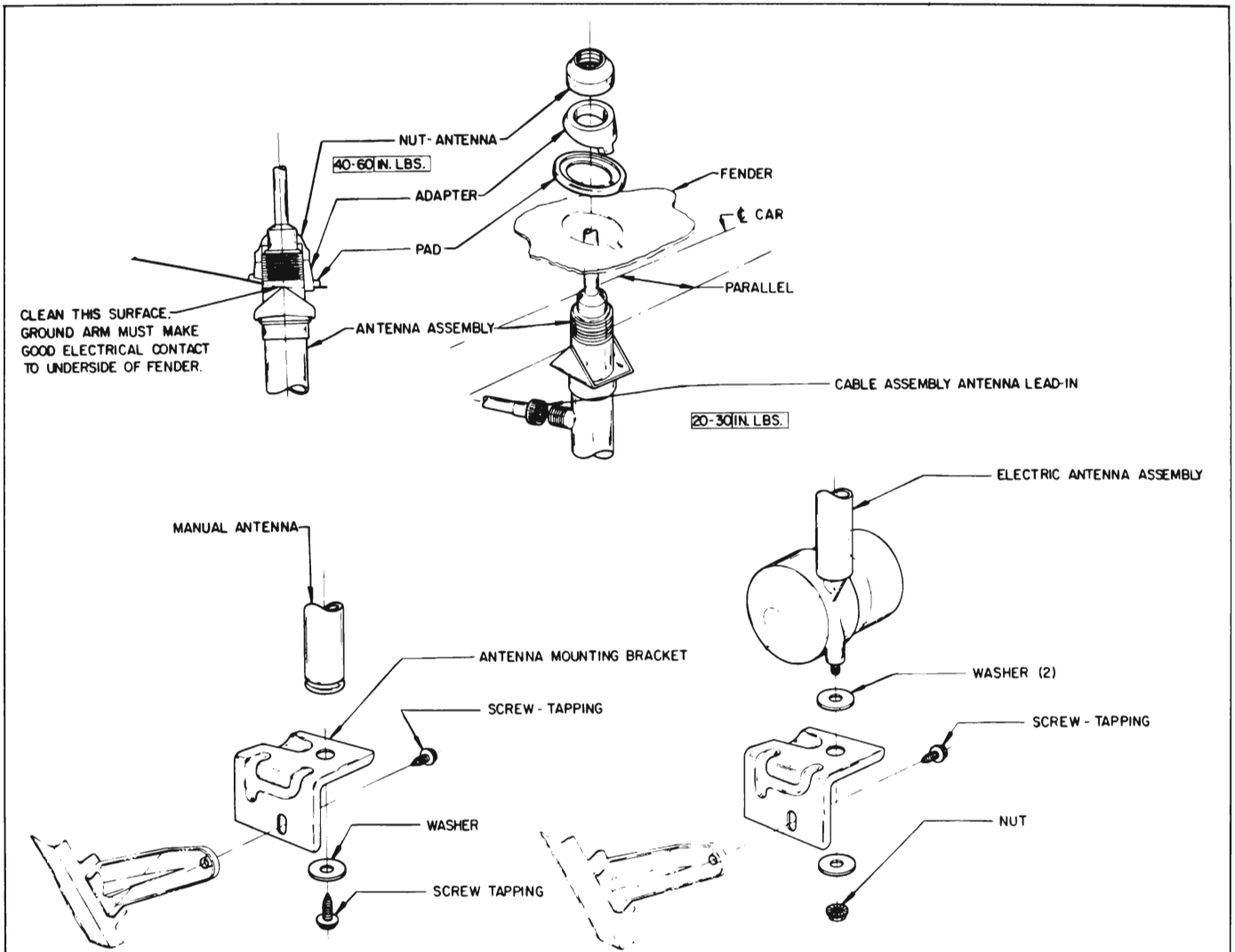


Figure 11-5—Antenna Mounting

rotary motion until the support tube is removed from the antenna.

7. Holding the drive assembly in one hand and the mast assembly in other hand, pull with a rocking motion, until the insulator bushing and .400" tube section are freed from the tubular fitting.

8. Apply 12 volts D.C. to the orange (up) lead wire until the entire length of nylon reed has been expelled from drive. Pull on the mast to keep the nylon taut.

NOTE: If the drive assembly is inoperative, it will be necessary to manually remove the nylon reed from the drive assembly. DO NOT DISASSEMBLE DRIVE ASSEMBLY FOR ANY PURPOSE WHILE THE ANTENNA IS COVERED BY THE MANUFACTURER'S WARRANTY.

To remove the nylon reed from disabled drive assembly, place the assembly in a vice

with the normal plane of the nylon parallel with the floor. Using both hands, pull on the .300 dia. mast tube until the nylon is removed completely from the drive assembly.

9. Remove bottom insulator and water seal washer from tubular fitting using wire hook or long nose pliers.

IF THE ANTENNA IS IN WARRANTY DO NOT DISASSEMBLE BEYOND THIS POINT AS IT WILL VOID THE WARRANTY AGREEMENT.

d. Reassembly of Mast, Support and Body and Upper Insulator Assemblies

1. Thread nylon reed into drive assembly making sure that bottom insulator and water seal washer are in place. (Small diameter end of insulator down.) Apply 12 volts D.C. to black power lead to assist feeding operation. Keep nylon reed straight to avoid kinking.

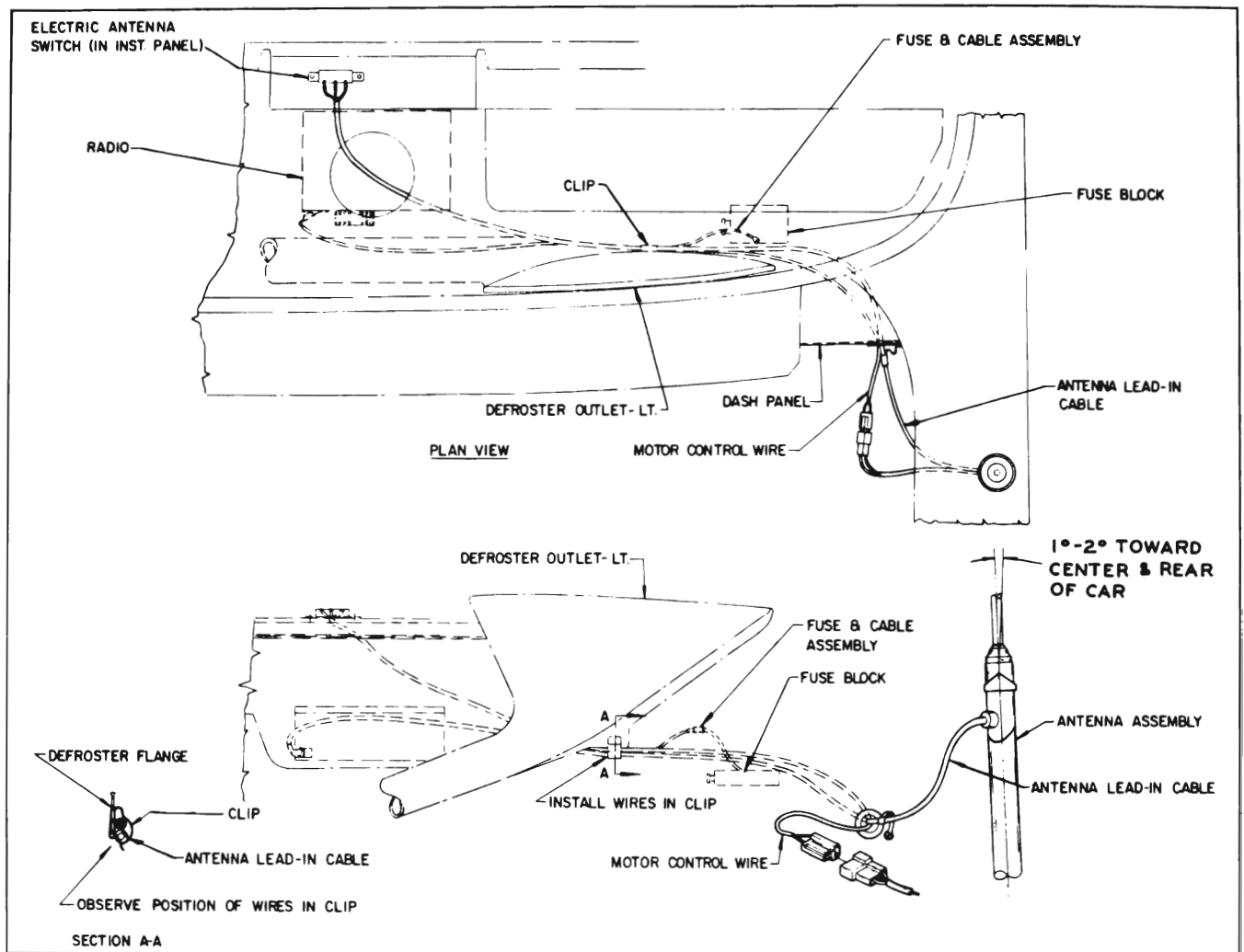


Figure 11-6—Antenna Lead-In and Motor Control Wire Installation

NOTE: Position water seal washer and bottom insulator in the tubular fitting before the

nylon reed completely disappears in drive assembly.

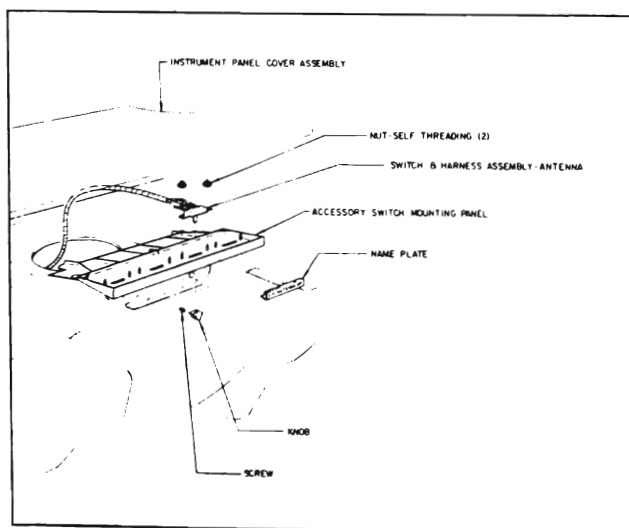


Figure 11-7—Electric Antenna Switch Installation

2. Push .400" tube section and insulator bushing into tubular fitting. Make sure that the upper edge of insulator bushing flange is below center of the 3 holes in the tubular fitting on the drive assembly. See Figure 11-9.

3. Install support tube.

4. Slip body and upper insulator assembly on the .400" tube section, but do not connect to support tube. Make sure that the "free-end" of the hook-up wire extends below the lower edge of the body and upper insulator assembly.

5. Solder this free-end of the hook-up wire to the .400" tube section using rosin flux solder. See Figure 11-10.

6. Position and connect body and upper insulator assembly to support tube.

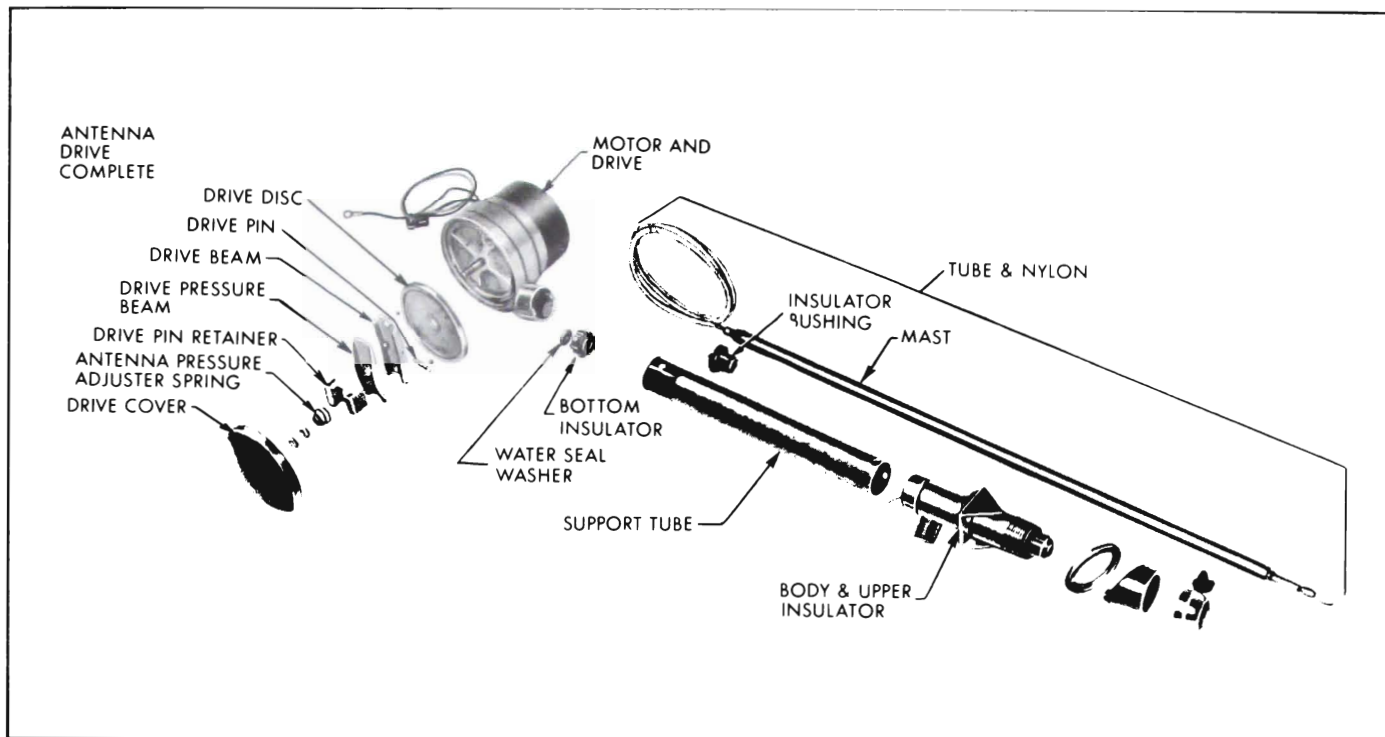


Figure 11-8—Exploded View of Electric Antenna

e. Disassembly of Electric Antenna (Unit Not in Warranty)

If the antenna is no longer covered by the manufacturer's warranty and it is necessary to replace the motor and drive unit or repair the drive assembly, proceed as follows: It is assumed for this disassembly procedure that the mast, body and upper insulator, and support tube have been removed.

1. Remove drive cover.

2. Holding the 7/16" hex nut on the output gear assembly shaft, remove the 3/8 hex nut.

3. Remove the 7/16" hex nut. See Figure 11-11.

4. Lift spring off shaft.

NOTE: When removing any of the following parts, observe their locations and positions carefully to make assembly easier.

5. Remove drive pin retainer.

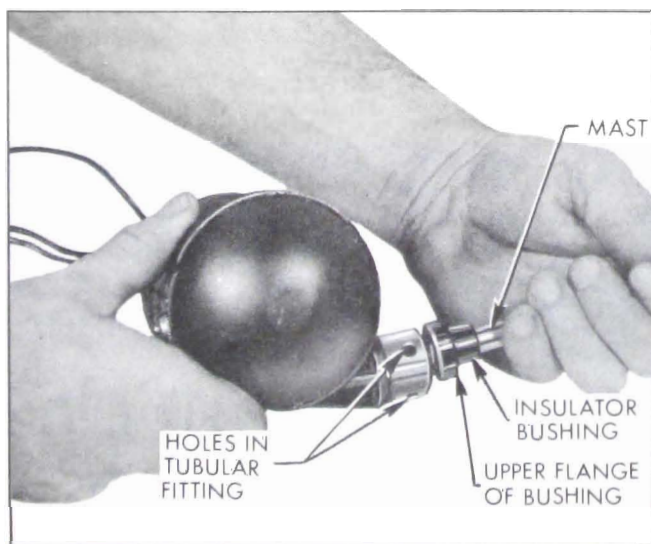


Figure 11-9—Positioning of Insulator Bushing

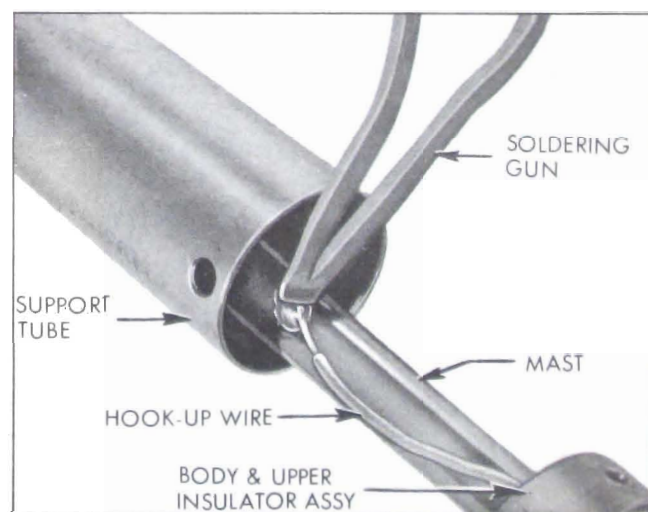


Figure 11-10—Soldering the Hook-up Wire to the Mast

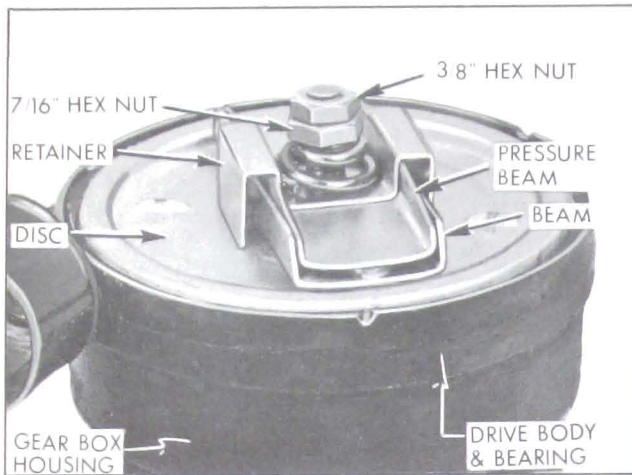


Figure 11-11—Antenna with Cover Removed

6. Remove the drive pressure beam.
7. Slide the drive pin from its holes in the shaft and drive beam.
8. Remove the drive beam. Do not lose the 2 steel balls in the holes at the end of the drive beam.
9. Remove the 2 steel balls.
10. Remove the drive disc from the shaft. Do not bend the drive disc or burr the edges of the channel.

NOTE: If it is necessary to remove drive body from motor to remove a broken nylon reed out of storage cup, care must be used to prevent pinion gears from falling loose. If for any reason the gears fall out or have been removed, it will be necessary to realign them.

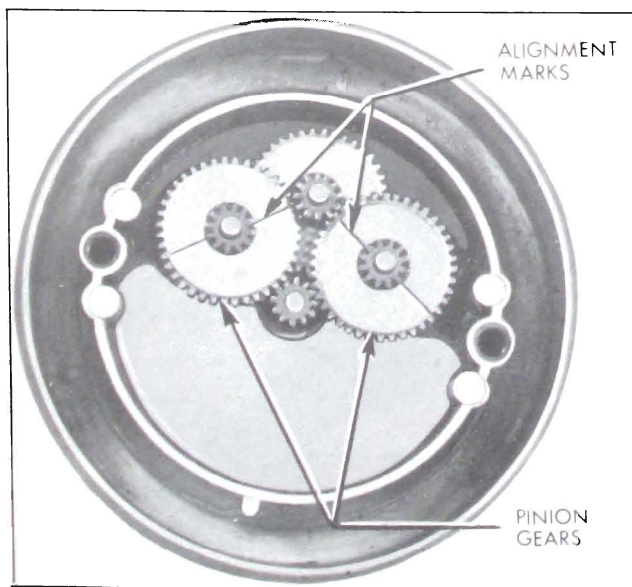


Figure 11-12—Alignment of Gears

This is done by positioning the right and left pinion gears so that the mark on each one points at the center of the pinion shaft of the drive gear which receives the motor pinion. See Figure 11-12.

f. Assembly of Antenna

Assemble the antenna drive components as they were removed. The following notes apply to certain assembly steps on which special emphasis is placed.

1. After assembling the drive beam, pull upward on the output gear assembly shaft until all of the axial movement is taken up. Then rotate beam to align holes to receive the drive pin.

2. Assemble the spring on the output gear assembly shaft with the largest dia. toward the drive pin retainer.

3. Screw the 7/16" hex nut 1 full turn after it touches the spring.

NOTE: Do not assemble the 3/8" hex nut on the shaft or snap the front cover in place at this time.

4. Reassemble the mast, support tube and body and upper insulator according to the procedure previously given.

g. Adjustment of Antenna

1. Place antenna in a vice on bench with center line of motor and drive assembly both parallel to the bench top.

2. Using 12 volts D.C. run mast tip up about 6" from the extreme down position.

3. Connect one end of a wire securely to the mast just below the tip and the other end to a 25 lb. capacity spring scale. Secure the spring scale to the bench so that the center line of the scale is in line with that of the mast assembly. See Figure 11-13.

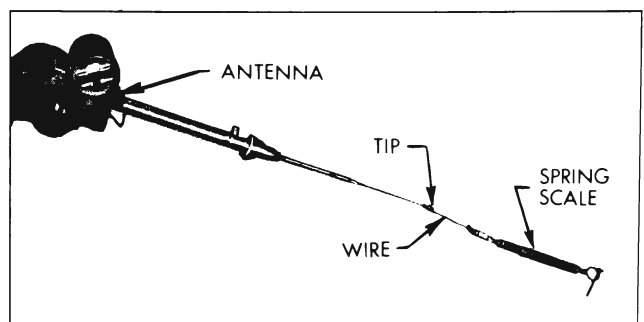


Figure 11-13—Antenna Ready for Adjusting Test

4. Attach one of the 12 volt D.C. power leads to the mounting bracket and touch the other power lead to the black (down) terminal to "jog" the drive assembly to the point of maximum pull before the clutch balls override the ridges of the drive disc. If the maximum pull is less than 15 lbs. turn the 7/16" hex nut clockwise a slight amount and recheck the maximum pull. If the pull is greater than 15 lbs., turn the 7/16" hex nut counterclockwise a slight amount and recheck pull. Repeat until the pull is set at 15 lbs.

5. Holding the 7/16" hex nut so it cannot turn, tighten the 3/8" hex nut against the 7/16" nut to lock it in place.

6. Disconnect spring scale and apply power to the orange (up) terminal. Run the mast all the way out and allow the motor to continue running until the clutch has made a minimum of 15 engagements or clicks.

7. Do the same in the down position.

8. Run antenna up and down for 3 minutes then reassemble spring scale to mast and recheck maximum pull. Adjust if necessary.

9. Snap front cover onto drive assembly, making sure that the vent hole is at the top when the mast is in operating position.

10. Reseal the assembly with waterproofing compound (heavy body sealer or its equivalent) making sure that neither the vent hole or the drain hole in the drive assembly is plugged.

11-5 RADIO ADJUSTMENTS—ON CAR

When making the adjustments covered in this paragraph it is essential to have the car in a location that is as free as possible from outside interference.

a. Antenna Trimmer Adjustment

An antenna trimmer adjustment is provided for matching the antenna coil in the receiver to the car antenna. This adjustment must always be made after installation of receiver

and antenna, or after any repairs of these units. The adjustment should also be checked whenever the radio reception is unsatisfactory.

1. Raise antenna to maximum height.

2. Tune radio to a station between 600 and 1000 K.C. that can barely be heard with volume turned full on.

3. Insert a screwdriver up through the opening in the rear of the bottom of the receiver (Figure 11-3). Carefully turn the trimmer screw back and forth until a position is found that gives maximum volume.

b. Setting Push Buttons to Desired Stations

1. Turn on the radio.

2. Pull button all the way out. It is desirable to set up the push buttons in logical sequence. For example, lowest frequency desired station on first button, next higher frequency station on second button, etc.

3. Carefully tune in the desired station manually, then push the button all the way in.

4. Move dial pointer away from the selected station and push the button to make certain the station will be properly tuned in.

5. Turn tuning knob back and forth to make certain that best tuning is obtained with the push button. If best tuning is not obtained, repeat steps 2, 3 and 4.

11-6 REAR SEAT SPEAKER INSTALLATION

Rear seat speakers may be installed by either the factory or by dealers. A separate speaker may be mounted on the shelf behind the rear seat, or on convertibles it can be mounted in the notch of the rear seat back cushion.

Rear seat speaker installation details are shown in Figures 11-14, 11-15, 11-16, 11-17, 11-18 and 11-19.

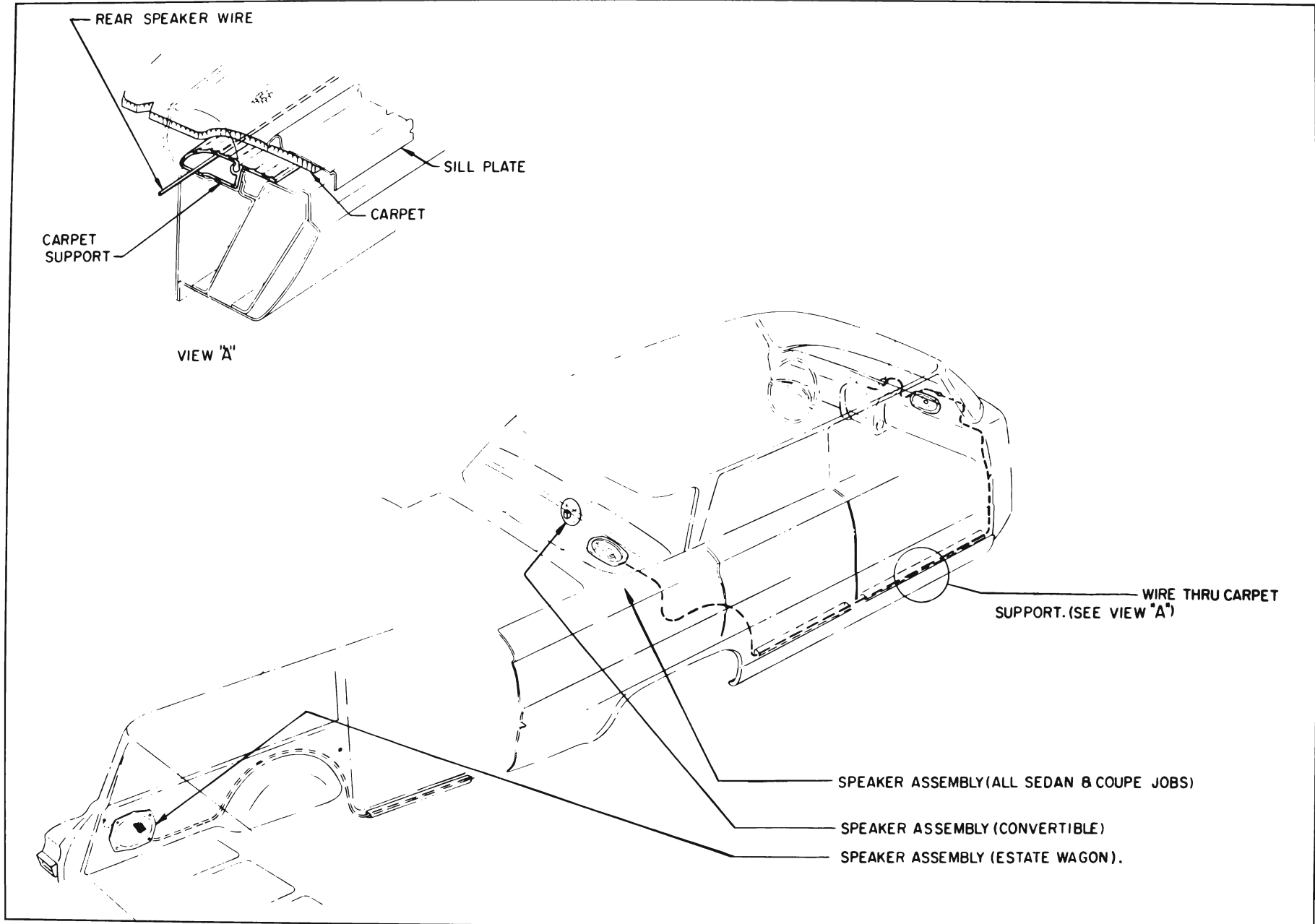


Figure 11-14—Rear Speaker Wiring—Sedans and Estate Wagons

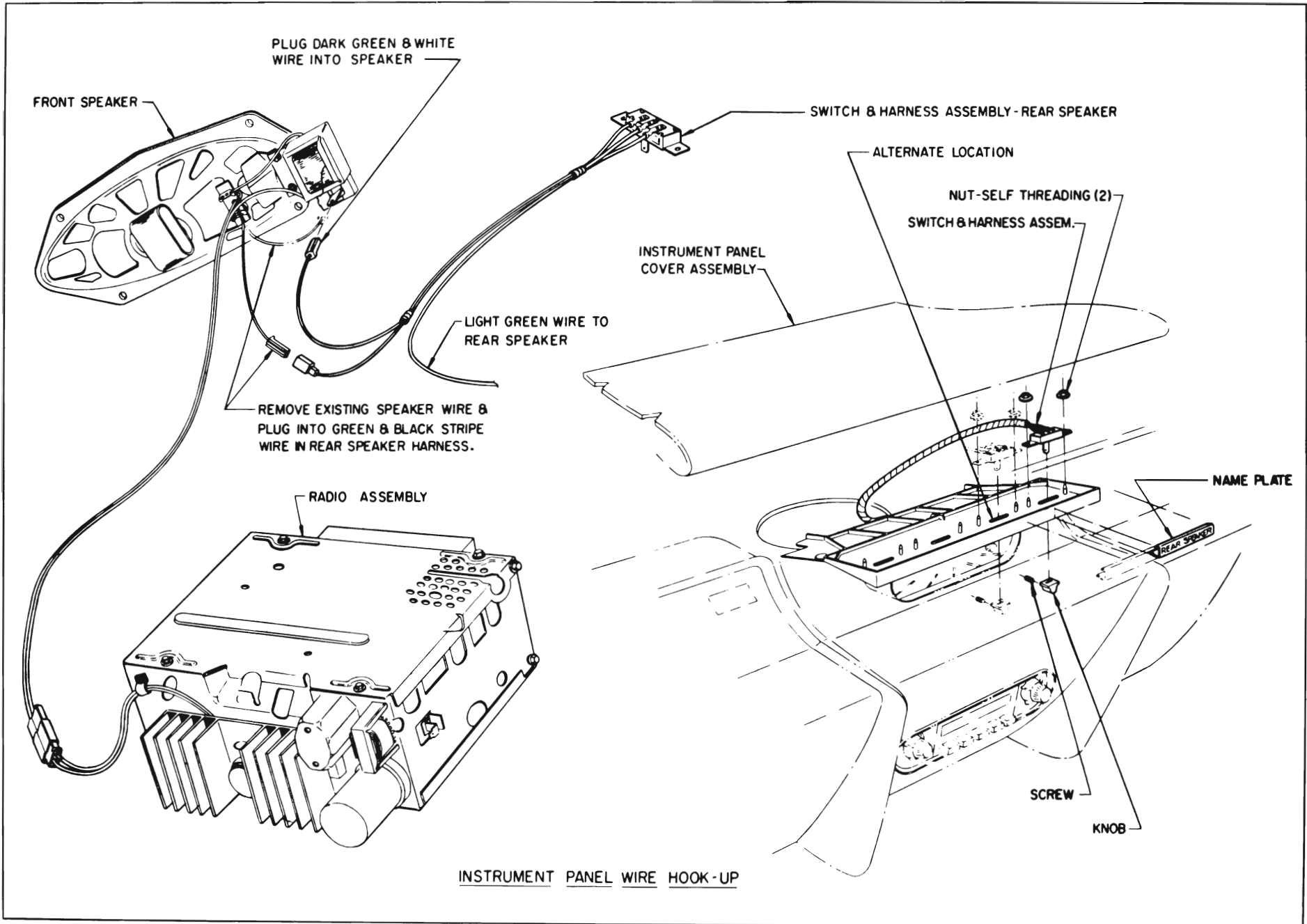


Figure 11-15—Rear Speaker Switch Installation

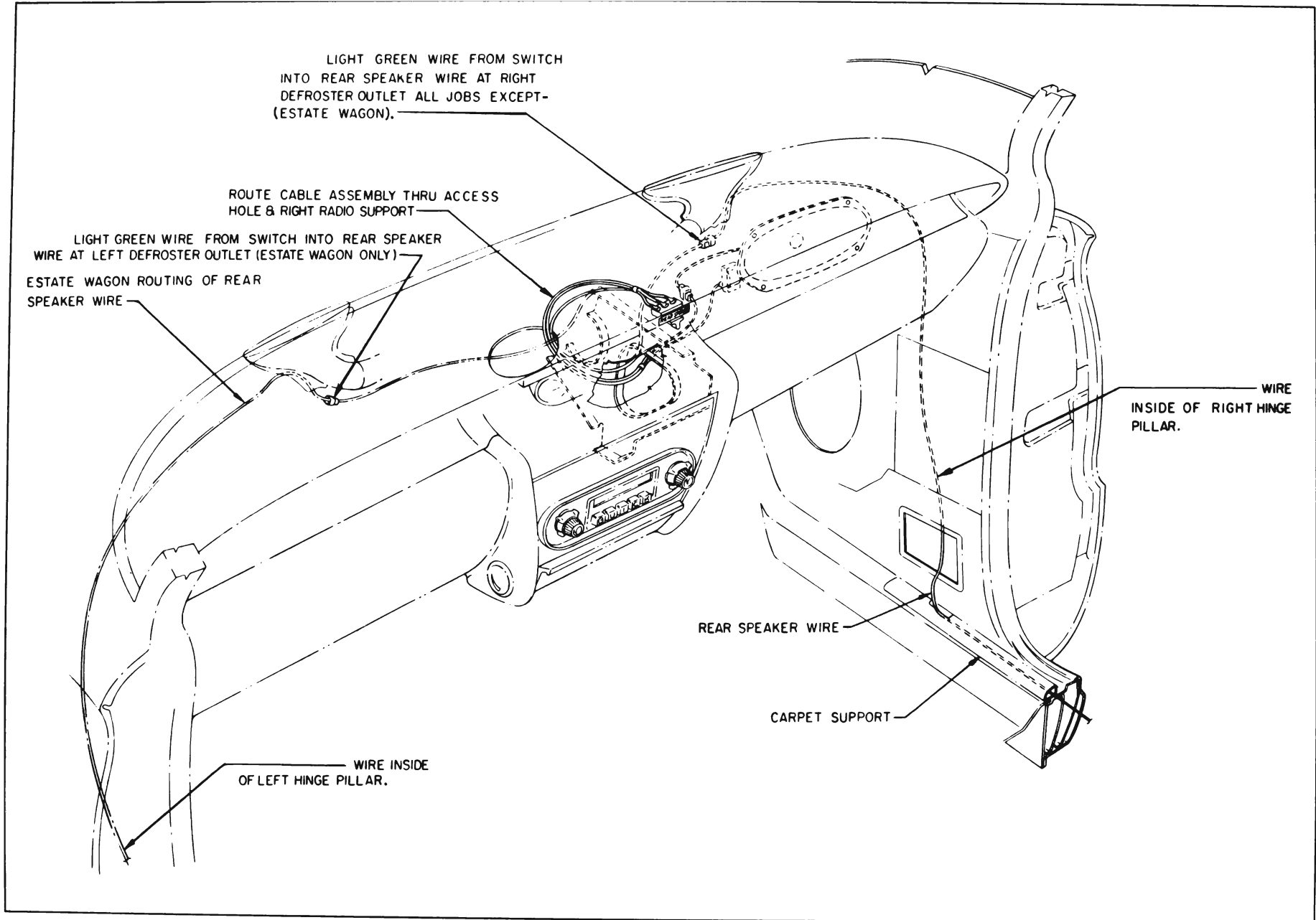


Figure 11-16—Rear Speaker Switch Wire Routing

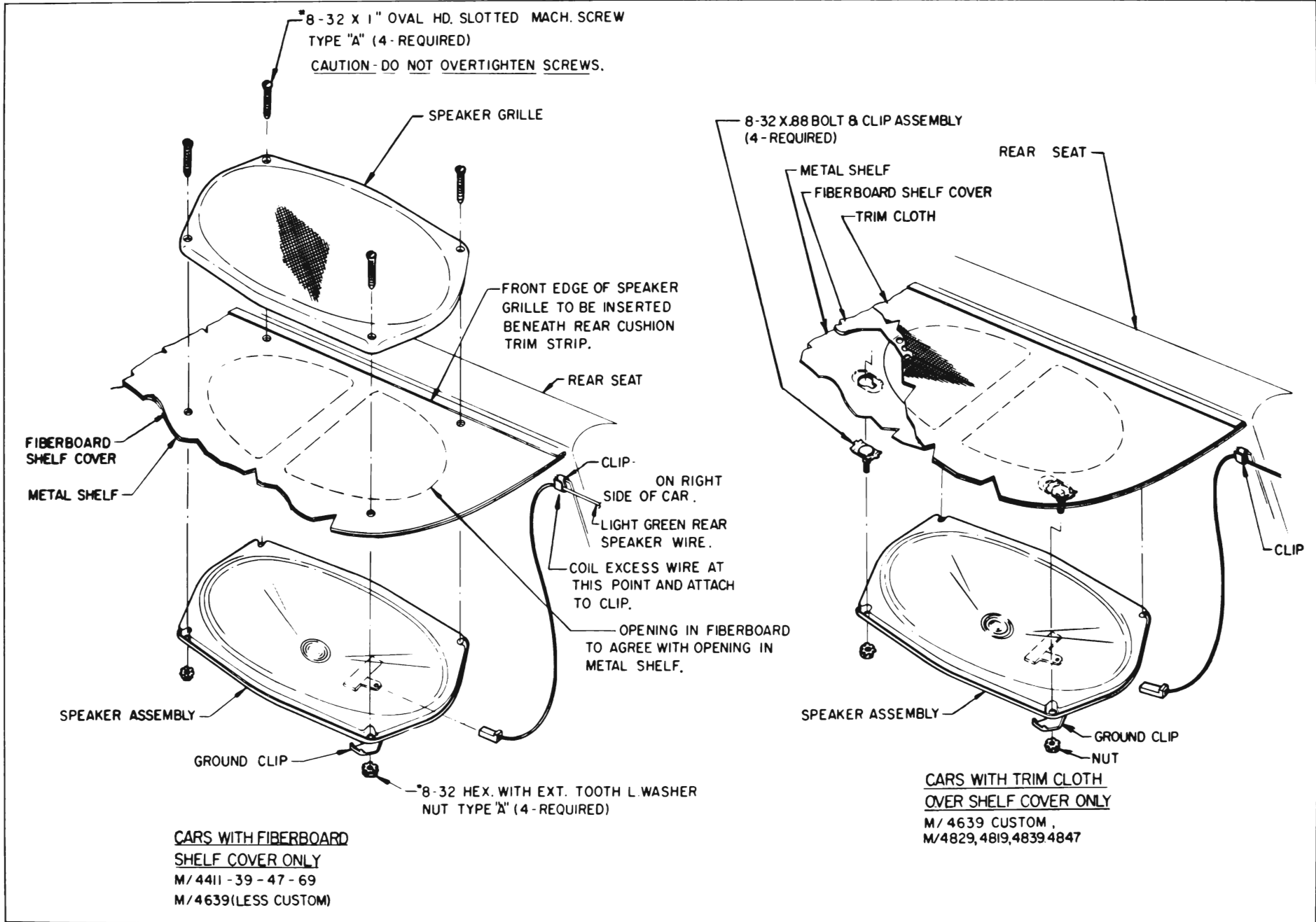


Figure 11-17—Rear Speaker Installation—Sedans

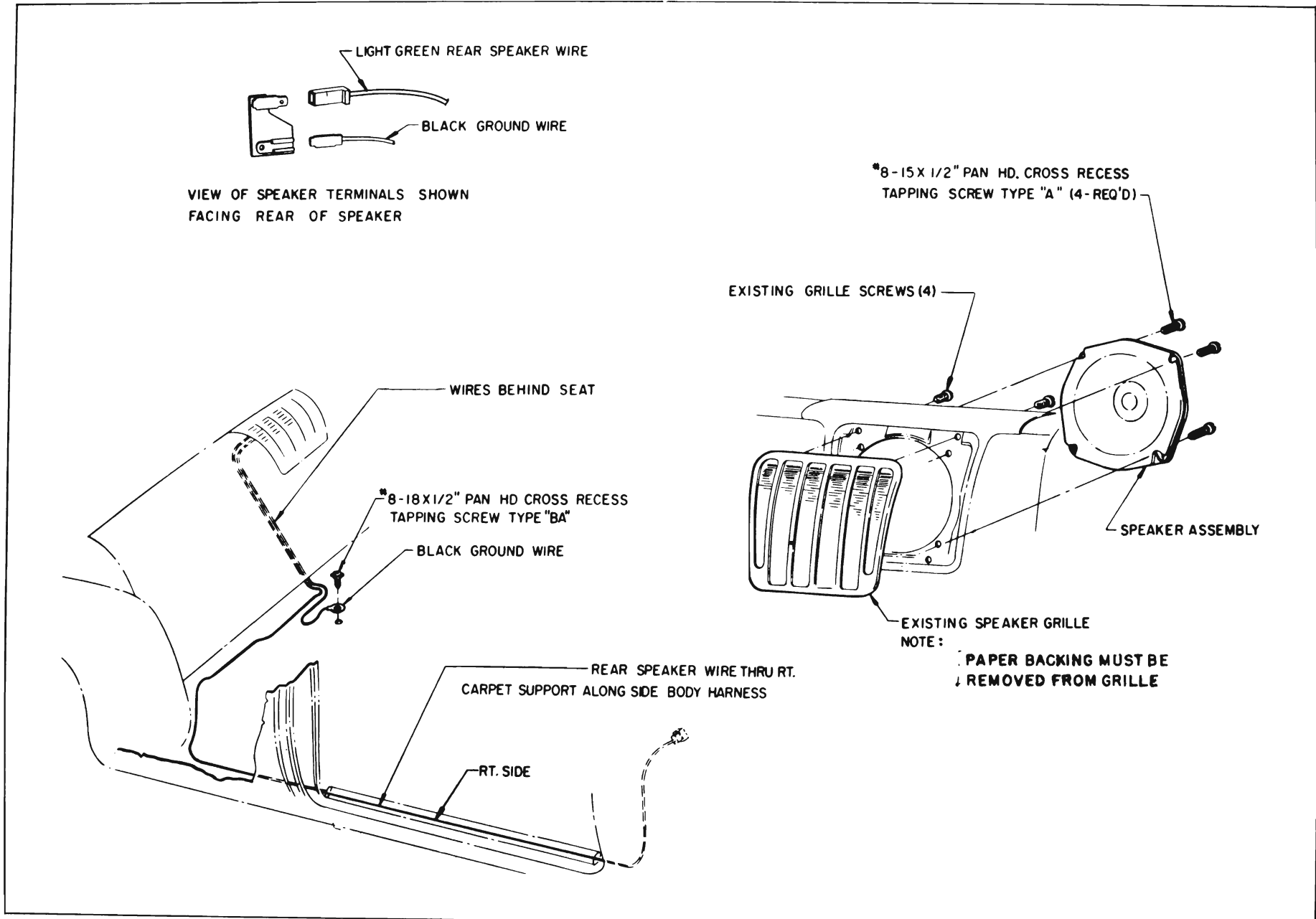


Figure 11-18—Rear Speaker Installation—Convertibles

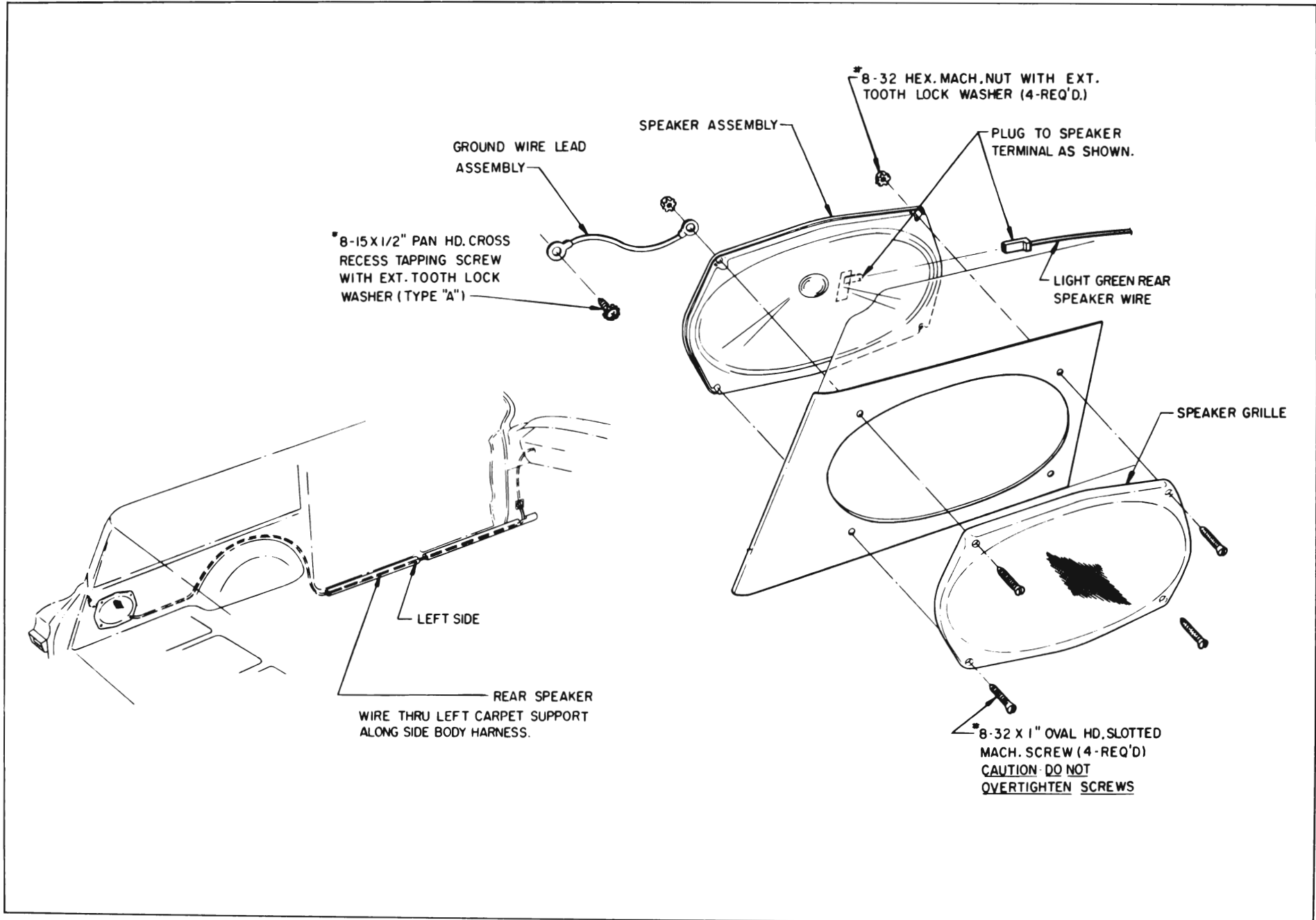


Figure 11-19—Rear Speaker Installation—Estate Wagons

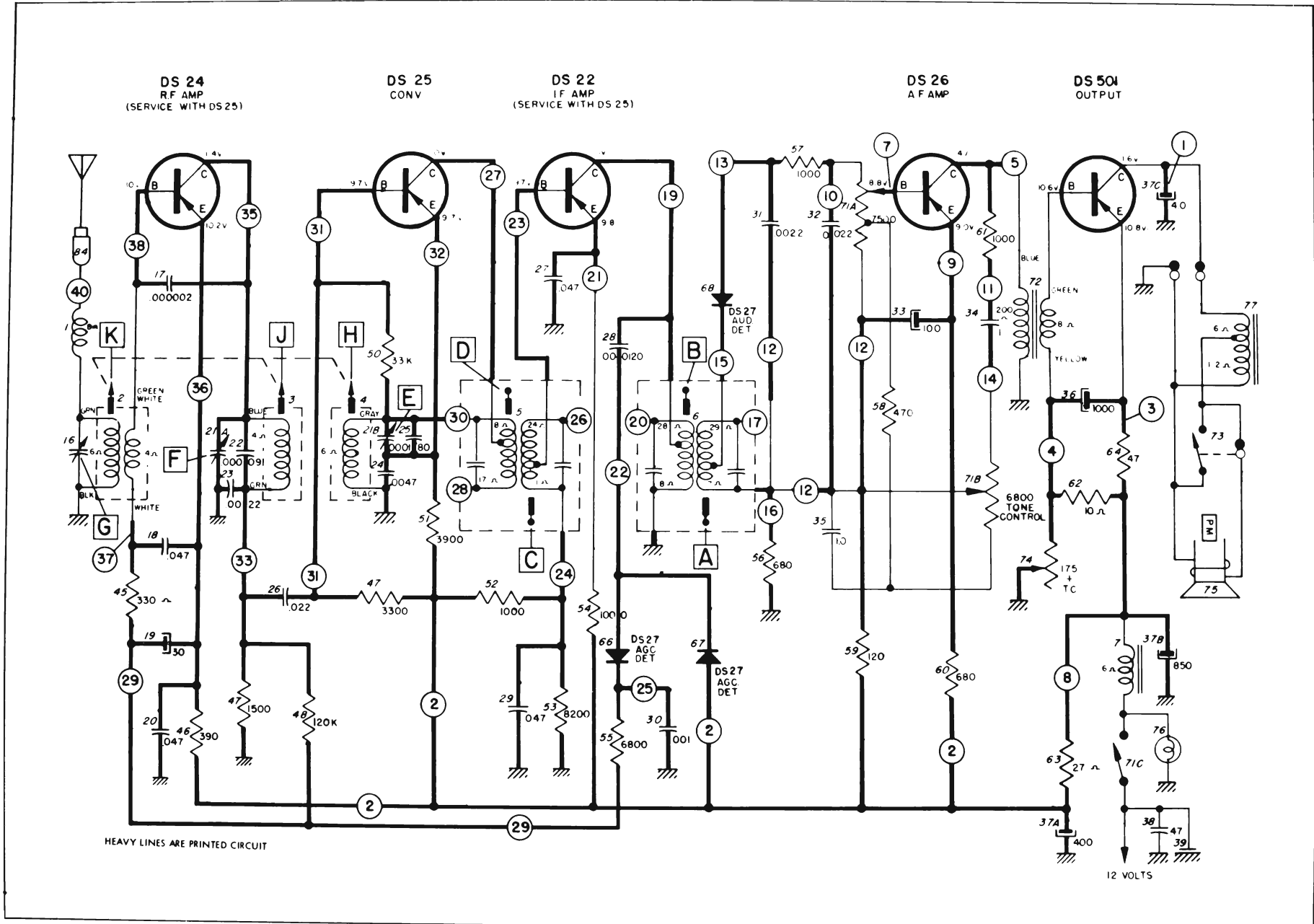


Figure 11-20—Sonomatic Radio Circuit Schematic

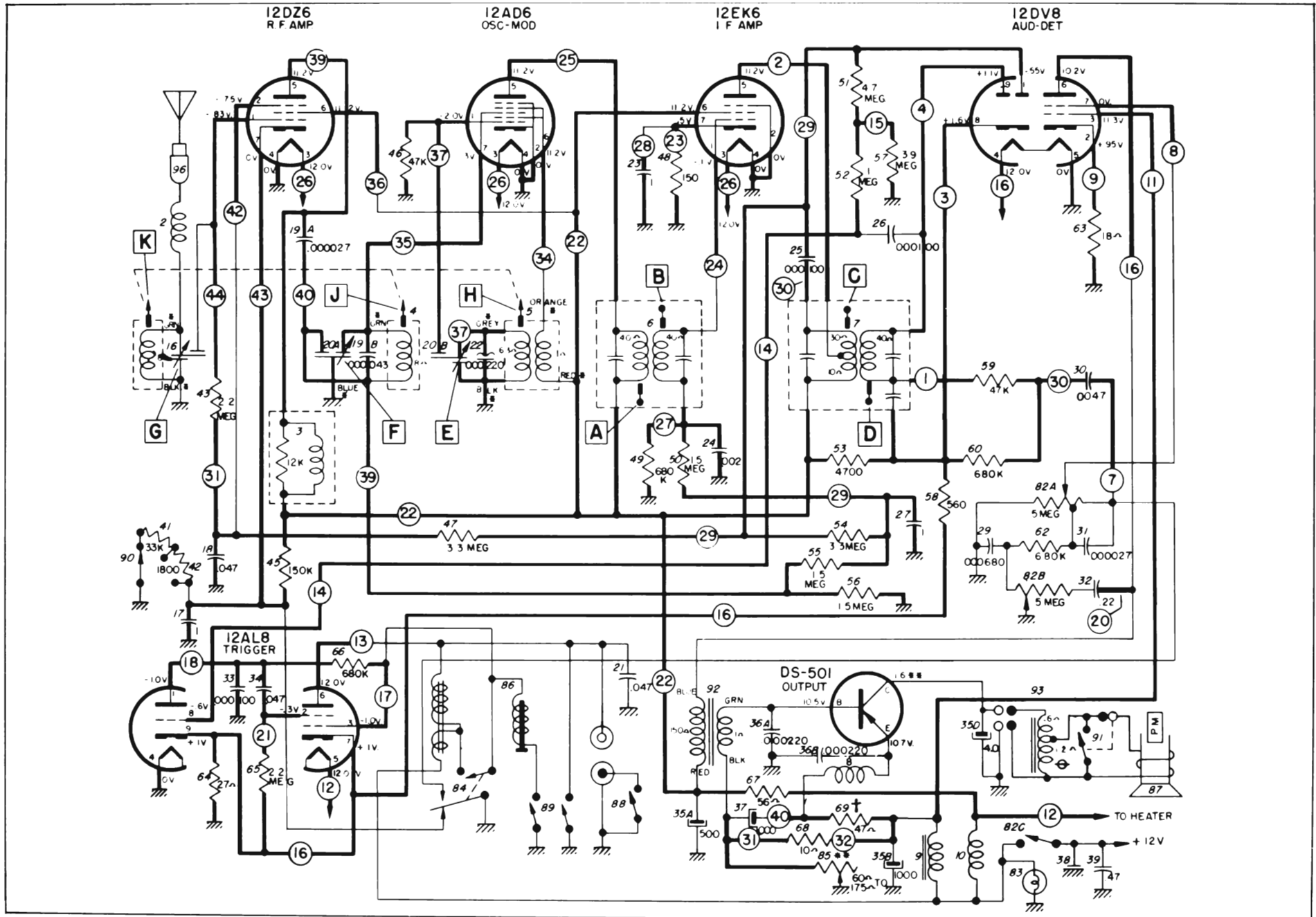


Figure 11-21—Wonderbar Radio Circuit Schematic