SECTION A

RADIO

ALL SERIES

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DIVISION I

TROUBLE DIAGNOSIS

129-1 RADIO TROUBLE DIAGNOSIS

Because radio problems are most often repaired at United Delco authorized Warranty Repair Stations, the tendency for many dealer servicemen is to remove the set when a problem is reported, without any preliminary diagnosis. This results in a large number of radios showing up as "NO TROUBLE FOUND" units when received by the Warranty Repair Stations. This indicates that the trouble can often time be corrected without removal of the radio.

The inconvenience to an owner of driving without a radio while his set is being serviced at a Warranty Station can frequently be avoided if the following quick checks are used to eliminate external radio system problems before removing the radio for repair.

Always determine from the owner the exact nature of the radio problem as an aid to diagnosis. Knowing whether the condition is intermittent or constant, whether it occurs with engine off or running, with car stationary or moving, will help to pinpoint the problem.

Dead Radio

- 1. Check the fuse and connectors to the radio.
- 2. Check the speaker listen for a thump when the radio is first turned on. If no thump, check the speaker and connectors.
- 3. Check the antenna is the antenna plugged into the radio is the windshield antenna "pigtail" plugged into the lead-in Check the windshield antenna with the Kent-Moore Tool J-23520.
- 4. If the trouble is not found, remove radio for repair.

Weak on AM

- 1. Peak the antenna trimmer adjustment.
- 2. Check the antenna using the J-23520 on the windshield and the lead-in cable.
- 3. If the windshield has been replaced, check around the pigtail to insure white or clear RTV or equivalent was used at this location.
- 4. If the problem is not found, remove the radio for repair.

Intermittent

- 1. Check connections to the radio and speakers by wiggling the wires and bumping the bottom of the radio with the heel of your hand.
- 2. Check connections to the antenna.

- 3. Check the radio installation for a good ground (all bolts tight).
- 4. Remove radio for repair if the problem is not discovered.

Noisy - AM Static

- 1. Trim antenna trimmer. Storm and flourescent or neon sign noise is normal for AM.
- 2. Motor noise and switch pops.

DO NOT REMOVE RADIO Go to the source of the noise in the car and suppress the noise by adding capacitors, chokes, or rerouting wires.

Noisy on FM

1. Flutter or Multipath.

This condition may be objectionable but is normal for some FM reception areas. The customer's radio operation should be compared to a "known good car" in the same area to determine if the flutter is normal. This can be done by driving a short distance in both cars.

2. Motor Noise and Switch Pops

DO NOT REMOVE RADIO Refer to "Noisy AM Static".

Winshield Antenna

The windshield antenna has been incorporated into the 1972 Buicks to improve antenna reliability, extend the life of the antenna, to eliminate antenna replacements due to vandalism, to eliminate antenna wind noise, and to enhance the appearance of the automobile.

With the windshield antenna the radio will perform equally as well as previous radio installations. Customers may notice a faint "swish" sound on weak FM stations, as the windshield wipers pass over the windshield antenna elements when it is raining. This is a normal occurrence.

It is extremely important that the AM antenna trimmer adjustment at the radio be checked before any complaint of poor AM reception is further diagnosed. It is equally important that the dealership readjust the antenna trimmer after reinstallation of a repaired radio or if a new windshield is installed.

Testing

The following guide will aid in further diagnosing the radio system, using the windshield antenna tester J-23520 and systems checker J-22194 available from Kent-Moore Corporation.

The spring shield must be on the tester J-23520 at all times to direct the signal only to the area being tested. Always check the testers on a known good car to make sure they are operating properly and that the batteries are not weak or dead.

The radio trouble diagnosis guide 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. 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.

DIAGNOSIS GUIDE

RADIO DEAD

(Turn on radio.)

A. NO THUMP HEARD

(Check fuse.)

Fuse blown Replace fuse and check for short or open in wiring.

Fuse okay Check receiver and speaker connectors.

Connectors loose or defective Correct as required.

Connectors okay Check speaker with radio systems tester J-22194. Substitute a known good speaker or switch to rear speaker if car is so equipped.

Radio does not play even with a known good substitute speaker Defective receiver. Remove for servicing.

Radio plays with substitute speaker Replace speaker.

B. THUMP HEARD

(Check antenna connection at back of radio and at base of windshield.)

Connections defective Correct as necessary.

Connections okay Substitute a known good lead-in cable.

Radio plays Defective cable.

Radio still won't play, even with a known good lead- in cable Substitute and trim a known good radio.

Good radio plays Defective radio.

Good radio still won't play Defective antenna. Change windshield.

RADIO CUTS ON AND OFF

(Check for defective or loose receiver or antenna connectors at the rear of radio or base of windshield.)

Defective or loose connectors Repair as necessary.

Connectors okay Substitute a known good lead-in cable.

Radio plays okay Defective cable.

Radio still cuts out with a known good lead-in cable Check speaker with radio system tester J-22194. Substitute a known good speaker or switch to rear speaker if car is so equipped.

Radio plays okay Replace speaker.

Radio still plays intermittently, even with a known good speaker Defective receiver.

RADIO STATIONS MIX TOGETHER

(Carefully trim radio. However, if two or more signals are picked up at the same time, there is no known way to separate them.)

RADIO NOISY

Static - Start engine, rev up engine several times, and listen for speaker static.

A. STATIC HEARD

Trim radio - check for spark plug wire breakdown, loose or improperly-seated wire, or loose or missing engine ground strap.

Check suppressors on voltage regulator, Delcotron, and resistor on timing control solenoid.

B. STATIC STILL PRESENT (Defective receiver.)

WEAK RADIO SIGNAL

(Place radio to AM band, just off a station, and turn volume up full. Hold tester J-23520 to antenna beginning at upper corner of antenna on both sides of windshield.)

A. HIGH-PITCH SOUND HEARD THROUGH RADIO SPEAKER WHEN BOTH ANTENNA WIRES ARE TESTED

Windshield antenna is okay - Check radio and speaker with radio system tester J-22194.

B. HIGH-PITCH SOUND HEARD THROUGH ONLY ONE ANTENNA WIRE

Check the problem antenna by moving the tester until sound begins - this is the area of the defect. Replace windshield.

C. NO HIGH-PITCH SOUND IS HEARD THROUGH EITHER ANTENNA WIRE

Unplug antenna lead at the radio and touch tester to antenna socket in the radio

(a) If High-Pitch Sound Is Heard (Remove windshield lower reveal molding.)

Disconnect pigtail at windshield, connect lead- in extension J-22276 to antenna lead-in and plug into J-22194 system tester.

Insert a 1/8 inch diameter metallic object into lead- in cable at cowl and attach alligator clip.

Cable tests okay Replace windshield.

(b) If No High-Pitch Sound Is Heard (Check radio and speaker with system checker J 22194.)

Replace defective components.

DISTORTED TONE

(Turn on radio, adjust for high volume and maximum bass. Check speaker with radio systems tester J-22194. Substitute a good speaker or switch to rear speaker if car is so equipped.)

A. NO DISTORTION

Replace speaker.

B. DISTORTION

Defective receiver - remove for servicing.

DIVISION II

DESCRIPTION AND OPERATION

129-2 GENERAL DESCRIPTION

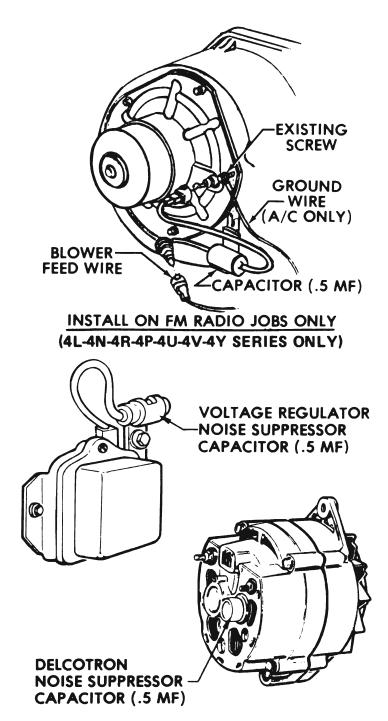
The radio system for 1972 Buicks consists of three components: (1) a radio receiver; (2) one or more speakers; and (3) and antenna embedded in the windshield. Three different receivers are available for all 1972 Buicks; AM, AM/FM, and a stereo AM/FM receiver. The 4L-4N-4R-4P-4U-4V-4Y Series will use a ten-slide tuner for both AM/FM and stereo AM/FM radio receivers. The AM, like the AM/FM receivers (monaural) incorporate one speaker in the center of the dash.

The radios have a current draw of: AM - 1.0 amp plus .4 for dial lamp; AM/FM - 1.1 amps plus .4 for dial lamp; AM/FM Stereo - 2.4 amps plus .4 for dial lamp; AM Tape - 1.7 amps; and AM/FM Stereo Tape - 3.1 amps at 12 VDC. All speakers have an impedance of 10 ohms. When replacing a speaker, the replacement speaker should have the same impedance for satisfactory results.

129-3 RADIO NOISE INTERFERENCE SUPPRESSORS

Five noise suppressor capacitors are used to eliminate radio interference (see Figure 129-1).

Four of the capacitors are exterior mounted, one on the voltage regulator, one on the blower motor (on FM



129-70

Figure 129-1 - Installation of Noise Suppressors

radios only 4L-4N-4R-4P-4U-4V-4Y), one is pressed into the end bell of the Delcotron, and one on the primary side of the ignition coil (on Max-Trac cars only). The interior mounted capacitor is attached to the brake pedal support bracket and connected to the terminal on the fuse block. The voltage regulator, blower motor, delcotron, and fuse block capacitors are rated at 0.5 MF. All models have resistor spark plugs, .075 inch rotor gap, and spark plug wires with an approximate resistance of 2000 ohms per foot.

On cars equipped with an automatic transmission, there is a 150 ohm, 5 watt resistor installed in the vacuum solenoid electrical wiring harness for the timing control system.

Various types of ignition suppressors are used to prevent spark noise from interfering with radio reception. Failure of any of these parts to function properly is accompanied by a popping noise. The noise increases as the engine is accelerated and varies with engine speed.

129-4 AM-FM RADIO

This radio is identical to the AM radio, as far as the operation of the ON-OFF and volume control, tone control, manual tuning control, and pushbuttons are concerned. The AM/FM selector bar is located directly above the dial face on 4D-4F-4G-4H Series, and below the dial face on 4L-4N-4R-4P-4U-4V-4Y Series. Movement of the bar to the left exposes the letters "FM" and switches the radio to FM operation. Movement of the bar to the right provides AM radio operation. An automatic frequency control circuit is incorporated in the FM portion of the radio and automatically keeps the receiver on frequency. This eliminates any station detuning due to temperature changes around the radio.

129-5 STEREO AM/FM RADIO

The stereo system includes a special AM/FM receiver with a multiplex section and four speakers. The radio is designed to receive and reproduce the dual stereo FM signal, as well as monaural AM/FM signals. The right rear and left front speakers are one channel, and the left rear and right front are the other channel. This gives a criss-cross, or a surrounding, sound effect. Operation of the controls is identical to previous AM/FM receivers, except the word "STEREO" lights up in the center of the dial when tuned to a stereo signal.

The receivers operate with 12 volts DC input. All speakers have an impedance of 10 ohms. When replacing a speaker, the replacement speaker should have the same impedance for satisfactory results.

129-6 RADIO/TAPE COMBINATIONS

Two radio/tape combinations are available: One is an AM/radio/tape, and the other is a stereo AM/FM tape. The pushbuttons and control knobs operate in the same manner as the 45-46-48-49000 Series' AM/FM radios.

This unit uses a standard eight-track tape cartridge that is inserted through the spring-loaded radio dial (tape door).

129-7 RADIO CONTROLS

A. Volume Switch and Tone Controls

The left knob turns the radio ON and OFF, and controls the volume. On the stereo radio the knob controls the volume in both channels simultaneously and on radio/tape combinations the knob changes the tape programs when depressed. The tone control ring around the left knob is turned counterclockwise for bass tones and clockwise for treble tones. When indexed at the detent, it provides a balanced normal tone. On the stereo radio, this control varies the tone in both channels simultaneously.

For best stereo reception, neutralize the tone control by turning it to the center detent position, then adjust the front and rear speaker control, as outlined in Sub-Section "b", so that the sound is balanced to your ears. Centering the tone control permits normal response from the speakers, and balanced speaker output is desirable for greatest stereo effect.

B. Manual Station Selector and Speaker Control

The right knob is used to tune stations manually. The ring around the knob is the front-rear speaker control. When the ring is turned all the way clockwise on monaural, the volume of the rear speaker is increased. As the ring is turned counterclockwise, the rear speaker volume decreases while the front speaker volume increases. When the ring is turned all the way counterclockwise, the front speaker is stronger.

On stereo AM/FM models, adjusting the ring changes the volume between the front two speakers and the rear two speakers. If the ring is in a complete clockwise position, volume of the rear speakers will be louder. If the ring is in a complete counterclockwise position, volume of the front speakers is louder. This control has no effect on the balance of stereo channels.

DIVISION III

ADJUSTMENTS AND MINOR SERVICE

129-8 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 windshield antenna, or after any repairs to these units. This adjustment should also be performed whenever the AM radio reception is unsatisfactory.

This adjustment applies only to AM radios or to the AM portion of AM-FM radios. Trimming for FM reception is accomplished automatically whenever the antenna is raised to 31 inches on cars with dealer installed whip antennas.

- 1. On cars with dealer installed whip antennas, raise antennas to 31 inches.
- 2. Tune radio to a weak station near 1400 KHz which can barely be heard with volume turned fully on.
- 3. Remove right inner and outer knobs.
- 4. On cars having a rear speaker, it is necessary to fabricate a jumper wire and insert it into center and an outside hole unless it is a stereo radio.

There are three small holes (electrical connecting points) in receiver which are located directly behind right knob. When a non-stereo car is equipped with a rear speaker, the right larger knob (rear speaker control) has three prongs which interconnect these points. When the rear speaker control is removed to gain access to the trimmer screw behind it, two of the holes (the center and an outside hole) must be interconnected by a short piece of jumper wire to channel sound to a speaker. It is generally desirable to trim the radio while using the front speaker.

- 5. Adjust trimmer screw until maximum volume is achieved.
- 6. Reinstall both right knobs.

129-9 RADIO PUSH BUTTON SET-UP PROCEDURE

- 1. Turn on the radio.
- 2. Pull buttons outward. It is desirable to set up the push buttons in logical sequence. For example -- lowest frequency on first buttons, next higher frequency station on second button, etc.
- 3. Select either the AM or FM band. 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 try the buttom to make certain the station is properly tuned in.

- 5. Turn the tuning knob back and forth to make certain that best tuning is obtained with the push button. If the best tuning is not obtained, repeat Steps 2, 3, and 4.
- 6. Any single push button on the 4L-4N-4R-4P-4U-4V-4Y AM/FM or stereo radios can be adjusted for BOTH A/M and F/M reception. This provides five A/M and five F/M station capability.

On push button selection, if the program sounds shrill or distorted, it is probably caused by improper tuning and can be corrected by adjusting the tuning knob slightly. Since the low notes are more affected by tuning than the high ones, it is preferable to tune the receiver to a point where the low notes are heard best, and high notes are clear but not shrill. This point may be most readily found by listening to the background noise of a station and tuning for the lowest noise level of the station. 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.

DIVISION IV

REMOVAL AND INSTALLATION

129-10 REMOVAL AND INSTALLATION OF RADIO PARTS - 4D-4F-4G-4H SERIES

A. Radio Removal

Stereo tape player must be removed first if so equipped.

- 1. Remove radio knobs and escutcheons. Remove two 5/8 inch hex nuts and two screws from radio filler plate and remove plate.
- 2. Remove ash receiver assembly.
- 3. If A/C, remove two screws at lower center A/C duct and remove duct.
- 4. Remove radio bracket to radio screw and two bracket screws at instrument panel and remove bracket.
- 5. Remove two instrument panel attaching nuts at radio face.
- 6. Disconnect radio wiring and remove radio downward.

B. Installation (Radio)

1. Install radio into dash and secure with attaching nuts at radio face.

- 2. Connect radio wiring.
- 3. Install radio bracket and secure with radio bracket screw and two (2) bracket screws at instrument panel.
- 4. If air conditioning, install center air conditioning duct and secure with two (2) screws.
- 5. Install ash receiver assembly.
- 6. Install two (2) 5/8 inch hex nuts and two (2) screws to radio filler plate.
- 7. Trim radio.
- 8. Install radio knobs and escutcheons.

C. Front Radio Speaker Removal

- 1. Remove radio knobs and escutcheons. Remove two 5/8 hex nuts and two screws from radio filler plate and remove plate. (Do not remove radio).
- 2. Unplug speaker connector from radio.
- 3. Remove screw at speaker bracket and remove speaker through radio filler plate opening. If AC, remove radio as explained in subparagraph a. Remove instrument panel upper cover as explained in subparagraph a and remove two screws at upper center AC duct and remove duct.

D. Installation (Front Radio Speaker)

- 1. Install speaker through radio filler plate opening and secure bracket.
- 2. Plug speaker connector into radio.
- 3. Install two (2) 5/8 inch hex nuts.
- 4. Install radio filler plate and secure with two (2) screws.
- 5. Install radio knobs and escutcheons. If AC, install AC duct and secure with two (2) screws at upper center duct. Install instrument panel upper cover and radio.

129-11 REMOVAL AND INSTALLATION OF RADIO - RADIO TAPE UNIT - 4L-4N-4R-4P-4U-4V-4Y SERIES.

A. Removal

The integral radio/tape unit consists of two (2) units, the radio/tape unit and remote converter. Should the radio/tape unit require servicing, it must be serviced with the remote converter, not as an individual component.

- 1. Remove knobs and escutcheons from radio control shafts. If car is equipped with trip set and/or speed alert, hold the shafts and unscrew the cone-shaped knobs to allow removal of the face plate. See Figure 129-2.
- 2. Remove face plate by grasping edges revealed by knob absence and pull directly outward. See Figure 129-3. Cars equipped with trip set and/or speed alert have a see lite which must be disconnected before the face plate is completely removed. This is done by separating the connector as shown in Figure 129-4.

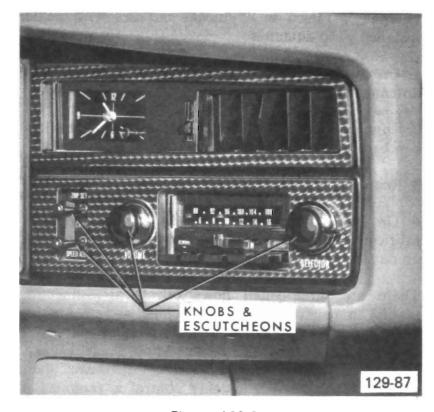


Figure 129-2



Figure 129-3



Figure 129-4

- 3. Remove the retaining nuts (2) from the threaded portion of the control shaft. See Figure 129-5.
- 4. Remove the ash tray by unscrewing (4) screws and pulling the ash tray and frame from the instrument panel. See Figure 129-6.
- 5. Separate the (2) multiple connectors and antenna lead-in before the radio is removed. See Figure 129-7.
- 6. Unscrew the nuts on the radio support bolts and



Figure 129-5

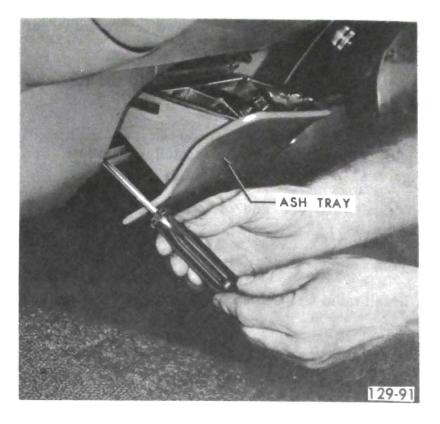


Figure 129-6

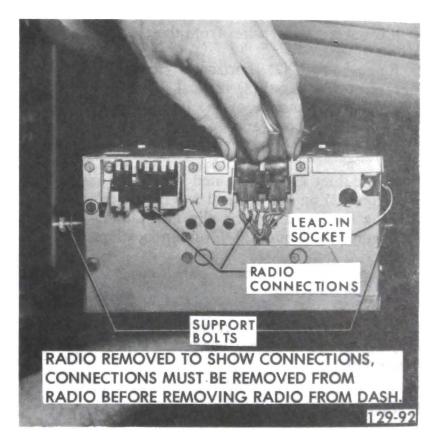


Figure 129-7

remove the radio from the opening, lowering it from behind the instrument panel. See Figure 129-7.

B. Installation

- 1. Install radio and secure with radio support, bolts, and nuts. See Figure 129-7.
- 2. Connect the two (2) multiple connectors and antenna lead-in. See Figure 129-7.

- 3. Install the ash tray assembly and secure with four (4) screws. See Figure 129-6.
- 4. Install the two (2) retaining nuts on the threaded portion of the control shaft. See Figure 129-5.
- 5. Install trip set and/or speed alert, if equipped, seelites into face plate and install face plate. See Figures 129-4 and 129-3.
- 6. Install trip set and/or speed alert knobs (if equipped).
- 7. Trim radio.
- 8. Install radio knobs and escutcheons. See Figure 129-2.

129-12 REMOVAL AND INSTALLATION OF FRONT CENTER SPEAKER - 4L-4N-4R-4P-4U-4V-4Y SERIES

A. Removal

- 1. Disconnect speaker wires from the rear of the radio.
- 2. Remove two (2) horizontal screws below the instrument panel, four (4) vertical screws on the upper most horizontal surface of the instrument panel, and three (3) nuts above and inside the glove box. See Figures 129-8 and 129-9 for screw and nut location.
- 3. Release three (3) clips located behind the instrument panel, one (1) on the left and two (2) on the right, by grasping the tongue of the clip and pulling forward. See Figures 129-8 and 129-9 for clip location.
- 4. Remove the instrument panel cover by pulling outward on the cover.
- 5. Remove the speaker by removing one (1) screw and slipping the speaker from beneath a side bracket. See Figure 129-12.

B. Installation

- 1. Install speaker under the side bracket and secure with one (1) screw. See Figure 129-12.
- 2. Install the instrument panel cover by pushing inward on the cover.
- 3. Install three (3) clips located behind the instrument panel, one (1) on the left, and two (2) on the right. See Figures 129-8 and 129-9 for clip location.
- 4. Install two (2) horizontal screws below the instrument panel, four (4) vertical screws on the uppermost horizontal surface of the instrument panel, and three (3) nuts above and inside the glove box. See Figures 129-8 and 129-9 for screw and nut location.

5. Connect speaker wires to the rear of radio.

129-13 REMOVAL AND INSTALLATION OF FRONT DUAL SPEAKER SYSTEM - 4L-4N-4R-4P-4U-4V-4Y SERIES

A. Removal

- 1. Disconnect speaker wires from the rear of the radio.
- 2. Remove two (2) horizontal screws below the instrument panel, four (4) vertical screws on the upper most horizontal surface of the instrument panel, and three (3) nuts above and inside the glove box. See Figures 129-8 and 129-9 for screw and nut location.
- 3. Release three (3) clips located behind the instrument panel, one (1) on the left and two (2) on the right, by grasping the tongue of the clip and pulling forward. See Figures 129-8 and 129-9 for clip location.
- 4. Remove the instrument panel cover by pulling outward on the cover.
- 5. Remove speakers by removing one (1) screw on each speaker for the 4L-4N-4R-4P Series, two (2) nuts on the right speaker, and one (1) screw on the left for the 4Y Series. See Figure 129-12.

B. Installation

- 1. Install the speaker(s) and secure with one (1) screw on each speaker for the 4L-4N-4R-4P-4U-4V Series, two (2) nuts on the right speaker, and one (1) screw on the left for the 4Y Series. See Figure 129-12.
- 2. Install the instrument panel cover by pushing inward on the cover.
- 3. Install three (3) clips located behind the instrument panel, one (1) on the left and two (2) on the right. See Figures 129-8 and 129-9 for clip location.
- 4. Install two (2) horizontal screws below the instrument panel, four (4) vertical screws on the uppermost horizontal surface of the instrument panel, and three (3) nuts above and inside the glove box. See Figures 129-8 and 129-9 for screw and nut location.
- 5. Connect speaker wires to the rear of radio.

129-14 REMOVAL AND INSTALLATION OF WINDSHIELD GLASS WITH BUILT-IN ANTENNA

A. Removal and Installation

Before removing windshield glass, disconnect antenna lead at lower center of windshield. If glass is to be reinstalled, fold and tape lead wire back onto outer surface of windshield to protect it during glass removal and installation.

1. Remove and install windshield.

- 2. Connect windshield antenna lead to radio lead in cable.
- 3. Trim radio.

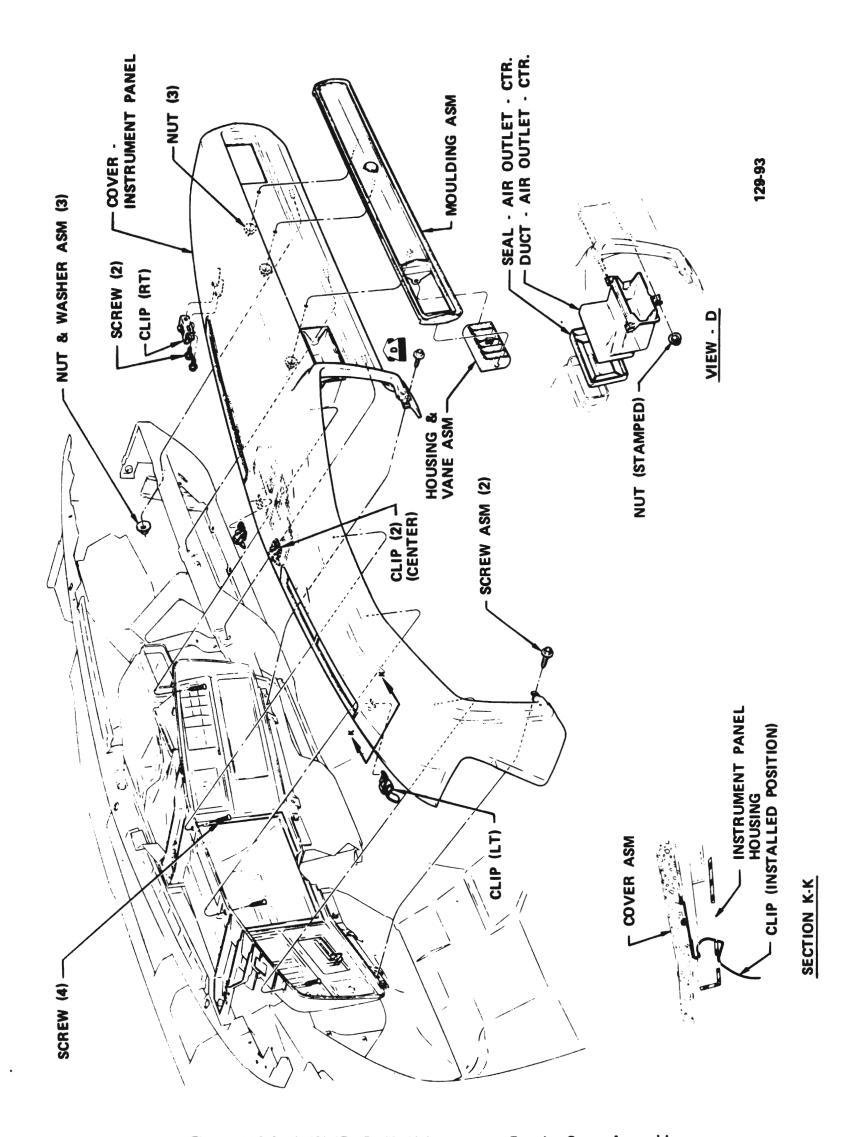


Figure 129-8 4L-4N-4R-4P-4U-4V Instrument Panel - Cover Assembly

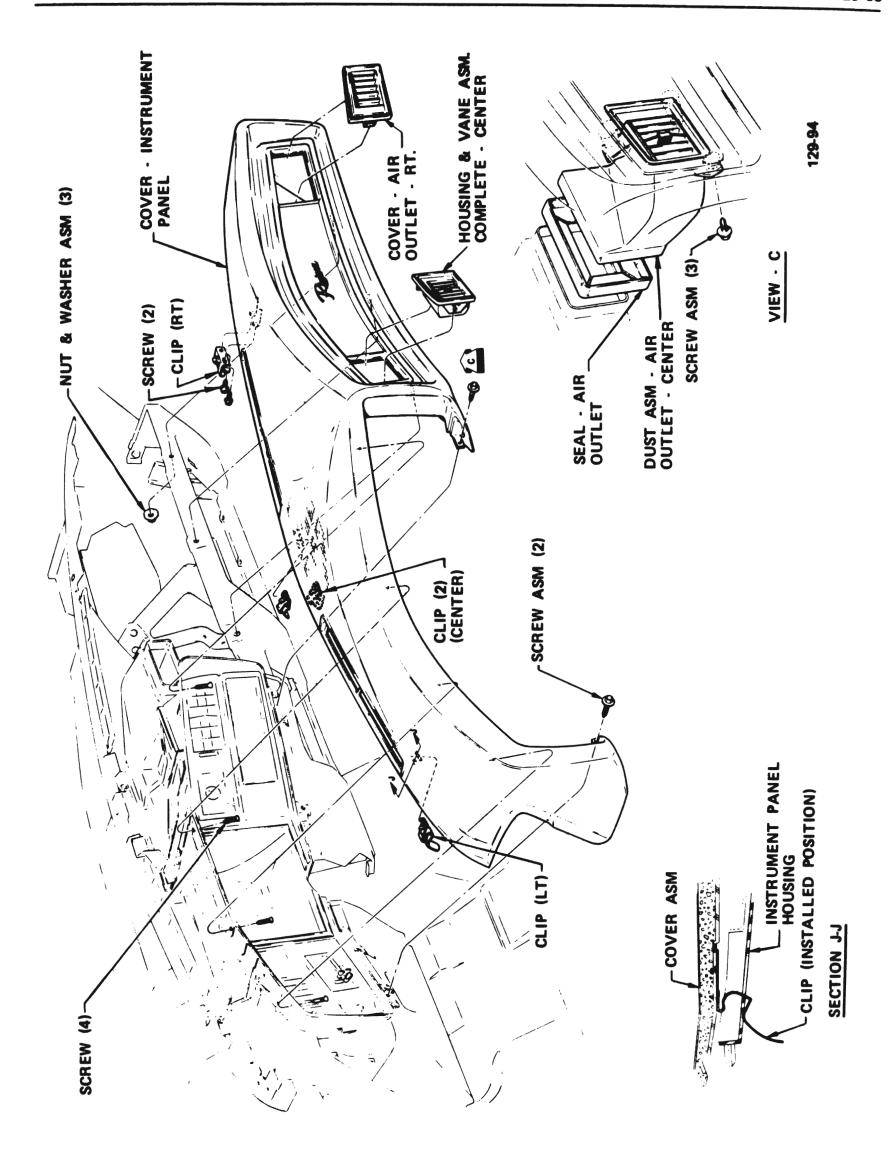


Figure 129-9 4Y Instrument Panel - Cover Assembly

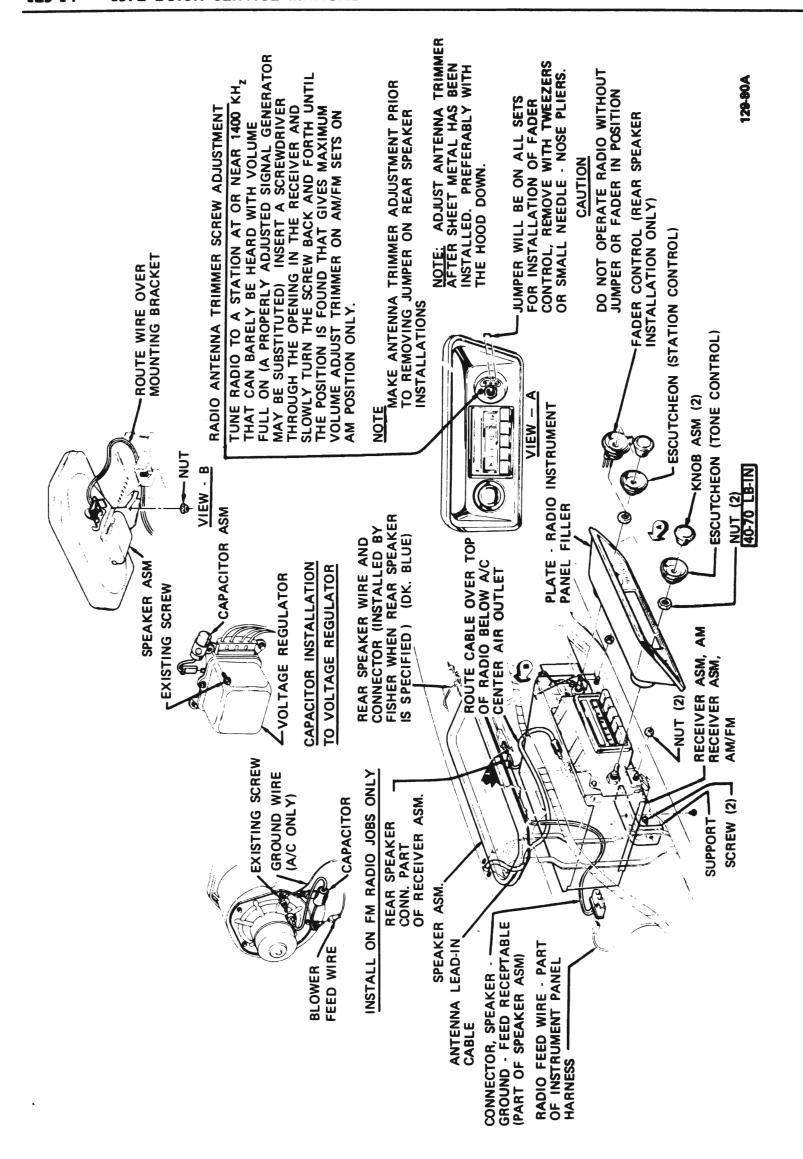


Figure 129-10 4D-4F-4G-4H Radio, Knobs, and Speaker

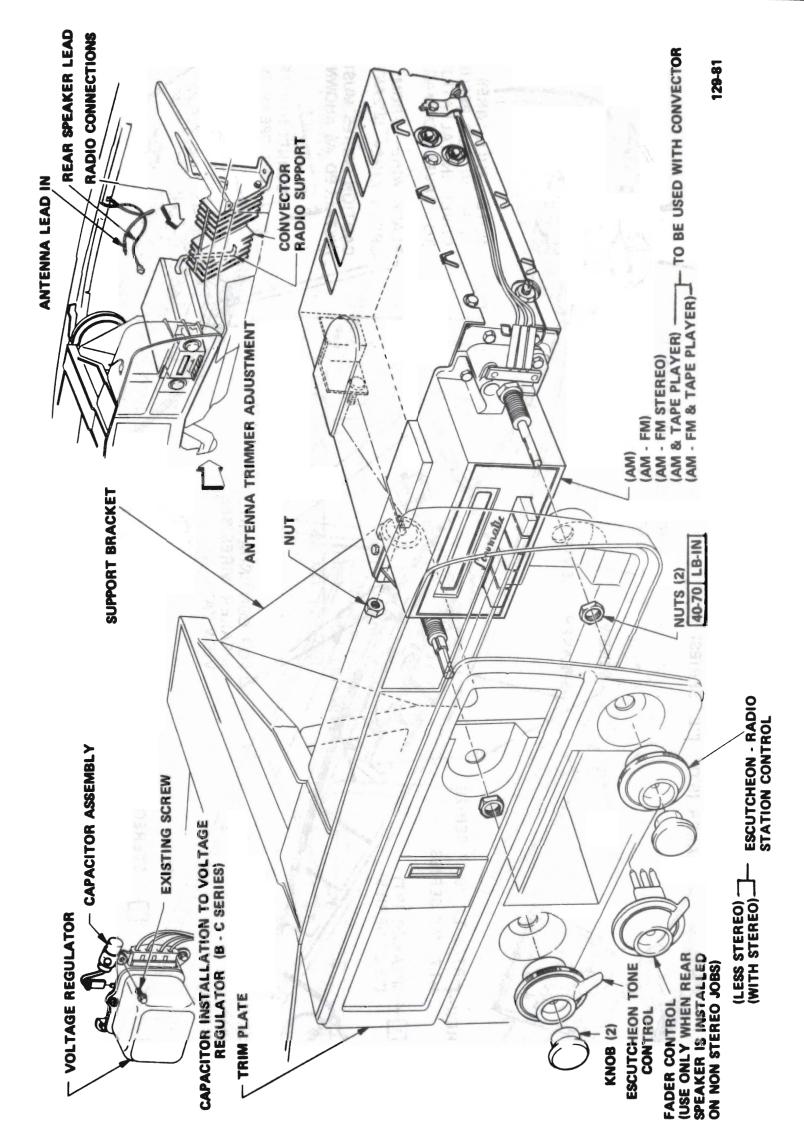


Figure 129-11 4L-4N-4R-4P-4U-4V-4Y Radio - Receiver and Knobs

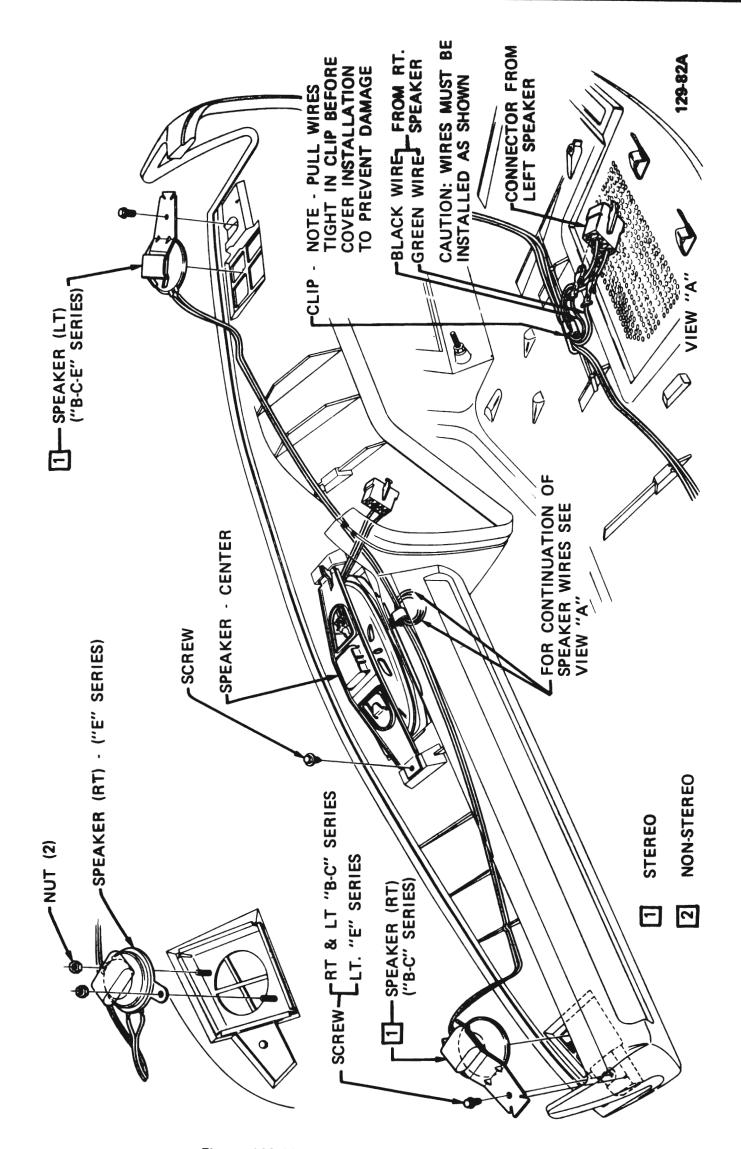


Figure 129-12 4L-4N-4R-4P-4U-4V-4Y Radio Speakers

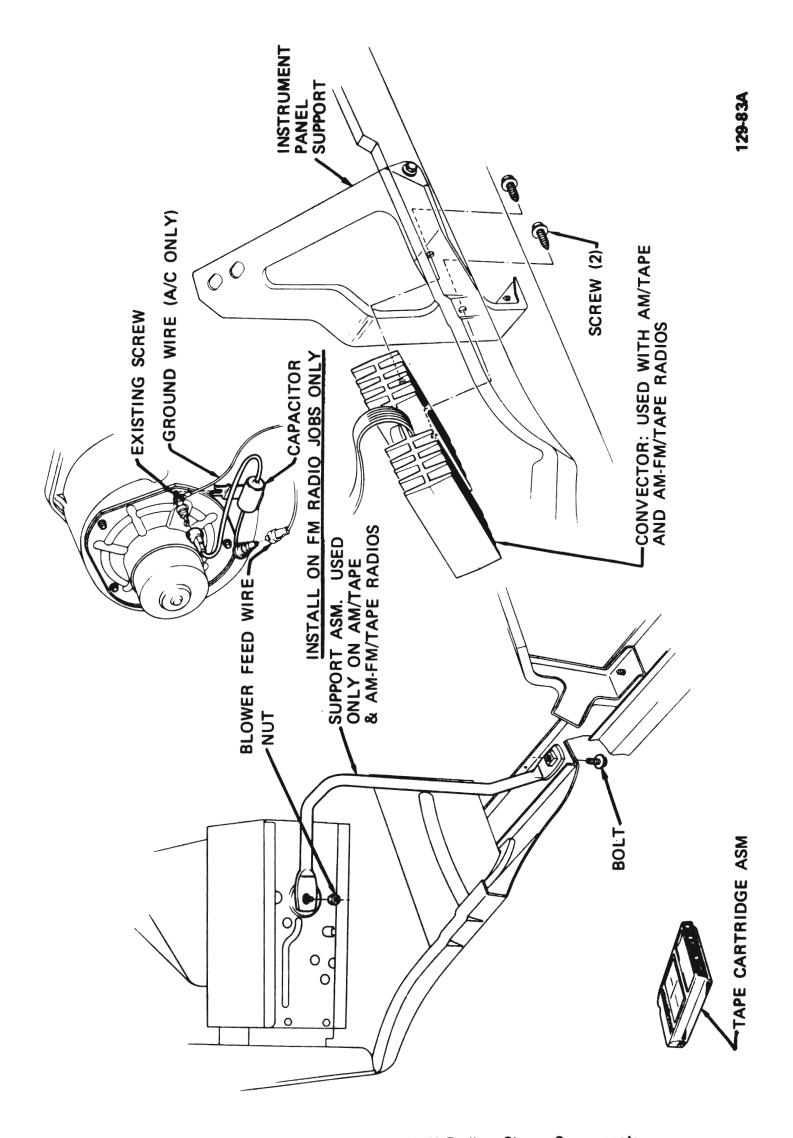


Figure 129-13 4L-4N-4R-4P-4U-4V-4Y Radio · Stereo Components

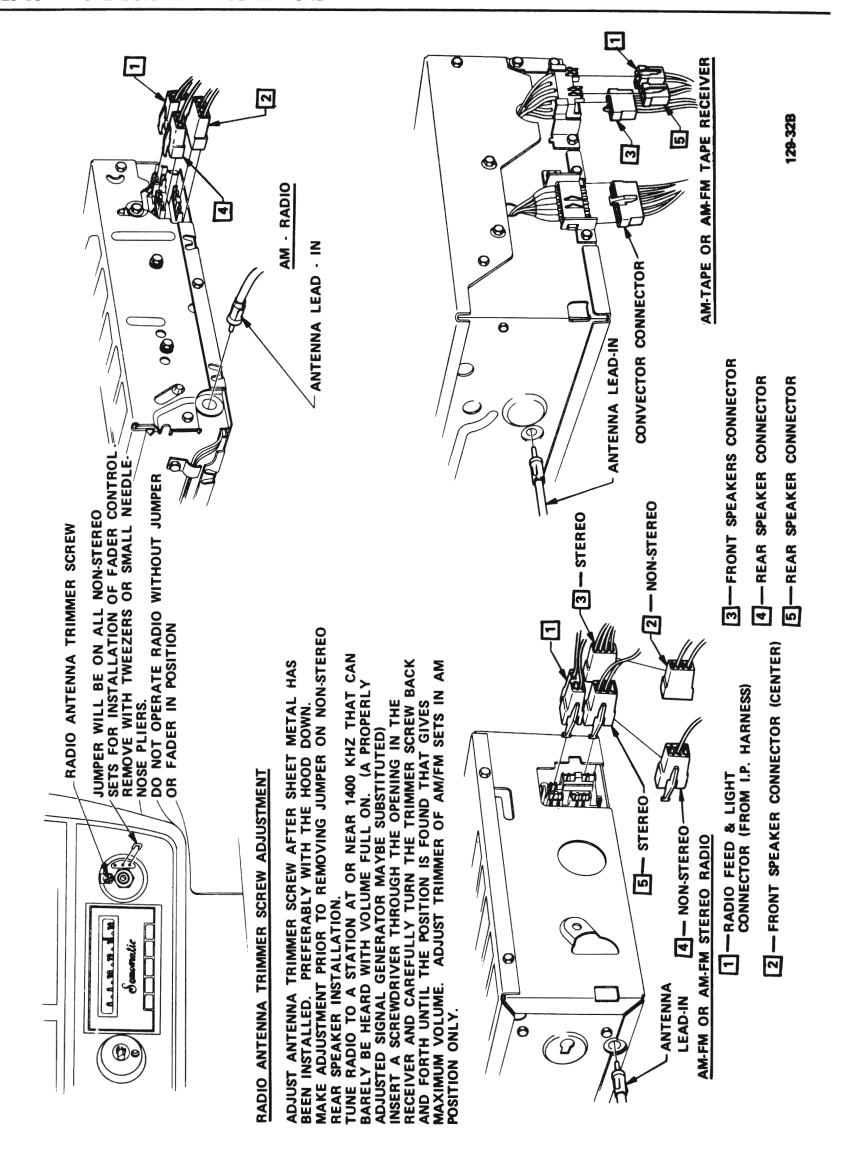


Figure 129-14 4L-4N-4R-4P-4U-4V-4Y Radio Connections