CHEVROLET RADIO SERVICE AND SHOP MANUAL

985432—PUSH BUTTON RADIO
985455—CHEVY II PUSH BUTTON RADIO
985431—MANUAL RADIO
985453—CHEVY II MANUAL RADIO
985449—CORVAIR PUSH BUTTON RADIO
985447—CORVAIR MANUAL RADIO
985396—CORVETTE RADIO
985471—MANUAL TRUCK RADIO
985443—SERIES 95 MANUAL TRUCK RADIO
985519—GUIDE-MATIC HEADLAMP CONTROL
FOR

1963

FOREWORD

The information in this service and shop manual covers a general description of Chevrolet Radios and Guide-Matic Headlamp Control for 1963 and thorough data on operations, specifications and procedures for testing and servicing Chevrolet Radios and Guide-Matic Headlamp Control.

CHEVROLET MOTOR DIVISION
GENERAL MOTORS CORPORATION
DETROIT 2, MICHIGAN

Litho in U.S.A.
P&A 1963
8.5M

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CHEVROLET RADIO SERVICE
AND SHOP MANUAL

Electrical Description

The circuit used in the Chevrolet receivers are of the superheterodyne type that use no regeneration. The tuning circuits are of the permeability type and are tuned by varying iron cores in and out of the antenna, radio frequency, and oscillator coils like pistons. This is shown for the push button models in Figure 1.

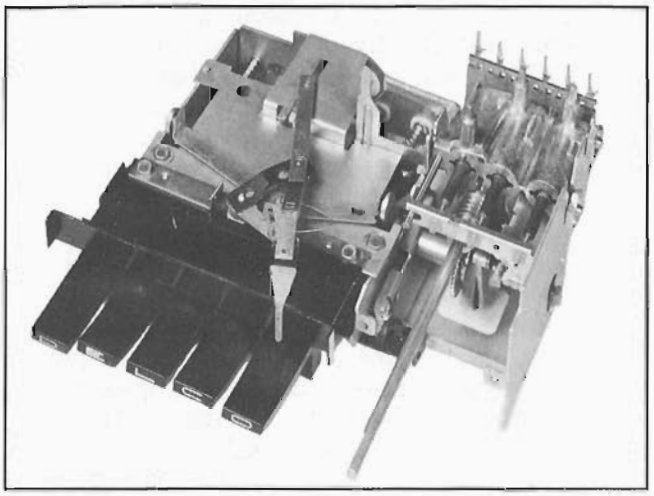


Figure 1

The intermediate frequency stages are tuned by means of two iron cores in each transformer as shown in Figure 2, and are adjusted from the top and bottom of the transformer. Both the first (input) and second (output) intermediate frequency transformers are tuned by this method.

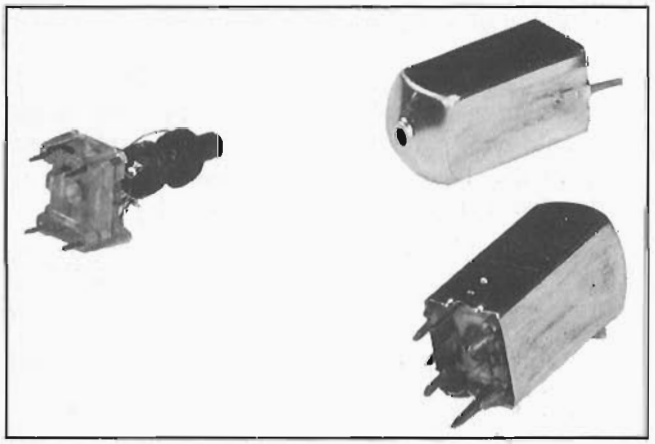


Figure 2

The antenna circuit is coupled to the antenna by means of an adjustable antenna trimmer to take care of normal variations in antenna and antenna cable capacity. The antenna trimmer is located on the front of the radio chassis under the dummy knob on the manual tuning shaft, and is adjusted by means of a small screwdriver. This trimmer permits the receiver to be adjusted to any of the Chevrolet antennas for maximum sensitivity and performance. This adjustment is very important, and station mixing may occur if it is not adjusted.

Procedure For Checking Inoperative Or Noisy Radios

Receiver Completely Dead

Check for a blown fuse, blown fuse could be caused by one of the following:

1. Short in 12 volt circuit of radio. It will be necessary to remove radio from car and check the 12 volt circuit.
2. Solenoid remaining energized. (Wonder Bar Radio only).

   Check speaker for open circuit.
   Check antenna for open or short circuit.

Weak - No Volume

A weak receiver can be caused by the failure to adjust the antenna trimmer or the speaker not being completely plugged in. Check these before removing the radio for servicing.

IMPORTANT: Adjusting the antenna trimmer for maximum volume on a weak station or noise will provide maximum performance and prevent weak & fading radios.

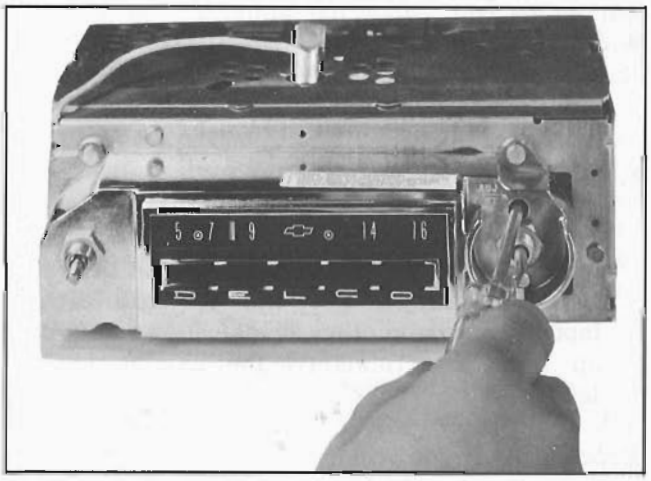


Figure 3

To prevent weak or fading reception, remove right-hand tuning knob and adjust "Antenna Trimmer" screw. See sticker on radio for instructions. CAUTION: THIS WILL NOT WORK IF TUNED TO A STRONG STATION.

NOISY OPERATING RADIOS

The noise can be caused by one or more of the following:

1. TIRE STATIC is caused by friction between the tires and pavement, and is almost a continuous roar while car is in motion, and does not vary appreciably with car speed. The intensity of the noise is greater on a dry sunshiny day, and not so noticeable on humid or rainy days. To eliminate this type noise be sure that the front wheel static collectors have been installed, being sure that they are free of grease and are making good contact to front wheel spindle. If the static still persists, install tire static powder in all five tires.
2. NOISY ANTENNA can be located by turning on the radio receiver, tuning in a station and by tapping the antenna with a screw driver handle. If noisy, a crashing sound will be heard in the radio each time you tap the antenna. The antenna lead-in can also cause noise in the radio if the shield is broken or unsoldered from the ends, or if the lead-in wire in cable is loose or broken. This can be checked by shaking the antenna lead-in cable. If you can cause a crash in the radio while shaking lead-in, replace lead-in.
3. MOTOR INTERFERENCE in Chevrolet radios is usually caused by poor grounds when installing the antenna or receiver. Check to make sure all required suppression material has been installed and that all grounds are free of paint, grease, or rust and are tight.
4. GENERATOR INTERFERENCE is a whining noise similar to a siren, and increases or decreases with speed of the engine. Install or replace generator condenser.
5. Delcotron Interference is a whining noise most noticeable with the radio volume very low. This noise is usually caused by a defect in the Delcotron itself. However, in the radio it is necessary to keep the "A" lead (battery input) away from other leads which would pick up noise, particularily the volume control leads.

Procedure For Checking and Servicing Printed Circuits

All stages of the 1963 Chevrolet radios use printed circuit boards, the latest method used in wiring electronic products. The printed circuits reduce the possibilities of shorted or broken wires and loose connections that the wired sets were subject to.

The servicing of printed circuits is not difficult but a few precautions must be observed when trouble develops in the component parts mounted to the printed circuit board and repairs or replacements are made.

In the servicing of the printed circuit portion of the radio, EXCESSIVE HEAT applied to any of the soldered terminals can cause the printed circuit to lift from the circuit board which results in the necessity of replacing the entire printed circuit board. A 25 to 50 Watt soldering iron is recommended for work on the printed circuit board. Care should be taken not to place the soldering iron tip directly on the printed circuit board. The iron should be placed on the lead or terminal being soldered to the printed circuit which will allow the heat and solder to flow down the lead or terminal to the printed circuit.

When removing or replacing component parts mounted on the printed circuit board, it is important that the heat be applied to the wire lead or terminal and not directly to the printed circuit. A small wire brush is most helpful in the removing operation. Care should be exercised not to crack or break the circuit board as any break in the board will necessitate replacement of the circuit board.

The printed circuit has an insulating and sealing coat placed over the entire board after the circuits are put in place on the board, and for any soldering that is required on the printed stripes, the insulation must be scraped off - NOT BURNED OFF with a soldering iron as it will also burn the printed strip. If a portion of the circuit on the board is broken, it can be repaired by scraping off the insulating coating and soldering a piece of wire across the break.

Resistance and voltage reading should be made at the soldered point on the circuit board. After any soldering operation has been performed, make sure to remove any loose particles of solder from the printed circuit board.

Procedure For Checking Transistors

Transistors have a very low failure rate, however, they do fail occasionally so a transistor checking procedure is very valuable.

The transistor which is most likely to fail is the large power transistor called the output transistor. This could cause no "Thump" to be heard as the radio is turned on, but remember that a defective speaker or blown fuse will also prevent the "Thump".

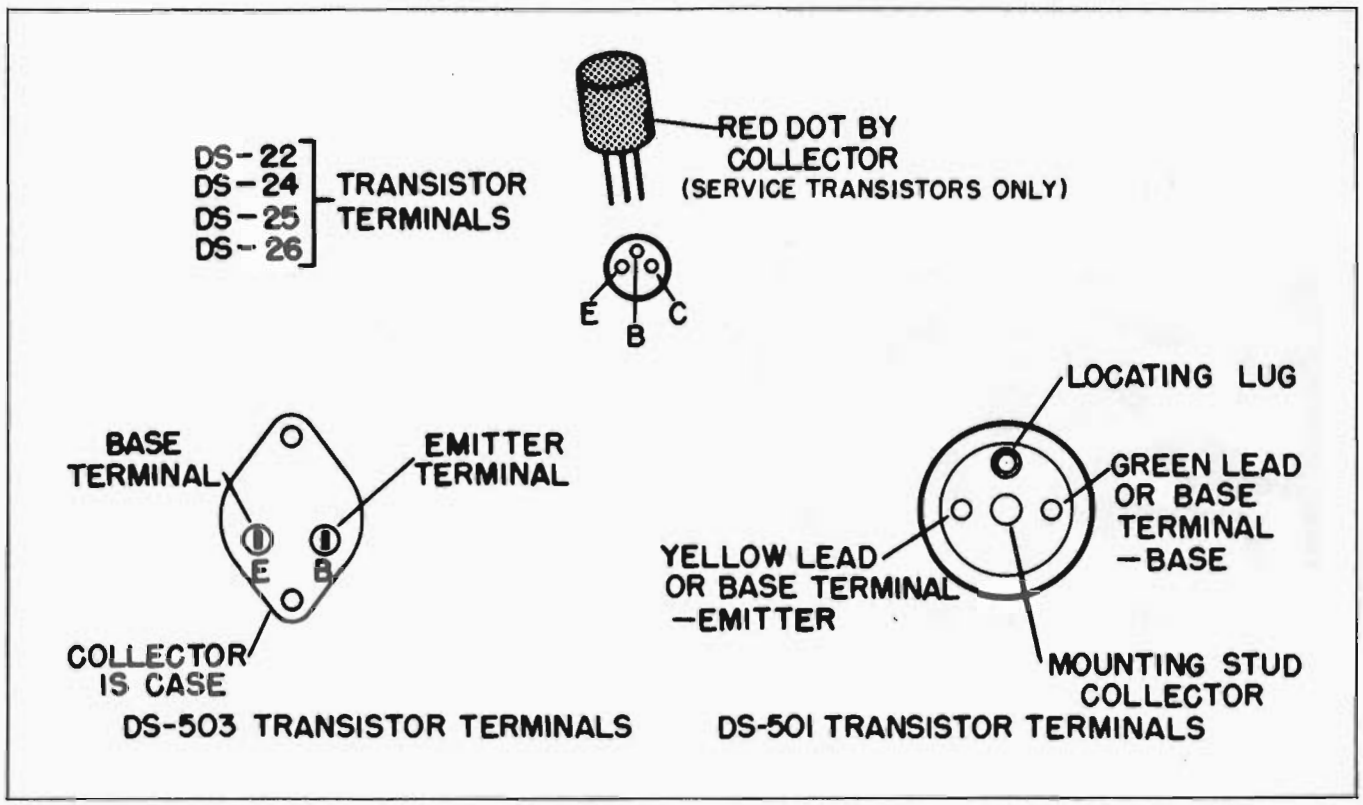


Figure 4

There are many commercial transistor checkers on the market also newer type tube checkers can test transistors. These checkers have their own testing procedure so the following paragraphs will be devoted to testing transistor with an ohmmeter.

Checking Power Transistors

The DS-501 and DS-503 leads must be unsoldered and disconnected from the circuit. Allow the transistor to cool to room temperature before checking.

Place an ohmmeter on the Rx1 scale and "zero" the meter. Connect meter between the emitter lead and the collector mounting stud, see Figure 4 leaving the base open. After taking this reading, reverse the meter leads and read the meter again. The lowest of these two readings must not be below 50 ohms.

If the transistor does not read 50 ohms or higher, the transistor is defective and should be replaced.

Most defective power transistors read "O" ohms. This will cause the fuse resistor on the circuit board to open and often causes the 10 ohm resistor connected to the fuse resistor to increase in value. These must be checked and replaced if necessary.

Checking Small Transistors

Small transistors, such as the DS22, DS24, DS25, and DS26 usually open inside the transistor when they fail. When this happens, no signal can pass through that stage.

If a stage is found to be dead by the signal injection or "Trouble Isolation" procedure, the transistor can be checked by bridging a good one across it, just like an open condenser is checked:

1. Connect a good transistor of the same or equivalent type across the one in the circuit, make sure that all three leads are making a good connection at the proper solder points on the circuit board - Base lead to point B; Emitter lead to point E; Collector lead to point C. See Figure 5.

2. If the radio plays, remove the defective transistor from the circuit and solder the new one in.

3. If the radio doesn't play, the chances are something else is at fault. Go to the "Procedure for Trouble Isolation".

NOTE: The above test cannot be made on the large transistors, DS501 and DS503, because they usually short instead of open.

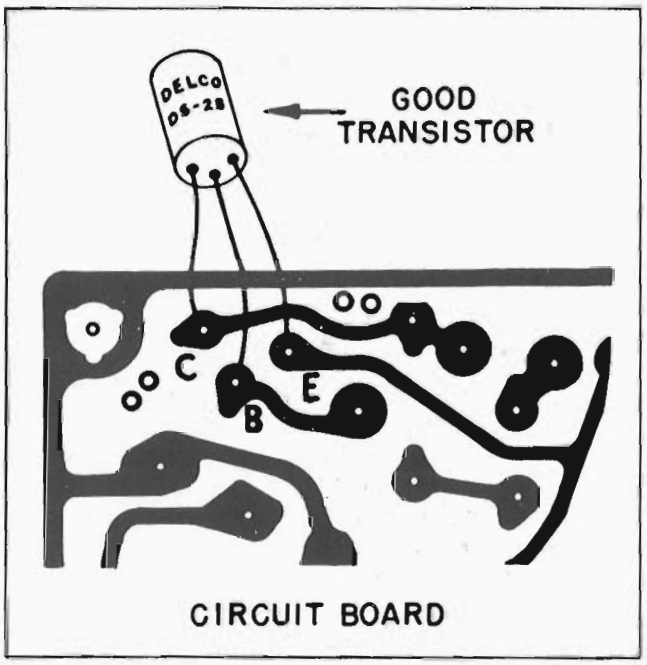


Figure 5

OHMMETER TEST

Small transistors can also be checked for open leads by using an ohmmeter. However, different meters give different readings, depending on the range selected, the battery used inside, and the meter resistance.

The table in Figure 6 shows the readings obtained when a Simpson Model 260 Volt-Ohm-Milliameter, or RCA Model WV-77A was used. The procedure is:

1. Set the meter on the RX100 range (radio power supply off).

2. Connect the ohmmeter leads to the Base and Emitter, B and E, solder points on the circuit board. Now reverse the meter leads and connect again to B and E. A definite change in resistance should be noted, and one of the readings should be less than 500 ohms.

3. Connect the ohmmeter leads to the Base and Collector, B and C, solder points on the circuit board. Now reverse the meter leads and connect again to B and C. A definite change in resistance should be noted, and one of the readings should be less than 500 ohms.

NOTE: In Figure 6 that the power to the radio must be turned off, and the radio volume control turned completely clockwise before taking ohmmeter readings.

NOTE: That the DS22 and DS26 have a 5:1 ratio or better when the high reading is divided by the low reading. The DS24 and DS25 have a 10:1 ratio or better. If the transistor is removed from the circuit and tested, the low readings will be about the same as shown in the chart, but the reversed readings will be much higher.

NOTE: Adequate tests are provided to determine if transistors are functioning properly. It is not necessary to remove and replace transistors that have passed these tests.

IN-CIRCUIT TESTING OF SMALL TRANSISTORS USING OHMMETER

Radio Power "Off", Volume Control Set at Maximum

Meter Scale RX100

Transistor	Meter on B and E	Meter Reversed B and E	Meter on B and C	Meter Reversed B and C
DS22	250 Ohms	1,900 Ohms	200 Ohms	2,000 Ohms
DS24	250 Ohms	50,000 Ohms	200 Ohms	50,000 Ohms
DS25	200 Ohms	7,000 Ohms	200 Ohms	3,000 Ohms
DS26	200 Ohms	2,000 Ohms	200 Ohms	**1,500 Ohms

Values may vary with different meters. Above measurements were made with a Simpson Model 260 or RCA Model WV-77A meter.

**Reading will be lower if volume control not turned completely clockwise.

Figure 6

Service Procedure For The Push Button and Manual Radios

Turn on signal generator and set in audio position to obtain a 400 cycle audio signal. Ground one lead of signal generator to radio chassis. A .1 mfd, capacitor should be placed in series with the remaining lead to block D.C. current. The lead with the capacitor will be the probe for signal tracing. Keep radio volume control turned to maximum for all tests.

PRELIMINARY TEST (IMPORTANT) - Turn radio on with ear next to speaker. As this is done a "thump" should be heard in the speaker. If O.K. go to Step 1. If no "thump" was heard, check:

a. Speaker connections and speaker for proper hook up.

b. Power connections and fuse for proper hook up.

c. DS501 power transistor collector voltage by measuring the voltage between the transistor case and chassis. (IMPORTANT: DO NOT CONNECT METER TO THE TRANSISTOR HEAT SINK OR FINS.)

d. A reading of about 11 volts from collector to ground means that something is open between collector and ground. Check output transformer.

Note of Explanation: The signal generator is now put into use, beginning with Step 1. The letters in parenthesis are found printed on the circuit board. For example, (AF) stands for "Audio Frequency" amplifier and refers to the DS26 transistor. (C) stands for collector. When the signal generator is applied at that point, if nothing is heard the output stage should be rechecked as described in the preliminary test above.

The test points - Step 1 through Step 7 - are shown in Figure 7.

STEP 1. Touch generator probe to DS26 (AF) collector (C) and adjust generator output to produce weak tone. If weak tone cannot be heard, check the DS501 output stage. Without changing generator controls, go to Step 2.

STEP 2. Apply generator probe to DS26 (AF) base terminal (B). An increase in signal should be noted, indicating DS26 transistor gain. If O.K. go to Step 3. If no gain was heard, check:

a. DS26 transistor without removing it from the circuit. See "Procedure for Checking Small Transistors" page 3. Volume control must be completely clockwise during all tests.

b. Check the voltage at the DS26(AF) collector (C), by measuring between (C) and chassis. The voltage should be about .5 volt. A reading of "0" volts or near "0" means that no current is flowing in this stage, and one of the following items is probably defective: Open resistor or poor connection in the Base (B) circuit, or in the Emitter (E) circuit. Trace the printed circuit from those points and check for open solder connections.

c. A very high voltage of 10 or 11 volts from DS26 (AF) collector (C) to ground means that there is an open between collector and ground. Check input transformer resistance, and check for bad solder connections.

d. Bridge a 100 mfd. capacitor across item 33. If the gain comes up, replace the capacitor.

Change signal generator from audio position to generate an intermediate frequency signal. Set signal generator to 262 kilocycles.

STEP 3. Apply generator probe to base (B) of DS22 (IF) transistor. A loud signal should be heard without turning the generator controls to a very high level. This usually takes less than half the maximum settings on the signal generator, as will be learned by practicing with your generator on a good radio. If O.K. go to Step 4. If no signal or a very weak signal is heard, check:

a. DS22 transistor without removing it from the circuit. See "Procedure for Checking Transistors".

b. Voltage between collector (C) and ground in the DS22 (IF) stage. Should be "0" volts. If voltage is high, near 10 or 11 volts, the trouble is due to: Open connection in the (IF) collector circuit (C), or open IF transformer, item 6.

c. Check DS22 (IF) conduction by measuring voltage across the 1000 ohm resistor, item 54. Measure this by putting the positive lead of a d.c. voltmeter on conductor 2 on the circuit board, and the negative lead on the emitter (E) of the DS22 (IF) transistor. The voltage should read about 1.0 volt.

If the voltage is low or near "0", check for: Open connection on the circuit board in the

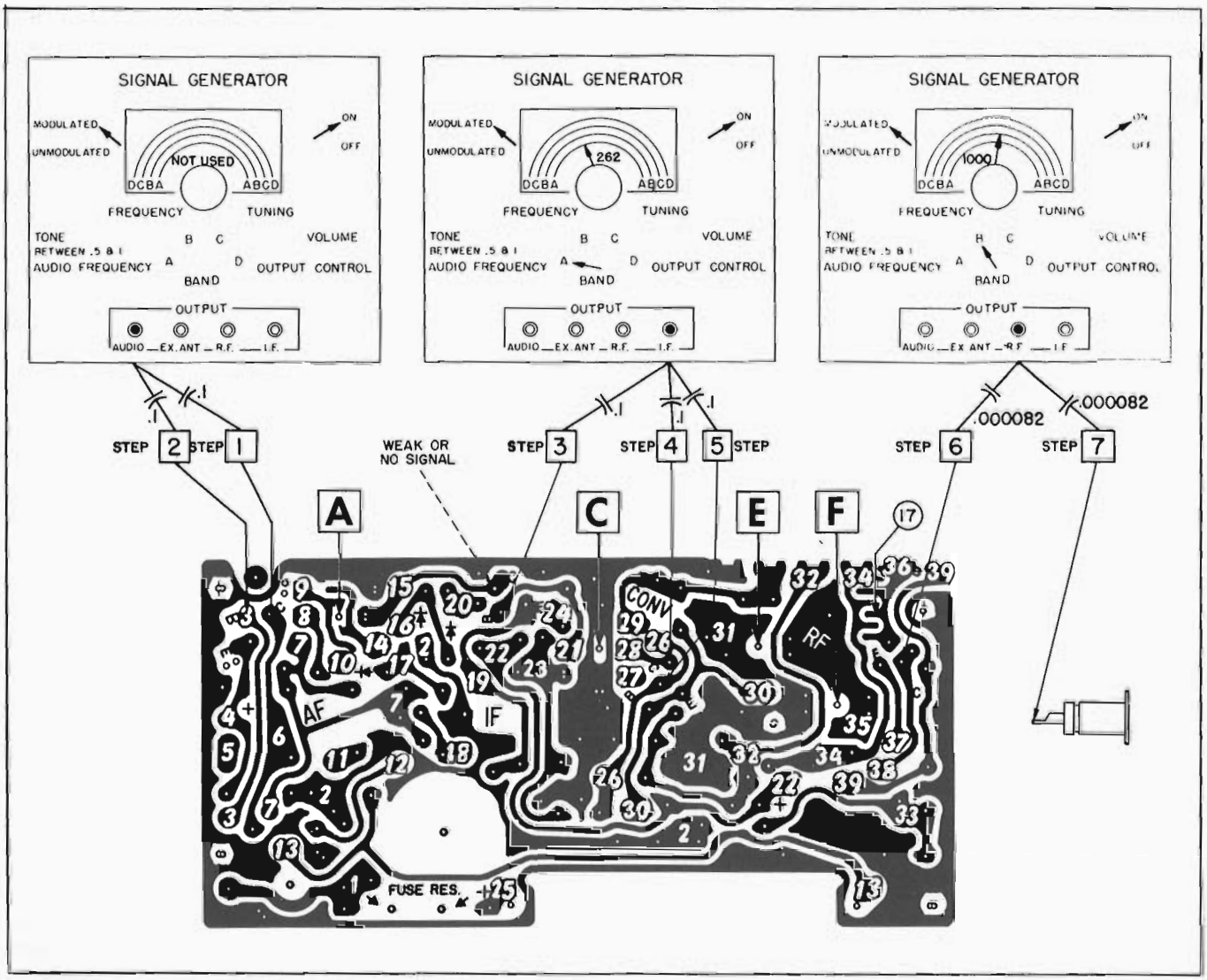


Figure 7 SIGNAL TRACING LOCATIONS ON CIRCUIT BOARD - ALL PUSH BUTTON AND MANUAL RADIOS

(IF) base circuit (B) or emitter circuit (E). Check IF transformer, item 5, for open.

If the voltage is very high instead of "0", check for leakage or shorts in the Base (B) and Emitter (E) circuits, including: Shorted .047 mfd. condenser, item 27.

Shorted .047mfd. condenser, item 29. Shorted IF transformer, item 5.

d. Bridge a .047 mfd. capacitor across capacitors, item 27 and item 29. If gain increases, the capacitor paralleled is open.

e. If trouble is still not located, turn signal generator volume control to maximum. Apply at collector (C) of DS22 (IF) transistor. A weak signal is usually heard, depending on the signal generator. If no signal is heard, check or replace: I.F. transformer, item 6; detector diode DS27.

STEP 4. Apply generator probe to DS25 converter collector (C) and adjust generator output to produce weak tone. Without changing generator controls, go to Step 5.

STEP 5. Apply generator probe to base (B) of DS25 converter transistor. An increase in signal should be noted, indicating DS25 transistor gain. If gain is not present, check:

a. DS25 without removing it from the circuit. See "Procedure for Checking Small Transistors".

b. Voltage between collector (C) and ground in the DS25 converter stage. Should be "0" volts. If voltage is high, near 10 or 11 volts, the trouble is due to one of the following: Open connection in the collector (C) circuit in the converter stage. Open IF transformer, item 5. Open oscillator coil, item 4.

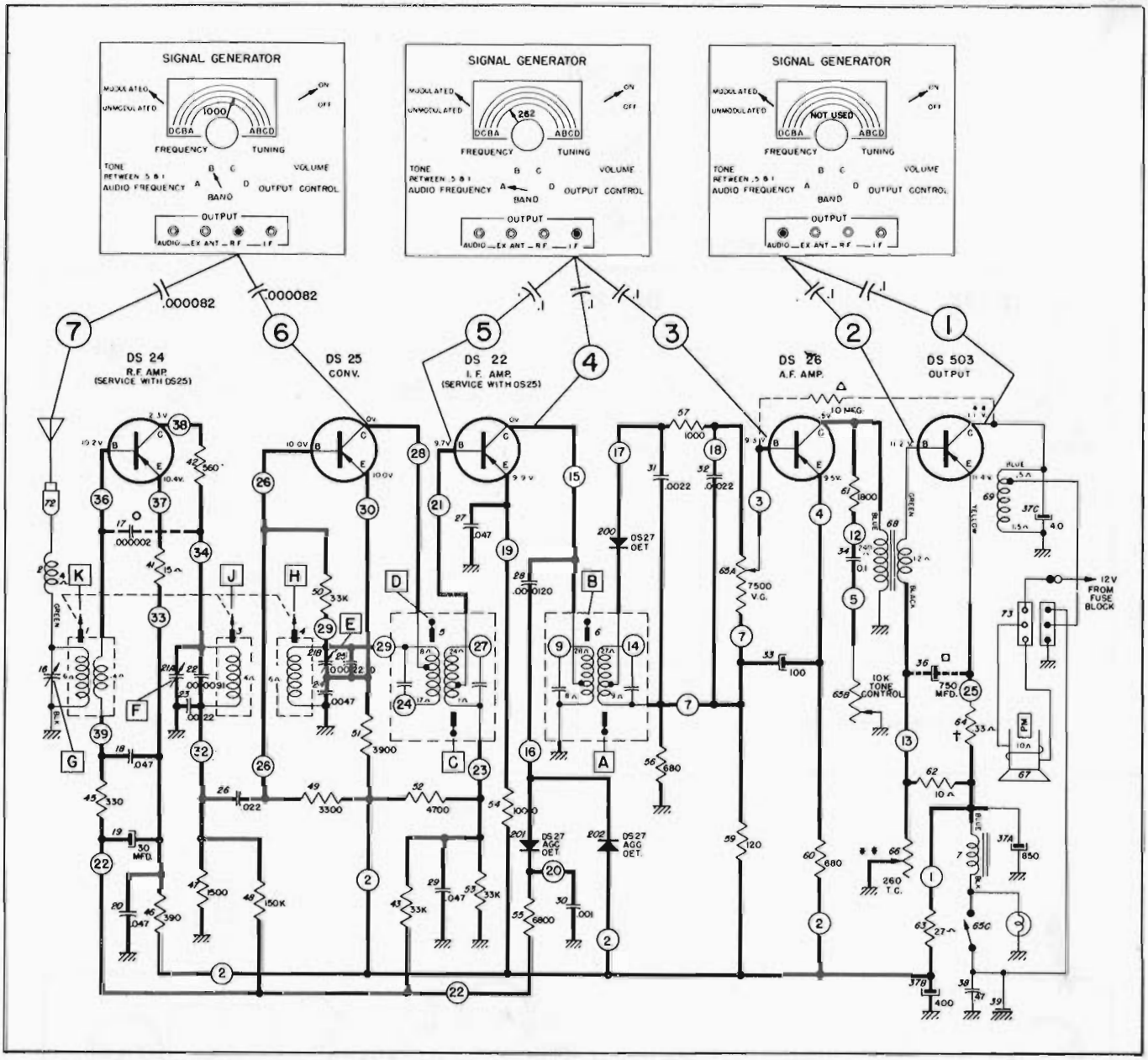


Figure 8 SIGNAL TRACING PROCEDURE - 985432 - RADIO

c. Check DS25 converter conduction by measuring voltage across the 3900 ohm resistor, item 51. Measure this by putting the positive lead of a d.c. voltmeter on conductor 2 of the circuit board, and the negative lead on the emitter (E) of the DS25 converter. The voltage should read about 1.0 volt.

If the voltage is low or near "0", check for: Open connection on the circuit board in the converter base circuit (B) or emitter circuit (E).

If the voltage is high, about 10 or 11 volts, check for: Shorted .000220 condenser, item 25. Shorted .0047 condenser, item 24. Shorted trimmer, item 21B.

d. If all above tests pass, align 1st I.F. coil. If coil fails to peak sharply replace it. See alignment procedure.

Change signal generator from intermediate frequency setting to radio frequency signal. Remove the .1 mfd. condenser from the probe lead of the signal generator. Place a .000082 mfd. condenser in place of the .1 mfd. just removed. Set signal generator to 1100 kilocycles and tune radio receiver to 1100 kilocycles (11 on dial scale). A slight retuning of the radio dial may be necessary, once the signal is injected into the radio, to provide maximum signal through the radio.

STEP 6. Apply the generator probe to DS24 (RF) collector (C), and adjust generator output to

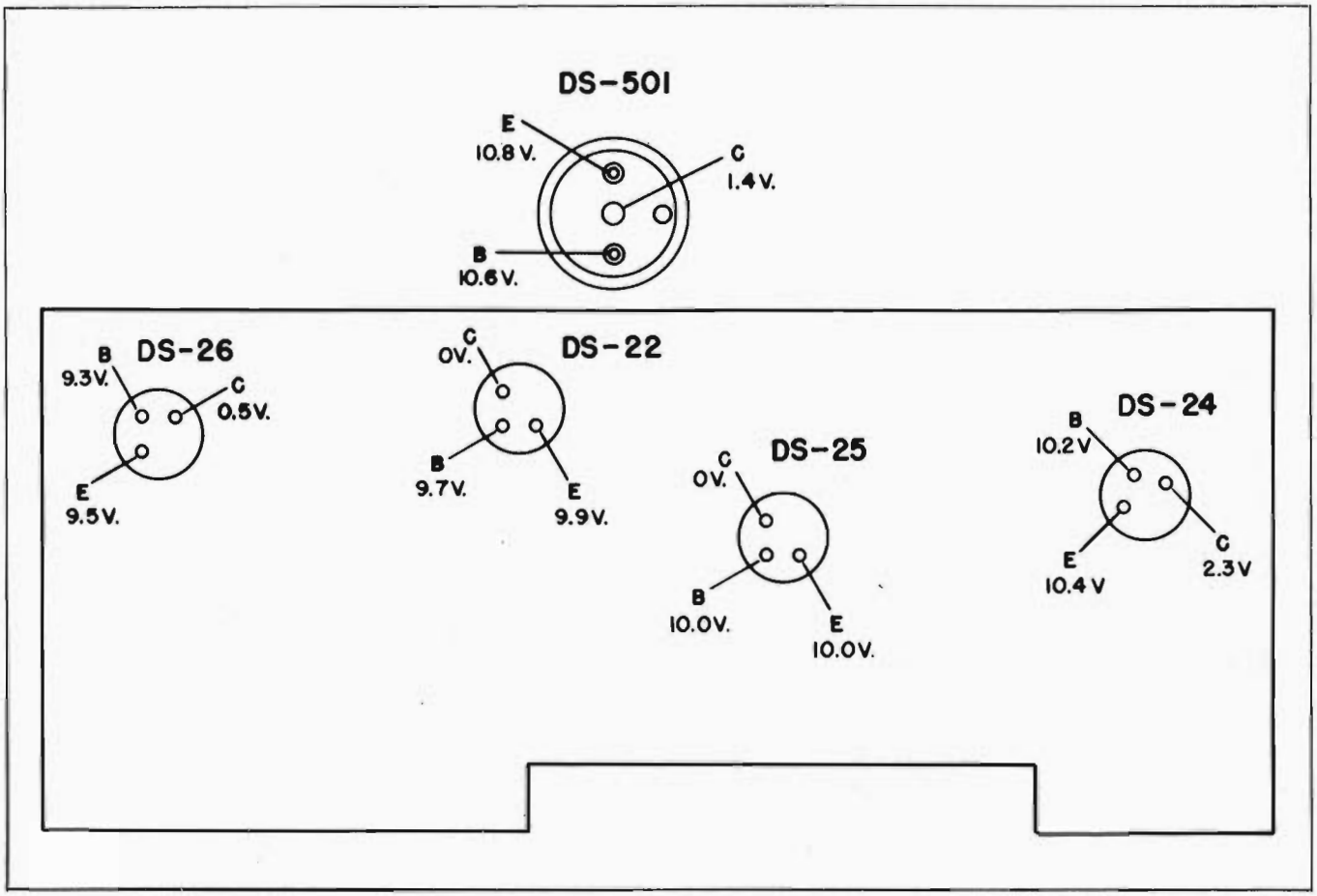


Figure 9 VOLTAGE CHART - ALL PUSH BUTTON - RADIOS

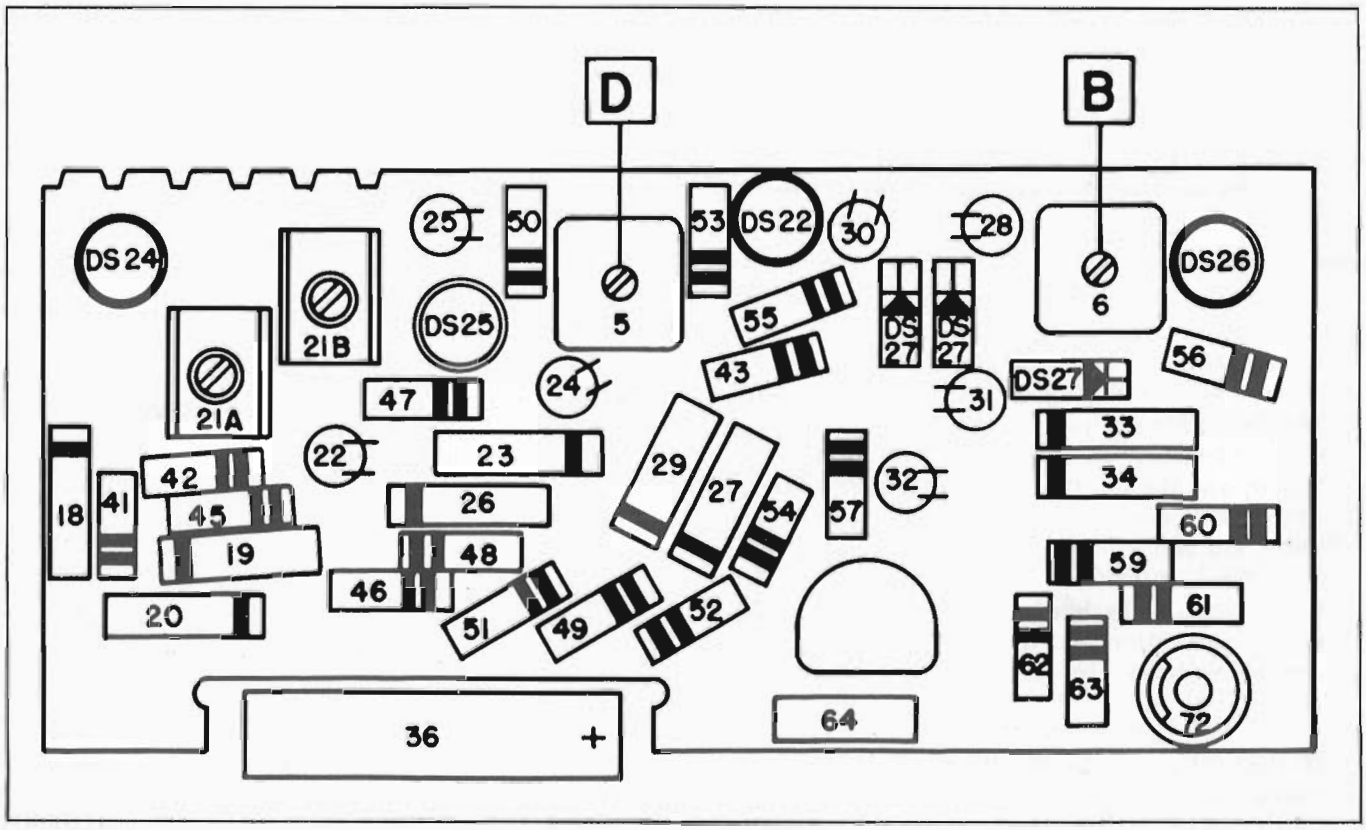


Figure 10 PARTS LAYOUT ON CIRCUIT BOARD - 985432 - RADIO

produce weak tone. Without changing generator controls, go to Step 7.

STEP 7. Move the generator probe to the antenna socket. A tone of equal or slightly less volume will result in the speaker. If signal at antenna socket is not heard, check:

a. DS24 transistor without removing it from the circuit. See "Procedure for Checking Small Transistors".

b. Check the voltage between the collector (C) and ground of the DS24 (RF) transistor. Should read about 2.3 volts d.c. with antenna disconnected from the radio.

   If voltage is high, near 10 or 11 volts, there is an open circuit between the collector (C) and ground. Check:

   RF coil, item 3, and resistor, item 47. Also check for bad solder connections in that area.

   If voltage is low, near "O" volts, check:

   Check for opens in the DS24 (RF) base circuit (B) and emitter circuit (E). Check the antenna coil, item 1, for open. Check trimmer capacitor, item 16 and .0022 capacitor, item 23 for short.

c. If (RF) stage is dead but voltages are all O.K., check:

   Antenna coil, item 1, for open. There are two windings on this coil, both at rear of tuner. Check antenna choke, item 2, for open. Check antenna trimmer, item 16, for short.

This completes the tests for a weak or dead radio. Below are additional hints which may help you find the trouble if it has not been located:

If noise can be heard in the speaker when the antenna is plugged in, but no stations can be picked up, the converter is probably not oscillating. To check for normal oscillation, measure the voltage across the 3.9K resistor, item 51 should be about 1.0 volt. Tune the radio from one end of the dial to the other while watching this voltage. If the voltage does not change slightly, the converter is not oscillating. Common causes of this are:

Open condensers in the DS25 converter circuit. Check by bridging them with good capacitors of the same value.

Defective DS25 transistor.

Open oscillator coil, item 4.

Defective trimmer, item 21.

If the radio plays loudly but is muffled on very strong stations, check the voltage between (RF) collector (C) and ground. This voltage should drop to a low value when turned to a strong station. If it doesn't, check:

DS27 AGC diodes, item 201 and item 202. When checked on the RX100 scale of an ohmmeter, there should be 10:1 ratio or better. Also check to see that those diodes are not mounted backward.

Check for open in conductors 22-36 and 39.

If the radio is very weak and distorted when tuned to strong stations, check:

a. The speaker and connections.

b. .47 ohm or .33 ohm fuse resistor, item 64, for open.

   Check the clear mica insulator between the power transistor and the heat sink or fin. The fin is grounded to the radio chassis on some models, but transistor is insulated from the fin by an almost invisible piece of mica. Other models have the fin insulated from the radio and the transistor connected directly to the fin.

Procedure For Servicing The Corvette Radio

All circuits, except the trigger circuit, are very similiar to the push-button and manual receivers, so the troubleshooting procedures outlined for these sets may be used for the wonder bar radio. Figure 10 shows the schematic diagram for the Corvette radio and the various points of signal injection.

It is very important that the first three stages of the radio are working and aligned properly before any attempt is made to troubleshoot the trigger circuit.

CONDENSED ELECTRICAL OPERATION OF ELECTRICAL TUNER USED ON WONDER BAR RADIO - 985396

The purpose of the electrical components associated with the tuner is to control the relay so the operator may start the tuner sweeping cycle by merely depressing a station selector bar switch so that the sweeping operation will continue until a signal is received. At that time, it

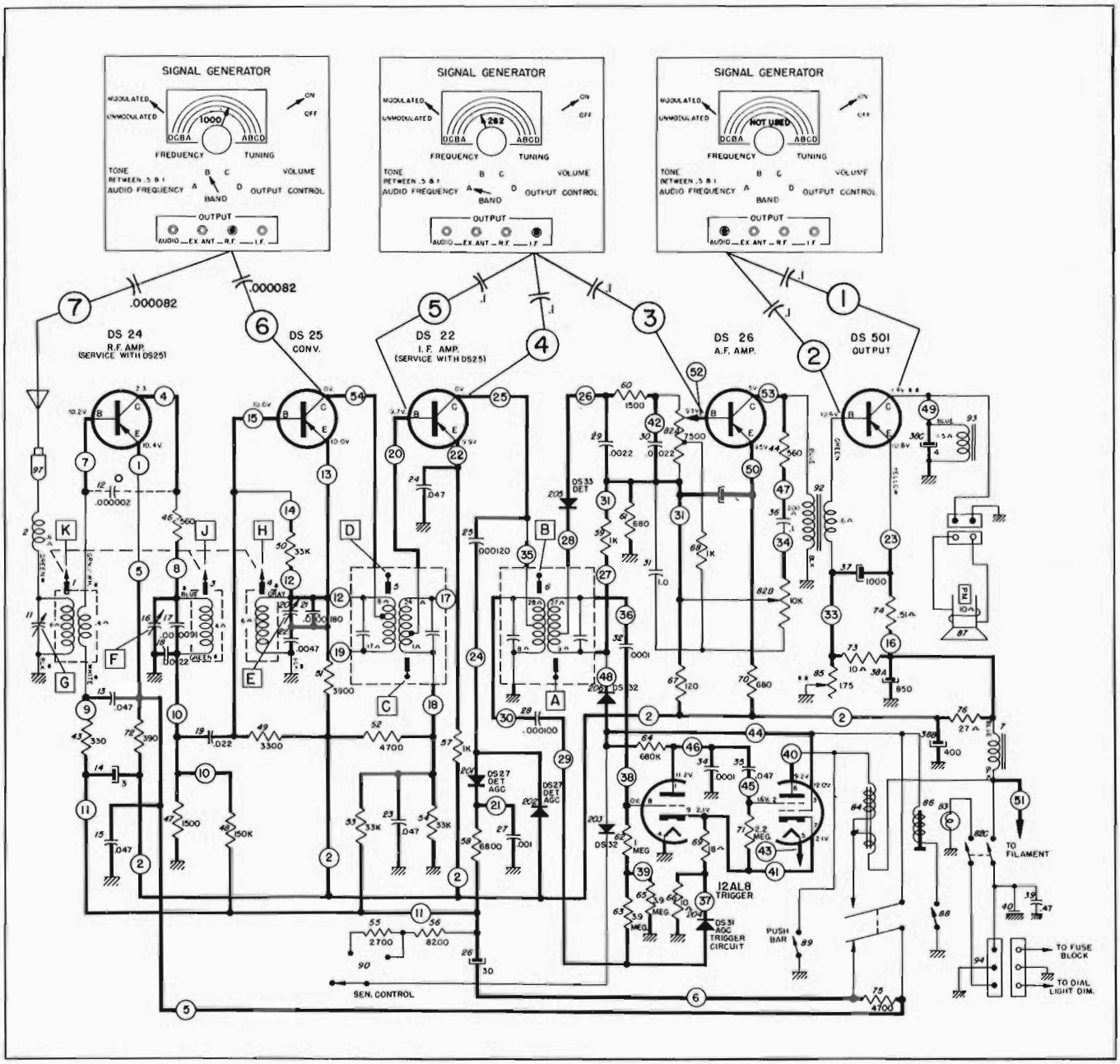


Figure 11 - SIGNAL TRACING PROCEDURE - 985396 - RADIO

is the function of this circuit to accurately tune to the frequency of the selected station. It also provides the necessary conditions to keep the tuner on the station until a change is desired.

ELECTRICAL OPERATION CYCLE

1. To start the tuner, the station selector bar is momentarily depressed actuating the station selector switch No. 89 which energizes the relay.

   A. Switch No. 89 completes a circuit from ground through the station selector switch (89) and relay (84) to the 12 volt supply.

   B. The current through this circuit energizes the relay (84) and removes the relay arm from the stopping disc - thus starting the tuner, and opening contact No. 2 and closing contact No. 1 on the relay switch (84).

2. To keep the tuner seeking after the station selector bar is released, the relay is held energized by a holding circuit.

   A. Contact No. 1 being closed supplies voltage to pin 3 of the 12AL8 tube which causes plate current through the relay.

3. To stop the tuner on station, the relay is de-energized by an electronic triggering circuit actuated by an incoming signal.

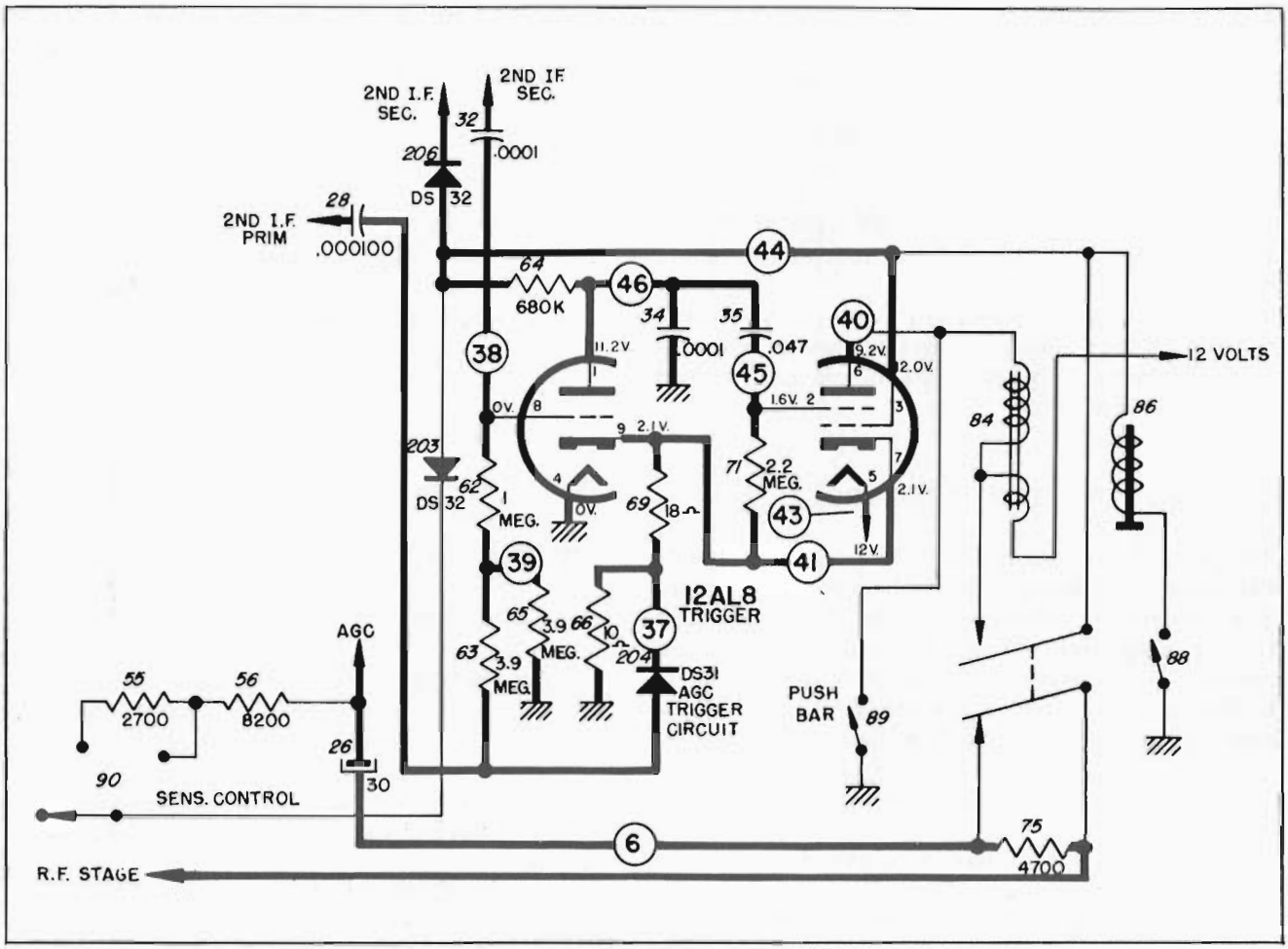


Figure 12 - TRIGGER CIRCUIT - 985396 - RADIO

A. The incoming signal develops a voltage in the primary and secondary of the 2nd I.F. transformer.

B. The I.F. signal voltage in the secondary of the 2nd I.F. transformer is coupled through the condenser (32) to the grid of the trigger detector section of the 12AL8 tube. This signal voltage is developed across the resistors (62) and (65).

C. The trigger detector section functions as a plate detector. The I.F. voltage appears on the grid and the tube conducts. The I.F. component is removed in the plate circuit by the .000100 condenser (34).

D. The plate current flow in the trigger detector section develops a biasing voltage across the 2.2 Meg. grid resistor (71), making the grid more negative than the cathode. This causes the plate current in the relay control section to stop.

E. Stopping the current flow de-energizes the relay (84) and the relay arm engages the stopping disc, stopping the tuner on station, opening contact No. 1, and closing contact No 2 of the relay switch.

4. To hold the tuner on the new station until another station is desired, the relay is held de-energized until the starting circuit is again actuated by the operator.

THE TRIGGER DETECTION CIRCUIT

The purpose of the trigger detector circuit is to take the input signal voltages of various amplitudes and trigger the relay tube so that the accuracy will be the same on all stations regardless of the signal strength. The grid of the plate detector (trigger-detector) is tied into the AGC line. A portion of the AGC voltage is used to vary the bias on the plate detector in proportion to the strength of the incoming signal. With a strong incoming signal, the bias voltage is high and triggering doesn't take place until the tuner gets very near the resonant frequency of the station providing the incoming signal. At this point the IF signal is great enough to overcome the bias

and the plate detector is caused to conduct, stopping the tuner. Likewise on a weak incoming signal, the AGC voltage is small and the bias on the plate detector is small, therefore a smaller amount of IF signal will stop the tuner at a point very close to the peak of the incoming signal. In other words, the AGC voltage raises and lowers the threshold over which the IF signal has to climb in order to stop the tuner.

The circuit is so designed that the IF signal voltage is high enough to overcome the bias and stop the tuner only when the tuner has reached the station frequency.

SENSITIVITY CONTROL

The sensitivity control 90 is a step switch with resistors of various values between each step. The control is inserted into the AGC circuit of the RF amplifier during the tuning sweep when contact No. 1 of the relay switch is closed. It is the means by which the operator controls the number of stations on which the tuner will stop.

Typical Complaints and Remedies

I. Tuner stops when bar is released

A. Check or replace 12AL8 trigger tube

B. Check or replace relay

II. Tuner runs as soon as set is turned on

A. Check for a shorted foot switch

B. Check for a short at the wonder bar selector switch

C. Check for a sticking relay

III. Tuner will not stop on stations

A. Check the antenna and 12AL8 tube. If radio is dead, check R.F., Conv, and I.F. Stages

B. Ground the negative end or a 1.5 V. flashlight battery and with the tuner cycling touch, the positive terminal on pin 8 of the 12AL8 tube. If tuner does not stop check:

1. Capacitor item 32.
2. Capacitor item 35.
3. Associated resistors around trigger tube
4. Check or replace relay

C. With a VTVM, check for the negative AGC voltage on pin 8 of the 12AL8 tube while tuning manually through A station. If no voltage appears

1. Check AGC system, mainly DS27 diodes

D. With VTVM, check for the small negative pulses on pin 8 of the 12AL8 trigger tube with the tuner seeking. If no pulses are present -

1. Check sensitivity control circuit

2. Align 2nd I.F. coil with a meter across the speaker (I.F. coil critical), (always replace with recommended parts.)

IV. Tuner will not stop on the center of stations.

A. Check or replace relay 84.

B. Set the clearance of the relay when energized, so it barely misses the teeth of the governor gear.

C. Align the 2nd I.F. coil and replace if it does not peak sharply.

PROCEDURE FOR ALIGNMENT OF ALL CHEVROLET RADIOS

All receivers are properly aligned at the factory and should require no further adjustments, except adjusting the receiver to the antenna when installation is made unless the adjustments have been tampered with, or new coils, intermediate frequency transformers or tuning cores have been installed.

To properly align the receiver, it will be necessary to have an output meter and signal generator.

NOTE: If any one of the tuning coils or cores have been replaced, see "Capacity and Inductance Alignment Procedure" before proceeding with alignment of the receiver. If only the adjustments have been tampered with or an intermediate frequency transformer has been replaced, proceed with the alignment as follows:

1. First hook up an output meter to the radio receiver. Any volt meter which will read "A.C." can be used. Set the volt meter in the 2.5 or 3 volt "A.C." range position, and ground one lead of meter to radio chassis. Place the other lead from volt meter on the speaker terminal.

2. Turn on signal generator and set adjustments to obtain a 262 kilocycle signal. Connect one lead of signal generator to radio chassis for ground. Attach the other lead of signal generator to the base of the converter transistor.

3. Adjust signal generator volume control so that the volt meter will lead about half scale.

   NOTE: Radio receiver volume control must be turned to the maximum position so that the automatic volume control circuit will not affect the alignment of the receiver.

4. Adjust in sequence cores "A, B, C and D" as shown on circuit diagram and parts layout for maximum meter reading. Repeat adjustments to get maximum meter readings. Keep the signal generator volume turned down so that during adjustments the meter does not read more than half scale. This will result in a better alignment of the receiver.

5. Next change signal generator setting to obtain a radio frequency signal and tune signal generator to exactly 1615 kilocycles. Place a .000082 mfd. condenser to antenna connector and attach signal generator lead. Tune the radio receiver to the "Stop" on the 1600 kilocycle end of the dial. Keep the signal generator volume control adjusted so that output meter reads at about half scale.

6. Adjust trimmers "E, F and G", on circuit diagram and parts layout, in sequence for maximum readings on output meter. Repeat for maximum meter readings.

7. After the receiver has been installed in the car, turn on receiver and tune in a weak station near 1000 kilocycles with the radio volume control turned to maximum position and the antenna extended to full height. Readjust trimmer "G" ONLY for maximum volume.

CAPACITY AND INDUCTANCE ALIGNMENT PROCEDURE FOR ALL CHEVROLET RADIOS

This alignment procedure is to be used only when any of the following parts have been replaced in the radio; antenna coil, radio frequency coil, oscillator coil, or any of the tuning cores.

The intermediate frequency alignment at 262 kilocycles is the same as outlined in "Alignment Procedure" operations 1 through 4. After completing the intermediate frequency alignment, proceed as follows:

1. Connect signal generator lead to a .000082 mfd. condenser and connect to antenna terminal of antenna socket. Mechanically align

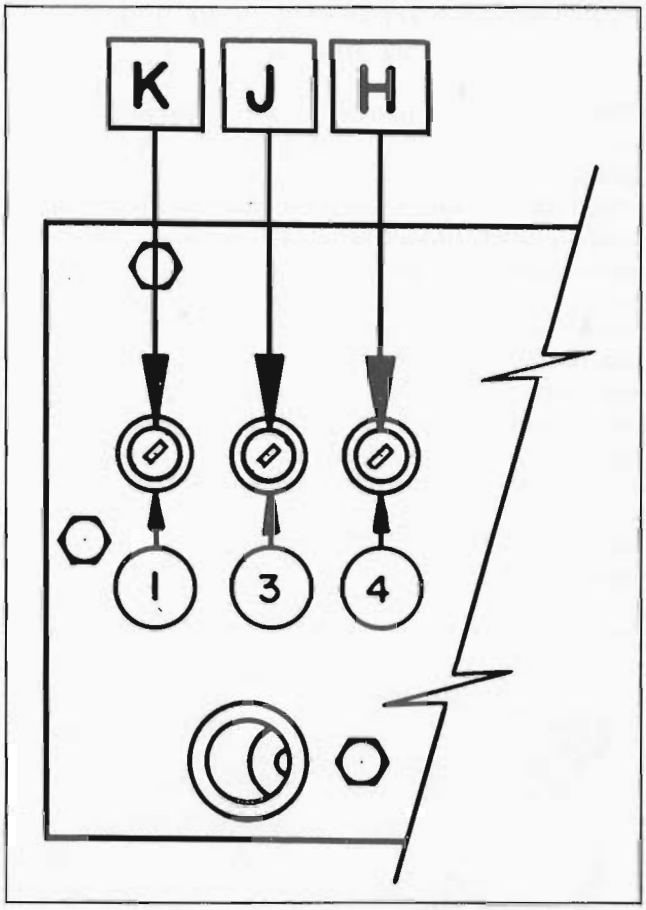


Figure 13

iron core "H", on circuit diagram and parts layout to measure 1-3/8" for all radios except 985396 and it is 1-5/8" in coil form from rear mounting edge of coil with radio tuned to stop on 1600 kilocycle end of dial.

2. With signal generator still adjusted to exactly 1615 kilocycles, adjust trimmers "E, F and G" on circuit diagram and parts layout in sequence for maximum output meter reading.

3. Tune signal generator and radio receiver to 600 kilocycles and readjust iron cores "J and K" ONLY, for maximum output meter reading. Repeat the adjustment for maximum meter reading.

4. Reset signal generator to exactly 1615 kilocycles and tune radio receiver to stop on 1600 kilocycle end of the dial. Then readjust trimmers "F and G" ONLY, until no further increase in output meter reading can be obtained.

5. After the radio receiver has been installed in the car, turn on the receiver and tune in a weak station near 1000 kilocycles, with radio volume turned to maximum position and antenna extended to full height. Readjust trimmer "G" ONLY, for maximum volume.

CUSTOMER SERIES 95 TRUCK RADIO 985443

The radio consists of a radio reciver unit with an external speaker. This type of design is advantageous for both installation and service as all component parts of the receiver are readily accessible for quick efficient replacement when service is required. Using an external type speaker affords the advantage of having a larger type speaker in a limited space area. The speaker is coupled to the instrument panel by a special type gasket, thereby using the entire instrument panel for unusually good tone reproduction.

Figure 68

TRANSISTOR COMPLEMENT AND FUNCTION

DS-24	Radio Frequency Amplifier
DS-25	Converter
DS-22	Intermediate Frequency Amplifier
DS-26	Audio driver transistor
DS-503	Audio output "HI-POWER" transistor

GENERAL INFORMATION

Tuning range 540 - 1615 kilocycles
Intermediate frequency - 262 kilocycles
Maximum power output 6 watts
Undistorted power output 3.5 watts
Current drain 1.2 amperes at 12 volts
Speaker-Alnico V permanent magnet type 4" x 10"

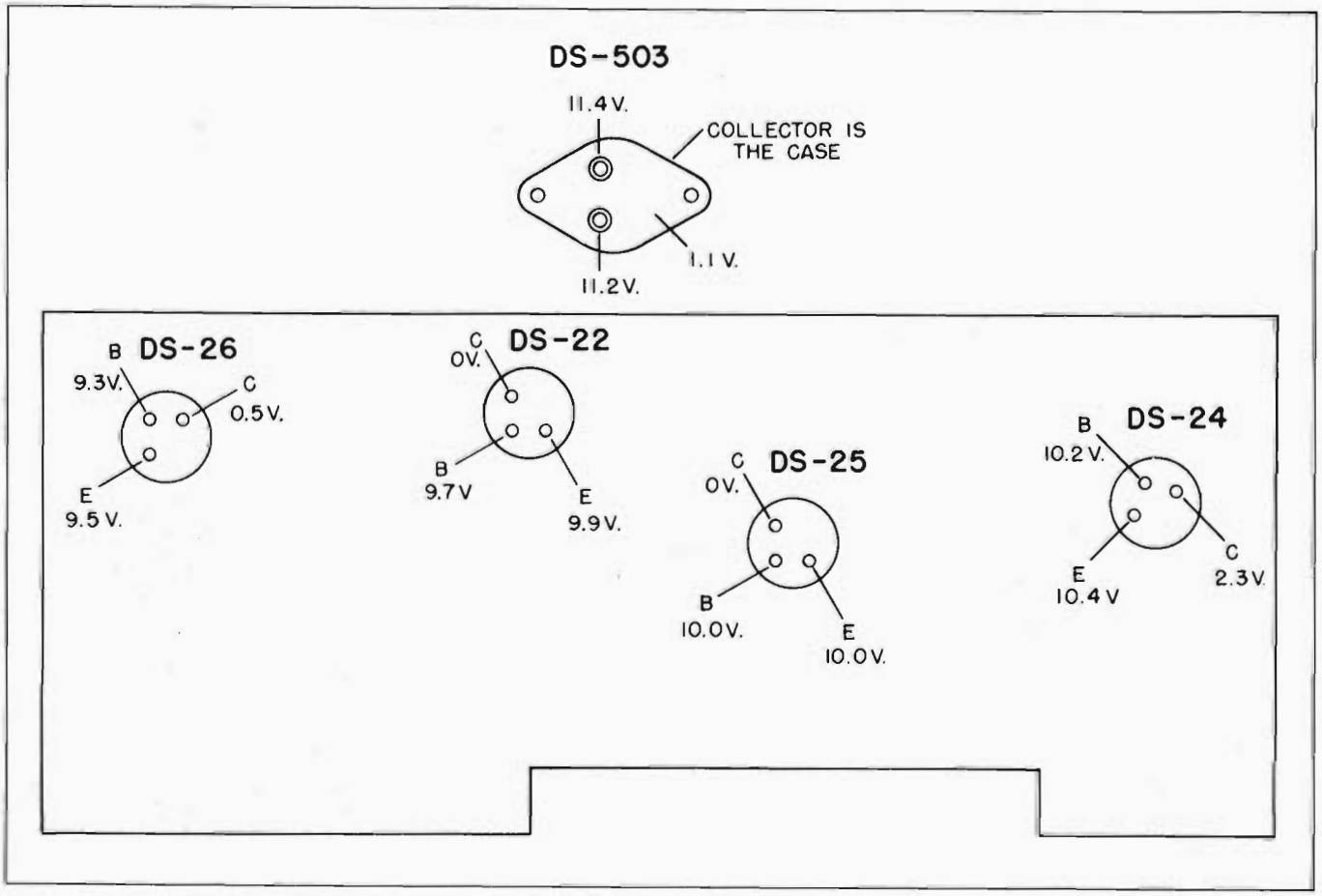


Figure 69 VOLTAGE CHART - 985443 - RADIO

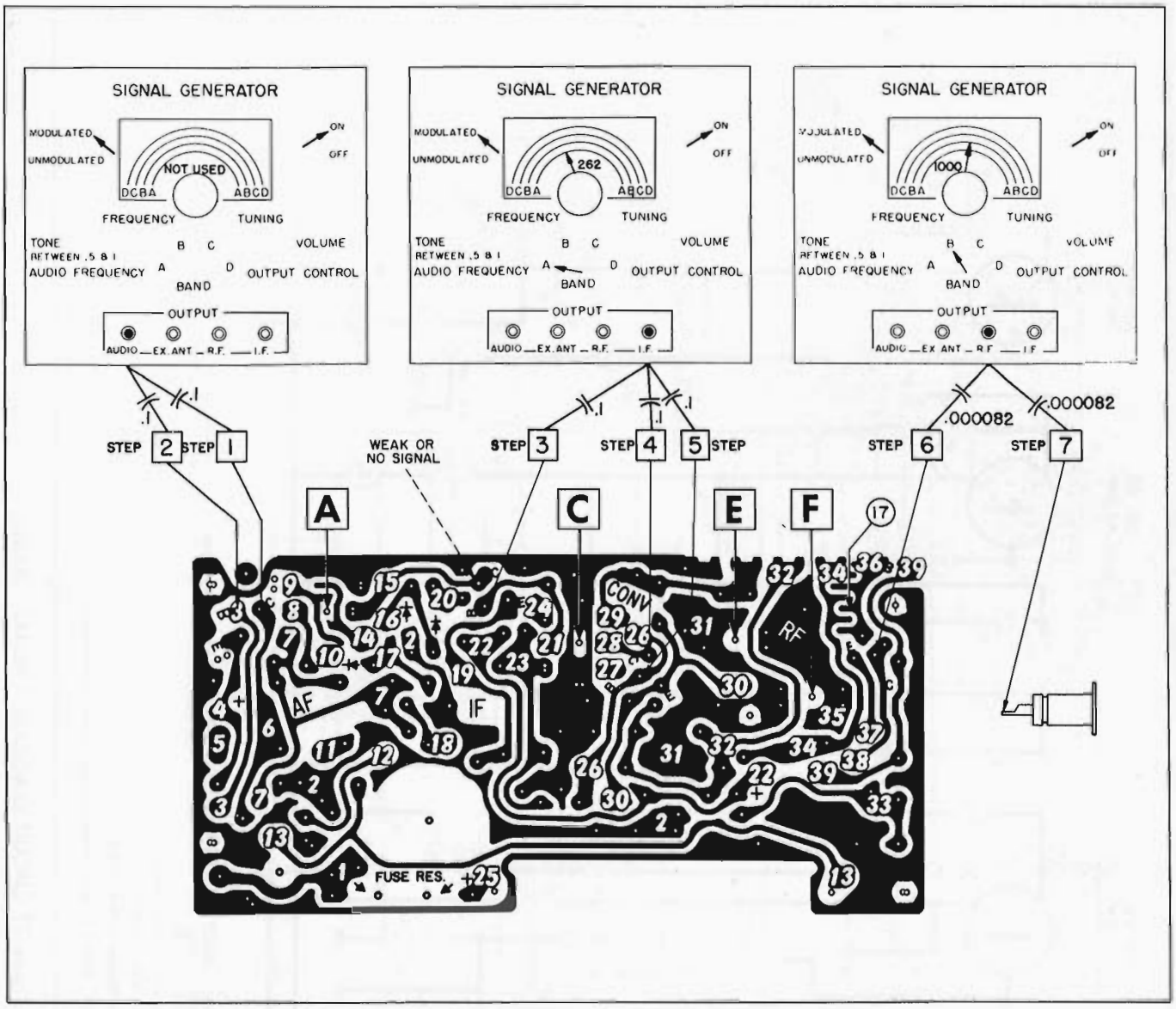


Figure 70 ISLAND NUMBER AND SIGNAL TRACING OF CIRCUIT BOARD - 985443 RADIO

Voice coil impedance 10 ohms at 400 cycles
All circuits use a printed circuit board
Fuse protection 2.5 amperes

SERVICE PROCEDURE

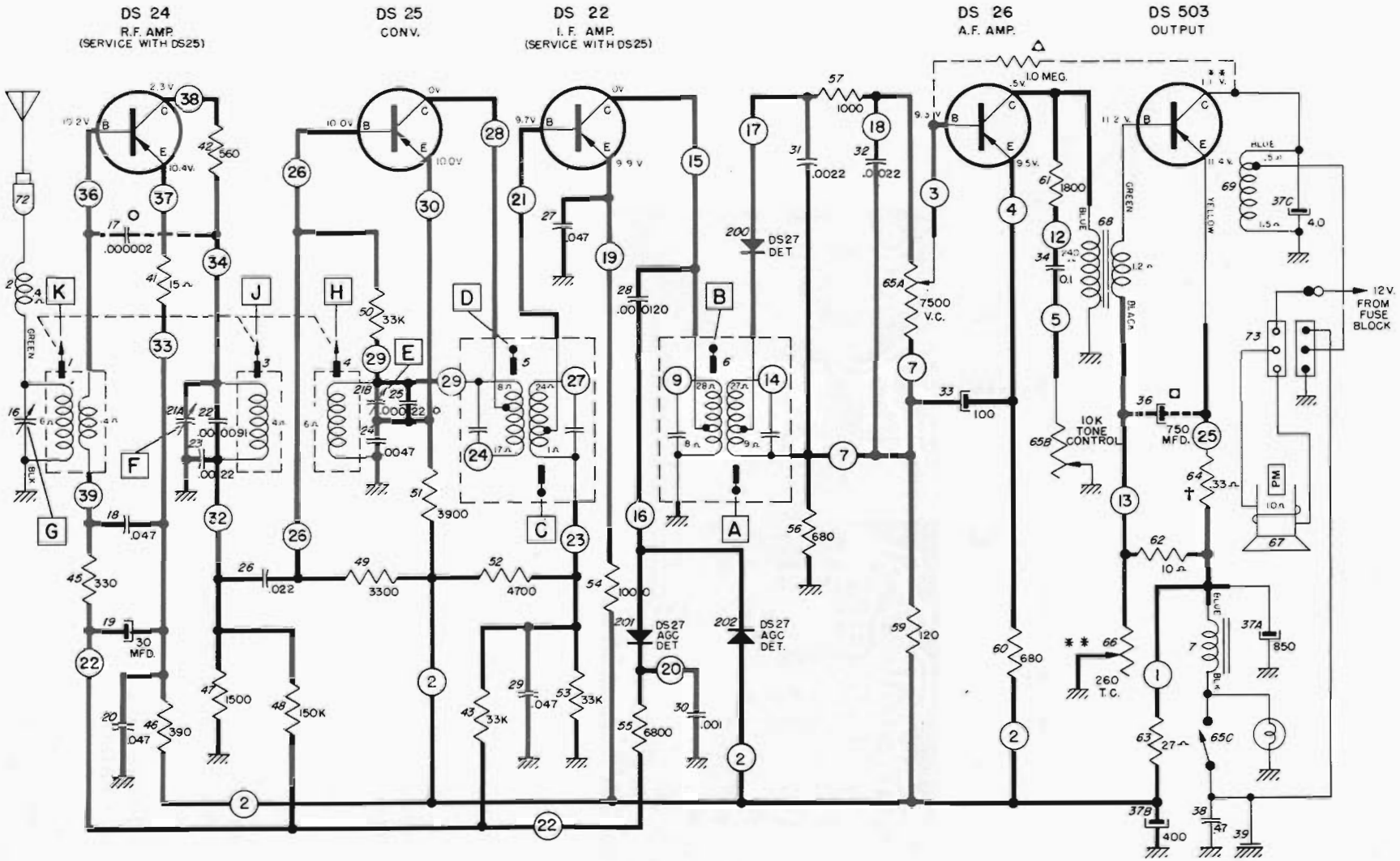
Check voltage for correct voltages as shown in figure 67. If voltages are correct and radio does not play proceed as outlined in Service Procedure for Push Button and Manual radios on page 5.

SERVICE PARTS LIST
985443 - RADIO

NOTE: All Chevrolet radio service parts are available to dealers through General Motors Parts Division Warehouses. Orders for radio parts requirements to be placed with warehouse in the usual manner.

ELECTRICAL PARTS

Illus. No.	Service Part No.	Description
		Coils
1	7281716	Antenna, tuning
2	7281946	Choke, antenna series
3	7282042	R.F., tuning
4	7281717	Oscillator, tuning
5	7282313	1st I.F.
6	7282323	2nd I.F.
7	1221623	Choke, 12 volt supply, input
		Capacitors
39	7271564	Spark Plate
37	7282272	Electrolytic, 3 - section



Voltages measured terminal to chassis with a volt-ohm meter - no signal and 12 volts applied to radio.

Total battery drain 1.2 amps at 12 volts.

Tolerance on voltage 10%.

Before measuring transistor voltages, a 10 ohm speaker must be connected to radio.

** Voltage should be measured from power transistor case to ground. If power transistor is replaced, adjust bias potentiometer (Item #66) to obtain proper collector voltage with 12 volts applied to radio.

† Item #64 is a fuse resistor for the power transistor. Service with exact replacement.

○ Printed on circuit board.

△ □ Will not appear in all radios.

CAUTION: Only a 10 ohm speaker should be used on this radio.

Figure 71 CIRCUIT DIAGRAM - 985443 - RADIO

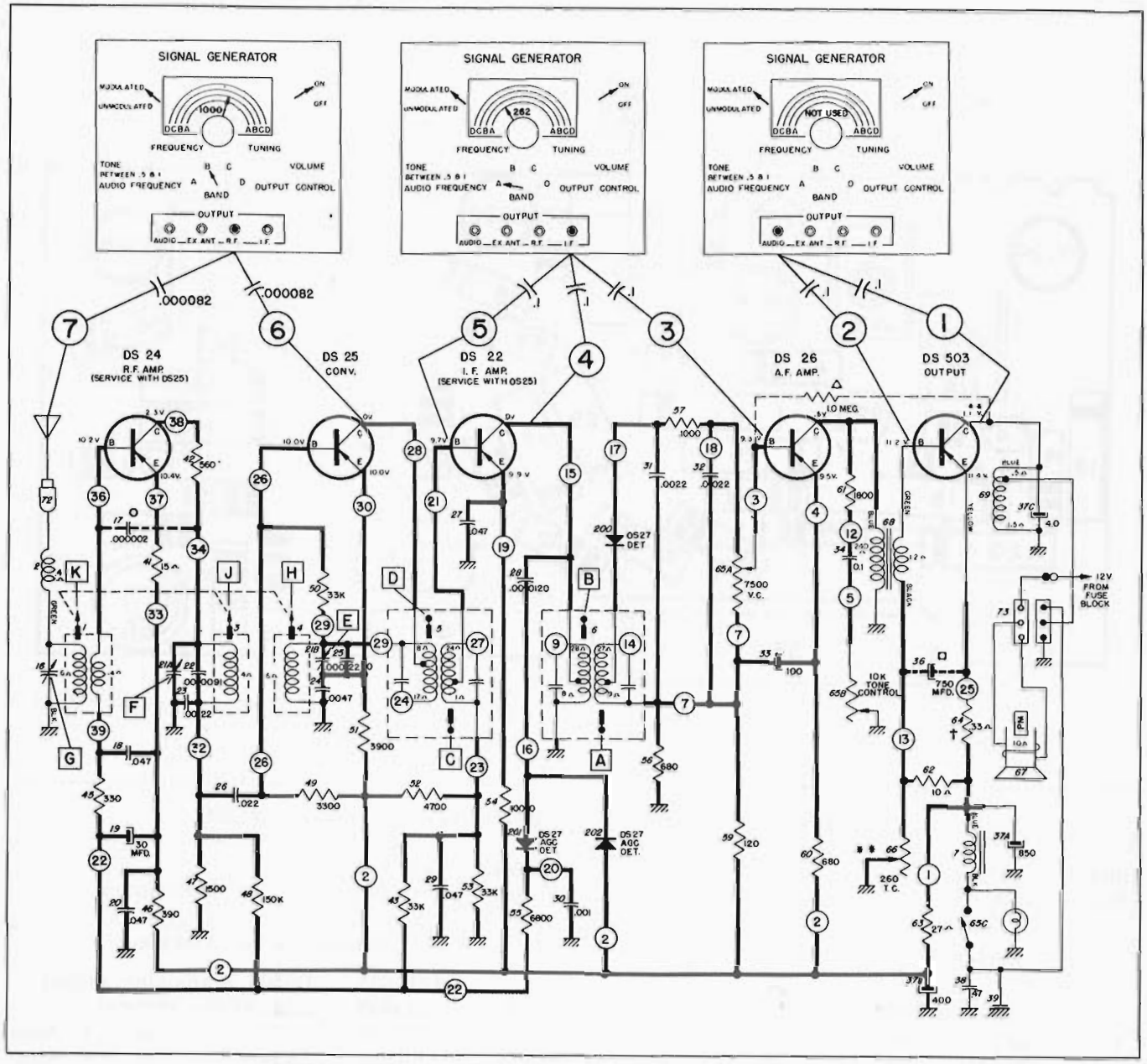


Figure 72 SIGNAL TRACING PROCEDURE - 985443 - RADIO

Illus. No.	Service Part No.	Description
37A		850 mfd., 16 volt
37B		400 mfd., 16 volt
37C		4 mfd., 11.5 R.M.S.
26	7278751	.022 mfd., 75 v., tubular
18	7272519	.047 mfd., 75 v., tubular
20	7272519	.047 mfd., 75 v., tubular
27	7272519	.047 mfd., 75 v., tubular
29	7272519	.047 mfd., 75 v., tubular
23	7281895	.0022 mfd., 100 v., tubular
34	7282046	.1 mfd., 75 v., tubular
17	Part of circuit board	.000002 mfd.
22	7280995	.000091 mfd., 100 v., ± 5% ceramic
28	7279895	.000120 mfd., 100 v., ± 5%, ceramic
25	7283835	.000220 mfd., 100 v., ± 5%, ceramic
30	7279773	.001 mfd., 100 v., ceramic
31	7280630	.0022 mfd., 100 v., ceramic
32	7280630	.0022 mfd., 100 v., ceramic
24	7280703	.0047 mfd., 100 v., ceramic
19	7279896	30 mfd., 6 v., electrolytic
33	7279888	100 mfd., 3 v., electrolytic
21A	7281932	R.F. Trim, 125-300 Mmfd.
21B	7281933	Osc. Trim., 225-325 Mmfd.
16	7281971	Antenna Trimmer
38	7257906	.47 mfd., 100 v., tubular

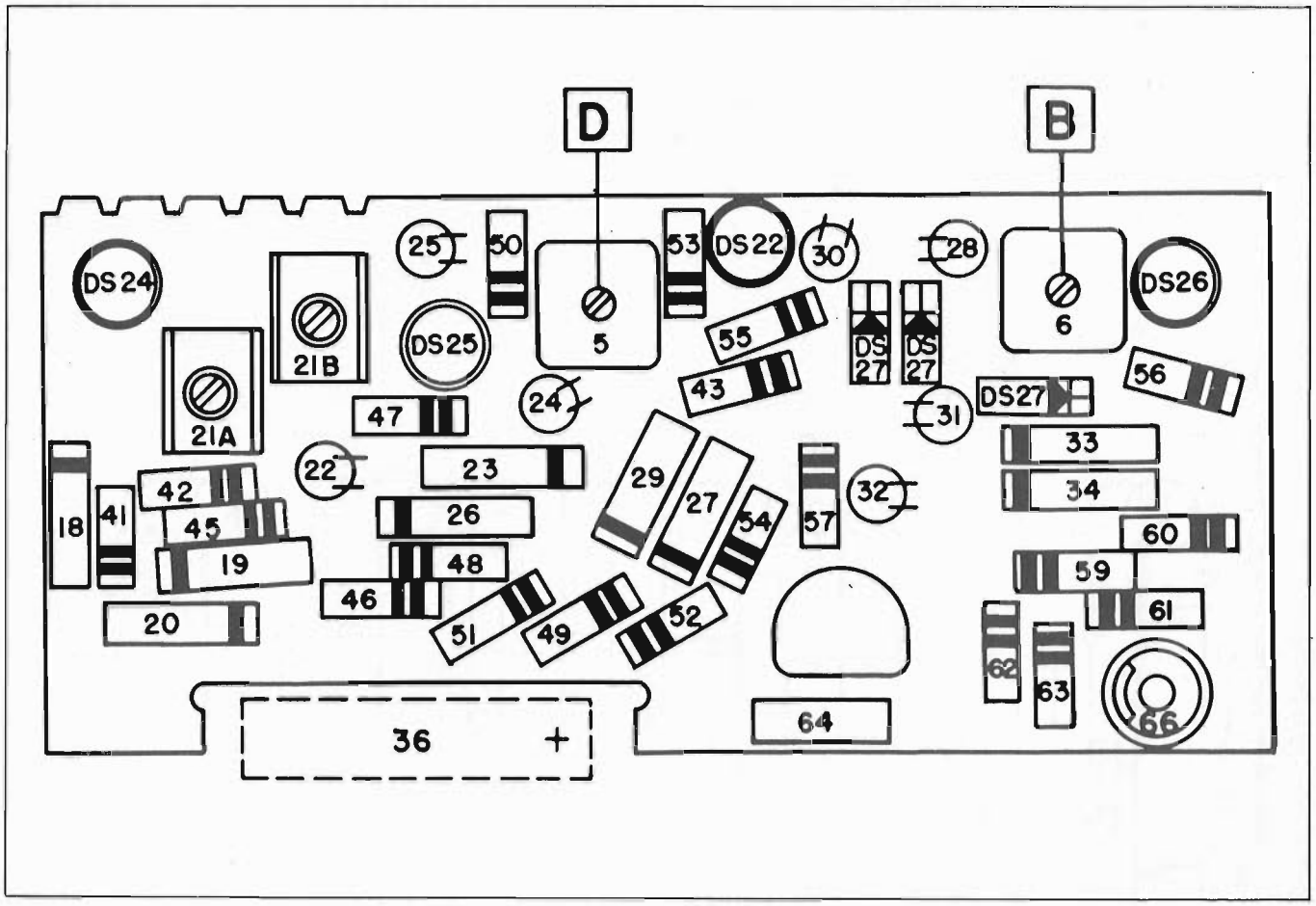


Figure 73 PARTS LAYOUT ON CIRCUIT BOARD - 985443 - RADIO

Illus. No.	Service Part No.	Description
		Resistors
59	1213218	120 ohms, 1/2 watt
45	1213224	30 ohm, 1/2 watt
46	1213482	390 ohm, 1/2 watt
60	1214543	680 ohm, 1/2 watt
56	1214543	680 ohm, 1/2 watt
54	1213235	1000 ohm, 1/2 watt
57	1213235	1000 ohm, 1/2 watt
47	1213237	1500 ohm, 1/2 watt
61	7241616	1800 ohm, 1/2 watt
51	1214546	3900 ohm, 1/2 watt
49	1213481	3300 ohm, 1/2 watt
52	1214547	4700 ohm, 1/2 watt
41	1215943	15 ohm, 1/2 watt
55	1213483	6800 ohm, 1/2 watt
42	1213229	560 ohm, 1/2 watt
43	1213845	33,000 ohm, 1/2 watt
50	1213845	33,000 ohm, 1/2 watt
53	1213845	33,000 ohm, 1/2 watt
48	1213272	150,000 ohm, 1/2 watt
62	7271133	10 ohm, 1/2 watt
63	1215557	27 ohm, 1/2 watt
64	7276499	.33 ohm, fuse resistor

Illus. No.	Service Part No.	Description
		Transistors and Diodes
	1211625	DS503 Transistor, output
200	7279893	DS27 Diode, crystal
	1221648	DS22 Transistor, I.F. Amp.
	1221648	DS24 Transistor, R.F. Amp.
	1221648	DS25 Transistor, converter
	1221649	DS26 Transistor, audio driver
201	7279893	DS27 Diode
202	7279893	DS27 Diode
		Miscellaneous Electrical
65	7282148	Control, volume, tone & switch
65A		Volume
65B		Tone
65C		Switch
	9416927	Lamp, dial light, # 1893
66	7275474	Rheostat, 260 ohms, T.C.
67	7282160	Speaker, front, 6 x 9, - slotted mtg. holes - 10 ohm
68	7283832	Transformer, input
69	7282057	Transformer, output

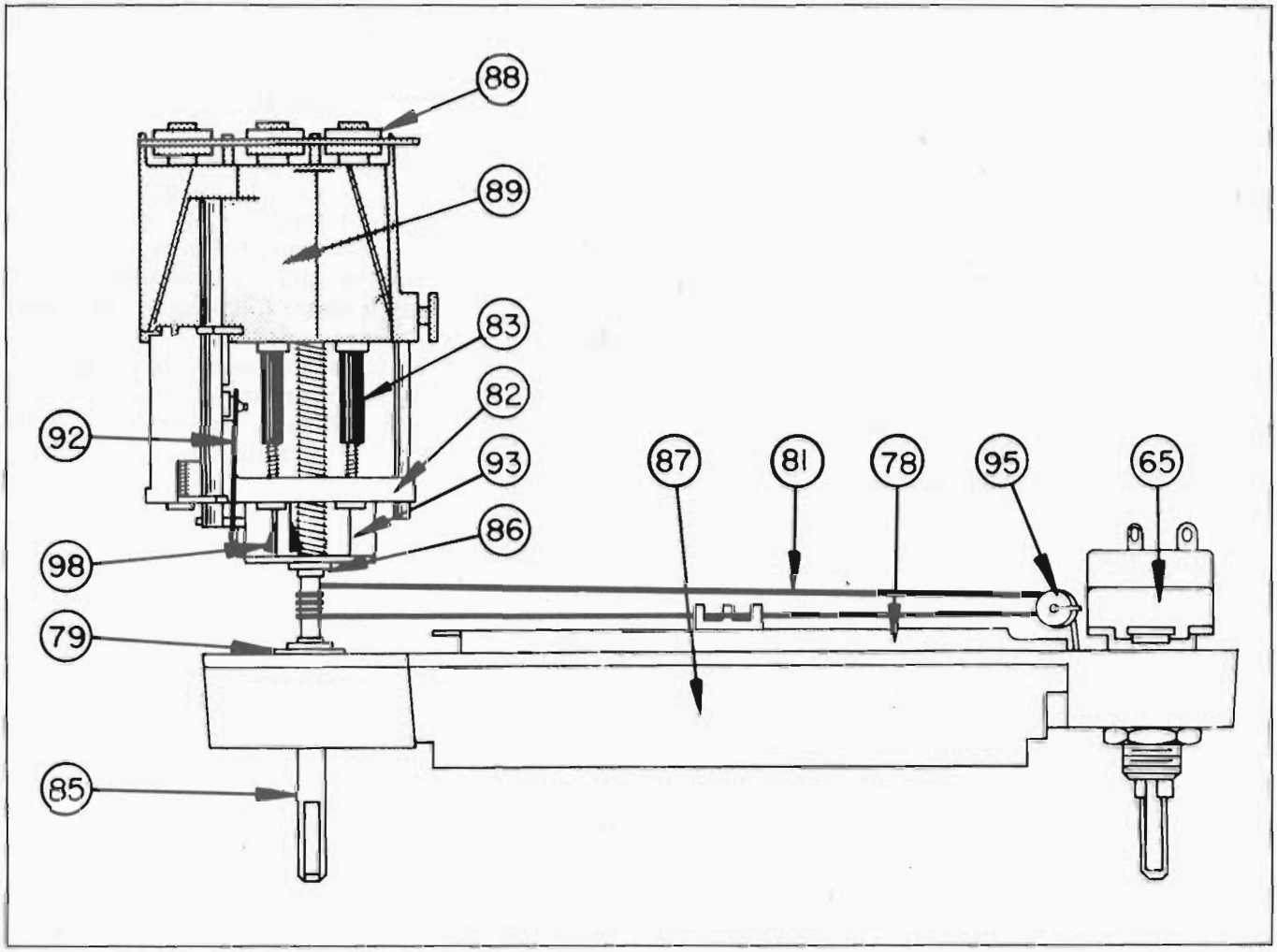


Figure 74 TUNER AND DIAL CORD VIEW - 985443 - RADIO

Illus. No.	Service Part No.	Description
		MECHANICAL PARTS
		Chassis
70	1221805	Board Pkg., tuning coils
	7282870	Bracket, receiver mtg.
73	7282114	Connector 12 volt and speaker
	1221833	Connector, Plug and Lead Assy.
71	1221812	Radiator Pkg., transistor heat
	1221813	Insulator, heat radiator
72	7281108	Socket, antenna connector
		Tuner Parts
77	7285126	Backplate, dial
78	7282176	Backplate, pointer
79	7282144	Bushing, manual shaft
80	7240121	Cap, dial light
81	1219143	Cord, dial pointer drive
82	7281896	Core Bar
83	7281719	Core, tuning (3)
84	7279493	Dial, calibrated
85	1221818	Drive, Shaft Pkg. manual - with "E" rings
86	1221529	Retaining Ring Pkg.
87	7282146	Escutcheon Trim Plate
88	7279570	Grommet, tuning coils mtg. (3)
89	7281889	Housing, tuning coils
90	7279468	Sleeve, oscillator Coil
91	7279469	Sleeve, ant. & R.F. coils (2)
92	7281575	Link, drive nut to core bar
93	1221815	Nut Pkg., core bar drive (M)
94	7284556	Pointer Assy. Pkg.
95	7263593	Pulley, dial cord
96	1221529	"E" ring, core bar stop - 10 to pkg.
97	7283903	Spring, dial cord tension
99	7282060	Spring, drive shaft retainer
98	7283718	Spring, drive shaft anti-backlash "V" shape

Illus. No.	Service Part No.	Description
		Installation Parts
	3783238	Bracket, radio cover
	3826294	Bracket, radio mounting, R.H.
	1911095	Capacitor, generator
	1947452	Capacitor, ignition coil
	7249643	Capacitor, voltage regulator
	3826296	Cover Assy., radio
	3783307	Cushion, speaker mtg. brkt.
	7283866	Fuse, 2.5 Amp., type AGC
	3787340	Gasket, radio cover
	7277055	Knob, control (2)
	3793635	Knob, dummy
	3793636	Knob, tone control
	445347	Nut "J" (2)
	9418476	Nut, "U" (3)
	7279805	Nut, radio bushing (2)
	3794324	Plate, speaker mtg.
	3823190	Spacer, radio receiver
	7279350	Spring, control knob
	7276494	Static Collector, front wheel (2)
	2974198	Strap, radio ground (2)
	3824198	Trimplate
	7247400	Washer, wave, knob anti-rattle (2)