CUSTOM MANUAL RADIOS FOR
CHEVROLET-CHEVELLE-CHEVY II-CORVAIR-
CHEVROLET TRUCKS-CHEVY VANS-
CORVAIR 95 TRUCKS
MODELS 986096-986201-986248-986113-
986330-986339-986338

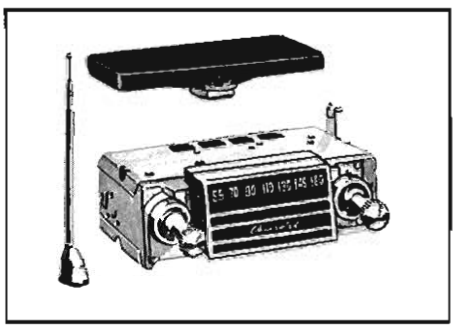
These radios are the superheterodyne type automobile radios designed for installation in 1965 passenger cars and trucks. The truck radios are designed especially for trucks and will stand the rugged hard use that trucks are subjected to.

The radios contain 6 transistors and 3 diodes, one being "HI-POWER" audio output transistor.

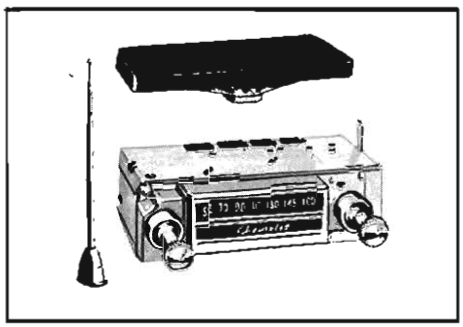
Using an external speaker affords the advantage of having a large speaker in a limited space. The speaker is coupled to the instrument panel by a special gasket, thereby using the instrument panel for unusually good tone reproduction.

TRANSISTOR COMPLEMENT
AND FUNCTION

| | |
|---|---|
| DS-51 | Radio frequency amplifier transistor |
| DS-52 | Converter transistor |
| DS-53 | Intermediate frequency transistor |
| DS-46 | Audio frequency driver transistor |
| DS-503 | Audio output power transistor |

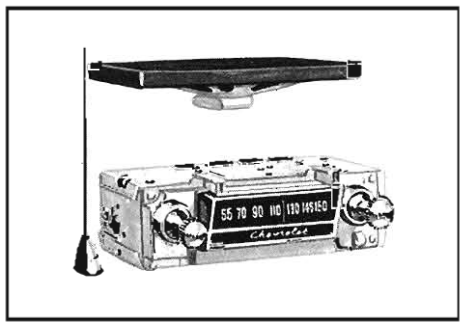


CHEVROLET



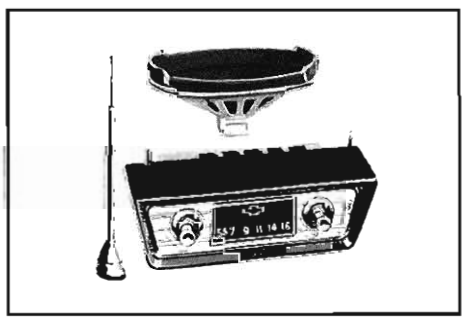
CHEVELLE

CHEVY II



CORVAIR

CHEVROLET TRUCK
TILT CAB



CHEVY VAN

Figure 27

## GENERAL INFORMATION

Tuning Range 540-1615 kilocycles
Intermediate frequency - 262 kilocycles
Maximum power output - 8 watts
Undistorted power output - 6 watts
Current Drain 1.29 amps at 12 volts
Speaker - Alnico V permanent magnet type
Voice coil impedance 10 ohms at 400 cycles
Fuse protection 2.5 amperes
All circuits use printed circuit boards

## SERVICE PROCEDURE FOR ALL MANUAL TUNED RADIO MODELS 986096-986201-986248-986113-986330-986339-986338

## IMPORTANT PRELIMINARY TEST

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, fuse and fuse resistor for open and proper hook-up.

c. Check DS503 transistor.

Check voltage of radio for correct voltages as shown in figure. If voltages are correct and radio does not play proceed as follows:

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.

Note of Explanation: The signal or noise generator is now put into use, beginning with Step 1. The letters in parenthesis are found printed on the circuit board. For example, (AF-1) stands for "Audio Frequency" amplifier and refers to one of the DS46 transistors. (C) stands for collector.

The test points - Step 1 through Step 7 - are shown in Figure 28.

STEP 1. Touch generator probe to DS46 - AF-1 "B", a loud signal should be heard. If weak or no signal check:

a. Fuse resistor.

b. DS503.

c. DS46 transistors "AF-1 and AF-2". Check by bridging a good transistor across each one - one at a time.

STEP 2. Touch generator probe to green lead from volume control-island No. 26 on circuit board - a loud signal should be heard with volume control set at maximum volume. If no signal check:

a. 10 mfd. audio coupling capacitor, C53, by bridging a good one across it.

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 DS53 (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. DS53 transistor without removing it from the circuit. See "Procedure for Checking Transistors".

b. DS27 audio detector diode.

c. Voltage between collector (C) and ground in the DS53 (IF) stage should be "0" volts. If voltage is high, near 10 or 11 volts, trouble is due to: Open connection in the (IF) collector circuit (C), or open IF transformer, item T2.

d. Check DS53 (IF) conduction by measuring voltage across the 470 ohm resistor, item R13. 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 DS53 (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 (IF) base circuit (B) or emitter circuit (E). Check IF transformer, item T1, for open.

STEP 4. Apply generator probe to DS52 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 DS52 converter transistor. An increase in signal should be noted, indicating DS52 transistor gain. If gain is not present, check:

a. DS52 without removing it from the circuit. See "Procedure for Checking Small Transistors".

b. Voltage between collector (C) and ground in the DS52 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 T1. Open oscillator coil, item L4.

c. Check DS52 converter conduction by measuring voltage across the 3900 ohm resistor, item R9. Measure this by putting the positive lead of a D.C. voltmeter on conductor number 2 of the circuit board, and the negative lead on the emitter (E) of the DS52 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 220 mmf. condenser, item C12. Shorted .0047 condenser, item C11. Shorted trimmer, item C10.

d. If all above tests pass, align 1st IF 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 82 mmf. condenser in place of the .1 mfd. just removed. Set signal generator to 900 kilocycles and tune radio receiver to 900 kilocycles 9 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 DS51 (RF) collector (C), and adjust generator output

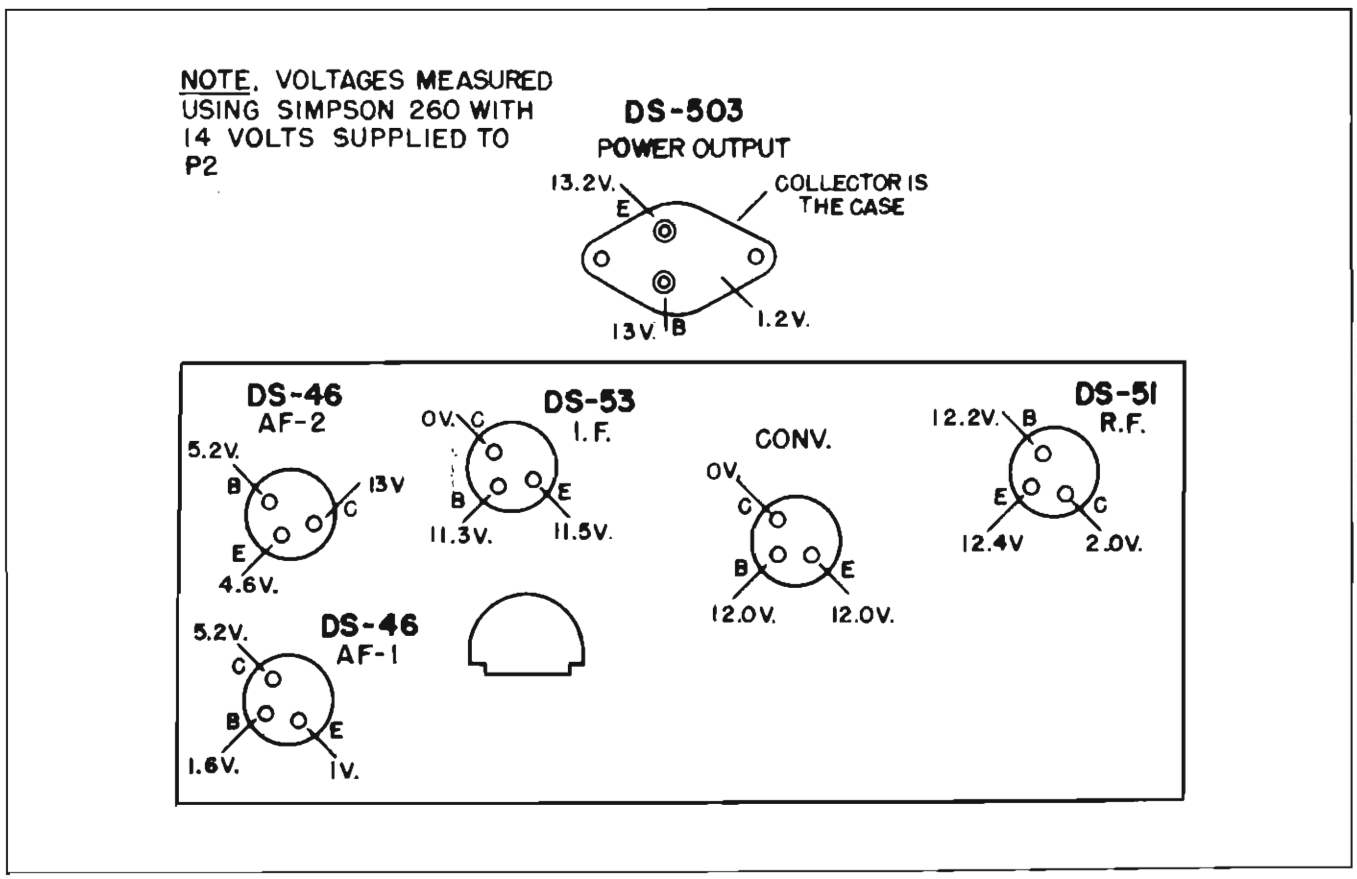



Figure 28 - VOLTAGE CHART - ALL MANUAL TUNED RADIO

to 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. DS51 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 DS51 (RF) transistor. Should read about 2.5 volts D.C. with antenna disconnected from the radio.

If voltage is high, check:

a. DS27 AGC diodes.

b. RF coil, item L3 and resistor.

If voltage is low, near "0" volts, check: Check for opens in the DS51 (RF) base circuit (B) and emitter circuit (E). Check the antenna coil, item L2, for open.

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

Antenna coil, item L2, for open. There are two windings on this coil, both at rear of tuner. Check antenna choke, item L1, for open. Check antenna trimmer, item C1, 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 R9 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 DS52 converter circuit. Check by bridging them with good capacitors of the same value.

Defective DS52 transistor.

Defective trimmer, item C10.

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:

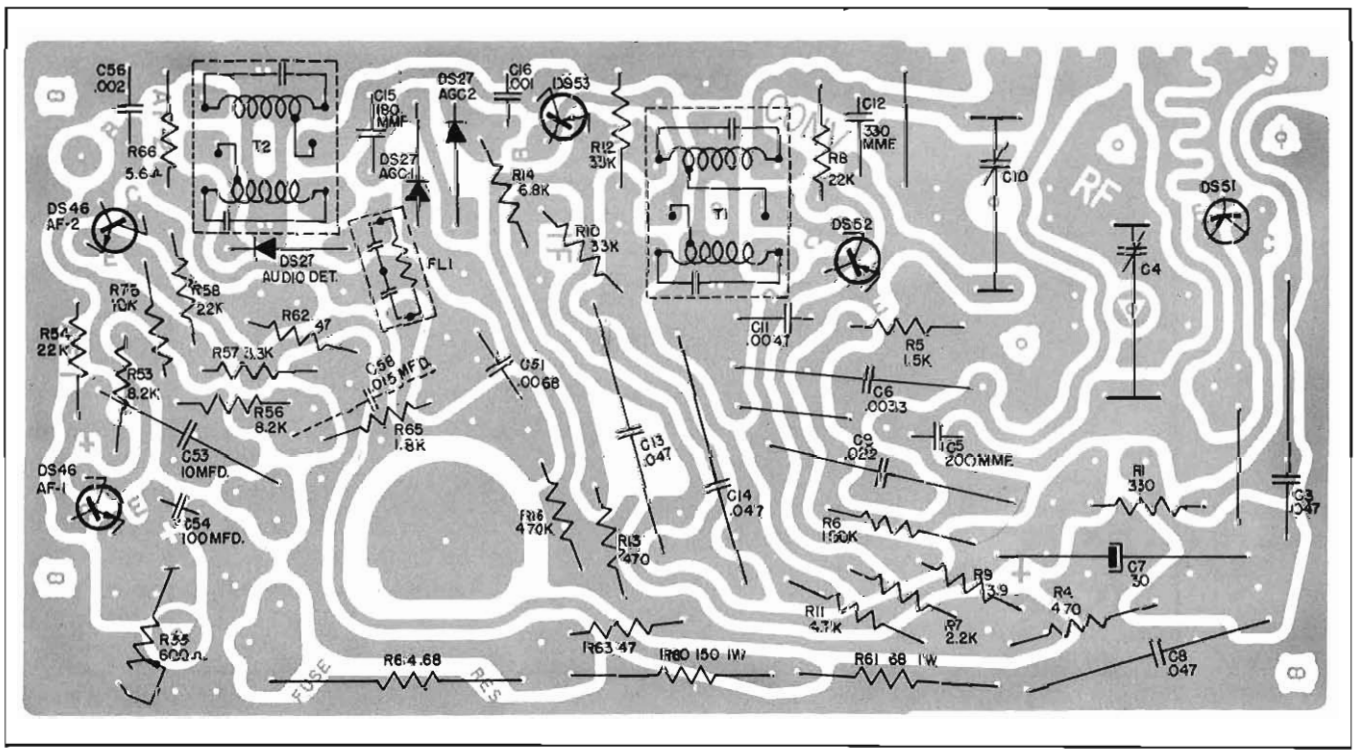



Figure 29 - PARTS LAYOUT ON CIRCUIT BOARD - ALL MANUAL - RADIOS

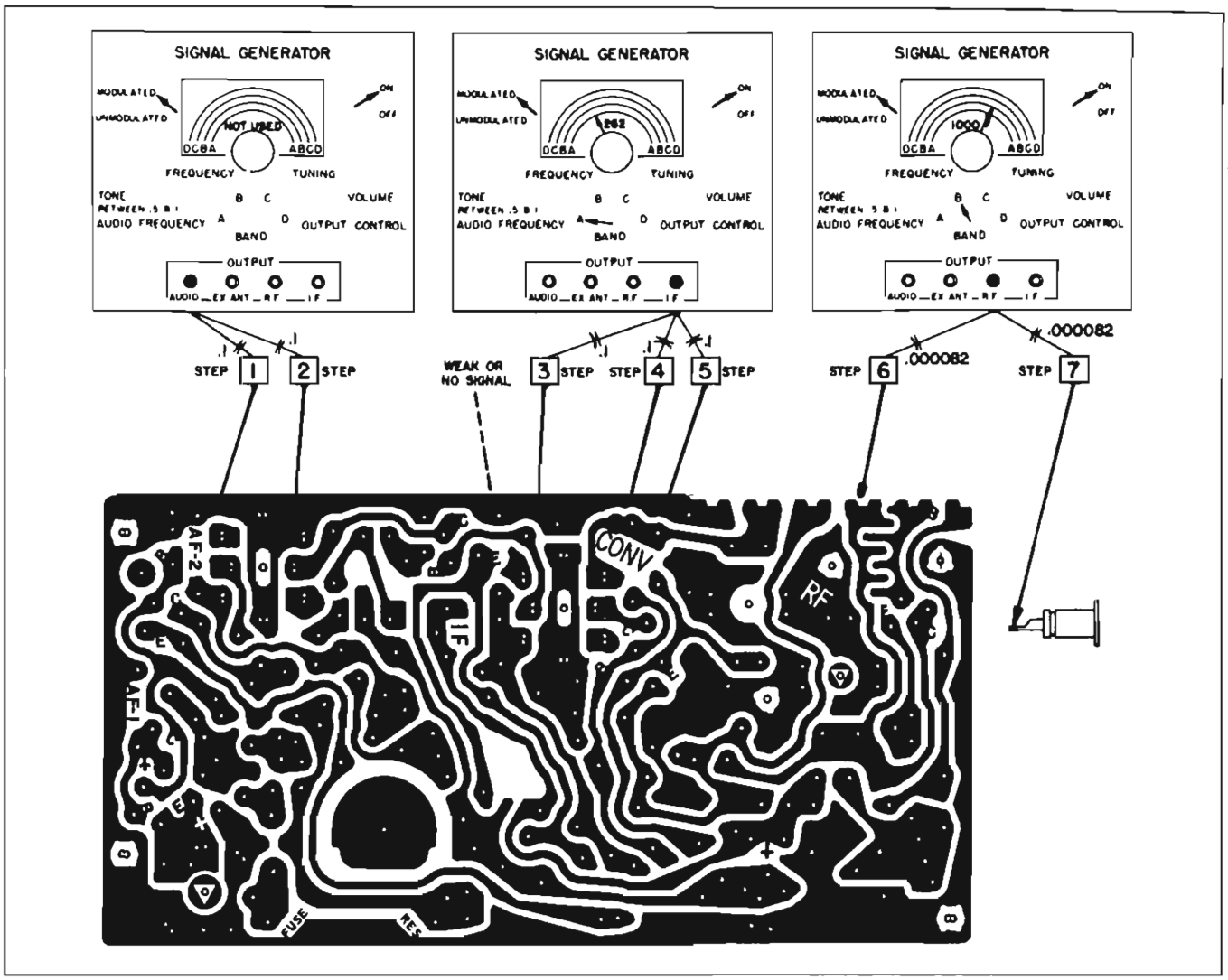



Figure 30 - SIGNAL TRACING PROCEDURE AND ISLAND NUMBERS - ALL MANUAL - RADIOS

DS27 AGC diodes, items AGC1 and AGC2. When checked on the RX100 scale of an ohmmeter, there should be 5:1 ratio or better. Also check to see that those diodes are not mounted backward.

## PROCEDURE FOR ALIGNMENT OF ALL CHEVROLET MANUAL 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.

1. With speaker connected to radio connect AC voltmeter across speaker voice coil. Use low voltage scale. Turn volume control fully clockwise. See Figure 32.
2. Tune radio to extreme right end of dial.
3. Connect a .1 mfd. capacitor in series with signal generator to antenna terminal. Connect generator ground lead to chassis.
4. Adjust signal generator frequency to 262 KC. Adjust its output for .5 to 1 volt reading on voltmeter.
5. Adjust secondary and primary windings Step 5-6-7-8 of IF transformers for maximum voltage reading on meter. Keep the voltage at the vacuum tube voltmeter at .5 to 1 volt. See Figure 34.
6. Check depth of tuning cores. When the radio pointer is at its extreme right end, tuning cores should be 1-3/8" from the end of the coil form. See Figure 33.

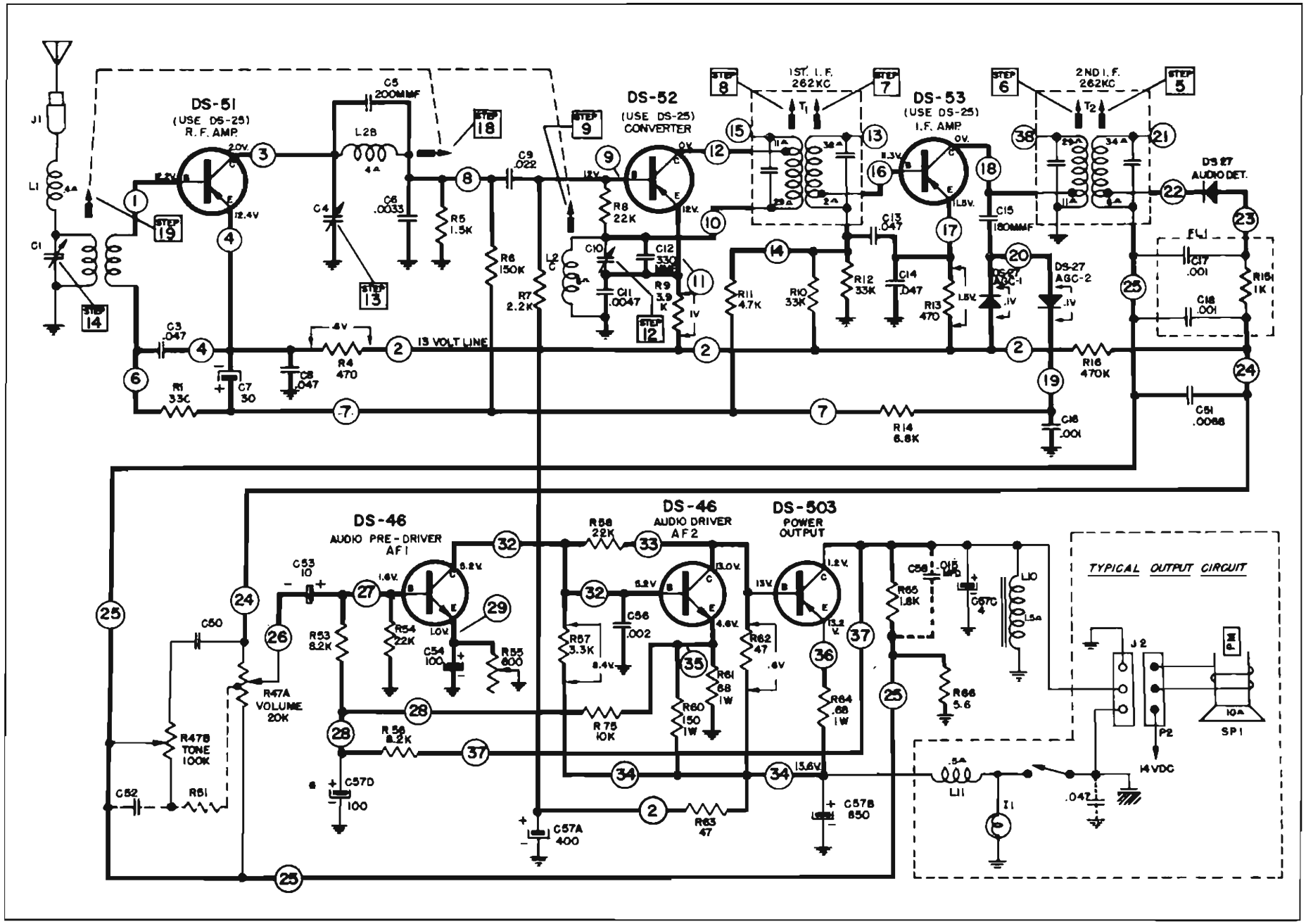



Figure 31 - CIRCUIT DIAGRAM - 986096-986201-986248-986113-986330-986338-986339 - PASSENGER CAR AND TRUCK MANUAL RADIOS

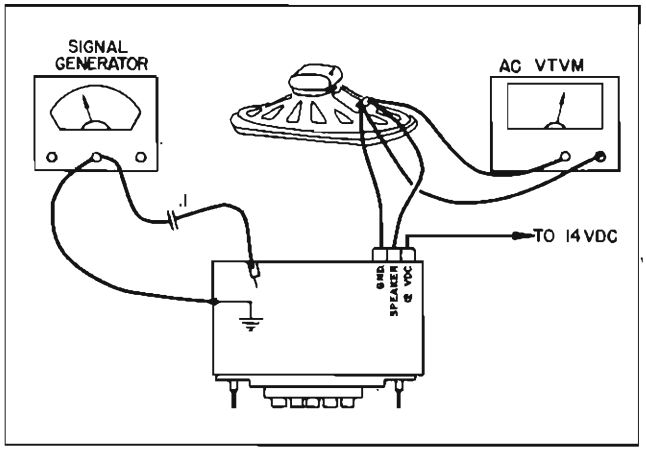



Figure 32 - HOOK-UP FOR SIGNAL AND OUTPUT METER

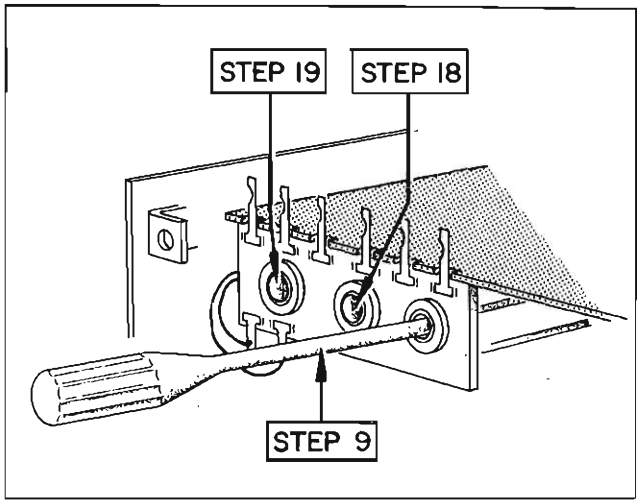



Figure 33 - CORE ADJUSTMENTS

7. Change value of capacitor in series with signal generator lead to 82 mfd. See Figure 32.
8. Set signal generator frequency at 1615 KC. Adjust its output for .5 to 1 volt reading on meter.
9. Core should be 1-3/8" inside the coil form before alignment of front end of radio is started.
10. Adjust trimmers 12-13-14 for maximum output voltage reading on meter.
11. Set signal generator to 600 KC.
12. Tune radio to signal generator frequency.
13. Adjust output of signal generator for .5 to 1 volt reading on meter.
14. Adjust slugs 18 and 19 for maximum voltage reading on meter. Do not adjust oscillator slug. See Figure 33.

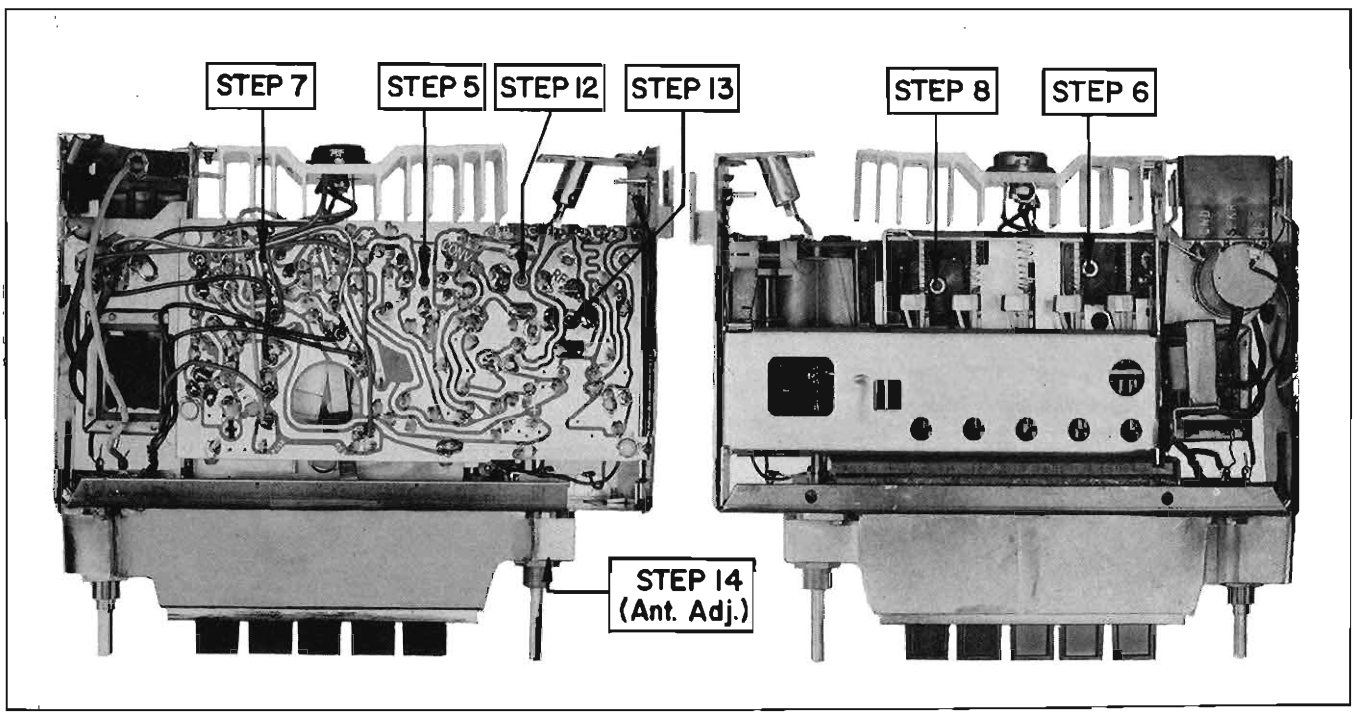



Figure 34 - ALIGNMENT PROCEDURE - ALL MANUAL RADIOS

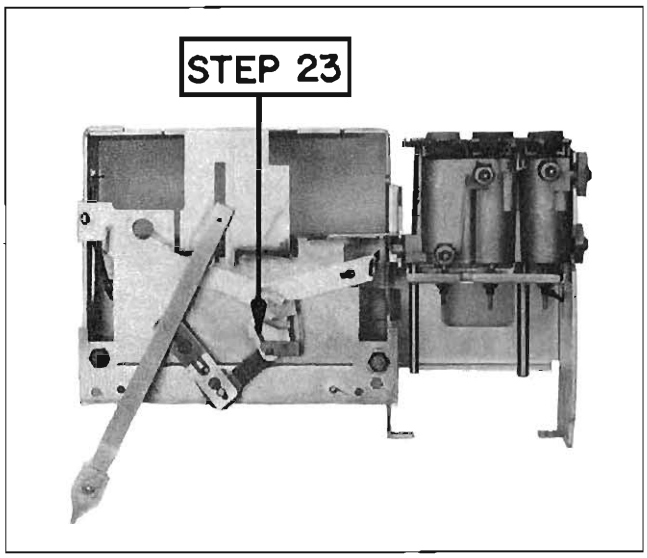



Figure 35 - DIAL POINTER ADJUSTMENT

15. Repeat adjustment as outlined in 8-9-10-11-12 and 13 until no improvement can be noted.

16. Set signal generator to 900 KC.

17. Tune radio to signal generator frequency.

18. Adjust pointer calibration link so the pointer reads 900 KC on the dial. See Figure 35.

19. Readjust antenna trimmer for maximum signal on an extremely weak station at or near 1400 KC after the radio is reinstalled in the car.

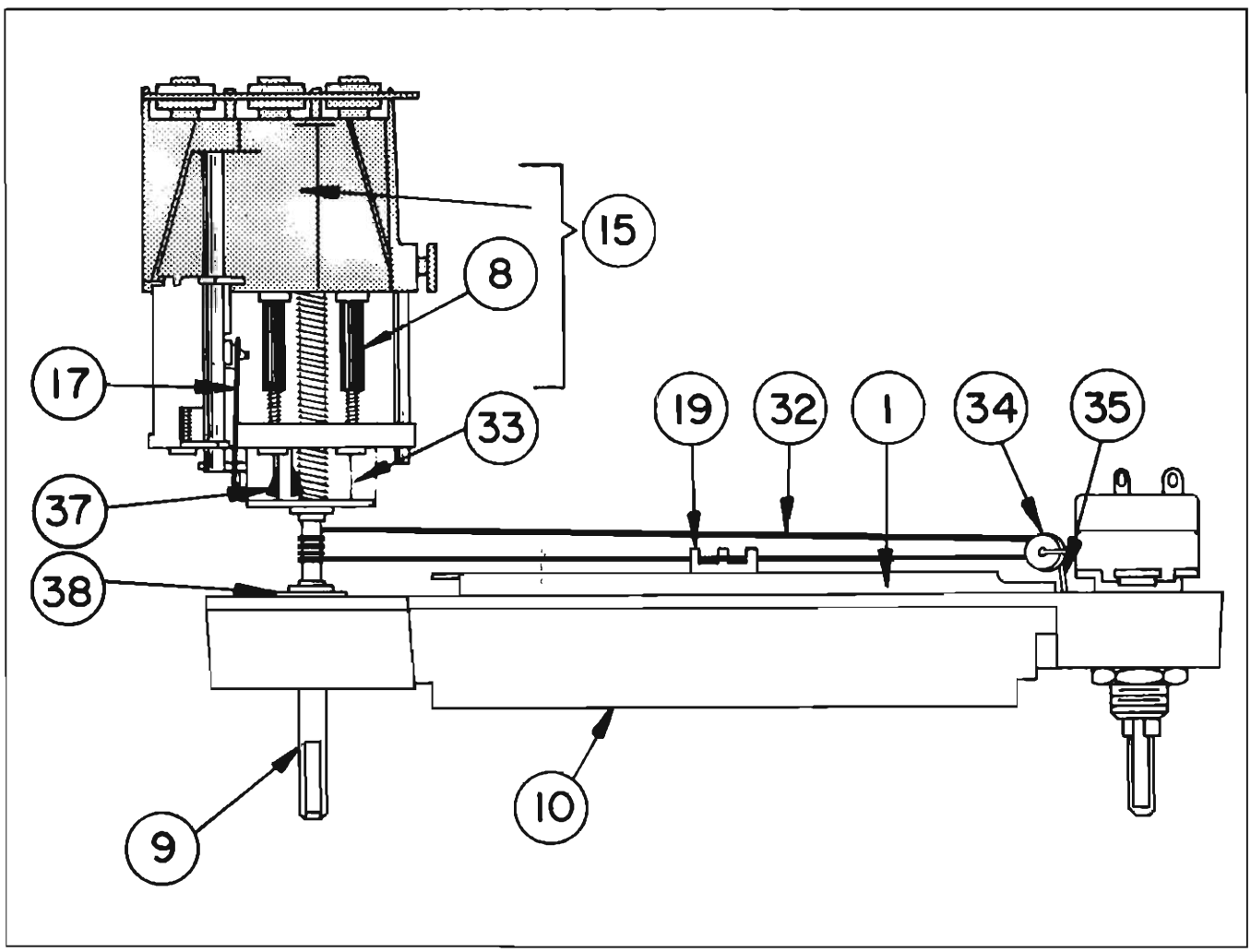



Figure 36 - TUNER PARTS LAYOUT AND DIAL CORD VIEW - ALL MANUAL TUNED RADIO

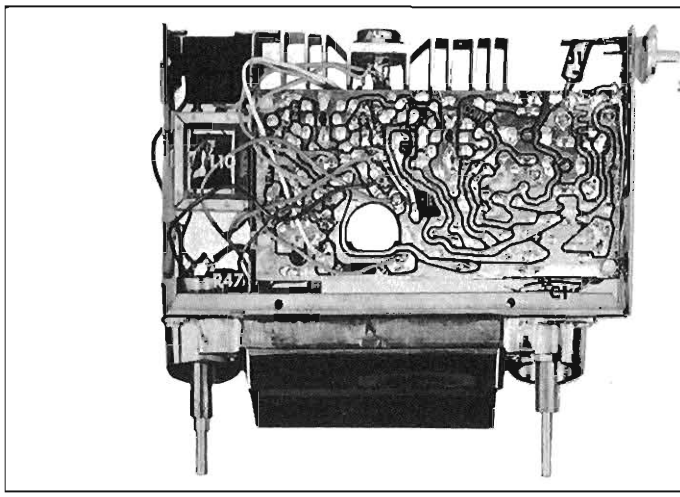



Figure 37 - CHEVROLET PARTS LAYOUT CIRCUIT BOARD VIEW - 986096 RADIO

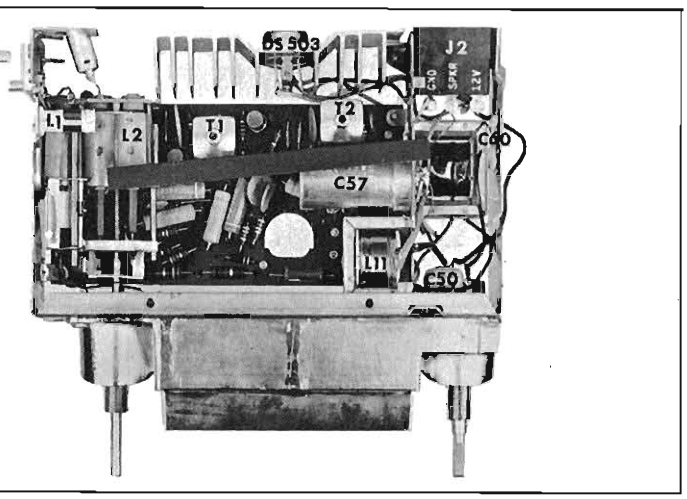



Figure 38 - CHEVROLET PARTS LAYOUT TUNER VIEW - 986096 - RADIO

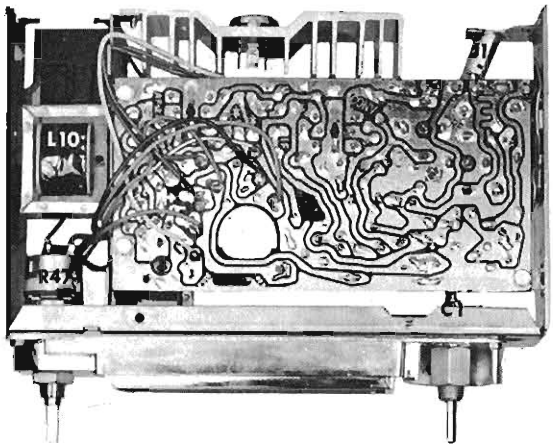



Figure 39 - CHEVELLE PARTS LAYOUT TUNER VIEW - 986201 - RADIO

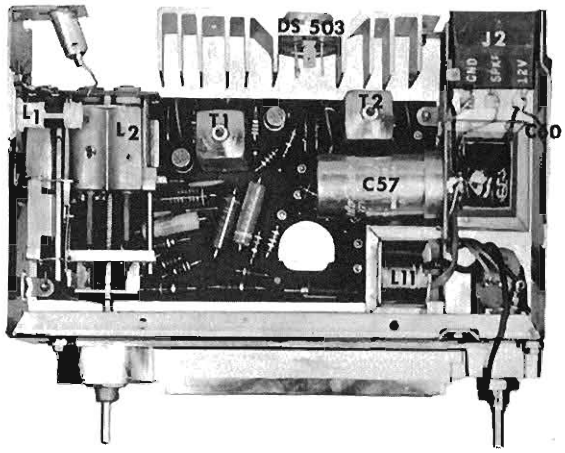



Figure 40 - CHEVELLE PARTS LAYOUT CIRCUIT BOARD VIEW - 986201 - RADIO

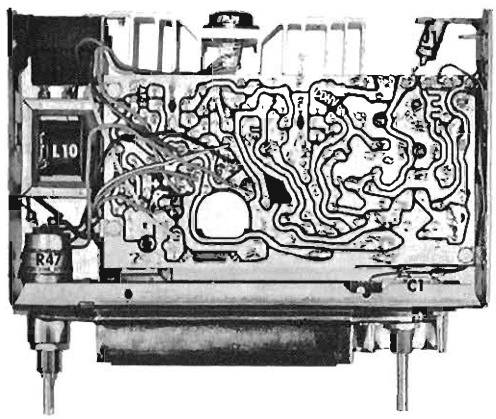



Figure 41 - CHEVY II - PARTS LAYOUT CIRCUIT BOARD VIEW - 986248 - RADIO

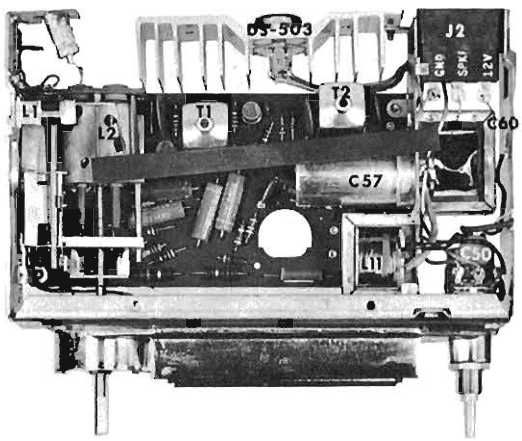



Figure 42 - CHEVY II PARTS LAYOUT TUNER VIEW - 986248 - RADIO

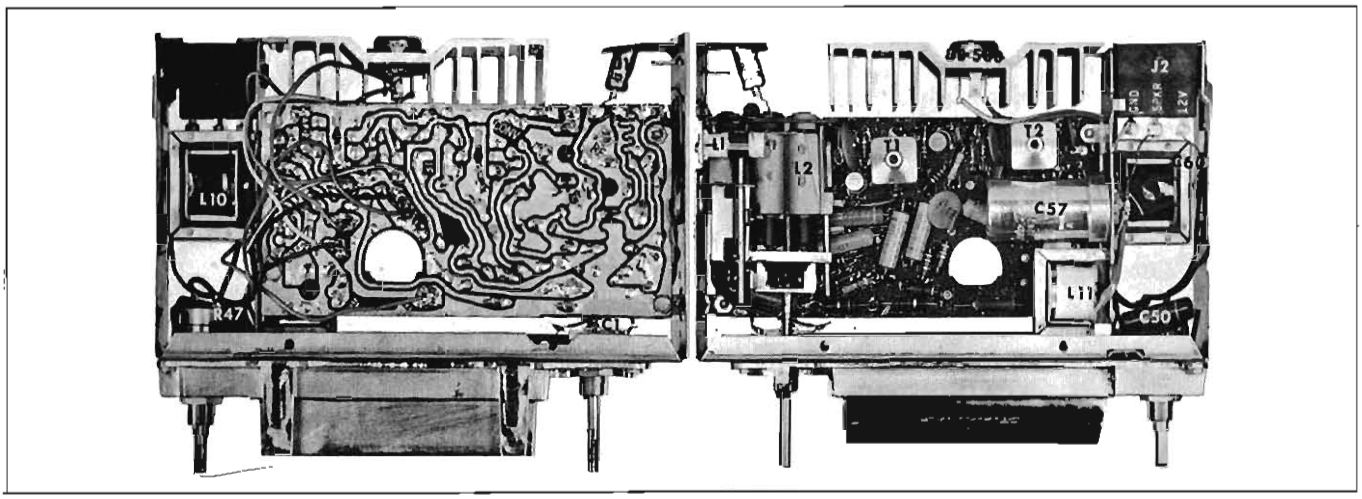



Figure 43 - CORVAIR - PARTS LAYOUT - CIRCUIT BOARD VIEW - 986201 - RADIO




Figure 44 - CORVAIR - PARTS LAYOUT - TUNER VIEW - 986201 - RADIO

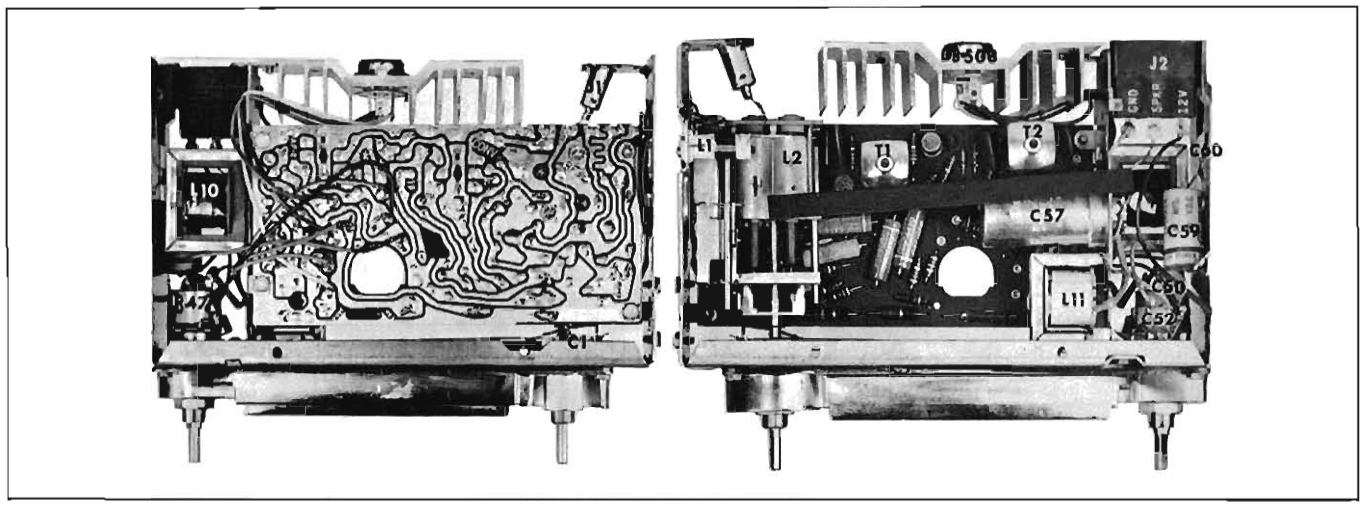



Figure 45 - CHEVROLET TRUCK - PARTS LAYOUT - CIRCUIT BOARD VIEW - 986338 - RADIO




Figure 46 - CHEVROLET TRUCK - PARTS LAYOUT - TUNER VIEW - 986338 - RADIO

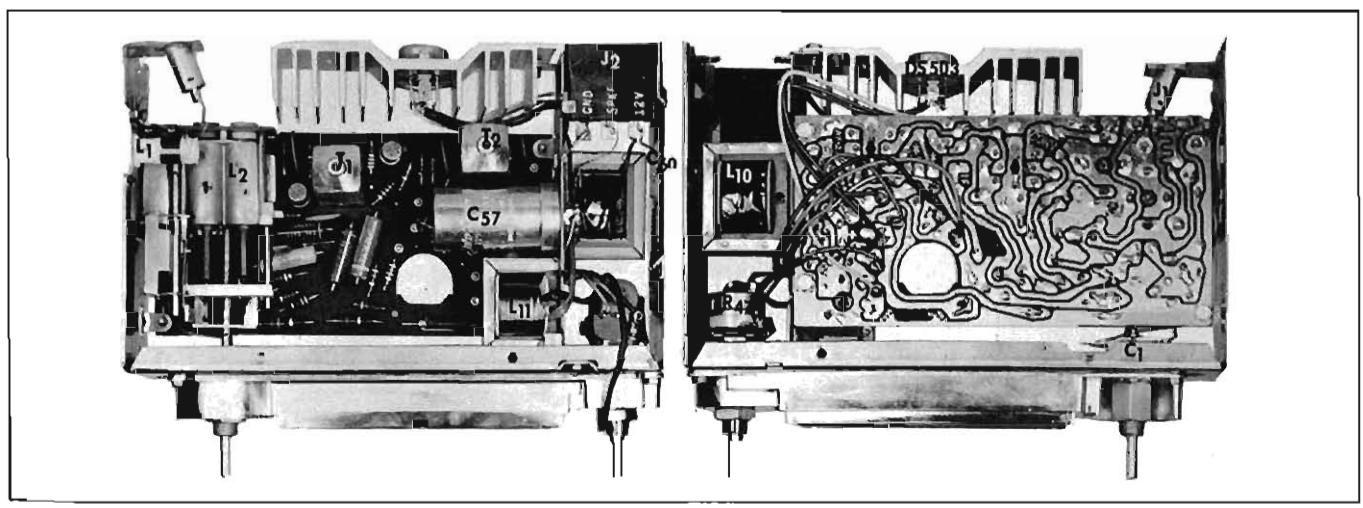



Figure 47 - CORVAIR 95 PARTS LAYOUT - CIRCUIT BOARD VIEW - 986330 - RADIO



Figure 48 - CORVAIR 95 PARTS LAYOUT - TUNER VIEW - 986330 - RADIO

## INSTALLATION PARTS

| Illus. No. | Service Part No. | Description |
|---|---|---|
| | 3843878 | Brace, radio mounting |
| | 1947452 | Capacitor, ignition coil |
| | 1960957 | Capacitor, voltage regulator |
| | 2965457 | Clip assembly, fuse |
| | 7283866 | Fuse, 3 ampere, type AGC |
| | 3787340 | Gasket, radio cover |
| | 7277055 | Knob, control - 2 |
| | 3825878 | Knob, dummy |
| | 3793636 | Knob, tone control |
| | 9420856 | 10-16 (2) |
| | 7279805 | Nut, manual shaft - 2 |
| | 3843879 | Plate, speaker mounting |
| | 9419303 | Screw, hex washer head, tapping, 10-16x1/2 (2) |
| | 9412180 | Screw, hex washer head, tapping, 8-32x5/16 |
| | 7279350 | Spring, control knob - 2 |
| | 7276494 | Static Collector, front wheel - 2 |
| | 2978714 | Strap, radio ground - 2 |
| | 7278015 | Washer, wave, knob anti-rattle - 2 |
| | 9419329 | Screw, pan head, cross recess, tapping, 10-16x5/8 |

## PARTS LIST FOR 986338 CORVAIR 95 TRUCK

### CAPACITORS

| Illus. No. | Service Part No. | Description |
|---|---|---|
| C1 | 7281971 | Antenna trimmer |
| C3 | 7275108 | .047 mfd., 75 volt, tubular |
| C4 | 7287935 | Trimmer, RF |
| C5 | 7288155 | 200 mmf., 100 volt, mica |
| C6 | 7287936 | .0033 mfd., 75 volt, tubular |
| C7 | 7279896 | 30 mfd., 6 volt, Electrolytic tubular |
| C8 | 7275108 | .047 mfd., 75 volt, tubular |
| C9 | 7278751 | .022 mfd., 75 volt, tubular |
| C10 | 7282165 | Oscillator trimmer |
| C11 | 7283366 | .0047 mfd., 100 volt, ceramic |
| C12 | 7290843 | 330 mmf., 100 volt, ceramic |
| C13 | 7275108 | .047 mfd., 75 volt, tubular |
| C14 | 7275108 | .047 mfd., 75 volt, tubular |
| C15 | 7279821 | 180 mmf., ±5% N080, 100 volt, ceramic |
| C16 | 7283364 | .001 mfd., 100 volt, ceramic |
| C17 | | .001 mfd., 100 volt, ceramic - Part of FL-1 |
| C18 | | .001 mfd., 100 volt, ceramic - Part of FL-1 |
| C50 | 7291813 | .1 mfd., 75 volt, tubular |
| C51 | 7292278 | .0068 mfd., 75 volt, tubular |
| C53 | 7291537 | 10 mfd., 24 volt, Electrolytic tubular |
| C54 | 7286539 | 100 mfd., 4 volt, dual Electrolytic |
| C56 | 7265426 | .002 mfd., 500 volt, ceramic |
| C57 | 7282272 | Electrolytic, 3 section<br>400 mfd., 16 volts<br>850 mfd., 16 volts<br>4 mfd., 11.5 RMS |
| C58 | 7292235 | .047 mfd., 75 volt, tubular |
| C60 | 7271564 | Plate, spark |

### DIODES AND TRANSISTORS

| | | |
|---|---|---|
| DS27 | 7279893 | DS-27 Diode - 3 used |
| DS51 | #1221648 | DS-51 Transistor, RF Amplifier |
| DS52 | #1221648 | DS-52 Transistor, Converter |
| DS53 | #1221648 | DS-53 Transistor, IF Amplifier |
| DS46 | 1221962 | DS-46 Transistor, Audio Amplifier |
| DS46 | 1221962 | DS-46 Transistor, Audio Driver |
| DS503 | 1221625 | DS-503 Transistor, Power Amplifier |

# Use DS-25 for replacement

### COILS AND TRANSFORMERS

| | | |
|---|---|---|
| L1 | 7281946 | Choke, antenna series |
| L2A | 7287959 | Coil & housing assy., |
| L2B | 7287959 | includes antenna, RF, |
| L2C | 7287959 | oscillator coils and tuner |
| L10 | 7282057 | Choke, audio output |
| L11 | 1221623 | Choke, "A" supply, input |
| T1 | 1221856 | 1st I.F. |
| T2 | 1221857 | 2nd I.F. |

### RESISTORS AND CONTROLS

| | | |
|---|---|---|
| R1 | 1213224 | 330 ohm, 1/2 watt |
| R4 | 1213486 | 470 ohm, 1/2 watt |
| R5 | 1213237 | 1.5K ohm, 1/2 watt |
| R6 | 1213272 | 150K ohm, 1/2 watt |
| R7 | 1214545 | 2.2K ohm, 1/2 watt |
| R8 | 1214550 | 22K ohm, 1/2 watt |

| Illus. No. | Service Part No. | Description |
|---|---|---|
| R9 | 1214546 | 3.9K ohm, 1/2 watt |
| R10 | 1214547 | 4.7K ohm, 1/2 watt |
| R11 | 1213845 | 33K ohm, 1/2 watt |
| R12 | 1213845 | 33K ohm, 1/2 watt |
| R13 | 1213486 | 470 ohm, 1 watt |
| R14 | 1213483 | 6.8K ohm, 1/2 watt |
| R15 | | 1K ohm, 1/2 watt - Part of FL-1 |
| R16 | 1214559 | 470K ohm, 1/2 watt |
| R47 | 9271771 | Control, volume, tone and switch |
| R53 | 1214549 | 8.2K ohm, 1/2 watt |
| R54 | 1214550 | 22K ohm, 1/2 watt |
| R55 | 7286601 | Rheostat, 600 ohms |
| R56 | 1214549 | 8.2K ohm, 1/2 watt |
| R57 | 1213481 | 3.3K ohm, 1/2 watt |
| R58 | 1214550 | 22K ohm, 1/2 watt |
| R60 | 1211005 | 150 ohm, 1 watt |
| R61 | 1216141 | 68 ohm, 1 watt |
| R62 | 1213489 | 47 ohm, 1/2 watt |
| R63 | 1213489 | 47 ohm, 1/2 watt |
| R64 | 7287480 | Fuse resistor, .68 ohm, 1 watt - use exact replacement |
| R65 | 7241616 | 1.8K ohm, 1/2 watt |
| R66 | 7288083 | 5.6 ohm, 1/2 watt |
| R75 | 1213252 | 10K ohm, 1/2 watt |

## MISCELLANEOUS

| | | |
|---|---|---|
| | 7282096 | Dial light socket assy. |
| | 7282160 | Speaker, 6x9, P.M., spec. mtg. holes, 10 ohm, voice coil |
| | 7282114 | Connector assy., "A" lead & speaker |
| | | Dial Light #1893 |
| | 1221833 | Lead & plug assy., speaker |
| | 1221812 | Radiator pkg., transistor heat |
| | 1221813 | Insulator, heat radiator |
| | 7284284 | Shield, light |
| J1 | 7281108 | Socket, antenna connector |
| FL1 | 7287253 | Component Pack .0022 mfd. - 2 - 1K ohm |

## TUNER PARTS

| | | |
|---|---|---|
| | 7281326 | Backplate, dial |
| | 7282176 | Backplate, pointer |
| | 7282144 | Bushing, manual shaft |
| | 7240121 | Cap, dial light |
| | 1219143 | Cord, dial pointer drive |
| | 7281896 | Core bar |
| | 7288147 | Core, tuning - 3 used |
| | 1222009 | Drive shaft, manual |
| | 1222174 | Escutcheon assy. (dial & backplate) |
| | 7287957 | Tuner complete, includes coils, housing & slugs |
| | 7281575 | Link, drive nut to core bar |
| | 7285846 | Nut, hex shaft, bushing |
| | 1221815 | Nut pkg., core bar drive-M |
| | 7282086 | Pointer, dial assy. |
| | 7263593 | Pulley, dial cord |
| | 7283693 | Spring, dial cord tension |

## INSTALLATION PARTS

| | | |
|---|---|---|
| | 3783238 | Bracket, radio cover |
| | 3843878 | Bracket, radio mtg., R.H. |
| | 1960957 | Capacitor, generator |
| | 1947452 | Capacitor, ignition coil |
| | 1960957 | Capacitor, voltage regulator |
| | 2965457 | Clip, assembly, fuse |
| | 3826296 | Cover assy., radio |
| | 3783307 | Cushion, speaker mtg. brkt. |
| | 7283866 | Fuse, 3 ampere, type AGC |
| | 3787340 | Gasket, radio cover |
| | 7277055 | Knob, control 2 |
| | 3825878 | Knob, dummy |
| | 3793636 | Knob, tone control |
| | 7279805 | Nut, radio bushing - 2 |
| | 3843879 | Plate, speaker mtg. |
| | 9420856 | Nut, spring steel "U" shape 10-16-2 |
| | 9419329 | Screw, pan head, cross recess, tapping, 10-16x5/16 |
| | 9412180 | Screw, hex head, tapping, 8-32x5/16 |
| | 9419303 | Screw, hex washer head, tapping, 10-16x1/2 (2) |
| | 3823190 | Spacer, radio receiver |
| | 7279350 | Spring, control knob - 2 |
| | 7276494 | Static Collector, front wheel - 2 |
| | 7278015 | Washer, wave, knob anti-rattle - 2 |