

CUSTOM SERIES 95 TRUCK RADIO 985203

This radio has four tubes and two hi-gain transistors and is designed for the Series 95 trucks. The radio consists of a radio receiver unit with



Figure 82

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

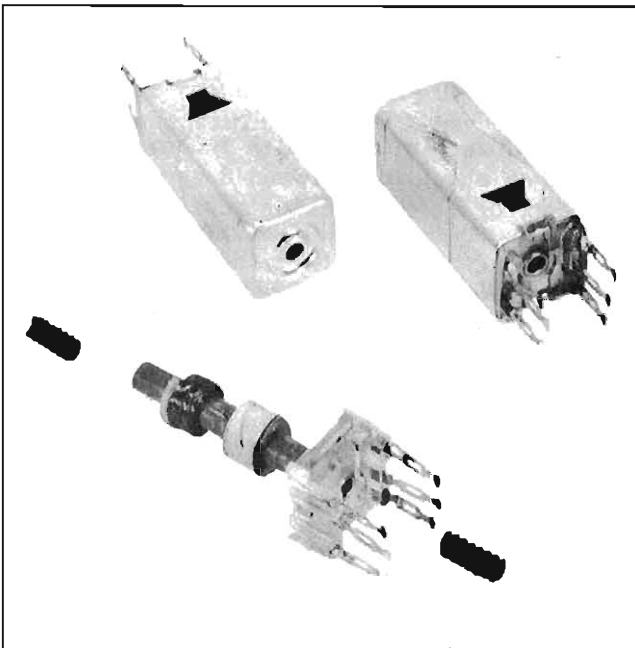


Figure 83

type gasket, thereby using the entire instrument panel for unusually good tone reproduction.

ELECTRICAL DESCRIPTION

The circuit used in this receiver is the super-heterodyne type that uses no regeneration. The tuning circuits are of the permeability type and are tuned by varying the iron cores in and out of the antenna, radio frequency and oscillator coils like pistons. The intermediate frequency stages are tuned by means of two iron cores in each transformer and are adjusted with an insulated screw driver from the bottom and top of each transformer; both the first (input) and second (output) intermediate frequency transformers are tuned by this method. See Figure 83.

The antenna circuit is capacity coupled to the antenna by means of an adjustable antenna trimmer condenser to take care of normal variations in antenna and antenna coil capacity. The antenna condenser is adjustable by means of a small screw driver and is located at the lower front on the right side of the radio case.

The automatic volume control is of the delayed signal type and is very capable of maintaining a constant level of volume at all times. Very high frequency filter chokes are used in the radio frequency grid circuit to discriminate against ignition interference in the receiver, thus eliminating the use of spark plug and distributor suppressors.

TUBE AND TRANSISTOR COMPLEMENT AND FUNCTION

12DZ6	Radio frequency amplifier
12AD6	Oscillator - modulator
12EK6	Intermediate frequency amplifier
12AE6A	Detector - Automatic volume control and first audio
DS26	Audio driver transistor
DS503	Audio output "HI-POWER" transistor

GENERAL INFORMATION

Tuning range 540 - 1615 kilocycles
Intermediate frequency - 262 kilocycles
Maximum power output 4.2 watts
Undistorted power output 3.2 watts
Current drain 1.4 amperes at 12 volts
Speaker-Alnico V permanent magnet type 6 x 9 inch
Voice coil impedance 4 ohms at 400 cycles
All circuits use a printed circuit board

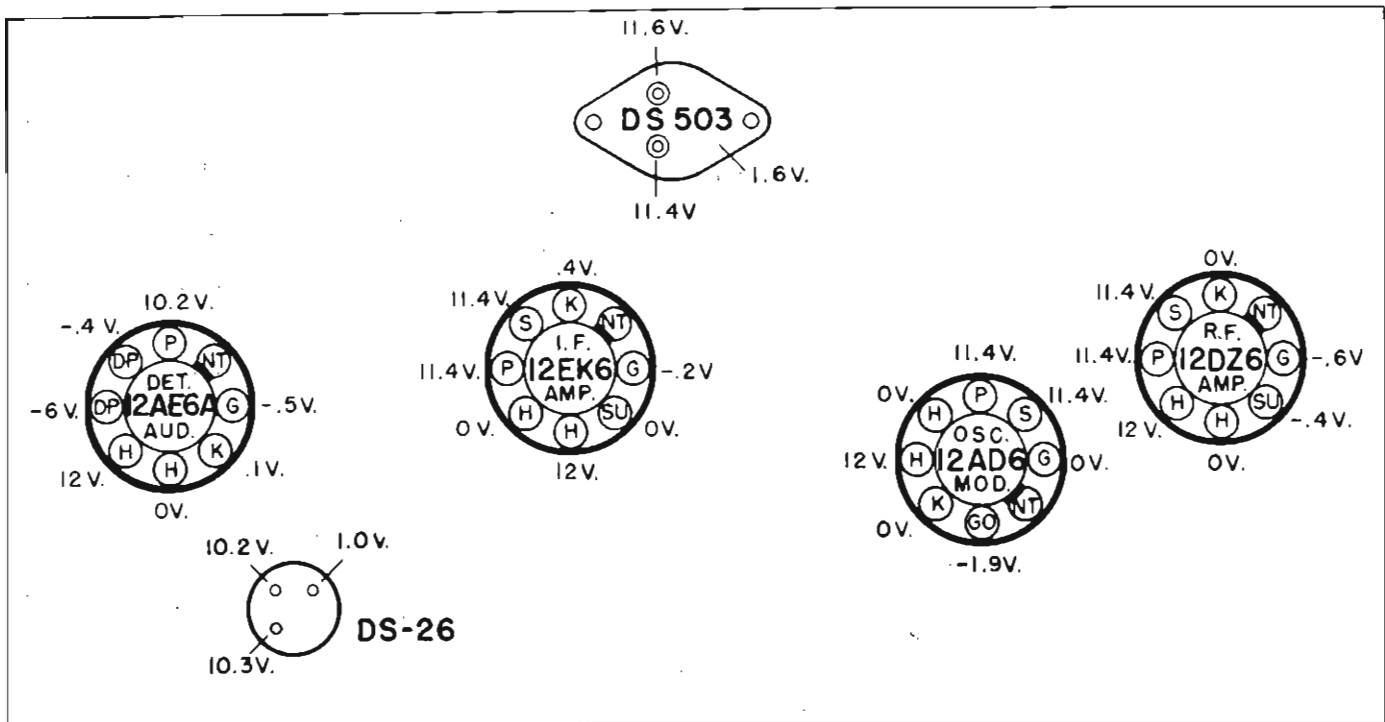


Figure 84 VOLTAGE CHART - 985203 - RADIO

PROCEDURE FOR CHECKING THE VOLTAGES OF 988336 RADIO

Hook up radio on the service bench to a "12" volt power supply unit. It is important that you have 12 volts at the spark plate of the radio, or the voltage readings will be correspondingly lower. All voltage readings have been taken with V.T.V.M. Set the volt-ohm meter in the "30" volt position to read "D.C." voltage. Ground one lead of volt meter to radio chassis and with other lead check all tube pins marked "H" with a voltage reading of 12 volts as shown in Figure 84. If incorrect or no voltage, check or replace the following:

1. Check or replace "On and Off" switch, Item 55C on circuit diagram and 55 on parts layout.
2. Check or replace condensers, Items 27 and 28 on circuit diagram and parts layout.

Next check the transistor collector element marked "C" of the DS503 output transistor which should read 1.3 to 1.7 volts D.C. If high or no voltage, check or replace:

1. Check or replace emitter fuse resistor, Item 50 on the circuit diagram and parts layout.
2. Check or replace speaker, Item 60 on the circuit diagram and parts layout.

3. Check or replace output transformer, Item 58 on the circuit diagram and parts layout.
4. Check connector, Item 59 for ground to chassis. This is a shorting type interlock switch and must be opened by speaker plug when testing radio.
5. Check or replace potentiometer, Item 57 on the circuit diagram and parts layout.

Next check the resistance of the base element of the transistor marked "B" of the DS503 to ground with the radio turned off. Make this check with meter on the R x 1 ohm scale. The resistance should be between 2 and 15 ohms. If incorrect or zero, check or replace:

1. Check or replace the input transformer, Item 56 on the circuit diagram and parts layout.
2. Check or replace condenser, Item 19B on the circuit diagram and parts layout.
3. Check or replace resistor, Item 51 on the circuit diagram and parts layout.

Next check the resistance to ground of the transistor emitter element marked "E" with the radio turned off. Set the ohmmeter on the RX1

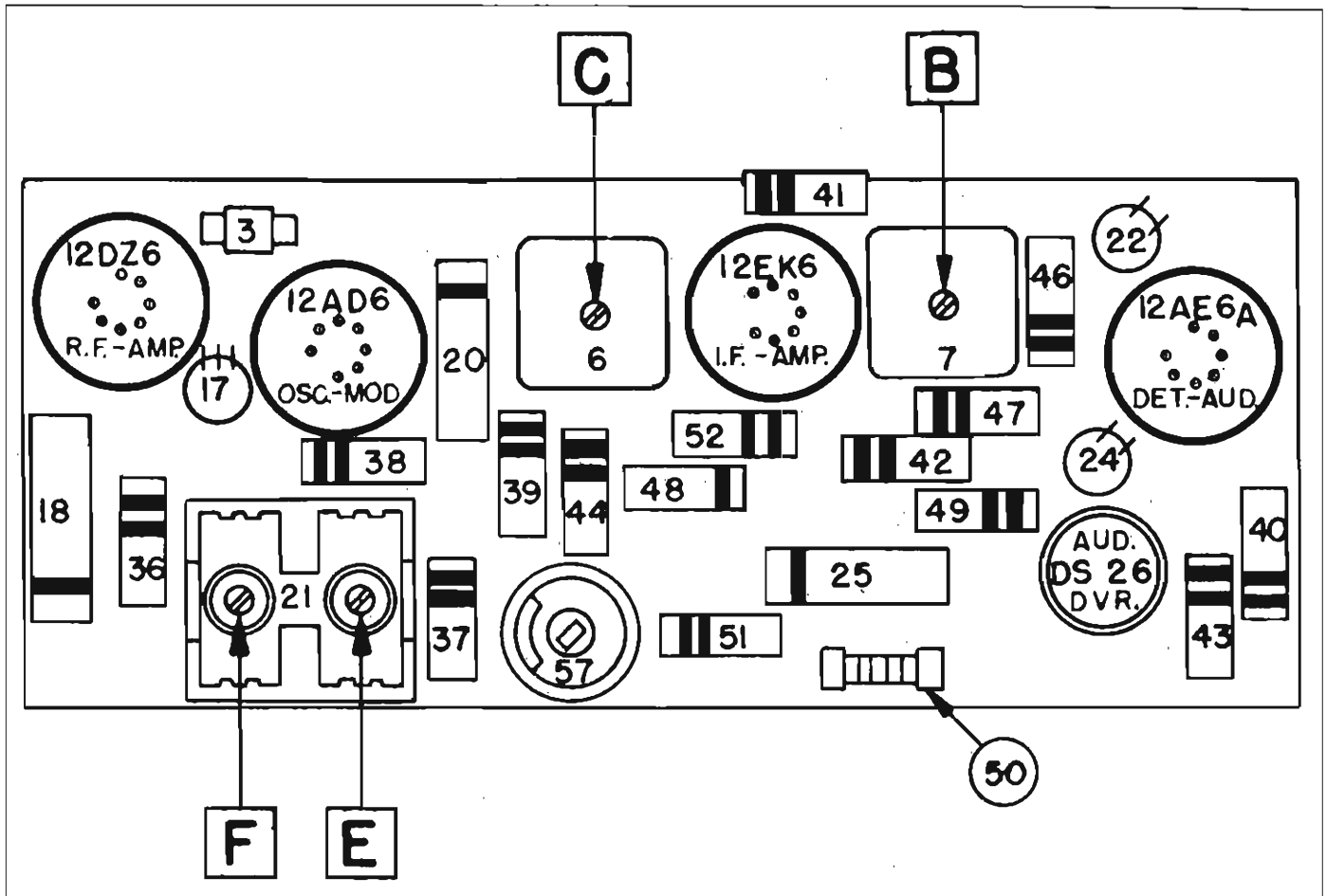


Figure 85 PARTS LAYOUT ON CIRCUIT BOARD - 985203 - RADIO

scale. The resistance should be between 1 and 4 ohms. If incorrect or zero, check or replace:

1. Check or replace fuse resistor, Item 50 on the circuit diagram and parts layout.
2. Check or replace condenser, Item 19B on the circuit diagram and parts layout.

Next, with the radio turned off, check the resistance between the collector element marked "C" and the emitter element marked "E" of the DS503. If less than 1 ohm, the transistor may be shorted. Disconnect the leads and check the resistance again. If still less than 1 ohm, replace the transistor.

Next check the transistor collector element marked "C" of the DS26 transistor which should read .5 to 1.0 volts D.C. If high or no voltage, check or replace:

1. Check resistor.
2. Check or replace audio transformer, Item 56 on the circuit diagram and parts layout.

3. Check or replace condenser, Item 19A on the circuit diagram and parts layout.
4. Check or replace 12AE6A tube.
5. Check or replace resistor, Item 47 on the circuit diagram and parts layout.
6. Check or replace resistor, Item 48 on the circuit diagram and parts layout.

Next check tube pin No. 7 marked "P" on the 12AE6A which should read 10.2 volts D.C. If incorrect or no voltage, check or replace:

1. Check or replace transformer, Item 56 on the circuit diagram and parts layout.
2. Check or replace resistor, Item 52 on the circuit diagram and parts layout.

Next check tube pin No. 2 marked "K" on the 12AE6A which should read 1.1 volts D.C. If incorrect or no voltage, check or replace:

1. Check or replace resistor, Item 42 on the circuit diagram and parts layout.

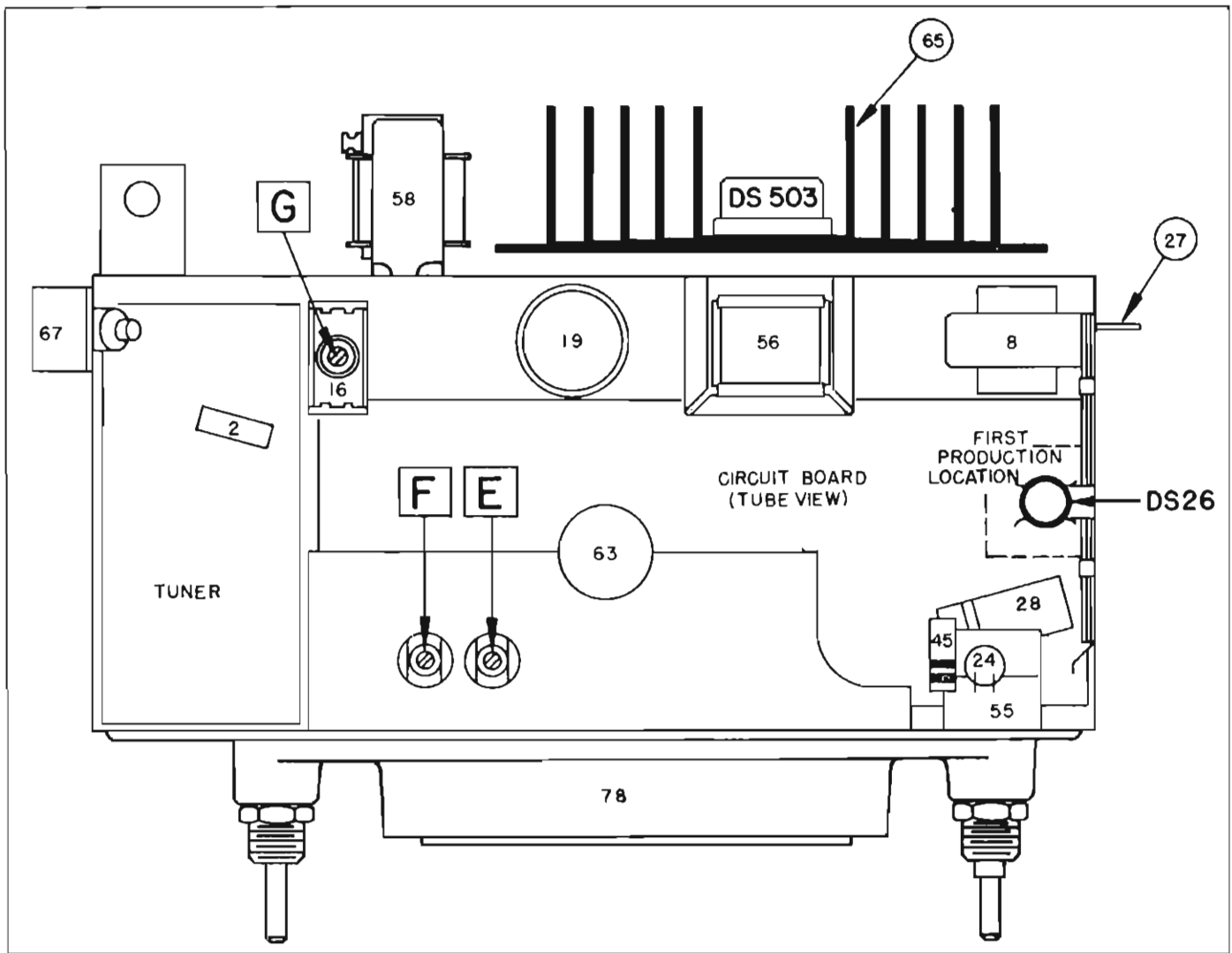


Figure 86 PARTS LAYOUT - BOTTOM VIEW - 985203 - RADIO

Next check tube pin No. 5 marked "P" on the 12EK6 I.F. amplifier which should read 11.4 volts D.C. If incorrect or no voltage, check or replace:

1. Check or replace I.F. transformer, Item 7 on the circuit diagram and parts layout.

Next check tube pin No. 6 marked "S" on the 12EK6 which should read 11.4 volts D.C. If incorrect or no voltage, check or replace:

1. Check or replace electrolytic condenser, Item 19A on the circuit diagram and parts layout.
2. Check or replace resistor, Item 52 on circuit diagram and parts layout.

Next check tube pin No. 5 marked "P" on the 12AD6 which should read 11.4 volts D.C. If incorrect or no voltage, check or replace:

1. Check or replace I.F. transformer, Item 6 on the circuit diagram and parts layout.

Next check tube pin No. 6 marked "S" on the 12AD6 which should read 11.4 volts D.C. If incorrect or no voltage, check or replace:

1. Check or replace oscillator coil, Item 5 on the circuit diagram and parts layout.

Next check tube pin No. 5 marked "P" on the 12DZ6 R.F. amplifier which should read 11.4 volts D.C. If incorrect or no voltage, check or replace:

1. Check or replace choke, Item 3 on the circuit diagram and parts layout.
2. Check or replace condenser, Item 17A on the circuit diagram and parts layout.

Next check tube pin No. 6 marked "S" on the 12DZ6 which should read 11.4 volts D.C. If incorrect or no voltage, check or replace:

1. Check or replace resistor, Item 52 on the circuit diagram and parts layout.

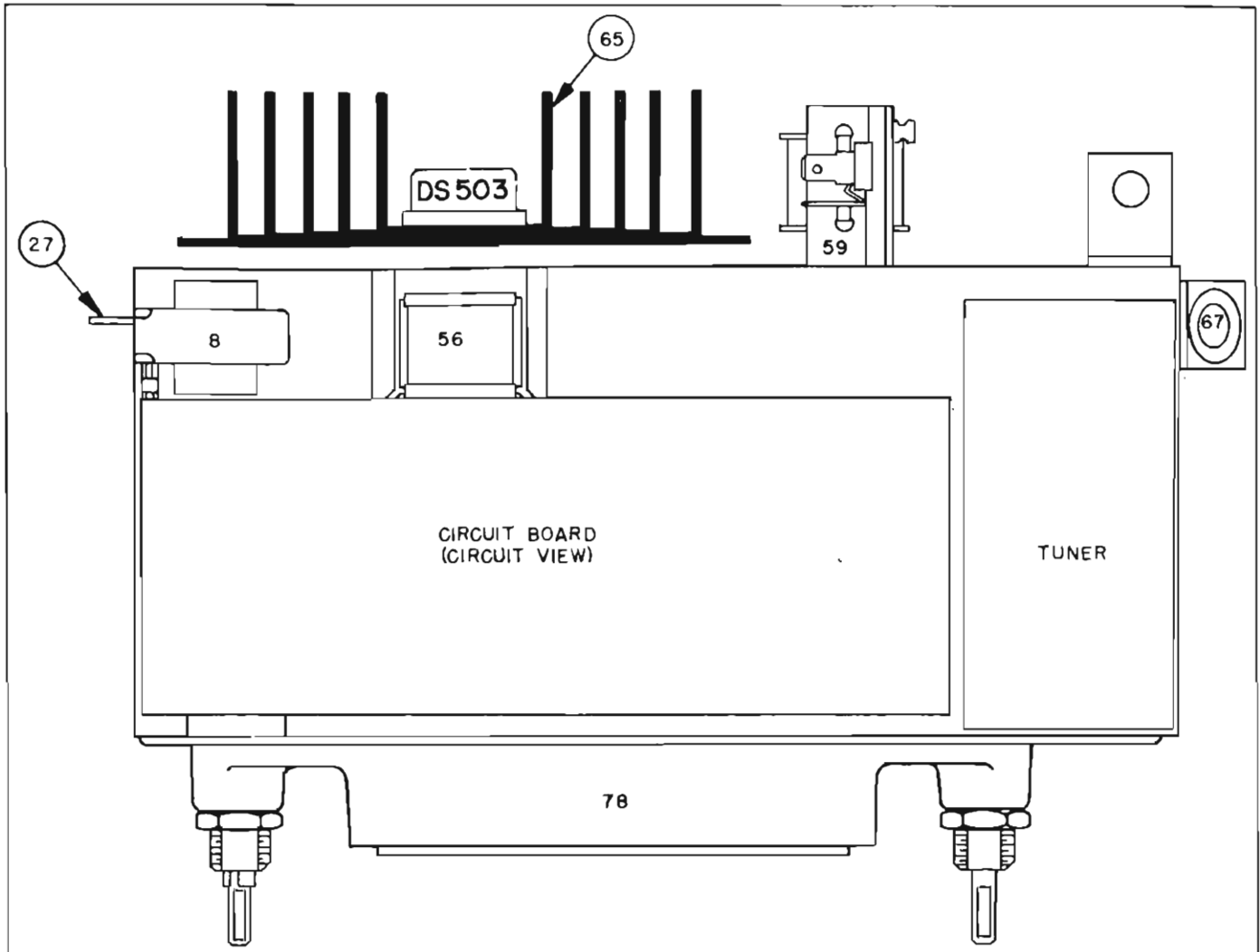


Figure 87 PARTS LAYOUT - TOP VIEW - 985203 - RADIO

PROCEDURE FOR SIGNAL TRACING
RADIO 985203

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.

NOTE: To protect the signal generator from "D.C." voltage, place a 0.1 mfd. condenser in signal generator lead between the signal generator and the end of the test lead. Adjust signal generator volume about 3/4 open to obtain a strong signal.

With signal generator lead, touch DS26 collector marked "C". If no signal, check or replace:

1. Check or replace fuse resistor, Item 50 on the circuit diagram and parts layout.
2. Check speaker interlock socket, Item 59.
3. Check or replace speaker, Item 60 on circuit diagram and parts layout.

4. Check or replace the output transformer, Item 58 on the circuit diagram and parts layout.
5. Check or replace input transformer, Item 56 on the circuit diagram and parts layout.
6. Check or replace DS503 transistor output stage.

With signal generator lead touch tube pin No. 7 marked "P" on the 12AE6A tube. If no signal check or replace the following:

1. Check transistor.
2. Check or replace 12AE6A tube.
3. Check or replace resistor, Item 47 on circuit diagram and parts layout.
4. Check or replace resistor, Item 48 on circuit diagram and parts layout.

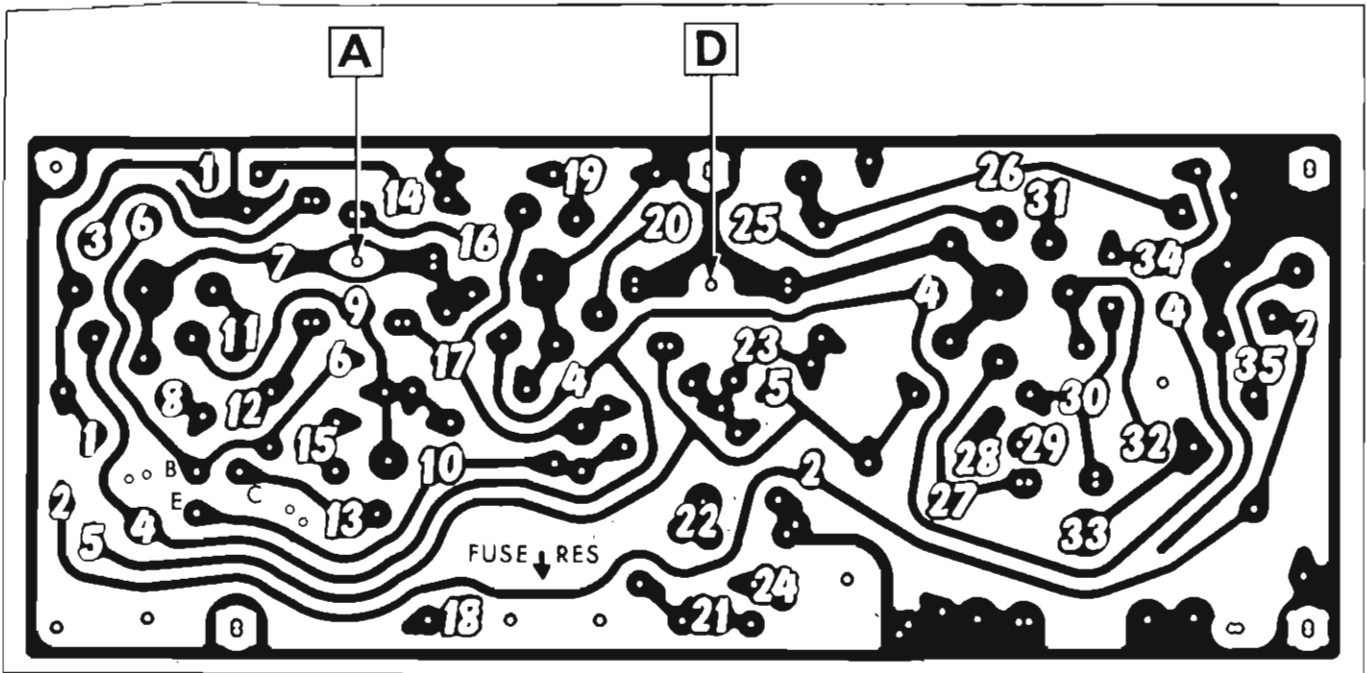


Figure 88 CIRCUIT BOARD PATTERN - 985203 - RADIO

5. Check or replace condenser, Item 19A on circuit diagram and parts layout.

With signal generator lead touch tube pin No. 7 marked "G" on the 12EK6A tube. If no signal, check or replace the following:

1. Check or replace 12AE6A tube or tube socket on circuit diagram and parts layout.
2. Check or replace resistor, Item 46 on circuit diagram and parts layout.
3. Check or replace resistor, Item 42 on the circuit diagram and parts layout.
4. Check or replace condenser, Item 23 on the circuit diagram and parts layout.

Next turn volume control all the way open and touch tube pins No's. 5 and 6 marked "DP" on the 12AE6A tube. If no signal, check or replace the following:

1. Check or replace 12AE6A tube.
2. Check or replace volume control, Item 55A on diagram and 55 on parts layout.

Now change signal generator from audio position to generate an intermediate frequency signal. Set signal generator to 262 kilocycles, leaving 0.1 mfd. condenser in signal generator lead to protect the signal generator from "D.C." voltage. Keep signal generator grounded to radio chassis.

Next touch tube pin No. 1 marked "G" on 12EK6 intermediate frequency amplifier tube. If no signal, check or replace the following:

1. Check or replace 12EK6 tube.
2. Check or replace intermediate frequency transformer, Item 6 on circuit diagram and parts layout.
3. Check or replace 12EK6 tube socket.

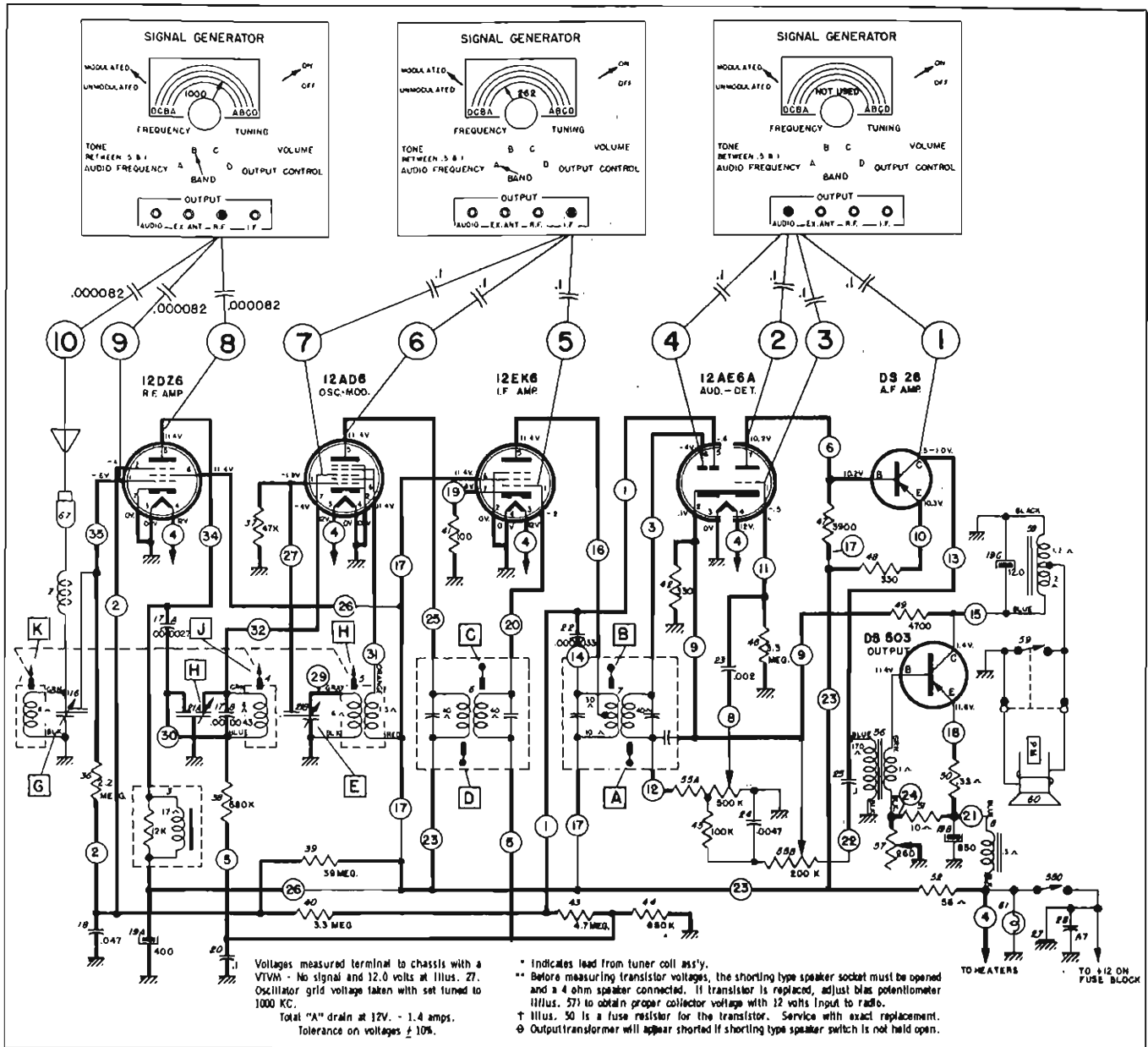
Next touch tube pin No. 5 marked "P" on 12AD6 tube. If no signal, check or replace the following:

1. Check or replace intermediate frequency transformer, Item 6 on circuit diagram and parts layout.

Next touch tube pin No. 7 marked "G" on 12AD6 tube. If no signal, check or replace the following:

1. Check or replace 12AD6 tube.
2. Check or replace oscillator coil, Item 5 on circuit diagram and parts layout.

Next change signal generator from intermediate frequency setting to radio frequency signal. Replace the 0.1 mfd. condenser in the signal generator lead with a .000082 mfd. condenser to protect signal generator from "D.C." voltage. Set signal generator to 1100 kilocycles and tune radio receiver to 1100 kilocycles (11 on dial scale).



POINT SIGNAL STOPS - CHECK OR REPLACE ITEMS LISTED

<p>No signal at Point 1 - Check or replace items 19C-51-50-56-58-60-69-DS503.</p>	<p>No signal at Point 6 - Check or replace item 6.</p>
<p>No signal at Point 2 - Check or replace items 19A-47-48-12AE6A tube-DS26.</p>	<p>No signal at Point 7 - Check or replace item 5-12AD6 tube or socket.</p>
<p>No signal at Point 3 - Check or replace items 23-42-46-12AE6A tube.</p>	<p>No signal at Point 8 - Check or replace items 4-5-17A-17B-21A-21B.</p>
<p>No signal at Point 4 - Check or replace items 42-55A-55B-12AE6A tube or socket.</p>	<p>No signal at Point 9 - Check or replace item 3-12DZ6 tube or socket.</p>
<p>No signal at Point 5 - Check or replace item 7 or 12EK6 tube or socket.</p>	<p>No signal at Point 10 - Check or replace items 1-2-16.</p>

Figure 89 SIGNAL TRACING PROCEDURE - 985203 - RADIO

Next touch tube pin No. 5 marked "P" on 12DZ6 radio frequency amplifier tube. If no signal, check or replace the following:

1. Check or replace radio frequency coil, Item 4 on circuit diagram and parts layout.
2. Check or replace oscillator coil, Item 5 on circuit diagram and parts layout.
3. Check or replace condensers, Items 17A, 20A, 21A and 21B on circuit diagram and parts layout.
4. Check or replace resistor, Item 37 on circuit diagram and parts layout.

Next touch tube pin No. 1 marked "G" on 12DZ6 radio frequency tube. If no signal, check or replace the following:

1. Check or replace 12DZ6 tube.
2. Check or replace 12DZ6 tube socket.
3. Check or replace choke, Item 3 on circuit diagram and parts layout.

Next touch antenna terminal at antenna socket. If no signal, check or replace the following:

1. Check or replace antenna coil, Item 1 on circuit diagram and parts layout.
2. Check or replace condenser, Item 16 on circuit diagram and parts layout.
3. Check or replace choke, Item 2 on circuit diagram and parts layout.

This completes the entire checking procedure of the receiver, and if the procedure has been followed as outlined, the failure will have been located. After repairing failure, receiver will operate and should now be aligned for proper performance as follows and which is part of the service operation when repairing radios.

PROCEDURE FOR ALIGNMENT OF 985203 RADIO

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 transformer, 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 In-

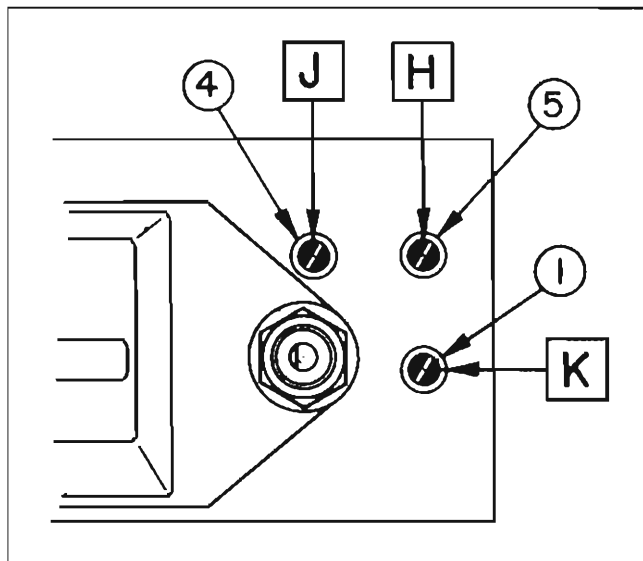


Figure 90 IRON CORE ALIGNMENT - 985203 - RADIO

ductance 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 voltmeter in the "3" volt "A.C." range position and place voltmeter leads across speaker voice coil terminals. Speaker is Item 60 on circuit diagram and parts layout.
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 from the signal generator to the tube pin No. 7 marked "G" on 12AD6 tube.
3. Adjust signal generator volume control so that the volt meter will read at about half scale.

NOTE: Radio receiver volume control must be turned to the maximum position so that the automatic volume control circuit of the radio 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 reading. Keep the signal generator volume tuned down so that during adjustments the meter does not read more than half scale. This

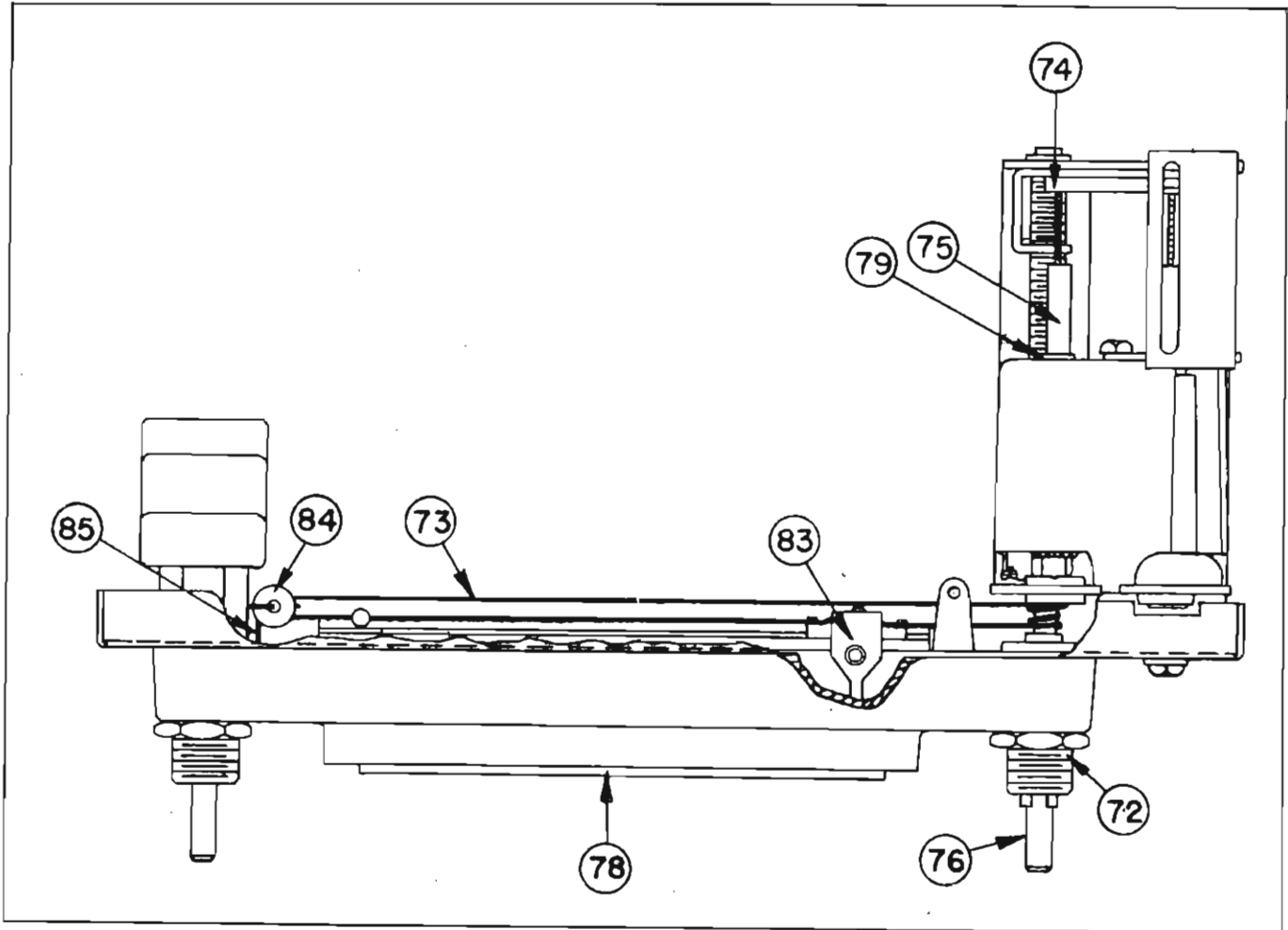


Figure 92 TUNER AND DIAL CORD VIEW - 985203 - RADIO

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. Connect a .000082 mfd. condenser to antenna connector and attach signal generator lead. Tune 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 radio volume control turned to maximum position and the antenna extended to full height. Re-adjust trimmer "G" ONLY for maximum volume.

CAPACITY AND INDUCTANCE ALIGNMENT PROCEDURE FOR 985203 RADIO

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. Tune signal generator to exactly 1615 kilocycles, and tune radio receiver to "stop" on the 1600 kilocycle end of the dial.
2. Adjust output meter to about half scale, and then adjust trimmers "E, F and G" on circuit diagram and parts layout in sequence for maximum meter readings.

- Next tune signal generator and radio receiver to exactly 600 kilocycles, approximately 6 on radio dial, and adjust iron cores "H, J and K" for maximum readings on output meter.

NOTE: The iron cores are slotted so that adjustments can be made with a small insulated screw driver that fits loosely in the coil forms.

- Repeat alignment procedure at 1615 and 600 kilocycles until the maximum readings have been attained.
- After the receiver has been installed in the car, turn on the receiver and tune in a weak station near 1000 kilocycles, with radio volume tuned to maximum position and antenna extended to full height. Readjust trimmer "G" only for maximum volume.

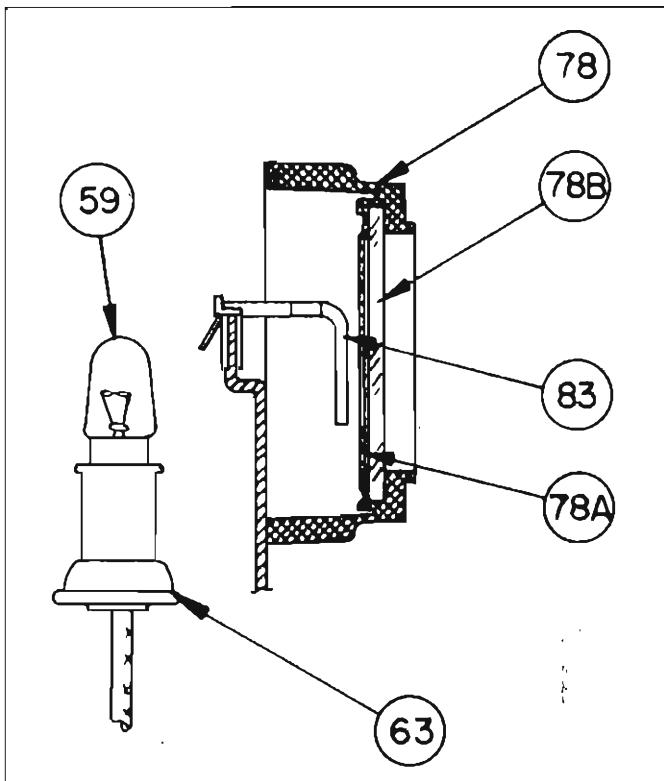


Figure 93 CROSS SECTION OF ESCUTCHEON - 985203 - RADIO

SERVICE PARTS LIST
985203 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.

Illus. Service Part No. Description

ELECTRICAL PARTS

COILS

1	1221138	Antenna, tuning
2	7255738	Choke, antenna series
3	7279416	Choke/Resistor Shunt, RF plate
4	1221138	R.F., tuning
5	1221263	Oscillator, tuning
6	1221621	1st I.F.
7	1221622	2nd I.F.
8	1221623	Choke "A" supply, input

CAPACITORS

16	7275120	Antenna Trimmer
17	7279808	Dual Ceramic
17A		.000027 mfd., 500 volt
17B		.000043 mfd., 500 volt
18	7272519	.047 mfd., 75 volt, tubular
19	7280385	Electrolytic - 3 section
19A		400 mfd., 16 volt
19B		850 mfd., 16 volt
19C		12 mfd., 11.5 RMS
20	7271042	.1 mfd., 75 volt, tubular
21	7273697	Dual Trimmer
21A		R.F. Section
21B		Osc. - Mod. Section
22	7274858	.000033 mfd., 500 volt, ceramic
23	7265426	.002 mfd., 500 volt, ceramic
24	7280703	.0047 mfd., 500 volt, ceramic
25	7271042	.1 mfd., 75 volt, tubular
27	1221509	Spark Plate
28	7257906	.47 mfd., 100 volt, tubular

RESISTORS

36	1214563	2.2 megohm, 1/2 watt
37	1214553	47,000 ohm, 1/2 watt
38	*1213488	680,000 ohm, 1/2 watt
39	*7273602	39 megohm, 1/2 watt
40	1214564	3.3 megohm, 1/2 watt
41	*1213217	100 ohm, 1/2 watt
42	1213224	330 ohm, 1/2 watt
43	*1214566	4.7 megohm, 1/2 watt
44	*1213488	680,000 ohm, 1/2 watt
45	*1213270	100,000 ohm, 1/2 watt
46	*1214564	3.3 megohm, 1/2 watt
47	*1216128	3900 ohm, 1/2 watt
48	1213224	330 ohm, 1/2 watt
49	*7280230	4700 ohm, 1/2 watt
50	7276499	.33 ohm, Fuse Resistor
51	7271133	10 ohm, 1/2 watt
52	*1214540	56 ohm, 1/2 watt

*Not serviced

Illus. No.	Service Part No.	Description	Illus. No.	Service Part No.	Description
TUBES AND TRANSISTORS			73	1219143	Cord, dial pointer drive
	1221649	DS26 Transistor, audio driver	74	7274289	Core Bar
	1221126	12DZ6 Tube, R.F. Amp.	75	7273859	Core, tuning
	1220987	12AD6 Tube, osc.-mod.	76	1221510	Drive Shaft, manual
	1221272	12EK6 Tube, I.F. Amp.	77	7274917	Spring, shaft retainer
	1221628	12AE6A Tube, audio-det.	78	7280000	Escutcheon Assembly
	1221625	DS503 Transistor, output	78A		Backplate, dial
	*1221643	Hardware-Insulator Kit, mtg.	78B		Dial, calibrated
MISCELLANEOUS ELECTRICAL			79	7258565	Grommet, ant. & R.F. coils mtg.
55	7280349	Control, vol., tone & switch	80	7258564	Grommet, osc. coil mtg.
55A		Volume	81	7271590	Housing, tuning coils
55B		Tone	82	7271505	Sleeve, ant. & R.F. coils
55C		Switch	83	7272125	Pointer Assembly Pkg.
56	7277230	Transformer, input	84	7263593	Pulley, dial cord
57	7275474	Rheostat, 260 ohms, T.C.	85	7269225	Spring, dial cord tension
58	1221535	Transformer, output	86	7262922	Spring, manual drive, friction
59	7274985	Switch, speaker inter-lock	INSTALLATION PARTS		
60	7277515	Speaker, 6 x 9", P.M., slotted	3783236		Bracket, radio mounting
61	456985	Lamp, dial light, #1891	3783238		Bracket, radio cover
MECHANICAL PARTS			7259643		Capacitor, generator
CHASSIS			1947452		Capacitor, ignition coil
63	7275571	Dial Light Assembly	7259643		Capacitor, voltage regulator
64	7278950	Lead & Plug Assembly, speaker	3798240		Cover Assembly, radio
65	7280898	Radiator Pkg., transistor heat	3783307		Cushion, speaker mtg. bracket
66	7269576	Shield, tube	148511		Fuse, 4 Amp., type AGC
67	1221114	Socket, antenna connector	7277055		Knob, control (2)
68	7268815	Socket, tube, 7-pin miniature	7274782		Knob, dummy
TUNER			7272970		Knob, tone control
71	7275106	Backplate, pointer	7235969		Nut, radio bushing (2)
72	7274916	Bushing, manual shaft	3784324		Plate, speaker mtg.
			7276494		Static Collector, front wheel (2)
			2974198		Strap, radio ground, 5" long (2)
			3797526		Trimplate
			7257400		Washer, wave, knob anti-rattle (2)
			445347		Nut, "J"

*Not serviced