

# Emerson Radio

## SERVICE NOTES

**MODELS: 511, 517, 541**

CHASSIS MODEL: 120010

**511  
517  
541**

### DESCRIPTION

TYPE: Single-band superheterodyne.

FREQUENCY RANGE: 540-1620 kc.

#### TYPE OF TUBES:

1—12SA7, pentagrid oscillator-modulator

1—12SK7 or 12SF7, first i-f amplifier

1—12SQ7, diode detector, a-f amplifier, a.v.c.

1—50L6, beam power output

1—35Z5, half-wave rectifier

POWER SUPPLY: A.C. or D.C.

VOLTAGE RATING: 105-125 volts.

POWER CONSUMPTION: 30 watts.

### GENERAL NOTES

1. If replacements are made or the wiring disturbed in the r-f section of the circuit, the receiver should be carefully realigned.
2. In operating the receiver on d.c., it may be necessary to reverse the line plug for correct polarity.
3. The color coding of the i-f transformer leads is as follows:
 

Grid—green	Plate—blue
Grid return—black	B+—red
4. All models have self-contained antennas and do not require additional antenna connections. For permanent home installations, however, if it is desired to improve reception of weak stations, an additional outdoor antenna may be used. For this purpose a lead has been brought out of the rear of the chassis near the line cord.
5. The loop antenna has directional properties. It is important, therefore, once the station is tuned in, to rotate the cabinet back and forth through a quarter of a circle (90 degrees), leaving it at the position where the station is received with maximum volume.

### VOLTAGE ANALYSIS

The following voltage readings are d-c measurements taken from B— (line switch) to the indicated tube-socket pin. A 1000 ohms-per-volt meter should be used for all readings except those indicated by an asterisk (\*), which should be taken with a d-c vacuum-tube voltmeter. Line voltage for these readings was 117 volts, 60 cycles, a.c. Measurements made with 117 volts d.c. will be lower than those given below. Take readings with the volume control set at minimum and the variable condenser closed.

TUBE	PIN NUMBER							
	1	2	3	4	5	6	7	8
12SA7			89	89	*—10			*—1.6
12SK7				*—1.6		89		89
12SQ7		*—0.7		*—1.6	*—0.5	37.5		
50L6			110	89				6.2
35Z5				116		116		117

## REPLACEMENT PARTS LIST

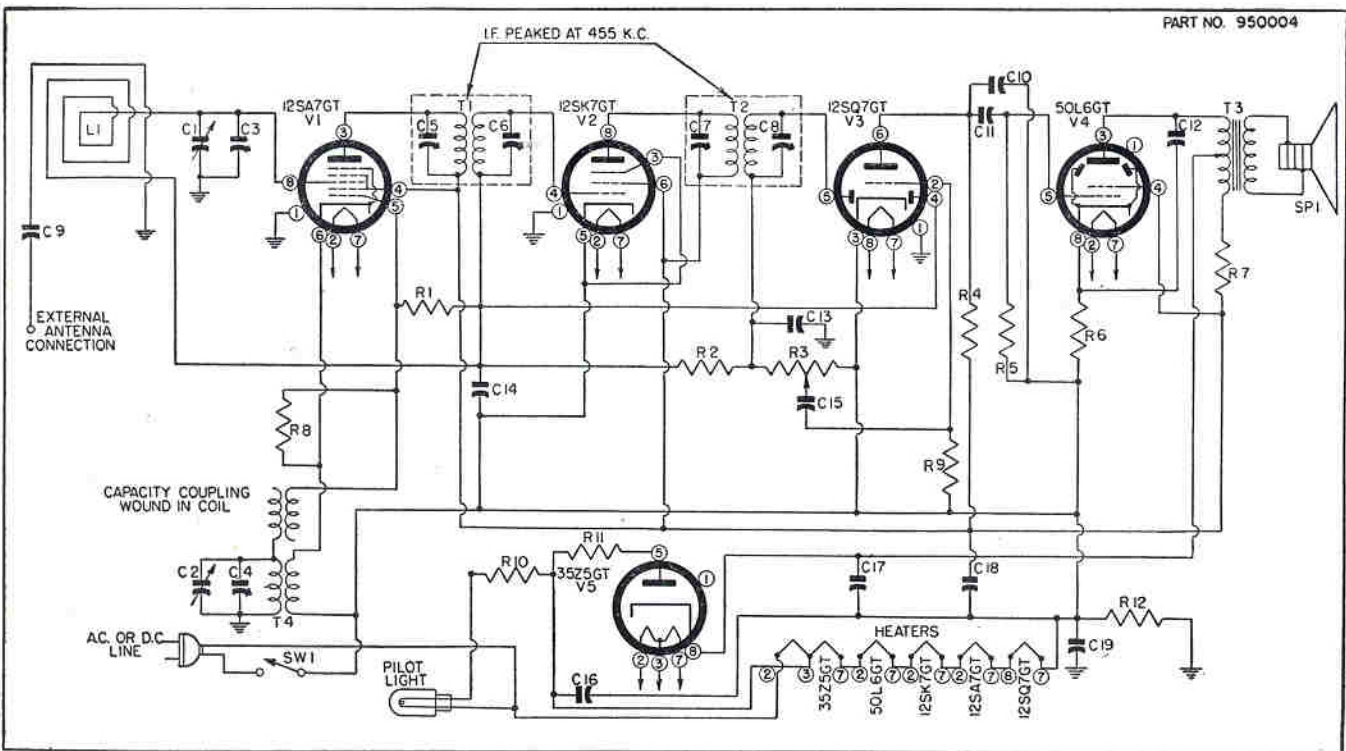
Schematic Symbol	†Part No.	DESCRIPTION	Schematic Symbol	†Part No.	DESCRIPTION
C1, C2	900160	Two-gang variable condenser	R2	321330	3.3 meg., ¼ watt carbon resistor
*C3, C4		Trimmers, part of variable condenser	R3	390000	Volume control with line switch
*C5, C6, } C7, C8 }		Trimmers, part of i-f transformers	R4, R5	321130	470,000 ohms, ¼ watt carbon resistor
C9, C15	920010	0.002 mfd., 600 V. paper condenser	R6	340290	150 ohms, ½ watt carbon resistor
C10	920240	500 mmfd., 600 V. paper condenser	R7	370490	1000 ohms, 1 watt carbon resistor
C11, C12	920020	0.02 mfd., 400 V. paper condenser	R8	310810	22,000 ohms, ¼ watt carbon resistor
C13	910000	220 mmfd., 600 V. mica condenser	R10	340010	6.8 ohms, ¼ watt carbon resistor
C14	920040	0.1 mfd., 200 V. paper condenser	R11	397040	15 ohms, 1 watt wire-wound resistor
C16	920030	0.05 mfd., 400 V. paper condenser	R12	321050	220,000 ohms, ¼ watt carbon resistor
C17, C18	925000	Dual electrolytic condenser, 150 V.; C20—30 mfd., C21—50 mfd.	SP1	180000	P.M. Speaker
C19	920050	0.2 mfd., 200 V. paper condenser	*SW1		Line switch, part of volume control
L1	700000	Loop antenna assembly, or	T1	720000	First i-f transformer
L1	700200	Loop antenna assembly	T2	720100	Second i-f transformer
R1, R9	397000	15 meg., ¼ watt carbon resistor	T3	734000	Output transformer
			T4	716010	Oscillator coil
				583010	Line cord

## CABINET AND DIAL PARTS

140017	Cabinet (Model 511)		807000	Pilot light, Mazda No. 47
140085	Cabinet (Model 517)		525130	Dial Pointer
140068	Cabinet (Model 541)		411040	Pointer hub
450310	Knob		520240	Dial crystal
410070	Bottom cover		280203	Drive shaft
507120	Pilot light socket			

\* Not supplied separately.

† Specify part numbers when ordering.





# ADJUSTMENTS

An oscillator with frequencies of 455, 600, and 1425 kc is required.

An output meter should be connected across the primary or secondary of the output transformer for observing maximum response.

Plug the receiver into the power supply outlet in such a way that the ground side of the power line is connected to the receiver B—.

Always use as weak a test signal as possible, turning down the output of the test oscillator as the alignment of the receiver progresses.

## Location of Coils and Trimmer Adjustments

The first i-f transformer (T1) is mounted on top of the chassis deck to the right of the variable condenser. The trimmers (C5, C6) are accessible through holes in the top of the can.

The second i-f transformer (T2) is mounted on top of the chassis between the variable condenser and the speaker. The trimmers (C7, C8) are accessible through holes in the top of the can.

The trimmer for the antenna (C3) and the trimmer for the oscillator coil (C4) are located on the variable condenser. The trimmer on the front section is for the oscillator coil.

The oscillator coil (T4) is located underneath the chassis. The loop antenna acts as the antenna coil.

## I-f Alignment

1. Rotate the variable condenser to the minimum capacity position.
2. Feed 455 kc. to the converter grid (stator of the r-f section of the variable condenser) and adjust the four i-f trimmers for maximum response.

## R-f Alignment

1. Connect the oscillator to a coil composed of three to four turns of wire wound in a circle approximately 12" in diameter. This coil should be held parallel to and in line with the loop antenna of the receiver at a distance of 15 to 20 inches.
2. Radiate a signal at 1425 kc, set the dial indicator to 1425 kc, and adjust the trimmers on the variable condenser (C3, C4) for maximum response.
3. Radiate a 600 kc signal and tune in the signal on the receiver. Adjust the loose outside turn of the loop antenna for maximum response. This loose turn may be moved to either side of the center. Fasten it in the position which gives maximum response.
4. Repeat steps (2) and (3) until no further improvement is evident.

## EXTERNAL ANTENNA

For loop antennas that do not have external antenna connection, wind one turn of insulated wire around or across the loop. Connect one end to an outside aerial. Connect the other end to a good ground or to chassis through a 0.002 mfd. condenser.

For best results replacements should be made with genuine Emerson parts and genuine Emerson tubes.

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FOR REPLACEMENT PARTS — SEE YOUR NEAREST EMERSON DISTRIBUTOR OR WRITE DIRECTLY TO



**EMERSON RADIO & PHONOGRAPH CORPORATION**

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