

RADIOLA "257"

(Continued from facing page)

OPERATING VOLTAGES.

The following measurements were made with a "1,000 ohms per volt" meter, and voltages are those existing between the socket contact indicated and chassis. The receiver was operating under "no signal" conditions from a 240 v. A.C. supply with all controls turned to their maximum clockwise position, with the exception of the wave-change switch which was set as desired. Those readings shown in parenthesis were made with the wave-change switch in both the "S/W.1" and the "S/W.2" positions, whilst the alternative readings were made with the receiver on "B/C"; all other readings are unaffected by the position of the wave-change switch.

6K7, R.F. Amplifier: Plate, 255 v. (250 v.); screen, 100 v. (90 v.); cathode, zero. Plate current, 4.5 mA. (5.5 mA.).

6L7, Pentagrid Mixer: Plate, 255 v. (250 v.); screen, 100 v. (90 v.); cathode, zero. Plate current, 2 mA. (2.5 mA.).

6J7, Oscillator: Plate, 210 v. (230 v.); screen, 200 v. (190 v.); cathode, zero.

6K7, 460 kC., I.F. Amplifier: Plate, 255 v. (250 v.); screen, 100 v. (90 v.); cathode, zero. Plate current, 4.5 mA. (5.5 mA.).

6H6, Detector and A.V.C. Rectifier: Detector plate returned to chassis through T11, R11, and R12 (when "Radio/P.U." switch is on "Radio"); cathode, zero.

6H6, A.V.C. Delay and Muting Diode: A.V.C. delay cathode tapped at junction of R24, R25 on "B/C.", and at junction of

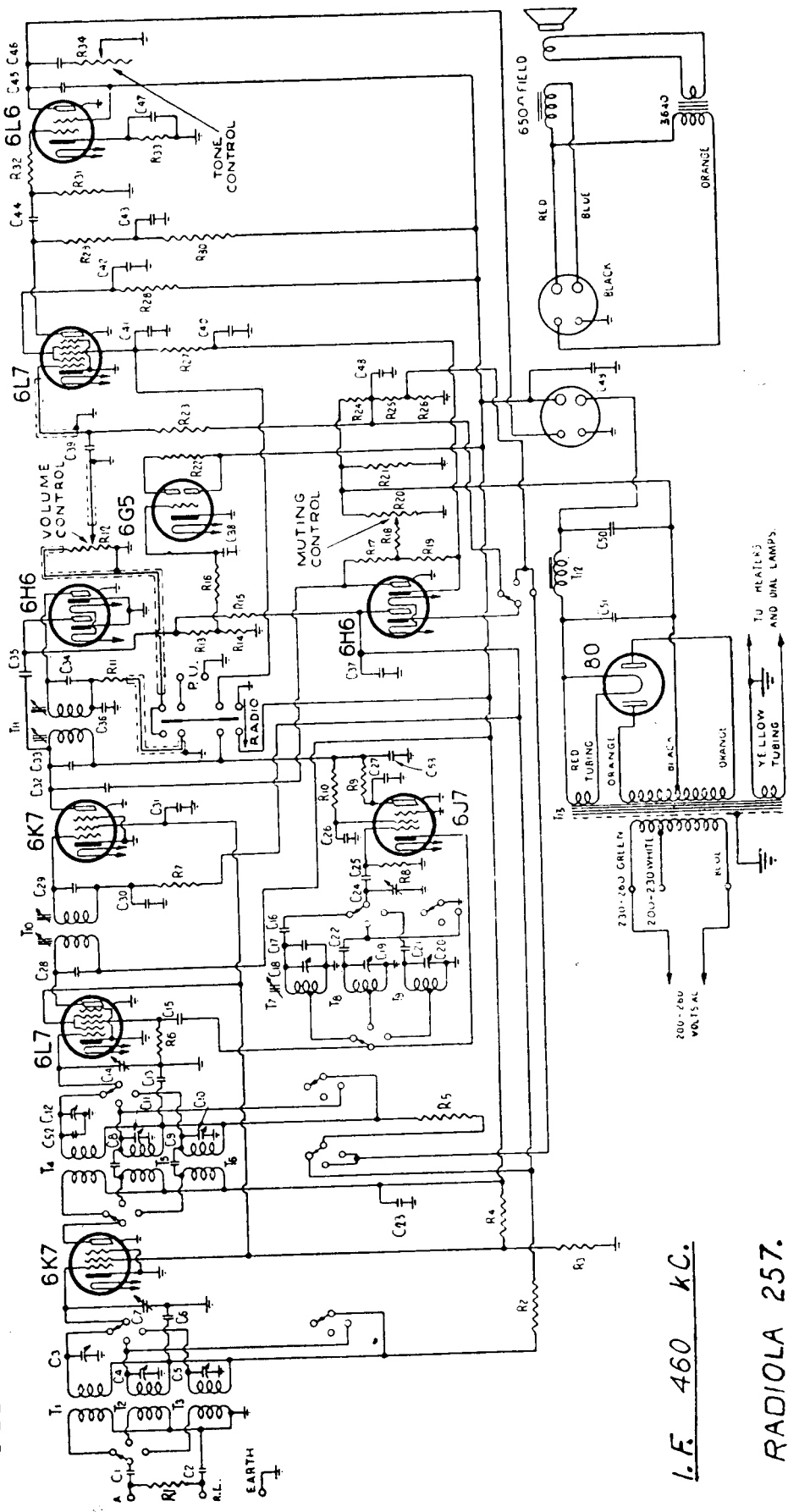
R25, R26 on "S/W.1" and "S/W.2"; muting diode cathode taken through R19 and R18 to R20.

6L7, A.F. Voltage Amplifier: Plate, 75 v.; screen, 45 v.; cathode, zero. Plate current, 0.9 mA.

6L6, "Beam" Power Output Tetrode: Plate, 245 v.; screen, 255 v.; cathode, 15 v. Plate current, 70 mA.

80, Rectifier: A.C. volts per plate (measured from C.T. of transformer high-tension secondary), 380 v.; voltage drop across loudspeaker field, 80 v. Total current, 105 mA.

"Radiola" A.C. Operated Triple-Wave Console Model 257



I.F. 460 KC.

RADIOLA 257.

RADIOLA 257 1937 CONSOLE

Uses 10-inch, 650 ohms field, loudspeaker.
Further data appear on facing page.

COMPONENT VALUES.

The numbers in parenthesis following component indices are manufacturer's part numbers.

RESISTORS.

R1, R2, R5, R7, R11—100,000 ohms, $\frac{1}{2}$ W.; R3, R4—11,000 ohms, $\frac{1}{2}$ W.; R6, R8, R30—50,000 ohms, $\frac{1}{2}$ W.; R9—5,000 ohms, $\frac{1}{2}$ W.; R10—15,000 ohms, $\frac{1}{2}$ W.; R12 (1668)—300,000 ohms, volume control; R13—250,000 ohms, $\frac{1}{2}$ W.; R14, R31—500,000 ohms, $\frac{1}{2}$ W.; R15, R17, R19, R22, R23—1 megohm, $\frac{1}{2}$ W.; R16, R18—1.75 megohms, $\frac{1}{2}$ W.; R20 (3680)—3,000 ohms, variable, muting control; R21

(3671)—106 ohms, w.w.; R24—30,000 ohms, $\frac{1}{2}$ W.; R25, R26—10,000 ohms, $\frac{1}{2}$ W.; R28, R29—200,000 ohms, $\frac{1}{2}$ W.; R32—300 ohms, $\frac{1}{2}$ W.; R33—150 ohms, $\frac{1}{2}$ W.; R34 (2762)—100,000 ohms, variable, tone control.

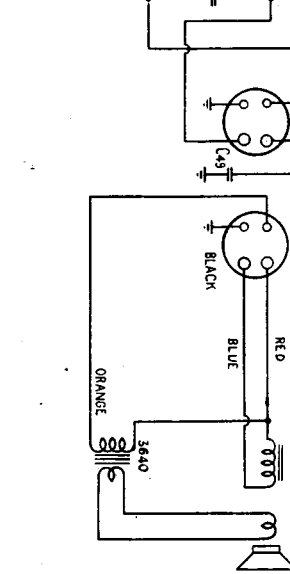
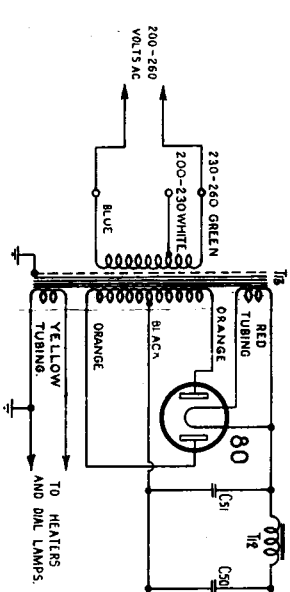
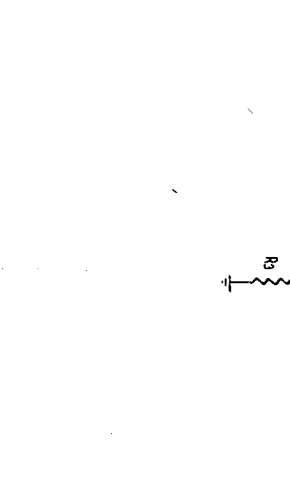
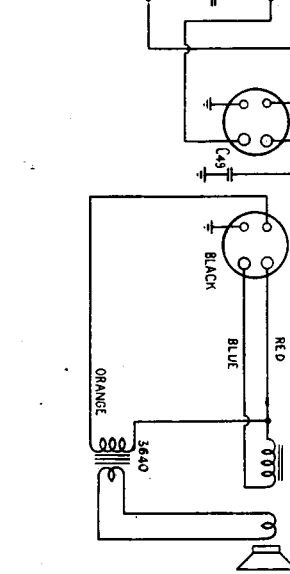
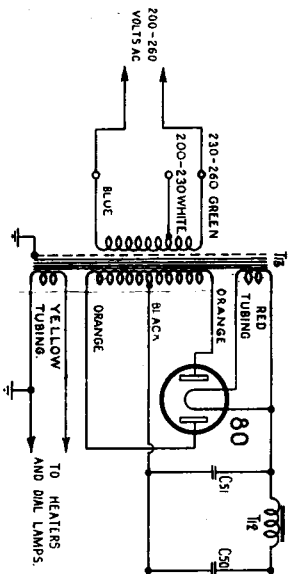
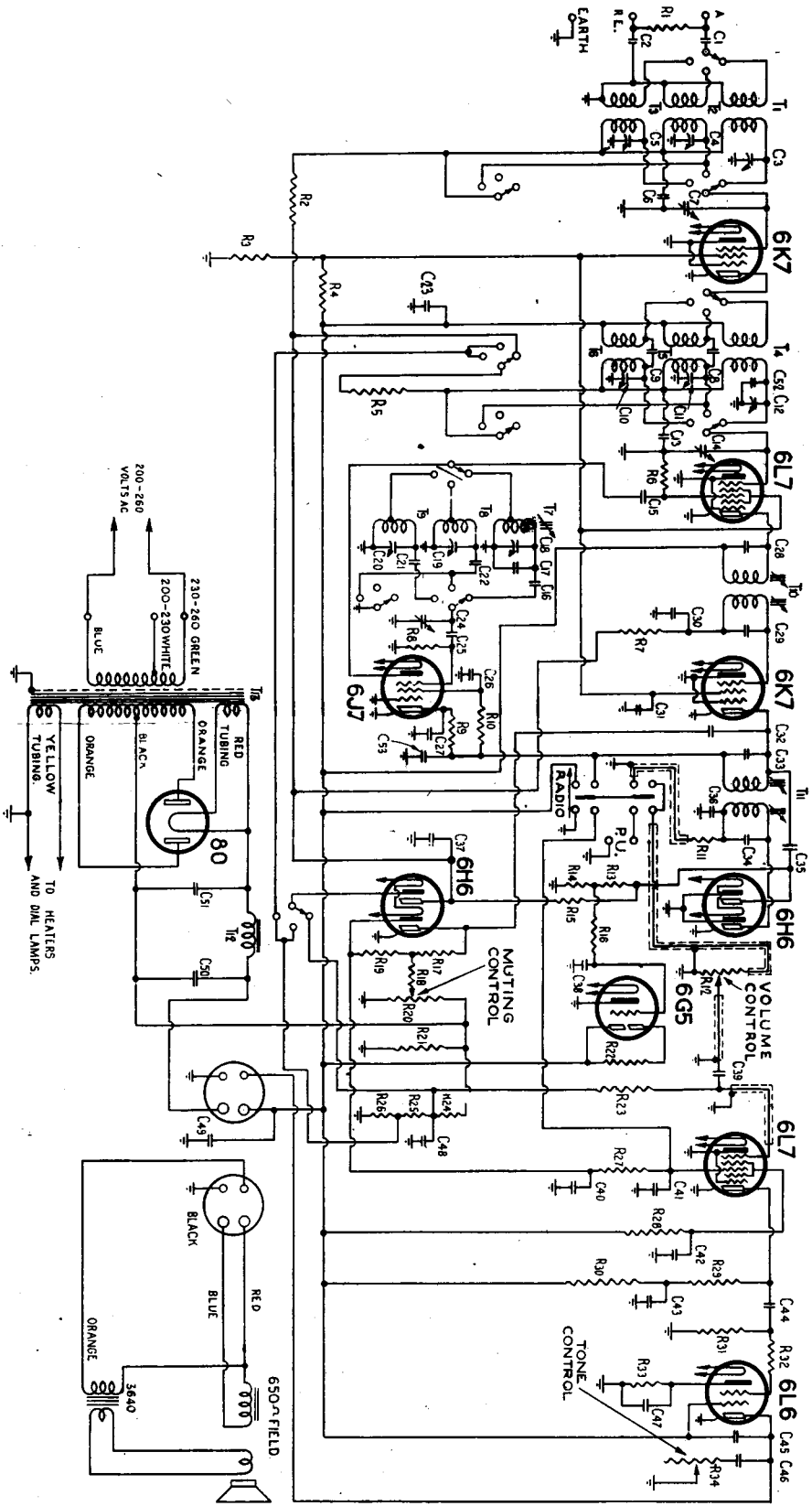
CONDENSERS.

C1, C2—500 mmfd., high voltage test; C2, C3, C4, C10, C11, C12, C18, C19, C20—2/20 mmfd. aer. dielectric, coil trimmers; C6, C13, C30, C38, C41, C46—0.05 mfd., paper; C7, C14, C24 (3665)—sections of 3-gang variable; C8, C9—6 mmfd. (A), mica; C15, C29, C32, C35—15 mmfd. (A), mica; C16—505 mmfd., mica 1/2 C; C17—20 mmfd. (K), mica, 1/2 C; C18—mer shunt; C21—3,950 mmfd., mica, S/W.2 pad; C22—2025 mmfd., mica, S/W.1 pad; C23, C31—0.1 mfd., paper; C26, C27, C45—0.005 mfd., paper; C28, C29, C33, C34—

115 mmfd. (A), mica, fixed I.F.T. trimmers; C36—200 mmfd. (J), mica; C37, C39, C51—C44—0.02 mfd., paper; C42, C49, C50, C51—500 V., electro; C43, C53—0.5 mfd., paper; C47, C48—25 mfd., 25 V., electro; C5—6 mmfd. (F), mica, B/C, R.F. coil trimmer shunt.

COILS, ETC.

T1, T2 (3663)—B/C, and S/W.1 aer. coils respectively; T3 (3668)—S/W.2 aer. coil; T4, T5 (3565)—B/C, and S/W.1 R.F. coils respectively; T6 (3611)—S/W.2 R.F. coil; T7 (3560)—B/C, osc. coil; T8 (3611)—S/W.1 osc. coil; T9 (3612)—S/W.2 osc. coil; T10 (3243)—1st I.F. transformer, 460 KC.; T11 (3444)—2nd I.F. transformer, 460 KC.; T12 (3682)—filter choke; T13 (3667, 3669)—power transformers for 40/50 cycle and 110 V. operation respectively.



Code	Part No.	COILS	Code	Part No.	RESISTORS	Code	Part No.	CONDENSERS
T1	3563	Aerial Coil, 1500-550 K.C.	R19		1 Megohm, $\frac{1}{2}$ watt	C17		20 mmfd. Mica (K)
T2	3563	Aerial Coil, 35-105 metres	R20	3680	3,000 ohms, Muting Cont.	C18		2-20 mmfd. Air Trimmer
T3	3568	Aerial Coil, 13-39 metres	R21	3671	106 ohms, Wire Wound	C19		2-20 mmfd. Air Trimmer
T4	3565	R.F. Coil, 1500-550 K.C.	R22		1 Megohm, $\frac{1}{2}$ watt	C20		2-20 mmfd. Air Trimmer
T5	3565	R.F. Coil, 35-105 metres	R23		1 Megohm, $\frac{1}{2}$ watt	C21		3950 mmfd. Mica Padding
T6	3611	R.F. Coil, 13-39 metres	R24		30,000 ohms, $\frac{1}{2}$ watt	C22		2025 mmfd. Mica Padding
T7	3560	Osc. Coil, 1500-550 K.C.	R25		10,000 ohms, $\frac{1}{2}$ watt	C23		.1 mfd. Paper
T8	3611	Osc. Coil, 35-105 metres	R26		10,000 ohms, $\frac{1}{2}$ watt	C24	3665	Variable Condenser
T9	3612	Osc. Coil, 13-39 metres	R27		100,000 ohms, $\frac{1}{2}$ watt	C25		115 mmfd. Mica (A)
T10	3243	First I.F. Transformer	R28		200,000 ohms, $\frac{1}{2}$ watt	C26		.005 mfd. Paper
T11	3244	Second I.F. Transformer	R29		200,000 ohms, $\frac{1}{2}$ watt	C27		.005 mfd. Paper
T12	3682	Filter Choke	R30		50,000 ohms, $\frac{1}{2}$ watt	C28		115 mmfd. Mica (A)
T13	3667	Power Transformer, 40~50~.	R31		500,000 ohms, $\frac{1}{2}$ watt	C29		115 mmfd. Mica (A)
T13	3669	Power Transformer, 110V.	R32		300 ohms, $\frac{1}{2}$ watt	C30		.05 mfd. Paper
			R33		190 ohms, 1 watt	C31		.1 mfd. Paper
			R34	2762	100,000 ohms, Tone Cont.	C32		115 mmfd. Mica (A)
						C33		115 mmfd. Mica (A)
						C34		115 mmfd. Mica (A)
						C35		115 mmfd. Mica (A)
						C36		200 mmfd. Mica (J)
						C37		.02 mfd. Paper
						C38		.05 mfd. Paper
						C39		.02 mfd. Paper
						C40		.02 mfd. Paper
						C41		.05 mfd. Paper
						C42		8 mfd. 500V. Electrolytic
						C43		.5 mfd. Paper
						C44		.02 mfd. Paper
						C45		.005 mfd. Paper
						C46		.05 mfd. Paper
						C47		25 mfd. 25V. Electrolytic
						C48		25 mfd. 25V. Electrolytic
						C49		8 mfd. 500V. Electrolytic
						C50		8 mfd. 500V. Electrolytic
						C51		8 mfd. 500V. Electrolytic
						C52		6 mmfd. Mica (F)
						C53		.5 mfd. Paper
R1		100,000 ohms, $\frac{1}{2}$ watt						
R2		100,000 ohms, $\frac{1}{2}$ watt						
R3		11,000 ohms, 3 watt	C1		500 mmfd. Mica			
R4		11,000 ohms, 3 watt	C2		500 mmfd. Mica			
R5		100,000 ohms, $\frac{1}{2}$ watt	C3		2-20 mmfd. Air Trimmer			
R6		50,000 ohms, $\frac{1}{2}$ watt	C4		2-20 mmfd. Air Trimmer			
R7		100,000 ohms, $\frac{1}{2}$ watt	C5		2-20 mmfd. Air Trimmer			
R8		50,000 ohms, $\frac{1}{2}$ watt	C6		.05 mfd. Paper			
R9		5,000 ohms, $\frac{1}{2}$ watt	C7	3665	Variable Condenser			
R10		15,000 ohms, $\frac{1}{2}$ watt	C8		6 mmfd. Mica (F)			
R11		100,000 ohms, $\frac{1}{2}$ watt	C9		6 mmfd. Mica (F)			
R12	1668	300,000 ohms, Volume Cont.	C10		2-20 mmfd. Air Trimmer			
R13		250,000 ohms, $\frac{1}{2}$ watt	C11		2-20 mmfd. Air Trimmer			
R14		500,000 ohms, $\frac{1}{2}$ watt	C12		2-20 mmfd. Air Trimmer			
R15		1 Megohm, $\frac{1}{2}$ watt	C13		.05 mfd. Paper			
R16		1 $\frac{1}{2}$ Megohms, $\frac{1}{2}$ watt	C14	3665	Variable Condenser			
R17		1 Megohm, $\frac{1}{2}$ watt	C15		115 mmfd. Mica (A)			
R18		1 $\frac{1}{2}$ Megohms, $\frac{1}{2}$ watt	C16		505 mmfd. Mica Padding			

RADIOLA 257 CIRCUIT DATA

Radiola Model 257

ELECTRICAL SPECIFICATIONS.

Voltage Rating	200-260 volts
Frequency Rating	40-60 Cycles
(Special instruments made for other voltage and frequency ratings)	
Power Consumption	95 watts
Tuning Ranges	(a) 1500-550 Kilocycles (b) 35-105 Metres (c) 13-39 Metres. 460 Kilocycles

Intermediate Frequency

VALVES AND CIRCUITS.

6K7 R.F. Amplifier	6H6 Muting Diode
6L7 Converter	6L7 Audio Amp.
6J7 Oscillator	6L6 Output
6K7 I.F. Amplifier	80 Rectifier
6H6 Detector and A.V.C.	6G5 Tuning Indicator

SOCKET VOLTAGES.

VALVE	Chassis to Cathode Volts	Chassis to Screen Grid Volts	Chassis to Plate Volts	Plate Current M.A.	Heater Volts
6K7 R.F. Amplifier	M.W.	0	100	4.5	6.3
	S.W.	0	90	5.5	
6L7 Converter	M.W.	0	100	2.0	6.3
	S.W.	0	90	2.5	
6J7 Oscillator	M.W.	0	200	3.0	6.3
	S.W.	0	190	5.5	
6K7 I.F. Amplifier	M.W.	0	100	4.5	6.3
	S.W.	0	90	5.5	
6H6 Detector and A.V.C.	—	—	—	—	6.3
6H6 Muting Diode	-4.5	—	—	—	6.3
6L7 Audio Amplifier	0	*45	75	0.85	6.3
6L6 Output	13.6	255	245	68.0	6.3
80 Rectifier	760/380 Volts, 105 M.A. total current.				5.0

Voltage across loud speaker field 80 volts.

Measured at 240 volts A.C. supply. No signal input. Controls in maximum clockwise position excepting range switch which is set as desired

* Cannot be measured with ordinary voltmeter.

Radiola "257" & "262"

MUTING SYSTEM

(See also pages 304 and 305)

The function of any muting device is to silence the receiver when tuning between stations, but at the same time it must not introduce distortion or impede the reception of a useful carrier. These conditions have been satisfied by the use of a 6L7 valve as A.F. amplifier, and also one section of a 6H6 duo-diode as control element in the muting system; the injector grid (No. 3) of the 6L7 is used to vary the mutual conductance of the valve, so that when a comparatively strong signal voltage (such as that due to the reception of a useful carrier) appears in the plate circuit of the 6K7, I.F. amplifier the receiver will function in the normal way, but when a comparatively weak voltage (such as that due to "noise" pick-up) appears, the injector grid reduces the mutual conductance of the 6L7 to zero, with the result that this "noise" will not reach the grid of the output valve. To adjust the "muter" the receiver should be tuned "off-station," and the "muting control" varied until all noise is reduced to a minimum or is stopped altogether. Under these conditions the negative voltage applied to the injector grid of the 6L7, A.F. amplifier is sufficient for plate current "cut-off" of this valve, so reducing its mutual conductance to a minimum; this means that any voltage applied to the signal grid of the 6L7 when in this condition will not be applied to the grid of the output valve, and the receiver will therefore remain silent. However, upon reception of a useful carrier, the voltage appearing at the plate of the 6K7, I.F.

amplifier is comparatively large and, by means of the coupling condenser C32, will cause an appreciable mean voltage to appear across the resistor R17, causing the muting diode anode to become positive with respect to its cathode. The resultant diode current will cause a voltage to appear across R19 in opposition to the negative bias applied to the 6L7 No. 3 grid from the "muting control." The reduction in the bias applied to this grid allows the valve to "unblock," and so any voltage applied to its signal grid will be amplified in the normal manner, and applied to the grid of the 6L6 output tetrode.