TECHNICAL INFORMATION
AND
SERVICE DATA

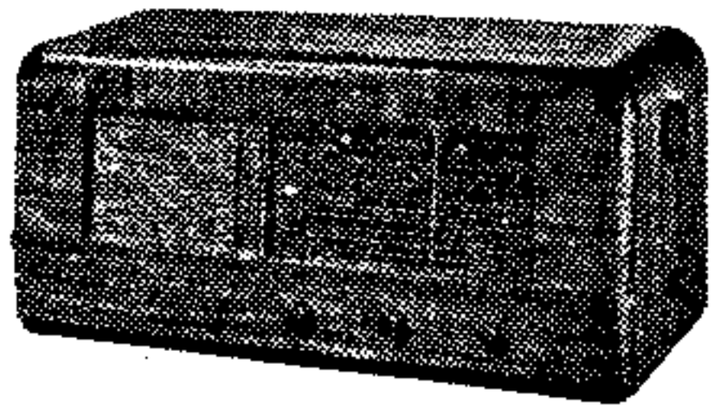
RADIOLA

Models 609-T, 707-C & 803-G

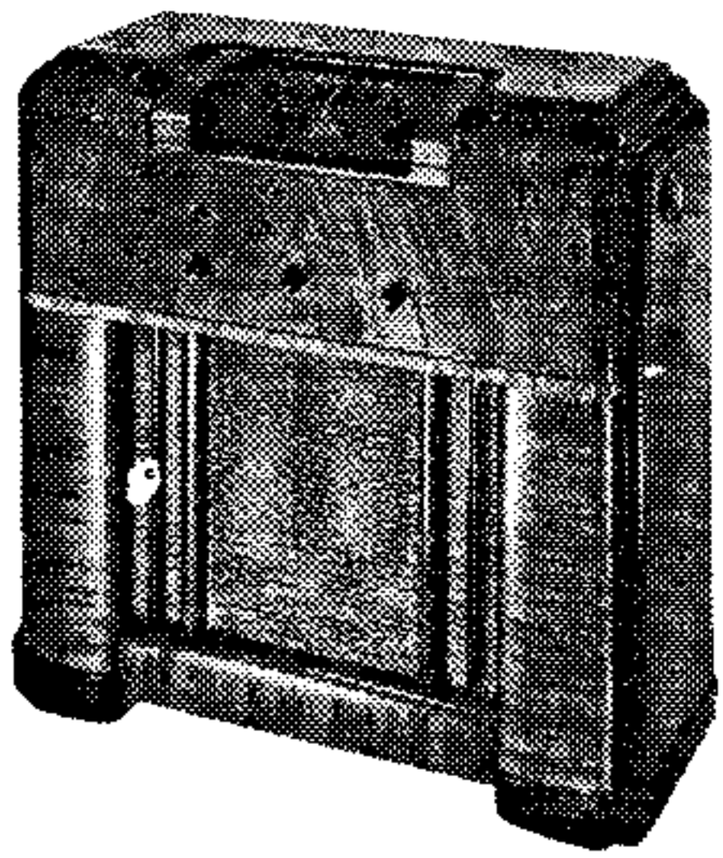
SIX VALVE, SEVEN BAND, A.C. OPERATED SUPERHETERODYNES

ISSUED BY
AMALGAMATED WIRELESS (A/SIA.) LTD.

609-T, 707-C & 803-G



609-T



707-C

NOTE: Model 803-G is not illustrated.

ELECTRICAL SPECIFICATIONS.

FREQUENCY RANGES:

(1)	1500-550 kc.	(200-545 M.)
(2)	4.0-1.5 Mc.	(75-200 M.)
(3)	9.7-3.6 Mc.	(31.0-83.4 M.)
(4)	12.0-9.4 Mc.	(25.0-31.9 M.)
(5)	15.0-11.7 Mc.	(20.0-25.7 M.)
(6)	19.0-15.0 Mc.	(15.8-20.0 M.)
(7)	22.3-17.7 Mc.	(13.5-16.9 M.)

INTERMEDIATE FREQUENCY 455kc.

POWER SUPPLY RATING ....200-260 V. A.C., 50-60 C.P.S.
(Models are produced with other voltage and frequency ratings.)

POWER CONSUMPTION .... 80 watts

VALVE COMPLEMENT:

(1) 6U7G R.F. Amplifier.
(2) 6J8G Converter.
(3) 6U7G I.F. Amplifier.
(4) 6G8G/6B8G Det., A.V.C. and A.F. Amplifier.
(5) 6V6GT/G Output
(6) 5Y3GT/G Rectifier.

LOUDSPEAKER:

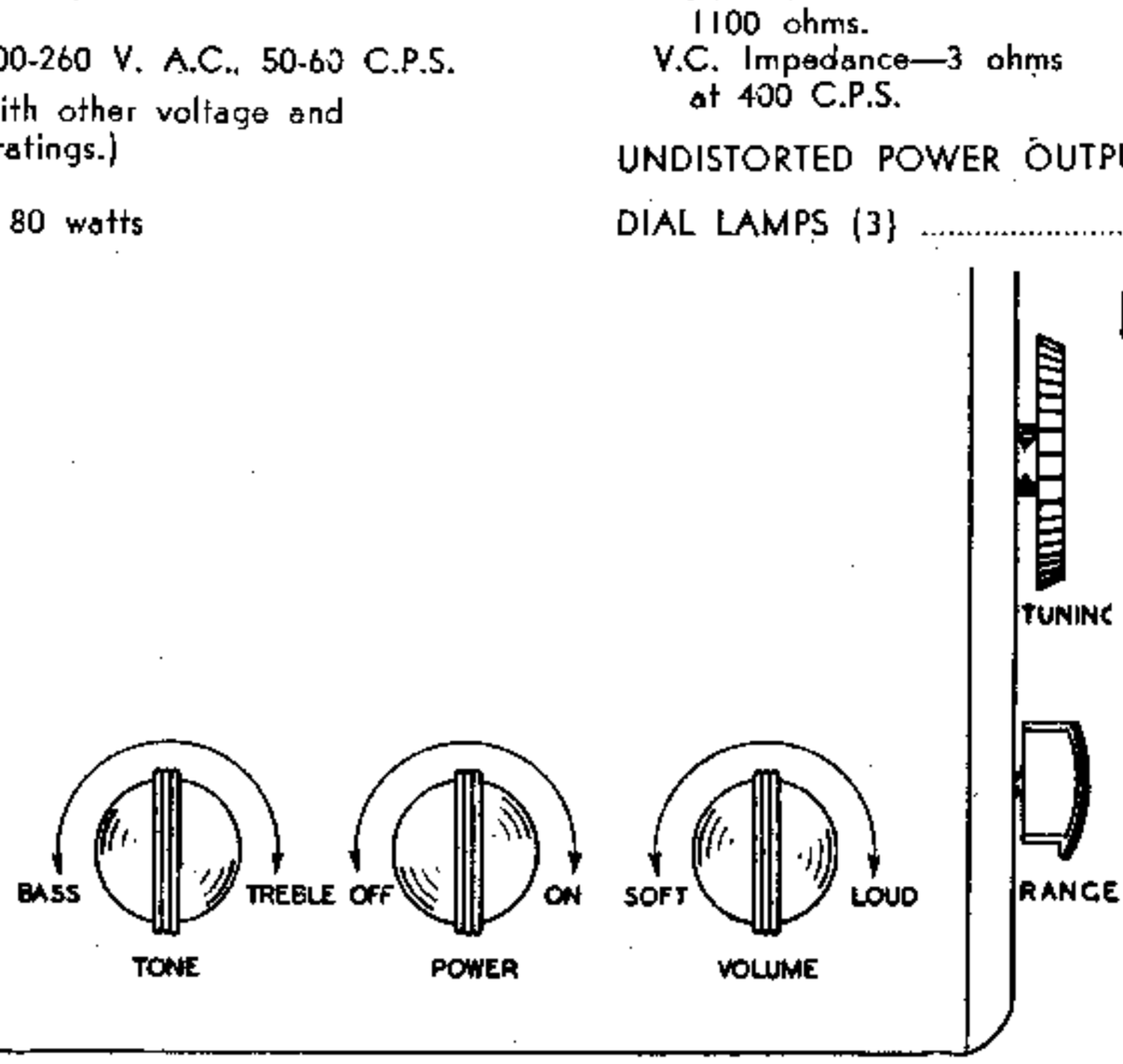
Model 609-T:
7 inch—Code No. AW19.
Transformer—XA1.
Field Coil Resistance—1100 ohms.
V.C. Impedance—3 ohms at 400 C.P.S.

Models 707-C, 803-G:
12 inch—Code No. AS17.
Transformer—TX1.
Field Coil Resistance—1500 ohms.
V.C. Impedance—12.5 ohms at 400 C.P.S.

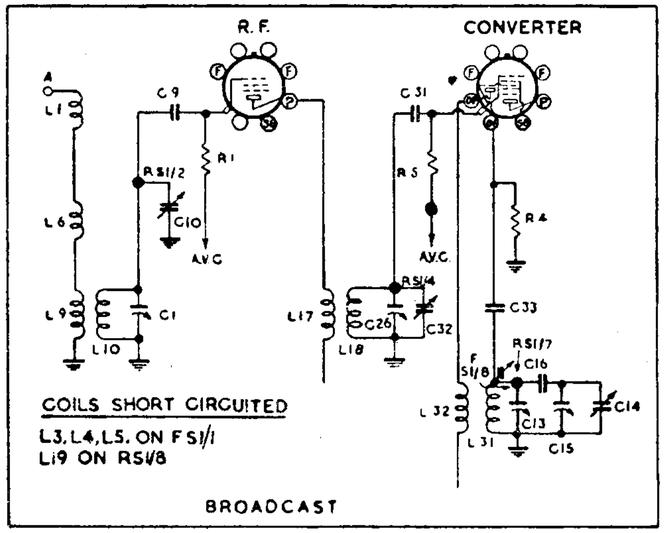
UNDISTORTED POWER OUTPUT ..... 4.2 watts

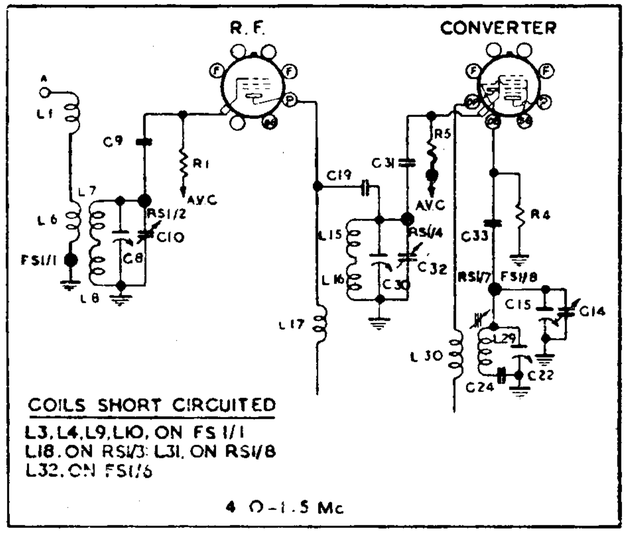
DIAL LAMPS (3) ..... 6.3 volt, 0.25 amp.

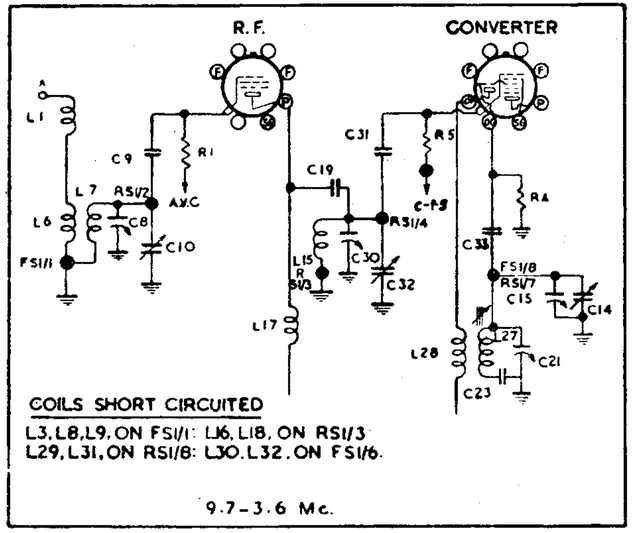
CONTROLS:

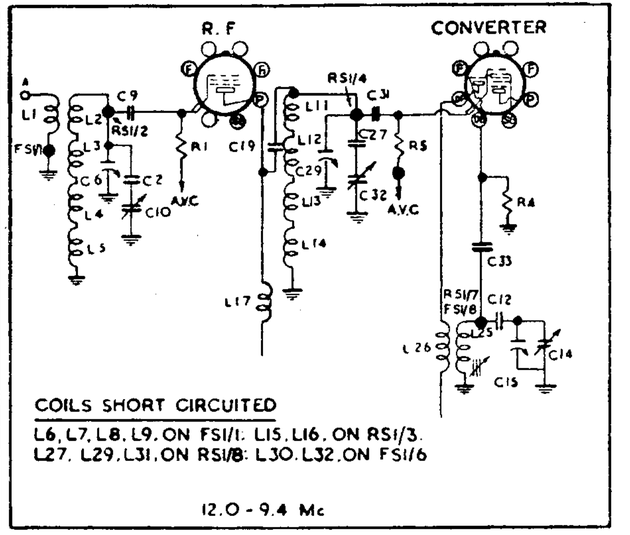


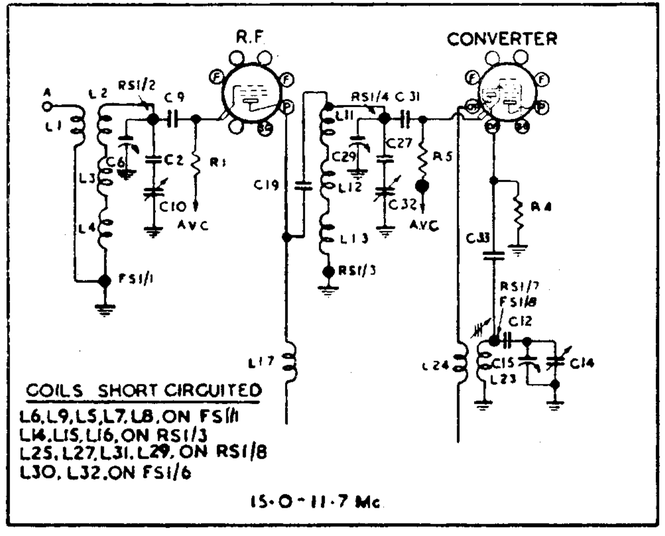
NOTE.—The three models covered in this booklet employ chassis of similar type, but which differ in the following details:—
Table Model 609-T—Power transformer secondary volts suitable for 1100 ohms loudspeaker field.
Console Model 707-C—Power transformer secondary volts suitable for 1500 ohms loudspeaker field.
Combination Model 803-G—Identical with 707-C chassis with the addition of a 3 point socket for phono. motor mains connection.

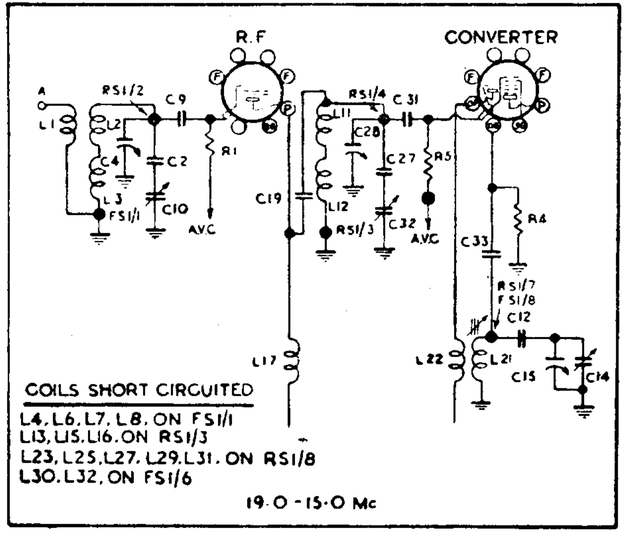


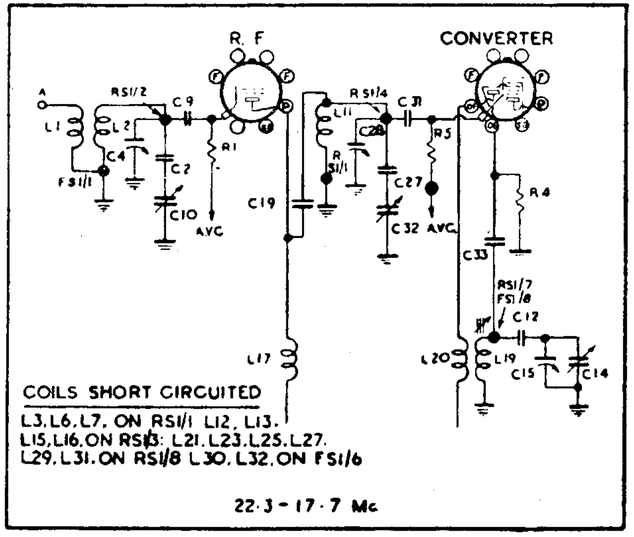












NOTE - ● INDICATES TWO OR MORE CONNECTIONS THROUGH SWITCH SECTION

E.G. 'RS1/7' REPRESENTS 'REAR OF SECTION 7'
'FS1/8' REPRESENTS 'FRONT OF SECTION 8'

TUNING CIRCUIT DIAGRAM.

PHONO. MOTOR AUTOMATIC STOP ADJUSTMENT.

The patent stop and switch is fully automatic.

As the needle travels towards the centre of the record, the pick-up arm moves friction plate A, which, through the friction pad and spring, carries with it the main lever B and trip lever C.

This main lever moves in towards the turntable spindle, on which is mounted the striker, which gently wipes against the rubber bush on end of trip lever C at each revolution, thus tapping back the main lever B (the friction between lever A and lever B allows this).

The "tapping back" process continues until the needle reaches the "run-in" groove in the centre of the record. The trip lever is now moved forward into the path of the striker, which strikes the side of the lever and trips the stop mechanism.

If stop fails to operate at finish of record, there is probably insufficient friction between lever A and lever B. This may be rectified by turning the friction screw in lever B in an anti-clockwise direction. If there is still insufficient friction, it may be that oil is present on the felt friction pad. If so, remove the pad and wash it in petrol to remove the oil.

When stop operates early, i.e., before needle reaches the end of the record, the trouble is either due to excessive friction or to the rubber bush on the trip lever being worn. Friction can be reduced by turning the friction screw clockwise.

As this adjustment is very sensitive, the screw should not be turned more than a quarter of a turn at a time. Excessive friction may cause a knocking sound to be heard in the loudspeaker and undue wear on the records.

When the rubber bush is worn, this may be turned round on its pin to expose a new face to the striker.

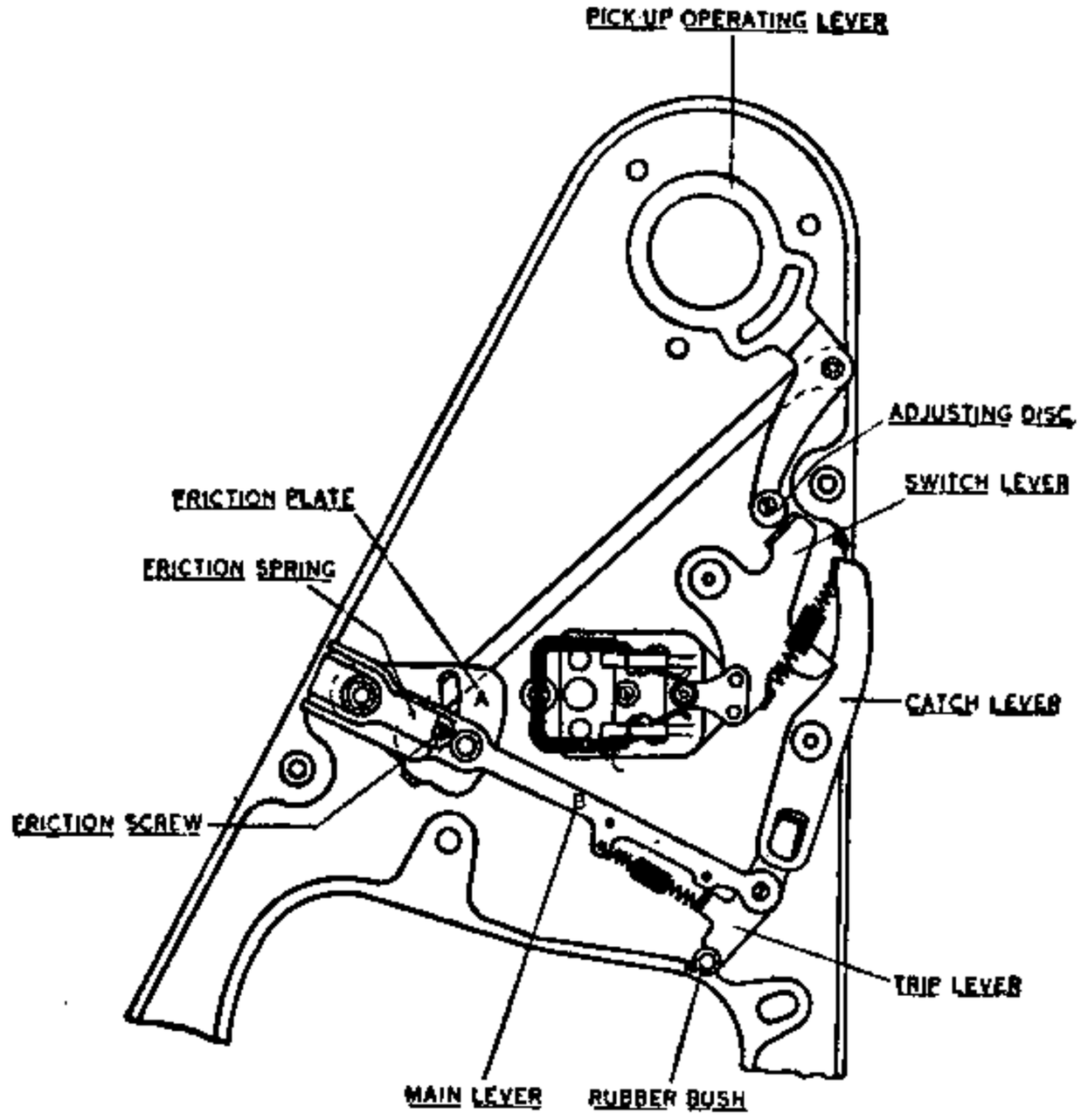


DIAGRAM OF AUTO-SWITCH FITTED TO TYPE E RADIOGRAM UNIT

SOCKET VOLTAGES AND CURRENTS

Valve.	Control Grid to Chassis Volts.	Cathode to Chassis Volts.	Screen Grid to Chassis Volts.	Plate to Chassis Volts.	Plate Current mA.	Heater Volts.
6U7G R.F. Amp., M.W.	−3.9*	0	95	255	7.0	6.3
S.W.	−3.5*	0	95	255	7.0	—
6J89 Converter, M.W.	−3.9*	0	95	255	0.8	6.3
S.W.	−4.5*	0	95	255	0.6–0.8	—
Oscillator, M.W.	—	—	—	150	5.0	—
S.W.	—	—	—	150	5.0	—
6U7G I.F. Amp., M.W.	−3.9*	0	95	255	7.0	6.3
S.W.	−3.5*	0	95	255	7.0	—
6G8G/6B8G Detector	−1.5*	0	30*	125*	0.5	6.3
6V6GT/G Output	0	12.5	255	245	44.0	6.3
5Y3GT/G Rectifier	700/350 V., 80 mA.		Total Current Drain			5.0

Measured with receiver connected to 240 volts A.C. supply. Volume Control at maximum. No signal input.

* Cannot be measured with ordinary voltmeter.

MECHANICAL REPLACEMENT PARTS.

Item.	Part No.
Cabinet, console	C69
Cabinet, combination	C46
Cabinet, table	C67
Cable, band indicator	19150
Cable, loudspeaker	19087
Cable, pick-up	19086
Cable, power	209
Cable, power switch	19089
Cable, volume control	19085
Chassis end, right hand	[illegible]
left hand	9875
Clip, grid	7459
Cone assembly, loudspeaker—	
Type AW19	9356
Type AS17	9332
Core, magnetite, small	11403
large	11400
Dial frame assembly	19082
Dial scale	19100
Drum, band indicator	19094
Drum, drive	9090
Dust cover, loudspeaker—	
AW19	9843
AS17	10306
Knob	4589
Knob, range switch	5846
Knob, tuning	8075
Mount plate assembly, tuning drive	17816
Pulley, brass	7885
Screen, I.F. transformer	3351
cap	8372
Screen, valve	8147
cap	8148
register	4733
Socket, dial lamp	4194
Socket, valve	4704
Socket, valve, cushion	7326
Spindle, tuning drive, table	17739
console	9812
Spindle, range switch extension, table	19066
console	19584
Spindle, tuning control extension	19583
Spring, band indicator	8364
Spring, drive tension	6641
Strip, tag, 1 way	7628
2 way	8863
3 way	9877
7 way	9879
Washer, felt	4935.

MECHANICAL SPECIFICATIONS.

	Height.	Width.	Depth.
Cabinet Dimensions (inches)—			
Table	12	26	11
Console	32½	33	13
Combination	32	36	16
Chassis Base Dimensions (inches)	3½	16	7½

Overall Chassis Height	9
Weight (nett lbs.)—	
Table	39
Console	84
Combination	150
Cabinet Finish	Walnut Veneer

CIRCUIT ARRANGEMENT.

6U7G—V1.

The 6U7G is a triple grid, super control R.F. amplifier and is utilised for this purpose. The output of the aerial coil, which is tuned to signal frequency by the aerial section of tuning capacitor, is applied to the control grid for amplification. The cathode being earthed, a minimum negative bias voltage of 3.9 volts is obtained from the back bias circuit, and applied to the control grid via the A.V.C. line. Amplification is also controlled automatically, due to functioning of the A.V.C. circuit.

6J8G—V2.

The 6J8G is a triode-heptode converter and is employed as a frequency converter. Voltages at signal frequency are applied to the control grid from the R.F. amplifier via the R.F. coil and associate circuit. Local oscillations are provided by the triode portion of this valve operating as a tuned grid feedback circuit comprising oscillator coil, padding capacitor and oscillator section of ganged tuning capacitor. Electronic mixing gives a resultant heterodyne frequency of 455 kc/s. The cathode of this valve being earthed, bias voltages are applied to the control grid via the A.V.C. line from the back bias circuit. Minimum bias on medium wave is -3.9 volts and short wave -4.5 volts. The 6J8G is not A.V.C. controlled on short wave.

6U7G—V3.

The output from the 6J8G is coupled to the control grid of the 6U7G by the first I.F. transformer, which is permeability tuned to 455 kc/s. Bias conditions are similar to those of the 6U7G R.F. amplifier (V1).

6G8G/6B8G—V4.

The second I.F. transformer, permeability tuned to 455 kc/s, couples the output of V3 to the diode of V4 for detection. Portion of the R.F. voltage from this diode is fed to the A.V.C. diode by coupling capacitor (C44) and, in conjunction with diode load resistor (R10), develops a voltage which is applied to the A.V.C. controlled grids via the A.V.C. line. The A.V.C. voltage so developed varies in proportion to the strength of carrier being received. The audio component across the volume control is applied to the pentode section of V4 for amplification.

Valve types 6G8G/6B8G are interchangeable in this circuit.

6V6GT—V5.

The 6V6G is a tetrode power amplifier which is resistance-capacity coupled to V4, and is automatically biassed. A negative feed-back tone control is employed. The output of the valve is coupled to the loudspeaker by the transformer T2.

5Y3GT—V6.

The 5Y3GT is a full wave high vacuum rectifier and supplies the D.C. requirements of the receiver.

ALIGNMENT PROCEDURE.

Alignment should be necessary only when adjustments have been altered from the factory setting or when repairs have been made to the tuned circuits. Climatic conditions should not seriously affect the receiver.

It is important to apply a definite procedure, as given in this booklet, and to use adequate and reliable test equipment. Instruments ideally suited to the requirements are either the A.W.A. Junior Signal Generator type 2R3911, or the A.W.A. Modulated Oscillators type J6726 and C1070*. An output meter is necessary with both these instruments, the recommended type having an output impedance of 5000 ohms and a range of 5-3000 milliwatts. The meter should be connected across the primary of the loudspeaker transformer with the voice coil of the loudspeaker open-circuit. If the output meter used is one which does not impress a load on the anode circuit of the output valve it will not be necessary to open-circuit the voice coil.

As the calibration of the band-spread bands requires great accuracy, it is recommended that an A.W.A. Crystal Calibrator, type 6795, be used after setting the oscillator calibration to check the accuracy of the signal generator. The crystal calibrator emits a modulated signal at intervals of either 100 or 1000 kc/s, throughout the radio frequency spectrum, thus providing a series of fixed and equally spaced calibration points of known accuracy. When using this instrument care should be taken to select the correct signal. With the crystal set at the 1000 kc. position, a spurious image signal can generally be obtained by turning the tuning control of the receiver to a point approximately 100 kc/s. higher in frequency. This is a useful check as to whether a harmonic or spurious image is being tuned. If a crystal calibrator is not available, broadcasting stations of known frequency may be used as an alternative.

When using a signal generator or modulated oscillator with the tuning of the receiver fixed, two frequencies can be tuned from the test instrument, one 0.92 Mc/s higher in frequency than the other. In all cases the desired frequency is the lower of the two.

A convenient alignment jig designed to hold the receiver chassis and fitted with a dial scale and pointer may be obtained from the Service Department of the company. With this jig alignment may be carried out with the chassis coupled to an actual scale, thus ensuring that the calibration will be correct when the chassis is placed in the cabinet; otherwise, use the 0-180° calibration scale on the drum. (See alignment table.)

For all alignment purposes connect the "low" side of the signal generator to the receiver chassis.

Perform alignment in the proper order as shown in the chart, starting from No. 1 and following all operations across, then No. 2, etc.

Keep the volume control set in the maximum clockwise position and regulate the output of the test instrument so that a minimum signal is introduced to the receiver to give a standard indication on the output meter. This will avoid A.V.C. action and overloading.

When the receiver has been satisfactorily aligned, seal the adjusting screws with a small quantity of cellulose cement.

* If a type J6726 or C1070 instrument is used, see that a 250,000 ohm resistor is connected between the output terminals, and for short wave alignment a 400 ohm non-inductive resistor in series with the active output lead.

CIRCUIT CODE

Circuit Code No.	Description	Stock Code or Part No.
	INDUCTORS.	
L1, L2	Aerial Coil 22.3-17.7 Mc.	9852
L1, L2, L3	Aerial Coil 19.0-15.0 Mc.	9852
L1, L2, L3, L4—	Aerial Coil 15.0-11.7 Mc.	9852
L1, L2, L3, L4, L5—	Aerial Coil 12.0-9.4 Mc.	9852
L6, L7	Aerial Coil 9.7-3.6 Mc.	9854
L6, L7, L8	Aerial Coil 4.0-1.5 Mc.	9854
L9, L10	Aerial Coil Broadcast	9748
L11	R.F. Coil 22.3-17.7 Mc.	9853
L11, L12	R.F. Coil 19.0-15.0 Mc.	9853
L11, L12, L13—	R.F. Coil 15.0-11.7 Mc.	9853
L11, L12, L13, L14—	R.F. Coil 12.0-9.4 Mc.	9853
L15	R.F. Coil 9.7-3.6 Mc.	9855
L15, L16	R.F. Coil 4.0-1.5 Mc.	9855
L17, L18	R.F. Coil Broadcast	9749
L19, L20	Oscillator Coil 22.3-17.7 Mc.	9747
L21, L22	Oscillator Coil 19.0-15.0 Mc.	9746
L23, L24	Oscillator Coil 15.0-11.7 Mc.	9745
L25, L26	Oscillator Coil 12.0-9.4 Mc.	9744
L27, L28	Oscillator Coil 9.7-3.6 Mc.	9743
L29, L30	Oscillator Coil 4.0-1.5 Mc.	9742
L31, L32	Oscillator Coil Broadcast	9741
L33, L34	1st I.F. transformer—	8286-Z, 8282*
L35, L36	2nd I.F. transformer—	8287-Z, 8281*
L37	Loudspeaker field— 1100 ohms (Table Model)	
L37	Loudspeaker field— 1500 ohms (Console Model)	
	RESISTORS.	
R1	1 megohm, ½ watt	600, 341
R2	50,000 ohms, ½ watt	600, 315
R3	1 megohm, ½ watt	600, 341
R4	1 megohm, ½ watt	600, 341
R5	20,000 ohms, 1 watt	600, 507 or 600, 707
R6	0.1 megohm, ½ watt	600, 321
R7	20,000 ohms, 1 watt	600, 507 or 600, 707
R8	16,000 ohms, 2 watt (2 x 32,000 ohms 1 watt in parallel)	600, 511 or 600, 711
R9	1.6 megohms, ½ watt	600, 345
R10	2.5 megohms, ½ watt	600, 349
R11	20 ohms, 3 watt, wire wound	
R12	20 ohms, 3 watt, wire wound	
R13	11 ohms, 3 watt, wire wound	
R14	20 ohms, 3 watt, wire wound	
R15	0.5 megohms, ½ watt	600, 335
R16	1.6 megohms, ½ watt	600, 345
R17	0.5 megohm volume control	19006
R18	1 megohm, 1 watt	600, 541 or 600, 741
R19	50,000 ohms, ½ watt	600, 315
R20	20,000 ohms, ½ watt	600, 307
R21	0.5 megohm, 1 watt	60, 535 or 600, 735
R22	50,000 ohms, ½ watt	600, 315
R23	50,000 ohms, ½ watt (Console only)	600, 315
R24	250 ohms, 3 watt	602, 369
R25	50,000 ohms, ½ watt	600, 315
R26	0.4 megohm, ½ watt	600, 333
R27	0.1 megohm, ½ watt	600, 321
R28	0.1 megohm tone control	19007
R29	0.2 megohm, 1 watt	600, 527 or 600, 727
R30	50,000 ohms, 1 watt	600, 515 or 600, 715
	CAPACITORS.	
C1	52 uuF silvered mica ± 2 uuF	
C2	12-430 uuF variable tuning (ganged)	18380
C3	200 uuF mica	13211†
C4	12 uuF mica	13211†
C5	1-25 uuF air trimmer	19659
C6	1-25 uuF air trimmer	19659
C7	12 uuF mica	13211†
C8	1-25 uuF air trimmer	19659
C9	12 uuF mica	13211†
C10	1-25 uuF air trimmer	19659
C11	490 uuF mica ± 2½%	13212†
C12	2-10 uuF air trimmer	3658
C13	12-430 uuF variable tuning (ganged)	18380
C14	11-29 uuF air trimmer	3411 B
C15	42 uuF Temp. Comp. N750	
C16	2550 uuF mica ± 2½%	13213†
C17	1350 uuF mica ±2½%	13213†
C18	2-20 uuF air trimmer	3611
C19	11-29 uuF air trimmer	3411 B
C20	200 uuF mica	13211†
C21	50 uuF mica	13211†
C22	52 uuF silvered mica ± 2 uuF	
C23	12-430 uuF variable tuning (ganged)	18380
C24	200 uuF mica	13211†
C25	1-25 uuF air trimmer	19659
C26	1-25 uuF air trimmer	19659
C27	1-25 uuF air trimmer	19659
C28	1-25 uuF air trimmer	19659
C29	0.1 uF paper, 400v. working	228, 121
C30	0.05 uF paper, 400v. working	228, 115
C31	70 uuF silvered mica	226, 460
C32	70 uuF silvered mica	226, 460
C33	70 uuF silvered mica	226, 460
C34	4 uuF mica	224, 233
C35	0.01 uF paper, 600v. working	228, 301
C36	0.1 uF paper, 400v. working	228, 121
C37	0.05 uF paper, 400v. working	228, 115
C38	70 uuF silvered mica	226, 460
C39	70 uuF silvered mica	226, 460
C40	110 uuF mica (Table only)	13211†
C40	30 uuF mica (Console only)	13211†
C41	0.0025 uF paper, 600v. working	228, 289
C42	110 uuF mica (Table only)	13211†
C42	30 uuF mica (Console only)	13211†
C43	0.02 uF paper, 600v. working (Table only)	228, 307
C43	0.01 uF paper, 600v. working (Console only)	228, 301
C44	50 uuF mica	13211†
C45	0.1 uF paper, 400v. working	228, 121
C46	0.1 uF paper, 400v. working	228, 121
C47	0.1 uF paper, 400v. working	228, 121
C48	16 uF, 525 P.V. electrolytic	
C49	8 uF, 525 P.V. electrolytic	
C50	0.5 uF paper, 400v. working	228, 135
C51	0.005 uF paper, 600v. working	228, 295
C52	0.05 uF paper, 400v. working	228, 115
C53	1500 uuF mica	13213†
C54	200 uuF mica	13211†
C55	0.02 uF paper, 600v. working (Table only)	228, 307
C55	0.01 uF paper, 600v. working Console only)	228, 301
C56	25 uF, 40 P.V. electrolytic	
C57	0.016 uF paper, 600v. working (Table only)	228, 305
C57	0.005 uF paper, 600v. working (Console only)	228, 295
C58	0.5 uF paper, 400v. working	
	TRANSFORMERS.	
T1	Power transformer 50-60 CPS	11344
	Power transformer 40 CPS	11346
T2	Loudspeaker transformer (Table only)	XA1
	Loudspeaker transformer (Console only)	TX1
	SWITCHES.	
S1	Phono-Range, 8 wafer, 8 position, rotary	19008
	Note: Wafers numbered from front of chassis.	
S2	Power switch, D.P.S.T. rotary	20007

* Part number of winding only. Some receivers are fitted with I.F. transformers bearing part numbers 8286-Y and 8287-Y. These are wound with solid wire, consequently the D.C. resistance of the windings is higher than when litz wire is used. It should also be noted that when these transformers are fitted capacitor C34 is omitted.

† Capacitance and tolerance (if shown) to be quoted.

SIMPLE SHORT WAVE CALIBRATION ADJUSTMENT.

The short wave calibration may be adjusted slightly, without removing the chassis from the cabinet for full alignment, by adjusting four cores, L19, L21, L23 and L25 after a station of known frequency is received.

The correct procedure is as follows:—

(1) Set the dial pointer so that calibration is correct on the medium wave band.

(2) To adjust the calibration of the 22.3-17.7 Mc. band, tune in the known station, and to shift the pointer position to the left, turn L19 clockwise or vice-versa until the station can be tuned in at its assigned frequency.

(3) The adjustments for the 19.0-15.0, 15.0-11.7 and 12.0-9.4 Mc. bands are similar, using L21, L23, and L25 respectively.

ALIGNMENT TABLE.

Alignment Order.	Test Ins. Connect to Receiver.	Frequency Setting.	Band Setting.	Calibration Scale Setting.	Circuit to Adjust.	Adjustment Symbol.	Adjust to Obtain.	
1	6J8G Cap.*	455 kc.	Broadcast	0°	2nd I.F. Trans.	Core L36	Max. Peak	SEC
2	6J8G Cap.*	455 kc.	Broadcast	0°	2nd I.F. Trans.	Core L35	Max. Peak	PRI
3	6J8G Cap.*	455 kc.	Broadcast	0°	1st I.F. Trans.	Core L34	Max. Peak	SEC
4	6J8G Cap.*	455 kc.	Broadcast	0°	1st I.F. Trans.	Core L33	Max. Peak	PRI
			Re-check 1, 2, 3, and 4.					
5	Aerial	600 kc.	Broadcast	19°	Oscillator†	Core L31	Calibration	1
6	Aerial	1500 kc.	Broadcast	168°	Oscillator	C14	Calibration	1
7	Aerial	1450 kc.	Broadcast	158°	Radio Frequency	C28	Max. Peak	1
8	Aerial	1450 kc.	Broadcast	158°	Aerial	C10	Max. Peak	1
			Re-check 5, 6, 7, and 8					
9	Aerial	17.8 Mc.	22.3-17.7 Mc.	18°	Oscillator	Core L19	Calibration	7 BAND
10	Aerial	17.8 Mc.	22.3-17.7 Mc.	18°	Radio Frequency†	C26	Max. Peak	7
11	Aerial	17.8 Mc.	22.3-17.7 Mc.	18°	Aerial	C8	Max. Peak	7
12	Aerial	21.0 Mc.	22.3-17.7 Mc.	149°	Oscillator	C12	Calibration	
13	Aerial	15.2 Mc.	19.0-15.0 Mc.	27°	Oscillator	Core L21	Calibration	6
14	Aerial	11.8 Mc.	15.0-11.7 Mc.	25°	Oscillator	Core L23	Calibration	5
15	Aerial	11.8 Mc.	15.0-11.7 Mc.	25°	Radio Frequency†	C25	Max. Peak	5
16	Aerial	11.8 Mc.	15.0-11.7 Mc.	25°	Aerial	C6	Max. Peak	5
17	Aerial	9.5 Mc.	12.0-9.4 Mc.	24°	Oscillator	Core L25	Calibration	4
18	Aerial	9.0 Mc.	9.7-3.6 Mc.	156°	Oscillator	C18	Calibration	3
19	Aerial	9.0 Mc.	9.7-3.6 Mc.	156°	Radio Frequency†	C27	Max. Peak	3
20	Aerial	9.0 Mc.	9.7-3.6 Mc.	156°	Aerial	C5	Max. Peak	3
21	Aerial	4.0 Mc.	9.7-3.6 Mc.	19°	Oscillator	Core L27	Calibration	3
			Re-check 18, 19, 20 & 21					
22	Aerial	1.6 Mc.	4.0-1.5 Mc.	15°	Oscillator	Core L29	Calibration	2
23	Aerial	3.7 Mc.	4.0-1.5 Mc.	153°	Oscillator	C19	Max. Peak	2
			Re-check 22 and 23					

Finally, re-check broadcast band. This is necessary only if the setting of C12 has been altered.

† Rock the tuning control back and forth through the signal.

* With grid clip connected. A 0.001 uF capacitor should be connected in series with the "high" side of the test instrument.

The column headed "Calibration Scale Setting" refers to the 180° scale on the ganged tuning capacitor drive drum. In taking readings on this scale, read from the right-hand edge of the pointer, that is, the edge nearest the rear of the chassis. Check the setting of the drum before taking readings. The zero mark should be opposite the pointer with the tuning capacitor fully closed.

CHASSIS REMOVAL AND REPLACEMENT.

(1) Turn the Phono-Range Switch to the 22.3-17.7 Mc. position and then remove the three control knobs from the front of the cabinet. These knobs are each held by one set screw.

To remove the two knobs at the side of the cabinet, proceed as follows:—

Table Model:

The knobs pull straight off. Do not loosen the set screw in the lower knob. If difficulty is experienced in removing this knob, refer to the label adhered to the inside of the cabinet for instructions.

Console Model:

The knobs are not removed but the spindles to which they are attached are parted at the couplings within the cabinet.

(2) Disconnect the dial pointer from the drive cord, first unscrewing the thumb nut, and disconnect the cable from the loudspeaker.

(3) Disconnect the Bowden cable which actuates the band indicator on the dial scale. The cable is connected to the dial assembly at two points, the sheath to the top left-hand corner of the dial assembly (viewed from the rear) and the core to the band indicator. Loosen the thumb screws at these points and carefully free the cable from the assembly.

(4) The chassis is held in the cabinet by four bolts. Remove these and withdraw the chassis from the cabinet.

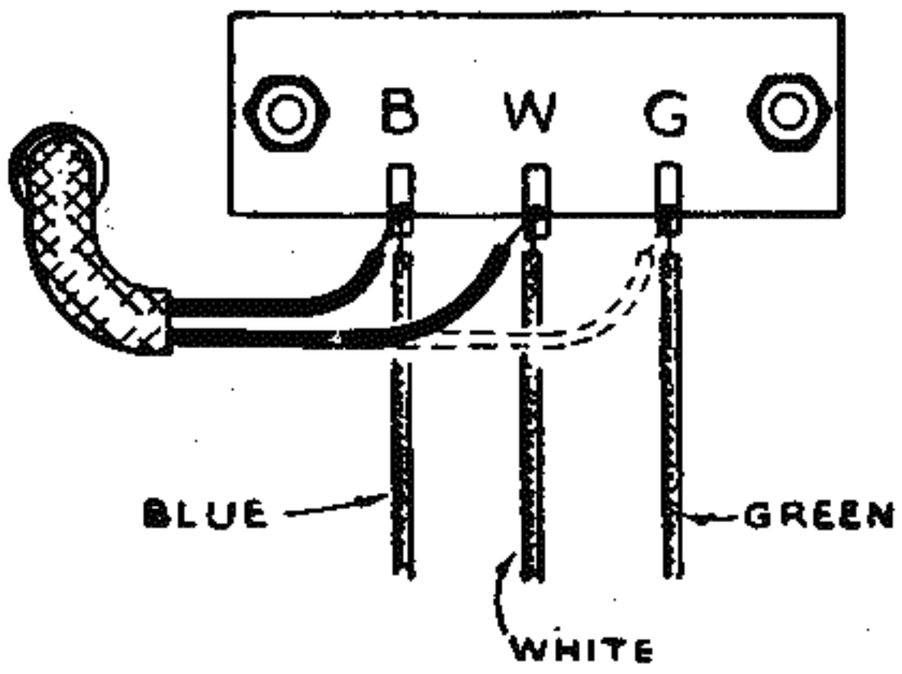
(5) Replacing the chassis in the cabinet is a direct reversal of the above instructions, but care must be taken to connect the dial pointer to the drive cord as follows:—

(a) Turn the tuning control to bring the ganged capacitor plates into full mesh.

(b) Connect the dial pointer to the drive cord with the pointer in a position opposite the setting mark on the dial scale, which is approximately 5/16 inch to the right of the 550 kc. calibration point

CONNECTION TO POWER SUPPLY.

The receiver should not be connected to any circuit supplying other than alternating current from 200 to 260 volts and at the frequency stated on the label within the cabinet. The power supply connection panel is shown in the accompanying diagram, and for 230 to 260 volt operation the input leads from the power switch (S2) should be connected to tags B and G. For operation on voltages below 230, connection should be made to tags B and W.

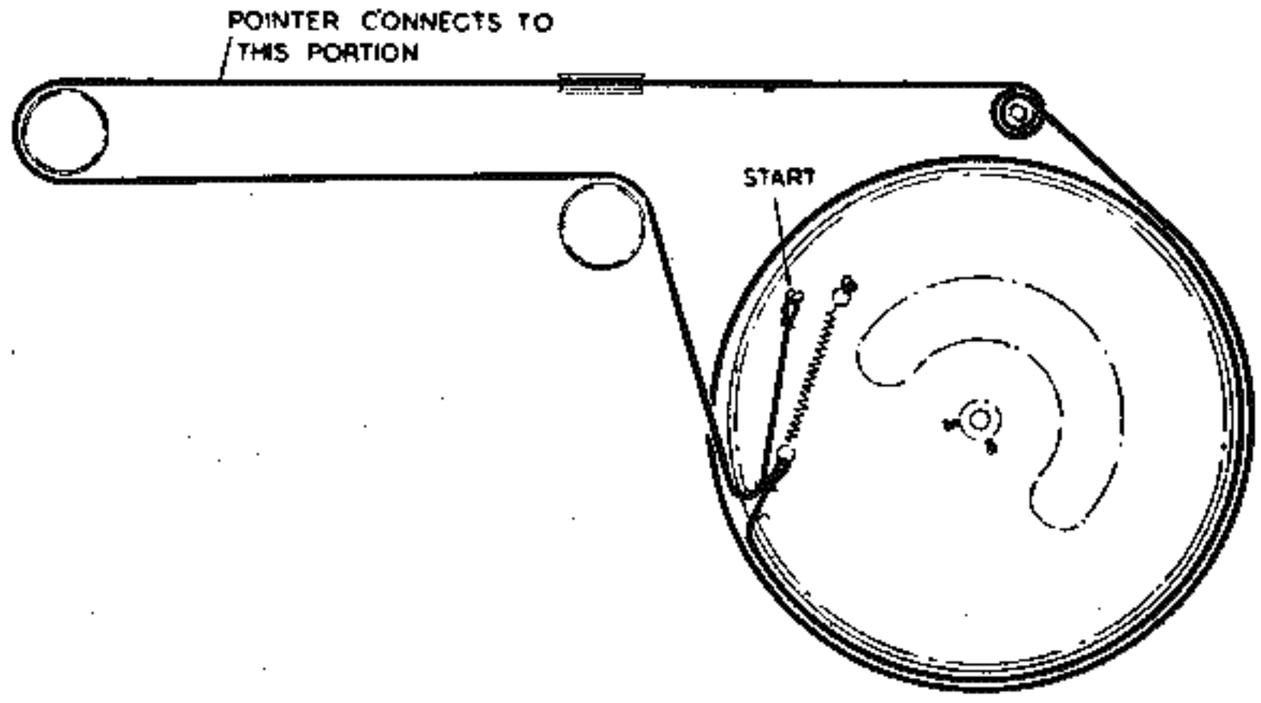


"SERVICE WINDOW."

A "Service Window" is provided in the base of the table model cabinet. The "window" is normally covered with a perforated grille fastened by four knurled nuts. With the grille removed, it is possible to perform most service operations without removing the chassis from the cabinet.

TUNING DRIVE CORD REPLACEMENT.

The accompanying diagram shows the route of the cord and the method of attachment. Whilst fitting the cord, keep it taut and adjust the length so that the tension spring measures approximately 2 inches long when fitted. The spring should be sheathed to prevent it from rattling against the drum.



LOUDSPEAKER SERVICE.

It is inadvisable to attempt loudspeaker repairs other than adjustment of the voice coil and replacement of the transformer. The fitting of a new cone or the replacement ment of a field winding should be done only by Service Departments suitably equipped to do the work.

To centre the voice coil, first remove the dust cover. To do this, use a sharp razor blade and cut the centre out of the dust cover, cutting just inside the edge of the voice coil former, which can be felt with the forefinger. Do not attempt to tear the cover from the cone. Loosen the suspension screws, insert three narrow paper "feelers" in the gap and re-tighten the suspension screws. The "feelers" should be approximately 3-16 inch wide and 0.006 inch thick.

After adjusting, test the loudspeaker, and, if satisfactory, fasten a replacement dust-cover in place with latex rubber cement. See "Mechanical Replacement Parts."

DESCRIPTION OF TUNING CIRCUIT ADJUSTMENTS

BROADCAST BAND.

The broadcast band adjustments follows usual practice with three trimming capacitors—C10 aerial, C28 R.F., C14 oscillator and a variable magnetite core for L.F. adjustment of the oscillator coil L31, L32.

9.7-3.6 Mc. BAND.

Adjustments are the same as those used on the broadcast band, that is, with three trimming capacitors—C5 aerial, C27 R.F., C18 oscillator and a variable magnetite core for L.F. adjustment of the oscillator coil L27, L28.

4.0-1.5 Mc. BAND.

All capacitors in the aerial and R.F. sections are common with those in the 9.7-3.6 Mc. band, the change of band being accomplished by switching tapped coils. The oscillator section, however, is provided with a separate capacitor, C19, for tracking with the signal circuits at the H.F. end and a variable magnetite core for L.F. adjustment of the oscillator coil L29, L30.

22.3-17.7 Mc. BAND.

At the L.F. end of this band there are three adjustments, a magnetite core in the oscillator coil L19, L20 and trimming capacitors C26 R.F. and C8 aerial. Small capacitors, C1, C22 and C15, are used in series with the ganged tuning capacitors to accomplish band-spreading at the L.F. end of this band. The oscillator circuit is made to track with the signal circuit at the H.F. end by adjustment of capacitor C12. The three series capacitors are chosen to give three point tracking between the signal and oscillator circuits.

19.0-15.0 Mc. BAND.

The capacity system is the same as for the 22.3-17.7 Mc. band, the change of band being accomplished by switching coils, the oscillator coil L21, L22 being fitted with a variable magnetite core for L.F. adjustment.

15.0-11.7 Mc. BAND.

Adjustments are similar to those on the 22.3-17.7 Mc. band, excepting that no H.F. adjustment is provided for the oscillator. L.F. adjustments are trimming capacitors C25 R.F. and C6 aerial and a variable magnetite core in oscillator coil L23, L24.

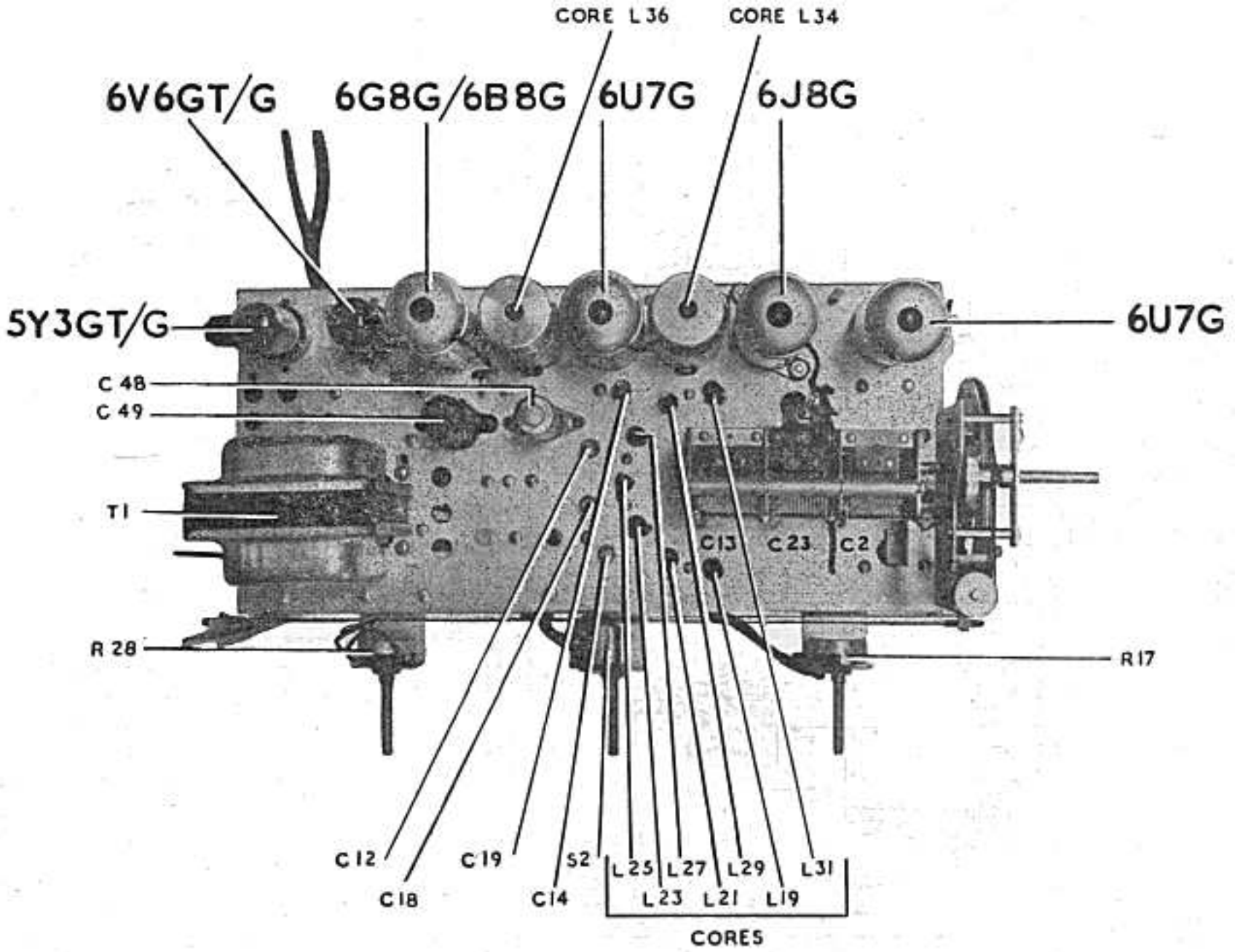
12.0-9.4 Mc. BAND.

One adjustment only is provided, a variable magnetite core in the oscillator core L25, L26.

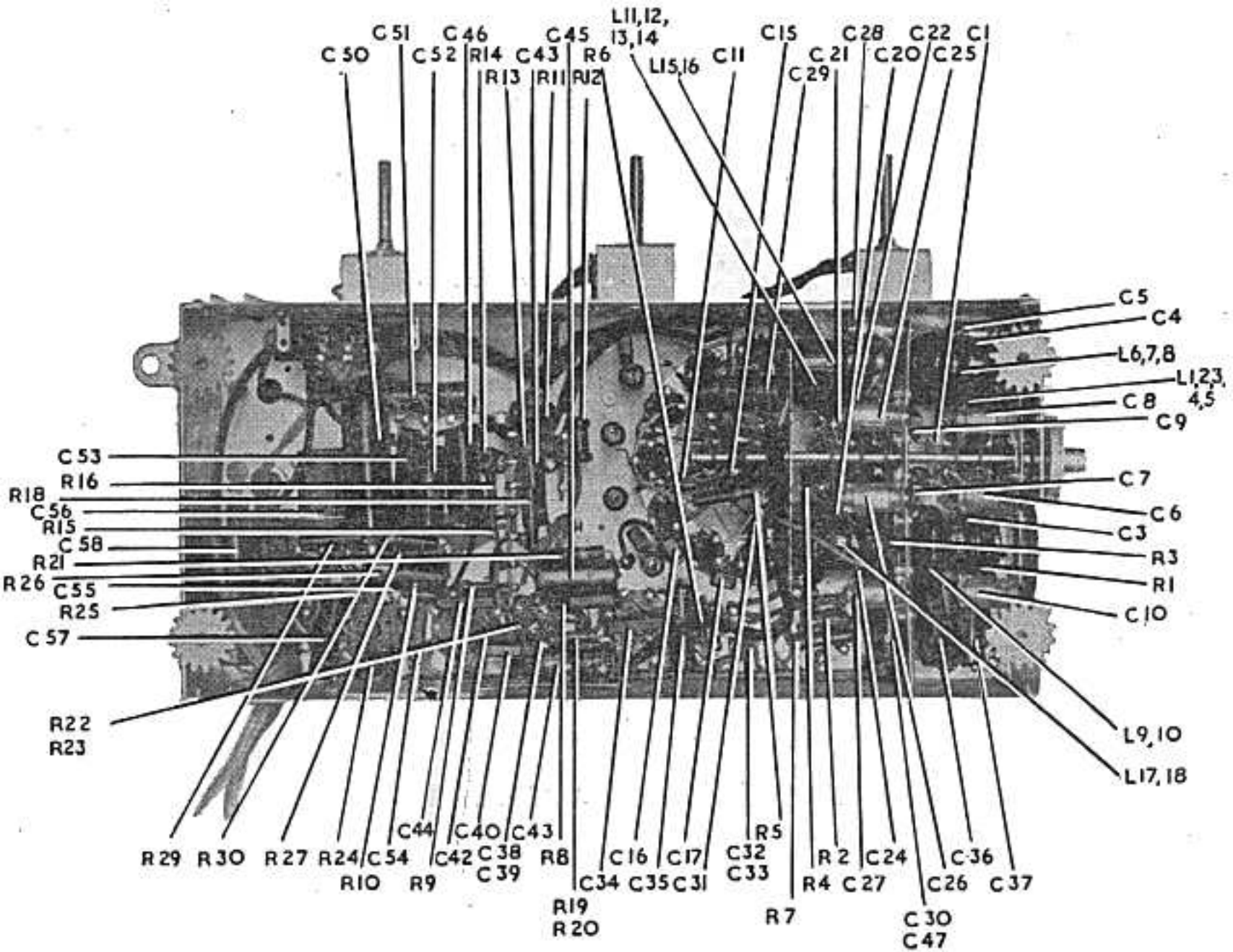
It will be noted that the ratio $\frac{\text{max. frequency}}{\text{min. frequency}}$ is the same on the four bands, 12.0-9.4 Mc., 15.0-11.7 Mc., 19.0-15.0 Mc., 22.3-17.7 Mc., and the tracking is practically correct, using the same series capacitor for all bands. The ratio $\frac{\text{max. frequency}}{\text{min. frequency}}$ is also the same on the 4.0-1.5 Mc. and 9.7-3.6. Mc. bands, but, due to the greatly different frequency spectrum of the oscillator, the series capacitors in the two oscillator circuits are different.

CIRCUIT DIAGRAM

V5 6V6GT/G
V4 6G8G
V3 6U7G
V2 6J8G
V1 6U7G
V6 5Y3GT/G
T1
T2
S1/1 (FRONT)
S1/2 (REAR)
S1/3 (REAR)
S1/4 (REAR)
S1/5 (FRONT)
S1/5 (REAR)
S1/6 (FRONT)
S1/6 (REAR)
S1/7 (FRONT)
S1/7 (REAR)
S1/8 (FRONT)
S1/8 (REAR)
S2
L33 L34 L35 L36 L37
C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27 C28 C29 C30 C31 C32 C33 C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 C44 C45 C46 C47 C48 C49 C50 C51 C52 C53 C54 C55 C56 C57 C58
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30
EXTERNAL SPEAKER
P1 PHONO.
P2 PHONO.
TINNED COPPER TO L.S FRAME
RED TUBING
MAROON
BLACK
MAROON
YELLOW TUBING
GREEN
WHITE
BLUE
GREEN- 230-260v.
WHITE- 200-230v.
BLUE- COMMON
200-260v
50-60~
RANGE SWITCH VIEWED FROM SPINDLE END IN ANTICLOCKWISE (PHONO.) POSITION
MECHANICAL STABILISER NOT SHOWN
SECTION "AA" FEMALE
SECTION "BB" MALE
PICK-UP & PHONO MOTOR CIRCUIT
200-260 VOLTS A.C.

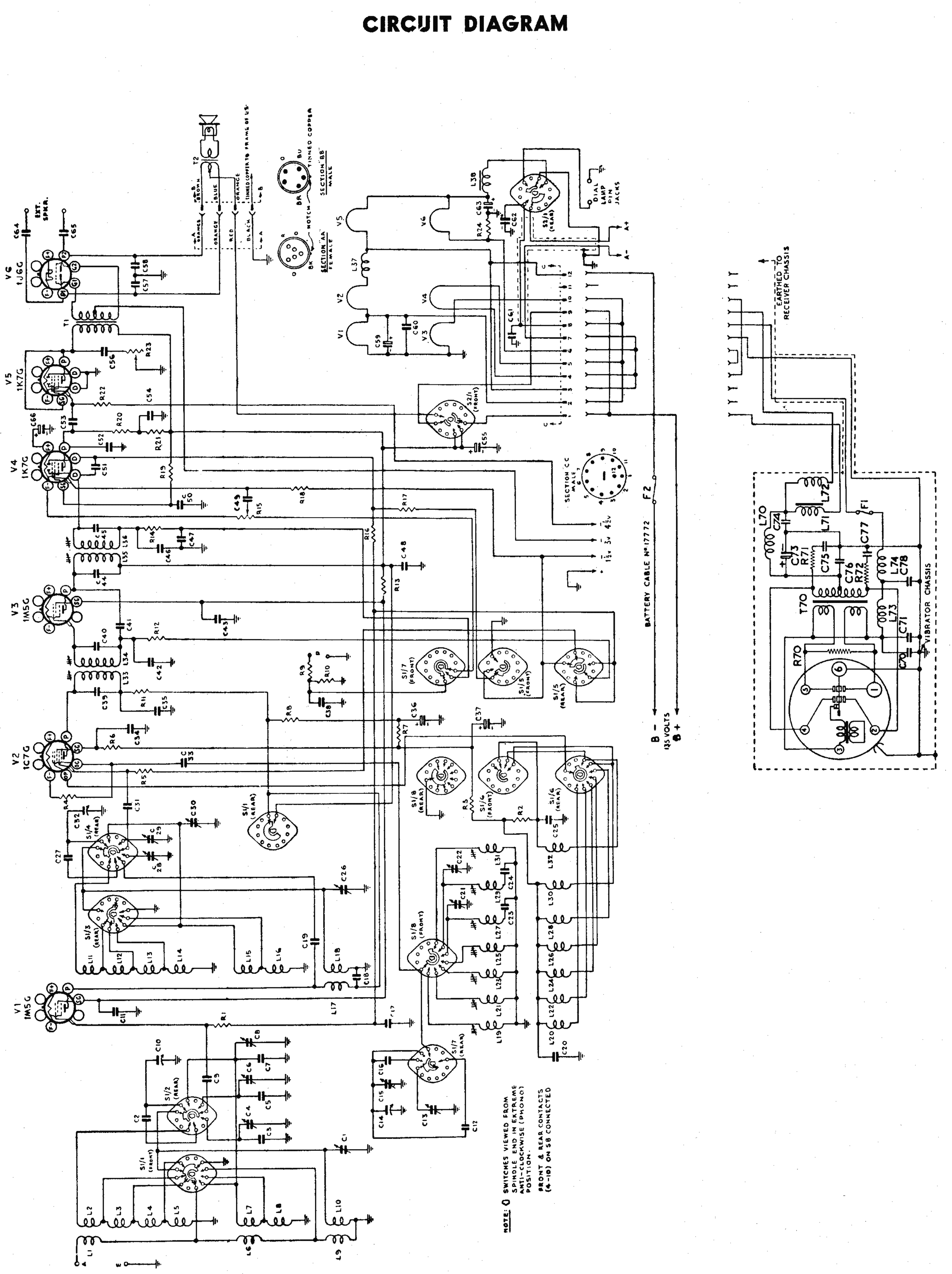


CHASSIS (Top View).



CHASSIS (Underneath View).

CIRCUIT DIAGRAM



NOTE: ○ SWITCHES VIEWED FROM SPINDLE END IN EXTREME ANTI-CLOCKWISE (PHONO) POSITION.

FRONT & REAR CONTACTS (4-10) ON S8 CONNECTED