TECHNICAL INFORMATION
AND
SERVICE DATA

AWA RADIOLA

MODELS 610-T AND 708-C

SIX VALVE, SEVEN BAND, BATTERY/ VIBRATOR OPERATED SUPERHETERODYNES

ISSUED BY
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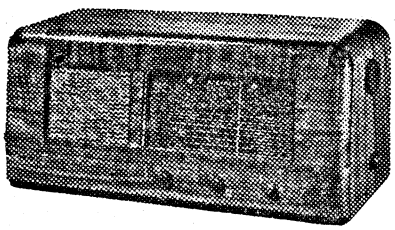
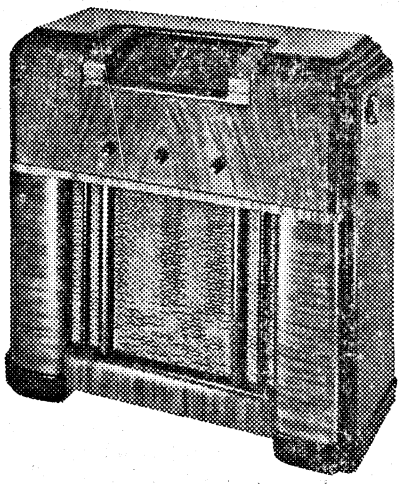

610-T


708-C

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 ..... 455 kc.

BATTERY COMPLEMENT:

There are two modes of operation—one employing "B" batteries and a 2-volt accumulator, and the other a Vibrator Power Unit, type 17770, powered from a 6-volt accumulator.

Battery cables are available, fitted with telephone tips for "B" batteries fitted with Fahenstock clips, or with plugs for socket-type batteries.

The batteries used and their respective cables are as follows:—

Battery Operation:	Cable with Tips.	Cable with Plugs.
1—2-volt accumulator	—	—
3—45-volt "B" batteries	19793	19799
1—4.5-volt "C" bias battery	—	—

NOTE: An additional 4.5-volt "C" battery is used to provide dial illumination. A lead, part No. 19682 is supplied with the "B" battery cable for connecting this battery—see diagram, "Battery Connections."

Vibrator Power Unit Operation:

1—6-volt Accumulator and Vibrator Power Unit, 17770.

BATTERY CONSUMPTION (Without Dial Lamps).

Battery Operation:

2-volt "A" battery—0.84 Amp.
135-volts "B" battery—17-20 mA.

Vibrator Operation ..... 1.1 Amps.

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

FUSE:

Battery Operation ..... 3/8 Amp.
Vibrator Operation ..... 5 Amp

VALVE COMPLEMENT:

(1) 1M5G R.F. Amplifier.
(2) 1C7G Converter.
(3) 1M5G I.F. Amplifier.
(4) 1K7G Detector, A.V.C. and A.F. Amplifier.
(5) 1K7G Driver.
(6) 1J6G "B" Class Output.

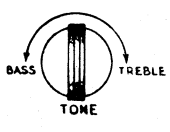
VIBRATOR ..... AWA-OAK Type V5124

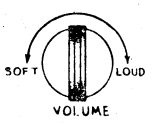
LOUDSPEAKER (Permanent Magnet):

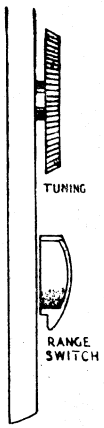
Model 610-T.	**Model 708-C.**
7-inch—Code No. AY22.	12-inch—Code No. AU13.
Transformer—XA11.	Transformer—TX5.
V.C. Impedance—3 ohms at 400 C.P.S.	V.C. Impedance—2.2 ohms at 400 C.P.S.

Undistorted Power Output ..... 1.5 watts

CONTROLS:







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 the 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.

VIBRATOR POWER UNIT No. 17770.

Operating from a 6-volt accumulator, the Vibrator Power Unit supplies the correct socket voltages for the receiver. It contains a plug-in vibrator, step-up transformer, an efficient filter system and a 5-amp. fuse, which is located within the unit.

The unit is connected to the receiver by means of a cable and plug. See "Battery Connections" diagram.

To remove the Vibrator Unit from the cabinet, disconnect the cable from the receiver and unscrew the three holding screws which pass through the base of the cabinet.

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 loudspeaker and battery or vibrator cables.

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

(4) 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.

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

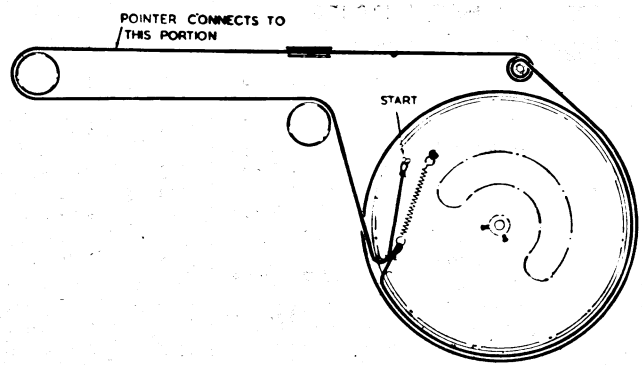
(6) Replacing the chassis in the cabinet is a direct reversal of the above instructions, but care must be taken to connect the dial pointer to the drive cord as follows:—

(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.

"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.

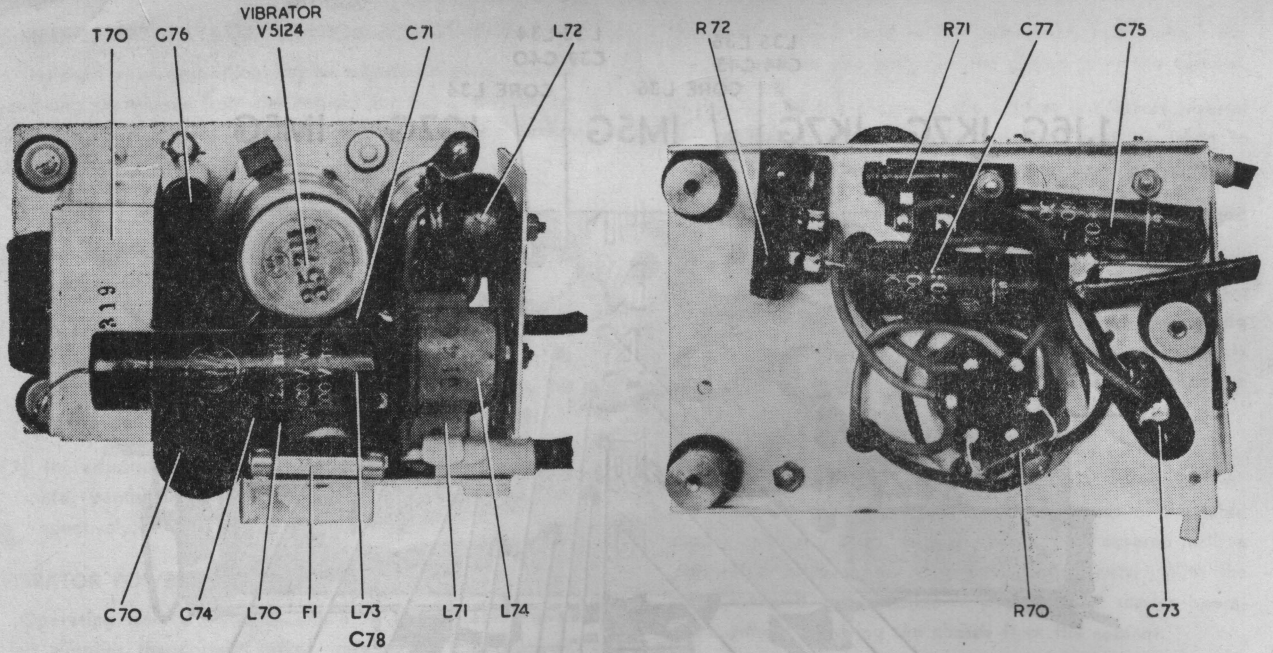
The accompanying diagram shows the route of the cord and the method of attachment. Whilst fitting the cord, keep it taut and adjust the length so that the tension spring measures approximately two inches long when fitted. The spring should be sheathed to prevent it from rattling against the drum.

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 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 very 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."



VIBRATOR POWER UNIT.

MECHANICAL REPLACEMENT PARTS.

Item.	Part No.
Cabinet, console	C69
table	C67
Cable, band indicator	19150
Cable, loudspeaker—	
AY22	15359
AU13	17826
Cable, pick-up	17725
Cable, "B" battery—	
With plugs	19799
With tips	19793
Cable, "C" battery	17773
Cable, dial lamp	19682
Chassis-end, right-hand	19080
left-hand	17821
Clip, grid	7459
Cone assembly, loudspeaker—	
AY22	9356
AU13	10370
Core, magnetite—	
Small	11403
Large	11400
Dial frame assembly	19082
Dial scale	19100
Drum, band indicator	19094
Drum, drive	9090
Dust cover, loudspeaker—	
AY22	9843
AU13	10306
Knob	4589
Knob, range switch	5486
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	
Console	9812
Table	17739
Spindle, range switch extension—	
Console	19584
Table	19066
Spindle, tuning control extension	19583
Spring, band indicator	8364
Spring, drive tension	6641
Strip, tag—1 way	7628
2 way	8021
3 way	9877
7 way	9879

VIBRATOR POWER UNIT No. 17770.

Cable, battery	17768
Socket, vibrator	8498
Strip, tag, 2 way	8570

MECHANICAL SPECIFICATIONS.

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

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

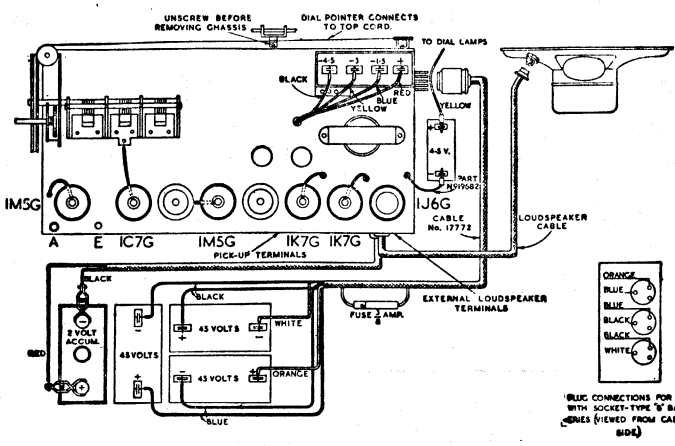


FIG. 1A
CONNECTIONS FOR BATTERY OPERATION

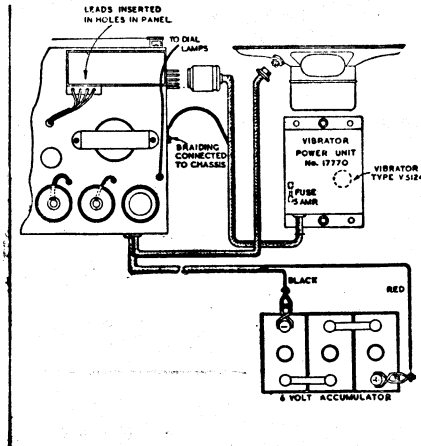


FIG. 1B
CONNECTIONS FOR VIBRATOR OPERATION

BATTERY CONNECTIONS.

CIRCUIT ARRANGEMENT.

IM5G — R.F. AMPLIFIER.

The IM5G is a super control R.F. pentode, and is utilised for this purpose. The output of the aerial coil, which is tuned by the aerial section of the ganged tuning capacitor, is applied to the control grid for amplification. The anode of this valve is coupled to the control grid of the IC7G via the R.F. coil.

IC7G — CONVERTER.

The IC7G is a pentagrid converter and is employed as a frequency converter. Local oscillations are provided by the oscillator section (grids 1 and 2).

The oscillator operates in a tuned grid feed back circuit, comprising oscillator coil, padder capacitor and oscillator section of the ganged tuning capacitor. The circuit constants are so designed that the resultant heterodyne frequency to which the output is tuned is 455 kc.

IM5G — I.F. AMPLIFIER.

A second IM5G is used as an I.F. Amplifier. The output from the converter is applied to the control grid via the first I.F. transformer, which is adjusted to a frequency of 455 kc. by means of the magnetite cores. The resultant amplified voltage from this stage is applied via the second I.F. transformer to one diode of the first IK7G for rectification.

IK7G — DETECTOR, A.V.C. AND A.F.

The IK7G is a duo diode pentode employed as detector, A.V.C. and audio amplifier. One diode acts as the signal detector, the other as A.V.C. detector, and the pentode section as the A.F. amplifier.

IK7G — DRIVER.

A second stage of audio frequency amplification is obtained by utilising another IK7G connected as a triode, the diodes being earthed. The output of this valve is fed to the primary of the audio transformer.

IJ6G — OUTPUT.

The secondary of the audio transformer is coupled to each grid of the IJ6G, which is a class B twin triode amplifier. Under these conditions, maximum economy of current is obtained with negligible distortion.

BIAS ARRANGEMENT.

Battery Operation.—A 4½-volt bias battery is used, 4½ volts being applied to the grid circuit of the IK7G driver, 3 volts to the IJ6G, and 1½ volts to the remaining valves.

Vibrator Operation.—Negative bias is obtained by arranging the valve filaments in such an order that the optimum necessary bias is obtained for each valve. All grids are returned to the chassis, which is negative with respect to the negative filament, thus giving the grid a bias voltage of the potential between the negative filament and chassis.

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 12,500 ohms and a range of 5-3,000 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 1,000 kc. 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 1,000 kc. position, a spurious image signal can generally be obtained by turning the tuning control of the receiver to a point approximately 100 kc. 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.

ALIGNMENT TABLE.

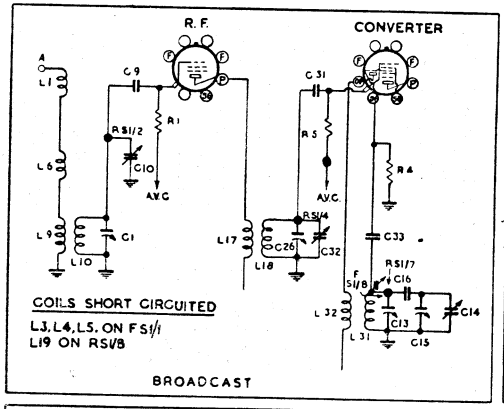
Alignment Order.	Test Inst. Connect to Receiver.	Frequency Setting.	Band Setting.	Calibration Scale Setting.	Circuit to Adjust.	Adjustment Symbol.	Adjust to Obtain.
1	IC7G Cap*	455 kc.	Broadcast	0°	2nd I.F. Trans.	Core L36	Max. Peak
2	IC7G Cap*	455 kc.	Broadcast	0°	2nd I.F. Trans.	Core L35	Max. Peak
3	IC7G Cap*	455 kc.	Broadcast	0°	1st I.F. Trans.	Core L34	Max. Peak
4	IC7G Cap*	455 kc.	Broadcast	0°	1st I.F. Trans.	Core L33	Max. Peak
			Recheck 1, 2, 3 and 4				
5	Aerial	600 kc.	Broadcast	19°	Oscillator†	Core L31	Calibration
6	Aerial	1500 kc.	Broadcast	168°	Oscillator	C13	Calibration
7	Aerial	1450 kc.	Broadcast	158°	Radio Frequency	C26	Max. Peak
8	Aerial	1450 kc.	Broadcast	158°	Aerial	C1	Max. Peak
			Recheck 5, 6, 7 and 8				
9	Aerial	17.8 Mc.	22.3-17.7 Mc.	18°	Oscillator	Core L19	Calibration
10	Aerial	17.8 Mc.	22.3-17.7 Mc.	18°	Radio Frequency†	C28	Max. Peak
11	Aerial	17.8 Mc.	22.3-17.7 Mc.	18°	Aerial	C4	Max. Peak
12	Aerial	21.0 Mc.	22.3-17.7 Mc.	149°	Oscillator	C15	Calibration
13	Aerial	15.2 Mc.	19.0-15.0 Mc.	27°	Oscillator	Core L21	Calibration
14	Aerial	11.8 Mc.	15.0-11.7 Mc.	25°	Oscillator	Core L23	Calibration
15	Aerial	11.8 Mc.	15.0-11.7 Mc.	25°	Radio Frequency†	C29	Max. Peak
16	Aerial	11.8 Mc.	15.0-11.7 Mc.	25°	Aerial	C6	Max. Peak
17	Aerial	9.5 Mc.	12.0-9.4 Mc.	24°	Oscillator	Core L25	Calibration
18	Aerial	9.0 Mc.	9.7-3.6 Mc.	156°	Oscillator	C21	Calibration
19	Aerial	9.0 Mc.	9.7-3.6 Mc.	156°	Radio Frequency†	C30	Max. Peak
20	Aerial	9.0 Mc.	9.7-3.6 Mc.	156°	Aerial	C8	Max. Peak
21	Aerial	4.0 Mc.	9.7-3.6 Mc.	19°	Oscillator	Core L27	Calibration
			Recheck 18, 19, 20 and 21				
22	Aerial	1.6 Mc.	4.0-1.5 Mc.	15°	Oscillator	Core L29	Calibration
23	Aerial	3.7 Mc.	4.0-1.5 Mc.	153°	Oscillator	C22	Max. Peak
			Recheck 22 and 23				

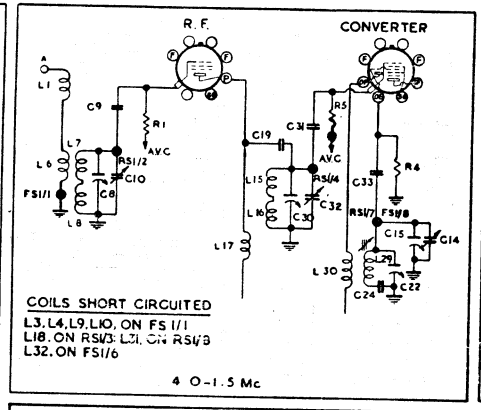
Finally, recheck broadcast band. This is necessary only if the setting of C15 has been altered.

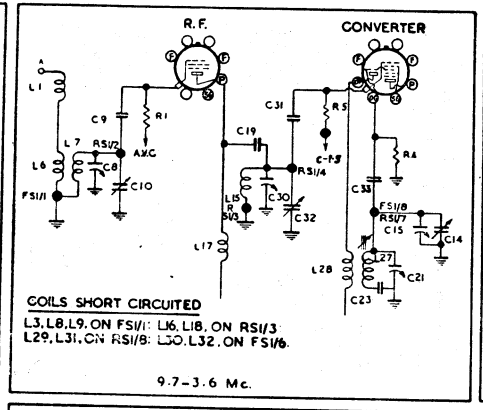
†Rock the tuning control back and forth through the signal.

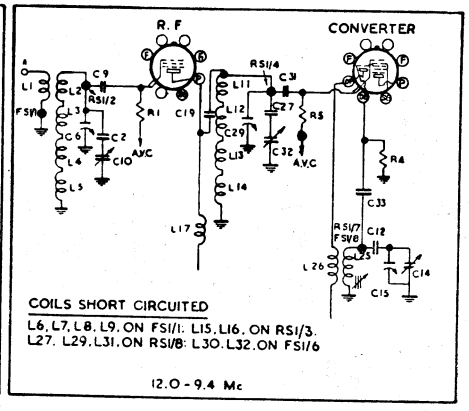
*With grid clip connected. A 0.001 uF capacitor should be connected in series with the "high" side of the test instrument.

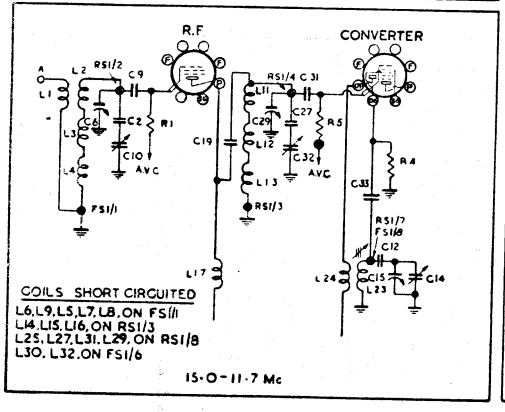
The column headed "Calibration Scale Setting" refers to the 180° scale on the ganged tuning capacitor drive drum. In taking readings on this scale, read from the right hand edge of the pointer; that is, the edge nearest the rear of the chassis. Check the setting of the drum before taking readings. The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

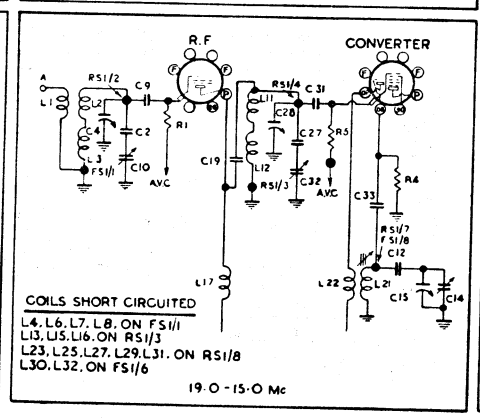


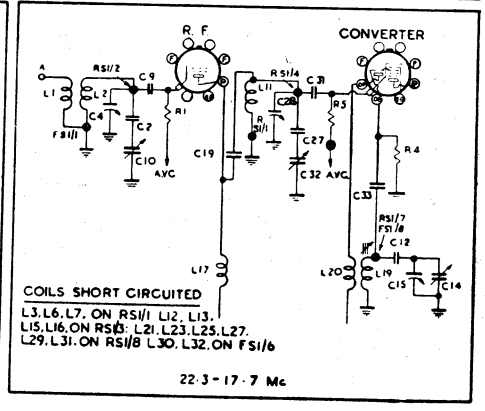












NOTE - ● INDICATES TWO OR MORE CONNECTIONS THROUGH SWITCH SECTION

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

TUNING CIRCUIT DIAGRAM.

610-T & 708-C

SOCKET VOLTAGES

Valve.	Bias Volts. B.	Bias Volts. V.	Screen Volts. B.	Screen Volts. V.	Screen Current. B.	Screen Current. V.	Anode Volts. B.	Anode Volts. V.	Anode Current. B.	Anode Current. V.	Filament Volts. B.	Filament Volts. V.
1M5G R.F. Amplifier	*—1.5	0	60	65	0.6	0.6	135	150	1.8	2.3	2.0	2.0
1C7G Converter, M.W.	—1.5	—2.0	50	57	1.8	2.0	135	150	1.8	1.0	2.0	4.0
S.W.	—1.5	—2.0	53	62	1.4	1.6	135	150	2.2	1.6	2.0	4.0
Oscillator, M.W.	—	—	—	—	—	—	60	68	2.0	2.5	—	—
S.W.	—	—	—	—	—	—	123	145	3.2	4.0	—	—
1M5G I.F. Amplifier	*—1.5	0	60	65	0.6	0.6	135	150	1.8	2.3	2.0	2.0
1K7G Detector	—1.5	—2.0	30	48	0.12	0.14	60	75	0.25	0.25	2.0	4.0
1K7G Driver	—4.5	—4.0	—	—	—	—	133	150	2.0	2.5	2.0	6.0
1J6G Output	—3.0	—4.0	—	—	—	—	135	150	3.5	2.5	2.0	6.0

Measurements taken with 1000 ohms/volt meter, no signal input, and Volume Control in maximum clockwise position.

Filament volts are from positive filament connection to chassis.

*—1.5 volts bias on Medium Wave, and 75-200 M. bands only. Zero bias condition on remaining bands.

DESCRIPTION OF TUNING CIRCUIT ADJUSTMENTS

Broadcast Band.

The broadcast band adjustments follow usual practice with three trimming capacitors—C1 aerial, C26 R.F., C13 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—C8 aerial, C30 R.F., C21 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, C22, for tracking with the signal circuit 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 C28 R.F. and C4 aerial. Small capacitors C2, C27 and C12 are used in series with the gang 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 C15. 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.

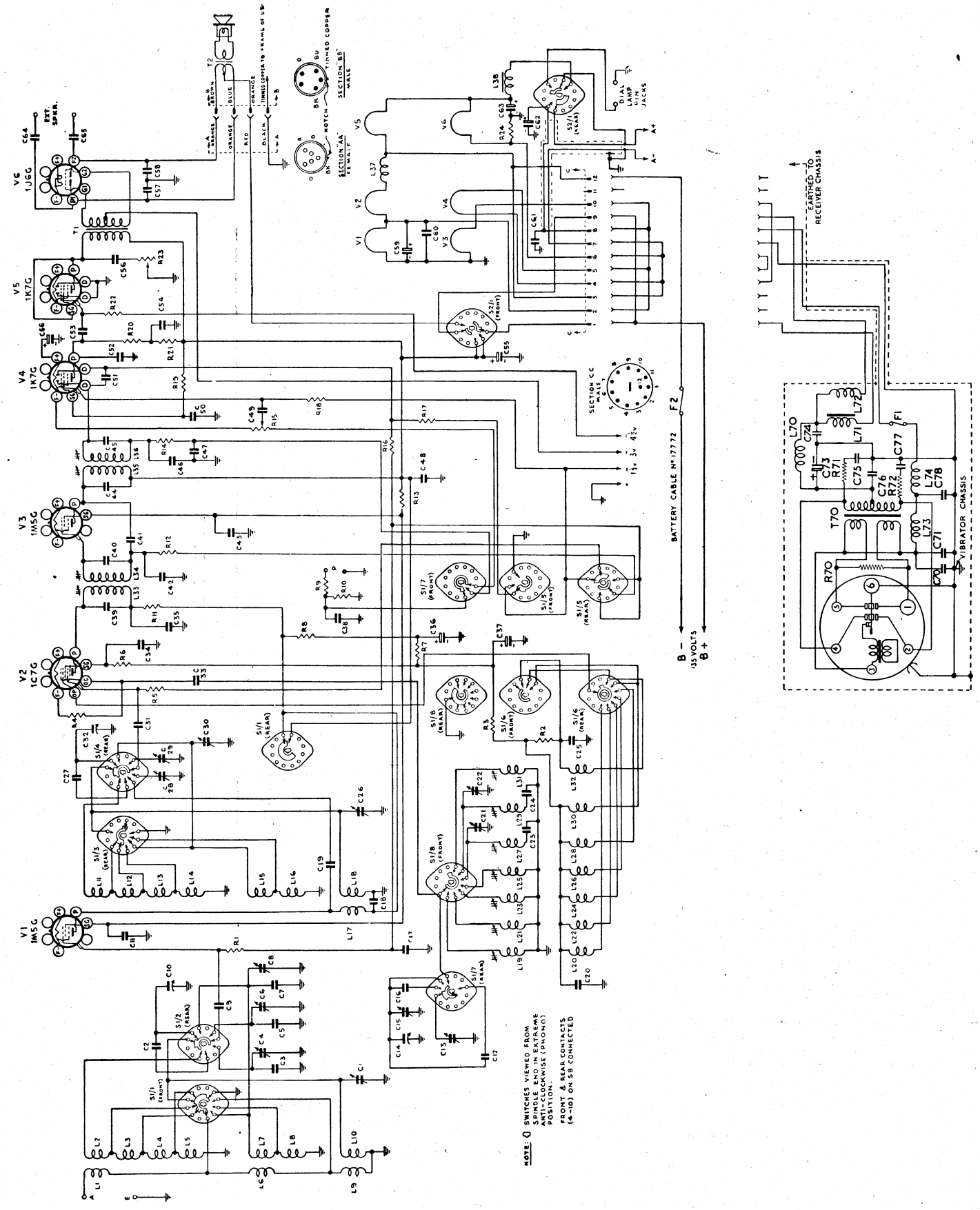
Adjustments are similar to those on the 22.3-17.7 Mc. band, excepting that no H.F. adjustment is provided for the oscillator. L.F. adjustments are trimming capacitors C29 R.F. and C6 aerial and a variable magnetite core in oscillator coil L23, L24.

12.0-9.4 Mc. Band.

One adjustment only is provided, a variable magnetite core is the oscillator coil 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 the 9.7-3.7 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

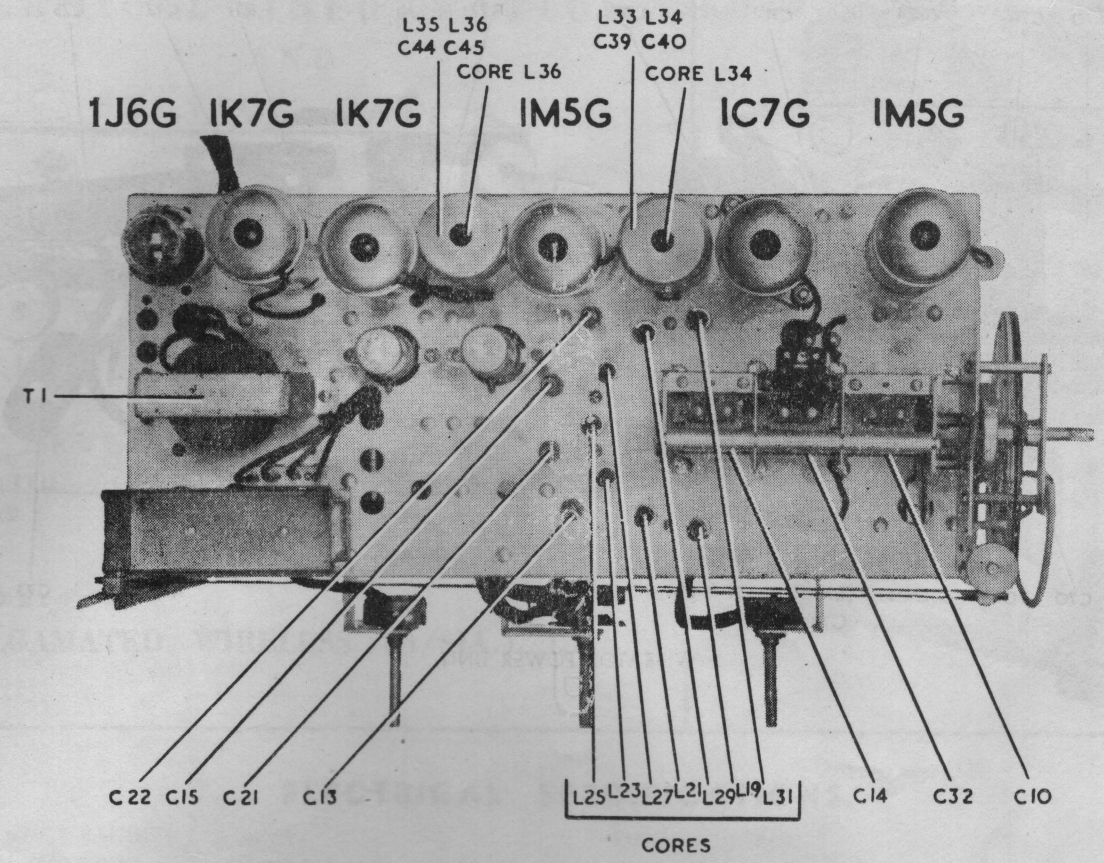


CIRCUIT CODE

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	Low tension R.F. filter choke	3149
L38	Low tension A.F. filter choke	8243E
L70	R.F. Choke	3036
L71	Smoothing Choke	8321
L72	R.F. Choke	3036
L73	R.F. Choke	3149
L74	R.F. Choke	3149
	RESISTORS.	
R1	1 megohm, ½ watt	600, 341
R2	30,000 ohms, 1 watt	600, 511 or 600, 711
R3	500 ohms, ½ watt	600, 275
R4	50,000 ohms, ½ watt	600, 315
R5	1 megohm, ½ watt	600, 341
R6	40,000 ohms, 1 watt	600, 513 or 600, 713
R7	500 ohms, ½ watt	600, 275
R8	500 ohms, ½ watt	600, 275
R9	20,000 ohms, ½ watt	600, 307
R10	50,000 ohms, ½ watt	600, 315
R11	320 ohms, ½ watt	600, 271
R12	0.1 megohm, ½ watt	600, 321
R13	63,000 ohms, 1 watt	600, 517 or 600, 717
R14	50,000 ohms, ½ watt	600, 315
R15	0.5 megohm Volume Control	19006
R16	1.6 megohms, ½ watt	600, 345
R17	2.5 megohms, ½ watt	600, 349
R18	1.6 megohms, ½ watt	600, 345
R19	1 megohm, 1 watt	600, 541 or 600, 741
R20	0.2 megohm, 1 watt	600, 527 or 600, 727
R21	50,000 ohms, 1 watt	600, 515 or 600, 715
R22	0.5 megohm, ½ watt	600, 535 or 600, 735
R23	0.1 megohm, Tone Control	19007
R24	16.6 ohms, 3 watt, wire wound	
R70	400 ohms, ½ watt	600, 273
R71	100 ohms, ½ watt	600, 261
R72	100 ohms, ½ watt	600, 261
	CAPACITORS.	
C1	1-25 uuF air trimmer	19659
C2	52 uuF silvered mica ± 2 uuF	
C3	12 uuF mica	13211†
C4	1-25 uuF air trimmer	19659
C5	12 uuF mica	13211†
C6	1-25 uuF air trimmer	19659
C7	12 uuF mica	13211†
C8	1-25 uuF air trimmer	19659
C9	200 uuF mica	13211†
C10	12-430 uuF variable tuning (ganged)	9872
C11	0.1 uF paper, 400v. working	228, 121
C12	42 uuF Temp. Comp.	N750
C13	11-29 uuF air trimmer	3411B
C14	12-430 uuF variable tuning (ganged)	9872
C15	2-10 uuF air trimmer	3658
C16	490 uuF mica ± 2½%	13212†
C17	0.05 uF paper, 400v. working	228, 115
C18	0.1 uF paper, 400v. working	228, 121
C19	50 uuF mica	13211†
C20	0.1 uF paper, 400v. working	228, 121
C21	2-20 uuF air trimmer	3611
C22	11-29 uuF air trimmer	3411B
C23	2550 uuF mica ± 2½%	13213†
C24	1350 uuF mica ± 2½%	13213†
C25	0.1 uF paper, 400v. working	228, 121
C26	1-25 uuF air trimmer	19659
C27	52 uuF mica ± 2 uuF	
C28	1-25 uuF air trimmer	19659
C29	1-25 uuF air trimmer	19659
C30	1-25 uuF air trimmer	19659
C31	200 uuF mica	13211†
C32	12-430 uuF variable tuning (ganged)	9872
C33	70 uuF mica	13211†
C34	0.1 uF paper, 400v. working	228, 121
C35	0.05 uF paper, 400v. working	228, 115
C36	8 uF, 525 P.V. electrolytic	EE10774
C37	8 uF, 525 P.V. electrolytic	EE10774
C38	0.01 uF paper, 600v. working	228, 301
C39	70 uuF silvered mica	226, 460
C40	70 uuF silvered mica	226, 460
C41	4 uuF mica	224, 233
C42	0.01 uF paper, 600v. working	228, 301
C43	0.1 uF paper, 400v. working	228, 121
C44	70 uuF silvered mica	226, 460
C45	70 uuF silvered mica	226, 460
C46	110 uuF mica	13211†
C47	110 uuF mica	13211†
C48	0.5 uF paper, 400v. working	228, 135
C49	0.02 uF paper, 600v. working	228, 307
C50	0.1 uF paper, 400v. working	228, 121
C51	50 uuF mica	13211†
C52	200 uuF mica	13211†
C53	0.02 uF paper	228, 307
C54	0.5 uF paper, 400v. working	228, 135
C55	8 uF, 525 P.V. electrolytic	ET1015
C56	0.035 uF paper, 600v. working	228, 311
C57	0.005 uF paper, 600v. working	228, 295
C58	0.005 uF paper, 600v. working	228, 295
C59	400 uF, 12 P.V. electrolytic	ET1045
C60	0.1 uF paper, 400v. working	228, 121
C61	450 uuF mica	13212†
C62	25 uF, 40 P.V. electrolytic	ET10769
C63	400 uF, 12 P.V. electrolytic	ET1045
C64	0.5 uF paper, 400v. working	228, 135
C65	0.5 uF paper, 400v. working	228, 135
C66	400 uF, 12 P.V. electrolytic	ET1045
C70	0.5 uF paper, 400v. working	228, 135
C71	300 uuF mica	13211†
C72	Not used.	
C73	8 uF, 525 P.V. electrolytic	EE0849
C74	0.01 uF paper, 600v. working	228, 301
C75	0.02 uF paper, 600v. working	228, 307
C76	0.01 uF paper, 600v. working	228, 301
C77	0.02 uF paper, 600v. working	228, 307
C78	0.25 uF paper, 400v. working	228, 129
	TRANSFORMERS.	
T1	Push Pull Input	3628G
T2	Loudspeaker (610T)	XA11
	Loudspeaker (708C)	TX5
T70	Vibrator	8319
	SWITCHES.	
S1	Phono-Range—8 position, rotary (NOTE: Wafers numbered from front of chassis.)	
S2	Battery. 17776.	
	FUSES.	
F1	5 Amp.	
F2	⅜ Amp.	

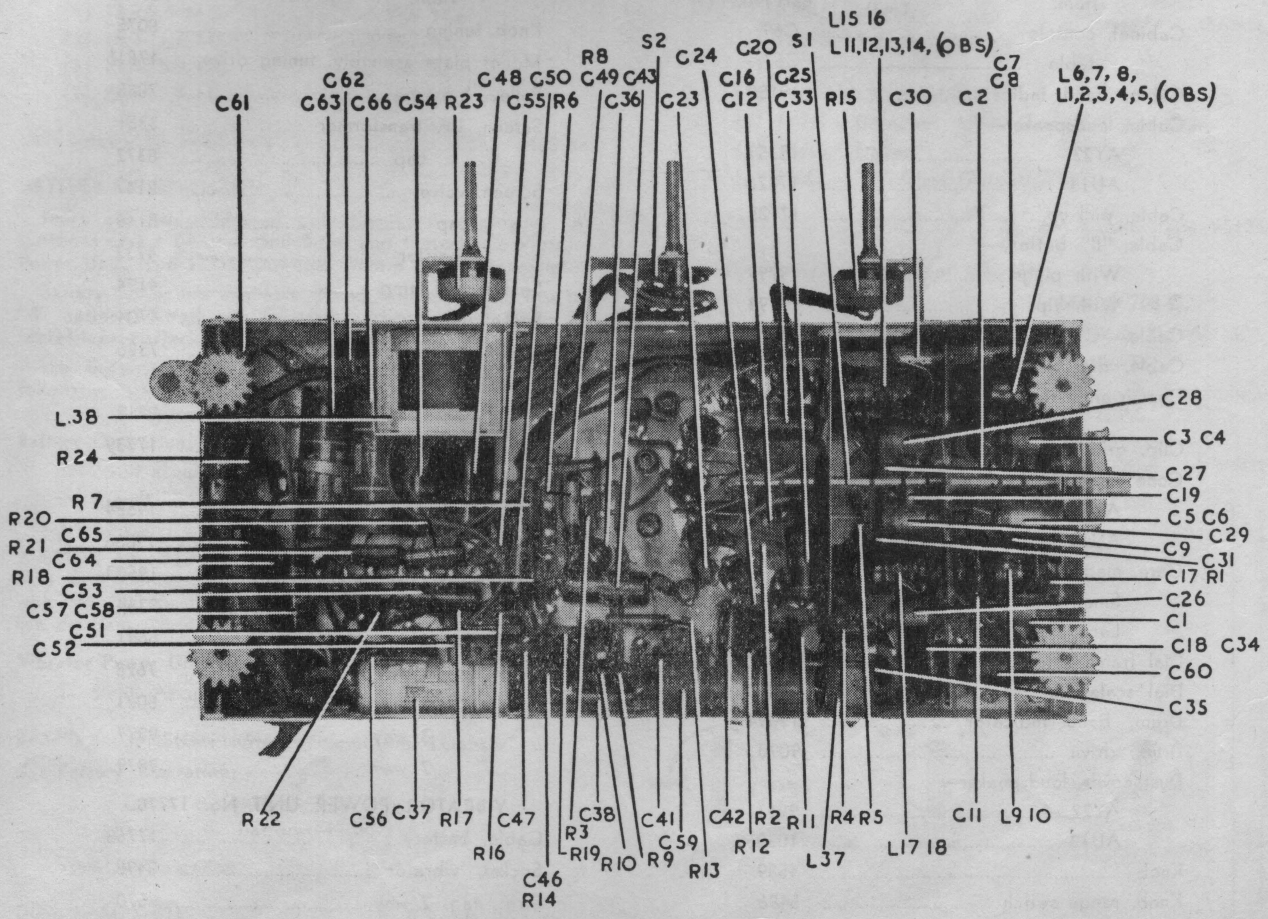
* Part number of winding only.

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



NOTE: The I.F. transformer primary cores are adjusted from underneath the chassis.

CHASSIS (TOP VIEW).



CHASSIS (UNDERNEATH VIEW).