

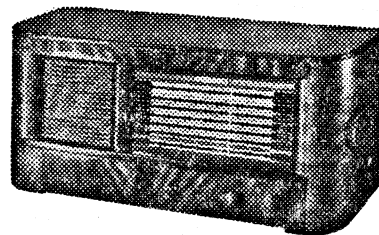
TECHNICAL INFORMATION
AND
SERVICE DATA



RADIOLA
MODEL 613-T

**FIVE VALVE, TWO BAND, UNIVERSAL A.C. OR D.C.
OPERATED SUPERHETERODYNE**

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



ELECTRICAL SPECIFICATIONS.

FREQUENCY RANGES—

Medium Wave 1600-550 kc. Short Wave 22-7 Mc.
(187.5-545 M.) (13.6-43 M.)

INTERMEDIATE FREQUENCY 455 kc.

POWER SUPPLY RATING 200-260 volts A.C. or D.C.

POWER CONSUMPTION 90 watts.

DIAL LAMP 240 volts, 15 watts, bayonet base.

VALVE COMPLEMENT—

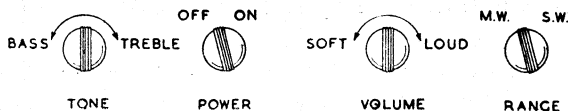
- | | |
|-------------------------------------|-----------------------|
| (1) 6J8G Converter. | (4) 25L6GT Output. |
| (2) 6U7G I.F. Amplifier. | (5) 25Z6GT Rectifier. |
| (3) 6B6G Det., A.V.C. and A.F. Amp. | 302 Barretter. |

LOUDSPEAKER—

7 inch—Code No. AW5. V.C. Impedance—3 ohms at 400 C.P.S.
Transformer—XA5. Field—2,500 ohms.

UNDISTORTED POWER OUTPUT 2.2 watts

CONTROLS—



MECHANICAL SPECIFICATIONS.

	Height.	Width.	Depth.
Cabinet Dimensions (inches)	11	24	10½
Chassis Base Dimensions	3	15	6½
Overall Chassis Height (inches)	8½		8½

	Height.	Width.	Depth.
Carton Dimensions (inches)	12½	25	42
Weight (nett lbs.)			30
Cabinet Finish			Walnut Veneer

ALIGNMENT PROCEDURE.

Manufacturer's Setting of Adjustments.

The receiver is tested by the manufacturers with precision instruments and all adjusting screws are sealed. Re-alignment should be necessary only when components in tuned circuits are repaired or replaced, or when it is found that the seals over the adjusting screws have been broken.

It is especially important that the adjustments should not be altered unless in association with the correct testing instruments listed below.

Under no circumstances should the plates of the ganged tuning capacitor be bent, as the unit is accurately aligned during manufacture and cannot be readjusted unless by skilled operators using specialised equipment.

For all alignment operations, connect the "low" side of the signal generator to the receiver chassis, and keep the generator output as low as possible to avoid A.V.C. action. Also, keep the volume control in the maximum clockwise position.

Testing Instruments.

- (1) A.W.A. Junior Signal Generator, type 2R3911, or
- (2) A.W.A. Modulated Oscillator, type J6726.

If the modulated oscillator is used, connect a 0.25 megohm non-inductive resistor across the output terminals, and, for short wave alignment, an additional 400 ohms non-inductive resistor in series with the "high" output lead of the instrument.

- (3) Output Meter.

The instrument recommended should have an output impedance of 2,000 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.

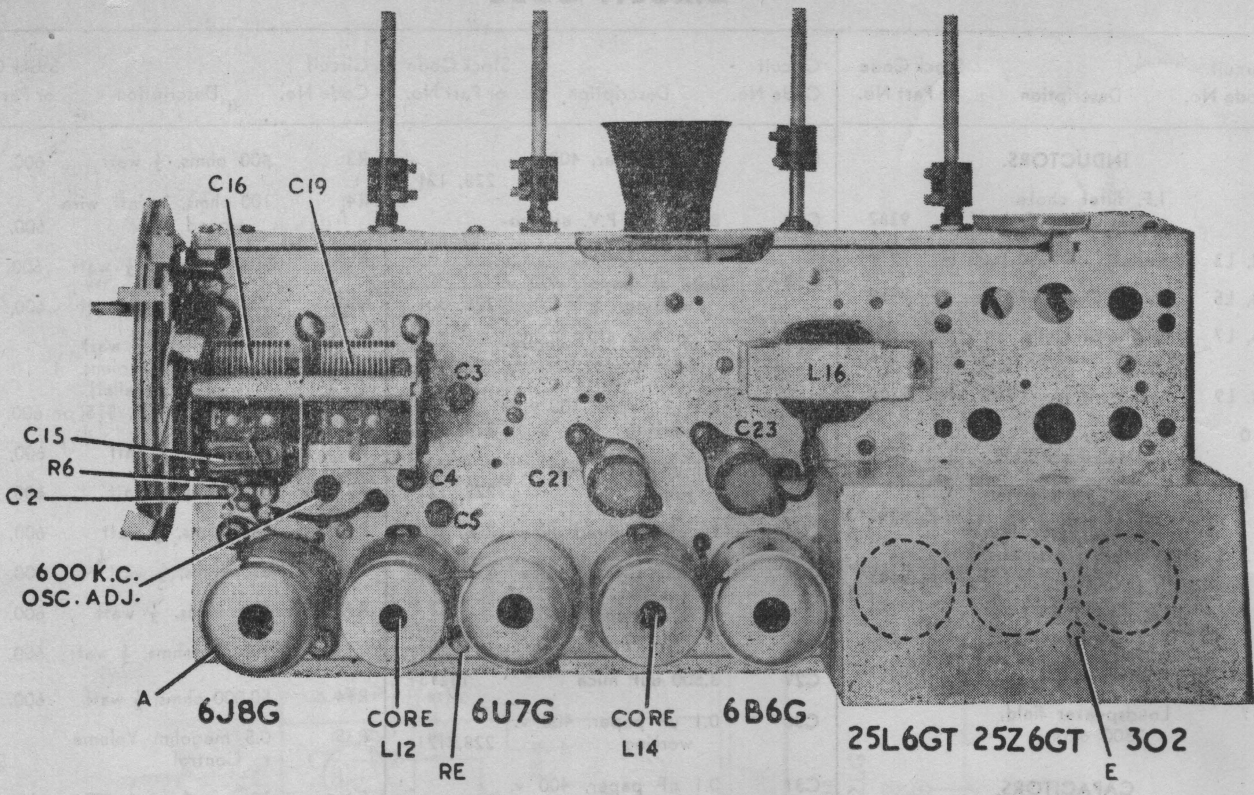
If the output meter used is one which does not impress a load on the anode circuit of the output valve, it will not be necessary to open circuit the voice coil.

CIRCUIT CODE

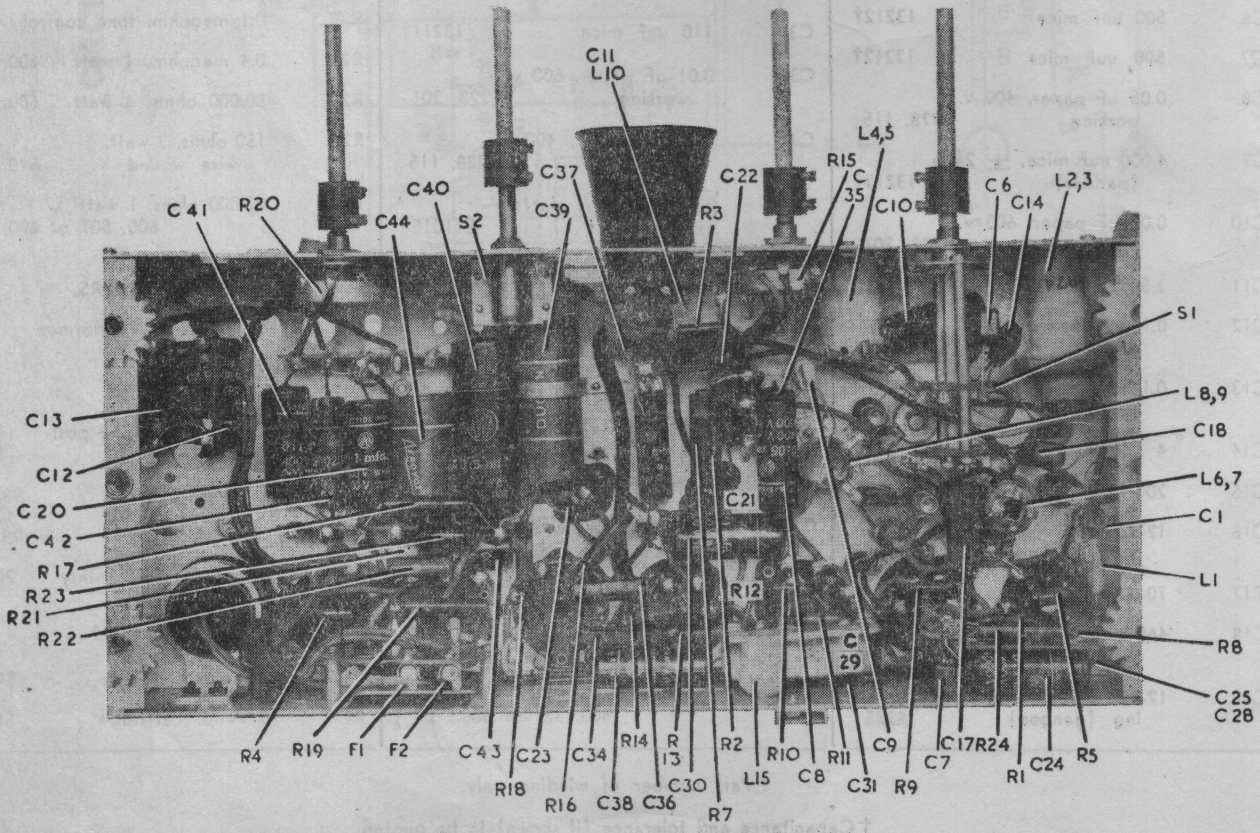
Circuit Code No.	Description	Stock Code or Part No.	Circuit Code No.	Description	Stock Code or Part No.	Circuit Code No.	Description	Stock Code or Part No.
INDUCTORS.			C20	0.1 uF paper, 400 v. working	228, 121	R3	400 ohms, ½ watt	600, 273
L1	I.F. filter choke (including C1)	9382	C21	8 uF, 525 P.V. electrolytic	EE0810	R4	100 ohms, 3 watt, wire wound	600, 361
L2, L3	Aerial Coil, 550-1600 kc.	7974	C22	0.01 uF paper, 600 v. working	228, 301	R5	50,000 ohms, ½ watt	600, 315
L4, L5	Aerial Coil, 7-22 Mc.	9569	C23	8 uF, 525 P.V. electrolytic	EE0810	R6	0.5 megohm, ½ watt	600, 335
L6, L7	Oscillator Coil, 550-1600 kc.	9206	C24	0.1 uF paper, 400 v. working	228, 121	R7	25,000 ohms, 2 watt (2 x 50,000 ohms, 1 watt in parallel)	600, 515 or 600, 715
L8, L9	Oscillator Coil, 7-22 Mc.	9205	C25	0.1 uF paper, 400 v. working	228, 121	R8	320 ohms, ½ watt	600, 271
L10	I.F. filter unit (including C11)	5080	C26	70 uuF silvered mica	226, 460	R9	630 ohms, ½ watt	600, 277
L11, L12	1st I.F. transformer	8286-Z, 8282*	C27	70 uuF silvered mica	226, 460	R10	630 ohms, ½ watt	600, 277
L13, L14	2nd I.F. transformer	8287-Z, 8281*	C28	0.02 uF paper, 600 v. working	228, 307	R11	630 ohms, ½ watt	600, 277
L15	I.F. filter unit (including C29)	5080	C29	3,500 uuF mica	13213†	R12	630 ohms, ½ watt	600, 277
L16	A.F. filter choke	TU17	C30	0.1 uF paper, 400 v. working	228, 121	R13	1.6 megohms, ½ watt	600, 345
L17	Loudspeaker field, 2500 ohms		C31	0.1 uF paper, 400 v. working	228, 121	R14	50,000 ohms, ½ watt	600, 315
CAPACITORS.			C32	70 uuF silvered mica	226, 460	R15	0.5 megohm Volume Control	5622
C1	50 uuF mica	224, 255	C33	70 uuF silvered mica	226, 460	R16	10 megohms, 1 watt	600, 561 or 600, 761
C2	2-20 uuF air trimmer	3661	C34	110 uuF mica	13211†	R17	50,000 ohms, 1 watt	600, 515 or 600, 715
C3	6-24 uuF air trimmer	5435A	C35	0.01 uF paper, 600 v. working	228, 301	R18	0.2 megohm, 1 watt	600, 527 or 600, 727
C4	11-29 uuF air trimmer	3411B	C36	110 uuF mica	13211†	R19	1.6 megohms, 1 watt	600, 345
C5	2-10 uuF air trimmer	3658	C37	0.01 uF paper, 600 v. working	228, 301	R20	0.1 megohm, tone control	4540
C6	500 uuF mica	13212†	C38	0.05 uF paper, 400 v. working	228, 115	R21	0.4 megohm, ½ watt	600, 333
C7	500 uuF mica	13212†	C39	8 uF, 525 P.V. electrolytic	ET1015	R22	50,000 ohms, ½ watt	600, 315
C8	0.05 uF paper, 400 v. working	228, 115	C40	0.5 uF paper, 400 v. working	228, 135	R23	150 ohms, 3 watt, wire wound	610, 605
C9	4,000 uuF mica, ± 2½% (padder)	13213†	C41	0.1 uF paper, 400 v. working	228, 121	R24	20,000 ohms, 1 watt	600, 507 or 600, 707
C10	0.02 uF paper, 600 v. working	228, 307	C42	0.0025 uF paper, 600 v. working	228, 289	TRANSFORMERS.		
C11	3,500 uuF mica	13213†	C43	0.02 uF paper, 600 v. working	228, 307	T1	Loudspeaker transformer	XA5
C12	0.1 uF paper, 400 v. working	228, 121	C44	25 uF, 40 P.V. electrolytic	ET10769	SWITCHES.		
C13	0.1 uF paper, 400 v. working	228, 121	RESISTORS.			S1	Range, 2 wafer, 2 position rotary	9830
C14	4 uuF mica	224, 233	R1	0.1 megohm, ½ watt	600, 321		Wafer 1	9830/1
C15	200 uuF mica	224, 267	R2	20,000 ohms, 1 watt	600, 321 or 600, 707		Wafer 2	9830/2
C16	12-430 uuF variable tuning (ganged)	18285				S2	Power, D.P.S.T., rotary	20007
C17	70 uuF mica	13211†				FUSES.		
C18	460 uuF mica, ± 2½% (padder)	13212†				F1	3 Amp. cartridge	S8940
C19	12-430 uuF variable tuning (ganged)	18285				F2	3 Amp. cartridge	S8940

* Part number of winding only.

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



CHASSIS (TOP VIEW).



CHASSIS (UNDERNEATH VIEW).

SOCKET VOLTAGES

Valve.	Cathode to Negative Volts.	Screen Grid to Negative Volts.	Plate to Negative Volts.	Plate Current mA.	Heater Volts.
6J8G Converter M.W.	2.5	80	220	0.9	6.3
S.W.	2.5	80	220	1.3	6.3
Oscillator M.W.	—	—	140	4.5	—
S.W.	—	—	140	4.5	—
6U7G I.F. Amp.	3.0	80	220	4.0	6.3
6B6G Detector	—	—	140*	0.4	6.3
25L6G Output	7.0	105	90	41	25.0
25Z6G	235	—	240	—	25.0

Voltage across loudspeaker field—130.

* Cannot be measured with ordinary voltmeter.

Measured at 240 volts A.C. Supply. No Signal input.

Volume at maximum.

D.C. RESISTANCE OF WINDINGS.

Winding.	D.C. Resistance in ohms.
Aerial Coil (M.W.)—	
Primary (L2)	10.5
Secondary (L3)	3.5
Aerial Coil (S.W.)—	
Primary (L4)	2
Secondary (L5)	*
Oscillator Coil (M.W.)—	
Primary (L6)	1
Secondary (L7)	6
Oscillator Coil (S.W.)—	
Primary (L8)	*
Secondary (L9)	*
I.F. Transformer Windings	7.5
I.F. Filter (L1)	17.5†
I.F. Filter (L10, L15)	2†
A.F. Filter Choke (L16)	1000
Loudspeaker Input Trans- former (T1)	125

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations, and it should not be assumed that a component is faulty if a slightly different reading is obtained.

* Less than 1 ohm.

† In some receivers this reading may be higher.

MECHANICAL REPLACEMENT PARTS.

Item.	Part No.	Item.	Part No.
Cabinet	C73	Reflector, Barretter	19725
Cable, loudspeaker	17822	Screen, I.F. Transformer	3351
Cable and plug, power	19730	Cap	8372
Cable, volume control	15320	Screen, Valve	8147
Chassis end	9901	Cap	8148
Clip, grid	7459	Register	4733
Cone Assembly, loudspeaker	9356	Socket, valve	4704
Coupling	S8512	Socket, valve, cushion	7326
Dial frame assembly	19711A	Spindle, extension	19736
Dial scale	19032	Spindle, tuning drive	9768
Drum, drive	9090	Spring, drive tension	6641
Dust cover, loudspeaker	9843	Strip, tag, 1-way	7628
Mount plate assembly, tuning drive	9727	3-way	9877
Panel, fuse	19738	5-way	8239
Pulleys, brass	1730	7-way	19664

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 Department 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 finger. 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.")

ALIGNMENT TABLE.

Order.	Connect "high" side of Generator to:	Tune Generator to:	Set Receiver Drive Drum Scale to:	Adjust for Maximum Peak Output:
1	6J8G Grid*	455 kc.	0	L14 core
2	6J8G Grid*	455 kc.	0	L13 core
3	6J8G Grid*	455 kc.	0	L12 core
4	6J8G Grid*	455 kc.	0	L11 core
Repeat above adjustments until maximum output is obtained.				
5	Aerial Terminal	600 kc.	18	L.F. Osc. Core Adj. (L7)†
6	Aerial Terminal	1500 kc.	154	H.F. Osc. Adj. (C4)
7	Aerial Terminal	1500 kc.	154	H.F. Aer. Adj. (C2)
Repeat adjustments 5, 6 and 7.				
8	Aerial Terminal	20 Mc.	157	H.F. Osc. Adj. (C5)‡
9	Aerial Terminal	20 Mc.	157	H.F. Aer. Adj. (C3)§

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

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

‡ Use minimum capacity peak if two can be obtained. Check to determine that C5 has been adjusted to correct peak by tuning the receiver to approximately 19.09 Mc. where a weaker signal should be received.

§ Use maximum capacity peak if two can be obtained.

Connection to Power Supply.

The receiver is designed to operate on alternating current (A.C.) or direct current (D.C.) mains supplying between 200 and 260 volts inclusive.

IMPORTANT: When connected to D.C. mains the receiver will operate only when the power cable is inserted in the power point with the right polarity. Should the receiver fail to operate after the warm-up period has elapsed, switch off the power point and reverse the plug in the socket.

Chassis Removal and Replacement.

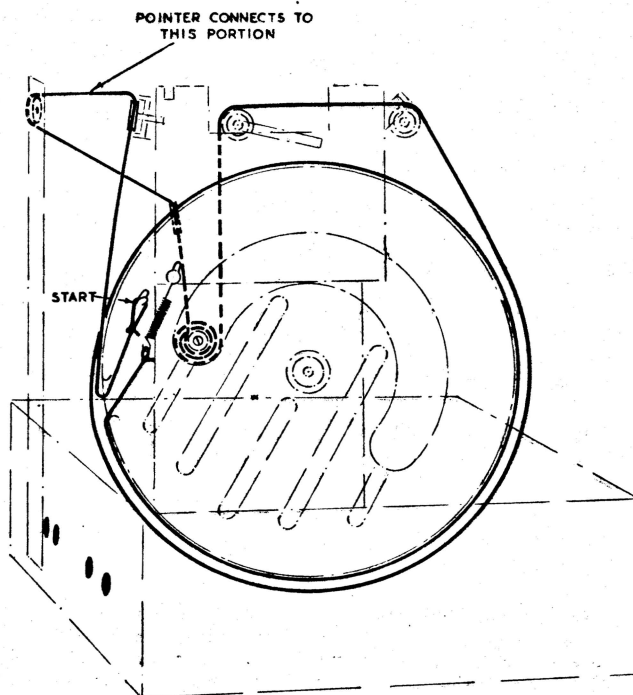
- (1) First remove the back of the cabinet and then the control knobs. The knobs on the front of the cabinet are held by a set screw; the Tuning Control knob at the side pulls straight off.
- (2) Disconnect the pointer from the dial drive cord by unscrewing the thumb nut and disconnect the loudspeaker cable from the loudspeaker.
- (3) The chassis is held in the cabinet by four bolts. Remove these and withdraw the chassis from the cabinet.

On replacing the chassis in the cabinet, care must be taken to connect the dial pointer to the drive cord correctly, as follows:

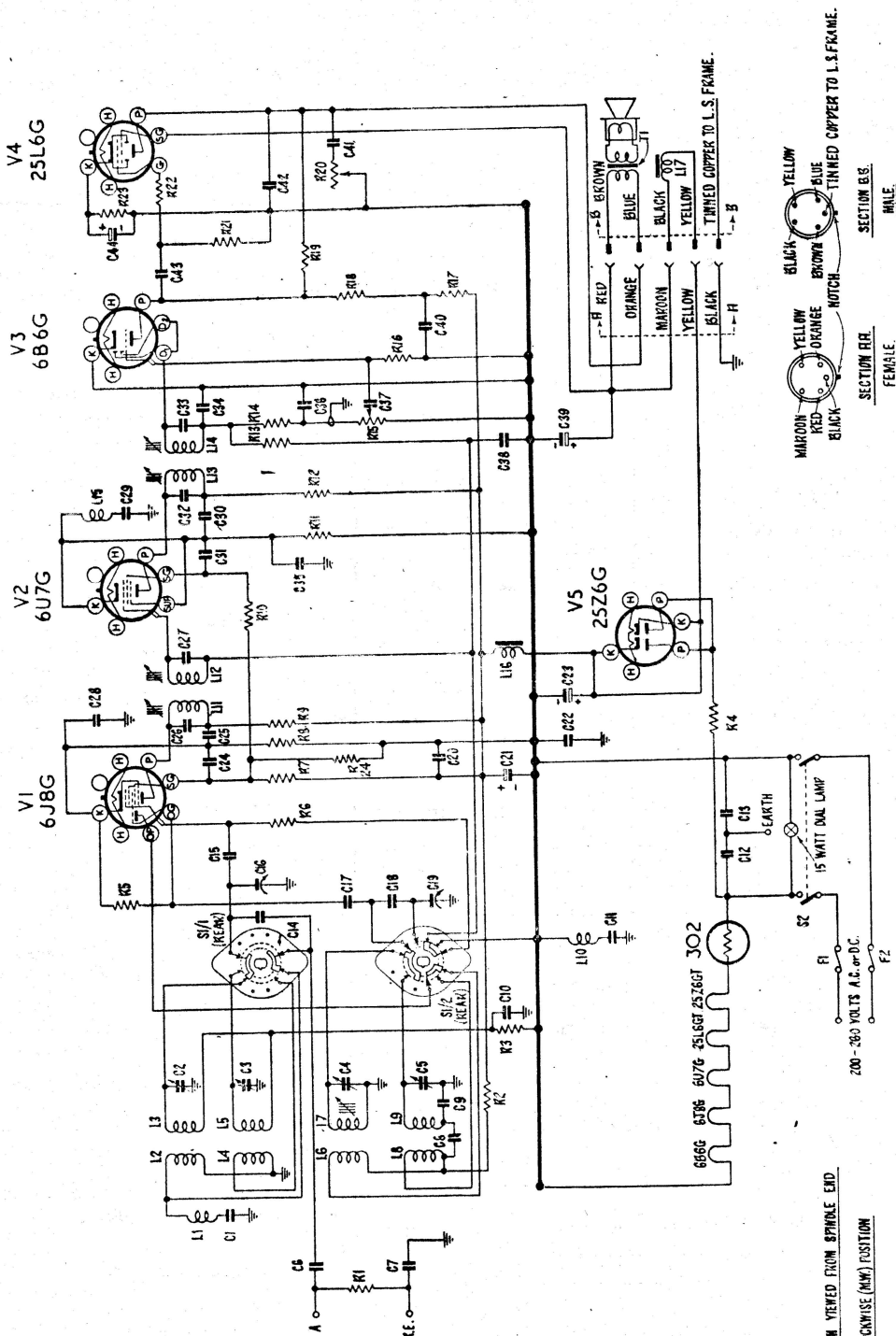
- (1) Turn the Tuning Control to bring the rotor plates of the ganged capacitor into full mesh.
- (2) Bring the dial pointer to a position opposite a mark on the scale approximately 1/16 inch to the left of 2CR.
- (3) Connect the pointer to the top drive cord and tighten the fastening thumb screw.

Tuning Drive Cord Replacement.

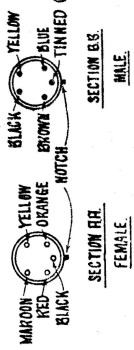
The accompanying diagram shows the route of the cord and the method of attachment. Whilst fitting the cord, keep it taut and adjust the length so that the tension spring measures approximately two inches long when fitted. The spring should be sheathed to prevent it from rattling against the drum.



CIRCUIT DIAGRAM



NOTE: RANGE SWITCH VIEWED FROM SPINDLE END
IN ANTICLOCKWISE (M) POSITION



200-0-200 VOLTS AC or DC
F2

666G 6378 6076 25L6GT 25Z6GT J02

15 WATT DUAL LAMP

0.01

110

0.022

0.023

0.021

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