

TECHNICAL INFORMATION  
AND  
SERVICE DATA

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# RADIOLAS

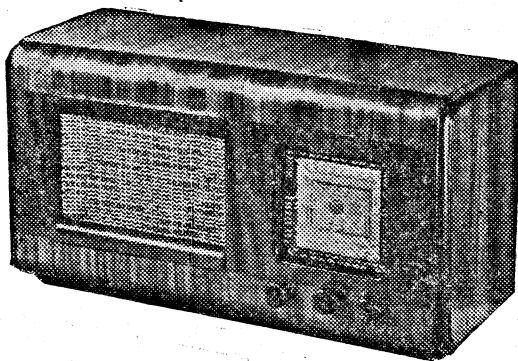
**Models 515-M, 616-T & 716-C**

FIVE VALVE, TWO BAND, BATTERY/VIBRATOR  
OPERATED SUPERHETERODYNES

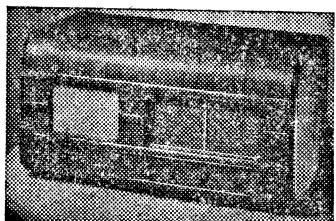
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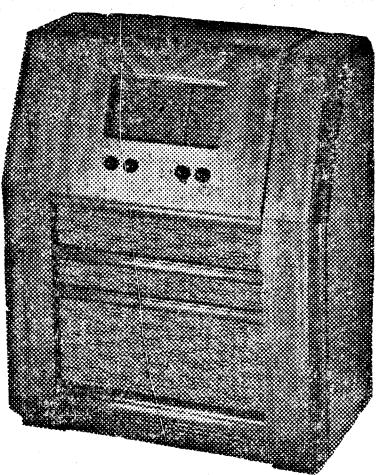
AMALGAMATED WIRELESS (A/SIA.) LTD.



515-M



616-T



716-C

## ELECTRICAL SPECIFICATIONS.

### FREQUENCY RANGES:

- |                                 |                |
|---------------------------------|----------------|
| Medium Wave 1600-540 Kc/s ..... | (187.5-555 M.) |
| Short Wave 18-6 Mc/s .....      | (16-50 M.)     |

INTERMEDIATE FREQUENCY ..... 455 Kc/s

### BATTERY COMPLEMENT:

- |                                     |   |       |
|-------------------------------------|---|-------|
| (1) 1-4 volt accumulafor            | { | 19183 |
| (2) 2-45 volt "B" batteries         |   |       |
| (1) 1-1.5 volt dry cell "A" battery | { | 19182 |
| (2) 2-45 volt "B" batteries         |   |       |

Cable with tips.      Cable with plugs.

### VIBRATOR POWER UNIT OPERATION:

- 1—4 volt accumulator.
- Vibrator Power Unit No. 19190.

### BATTERY CONSUMPTION:

- |                            |          |
|----------------------------|----------|
| 4 volt "A" battery .....   | 0.2 amp. |
| 1.5 volt "A" battery ..... | 0.3 amp. |
| "B" battery .....          | 16 mA    |
| Vibrator operation .....   | 0.8 amp. |

DIAL LAMP ..... 6.3 volt, 0.25 amp.

### FUSE:

- |                          |                                    |
|--------------------------|------------------------------------|
| Battery Operation .....  | $\frac{1}{2}$ - $\frac{3}{4}$ amp. |
| Vibrator Operation ..... | 3 amp.                             |

NOTE: If a 1.5 volt dry cell "A" battery is used, it is necessary, if dial illumination is required, to remove the dial lamp cable from the terminals on top of the chassis and to connect the cable to the outer terminals of a 4.5 volt battery—see diagram "Battery Connections."

# D.C. RESISTANCE OF WINDINGS.

Windings.	D.C. Resistance in ohms.
Aerial Coil (M.W.)—	
Primary (L2)	18
Secondary (L3)	6
Aerial Coil (S.W.)	
Primary (L4)	3
Secondary (L5)	*
Oscillator Coil (M.W.)—	
Primary (L6)	*
Secondary (L7)	2
Oscillator Coil (S.W.)—	
Primary (L8)	*
Secondary (L9)	*
I.F. Transformer Windings	11
I.F. Filter (L1)	45†
L.T. Choke (L16)	*
Smoothing Choke (L75)	200
R.F. Filter Choke— (L73, L74)	*
R.F. Filter Choke— (L71, L72)	9
Loudspeaker Input Trans- former (T1)—	
XA8 Primary	425 or 510
XA8 Secondary	*      *
TX31 Primary	380
TX31 Secondary	*
Vibrator Transformer— (T71)—	
Primary	*
Secondary	300

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.

† On some receivers this reading may be as high as 60 ohms.

### VALVE COMPLEMENT:

- (1) IR5 Converter.
- (2) IT4 I.F. Amplifier.
- (3) IT4 I.F. Amplifier.
- (4) IS5 Detector, A.V.C., and A.F. Amplifier.
- (5) 3V4 Output.

VIBRATOR ..... A.W.A./OAK Type V6804

LOUDSPEAKER (Permanent Magnet):

Model 515M.

Model 616-T.

5 inch—code number AC32 7 inch—code number AY40

Transformer—XA8 Transformer—XA8

V.C. Impedance 3 ohms at 400 C.P.S. V.C. Impedance—3 ohms at 400 C.P.S.

Model 716C.

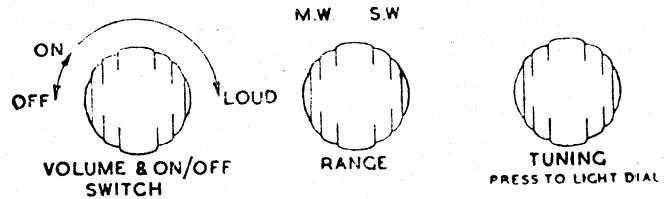
12 inch—code number AU29

Transformer—TX31

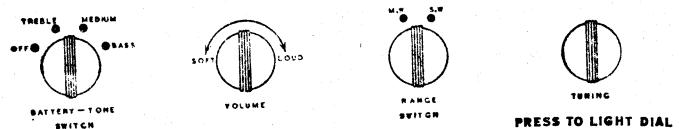
V.C. Impedance  $12\frac{1}{2}$  ohms at 400 C.P.S.

UNDISTORTED POWER OUTPUT ..... 200 milliwatts

### CONTROLS:



MODEL 515-M



MODELS 616-T & 716-C

## MECHANICAL SPECIFICATIONS.

Height. Width. Depth.

Cabinet Dimensions (inches)—

515-M .....	$9\frac{1}{4}$	$17\frac{3}{8}$	$6\frac{3}{4}$
616-T .....	$10\frac{1}{2}$	$19\frac{3}{4}$	$8\frac{7}{8}$
716-C .....	32	30	13

Chassis Base Dimensions (ins.) 2 $\frac{1}{2}$  11 5 $\frac{1}{2}$

Carton Dimensions (inches)—

515-M .....	$9\frac{1}{2}$	$17\frac{3}{4}$	$8\frac{1}{2}$
616-T .....	11	20	$10\frac{1}{4}$
716-C .....	33	$31\frac{3}{4}$	$14\frac{3}{4}$

Weight (nett lbs.)—

515-M .....	14
616-T .....	23
716-C .....	56

Cabinet Finish—

515-M .....	Walnut Veneer
616-T .....	Walnut Veneer
716-C .....	Walnut Veneer

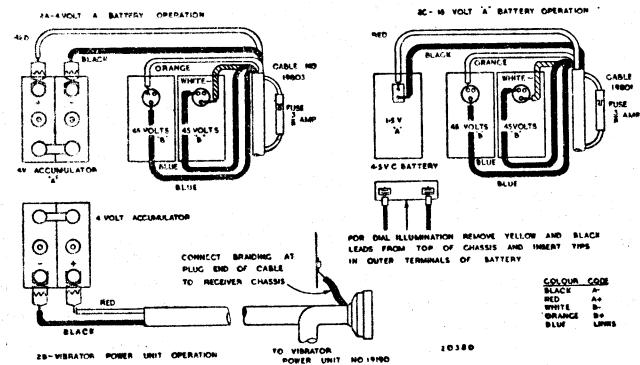
## GENERAL DESCRIPTION.

The models 515-M, 616-T and 716-C are mantel, table and console models respectively. They may be either battery or vibrator operated and for battery operation either a 4-volt accumulator or a 1.5 volt dry cell "A" battery may be used, the necessary circuit modification being effected by the battery cable employed.

Battery connections are shown in the accompanying diagrams.

Design features include: Tropic-proof construction, automatic volume control, magnetite cores in I.F. transformers and broadcast oscillator coil, and air-dielectric trimming capacitors.

Models 616-T and 716-C employ straight-line edge lighted dials with metropolitan stations printed in 1/8" high characters.



## 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 re-adjusted 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 an 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) A.W.A. Output Meter type 2M8832.

## ALIGNMENT TABLE

Order.	Connect "high" side of Generator to	Tune Generator to	Set Receiver Dial to	Adjust for Maximum Peak Output.
1	Aerial section of gang (Rear Portion)	455 kc/s	540 kc/s	L14 (Core)
2	Aerial section of gang (Rear Portion)	455 kc/s	540 kc/s	L13 (Core)
3	Aerial section of gang (Rear Portion)	455 kc/s	540 kc/s	L12 (Core)
4	Aerial section of gang (Rear Portion)	455 kc/s	540 kc/s	L11 (Core)
5	Aerial section of gang (Rear Portion)	455 kc/s	540 kc/s	L10 (Core)
Repeat the above adjustments until the maximum output is obtained.				
6	Aerial Terminal	600 kc/s	600 kc/s	L.F. Osc. Core Adj. (L7)*
7	Aerial Terminal	1500 kc/s	1500 kc/s	H.F. Osc. Adj. (C5)
8	Aerial Terminal	1500 kc/s	1500 kc/s	H.F. Aer. Adj. (C2)
Repeat adjustments 6, 7 and 8.				
9	Aerial Terminal	16 mc/s	16 mc/s	H.F. Osc. Adj. (C7)†
10	Aerial Terminal	16 mc/s	16 mc/s	H.F. Aer. Adj. (C3)‡

\* Rock the tuning control back and forth through the signal.

† Use the minimum capacity peak if two can be obtained. Check to determine that C7 has been adjusted to correct peak by tuning the receiver to approximately 15.09 mc/s, where a weaker signal should be received.

‡ Use maximum capacity peak if two can be obtained.

### Loudspeaker Service.

It is inadvisable to attempt loudspeaker repairs other than replacement of the transformer. The fitting of a new cone should be done only by Service Departments suitably equipped to do the work.

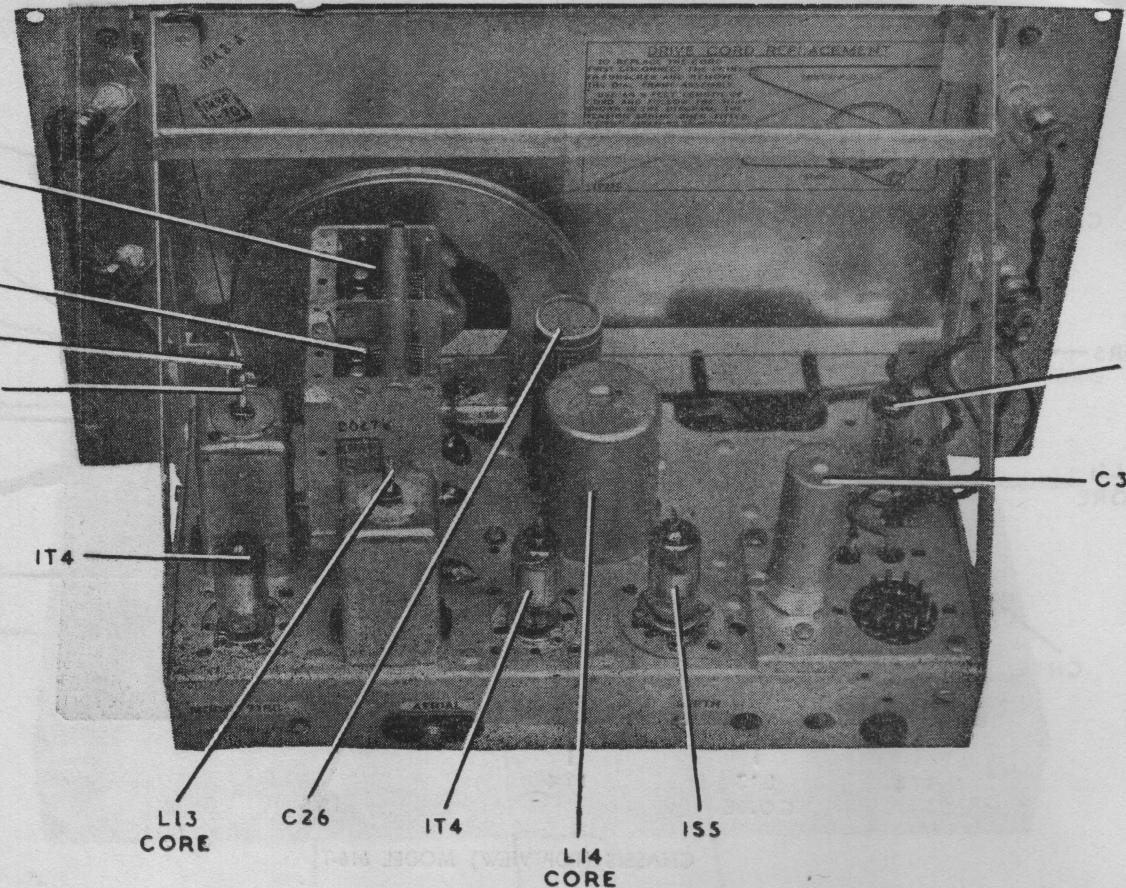
### Chassis Removal.

#### Models 515-M and 616-T.

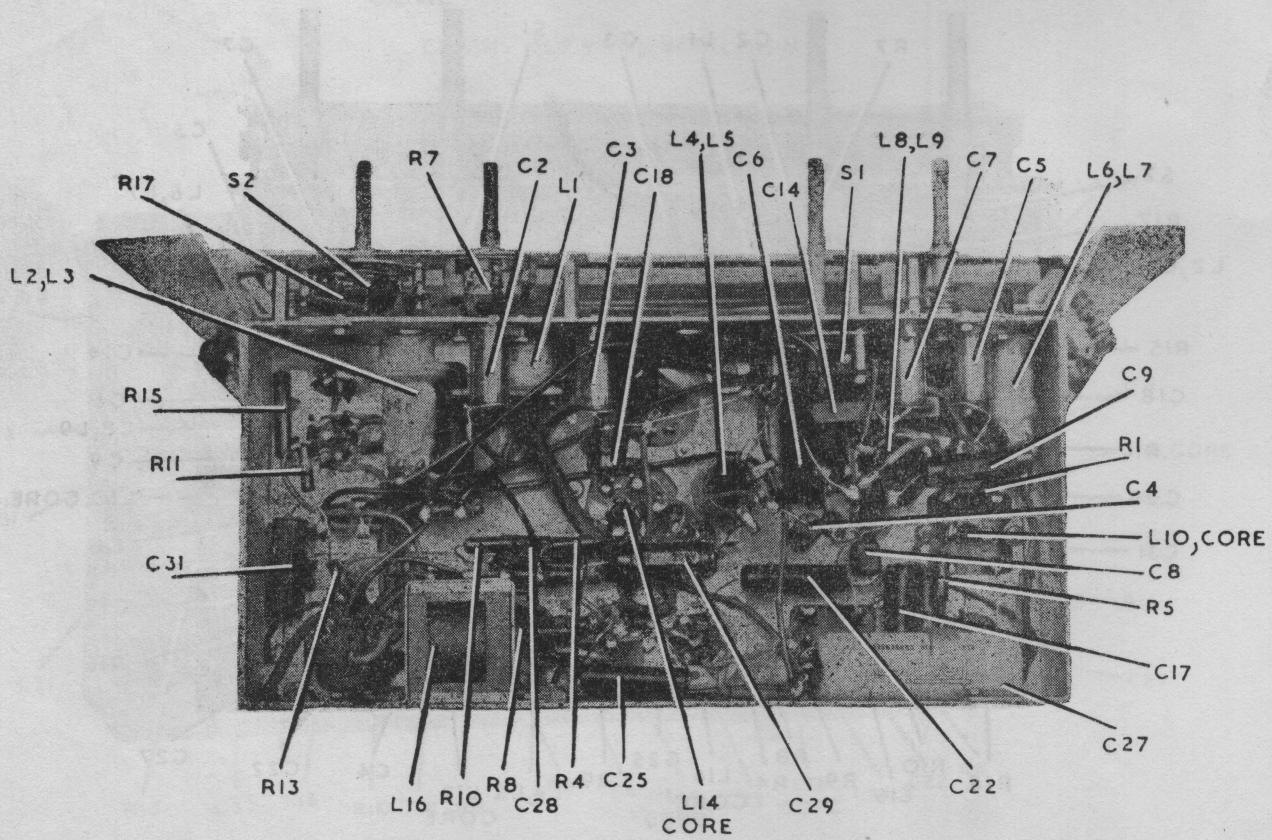
First remove the knobs and felt washers—each knob is held by a set screw. Then, remove the two screws from underneath the cabinet and withdraw the chassis.

### Model 716-C.

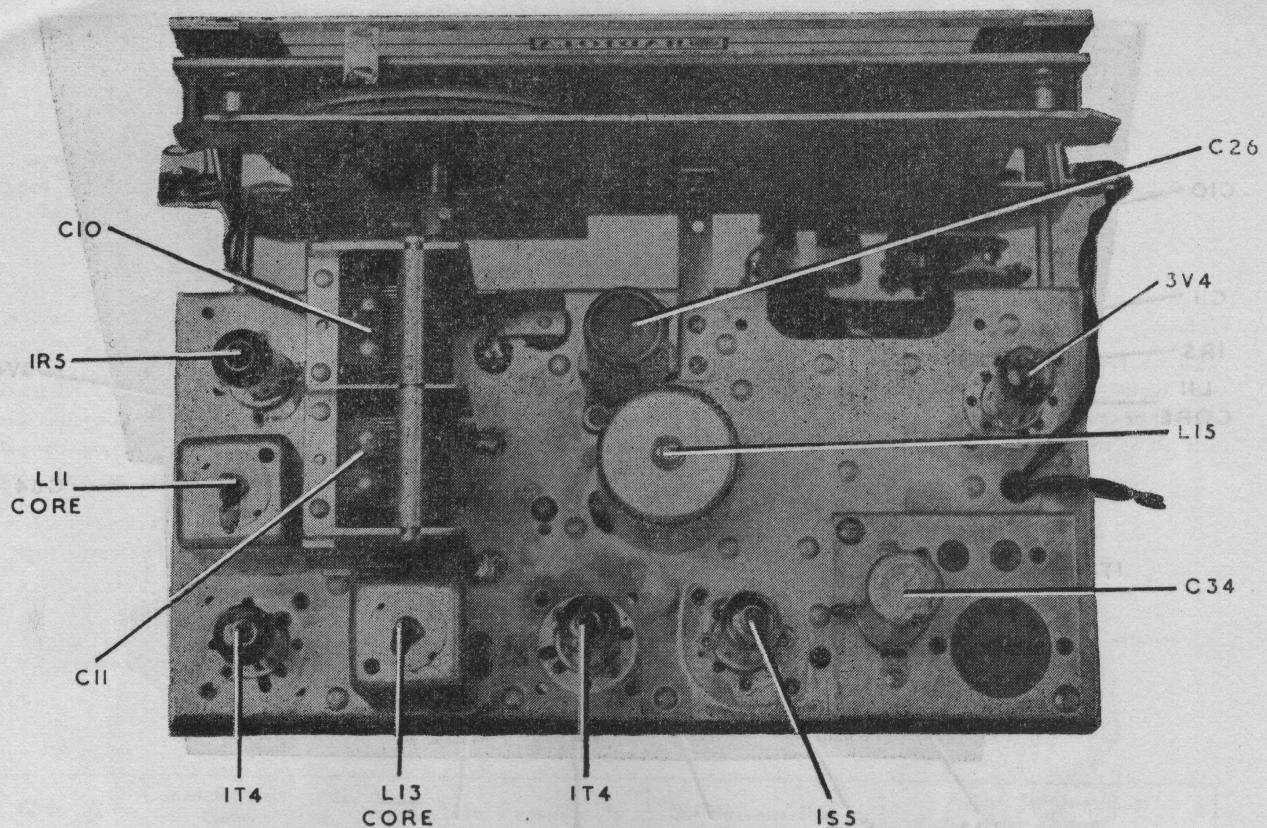
- (1) Remove the knobs and felt washers. The knobs are each held by set screws.
- (2) Disconnect the loudspeaker cable.
- (3) The chassis is held in the cabinet by four winged nuts, two at each end of the dial frame assembly. Removal of these enables the chassis to be withdrawn from the cabinet.



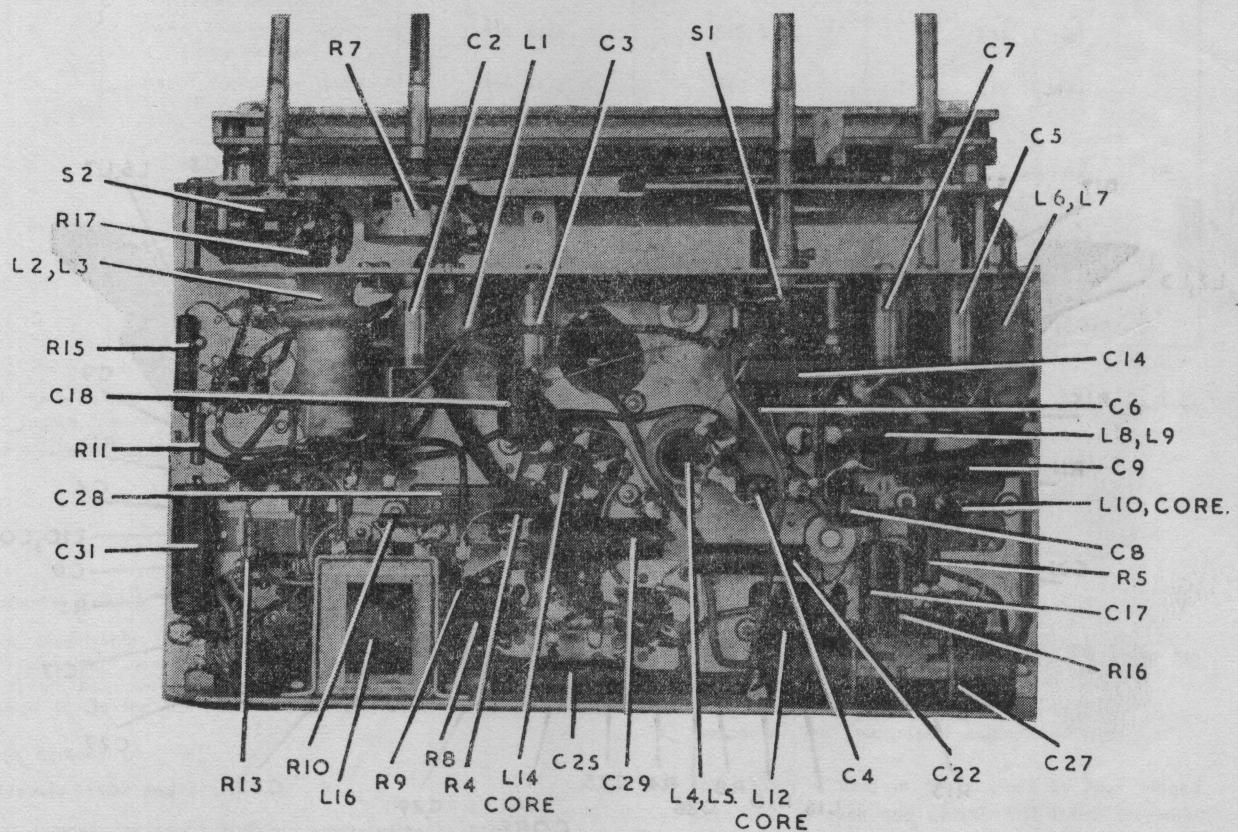
CHASSIS (TOP VIEW) MODEL 716-C



CHASSIS (UNDERNEATH VIEW) MODEL 716-C



CHASSIS (TOP VIEW) MODEL 616-T



CHASSIS (UNDERNEATH VIEW) MODEL 616-T

### Dial Pointer Adjustment.

#### Model 515-M.

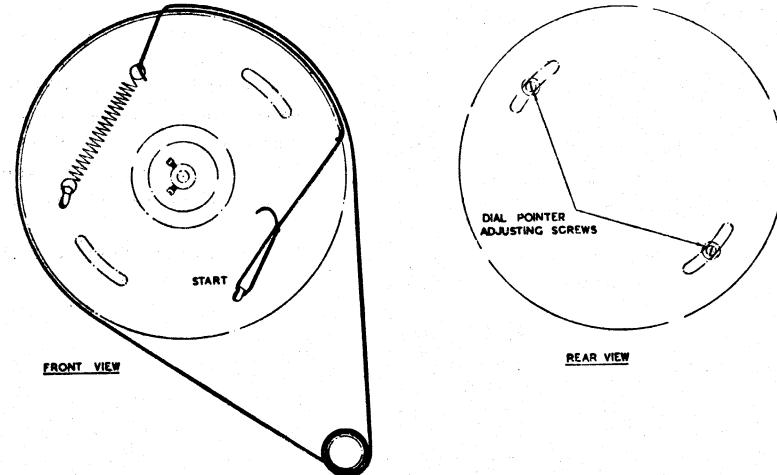
To shift the position of the dial pointer, loosen two screws in the rear of the drive drum—see accompanying diagram—move the drum to the required position, and retighten the screws.

#### Models 616-T and 716-C.

The dial pointer is held in position on the drive cord by two rubber-lined clips. To alter the position of the

pointer, loosen the holding clips slightly and move the pointer in the required direction. It is important to re-clamp the clips after any adjustment of the dial pointer.

To replace the tuning drive cord, follow the diagram which is affixed to the back of the dial frame assembly. This shows the route of the cord and the method of attachment.



### SOCKET VOLTAGES

Valve.	Bias B. V.	Screen to Chassis Volts. B. V.	Anode to Chassis Volts. B. V.	Anode Current mA. B. V.	Filament Volts.
1R5 Converter .....	0 0	55* 55*	55* 55*	1.1 1.1	1.3—1.4
IT4 I.F. Amp. ....	0 0	35* 35*	85 87	1.4 1.4	1.3—1.4
IT4 I.F. Amp. ....	0 0	35* 35*	85 87	1.4 1.4	1.3—1.4
IS5 Detector .....	0 -1.4	25† 35†	20† 20	0.06 0.06	1.3—1.4
3V4 Output .....	-5 -4.5	85 87	80 82	7.5 8	1.3—1.4

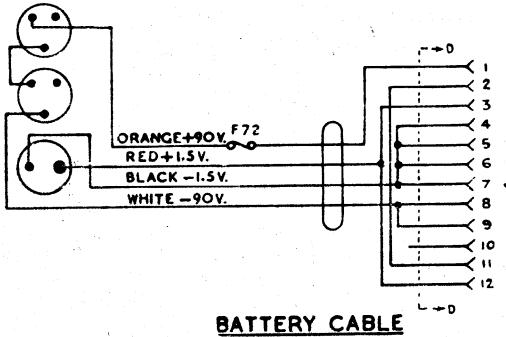
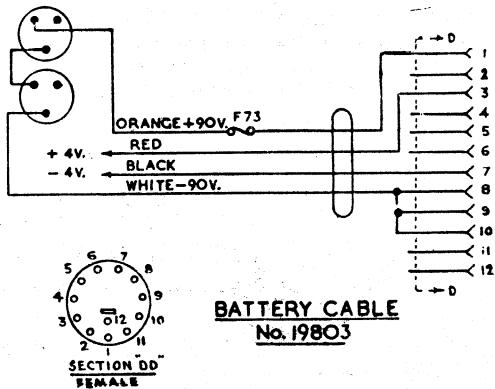
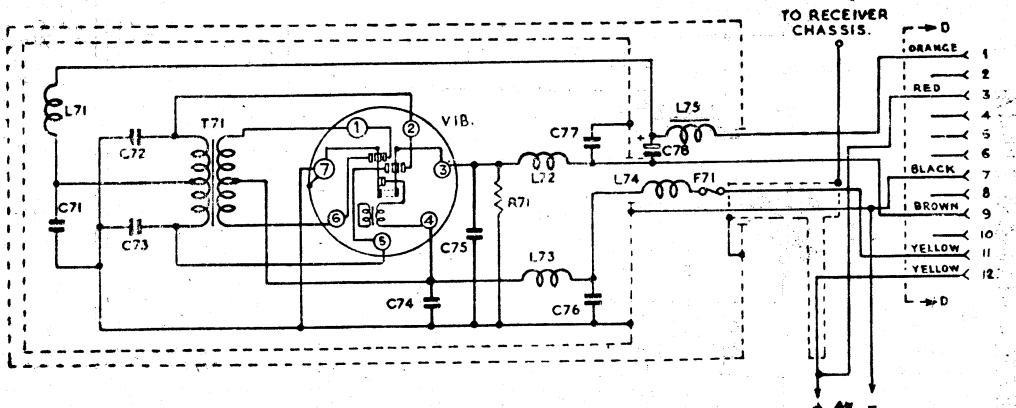
Measured with no signal input. Volume Control maximum clockwise.

\* These readings may vary depending on the resistance of the voltmeter used.

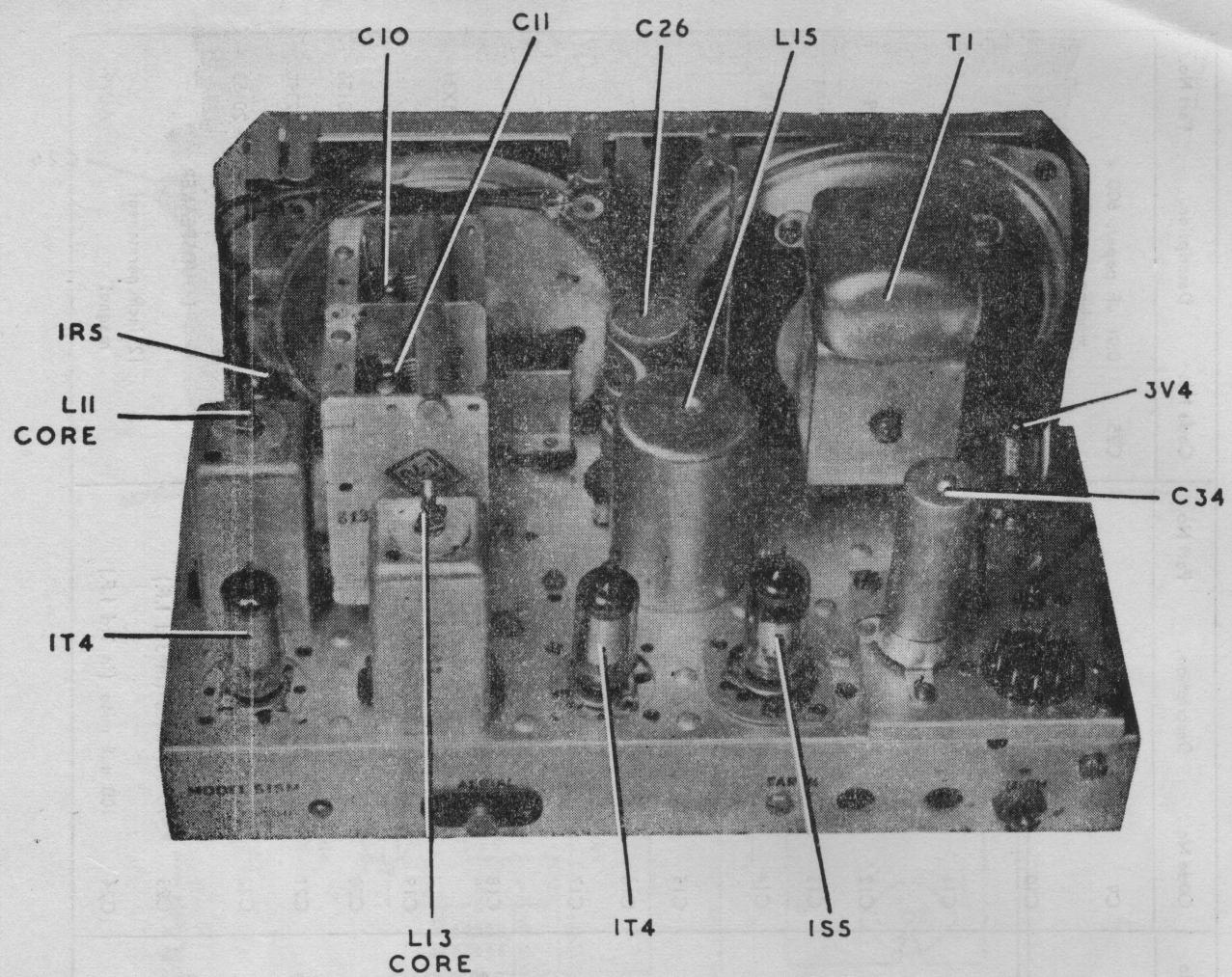
† Cannot be measured with an ordinary voltmeter.

### MECHANICAL REPLACEMENT PARTS

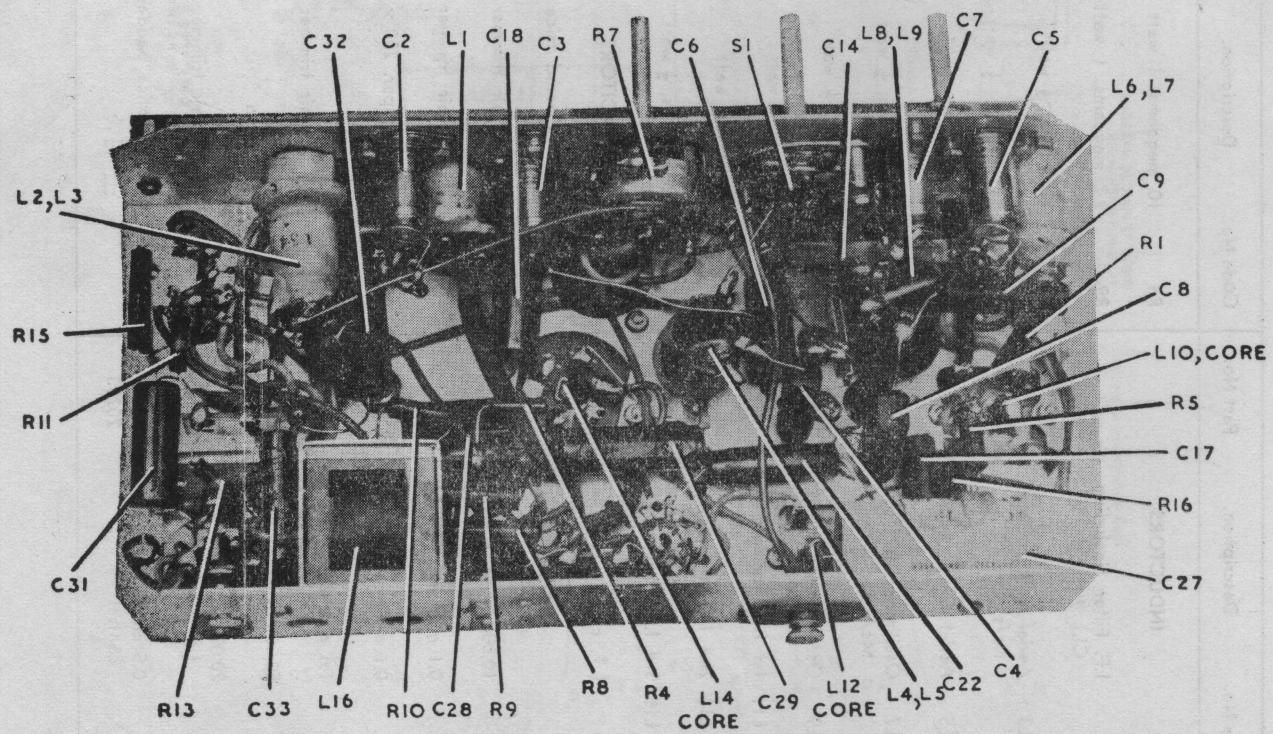
Item...	Part No.	Item...	Part No.
Cabinet, 515-M .....	C76	Drive Drum Assembly—	
Cabinet, 616-T .....	C83	515-M .....	20130
Cabinet, 716-C .....	C81	616-T .....	20130
Cable, battery—	With Tips. With Plugs.	716-C .....	15684
4 volt .....	19183 19803	Knob—	
1.5 volt .....	19182 19801	515-M .....	17603
Cable, loudspeaker (616-T, 716-C only) .....	19188	616-T .....	4589
Cable, volume control .....	15928	716-C .....	4589
Chassis end—		Socket, valve .....	19965
515-M, 616-T, Left-hand .....	20124	Spindle, tuning drive—	
Right-hand .....	22417	515-M .....	20650
716-C, Left-hand .....	20316	616-T .....	22634
Right-hand .....	20318	716-C .....	22388
Dial Scale—		Strip tag—	
515-M .....	20008	515-M, 2 way .....	8863
616-T .....	20524	3 way .....	8821
716-C .....	20334	5 way .....	15926
Dial Pointer Assembly—		616-T and 716-C—	
515-M .....	20132	1 way .....	7628
616-T .....	20522	2 way .....	8863
716-C .....	20331	3 way .....	8021
		5 way .....	15926
		Vibrator Power Unit .....	19190
		Terminal, aerial .....	17717

PLUGS VIEWED  
FROM WIRING SIDE.PLUGS VIEWED  
FROM WIRING SIDEVIBRATOR POWER UNIT No.19190

L71	R.F. choke	13809
L72	R.F. choke	13809
L73	R.F. choke	3149
L74	R.F. choke	3149
L75	R.F. choke	8321
R71	150 ohms, 1 watt, W.W.	
C71	0.01 uF paper, 600 V. working	
C72	0.02 uF paper, 600 V. working	
C73	0.02 uF paper, 600 V. working	
C74	0.1 uF paper, 400 V. working	
C75	0.01 uF paper, 600 V. working	
C76	0.1 uF paper, 400 V. working	
C77	0.01 uF paper, 600 V. working	
C78	20 uF, 200 P.V. elec- trolytic	
T71	Vibrator transformer	17568



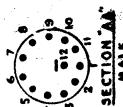
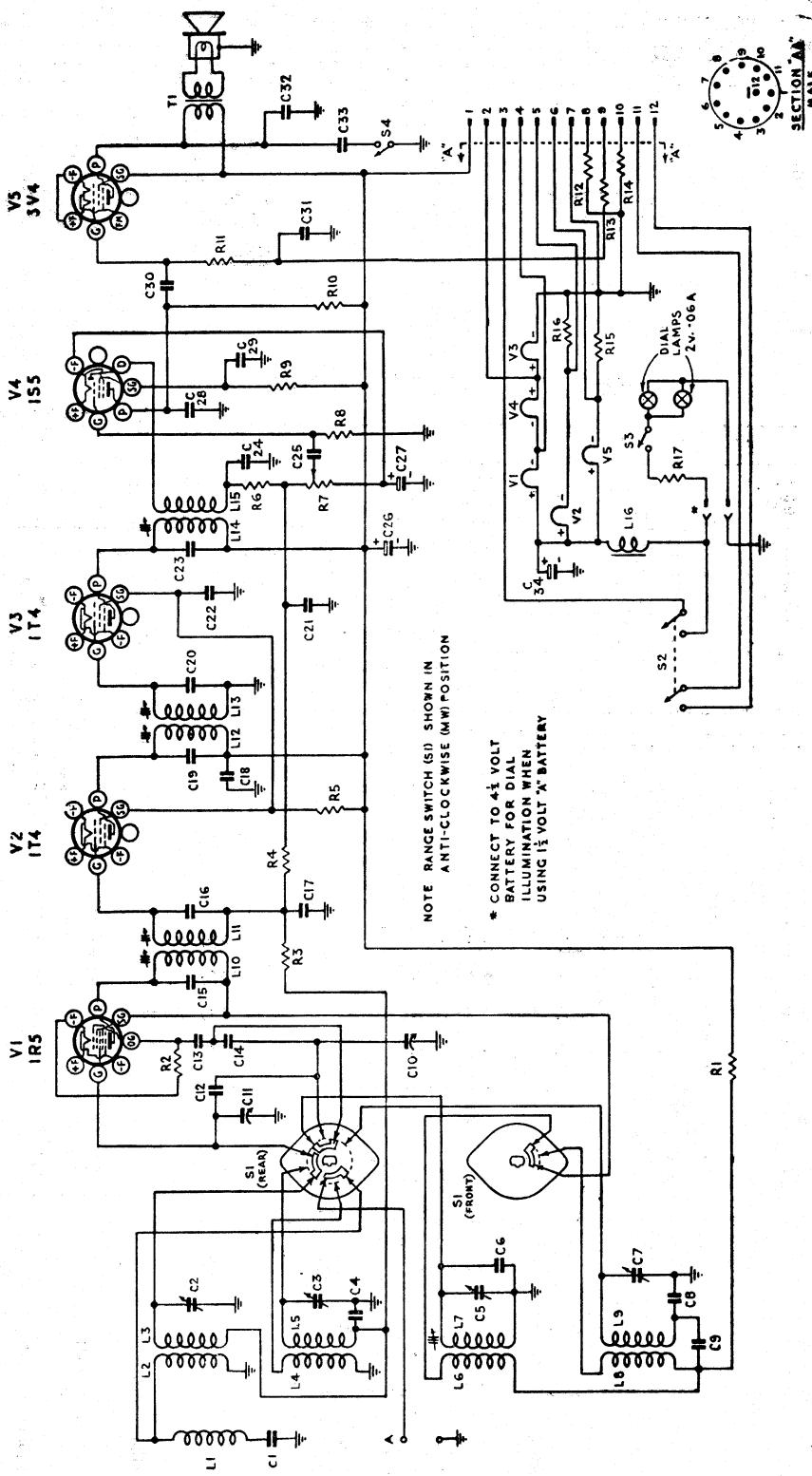
CHASSIS (TOP VIEW) MODEL 515-M



CHASSIS (UNDERNEATH VIEW) MODEL 515-M

**CIRCUIT CODE — Model 716-C**

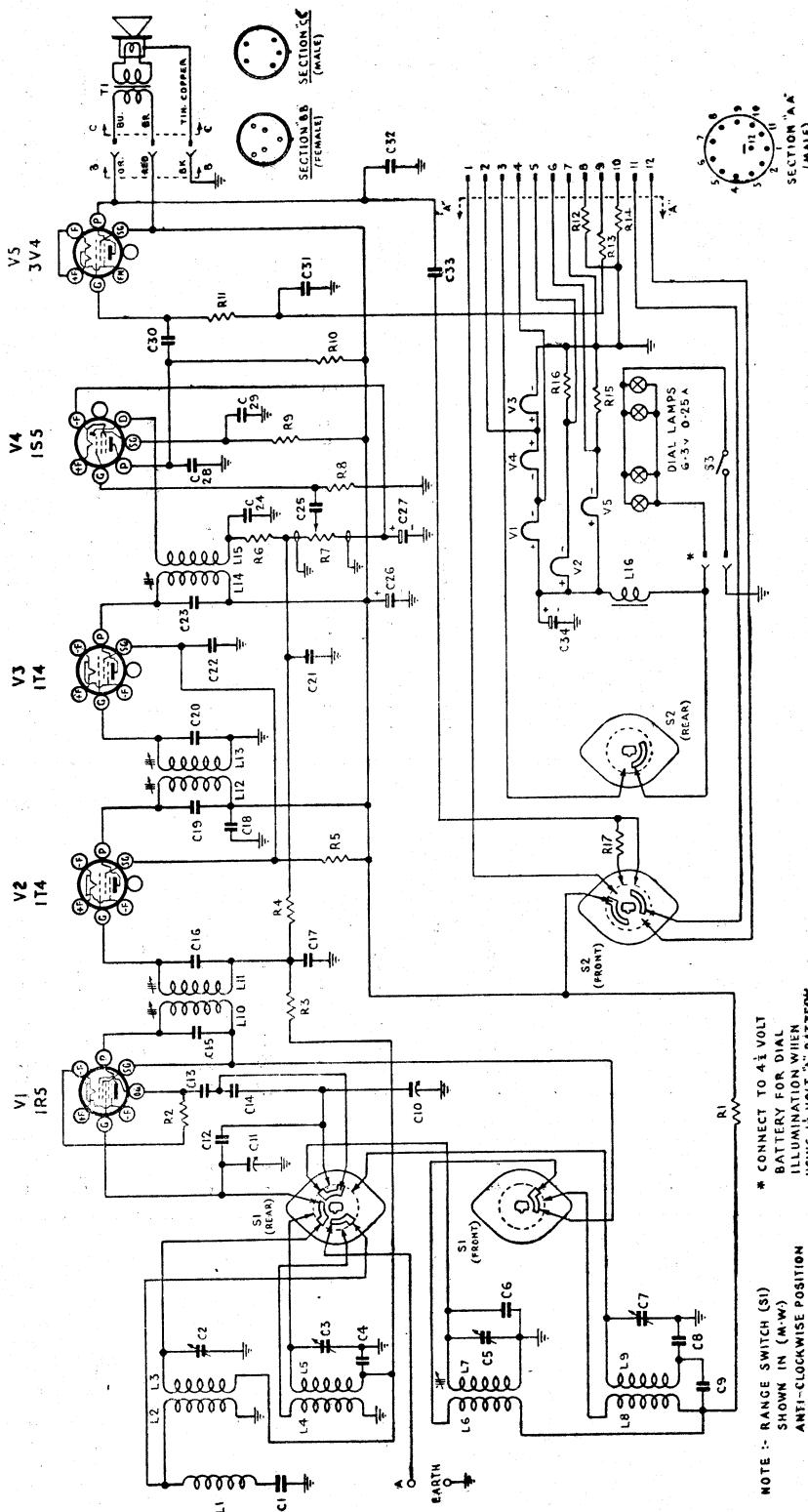
# CIRCUIT DIAGRAM — Model 515-M



**CIRCUIT CODE — Model 515-M**

Code No.	Description	Part No.	Code No.	Description	Part No.	Code No.	Description	Part No.	Code No.	Description	Part No.
<b>INDUCTORS.</b>											
L1	I.F. Filter (including C1)	9382	R7	0.5 megohm Volume Control	20293	C7	3-25 uuf air trimmer	19659	C25	0.01 uF paper, 600 v. working	
L2, L3	Aerial Coil, 1600-540 Kc/s	15454	R8	10 megohms, 1 watt		C8	4,000 uuf mica		C26	20 uF, 200 P.V. Electrolytic	
L4, L5	Aerial Coil, 18-6 Mc/s	15456	R9	3.2 megohms, 1 watt		C9	0.05 uF paper, 200 v. working		C27	400 uF, 12 P.V.	
L6, L7	Oscillator Coil, 1600-540 Kc/s	9206A	R10	1 megohm, $\frac{1}{2}$ watt		C10	12-430 uuf tuning (ganged)	18286	C28	100 uuf mica	
L8, L9	Oscillator Coil, 18-6 Mc/s	15922	R11	0.5 megohm, $\frac{1}{2}$ watt		C11	12-430 uuf tuning (ganged)	18286	C29	0.1 uF paper, 200 v. working	
L10, L11	1st I.F. Transformer	22416	R12	320 ohms, $\frac{1}{2}$ watt		C12	Neutralising		C30	0.01 uF paper, 600 v. working	
L12, L13	2nd I.F. Transformer	22416	R13	0.5 megohm, $\frac{1}{2}$ watt		C13	70 uuf mica		C31	0.1 uF paper, 200 v. working	
L14, L15	3rd I.F. Transformer	15483	R14	320 ohms, $\frac{1}{2}$ watt		C14	470 uuf mica		C32	0.005 uF paper, 600 v. working	
L16	LT Choke (Audio)	X1A8	R15	25 ohms, 1 watt		C15	70 uuf mica		C33	0.025 uF paper, 400 v. working	
			R16	56 ohms, 1 watt		C16	70 uuf mica		C34	400 uF, 12 P.V.	
			R17	Not used.		C17	0.05 uF paper, 200 v. working		T1	Loudspeaker Transformer XA8	
<b>CAPACITORS.</b>											
R1	10,000 ohms, 1 watt	C1	50 uuf silvered mica		C18	0.1 uF paper, 200 v. working					
R2	0.1 megohm, $\frac{1}{2}$ watt	C2	3-25 uuf air trimmer	19659	C19	70 uuf mica		S1	Range Switch	20156	
R3	0.1 megohm, $\frac{1}{2}$ watt	C3	3-25 uuf air trimmer	19659	C20	70 uuf mica		S2	Battery Switch (inc. in R7)		
R4	1.6 megohms, $\frac{1}{2}$ watt	C4	0.05 uF paper, 200 v. working		C21	100 uuf mica (in I.F.)		S3	Dial Lamp Switch	20153	
R5	50,000 ohms, $\frac{1}{2}$ watt	C5	3-25 uuf air trimmer	19659	C22	0.05 uF paper, 200 v. working		S4	Tone Switch	20109	
R6	20,000 ohms, $\frac{1}{2}$ watt (in I.F.)	C6	9 uuf mica		C23	70 uuf mica (in I.F.)			LOUDSPEAKER.		
					C24	100 uuf mica (in I.F.)			5 inch Permanent Magnet AC32		

# CIRCUIT DIAGRAM — Model 716-C



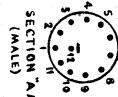
**CIRCUIT CODE — Model 616-T 1**

Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.	Code No.	Description.	Part No.
<b>INDUCTORS.</b>											
L1	I.F. Filter (including C1)	9382	R7	0.5 megohm volume control	20293	C7	3-25 uuF air trimmer	19659	C24	100 uuF mica (in 3rd I.F.)	
L2, L3	Aerial Coil, 1600-540 Kc/s	15454	R8	10 megohms, 1 watt		C8	4000 uuF mica padder ± 2½%		C25	0.01 uF paper, 600 v. working	
L4, L5	Aerial Coil, 18.6 Mc/s	15456	R9	3.2 megohms, 1 watt		C9	0.05 uF paper, 200 v. working		C26	20 uF 200 P.V. Electrolytic	
L6, L7	Oscillator Coil, 1600-540 Mc/s	9206A	R10	1 megohm, ½ watt		C10	12-430 uuF tuning (ganged)	20460	C27	400 uF 12 P.V.	
L8, L9	Oscillator Coil, 18.6 Mc/s	15922	R11	0.5 megohm, ½ watt		C11	12-430 uuF tuning (ganged)	20460	C28	100 uuF mica	
L10, L11	1st I.F. transformer	22416	R12	320 ohms, ½ watt		C12	Neutralising		C29	0.1 uF paper, 200 v. working	
L12, L13	2nd I.F. transformer	22416	R13	0.5 megohm, ½ watt		C13	70 uuF mica		C30	0.01 uF paper, 600 v. working	
L14, L15	3rd I.F. transformer	15483	R14	320 ohms, ½ watt		C14	470 uuF mica padder ± 2½%		C31	0.1 uF paper, 200 v. working	
L16	L.T. choke (audio)	X1A18	R15	25 ohms, 1 watt		C15	70 uuF mica		C32	0.005 uF paper, 600 v. working	
<b>RESISTORS.</b>											
R1	10,000 ohms, 1 watt		C1	50 uuF silvered mica		C18	0.1 uF paper, 200 v. working		T1	Loudspeaker transformer XA8	
R2	0.1 megohm, ½ watt		C2	3-25 uuF air trimmer	19659	C19	70 uuF mica		<b>SWITCHES.</b>		
R3	0.1 megohm, ½ watt		C3	3-25 uuF air trimmer	19659	C20	70 uuF mica		S1	Range Switch	20507
R4	1.6 megohm, ½ watt		C4	0.05 uF paper, 200 v. working		C21	100 uuF mica (in 3rd I.F.)		S2	Battery/Tone Switch	22632
R5	50,000 ohms, ½ watt		C5	3-25 uuF air trimmer	19659	C22	0.05 uF paper, 200 v. working		S3	Dial Lamp Switch	15915
R6	20,000 ohms, ½ watt (in 3rd I.F.)		C6	9 uuF mica		C23	70 uuF mica (in 3rd I.F.)		<b>LOUDSPEAKER.</b>		
											7 inch permanent magnet AY40

# CIRCUIT DIAGRAM — Model 616-T

NOTE :- RANGE SWITCH (S1)  
SHOWN IN (IN W)  
ANTI-CLOCKWISE POSITION

\* CONNECT TO 4½ VOLT  
BATTERY FOR DIAL  
ILLUMINATION WHEN  
USING ½ VOLT "A" BATTERY



SECTION A-A  
(MALE)

SECTION C-C  
(FEMALE)

SECTION B-B  
(FEMALE)

SECTION D-D  
(MALE)

