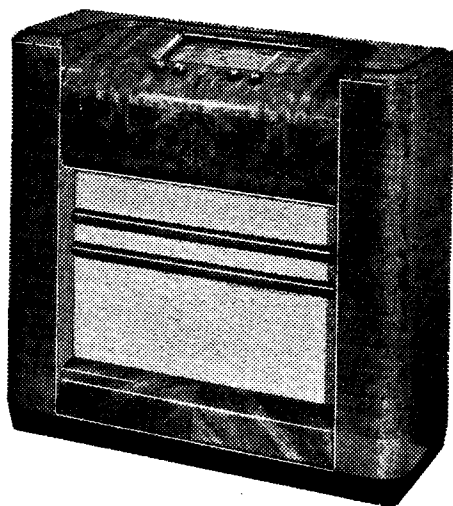


TECHNICAL INFORMATION
AND
SERVICE DATA

AWA **RADIOLA**
MODEL 731-C

**FIVE-VALVE, TWO-BAND
BATTERY/VIBRATOR-OPERATED
SUPERHETERODYNE**

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



ELECTRICAL SPECIFICATIONS.

FREQUENCY RANGES:

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

INTERMEDIATE FREQUENCY: 455 Kc/s.

BATTERY COMPLEMENT:	Cable with	Cable with
	Tips	Plugs
(1) 1 4-volt Accumulator	} 19183	} 19803
2 45-volt "B" Batteries		
(2) 1.5-volt Dry Cell "A"	} 19182	} 19801
Battery:		
2 45-volt "B" Batteries:		

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 "C" battery—see diagram "BATTERY CONNECTIONS."

VIBRATOR POWER UNIT OPERATION:

Unit No. 19190: 1—4-volt accumulator.
Unit No. 22770: 1—6-volt accumulator.

BATTERY CONSUMPTION:

4-volt "A" battery, 0.2 amp.
1.5-volt "A" battery, 0.3 amp.

"B" battery, 16 mA.

4-volt vibrator operation, 0.8 amp.
6-volt vibrator operation, 0.7 amp.

DIAL LAMPS: 6.3 volt, 0.25 amp. M.E.S.

FUSES:

Battery Operation: $\frac{1}{4}$ - $\frac{3}{8}$ amp.
Vibrator Operation: 3 amp.

VALVE COMPLEMENT:

1. 1T4 R.F. Amplifier.
2. 1R5 Converter.
3. 1T4 I.F. Amplifier.
4. 1S5 Detector, A.F. Amplifier, A.V.C.
5. 3V4 Output.

VIBRATOR CARTRIDGE:

4-volt operation: V6804.
6-volt operation: V5211.

LOUDSPEAKER (Permanent Magnet):

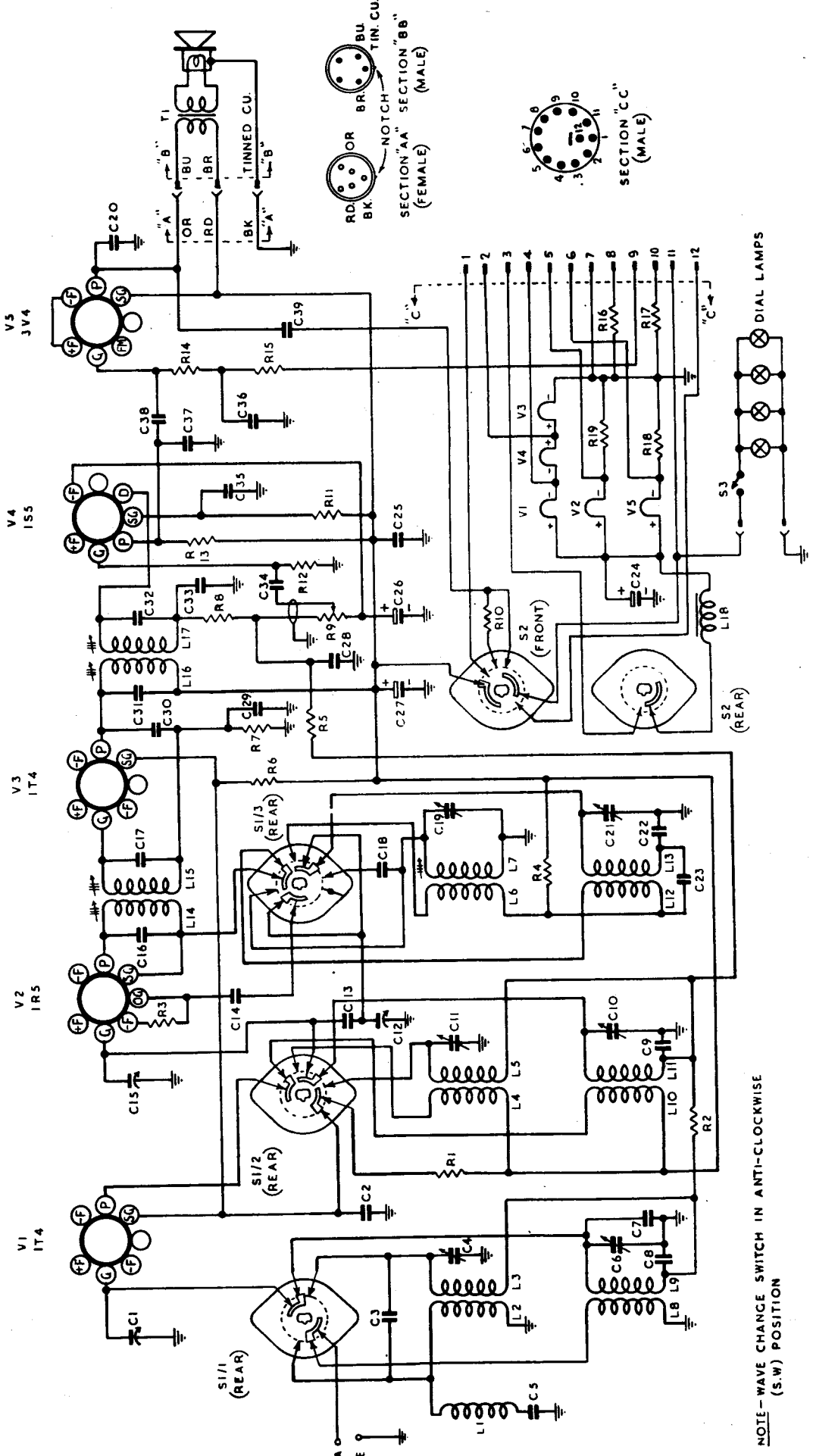
12-inch—code number AU59.
Transformer: TX35.
V.C. Impedance 6.5 ohms at 400 C.P.S.

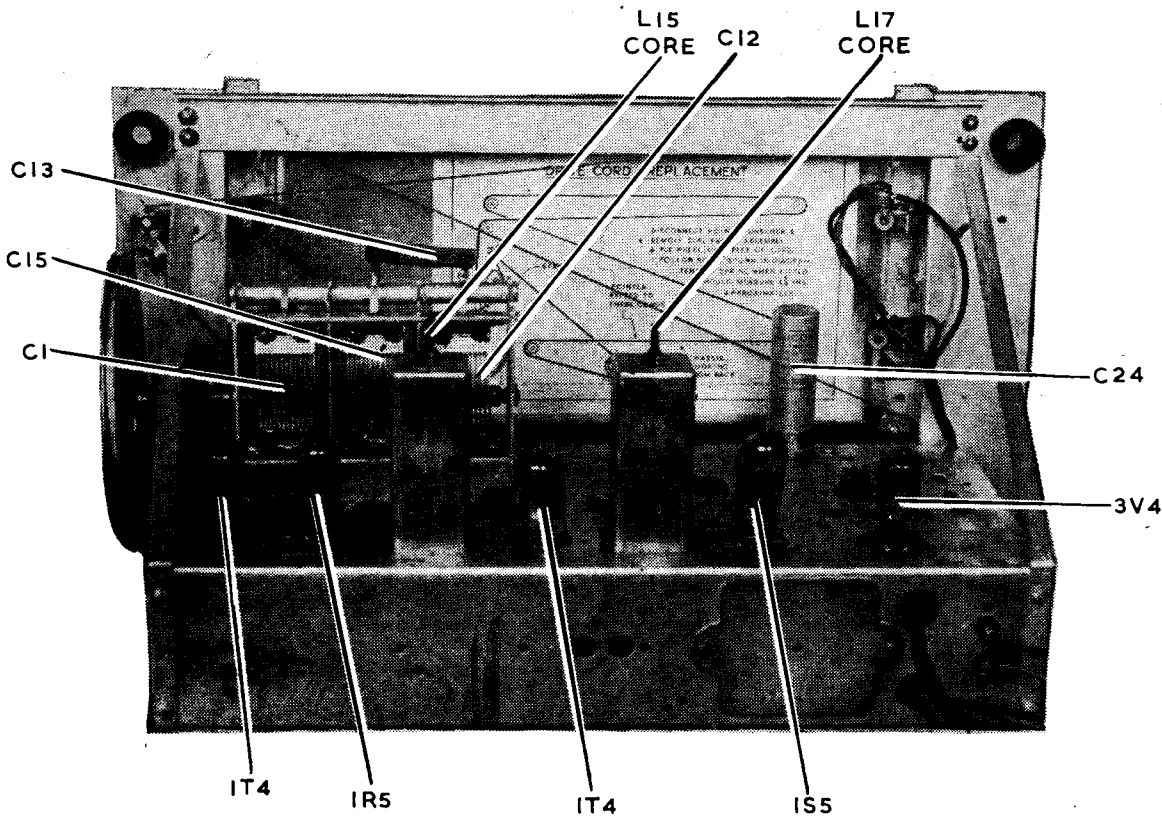
UNDISTORTED POWER OUTPUT: 200 milliwatts.

MECHANICAL SPECIFICATIONS

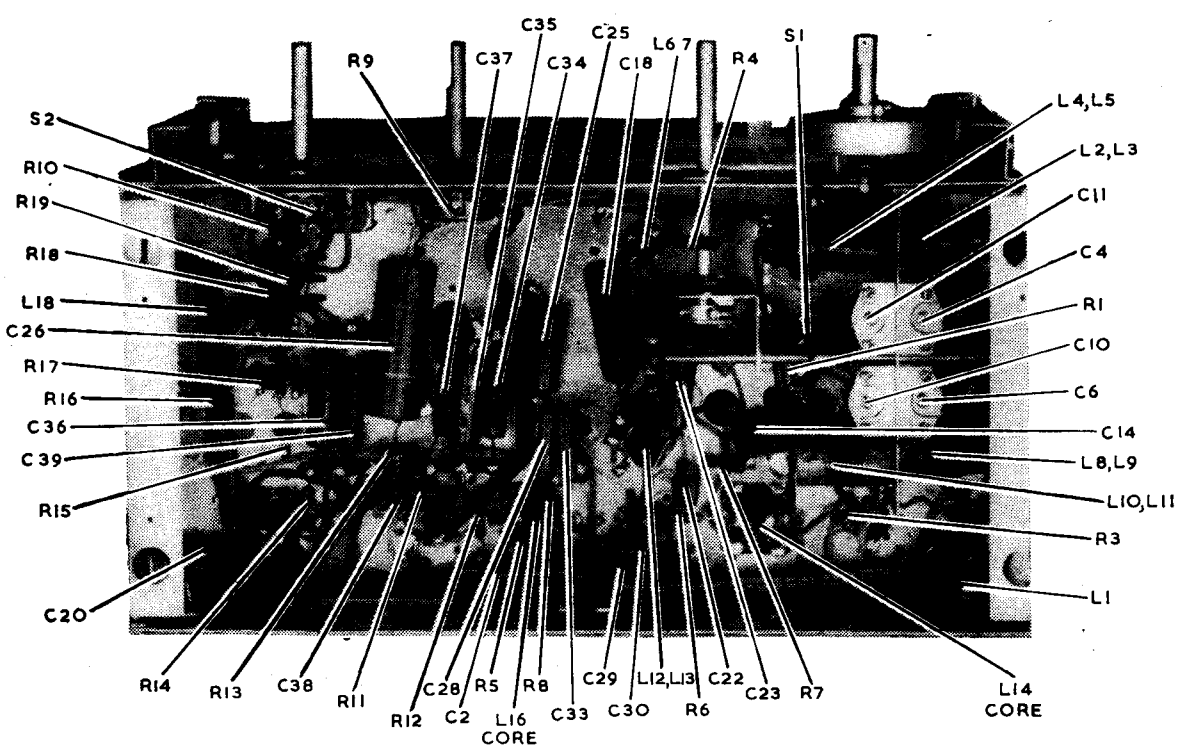
	Height	Width	Depth
Cabinet Dimensions (inches):	32	30	13
Chassis Base Dimensions (inches)	2 $\frac{3}{4}$	14 $\frac{3}{4}$	7
Cabinet Finish	Walnut Veneer		
Weight (nett lbs.):	63 lbs.		







CHASSIS TOP VIEW MODEL 731-C



CHASSIS UNDERNEATH VIEW MODEL 731-C

GENERAL DESCRIPTION.

The Model 731-C is a console model designed for either battery or vibrator operation. Battery and vibrator connections are shown in the accompanying diagram.

Features of design include: Tropic-proof construction, automatic volume control, magnetite cores in I.F. transformers and broadcast oscillator coils, air-dielectric trimming capacitors, straight-line edge-lighted dial scale.

Chassis Removal.

First remove the control knobs by pulling them straight off their spindles.

Then disconnect the cable from the loudspeaker.

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.

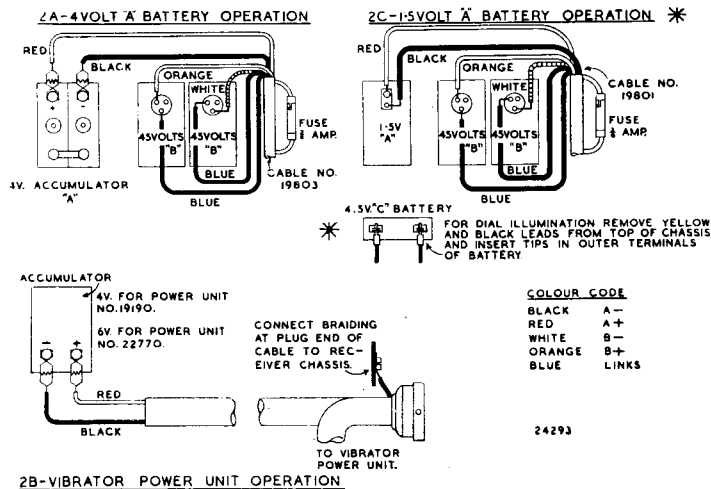
When replacing the chassis make sure that the four tubular spacers are in their correct position.

Dial Pointer Adjustment.

The dial pointer is held in position by two rubber-lined clips. To alter the position of the pointer, loosen the two holding clips slightly and move the pointer in the required direction. It is important to reclamp the clips after any adjustment of the dial pointer.

Drive Cord Replacement.

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. MODEL 731-C

Socket Voltages	Bias Volts		Screen to Chassis Volts		Anode to Chassis Volts		Anode Current mA		Filament Volts	
	B	V	B	V	B	V	B	V		
1T4 R.F. Amp. M/W	0	0	25†	30†	84†	90†	0.7	0.7	1.3	1.4
S/W			35†	40†			1.2	1.2		
1R5 Converter	0	0	50†	60†	50	60	1.0	1.0	1.3	1.4
1T4 I.F. Amp. M/W	0	0	25†	30†	84	90	0.7	0.7	1.3	1.4
S/W			35†	40†			1.2	1.2		
1S5 Det., A.F. Amp. A.V.C.	0	-1.4	20*	20*	25*	25*	0.1	0.1	1.3	1.4
3V4 Output	-4.5	-4.5	84	90	80	85	7.0	8.0	1.3	1.4

†These readings may vary depending on the resistance of the voltmeter used. Measured with no signal input.

*Calculated from measured current. An ordinary voltmeter will register a lower value.

ALIGNMENT PROCEDURE.

Manufacturer's Setting of Adjustments.

The receiver is tested by the manufacturer 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.

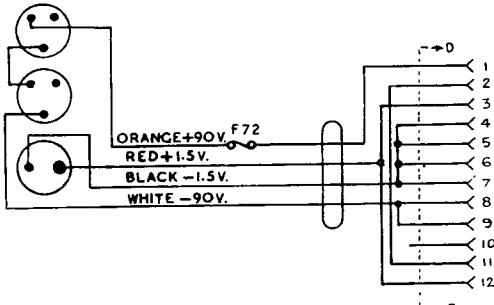
TESTING INSTRUMENTS.

- (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.

MODEL 731-C — CIRCUIT CODE.

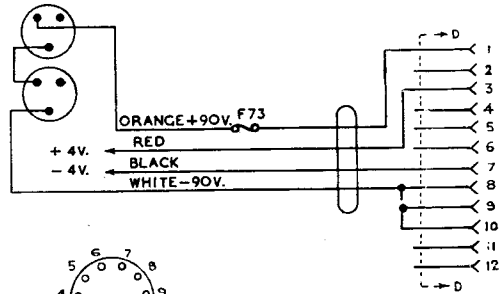
Code No.	Description	Part No.	Code No.	Description	Part No.	Code No.	Description	Part No.
INDUCTORS								
L1	Filter Unit (including C5)	9382	C1	12-430 μ F Tuning	18321	C26	400 μ F 12 P.V. Electro-lytic	
L2, L3	Aerial Coil 540-1600 Kc/s	15454	C2	0.1 μ F paper 200v. work- ing		C27	20 μ F 200 P.V. Electro-lytic	
L4, L5	R.F. Coil 540-1600 Kc/s	23891	C3	4 μ F mica	19659	C28	100 μ F mica	
L6, L7	Oscillator Coil 540-1600 Kc/s	9206A	C4	2-20 μ F Air Trimmer		C29	0.01 μ F paper 600v. work- ing	
L8, L9	Aerial Coil 6-18 Mc/s	15456	C5	50 μ F silvered mica	19659	C30	9 μ F mica	
L10, L11	R.F. Coil 6-18 Mc/s	26060	C6	2-20 μ F Air Trimmer		C31	70 μ F silvered mica	
L12, L13	Oscillator Coil 6-18 Mc/s	15922	C7	9 μ F mica		C32	70 μ F silvered mica	
L14, L15	1st I.F. Transformer	22700	C8	0.05 μ F paper 200v. working		C33	100 μ F mica	
L16, L17	2nd I.F. Transformer	22703	C9	0.05 μ F paper 200v. working		C34	0.01 μ F paper 600v. work- ing	
L18	L.T. Filter Choke	17828A	C10	1-12 μ F Air Trimmer	16347	C35	0.1 μ F paper 200v. work- ing	
RESISTORS								
R1	0.1 megohm, $\frac{1}{2}$ watt		C11	2-20 μ F Air Trimmer	19659	C36	0.1 μ F paper 200v. work- ing	
R2	0.1 megohm, $\frac{1}{2}$ watt		C12	12-430 μ F Tuning	18321	C37	200 μ F mica	
R3	0.1 megohm, $\frac{1}{2}$ watt		C13	Neutralising		C38	0.01 μ F paper 600v. work- ing	
R4	10,000 ohms, $\frac{1}{2}$ watt		C14	70 μ F mica	18321	C39	0.025 μ F paper 400v. working	
R5	2.5 megohms, $\frac{1}{2}$ watt		C15	12-430 μ F Tuning		TRANSFORMERS		
R6	0.1 megohm, $\frac{1}{2}$ watt		C16	70 μ F silvered mica		Loudspeaker Transformer TX35		
R7	2.5 megohms, $\frac{1}{2}$ watt		C17	70 μ F silvered mica		LOUDSPEAKER		
R8	20,000 ohms, $\frac{1}{2}$ watt		C18	490 μ F mica padder \pm 2 $\frac{1}{2}$ %	19659	12 inch permanent magnet AU59		
R9	0.5 megohm Volume Con- trol	26191	C19	2-20 μ F Air Trimmer		SWITCHES		
R10	10,000 ohms, $\frac{1}{2}$ watt		C20	0.0025 μ F paper 600v. working	16347	Range Switch 26072		
R11	3.2 megohms, $\frac{1}{2}$ watt		C21	1-12 μ F Air Trimmer		Battery/Tone Switch 26197		
R12	10 megohms, $\frac{1}{2}$ watt		C22	4000 μ F mica padder \pm 2 $\frac{1}{2}$ %		Dial Lamp Switch 20153		
R13	0.63 megohm, $\frac{1}{2}$ watt		C23	0.05 μ F paper 200v. work- ing		VIBRATOR		
R14	0.5 megohms, $\frac{1}{2}$ watt		C24	400 μ F 12 P.V. Electro-lytic		6 volt Power Unit 22770		
R15	0.5 megohm, $\frac{1}{2}$ watt		C25	0.1 μ F paper 200v. work- ing		4 volt Power Unit 19190		
R16	320 ohms, $\frac{1}{2}$ watt							
R17	320 ohms, $\frac{1}{2}$ watt							
R18	25 ohms \pm 5%, 1 watt							
R19	50 ohms \pm 5%, 1 watt							

PLUGS VIEWED FROM WIRING SIDE.



**BATTERY CABLE
No. 1980I**

PLUGS VIEWED FROM WIRING SIDE.



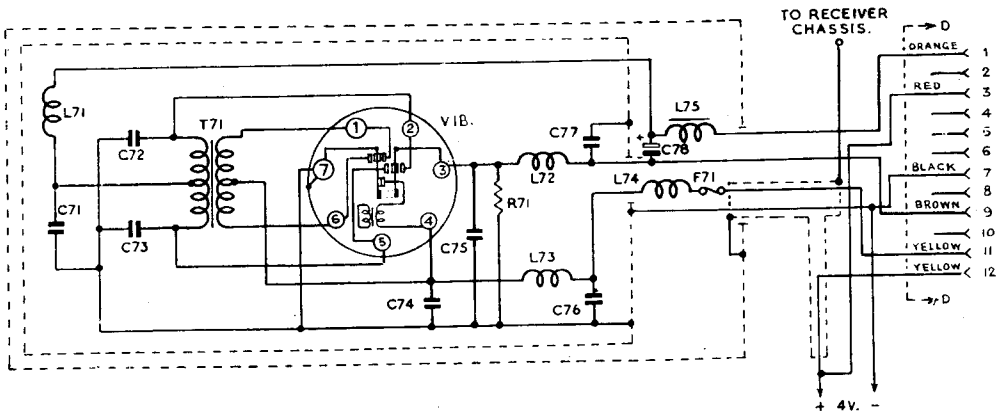
**BATTERY CABLE
No. 19803**



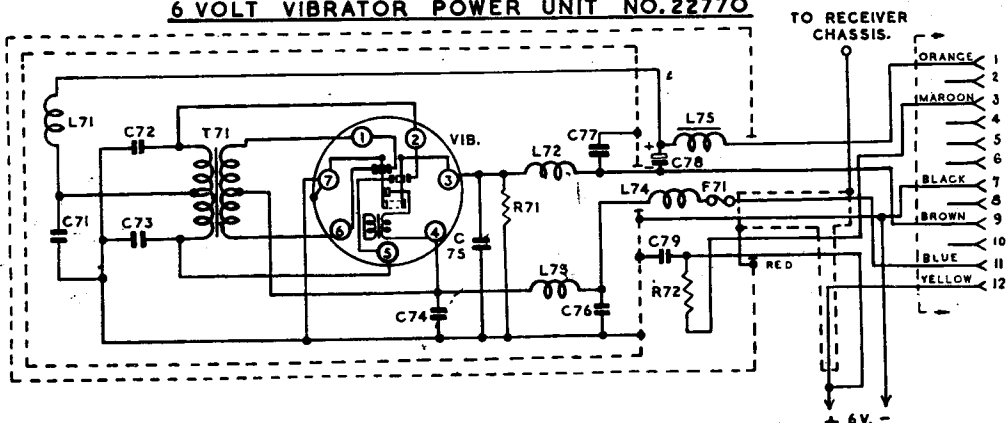
VIBRATOR POWER UNITS 19190, 22770 — CIRCUIT CODE.

Code No.	Description	Part No.	Code No.	Description	Part No.	Code No.	Description	Part No.
INDUCTORS			CAPACITORS			C77	0.01 μ F Paper, 600v. working	
L71	R.F. Choke	13809	C71	0.01 μ F Paper, 600v. working		C78	20 μ F 200, P.V. Electrolytic	
L72	R.F. Choke	13809	C72	0.02 μ F Paper, 600v. working		C79	0.1 μ F Paper, 200v. working (22770) only	
L73	R.F. Choke	3149	C73	0.02 μ F Paper, 600v. working		TRANSFORMERS		
L74	R.F. Choke	3149	C74	0.1 μ F Paper, 400v. working		T71	Vibrator Transformer (19190)	17568
L75	L.F. Choke	8321	C75	0.01 μ F Paper, 600v. working			Vibrator Cartridge (19190)	17892
RESISTORS			C76	0.1 μ F Paper, 400v. working			Vibrator Cartridge (22770)	V6804
R71	150 ohms, 1 watt (wire-wound)							V5211
R72	12 ohms, \pm 5%, 1 watt (22770 only)							

VIBRATOR POWER UNIT No. 19190



6 VOLT VIBRATOR POWER UNIT NO. 22770



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 (L8)	3
Secondary (L9)	*
R.F. Coil (M.W.):	
Primary (L4)	80
Secondary (L5)	4
R.F. Coil (S.W.):	
Primary (L10)	*
Secondary (L11)	*
Oscillator Coil (M.W.):	
Primary (L6)	*
Secondary (L7)	2
Oscillator Coil (S.W.):	
Primary (L12)	*
Secondary (L13)	*
I.F. Transformer Windings	10
I.F. Filter (L1)	17.5†
L.T. Choke (L18)	*
Smoothing Choke (L75)	200
R.F. Filter Choke (L73, L74)	*
R.F. Filter Choke (L71, L72)	9
Loudspeaker Input Transformer (T1):	
Primary	380
Secondary	*
Vibrator Transformer (T71):	
17568 Primary	*
17568 Secondary	300
17892 Primary	*
17892 Secondary	150

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.

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

*Less than 1 ohm.

ALIGNMENT TABLE.

Order	Connect "High" Side of Generator to:	Tune Generator to:	Tune Receiver Dial to:	Adjust for Maximum Peak Output
1	R.F. Section of Gang (centre portion)	455 Kc/s	540 Kc/s	L17 Core
2	R.F. Section of Gang (centre portion)	455 Kc/s	540 Kc/s	L16 Core
3	R.F. Section of Gang (centre portion)	455 Kc/s	540 Kc/s	L15 Core
4	R.F. Section of Gang (centre portion)	455 Kc/s	540 Kc/s	L14 Core
Repeat the above adjustments until the maximum output is obtained.				
5	Aerial Terminal	600 Kc/s	600 Kc/s	Osc. Core Adj. (L7)*
6	Aerial Terminal	1500 Kc/s	1500 Kc/s	Osc. Adj. (C19)
7	Aerial Terminal	1500 Kc/s	1500 Kc/s	R.F. Adj. (C11)
8	Aerial Terminal	1500 Kc/s	1500 Kc/s	Aer. Adj. (C4)
Repeat adjustments 5, 6, 7 and 8.				
9	Aerial Terminal	16 Mc/s	16 Mc/s	Osc. Adj. (C21)†
10	Aerial Terminal	16 Mc/s	16 Mc/s	R.F. Adj. (C10)‡
11	Aerial Terminal	16 Mc/s	16 Mc/s	Aer. Adj. (C6)‡
12	Aerial Terminal	16 Mc/s	16 Mc/s	Neutralising (C13)*
Repeat adjustments 9, 10 and 11.				

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

†Use minimum capacity peak if two can be obtained. Check to determine that C21 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.

MECHANICAL REPLACEMENT PARTS.

Item	Part No.	Item	Part No.
Cabinet	C94	Knob	27085
Cable, Speaker	26077	Knob (With Spot)	27086
Cable, Volume	26076	Socket, Valve	19965
Chassis, End	26144	Strip, Tag:	
Dial, Frame Assembly	26174A	1-way	7628
Dial, Pointer Assembly	20331	2-way	22947
Dial Scale	25953A	7-way	9879
Drum, Drive	26147	Terminal, Spring	5458