The FISK

RADIOLA

MODEL 48

•

Four Valve, Medium Wave, A.C. Operated
Superheterodyne

•

TECHNICAL INFORMATION
AND SERVICE DATA

•

Amalgamated WORLD WIDE WIRELESS Wireless
Australasia Ltd

THE FISK RADIOLA, MODEL 48

Four Valve, Medium Wave, A.C. Operated, Superheterodyne

TECHNICAL INFORMATION

Electrical Specifications

Tuning Range	1500-550 K.C.	R.F. Alignment Frequencies	1400 K.C. 600 K.C.
Intermediate Frequency			460 K.C.
Power Supply Rating	200-260V, 50-60C	Power Consumption	50 watts
Dial Lamp			6.3 volts, .25 amps.
Loudspeaker, 5 inch	Type AA2	Loudspeaker Transformer	T.G.51
Loudspeaker Field Coil Resistance			1600 ohms

VALVE COMPLEMENT.

(1) 6A7	Detector-Oscillator	(3) 42	Output Pentode
(2) 6B7	I.F. Amp., 2nd Det., A.V.C. and A.F. Amplifier	(4) 80	Rectifier

General Description

The Radiola 48 is a four valve Superheterodyne of compact design, for the reception of Medium Wave broadcasting. The tuning range is from 1500-550 kilocycles.

Features of the circuit arrangement include the use of magnetite cores within both the aerial and oscillator coils and I.F. transformers, air-trimmers for R.F. alignment, a straight line frequency tuning condenser gang, automatic volume control and a tone control switch.

The standard power supply rating of the Radiola is 200-260 volts A.C., 50-60 cycles. Special instruments are available for other voltage and frequency ratings. The Radiola is supplied ready for operation on voltages of 230 or above. If the power supply is consistently below 230 volts, remove the chassis from the cabinet and connect the power cable as shown in fig. 1.

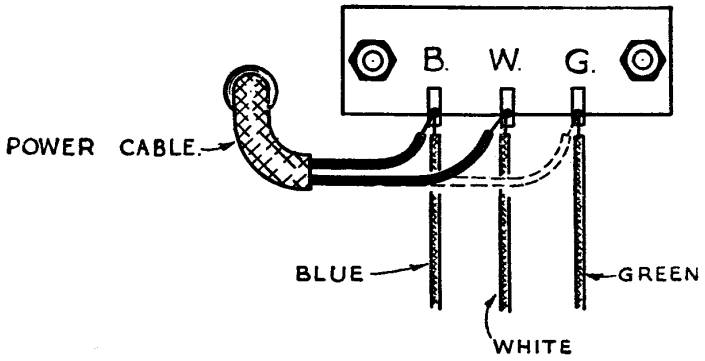


Fig. 1.—Showing power cable connection for line voltages below 230 V. (dotted lead indicates "standard" connection).

Alignment Procedure

Unless it is felt certain that the alignment is incorrect it is not desirable to alter the adjustments from the factory setting. Alignment is necessary, however, if the adjustments have been altered from the original setting or repairs have been effected to any of the tuned circuits.

In aligning the tuned circuits, it is important to apply a definite procedure, as tabulated below, and to use adequate and reliable test equipment. An A.W.A. modulated oscillator, Type C1070 in conjunction with an output meter of conventional design is ideal for the purpose.

The R.F. circuits are aligned at 1400 K.C. by plunger type air trimmers. A special tool Part No. 5371 is available for the alignment of air-trimmers. It is constructed of steel, with the adjustment tool on one end and a deep centred socket wrench for locking the trimmer on the other. Owing to the construction of the air-trimmers and their locations on the Radiola chassis, alignment without the aid of this tool will be difficult. It will be found advantageous in adjusting the air-trimmers to rotate the plunger during the operation, in addition to using a steady pressure. As soon as the correct capacity is obtained, lock the trimmer with the tool to make the setting permanent.

The I.F. transformers and the oscillator circuit, at 600 K.C., are adjusted by magnetite cores inserted within the windings. The adjustment screws are shown in figs. 3 and 4, and these require the use of a non-metallic screwdriver, since the self-capacity of a metal screwdriver will render accuracy most difficult. A special tool Part No. 5372 is also available for this purpose, which in addition to being non-metallic fits conveniently over the adjustment screw simplifying the operation.

See that a 250,000 ohms resistor is connected between the output terminals of the test oscillator.

Connect the ground connection of the test oscillator to the chassis of the Radiola during alignment and when aligning the I.F. stages, remove the grid clip from the 6A7 before connecting the oscillator.

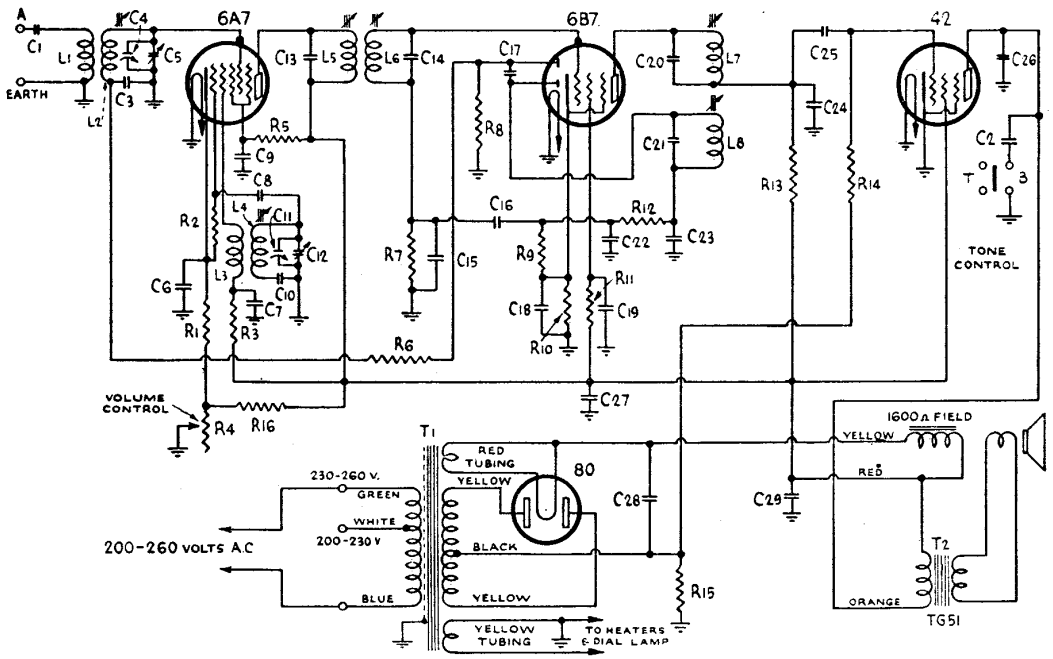
Perform alignment in the proper order, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown in figs. 3 and 4. Keep the volume control set in the maximum clockwise position and regulate the output of the test oscillator, so that a minimum signal is applied to the Radiola to obtain an observable output indication. This will avoid A.V.C. action and overloading.

"Approx. 550 K.C. no signal," mentioned in the chart, means that the Radiola should be tuned to a point at or near 550 K.C. where no signal or interference is received from a station or local (Heterodyne) oscillator.

To check the calibration of the Radiola, connect an aerial and an earth wire and tune a broadcasting station of frequency between 700 and 550 K.C. If an error is apparent, reset the pointer by loosening the centre screw.

Alignment Order	Oscillator Connection to Radiola	Oscillator Setting	Radiola Dial Setting	Circuit to Adjust	Adjustment Symbol	Adjust to Obtain
1	6A7 Grid Cap	460 K.C.	Approx. 550 K.C. No signal	2nd I.F. Trans.	L8	Max. (peak)
2	6A7 Grid Cap	460 K.C.	Approx. 550 K.C. No signal	2nd I.F. Trans.	L7	Max. (peak)
3	6A7 Grid Cap	460 K.C.	Approx. 550 K.C. No signal	1st I.F. Trans.	L6	Max. (peak)
4	6A7 Grid Cap	460 K.C.	Approx. 550 K.C. No signal	1st I.F. Trans.	L5	Max. (peak)
			Repeat the above adjustments before proceeding.			
5	Aerial Term.	600 K.C.	600 K.C.	Oscillator	L4 OSC. 600 K.C.	Max. (peak)
6	Aerial Term.	1400 K.C.	1400 K.C.	Oscillator	C11	Max. (peak)
7	Aerial Term.	1400 K.C.	1400 K.C.	Detector	C4	Max. (peak)
8	Aerial Term.	600 K.C.	600 K.C.‡	Oscillator	L4 OSC. 600 K.C.	Max. (peak)
			Repeat adjustments 6 and 7.			

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



Code	Part No.	COILS
L1, L2	4257	Aerial Coil
L3, L4	4259	Oscillator Coil
L5, L6	4253	1st I.F. Transformer
L7, L8	4255	2nd I.F. Transformer
		TRANSFORMERS
T1	4321A	Power Transformer 50-60C
T1	4323A	Power Transformer 40C
T1	4325A	Power Transformer 110V
T2	TG51	Loudspeaker Transformer

Code	Part No.	RESISTORS
R1		400 ohms, ⅛ watt
R2		60,000 ohms, ⅛ watt
R3		20,000 ohms, ⅛ watt
R4	4124	3000 ohms, Vol. Control
R5		50,000 ohms, ⅛ watt
R6		1.75 megohms, ⅛ watt
R7		1.75 megohms, ⅛ watt
R8		1.75 megohms, ⅛ watt
R9		500,000 ohms, ⅛ watt
R10		2000 ohms, ⅛ watt
R11		500,000 ohms, 1 watt
R12		300,000 ohms, ⅛ watt
R13		70,000 ohms, 1 watt
R14		300,000 ohms, ⅛ watt
R15		400 ohms, 3 watt, W.W.
R16		25,000 ohms, 3 watt

Code	Part No.	CONDENSERS
C1		500 mmfd. Mica
C2		.02 mfd. Paper
C3		.05 mfd. Paper
C4	3658	2-10 mmfd. Air Trimmer
C5	4252	Variable Condenser
C6		.1 mfd. Paper
C7		.05 mfd. Paper
C8		110 mmfd. Mica (L)
C9		.1 mfd. Paper
C10		440 mmfd. Mica (Padder)
C11	4849	17-25 mmfd. Air Trimmer
C12	4252	Variable Condenser
C13		115 mmfd. Mica (A)
C14		115 mmfd. Mica (A)
C15		200 mmfd. Mica (J)
C16		.05 mfd. Paper
C17		200 mmfd. Mica (J)
C18		25 mfd. 25 volt Elect.
C19		.1 mfd. Paper
C20		85 mmfd. Mica (E)
C21		85 mmfd. Mica (E)
C22		200 mmfd. Mica (J)
C23		200 mmfd. Mica (J)
C24		700 mmfd. Mica
C25		.05 mfd. Paper
C26		.005 mfd. Paper
C27		.5 mfd. Paper
C28		8 mfd. 500V. Electrolytic
C29		8 mfd. 500V. Electrolytic

Fig. 2.—Circuit Diagram and Code.

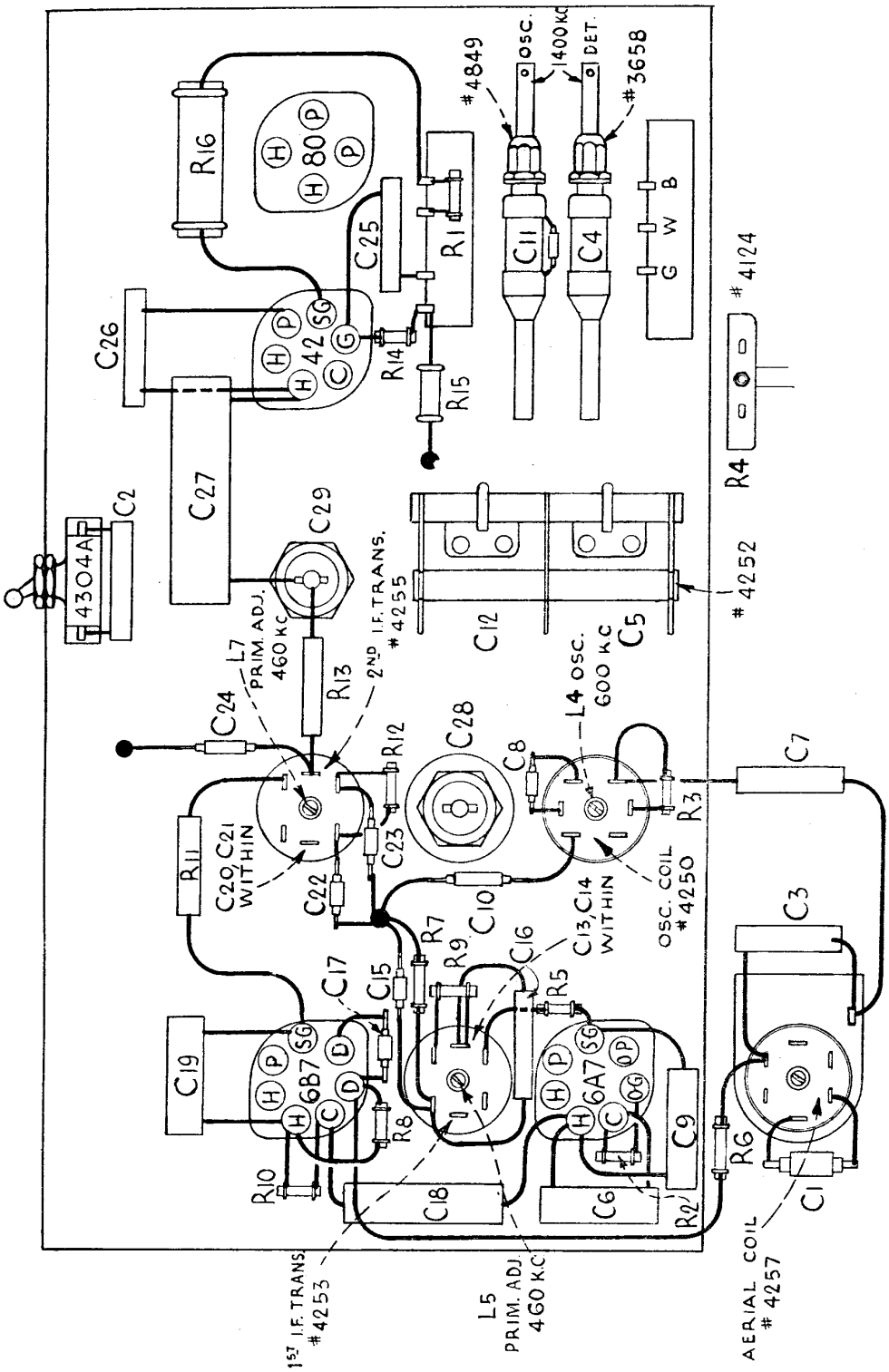


Fig. 3.—Lay-out Diagram (underneath view).

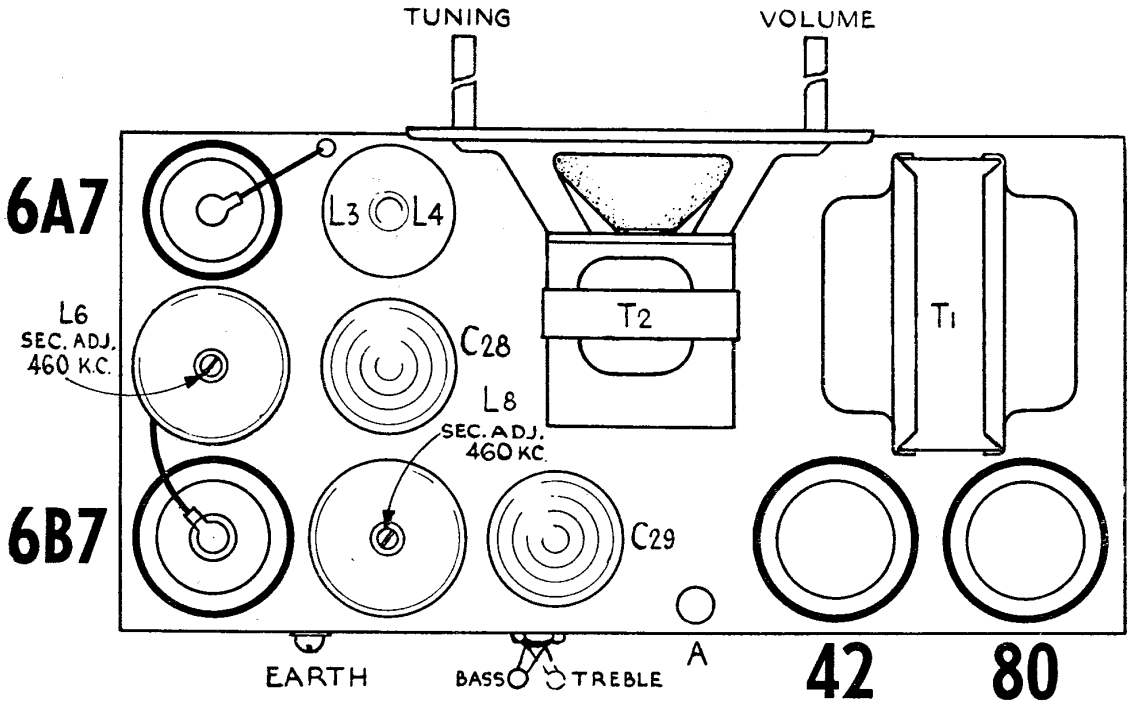


Fig. 4.—Lay-out Diagram (top view).

TUNING COILS.

Each coil is secured in its shield by a circular spring which can be seen seated in a recess, between the shield and the coil base. To remove a coil, insert a small screwdriver blade between the spring and the shield, then ease the spring from the recess. A coloured dot will be noticed on the base of the coil. This indicates the grid connection to avoid confusion when wiring the coil in the circuit.

VARIABLE CONDENSER AND DIAL ASSEMBLY.

The variable condenser and dial assembly are built in the one unit which is mounted by a novel and convenient method. To detach the unit, simply remove the three horseshoe clips from above the chassis. Before the unit can be completely removed, the volume control will need to be swung aside and the chassis strut removed.

AIR TRIMMERS.

Air-trimmers were adopted on the 27/11/37. Prior to this date, compression type trimmer condensers, located on the variable condenser, were employed.

RESISTANCE MEASUREMENTS.

The resistance values shown in fig. 5 have been carefully prepared so as to facilitate a rapid check of the circuit for irregularities. To obtain the full benefit from this diagram it is advisable to consult the circuit and layout diagrams when conducting the check. Each value should hold within ±20%. Variations greater than this limit will usually be a pointer to trouble in the circuit.

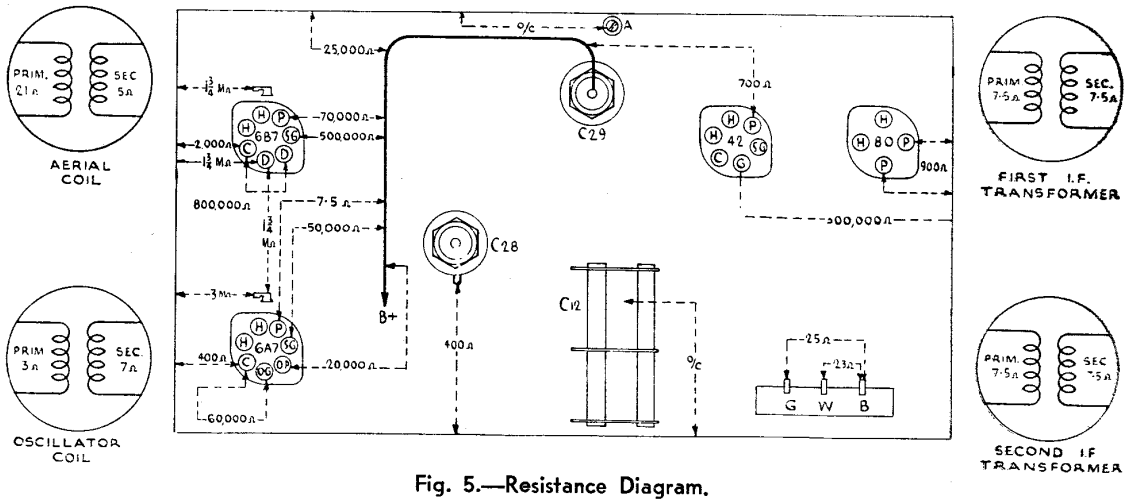


Fig. 5.—Resistance Diagram.

Resistance values were taken with valves removed, variable condenser in full mesh and volume control in maximum clockwise position.

SOCKET VOLTAGES.

VALVE.	Bias Voltages.	Screen Grid to Chassis. Volts	Plate to Chassis. Volts	Plate Current M.A.	Heater Volts.
6A7 Detector	3.0*	90	240	2.0	6.3
Oscillator	—	—	160	3.5	—
6B7 Reflex Amplifier	3.0*	80†	125†	1.5	6.3
42 Pentode	−18.0‡	230	210	25.0	6.3
80 Rectifier	600/300 volts, 50 M.A. total current.				5.0

Voltage across loudspeaker field, 80 volts.

†Cannot be measured with ordinary voltmeter.

‡Control Grid to chassis. Cannot be measured with ordinary voltmeter.

*Cathode to chassis.

Measured at 240 volts A.C. supply. No signal input. Volume control in maximum clockwise position.


AWA