The FISK

RADIOLA

MODEL 171

•

Five Valve, Medium Wave, Automatic and Manually Tuned,

A.C. Operated Superheterodyne

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TECHNICAL INFORMATION

AND SERVICE DATA

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Amalgamated WORLD WIDE WIRELESS Wireless

(Australasia) Ltd

THE FISK RADIOLA, MODEL 171

Five Valve, Medium Wave, Automatic and Manually Tuned A.C. Operated, Superheterodyne

TECHNICAL INFORMATION

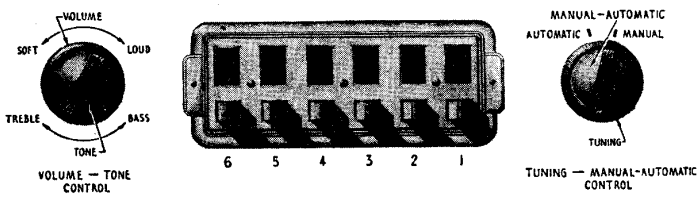
Electrical Specifications

Tuning Range ..... 1500-550 K.C. R.F. Alignment Frequencies ... 600 K.C., 1400 K.C. 1500 K.C.

Intermediate Frequency ..... 460 K.C.

Power Supply Rating ..... 200-260V., 50-60C. Power Consumption ..... 60 Watts

CONTROLS.



Loudspeaker ..... 8 inch ..... Type AJ4

Loudspeaker Transformer T.T.2

Loudspeaker Field Resistance ..... 1580 ohms

Dial Lamps ..... 6.3 volts, .25 amps.

VALVE COMPLEMENT.

(1) 6K8G ..... Frequency Converter (3) 6G8G .. I.F. Amp., Det., A.V.C. & A.F. Amp.

(2) 6U7G ..... I.F. Amplifier (4) 6F6G ..... Output Pentode

(5) 5Y3G ..... Rectifier

6U5 ..... Visual Tuning Indicator

General Description

This receiver incorporates automatic tuning. Any six stations in the broadcasting band may be tuned instantaneously by pressing buttons situated between the control knobs on the cabinet front. All stations may also be tuned manually.

Instructions for the selection of the stations for Automatic Tuning are given on a later page.

Alignment Procedure

Alignment should only be necessary 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 tabulated below and to use adequate and reliable test equipment. Instruments ideally suited to the requirements are the A.W.A. Junior Signal Generator, Type 2R3911 or the A.W.A. Modulated Oscillator, Type C1070. An output meter is necessary in conjunction with both these instruments

Alignment of the R.F. stages at the high frequency end of the band is by air trimmers of the plunger type. The construction of an air trimmer necessitates the use of a special adjusting tool. Such a tool, Part No. 5371, may be obtained from the Service Department of the company. It will be found advantageous to rotate the air trimmer plunger when adjusting. By doing this accuracy is more easily obtained.

The I.F. Transformers and the aerial and oscillator coils (600 K.C.) are adjusted by magnetite cores within the windings. A non-metallic screw-

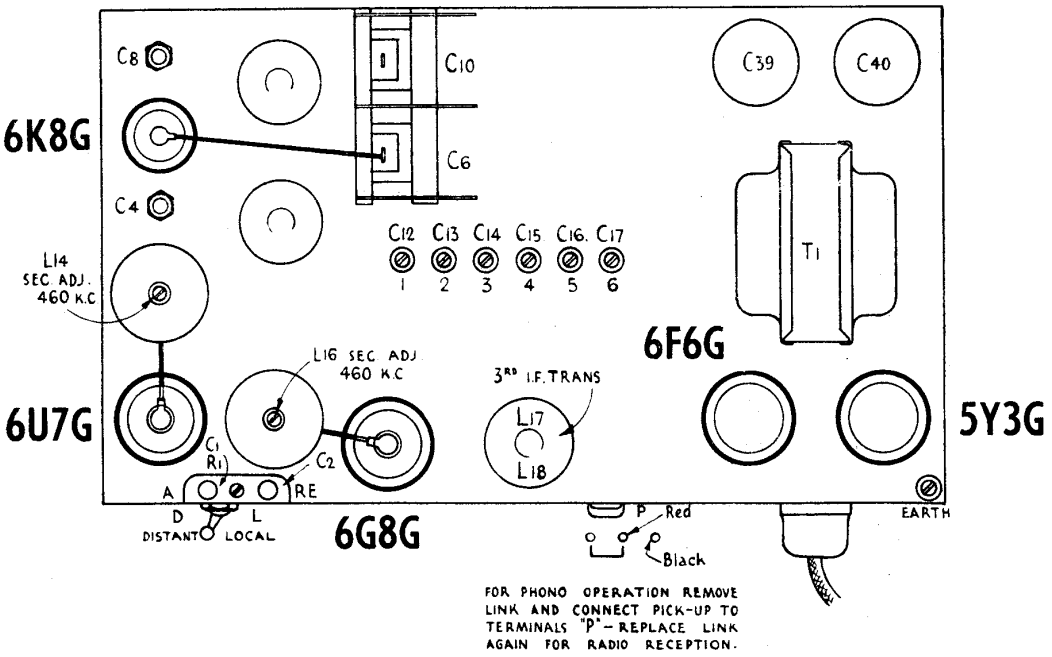


Fig. 1.—Lay-out Diagram (top view).

driver should be used for adjusting. A tool specially designed for the purpose is also obtainable from the company. The part number of this tool is No. 5372.

If the A.W.A. Type C1070 test oscillator is used, see that a 250,000 ohms resistor is connected between the output terminals.

Connect the ground connection of the test instrument to the receiver chassis.

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. 1 and 3. Keep the Volume Control set in the maximum clockwise position and the Sensitivity Switch at Distant (D), and regulate the output of the test instrument so that a minimum signal is introduced to the receiver to obtain an observable output indication. This will avoid A.V.C. action and overloading.

Alignment Order	Test Inst. Connection to Receiver	Test Inst. Setting	Receiver Dial Setting	Circuit to Adjust	Adjustment Symbol	Adjust to Obtain
1	*6K8G Grid Cap	460 K.C.	550 K.C.	3rd I.F. Trans.	L17	Max. (peak)
2	*6K8G Grid Cap	460 K.C.	550 K.C.	2nd I.F. Trans.	L16	Max. (peak)
3	*6K8G Grid Cap	460 K.C.	550 K.C.	2nd I.F. Trans.	L15	Max. (peak)
4	*6K8G Grid Cap	460 K.C.	550 K.C.	1st I.F. Trans.	L14	Max. (peak)
5	*6K8G Grid Cap	460 K.C.	550 K.C.	1st I.F. Trans.	L13	Max. (peak)
	Repeat the above adjustments before proceeding.					
6	Aerial Term.	535 K.C.	†	Oscillator	L4, L.F. Osc.	Max. (peak)
7	Aerial Term.	600 K.C.	**	—	—	Max. (peak)
8	Aerial Term.	600 K.C.	600 K.C.	Aerial	L2, L.F. Aer.	Max. (peak)
9	Aerial Term.	1500 K.C.	1500 K.C.	Oscillator	C8	Max. (peak)
10	Aerial Term.	1400 K.C.	1400 K.C.	Aerial	C4	Max. (peak)
	Repeat adjustments 6, 7, 8, 9 and 10.					

* With grid clip connected, a .001 condenser should be connected in series with the "hot" lead of the test instrument.

† Tuning condenser plates in full mesh.

** Tune receiver to resonance. Set receiver pointer to 600 K.C. by loosening mounting screw, if necessary.

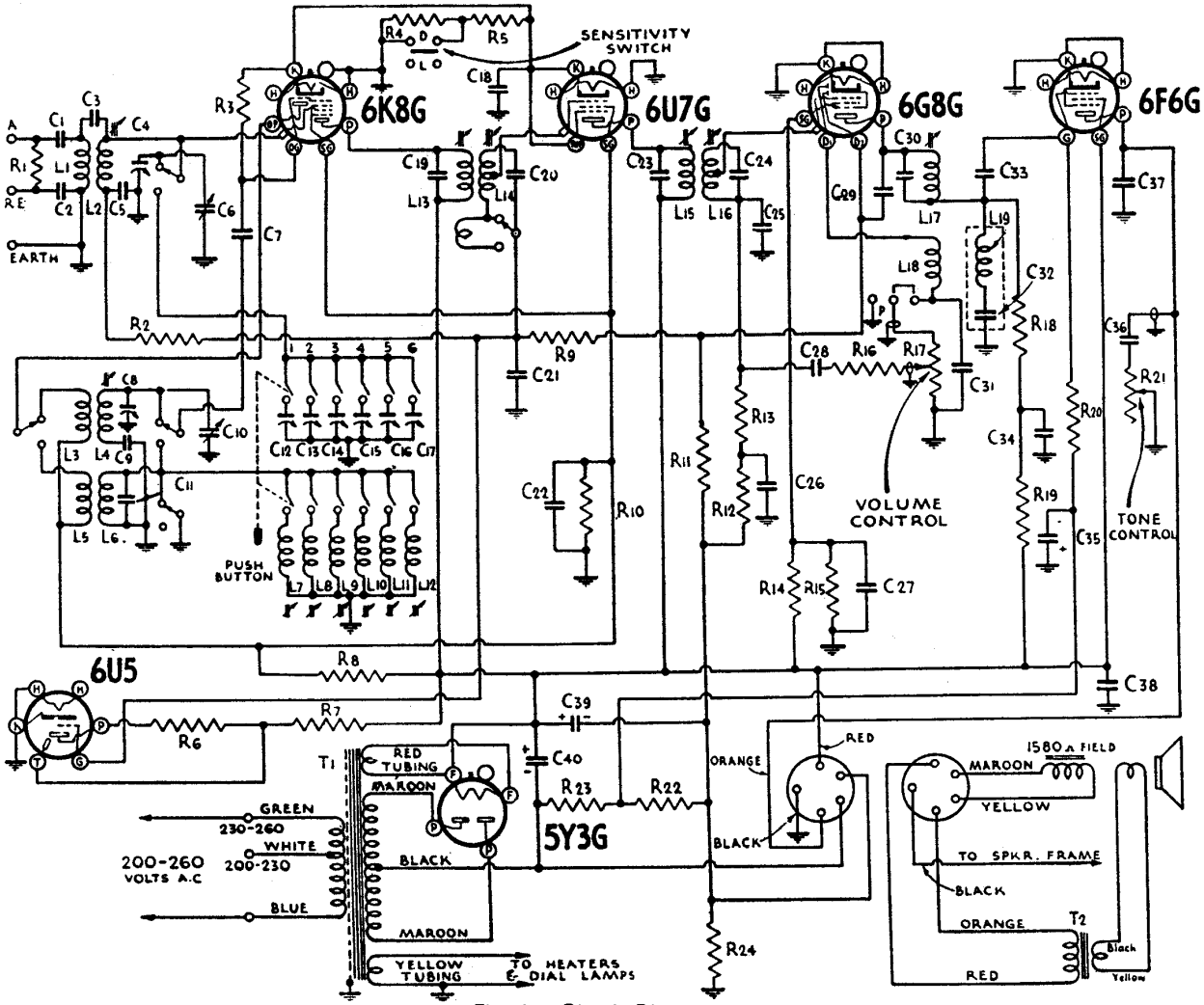


Fig. 2.—Circuit Diagram.

Code	Part	COILS
L1, L2	4426	Aerial Coil
L3, L4	5753	Oscillator Coil
L5, L6	6035	Exciter Oscillator Coil
L7	6039	Osc. Coil—Automatic
L8	6039	Osc. Coil—Automatic
L9	6040	Osc. Coil—Automatic
L10	6040	Osc. Coil—Automatic
L11	6041	Osc. Coil—Automatic
L12	6041	Osc. Coil—Automatic
L13, L14	6037	1st I.F. Transformer
L15, L16	5688	2nd I.F. Transformer
L17, L18	5759	3rd I.F. Transformer
L19, C32	5441	Filter Unit
		TRANSFORMERS
T1	5684C	Power Transformer, 50-60C
T1	5686C	Power Transformer, 40C
T2	T.T.2	Loudspeaker Transformer

Code	Part	RESISTORS
R1		100,000 ohms, ⅛ watt
R2		100,000 ohms, ½ watt
R3		50,000 ohms, ½ watt
R4		2,000 ohms, ½ watt
R5		200 ohms, ½ watt
R6		1 megohm, 1 watt
R7		20,000 ohms, 1 watt
R8		11,000 ohms, 3 watt
R9		1¾ megohms, ½ watt
R10		20,000 ohms, 1 watt
R11		2.3 megohms, ⅛ watt
R12		300,000 ohms, ½ watt
R13		2.3 megohms, ⅛ watt
R14		1 megohm, 1 watt
R15		100,000 ohms, 1 watt
R16		500,000 ohms, ⅛ watt
R17	5622	500,000 ohms, Vol. Control
R18		150,000 ohms, 1 watt
R19		20,000 ohms, 1 watt
R20		500,000 ohms, ⅛ watt
R21	5623	100,000 ohms, Tone Control
R22		20,000 ohms, 1 watt
R23		100,000 ohms, 1 watt
R24		20 ohms, 3 watt

Code	Part	CONDENSERS
C1		500 mmfd. Mica
C2		500 mmfd. Mica
C3		4 mmfd. Mica
C4	3661	2-20 mmfd. Air Trimmer
C5		.05 mfd. Paper
C6	6034	Tuning Condenser
C7		70 mmfd. Mica (N)
C8	4853	16-34 mmfd. Air Trimmer
C9		440 mmfd. Mica (Padder)
C10	6034	Tuning Condenser
C11		100 mmfd. Compensator
C12	6042	30-180 mmfd. Mica Trimmer
C13		30-180 mmfd. Mica Trimmer
C14	6043	65-280 mmfd. Mica Trimmer
C15		65-280 mmfd. Mica Trimmer
C16	6044	120-470 mmfd. Mica Trimmer
C17		120-470 mmfd. Mica Trimmer
C18		.1 mfd. Paper
C19		115 mmfd. Mica (A)
C20		130 mmfd. Mica (H)
C21		.05 mfd. Paper
C22		.1 mfd. Paper
C23		115 mmfd. Mica (A)
C24		130 mmfd. Mica (H)
C25		110 mmfd. Mica (L)
C26		.1 mfd. Paper
C27		.1 mfd. Paper
C28		.01 mfd. Paper
C29		50 mmfd. Mica (D)
C30		70 mmfd. Mica (N)
C31		110 mmfd. Mica (L)
C32		115 mmfd. Mica (A)
C33		.02 mfd. Paper
C34		.5 mfd. Paper
C35		25 mfd. 25V Electrolytic
C36		.035 mfd. Paper
C37		.0025 mfd. Paper
C38		.1 mfd. Paper
C39		8 mfd. 500V Electrolytic
C40		8 mfd. 500V Electrolytic

Circuit Code.

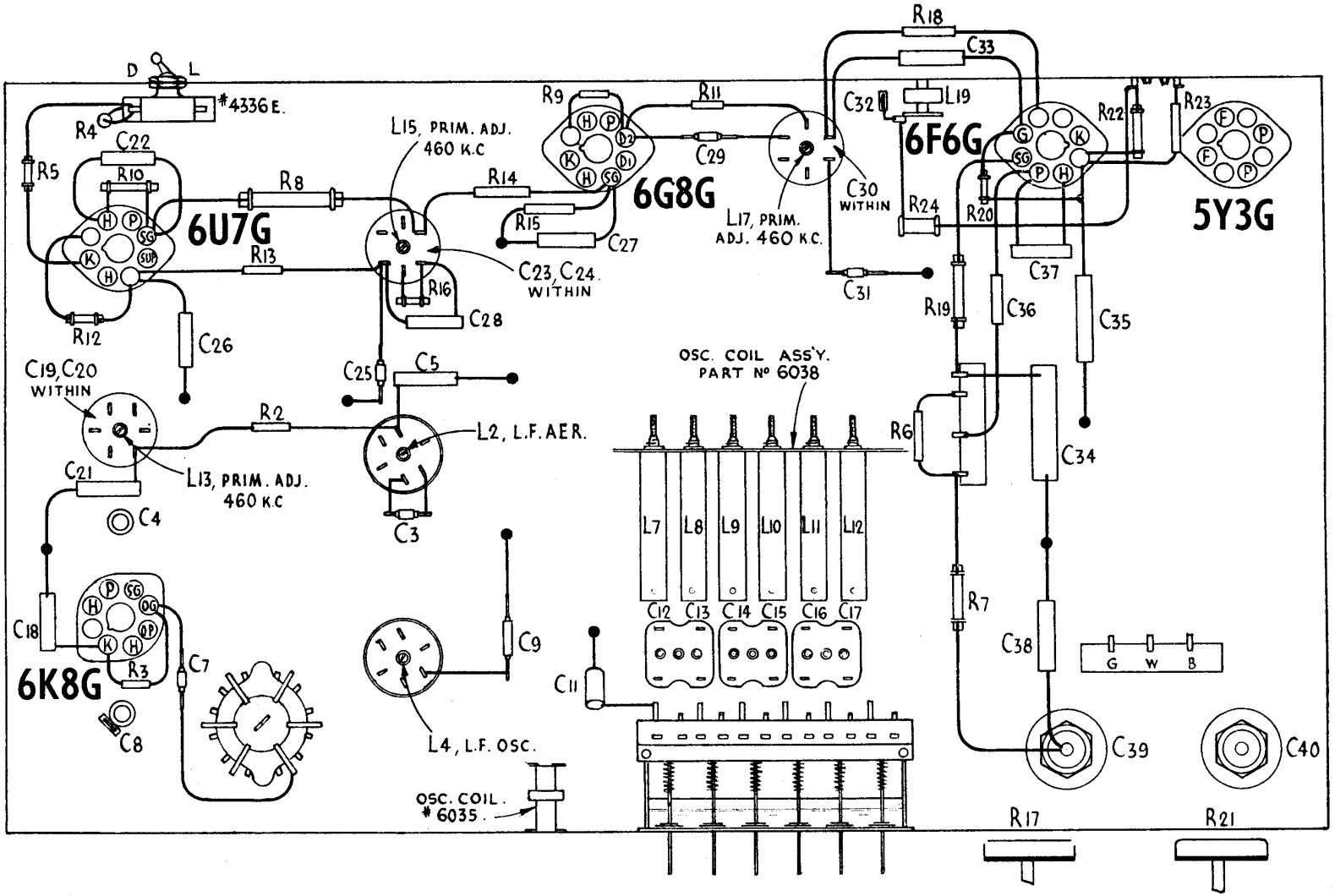
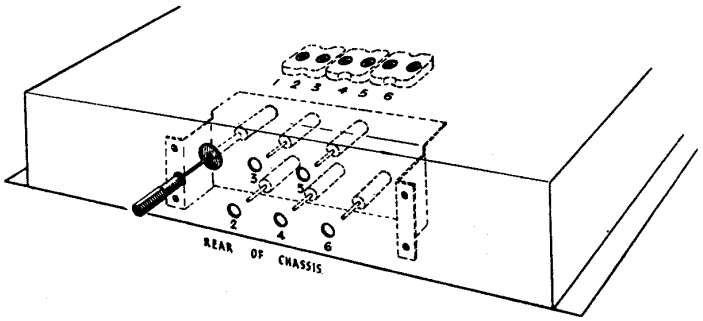


Fig. 3.—Lay-out Diagram (underneath view).



Automatic Tuning Adjustments.

ADJUSTMENTS FOR AUTOMATIC TUNING

Any six stations in the "Standard Medium Wave" Broadcasting Band may be selected for "Automatic" tuning.

The range of frequencies covered by each button from right to left, is as follows, and only stations with the given range can be obtained

(1) 850 .. 1500 K.C.
(2) 850 .. 1500 K.C.
(3) 700 .. 1300 K.C.
(4) 700 .. 1300 K.C.
(5) 550 .. 1100 K.C.
(6) 550 .. 1100 K.C.

A sheet on which are printed the call-signs of all Australasian broadcasting stations accompanies the Receiver. Call-signs of the six stations selected should be removed from the sheet.

Remove the escutcheon plate beneath the dial, by removing the three screws, and take out the celluloid window.

The stations should be adjusted in order of their frequency in kilocycles. This order is used in the following example:

(1) 2SM (1270 K.C.)
(2) 2CH (1190 K.C.)
(3) 2UW (1110 K.C.)
(4) 2GB (870 K.C.)
(5) 2BL (740 K.C.)
(6) 2FC (610 K.C.)

Place the six selected stations call-signs in their respective sections and replace the celluloid window and escutcheon plate.

Turn the Receiver ON and allow it to operate for at least five minutes before making adjustments.

Attached to the inside of the cabinet will be found an envelope containing a screwdriver and guide. On the rear of the chassis are six holes, number 1 to 6, as shown in the diagram. They give access to the adjusting screws. Take the screwdriver guide and insert it in the hole marked "1." Pass the screwdriver through the guide and turn till it is felt to engage in the slot of the adjusting screw.

It will be found most convenient when making the adjustments to lean over the Receiver from the rear. In this attitude the adjustments may be carried out with one hand, and the controls operated with the other, and at the same time allowing a good view of the Tuning Indicator.

Then proceed as follows:

(1) Set the Manual-Automatic control at "Manual" and tune the station selected for No. 1 push-button (2SM in the above example).

(2) Switch the Manual-Automatic control to "Automatic." It is advisable to set the Sensitivity switch to Distant (D) at the same time.

(3) Press push-button No. 1 (see Controls diagram, front page).

(4) Turn the screwdriver, previously placed in position, slowly, until station No. 1 is heard (2SM in example). Watch the Tuning Indicator and adjust until its darkened sector is at the narrowest possible width.

(5) While searching for the station, switch the Manual-Automatic control to "Manual" frequently to verify that station No. 1 is that which is being tuned.

(6) Switch the Manual-Automatic control to "Automatic." On **top** of the chassis are six more holes numbered 1 to 6—see diag. These give access to six screw adjustments. Insert the screwdriver in the hole marked "1" and turn until the darkened sector of the Tuning Indicator is at its narrowest possible width.

(7) Return to the **rear** of the chassis and make a final adjustment of adjusting screw No. 1 until the Tuning Indicator shows most accurate tuning.

Now proceed in order of frequency to adjust for the other five stations making the set-up 2, 3, 4, 5, and 6, in sequence, by the same method as that described above for No. 1.

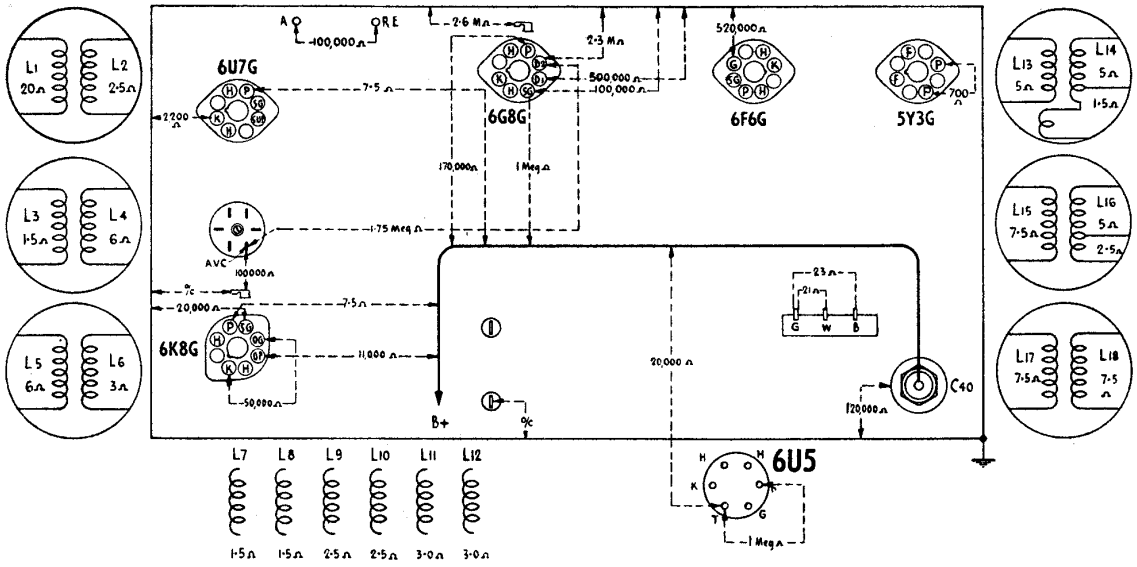


Fig. 4.—Resistance Diagram.

Resistances taken with all controls maximum clockwise.wise, Sensitivity Switch at Local (L).

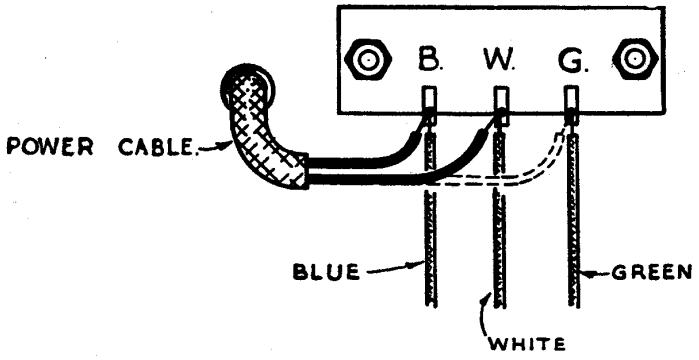


Fig. 5.—Showing Power Cable Connections for Line Voltages below 230 V. (dotted lead indicates "standard" connection).

SOCKET VOLTAGES.

VALVE	Bias Voltages	Screen Grid to Chassis Volts	Plate to Chassis Volts	Plate Current M.A.	Heater Volts
6K8G Detector	—1.2‡2.8†	100	250	1.25	6.3
Oscillator	—	—	100	3.0	—
6U7G I.F. Amplifier	—1.2‡2.8†	100	250	1.0	6.3
6G8G Reflex Amplifier	—1.2	16*	165*	0.47	6.3
6F6G Pentode	—17.0	250	230	33.0	6.3
5Y3G Rectifier	720/360 volts, 65 m.a. total current.				5.0

Voltage across Loudspeaker field, 100 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 at maximum and Sensitivity switch at Distant (D).