

AIR MINISTRY

Chapter 3

POWER UNIT TYPE 234A

LIST OF CONTENTS

	Para.		Para.
Introduction	1	Constructional details	7
Circuit description	3	Operation of power unit	10

LIST OF ILLUSTRATIONS

	Fig.		Fig.
Power unit Type 234A, front view, fuses exposed ...	1	Power unit Type 234A, top view	2
Power unit Type 234A, circuit	2		

RECEIVERS R.1392A, B, D and E
 This is Amendment List No. 1 to Air Publication 2555F(3), Volume I,
 Part I. Insert this Chapter 3 to follow the Part I marker card. Record the
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SIGNALS

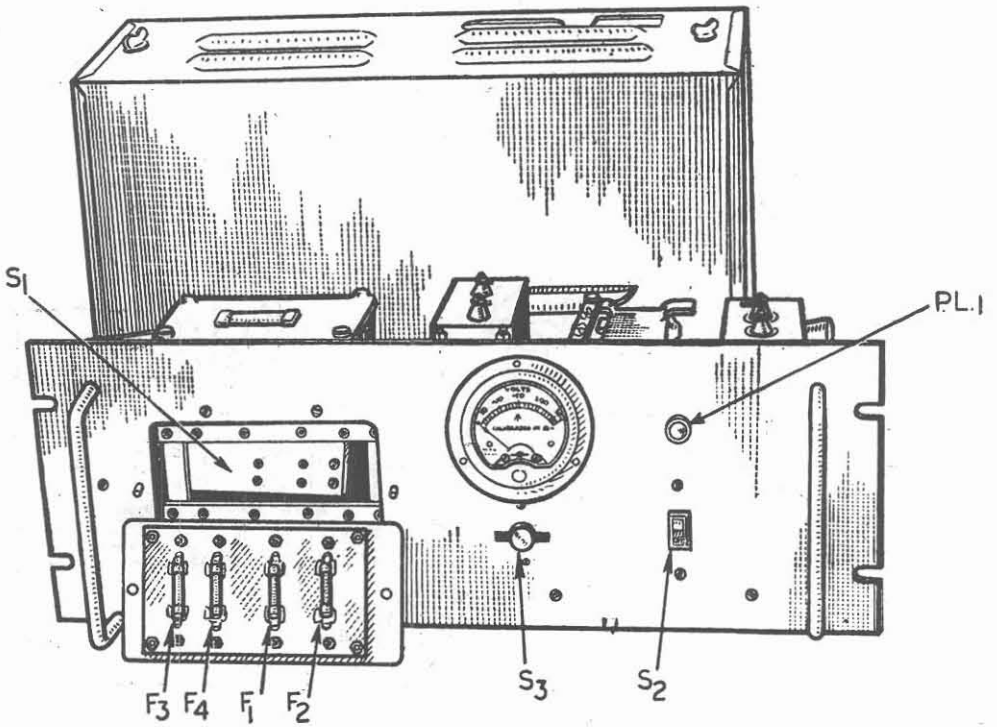


Fig. 1. Power unit Type 234A, front view, fuses exposed

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Introduction

1. This power unit is designed to supply both HT and LT voltages to a number of receivers, including the R.1132A, R.1481 and R.1382A, B, D or E. It is built on a 17 in. × 10 in. chassis, with a front panel 19 in. × 7 in. intended for mounting in a standard 19 in. rack assembly. A dust cover is provided for the unit, with louvres to give adequate ventilation.

2. The output voltage of the power unit may be varied for the particular type of receiver being used by a pre-set switch which varies the primary tapplings of the mains transformer. In addition, a tapping switch S4 in the secondary of this transformer gives a high-voltage input to the rectifier when maximum HT output is required. The range of voltages obtained from the unit is of the order of 180 to 270 volts. A moving-iron meter on the front panel normally reads the AC input to the unit, but by means of a lever switch S3 (marked PRESS TO READ HT) it may be switched to read the smoothed HT output.

Circuit description

The circuit diagram of the power unit is given in fig. 2 and it will be seen that it is basically a conventional full-wave rectifier circuit with a condenser-input smoothing filter. The 230 volts 50 c/s input is applied to the primary of the mains transformer T1 via the mains on-off switch S2, double-pole

fuses F1 and F2, and the tapping switch S1. The secondary of T1 has three windings; the centre-tapped HT winding feeds the anodes of the full-wave rectifier V1. The other two windings provide, respectively, 5 volts at 2 amps for the heater of V1, and 6.5 volts at 4.3 amps for the heaters of the valves in the receiver. The latter winding is connected to pins 7 and 8 on the output socket P2, whilst connected directly across the winding are the resistor R1 and the indicator lamp PL1. The output voltage of 6.5 is intended to give 6.3 volts at the receiver after making allowance for the voltage drop along the line connecting power unit and receiver.

4. The HT winding of T1 is provided with a tapping switch S4. In the position shown in fig. 2 only a part of the secondary turns are in use and the input to the rectifier is reduced. When S4 is set to the left-hand position the secondary input voltage to the rectifier is increased, due to the increased number of turns, and, consequently the HT output from V1 is correspondingly increased. The HT negative line from the centre-tap of this winding, which is not earthed, is connected to the smoothing network and also to pin 9 on socket P2 via the fuse F3.

5. The HT positive line from the cathode of V1 is connected to the choke L1 of the smoothing network. This is a two-section filter comprising L1, L2 and the condensers

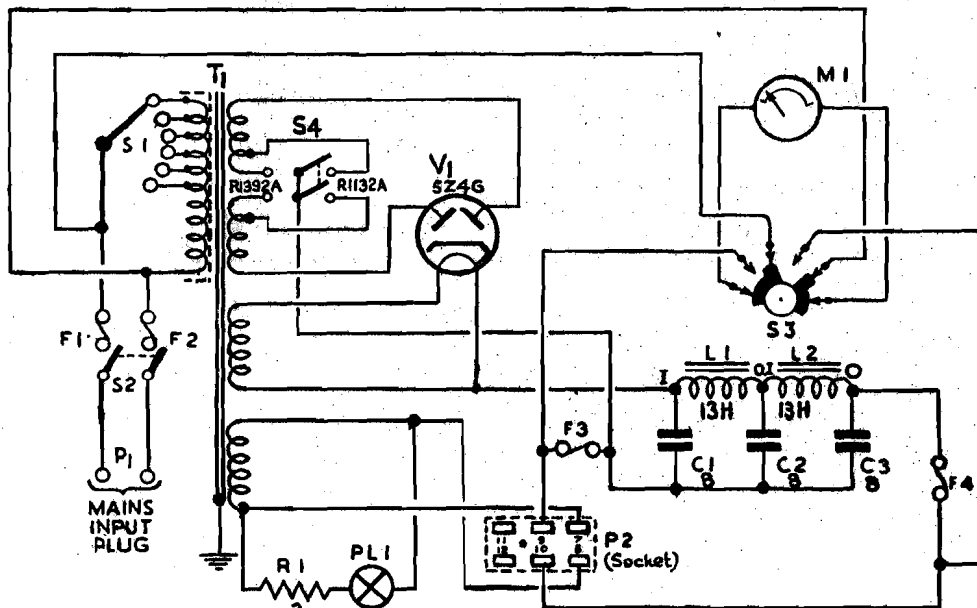


Fig. 2. Power unit Type 234A, circuit

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C1, C2 and C3 and its efficiency is such that the HT ripple is of the order of 0.01 per cent. The output from the filter is connected to pin 10 on the socket P2 via the HT fuse F4.

AL9 6. Switch S3 is the meter selector switch previously mentioned. The meter itself is a moving-iron type having a range of 0-300 volts and in the position shown in the diagram it is connected directly across the primary of the mains transformer. In the other position of the switch, the meter is connected directly across the HT output of the unit.

Constructional details

7. The general layout of the unit may be seen from fig. 1 and 3. The front view (fig. 1) gives the location of the controls on the front panel, including the meter M1 and the PRESS TO READ HT switch S3. The fuse panel is shown removed from the unit to illustrate the method of mounting of the fuses; they are held in clips on an insulated panel mounted on the rear of the outside metal panel, each clip being connected to a metal pin. Inside the unit are two insulated strips carrying sockets to which the circuit connec-

tions are made. When the fuse panel is in position, the metal pins plug into these sockets and connect the fuses into circuit, the panel then being locked in position by two wing-nuts. The primary tapping switch S1 is a link plug fitting into the sockets indicated in fig. 1.

8. Fig. 3 gives a view of the power unit from the rear and shows the mechanical construction. The metal chassis carrying the heavy components is strengthened by bracing it to the front panel by two brackets at either side.

9. The wiring of the unit, except for the smoothing circuit components and the valve base, is by a cableform, all leads except the LT supply using Unicel 4c. The heavier requirements of the LT circuits are met by using Unicel 19.

Operation of power unit

10. Before use it is advisable to check the unit for superficial damage. The tappings

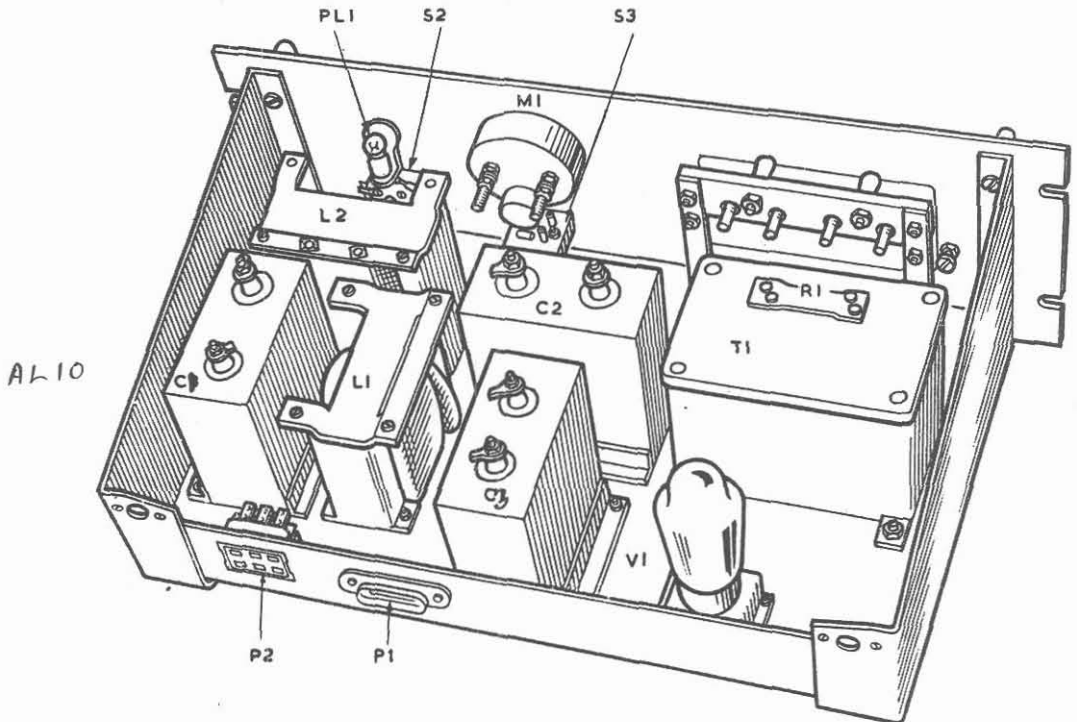


Fig. 3. Power unit Type 234A, top view

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* But see Vol 2 leaflet 5.

on the mains transformer should then be adjusted and to do this it is necessary to remove the fuse panel. When this has been done the primary tapings and the link-plug will be seen and the link switch can be set to the correct voltage by pulling it out and plugging it into the appropriate position. The output adjustment S4 should be set in

the position "R.1392A" when used with receivers R.1392A, B, D or E.

II. Prior to replacing the fuse cover, examine the fuses located upon it and check that they are of the correct value. The mains input fuses should be of 1 amp rating and the fuses in the HT positive and negative lines of 150mA.

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