SECTION 24

POWER SUPPLIER PS3/24

24.1 General

The PS3/24 is a mains-operated unstabilised power-supply unit providing outputs of 1·5 amps d.c. at 50 volts and 2 amps a.c. at 6·3 volts. This unit is intended for general-purpose applications where a 50-volt supply with positive earth is required. It is mainly used in transmitter relay stations.

The unit is built on a 19-inch by $6\frac{31}{32}$-inch panel suitable for bay mounting. An On/Off switch, indicator-lamp and fuses are situated at the front of the panel for easy access.

24.2 Circuit Description (Fig. 24.1)

The mains input is applied via the double-pole On/Off switch to the primary winding of the input transformer which is tapped to enable the unit to be supplied from 200/250-volt mains.

Of the two secondary windings, one normally supplies 2 amps a.c. at 6·3 volts, although provision is made by means of a tap to provide 5·5 or 5·0 volts instead. Fuse FS2, which is rated at 3 amps, protects the transformer from overloading.

The high-voltage secondary winding is applied to a selenium full-wave bridge rectifier, the output of which is fed via 2-amp fuse FS1 to a choke-input filter comprising inductor L1 and smoothing capacitor C1. With this arrangement the ripple content in the output is about 5 per cent under full-load conditions. In parallel with the output terminals are an indicator-lamp, and a 470-ohm dummy load resistor which improves the voltage regulation.

24.3 Testing

24.3.1 Test Equipment

Avometer Model 8
0—50 ohm slidewire (200-watt rating)
0—5 ohm slidewire (45-watt rating)

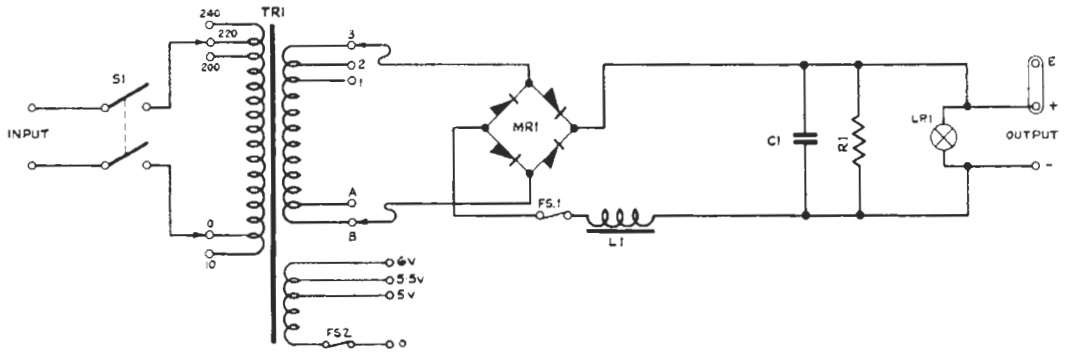
24.3.2 Test Procedure

1. First check that fuse FS1 is rated at 2 amps and fuse FS2 at 3 amps, and that the mains tap on the transformer primary is set to the appropriate position.
2. Set the Avometer to measure resistance. Connect the instrument in parallel with each slidewire in turn and set their resistances to 33·5 ohms and 3 ohms respectively.
3. Connect the 3-ohm slidewire in parallel with the 6·3-volt output and the 33·5-ohm slidewire in parallel with the 50-volt output.
4. Switch on the supply unit and with the Avometer set to the appropriate a.c. range connect the instrument across the 6·3-volt output terminals. The reading indicated should be 6·3 $\pm$0·3 volts.
5. Set the Avometer to the appropriate d.c. range to measure 50 volts and connect the instrument across the 50-volt output terminals. The reading indicated should be 50 $\pm$2 volts.
6. Disconnect the slidewires and again measure the output voltages. The 6·3-volt output should not exceed 6·8 volts and the 50-volt output should not exceed 55 volts.

If any of the measurements lie outside the limits specified, the tap on the secondary windings should be re-set as required.

C.W.P.M.(X). 11/65

FIG 3.24



LIST OF COMPONENTS		TYPE
ITEM	DESCRIPTION	
S1	ISOLATOR	ARCO TG20
TR1	MAIN TRANSFORMER	
MR1	MAIN RECTIFIER	WESTINGHOUSE 17 L84
L1	SMOOTHING CHOKE	
C1	SMOOTHING CONDENSER 250 MFD.	DALY 100V
R1	BLEED RESISTANCE 470Ω	CURTIS 08.30 HS/470
E	EARTH LINK	
FS.1	OUTPUT FUSE 2A	BELLING-LEE LI055/2
LP.1	INDICATOR LAMP	PO No. 2 60V
FS.2	A.C. OUTPUT FUSE 3A	BELLING-LEE LI055/2

INPUT: 200/250 VOLTS 50 CYCLES SINGLE PHASE

OUTPUT: 50 VOLTS 1·5A D.C. SMOOTHED 5%

6 VOLTS 2A } A.C.

POWER SUPPLIER PS3/24 : CIRCUIT