STABILISED POWER SUPPLIER PS2/37

Introduction

The PS2/37 is basically a conventional power supplier with a main output of 32 to 34 volts and a subsidiary output of about 12 volts. A circuit diagram is given in Fig. 1.

The main output has a current-limiting circuit incorporated and this can be preset to limit the output current within the range 1·2 to 2·0 amperes approximately.

The main and subsidiary outputs can be used with either their positive or negative sides common. The choice is made by short-circuiting the appropriate ballast resistor (either R9 or R10) externally on the parent equipment[1,2].

The supplier is constructed on a CH1/12B chassis with index peg positions 8 and 27.

General Specification

Input	200-250 volts, 50 Hz
Main Output	
Output Voltage	Adjustable from 32 to 34 volts
Max. Load Current	2·0 amperes
Output Resistance	Less than 0·3 ohm
Output Impedance at 1 kHz	Less than 0·3 ohm
Ripple Content	Less than 3 mV p-p (measured at 32 volts and 1·5 amperes)
Output Voltage Change	Less than 0·2 per cent for 5 per cent mains-voltage variation
Subsidiary Output	
Output Voltage at max. current	12·2 volts ±0·6 volt
Max. Load Current	120 mA
Output Resistance	Less than 3 ohms
Max. Ambient Temperature	55 degrees C

Current Limiting Circuit

The current-limiter comprises a two-stage d.c. amplifier, TR6 and TR7, in connection with the conventional stabiliser circuit, and it changes the mode of operation from constant-voltage to constant-current working. The change-over point occurs when the output current rises to a predetermined value set by RV2.

The output current causes a voltage drop across R4 and R5 and a portion of this voltage is applied between the base and emitter of TR7 via RV2. When the output current rises to the preset value, TR7 and TR6 conduct sufficiently to over-ride the voltage-sensing function of TR1 and any additional tendency to increase is prevented by the series transistors TR4 and TR5 being progressively turned off. The output current thus tends to a constant maximum value as indicated by the typical curves given in Fig. 2.

If the load resistance falls enough to reduce the output voltage to below about 6 volts, the constant-current condition is not maintained and protection of the supplier depends on FS3.

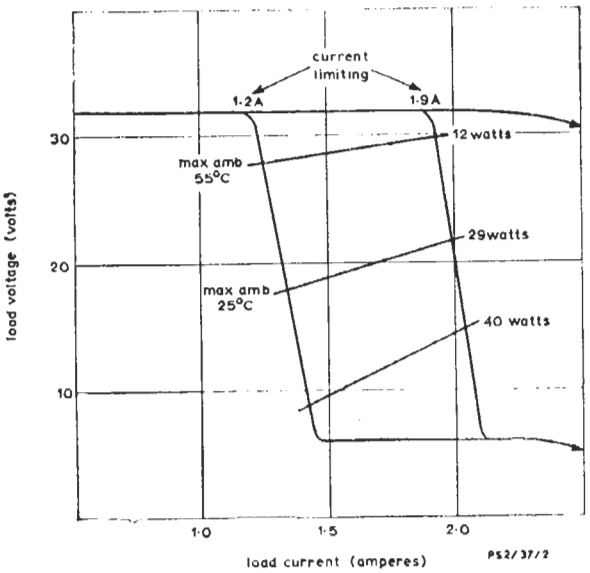

Fig. 2 Current Limiting Characteristics

Maintenance and Testing

Normal techniques can be used to ensure that the general specification is met. The main output voltage can be set to the required value by adjustment of RV1 whilst the supplier, with the current-

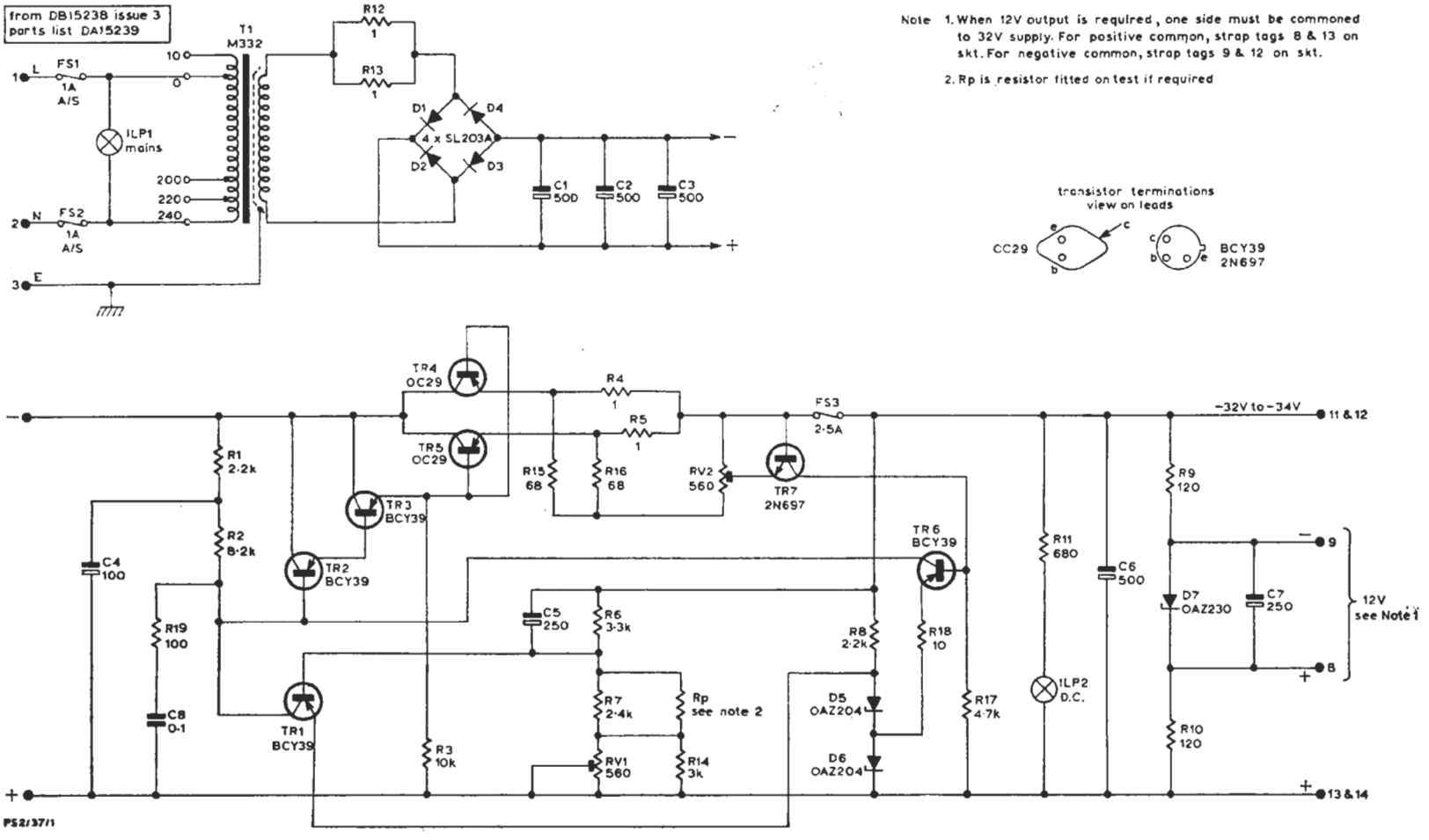

Fig. 1 Circuit of the PS2/37

limiter control set to maximum (RV2 turned fully clockwise), is delivering its normal working current into a dummy load. Note that Rp, in parallel with R7, is fitted on initial test if required to bring the range of RV1 within specification.

Adjustment of the current-limiter must not be attempted until the correct output voltage has been selected. The limiting control can be set as follows:

1. Turn RV2 control fully clockwise.
2. Feed into a dummy load and adjust the output current to the required limiting value.
3. Check the output voltage and adjust if necessary.
4. Repeat 2 and 3 until the required values are obtained.
5. Turn RV2 slowly counter-clockwise until the output voltage begins to fall.
6. Reduce the value of load resistance and check that the current remains substantially constant; see Fig. 2.

References to Typical Associated Equipment

1. V.H.F./F.M. Translator EP7/5
2. V.I.F.M. Drive Unit EP7/7A

AJ 1/69