UNSTABILISED POWER SUPPLIER PS3/21

Introduction

The PS3/21 is a general-purpose heavy-duty power supplier for operation on 240—250 volts a.c. mains supplies and designed to deliver up to 8 amperes d.c. at a nominal 24 volts. It is used typically to supply power for relays and other control apparatus. The regulation is not good enough for it to be used to supply power to other electronic equipment. The unit is constructed on a CH1/3 chassis.

Circuit Description (Fig. 1)

A conventional full-wave rectifying arrangement is employed, with silicon-junction rectifiers connected in the secondary circuit of mains transformer T1. The transformer primary tappings A and C are used to maintain the output voltage fairly close to 24 volts for two conditions of load. B and C are strapped when the supplier is used to deliver up to 4 amperes, and A and B are joined if the output current is up to 8 amperes.

Smoothing is effected by a choke-input filter L1, C1, C2, the choke being tuned by the parallel capacitors C3 and C4 because of the high ripple current.

The output circuit of the supplier is protected by the circuit-breaker CB1; this is a normally-closed type, with a tripping coil in series with the contacts. It is mounted on the front panel of the unit and is reset manually. Tripping of the breaker is indicated by the buzzer EBz.1. The resistors R1 and R2 complete the operating circuit for the buzzer and serve to discharge smoothing capacitors C1 and C2 if the unit is operated without a load.

Data

Mains fuses: Beswick P.O. 36A/2 (Anti-surge 2A).

Regulation: The supplier is normally used to deliver a nominal 24-volts d.c., but it can be used up to full load (8 amperes) at both settings of the primary tap. The table indicates the output voltage for various load currents.

Primary Strap	*Load Current (amperes)*	*Output Voltage*
A—B	0	36·8 ± 1·2
	2	26 ± 1
	5	24·6 ± 1
	8	23·5 ± 1
B—C	0	33·5 ± 1·2
	2	23·6 ± 1
	5	22·4 ± 1
	8	21 ± 1

Circuit-breaker: Set to trip at 11·5 amperes (load current).

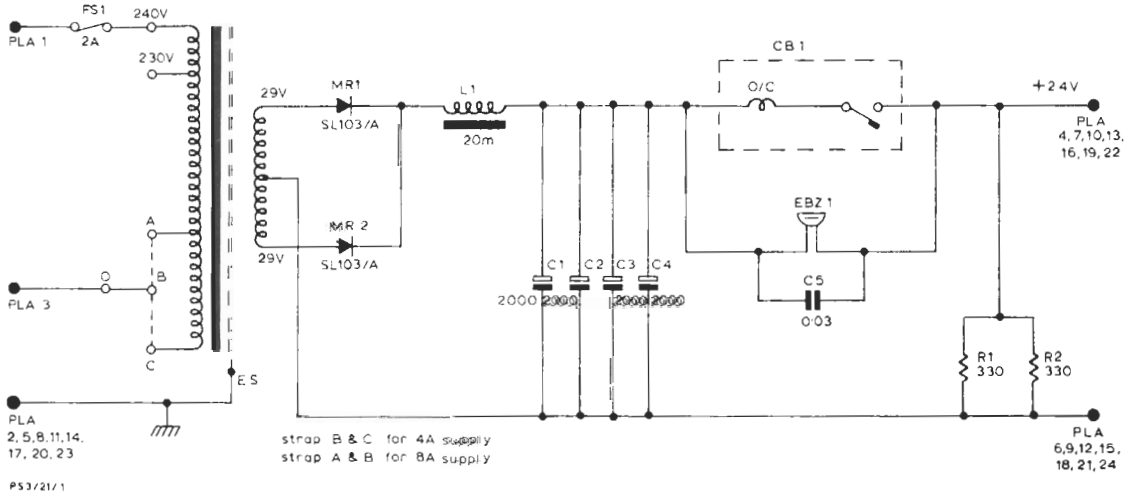

Fig. 1. Circuit of the PS3/21