BULK POWER SUPPLIER PS2/75

See also UN1/110

This unit provides stabilised heater and h.t. supplies for a maximum of eight AKG condenser microphones, either monophonic or stereophonic. The power is supplied to each microphone through a regulator unit UN1/110, and both heater supply voltage and h.t. voltage are stabilised, the former at 27 volts and the latter at 130 volts.

The PS2/75 is mechanically similar to the CH1/18C chassis but is of non-standard width. Three PS2/75 units fit into a PA1M/65 mounting panel.

Fig. 1 shows the circuit of the PS2/75, in which the smaller components are mounted on two separate plug-in sub-units (mechanically coded to prevent incorrect insertion). Because of the division into parts, the sequence of numbering of Zener diodes, resistors and capacitors adopted by the manufacturer is repeated several times in the circuit; there are thus, for example, three capacitors numbered C2, three resistors numbered R1 and two resistors numbered R5.

Consider first the heater supply circuit in the upper part of the diagram. The reservoir capacitor C2 is charged up to about 36 volts by the transformer and bridge rectifiers T1 and DA1. The potential at the junction of R2 and R3 (terminal 8 of sub-panel 6501) controls the collector-to-emitter impedance of TR2 and this in turn determines the base current of TR1 and thus the collector current of TR1. Bridged across the output from the unit is a potential divider R4, RV1, R5 which is used to adjust the d.c. voltage at the base of transistor TR3. The voltage at the emitter of this transistor is kept constant at 6·25 volts by the Zener diode ZD2; hence the potential difference between emitter and base is proportional to the output voltage, and controls the collector current of TR3, derived from the supply via R1 and R2. If, at any given setting of RV1, the output voltage falls with increasing load, the base voltage of TR3 also falls, the collector current falls and therefore the voltage at terminal 8 of the sub-panel rises, causing the impedance of TR1 and TR2 to fall. This is equivalent to lowering the internal impedance of the supply and tends, therefore, to restore the output voltage. At the same time, since this is a negative feedback action and because capacitor C2 feeds the full ripple voltage to TR3 base, the ripple voltage is reduced.

The output voltage can be adjusted by RV1. Moving RV1 slider upwards raises the base voltage of TR3 and therefore lowers the voltage on TR2 base; this in turn raises the impedance of TR1 and TR2 and lowers the output voltage.

The maximum current demand on the unit is of the order of 1·6 amps, but if a fault should occur the load might increase suddenly and endanger transistors TR1 and TR2. F3 is a 2-amp fuse provided to protect the unit, but, since fuses take too long to act, instantaneous protection is afforded by the arrangement of the circuit of TR1, in which Zener diode ZD1 prevents the voltage drop between the left-hand end of R1 and TR1 base from exceeding 6·25 volts. This in turn prevents the current flowing in R1 from exceeding about 6 amps, and protects the transistors sufficiently until the fuse F3 blows.

The lower part of the illustration shows the h.t. supply circuit, which operates on the same principle as the heater supply. The chief difference is that the overload protection circuit (ZD1 and the 1-ohm resistor R1 in the heater supply circuit) is omitted; the 200-ohm resistor R3 would, however, limit the current while the fuse F2 failed.

A 3·3 volt Zener diode is included in the negative rail to enable a grid bias of 1·05 volts to be derived by adjustment of variable resistor RV2 on sub-unit 6501.

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See overleaf for Fig. 1

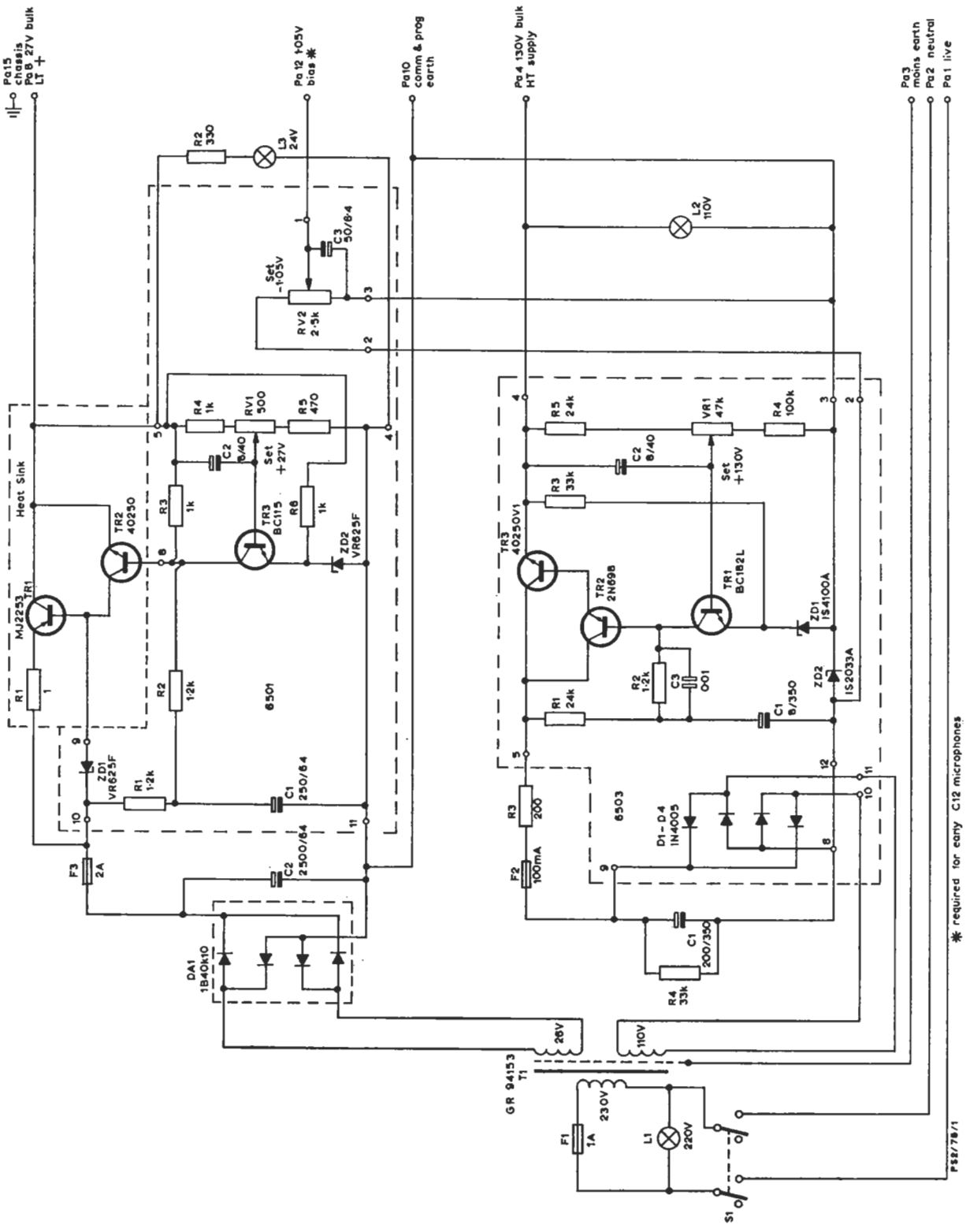

Fig. 1. Circuit of Bulk Power Supplier PS2/75
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