

V78

Technical Details & Function

The circuit of the V78 originates from the V72 studio amplifier. By parallel connection of the primary winding of the input transformer and series connection of the secondary winding of the output transformer, together with a negative feedback loop, the required 70dB amplification of the V78 is achieved.

The two-stage amplifier uses two EF804S valves. The input transformer has a twin compartment Mu Metal casing to counter extraneous fields; the Mu Metal layers sandwich a copper layer. The high level of amplification is determined by the degree of negative current and voltage feedback. The highest level of amplification is set by potentiometer 6 (see schematic) which, along with resistor 12, forms part of a negative current feedback loop. Adjustment of resistor 12 enables 70dB of amplification to be achieved. Moreover, the loop from the second stage anode to the first stage cathode also carries negative voltage feedback. Within the cathode loop the amplification can be adjusted to 50db with potentiometer 20. The amplification level can be set by the large split knob on the front plate. The second valve works into a DC free output transformer which has cylindrical windings.

The optimal performance adjustment occurs when the input impedance of the following device is about 2.7K and although the input impedance of the loudspeaker amplifiers V53 and V73 is about 2K, there is nevertheless sufficient output capacity in reserve. The constancy of output voltage with variable frequency or load resistance is attained because the output resistance is <500 Ohms. The high frequency cut-off at 15KHz is set by trimmer capacitor 40.

The mains voltage is rectified by solid state diodes in a bridge circuit, with a two stage RC chain to smooth the HT voltage. The heater voltage is centre-tapped by two resistors to achieve symmetry. The signal lamp is connected across the heater supply to indicate that it is working. The mains transformer is enclosed in a Mu-Metal casing to screen out the hum leakage field. Casing and earth are separated by the connecting lead.

