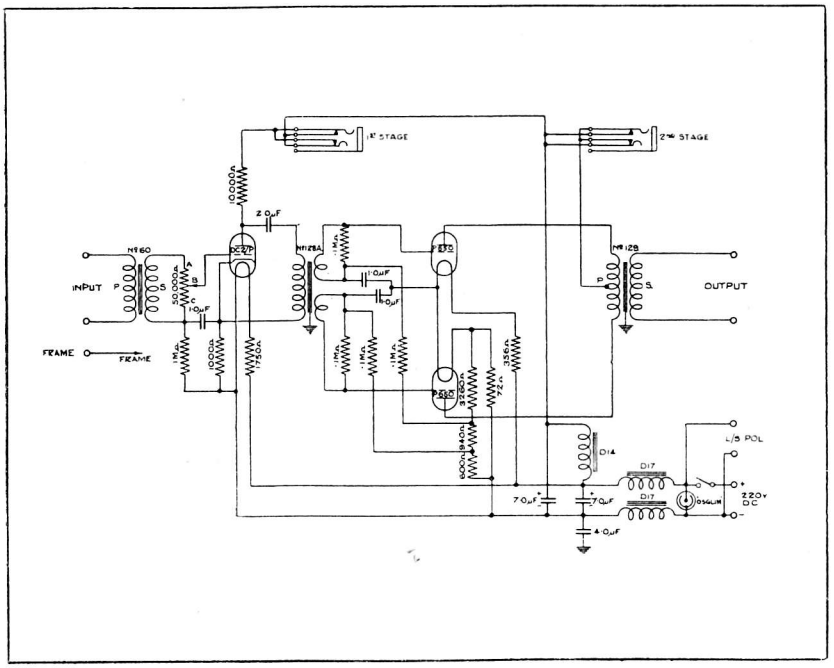
AMPLIFIER LSM/3



Drawing A.2378, Issue 4.

Function—This is a D.C. mains-operated loudspeaker amplifier used for quality checking and talk-back purposes. It is normally connected either in the output of the programme trap valve amplifier or in that of the **CPL** unit, and works a Rice-Kellogg Senior moving-coil loudspeaker.

It is used at stations having a D.C. main supply.

Circuit—It has two stages consisting of a DC 2 P valve, resistance-transformer coupled to two P650 valves in push-pull. The amplifier is transformer coupled on its input side to the line, and on its output side to the loudspeaker.

All the supplies are obtained from 220 volt D.C. mains. The filament supply is taken via a smoothing system consisting of series chokes, one in each lead, and parallel 8 μF. condenser which, in conjunction with the 4 μF. condenser between the negative lead and earth, also serves to suppress any mains-borne interference. Additional smoothing is provided in the H.T. supply lead, consisting of the D/14 choke and 8 μF. condenser. The smoothing arrangements are such that either the positive or the negative leg of the mains may be neutral (earthy) without affecting the performance of the amplifier, but care must be taken to ensure that the supply is connected to the amplifier in the correct polarity, since otherwise the electrolytic smoothing condensers will be damaged. For this reason the mains plug is clearly engraved with the polarity symbols.

The heater of the DC 2 P valves takes 100 mA. at 35 volts, and a suitable voltage dropping resistance is included in the positive lead. This stage is biassed by the anode current passing through the 1,000 ohm resistance connected in the cathode lead. The filaments of the P650 valves take 0.5 A at 6 volts, and are connected in series. The voltage dropping resistance for these valves is included partly in the positive lead and partly in the negative lead. Shunted across the 72 ohm resistance in the negative lead and mounted on the back of the unit is a tapped resistance which serves as a potential divider and provides the grid bias to the output stage. Since one of the filaments is at a higher potential than the other separate leads are provided for each valve, tapping the potential divider at points differing in potential by the voltage drop across one of the filaments, in order that both valves may receive the same bias. This arrangement necessitates the secondary winding of the inter-valve transformer being split into two halves, each connected to the filament via a condenser in order to complete the grid circuits as regards A.C. The feeds to the two stages may be read by plugging the portable testing meter **PTM/1** into the jacks provided.

A Neon lamp is connected across the mains supply to take the inductive discharge from the loudspeaker polarising winding when the amplifier is switched off.

Impedances

Input impedance	2,000 ohms.
Output impedance	10 ,,

Transformers

	Number	*Impedance Ratio*	*Turns Ratio*
Input	60	1/30.4	1/5.52
Intervalve	128A	1/16	1/4
Output	129	600/1	24.6/1

Volume Control

Continuously variable potentiometer of resistance 50,000 ohms (approx.).

Supply Data

Stage	*Valve*	*Anode Feed* mA.	*Filament* Volts	Amps
1	DC 2 P	7— 8	35	0.1
2	2—P650 (in push-pull)	38—40	6 (per valve)	0.5
	Total	45—48		0.6

Current drawn from 220 volt D.C. mains (approx.).

Amplifier	700 mA.
Loudspeaker	50 mA.
Total	750 mA.

Test Data

Maximum Voltage Gain at 1,000 c/s. (Output loaded with 12 ohms and at a level of 0 db.) .. .. 17 ±2 db.