

**LOUDSPEAKER AMPLIFIERS AM8/2, AM8/2A
General Description**

Loudspeaker Amplifier AM8/2 forms part of the General Purpose Loudspeaker LS1/1 described in Instruction S.8, and is mounted in the amplifier compartment at the bottom of the loudspeaker cabinet.

Its performance and certain other features are specified by the BBC but otherwise its design and construction are left to the manufacturer. Models supplied at different times by the same or different manufacturers are interchangeable but may differ in design and construction.

It is approximately 11 in. long by 5½ in. wide by 5½ in. high and weighs under 10 lb.

The amplifier is mains-operated and gives an output of at least 3 watts into a resistive load of 3 ohms for an input of 0.1 volt r.m.s. at a frequency of 1 kc/s. It has low distortion over the frequency range of 60 c/s to 10 kc/s.

No gain control is fitted, as a separate 50-kilohm volume control is provided as part of Loudspeaker LS1/1; mains fuses and a mains switch also are provided as part of the LS1/1 and are omitted from the amplifier.

Tag blocks are fitted for external connections.

Components to reduce r.f. pick-up have been added to some amplifiers and these amplifiers are coded AM8/2A.

AM8/2, AM8/2A: SERIAL NOS. 101 TO 185**Circuit Description (Fig. 57)**

Fig. 57 shows the circuit of amplifiers with Serial Nos. 101 to 185. Only two stages are used and the amplifying stage V1 is d.c.-coupled to the single-valve output stage V2. The specified requirements, which are not so severe as those for the AM8/1, have been met without employing a push-pull output stage. Negative feedback, however, is employed in the single-valve output stage itself by coupling the anode to the screen grid via the 47-kilohm resistor R9 to give an arrangement which has advantages similar to the *ultra linear* or distributed load type of circuit used in the AM8/1. This arrangement causes the valve to operate more like a triode and less like a pentode, and so reduces its output impedance and distortion while retaining to the necessary extent the greater efficiency and power-handling capacity of the valve used as a pentode.

Further negative feedback is obtained by connecting the 5.6-kilohm resistor R13 between the cathode circuit of V1 and the output of the amplifier.

Since d.c. coupling is employed between V1 and V2, the control grid of V2 is at the same d.c. potential as the anode of V1; consequently, the cathode potential of V2 must be raised correspondingly, and is in fact about 36 volts above earth as measured across the bias resistors R10 and R11 in series. This is a suitable value for the screen-grid potential of V1, so the screen of V1 is connected via R4 to the cathode of V2.

H.T. current for both stages is supplied by the rectifying valve V3.

Valve Data

Valve	Anode Volts	Anode Current (μA)	Bias Volts across R10 + R11	Heater Volts	Heater Amps
V1: EF86	—	70	—	6.3	0.2
V2: EL84	280	—	36	6.3	0.76
V3: U709	—	—	—	6.3	0.95

Voltage across reservoir capacitor C8: 325 V.

General Data**Mains Power Supply**

Voltage: 200 to 250 V a.c.

Frequency: 45 to 55 c/s

Impedances

Specified input capacitance: Not greater than 150 pF

Specified output impedance: Not greater than 1 Ω over the range 100 c/s to 10 kc/s.

Load impedance: 3 Ω nominal.

Stability

No observable self-oscillation at the output terminals when either an impulsive or a steady signal of any kind from zero to maximum input (0.1 V r.m.s.) is applied to the input terminals from any source impedance ahead of the external 50-kilohm control; this applies with any setting of the volume control and with the amplifier output (a) open-circuit and (b) loaded with a 3-ohm resistor in series with any value of inductance.

Sensitivity and Power Output

At least 3 watts output into a resistive load of 3 ohms with a sinusoidal input of 0.1 volt r.m.s. at a frequency of 1 kc/s.

INSTRUCTION S.3

Section 10

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Noise

With the input terminated by a resistor of 50 kilohms, the total noise output does not exceed 2.5 mV r.m.s. across a load resistor of 3 ohms in the frequency band 0 c/s to 10 kc/s.

Harmonic Distortion

Not greater than 1.5 per cent total for an output into a 3-ohm resistive load of 2 watts at 1 kc/s and 0.5 watt at 60 c/s.

Frequency Response

With a constant input voltage and a 3-ohm resistive load the response with respect to that at 1 kc/s is within ± 1 dB from 60 c/s to 10 kc/s.

AM8/2, AM8/2A: SERIAL NOS. 186 TO 505

Circuit Description (Fig. 57A)

The circuit of amplifiers with serial numbers 186 to 505 is shown in Fig. 57A. It is basically the same as that shown in Fig. 57, but a.c. coupling instead of d.c. coupling is employed between the two stages, and the biasing and feedback arrangements are somewhat different. The amplifiers have a similar performance to those with serial numbers 101 to 185.

Valve Data

Valve	Anode Volts	Anode Current	Cathode Volts	Heater Volts	Heater Amps
V1: EF86	—	1 mA	2.2	6.3	0.2
V2: EL84	240	—	6.4	6.3	0.76
V3: EZ80	—	—	—	6.3	0.6

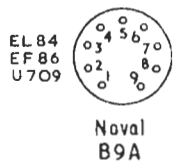
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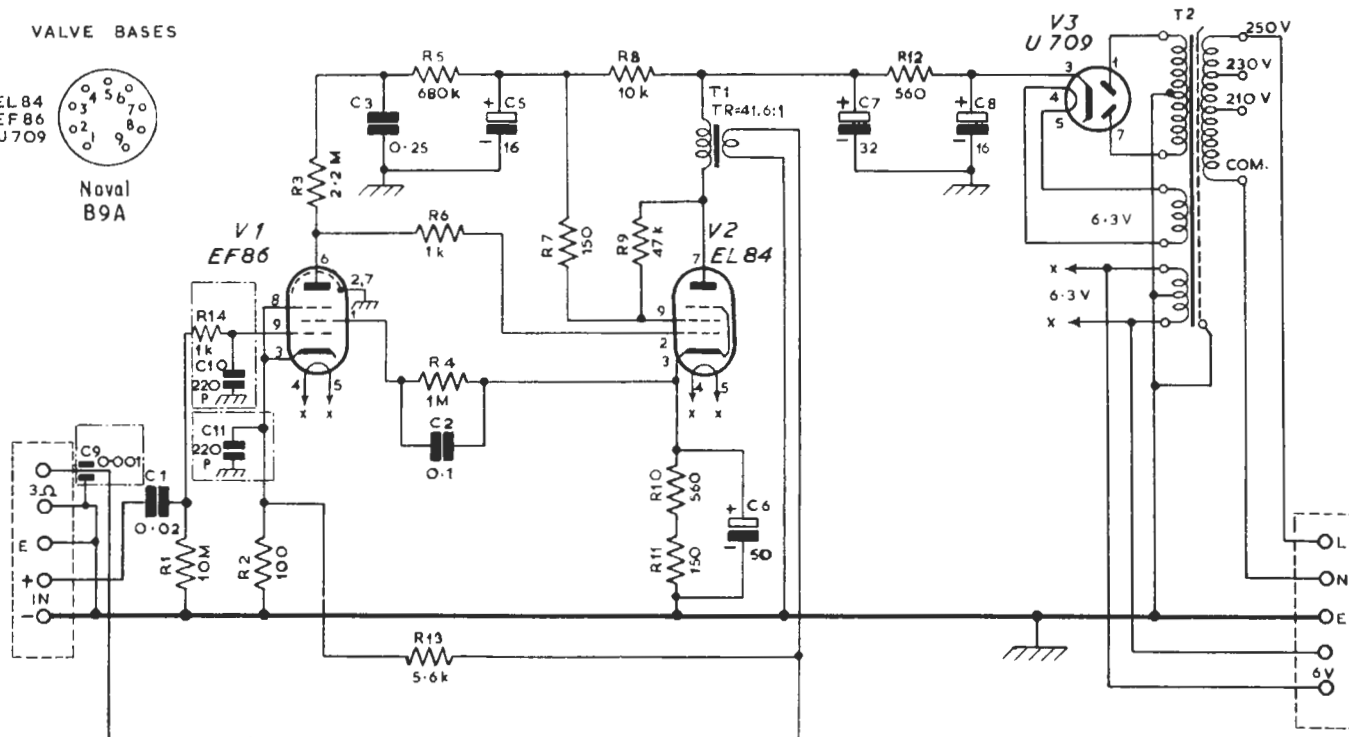
60/MG/128/AP
EA 10790

A B C D E F G H J K

VALVE BASES



1
2
3
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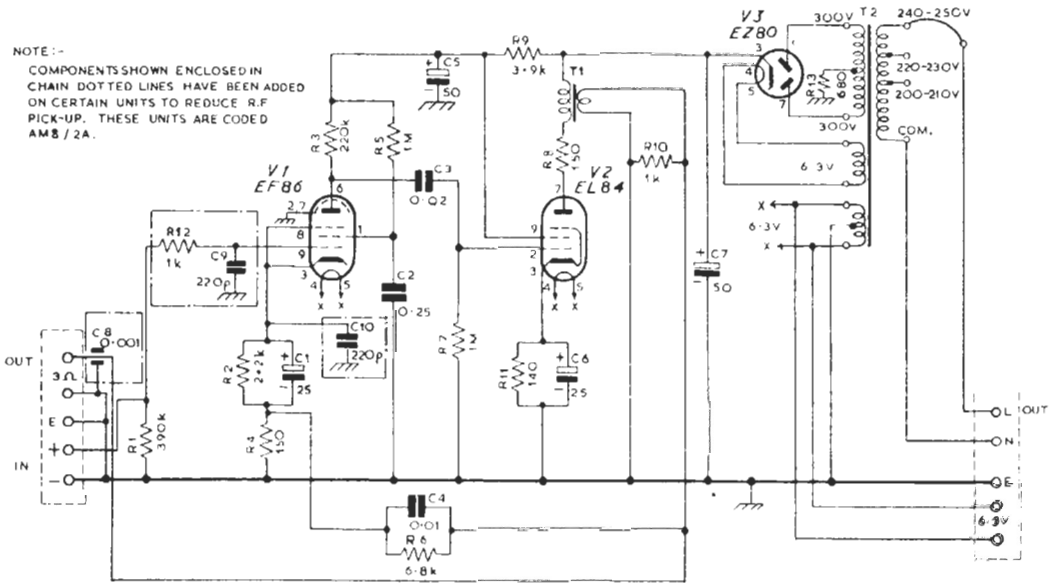


NOTE :-
COMPONENTS SHOWN ENCLOSED IN CHAIN DOTTED LINES
HAVE BEEN ADDED ON CERTAIN UNITS TO REDUCE RF PICK-UP.
THESE UNITS ARE CODED AM8/2A.

LOUDSPEAKER AMPLIFIERS AM8/2 & AM8/2A:
SERIAL Nos. 101-185: CIRCUIT

FIG 57
ISSUE 2

S3
SECTION 10



VALVE BASE



B9A

LOUDSPEAKER AMPLIFIERS AM8/2 & AM8/2A:
SERIAL Nos. 186-505: CIRCUIT

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