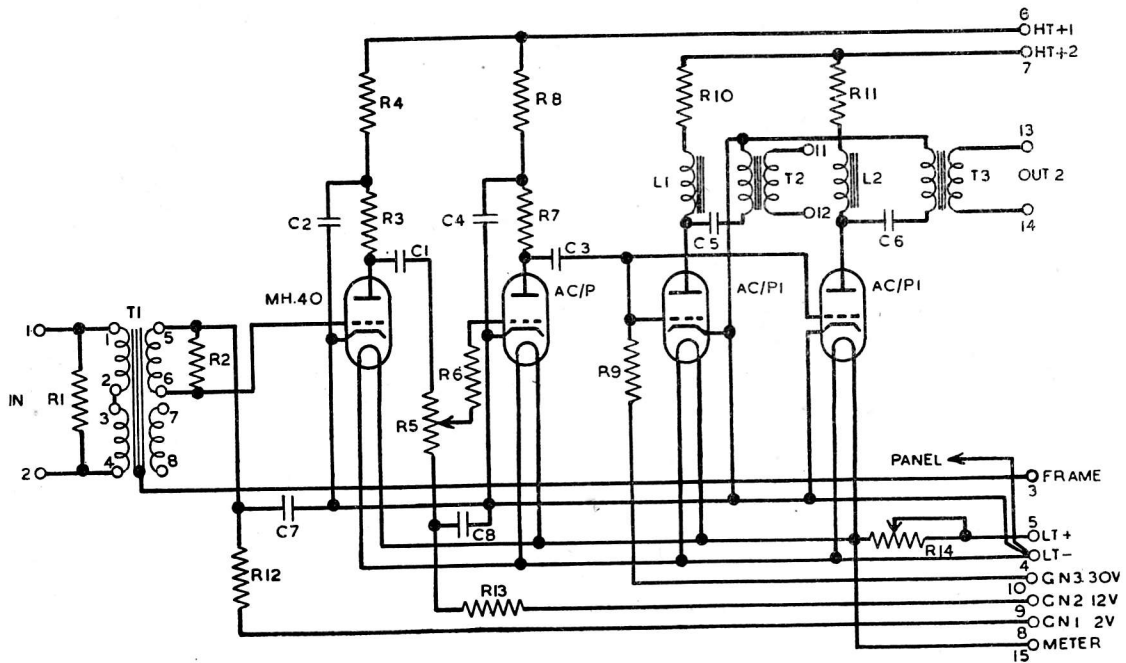


AMPLIFIER A/4A



Components Table

Component	Value or Type	Component	Value or Type	Component	Value or Type
C1	0.5 μ F	L1	D5	R7	25,000 Ω
C2	2 μ F	L2	D5	R8	10,000 Ω
C3	0.5 μ F	R1	500 Ω *	R9	500,000 Ω
C4	2 μ F	R2	150,000 Ω *	R10	2,000 Ω
C5	4 μ F	R3	100,000 Ω	R11	2,000 Ω
C6	4 μ F	R4	20,000 Ω	R12	500,000 Ω
C7	1 μ F	R5	100,000 Ω	R13	500,000 Ω
C8	1 μ F	R6	500 Ω	R14	0.85 Ω

* For Type IT256. In the case of Type CA4201-23, R1=400 Ω , R2=250,000 Ω .

Transformers

- T1. Turns Ratio 1/14.5. Type IT256 or CA4201-23.
 T2. Turns Ratio 4.47/1. No. 105.

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Circuit

The A/4A is a three-stage amplifier with a screened input transformer and two output stages, output No. 2 providing a source of echo. Resistance-capacity coupling is used between the stages and the output stages are choke-capacity coupled to their output transformers. The volume control operates in the input to the second stage.

The grid-bias voltages to all the stages are obtained, like the H.T. and L.T. supplies, from an external battery.

This amplifier has recently been modified for use with type AXB microphones which, as explained in Instruction ST.5, Part 1, page 4, require no frequency correction.

Correction for the upper-frequency band has been removed by loading the secondary of the input transformer T1 with the resistance R2 and increasing the value of the resistance R1 across the primary. The values of these resistances are conditioned by the type of transformer used and are indicated in the components table.

Low-frequency correction has been removed by cutting out a small condenser which was previously connected in series with the $4\mu\text{F}$ feed condenser in each of the output circuits.

Impedances

Input impedance	..	..	..	..	..	..	(approx) 300 ohms
Output impedance (Nos. 1 & 2)	..	..	..	..	..	..	(approx) 190 ohms
Normal load impedance	..	..	..	..	..	..	(approx) 600 ohms

Volume Control

<i>Type</i>	<i>Total Resistance</i>	<i>No. of Studs</i>	<i>Loss per Stud</i>	<i>Loss on Lowest Stud</i>
P10	100,000 Ω	10	4 db.	Infinite

Supply Data

<i>Stage</i>	<i>Valve</i>	<i>Grid Bias</i>		<i>Anode Current</i> mA (approx)	<i>Filaments</i>	
		Volts Negative			Volts	Amps
1	MH.40	2		1.4	4	1
2	AC/P	12		5.0	4	1
3 (Main)	AC/P1	30		18.0	4	1
3 (Echo)	AC/P1	30		18.0	4	1
		<i>Total</i>		42.4	4	

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H.T. Supply H.T. +1 (Stages 1 & 2)	300 Volts
H.T. +2 (Output Stages)	300 Volts
L.T. Supply	6 Volts (adjusted to 4 V. by a series resistance)

Grid bias from an external battery at -2, -12 and -30 volts.

600 Ohm Test Gain

Testing Conditions

Amplifier volume control set for maximum output

T.M.S. sending level to **Loss Pads** branch

with key at **60 db.** -40 db.

T.M.S. sending level to **Attenuator** branch .. -20 db.

Gain at 1,000 c/s (outputs 1 & 2) **64±2 db.**

Frequency Response 50—9,000 c/s **±1 db.** relative to 1,000 c/s

Working Voltage Gain

Testing Conditions

Volume control set for maximum output

Output loaded with 600 ohms and at approximately zero level.

Gain at 1,000 c/s **67±2 db.**