

SPECIFICATIONS

FOR

AMPLIFIER 30 WATT A.C.

POWER OUTPUT 30 watts.

FREQUENCY RESPONSE 30 - 15000 c/s within 2 dB with tone control set for flat response.

RANGE OF BASS CONTROL plus 0 dB to - 16 dB at 40 c/s.

RANGE OF TREBLE CONTROL plus 0dB to - 20 db at 15000 c/s.

SIGNAL TO NOISE RATIO Microphone - 55 dB }
Pickup - 70 dB } weighted

DAMPING FACTOR 2.5

MAINS VOLTAGE 220, 240, 260 Volts A.C.

MAINS FREQUENCY 40 - 60 c/s.

POWER CONSUMPTION Without signal 130 VA
With signal 150 VA

INPUT IMPEDANCE Microphone 1M ohm.
Pickup 500,000 ohm.

OUTPUT IMPEDANCE 300, 150, 100, 75 and 15 ohms.
(one side of output earthed for 15 ohm.)

INPUT SENSITIVITY Microphone 1.5 MV
Pickup 150 MV

FUSES 2 amp auto type

VOLTAGE ANALYSIS

VALVE	ANODE	SCREEN	CATHODE	HEATER
V1 EF 86	70 V D.C.	45 V D.C.	1.4 V D.C.	6.4 V A.C.
V2 GZ 32	345 V A.C.	-	380 V D.C.	5.0 V A.C.
V.3 GN 8	35 V D.C.	-	1.4 V D.C.	6.4 V A.C.
V.4 12 AX 7	150 V D.C. 260 V D.C.	- -	1.3 V D.C. 75 V D.C.	6.4 V A.C. 6.4 V A.C.
V.5&6 EL34	370 V. D.C.	360 V D.C.	22.5 V D.C.	6.2 V A.C.

30 Watt Amplifier

VOLUME CONTROL

Separate controls are provided for each input channel and this allows individual adjustment and mixing. To increase volume turn the knob clockwise.

TONE CONTROL

Separate bass and treble controls having wide attenuation range. Refer Frequency Response Graph.

PRECAUTIONS

It is strongly recommended not to carry out repairs on Amplifiers unless technically capable. Besides additional damage which may result from trying to tamper with an Amplifier, it should always be borne in mind that if the top or bottom covers are removed, terminals carrying dangerous high voltages are exposed, sometimes even after the Amplifier is disconnected from the mains supply.

It is essential that sufficient space be allowed on all sides of the Amplifier to provide efficient ventilation. Under no circumstances should anything be placed on top of the perforated cover, as this will result in overheating and subsequent damage.

NOTE:

Plug numbers quoted for connections for microphone and pickup apply to the plugs supplied with the Amplifier (Acme).

TEST SHEET

for

AMPLIFIER 30 WATT BOOSTER

1. Plug in all valves except rectifier and switch on.
2. Connect 300 ohm load to output terminals.
3. Plug in rectifier and watch for H.T. short circuits.
4. Adjust phase of feedback if necessary.
5. Check for the following voltages with 1000 ohm/volt meter.

	<u>ANODE</u>	<u>SCREEN</u>	<u>CATHODE</u>	<u>HEATER</u>
GZ32	345 V A.C.	-	390 V D.C.	5.1 v A.C.
EL34	388 V D.C.	378 V D.C.	23 V D.C.	6.2 v A.C.
12AX7	(1) 250 V D.C.	-	80 V D.C.	6.2 v A.C.
	(2) 145 V D.C.	-	1.7 v D.C.	

6. Connect a signal of .9v at 1000 cps to the input.
7. Turn volume to maximum and output for 95 volts at less than 5% distortion.
8. Reduce output to 50 volts and change generator frequency to 10000 cps. Output should now be 40 volts.
9. Change generator frequency to 40 cps. Output should now be 52 volts.
10. Remove input signal and short circuit input. Output should not be more than 40 mV.

OPERATING INSTRUCTIONS

for

30 WATT AMPLIFIER

GENERAL

Before using a new Amplifier, make sure that all valves are seated firmly in their sockets, and that fuses are fitting tightly in their holders.

All Amplifiers leave the factory with the power cable connected to the main transformer for 240 volt A.C. operation. In cases where the mains voltage is not 240 volt, it is necessary to remove the baseplate of the Amplifier, BUT ENSURE THE AMPLIFIER IS NOT CONNECTED TO THE MAINS SUPPLY, unsolder the lead of the power cable connected to the 240 volt and re-solder to the lug required as per the following sequence:-

WHITE	260 v
RED	240 v
GREEN	220 v
BLUE	110 v

The power point used for Amplifiers should be of the three pin earthed type, which will then earth the amplifier through the third conductor in the power lead. If an earthed power point is unavailable, a separate earthing wire should be connected to the Amplifier chassis.

INPUT CONNECTORS

Before connecting any input source to this Amplifier, ensure the voltage to the plugs does not exceed the following, otherwise severe overloading will result.

Pickup	2 v
Microphone	.05 v

The input connectors are two - pin plugs (metal sheathed type) which are supplied with the Amplifier. The pin numbers are stamped on the inside bakelite moulding of the plug - No. 2. being Grid and No. 1 being Grid return.

When connecting the microphone or pickup cable to the plug pins, the two inner wires must be connected to Pins No. 1 and No. 2. whilst the braid shielding is soldered directly to the outer spring on the plug.

Where a single shielded conductor is encountered, the shielding should be connected to No. 1 pin and NOT to the spring, as this amplifier features SINGLE POINT EARTHING. If this is NOT done correctly, EXCESSIVE HUM will develop.

OUTPUT CONNECTIONS

The constant voltage output system used, eliminates mismatch distortion. This permits any number of loudspeakers to be connected provided the total impedance is not lower than 0.8 times the selected impedance. In this regard there is provided at the rear of the amplifier, a variable impedance selector switch.

Selection of wattage per speaker is calculated as under when connected to the 300 ohm tapping.

$\frac{1}{2}$ watt	20,000 ohms
1 watt	10,000 ohms
2 watt	5,000 ohms
4 watt	2,500 ohms
8 watt	1,250 ohms

When the impedance selector switch is set to a lower impedance value, the power fed to each loudspeaker is proportionately reduced.

AMPLIFIER 30 Watt, A.C.

1. Set the mains tap to 240 volt.
2. Plug in all valves with exception of rectifier.
3. Switch on and ensure that valves light.
4. Plug in rectifier and watch for H.T. short circuits.
5. Connect a 300 ohm load and set the output impedance to 300 ohm.
6. Adjust the polarity of the negative feedback if necessary.
7. The following voltages should now be measured with a 1000 ohm per volt meter to chassis.

	<u>ANODE</u>	<u>SCREEN</u>	<u>CATHODE</u>	<u>HEATER</u>
GZ32	345 V A.C.	-	380 V D.C.	5.0 volt
EL34	370 V D.C.	360 V D.C.	22.5V D.C.	6.3 volt
12AX7	150 V D.C.	-	1.3 V D.C.	6.4 volt
	260 V D.C.	-	75 V D.C.	
6N8	35 V D.C.	-	1.4 V D.C.	6.4 volt
EF86	70 V D.C.	45 V D.C.	1.4 V D.C.	6.4 volt

8. Apply a signal of approximately 210 mV at 1000 c/s to the pickup socket and ensure that it is possible to produce 95 volts across the load resistor without excessive (up to 5%) distortion.

NOTE: Both tone controls should be in a fully anti-clockwise position for this and the next test.

9. Apply a signal of approximately 1.3mV at 1000 c/s to the microphone socket, advance microphone gain control and ensure that it is possible to obtain 95 volts across the load.
10. With output maintained at 95 volts switch the output tapping to 150, 100, 75 and 15 ohms and note change of output voltage to approximately 93, 84, 75 and 36 volts respectively.
11. Return output to 300 ohm tap and change oscillator frequency to 60 c/s. The output voltage should now be 90 volt.
12. Rotate bass tone control to fully clockwise position. The output should now be approximately 12 volt.
13. Return bass tone control to fully clockwise position and change oscillator frequency to 10,000 c/s. The output should now be approximately 90 volt.
14. Rotate treble control to fully clockwise position. The output should now be approximately 10 volt.
15. Remove input signal, turn all controls fully anti-clockwise and short circuit input sockets. The output should not be greater than 70 mV.
16. Turn microphone and pickup gain controls up fully. The output should now be less than 500 mV.
17. Tap valves gently and check for excessive microphony of inter-electrode shorts.

OPERATING INSTRUCTIONS FOR 30 WATT BOOSTER

GENERAL

Before using a new Booster Amplifier, make sure that all valves are seated firmly in their sockets, and that fuses are fitting tightly in their holders.

All Booster Amplifiers leave the factory with the power cable connected to the mains transformer for 240 volt A.C. operation. In cases where the mains voltage is not 240 volt, it is necessary to remove the baseplate of the Booster BUT ENSURE THE BOOSTER IS NOT CONNECTED TO THE MAINS SUPPLY, then unsolder the lead of the power cable connected to the 240 volt lug on connecting strip and rewire as per following guide:

White or Yellow	260 V
Red	240 V
Green	220 V

The power point used for Boosters should be of the three-pin earthed type, which will then earth the Booster through the third conductor in the power lead. If an earthed power point is unavailable, a separate earthing wire should be connected to the Booster chassis.

INPUT

Input is made via pins 10 and 12 on a 12 pin socket. The pin numbers are stamped on the inside bakelite moulding.

OUTPUT

The constant voltage output system used eliminates mismatch distortion. This permits any number of loudspeakers to be connected provided the total impedance is not lower than 0.8 times the selected impedance. Selections of wattage per speaker is calculated as under when connected to the 300 ohm tapping.

$\frac{1}{2}$ watt	20,000 ohm
1 watt	10,000 ohm
2 watt	5,000 ohm
4 watt	2,500 ohm
8 watt	1,250 ohm

When a lower impedance tapping is used the power fed to each loudspeaker is proportionately reduced.

VOLUME CONTROL

A volume control is provided on the input. To increase volume turn clockwise.

PRECAUTIONS

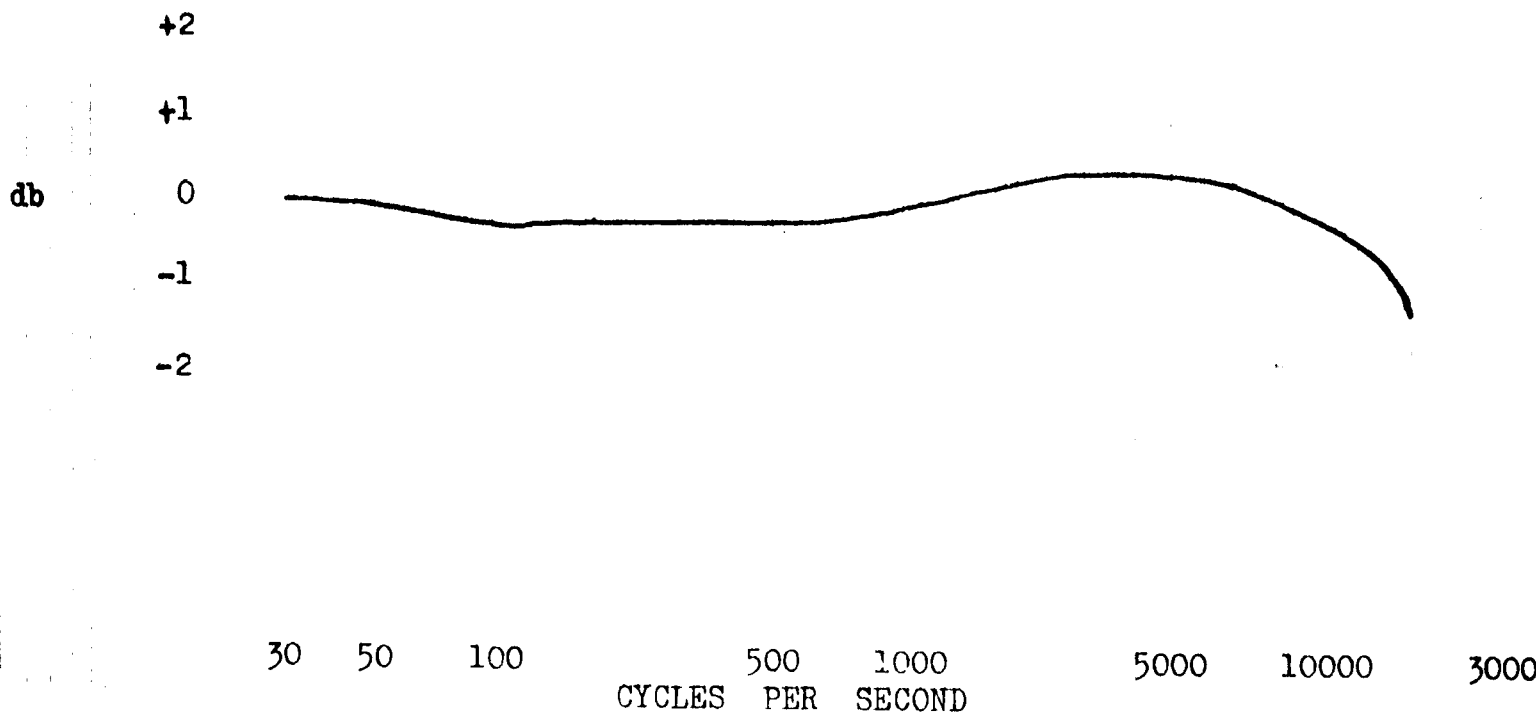
It is strongly recommended not to carry out repairs on Booster unless technically capable. Besides additional damage which may result from trying to tamper with the equipment, it should always be borne in mind that if the top or bottom covers are removed, terminals carrying dangerous high voltages are exposed, sometimes even after the Booster is disconnected from the mains supply. It is essential that sufficient space be allowed on all sides of the Booster to provide efficient ventilation.

A graph titled "FREQUENCY RESPONSE GRAPH" showing the frequency response of various components. The vertical axis is labeled "db" and ranges from +2 to -20 in increments of 2. The horizontal axis is labeled "CYCLES PER SECOND" and is a logarithmic scale with major ticks at 20, 50, 100, 500, 1000, 5000, and 10000. There are four curves: 1) A solid line with 'x' markers that starts at approximately -13.5 dB at 20 cps, remains relatively flat until 100 cps, then rises to a peak of about -8.5 dB at 1000 cps, before falling to -20 dB at 10000 cps. 2) A dash-dot line with dot markers that starts at approximately -3.5 dB at 20 cps, rises to a peak of about -2 dB at 1000 cps, and then falls to -20 dB at 10000 cps. 3) A dashed line that starts at approximately -0.5 dB at 20 cps, remains flat until about 500 cps, then falls to -20 dB at 10000 cps. 4) A solid line that starts at approximately -3.5 dB at 20 cps, rises to a peak of about -0.5 dB at 5000 cps, and then falls to -7.5 dB at 10000 cps.

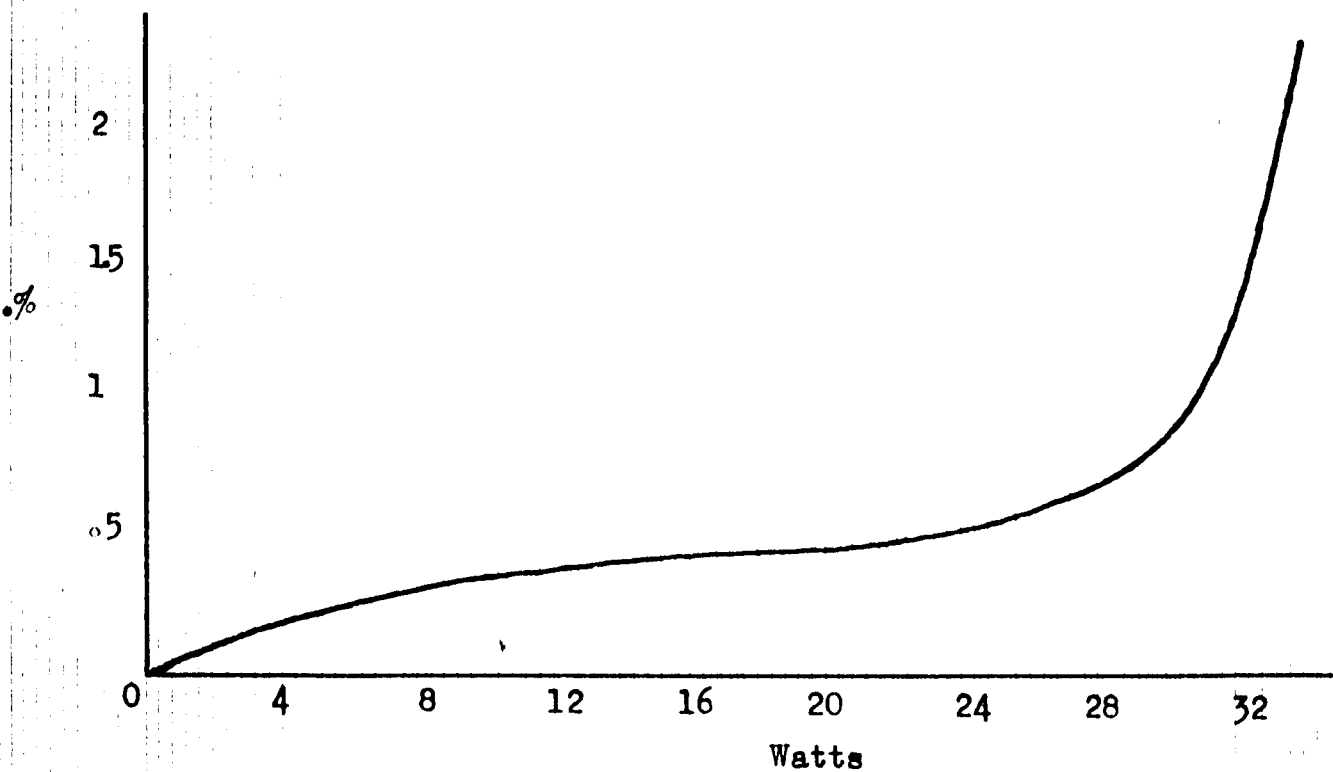
POWER OUTPUT (WATTS)



FREQUENCY RESPONSE GRAPH



POWER OUTPUT (WATTS)



POWER OUTPUT 30 Watts.
3% Total Harmonic distortion at full output.

FREQUENCY RESPONSE plus or minus 1 dB from 40 cps to 15 KC.

INPUT SENSITIVITY .9 V

DAMPING FACTOR 4

SIGNAL TO NOISE RATIO 70 dB

POWER CONSUMPTION 156 VA at full signal

MAINS VOLTAGES 220, 240, 260 AC

VALVES
1 x GZ.32
2 x EL34
1 x 12AX7

FUSE 1.5 AMP AUTO TYPE

VOLTAGE ANALYSIS

VALVE	ANODE	SCREEN	CATHODE	HEATER
GZ.32	345V A.C.	-	390 V D.C.	5.1 V A.C.
EL.34	388V D.C.	378 V D.C.	23 V D.C.	6.2 V A.C.
12 AX 7	(1)250V D.C.	-	80 V D.C.	6.2 V A.C.
	(2)145V D.C.	-	1.7 V D.C.	

ALL MEASUREMENTS TAKEN WITH 1000 OHM PER VOLT METER TO CHASSIS