PHILIPS

SERVICE DATA

MODEL EV 4435
30W. P.A. AMPLIFIER

ELECTRO-ACOUSTICS

MOD. EV. 4435 - P.A. AMPLIFIER - 30 W.

S P E C I F I C A T I O N

Power output:	30 Watts at less than 5% T.H.D.
Output Impedances:	330 Ohms, 160 Ohms, 80 Ohms and separate 2 volt winding *
Damping Factor:	3.0
Input Sensitivity:	P.U. 140 mV Mic. 2.5 mV.
Input Impedance:	P.U. 500,000 Ohms Mic. 100,000 ohms.
Signal to Noise Ratio:	Controls Down 60 dB Controls Up 50 dB
Valves:	2-6CM5's; 2 - 12AX7's.
Power Consumption:	84 V.A. average on music and speech.
Overall Dimensions:	14 inches L., $8\frac{1}{2}$ inches H., x 10 inches deep.
Weight:	19 pounds.
Mains:	220 - 260 volts A.C. 50-60 c/s
Frequency Response:	See Curves.
Power Switch:	Push pull type on tone control.
Microphone Tone Control:	Push pull bass cut tone switch on microphone volume control.

* A separate 2 volt winding on output transformer is intended to supply headphones, remote line or 2 to 3 ohm voice coil of monitor speaker. The monitor speaker will absorb 1 watt when rated output is reached.

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1. GENERAL

This P.A. type amplifier is a complete table-standing unit suitable for a high impedance microphone input and pick-up/radio input with independent volume control and tone control. The rated output on speech and music signals is 30 watts peak.

The microphone input can be changed to low impedance by means of a plug-in unit, EV 4404.

The standard output voltage is 100 volts (peak) but the output transformer is tapped for 70 V and 50 volts. An auxiliary winding of 2 V is available and can be used to drive monitoring headphones or a 2 to 3 ohm loudspeaker. The peak power drawn by the loudspeaker under these conditions is 1 watt.

The mains transformer is designed to deliver power to a radio tuner or auxiliary preamplifier. The current available for this purpose is:

16 mA at 250 V D.C. Continuous rating
0.6 amp at 6.3V A.C.

2. INSTALLATION

Adequate ventilation is necessary to prevent overheating in operation. The amplifier is set for operation off 240 V A.C. 50 c/s mains supply but, where the mains voltage varies by more than 10% from this figure, the fly-lead on the mains transformer should be resoldered to the nearest alternative tap, i.e., 220 V or 260 V A.C.

Ensure that the correct mains fuse has been fitted (1.5 amp. rating) and that the spare fuse is of the same rating.

Relay Operation: The mains transformer has an additional 35 volt winding included, with one side earthed to chassis. The winding is intended for the operation of one or two 4000 ohm S type relays when used with a Westinghouse rectifier type 14D7 or a Philips OA 210 diode, and a 50 mfd., 150 volt electrolytic condenser to convert the A.C. to a D.C. supply.

3. VOLTAGE READINGS

When the amplifier is connected to the correct mains supply, the following voltage readings should be obtained between chassis and the point indicated. Use an Avo model 7 or 8 (or similar) on 1000V D.C. and 10V D.C. ranges as applicable.

12 AX7 (V1)		12 AX7 (V2)		6CM5 (V3.V4.)
Pin 1	125 V.	Pin 1	250 V*	T.C. - 310-330 V
Pin 6	125 V.	Pin 6	160 V*	Pin 4 - 155-165 V.
Pin 3) Pin 8)	1.3 V.	Pin 3	50 V*	
		Pin 8	2.4 V*	

* - Tolerance ± 5%.

The heater supply across pin 2 and 7 of any one 6CM5 should read 6.3 volts A.C.

4. FREQUENCY RESPONSE

Instruments required:

Audio generator Philips GM 2315.
Voltmeter Philips GM 6005.
Cathode Ray Oscilloscope.
Load resistor 330 ohm 30 watts.
Avo meter Model 7 or 8
Monitor loudspeaker 2 or 3 ohm V.C.

Procedure:

4.1 Connect load resistor across output terminals (output transformer tap at 100 V). Set tone control to mid-position.

4.2 Set audio generator to 1000 c/s at 140 mV output and connect to pick-up input of amplifier. Rotate "P.U." gain control fully clockwise. Check that amplifier output voltage is 100 volts before overload is evident (as seen in C.R.O.).

4.3 Reduce audio generator output to 2.5 mV and connect to microphone input. Repeat procedure as for P.U. input above.

4.4 Set generator to 100 c/s and reduce input to give 50 volts output from amplifier with microphone control knob pulled out. Push in control knob when output should fall to 15 to 20 volts. Switch generator to 10 Kc/s. Output should read 35 to 40 volts.

4.5 Rotate tone control fully anti-clockwise. Amplifier output should fall to 3 to 5 volts. Pull out microphone control knob and change generator to 100 c/s. Amplifier output should now be 30 to 40 volts.

4.6 Rotate tone control fully clockwise. Output should fall to 5 to 10 volts. Switch generator to 10 k/cs when amplifier output should rise to 30 to 40 volts.

4.7 Disconnect generator from amplifier and short-circuit microphone and pick-up input. Turn both gain controls fully

anti-clockwise and tone control to centre position. Amplifier output (internal noise) should be less than 100 mV. Turn both gain controls fully clockwise and output should not rise above 200 mV.

4.8 Connect monitor loudspeaker and check valves for microphony by gently tapping each in turn. Valves found to be excessively microphonic should be replaced.

5. FITTING A RADIO TUNER TO THE EV 4431

A radio tuner EV 4453 may be operated from the EV 4435. The tuner may be mounted on the chassis of the EV 4435 using self-tapping screws through the four fixing holes provided.

The EV 4453 is a two valve superheterodyne tuner employing a permeability tuner. The two controls are "Tuning" and "Radio-pickup" change-over switch. The switch turns off the tuner heaters and dial lamp supply and connects the pickup socket to the pickup volume control when the switch is in the pickup position. The slide switch in the dial escutcheon is not normally connected but may be used as a monitor speaker on-off switch. Note that one side of the switch is earthed.

The tuner may be mounted in the space provided on the top of the chassis using three No. 6P.K. screws for fixing. Heater leads (red and white twisted) should be connected to pins 2 and 7 of the nearest 6CM5 socket. H.T. negative (green wire) is connected to the second lug of the 1E4E1 tag strip nearest the rectifiers under the chassis. The third lug (red wire) is the termination for H.T. positive and the fourth lug (junction of two resistors) is the take-off point for the -2 volt A.V.C. return (black wire).

Disconnect the twin shielded pickup lead at the pickup volume control, feed through slot in chassis and connect to top right-hand lug of the tuner switch (as viewed from the front). Connect black and shield to tuner chassis adjacent to switch. Connect twin shielded lead from switch to pickup volume control. The aerial lead from the tuner should now be taken on the top of the chassis towards the rear and passed through the eyelet between the output transformer and 12AX7 and thence to the aerial terminal on the rear of the chassis. The cover (part No.720039) with cut-out for the tuner should now be fitted. The aluminium escutcheon plate which is fitted over the dial on the outside of the cover is held in place by nuts fitted to the tuner control shaft bushes.

To complete the conversion, fit a tuner amplifier name plate (part No.660135) over the valve location plate after first typing the serial number of the amplifier on to the new plate.

6. ADDITIONAL FACILITIES

The 2 volt winding on the output transformer may be used for either of the following purposes:

(i) A monitor speaker (2 or 3.5 ohms) may be connected, thus dispensing with a transformer.
(ii) Headphones, low impedance may be fed.
(iii) Additional amplifiers fed in cascade through a P.M.G. line. This gives +8dBm in 600 ohms.

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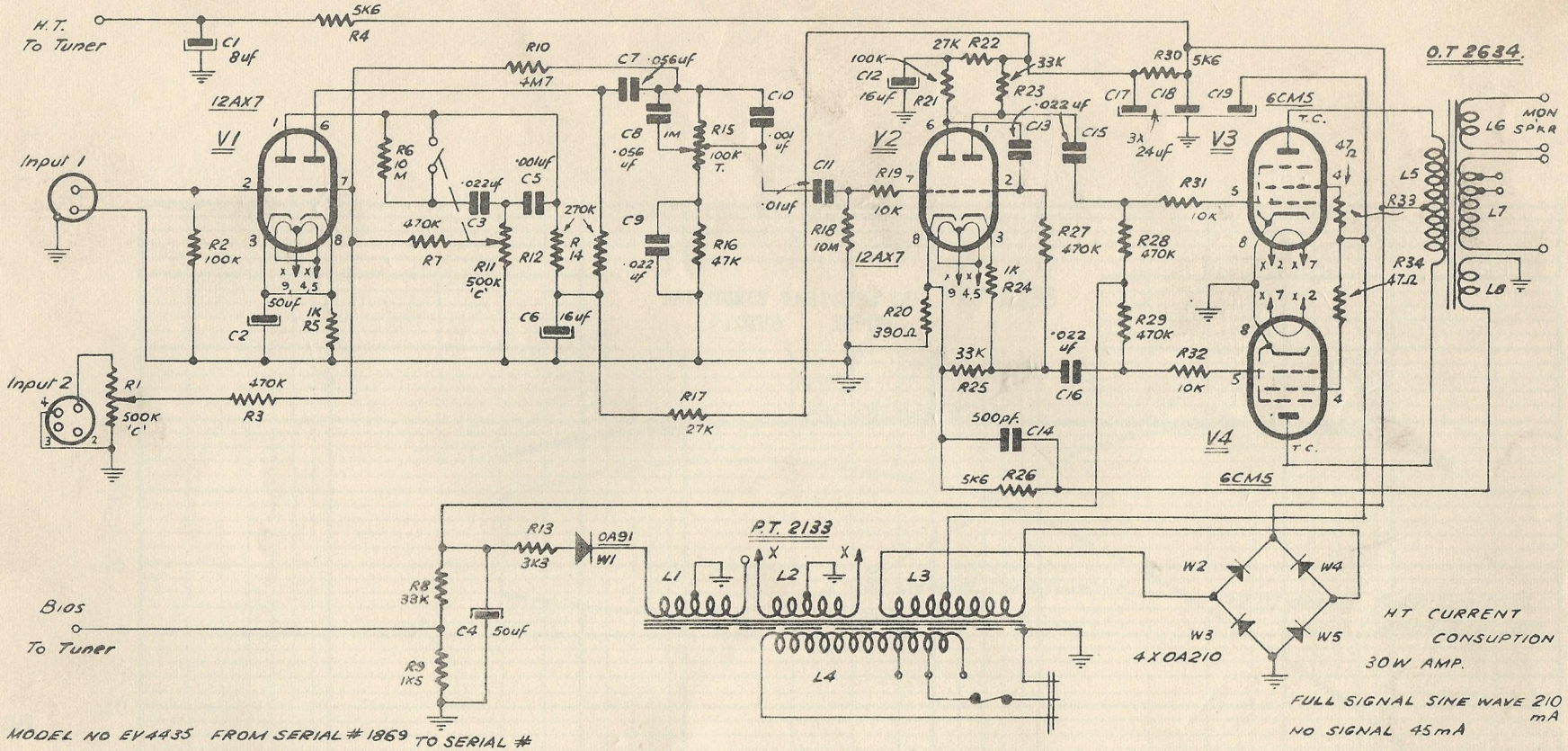
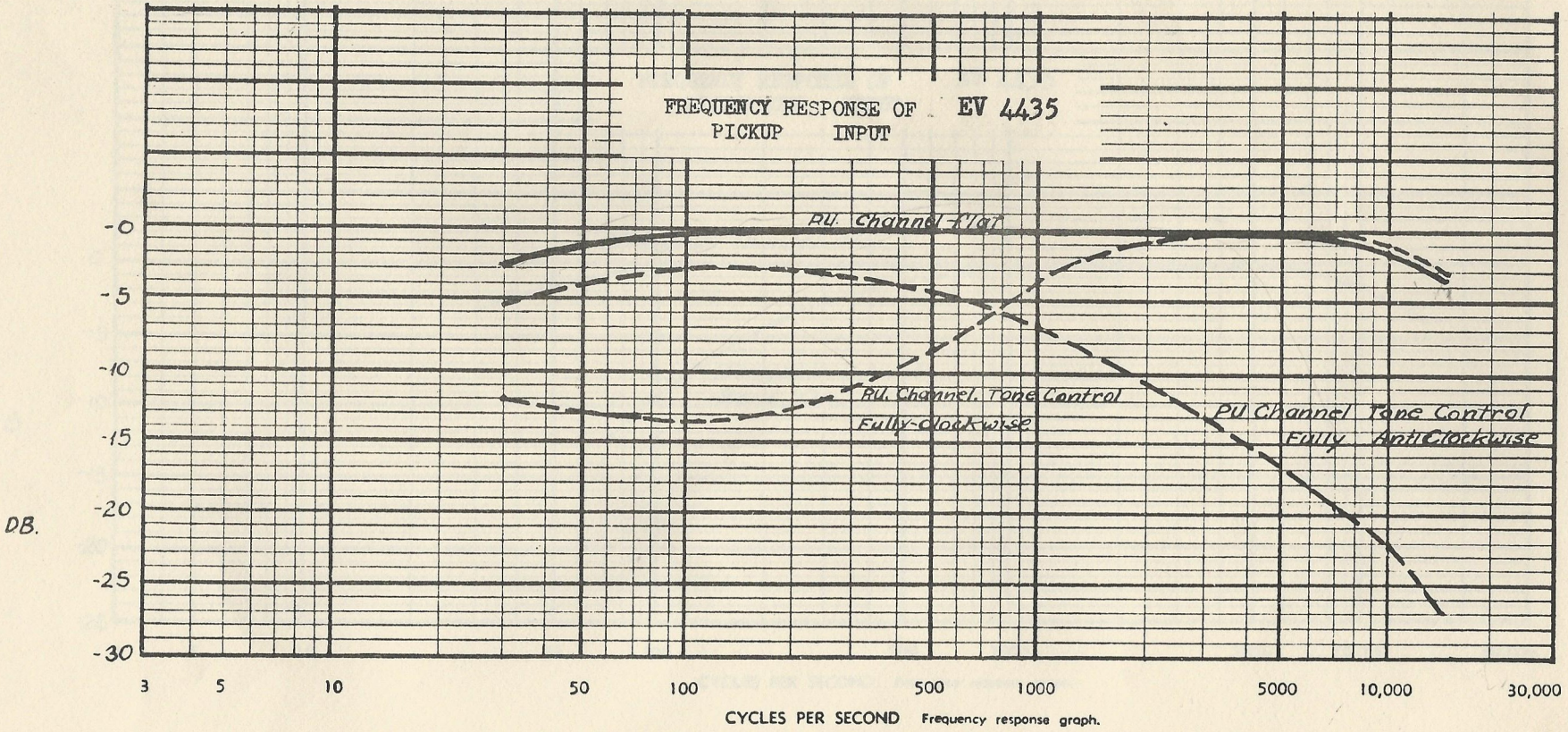
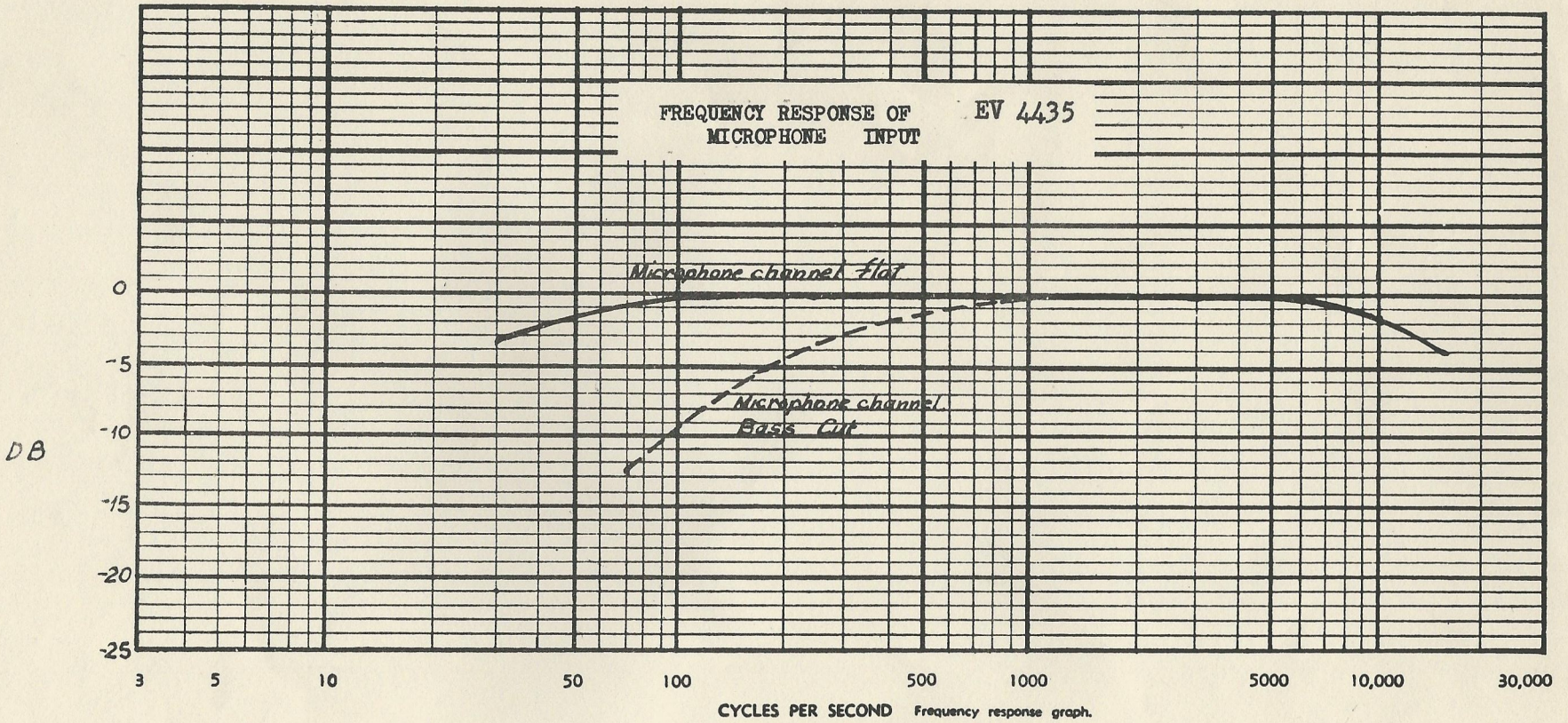


MODEL NO EV4435 FROM SERIAL # 1869 TO SERIAL #



Frequency response graph.



Frequency response graph.

PHILIPS ELECTRO-ACOUSTICS

PHILIPS ELECTRICAL INDUSTRIES PTY. LTD.

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MELBOURNE	590 Bourke Street	Phone 60 1321
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FURTHER INFORMATION ON THIS EQUIPMENT CAN BE OBTAINED FROM ANY OF THE ABOVE PHILIPS BRANCHES