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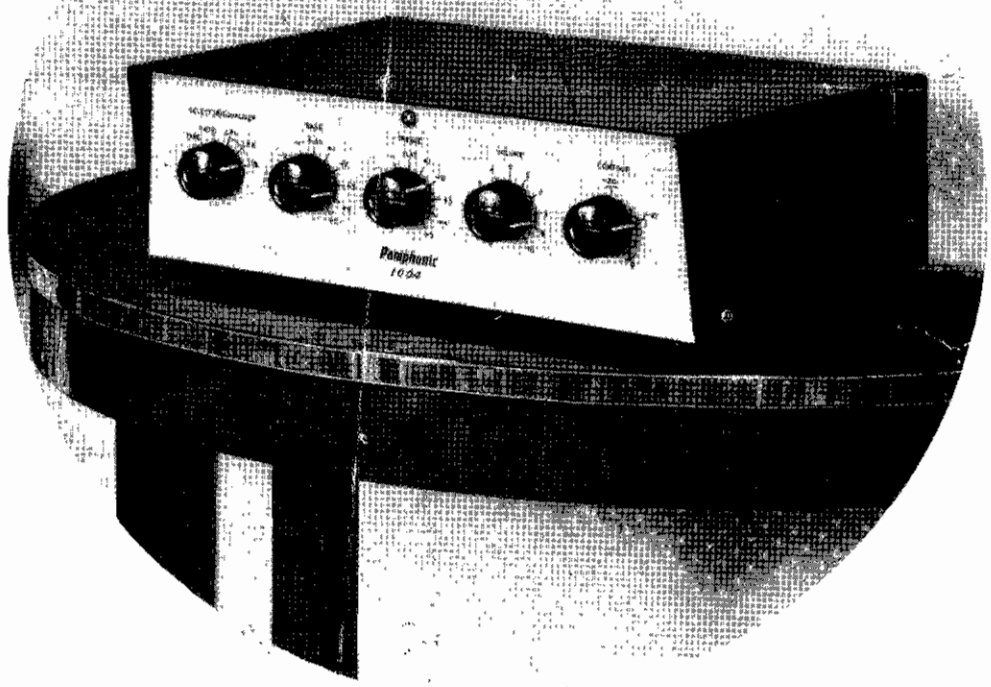
Pamphonic

AMPLIFIER

Model 1004



INSTALLING AND OPERATING INSTRUCTIONS

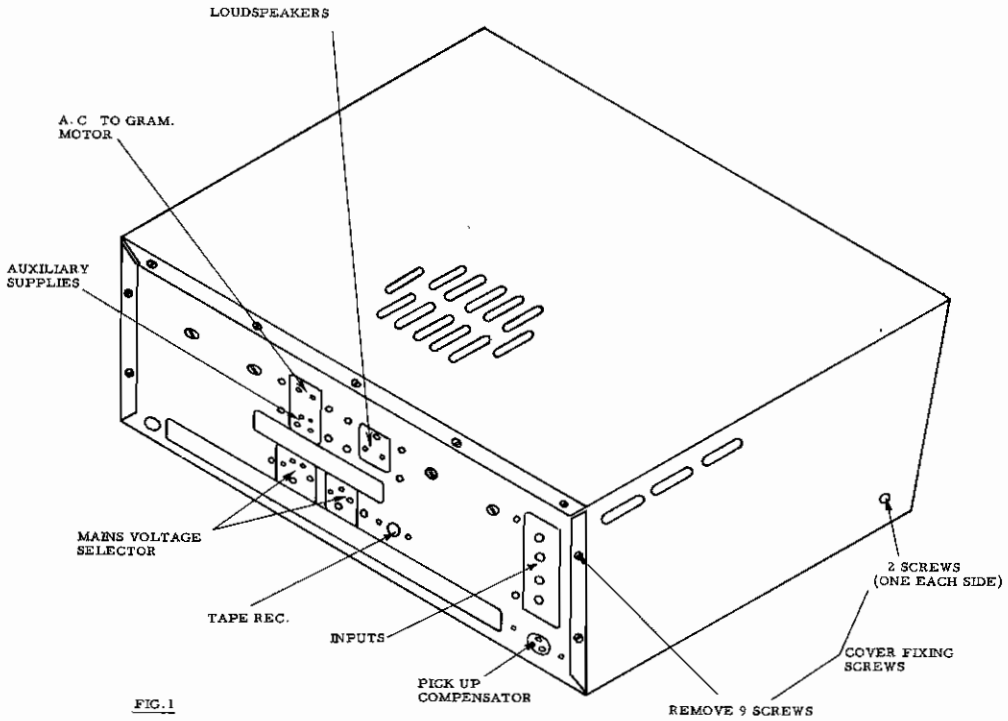


FIG.1

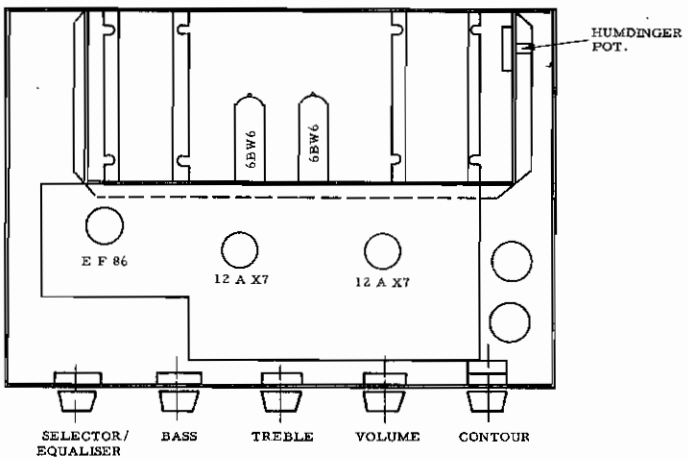


FIG. 2. PLAN VIEW OF 1004 AMPLIFIER SHOWING VALVE POSITIONS

PAMPHONIC REPRODUCERS LIMITED

HIGH FIDELITY AMPLIFIER 1004

INSTALLATION & OPERATION

After unpacking the amplifier it is necessary to remove the cover in order to fit the valves in place. Fig.1 shows the position of the screws securing the cover, which lifts off vertically when all the screws have been removed. The valves and their correct positions are indicated in Fig.2. After fixing the valves replace the cover.

VENTILATION - IMPORTANT

Owing to the compact design of the amplifier 1004 it is important to see that air can circulate around the case and through the ventilating slots. Serious overheating will occur if the slots in the cover are obstructed. If the amplifier is fitted into a cabinet of any kind clear spaces of at least three inches above the cover and two inches below the case are essential, with ample holes in the back of the cabinet for ingress and outlet of air. The amplifier case can stand on a shelf inside a cabinet if air holes are provided directly below the slots in the case, but the rubber feet should not be removed from the amplifier case.

MAINS VOLTAGE ADJUSTMENT

The mains voltage ranges are 100-150 and 200-250 Volts 50/60 cycles per second. First place the four-pin plug into the appropriate position and then select the correct voltage setting for the two pin plug. The mains lead has three cores, the green core is EARTHED and should be connected to the Earth pin of the mains plug. In the absence of a 3-pin socket the green lead should be connected directly to an earthed point, e.g. a water pipe, or if this is not possible the green lead should be cut short and not connected at all.

LOUDSPEAKER

The Amplifier 1004 is arranged for operating loudspeakers of either 15 or 3.5 ohms impedance. The connections are made with a two-pin plug into which the loudspeaker wires can be soldered. This plug can be put into its socket (large pin uppermost) with the small pin to the right for 15 ohm loudspeakers and to the left for 3.5 ohm loudspeakers.

HUM LEVEL

In this amplifier one pole of the heater circuit is permanently earthed and under all normal conditions the hum level will be negligible. However, if there is excessive 50c/s hum, it may be beneficial to reverse the mains input connections to the amplifier.

INPUT CONNECTIONS

Screened cables should be used for the input connections in all cases, except that twin twisted flex can be used for Tape and Radio signals if these are taken from low impedance sources, e.g. Radio from Loudspeaker sockets of a receiver.

The screen braid of the cables should be carefully soldered to the input plugs. It is advisable to earth the gramophone motor and/or Tape Deck separately from the screened input lead to the amplifier. If it is desired to earth the gram motor or tape deck to the amplifier, a soldering tag can be used under the head of one of rear cover fixing screws.

When the Pamphonic F.M.Tuner Type 640 is connected to this amplifier and is deriving its H.T. supplies from the auxiliary supply socket, the screening braid of the audio frequency output lead of the tuner should not be connected to the screen of the input socket, neither should the chassis of the F.M.Tuner be earthed to the amplifier by means of a separate earth lead.

PICK-UP ATTENUATOR

Provision is made for a plug-in pick-up attenuator so that widely differing types of pick-up can be used. The plug-in attenuator provides the correct resistance for the pick-up to give a velocity response and also cuts the input signal level, (when necessary) to prevent overloading the amplifier. If no pick-up attenuator is used the input resistance of the amplifier will be 200 K ohms and there will be a loss of half of the output of the pick-up. If the E type attenuator is fitted the input becomes 100K ohms and there will be no loss. The attenuators available are listed below together with the types of pick-up for which they are suitable. One type E attenuator is supplied with each amplifier.

Type	Attenuation	Pick-up Load Impedance.	Suitable for:
A	11:1	110K ohms	Collaro Studio P, Acos HGP-20, and all high output crystals.
B	4:1	133K ohms	Decca XMS - C, Ortofon with No.251 Transformer.
C	13:1	115K ohms	Decca XMS - D.
D	3:1	150K ohms	Leak (in. transformer)
E	Nil	100K ohms	Tannoy.
F	Nil	50K ohms	Goldring No.500 Var.Reluctance.
H	2.5:1	30K ohms	Pickering 220-240-260.
J	6:1	6K ohms	Ortofon (with No.384 Transformer.)

AUXILIARY SUPPLIES

The 4-pin and 2-pin sockets shown in Fig. 1 can be used with the plugs provided for supplying 6.3V and 200V D.C. to a Radio unit and A.C. mains to a gram motor or tape recorder. The load must not exceed 2 amps on the 6.3V supply and 30 milliamps on the 200V supply.

When the Pamphonic F.M. Tuner unit Type 640 is used with this amplifier, no additional H.T. dropper unit is necessary.

TAPE RECORDER - RECORDING

A "Tape" output socket is provided, connected after the tone control circuits and before the volume control, so that the signal for recording purposes must be controlled for level at the tape recorder. The "Tape" output lead should be screened and kept reasonably short.

TAPE RECORDER - PLAYBACK

To play back Tape records, the output of the tape recorder is connected by screened cable to the "Tape Input" socket.

The output impedance of some tape recorders at the point from which low level signals are taken may be high and some loss of high frequencies will occur if excessively long screened leads are used for connection to the "Tape Input" socket.

MICROPHONE

This is a high impedance input (approx. 100K ohms) suitable for direct connection to a CRYSTAL microphone. MOVING-COIL or RIBBON types should be connected to the pre-amplifier terminals via a step-up transformer to suitable ratio. 1:50 can be regarded as adequate in most instances. The sensitivity of the MIC input is approx. 6 mV for 10 watts output.

PICK-UP

Three positions on the selector switch with different compensation characteristics are available, and the sensitivity is approx. 12/15mV in each. In the "78" position the compensation is suitable for most 78 RPM records, but if the top response is excessive, LP 1 position can be used instead. The LP 2 compensation is suitable for all new LP records of American and British manufacture but some of the older LP recordings will be improved by using the LP.1 position. In all cases final tone adjustment should be made by means of the BASS and TREBLE controls, which have ample range of both cut and boost to cover all variations in records, loudspeakers and listening room conditions.

Gramophone motor rumble usually occurs at frequencies below 50 c.p.s. and so the amplifier response is attenuated in the gram positions of the selector switch to reduce trouble of this kind. However,

if max. BASS boost is employed there will be excessive response at the lower frequencies which may result in an increase of rumble.

RADIO & TAPE

In these switch positions the amplifier has a "flat" frequency response when the tone controls are in the "flat" position, and there should be no difficulty in adjusting the response of the amplifier to suit the incoming signal and listening conditions.

Note that the Tape signal should be taken from a tape recorder after equalisation, and owing to the widely differing characteristics of tape machines no advice on the most suitable settings for the tone control can be given.

The input impedance of the amplifier on Radio and Tape is 120K ohms, and sensitivity is 100 MV in both cases.

CONTOUR CONTROL

It is a characteristic of the human ear that it is more sensitive to sounds in the middle frequency range than at the extreme high and low frequencies. As a result when music is played at a low volume level there appears to be too little bass and too little treble in the music. This is known as the Fletcher-Munson effect and by turning the contour control back when listening at low volume levels, the frequency response of the amplifier is modified so that the extreme bass and treble frequencies are accentuated. This tends to preserve the balance between high, middle and low frequencies and the results depend very much on the aural sensitivity of the listener.

SPECIFICATION

Power Output	10 watts
Output Matching Impedance	3.5 & 15 ohms
Frequency Response (Controls at "level") ...	Substantially flat from 20c/s to 20 kc/s
Distortion	0.5% @ Kc/s @ 10 watts
Hum & Noise - Mic	-53dB
- Pick-up	-54dB
- Radio/Tape ...	-65dB
Negative Feedback	20dB
Sensitivity	1. Mic. Sensitivity 6.0MV 2. Tape) Sensitivity 3. Radio) 100 MV 4. Pick-up Sensitivity 12-15 MV
Input Selector Switch	Mic. Tape Radio

New Standard for USA and British Records	(LP1.	Pick-up Decca Correction
	(LP2.	" " B.S.S. Fine Groove
	(78	" " B. S. S. Coarse Groove
BASS Control		Continuously variable from -16dB to + 15dB @ 50c/s.
TREBLE "		Continuously variable from -16dB to + 16dB @ 10Kc/s.
VOLUME Control		Graded
CONTOUR "		Adjust response in accordance with Fletcher-Munson curves. Also mains on/off switch.
MAINS Voltage		100-150V, 200-250V, 50/60 c/s.
MAINS Consumption		70 VA.
Auxiliary Supplied available for Tuner etc.)	...	+200V. 20MA. D.C. 6.3V 2A. A.C.
Valves		2 x 6BW6 (Brimar) 2 x 12AX7(Brimar) 1 x EF86 (Mullard)
H.T. Rectifier		Fullwave bridge selenium rectifier.

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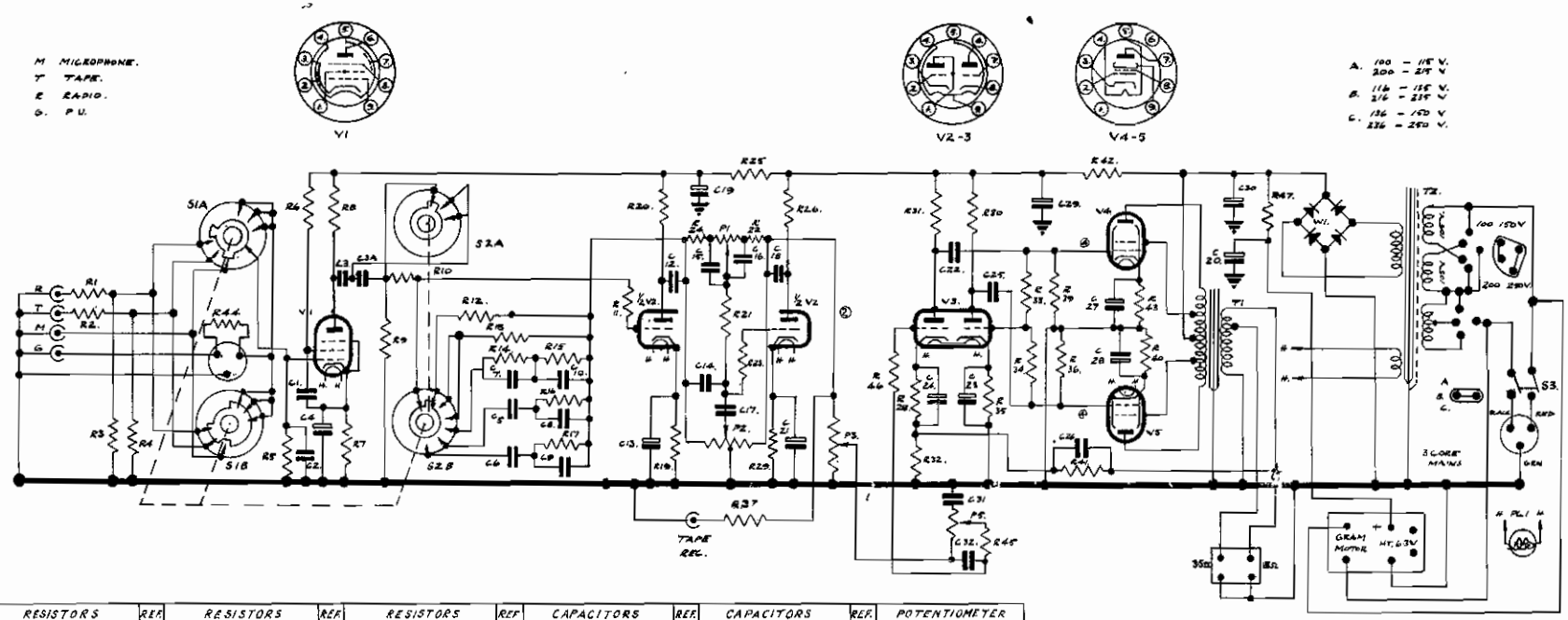

REF.	RESISTORS	REF.	RESISTORS	REF.	RESISTORS	REF	CAPACITORS	REF.	CAPACITORS	REF.	POTENTIOMETER
R1	100 KΩ 10% ½W.	R20	220 KΩ 20% ½W.	R39	470 KΩ 20% ½W	C1	25 μF 350V. TUB	C20	32 μF 350V ELECT.	P1	1 MΩ LINEAR
R2	" " "	R21	470 KΩ 20% ½W.	R40	500 Ω 10% 1W.	C2	30 PF 10% SIL. MICA.	C21	50 μF 25V ELECT.	P2.	500 KΩ LIN C.T.
R3	33 KΩ 10% ½W.	R22	100 KΩ 10% ½W.	R41	470 Ω 5% ½W.	C3&3A	·05 μF 350V TUB.	C22	·1 μF 350V. TUB	P3	500 KΩ LOG
R4	" " "	R23	4·7K Ω 20% ½W.	R42	10 KΩ 20% ½W	C4	50 μF 25V ELECT	C23	50 μF 25V. ELECT.		
R5	100 KΩ 10% ½W	R24	100 KΩ 10% ½W	R43	500 Ω 10% 1W	C5	700 PF 5% SIL. MICA	C24	" " "	P5	1 MΩ LOG & DP S3.
R6	680K Ω 20% ½W.	R25	22 K Ω 20% ½W	R44	100 K 10% ½W	C6	2000 PF 5% " "	C25	·1 μF 350V. TUB.		
R7	1 KΩ 10% ½W.	R26	220 KΩ 20% ½W	R45	47K 20% ½W.	C7	1000 PF 5% " "	C26	7000 PF 20% SIL. MICA		
R8	150 KΩ 10% ½W.	R27		R46	4·7K 20% ½W.	C8	220 PF 5% " "	C27	50 μF 25V ELECT.		
R9	100 KΩ 10% ½W.	R28	2·2 KΩ 10% ½W.	R47	3·3KΩ 5% 6W. W/W	C9	50 PF 5% " "	C28	" " "	W1	RECTIFIER B260 C125
R10	100 KΩ 5% ½W.	R29	" " "	V1	EF86 MULLARD	C10	120 PF 5% " "	C29	32 μF 350V "		
R11	4·7K Ω 20% ½W.	R30	220 KΩ 10% ½W.	V2	12AX7 BRIMAR	C11		C30	32 μF 450V "		
R12	1 MΩ 10% ½W	R31	" " "	V3	" "	C12	·1 μF 350V. TUB.	C31	·005 MFD 20% 150V.		
R13		R32	100 Ω 5% ½W.	V4	6BW6 "	C13	50 μF 25V ELECT	C32	100 PF S.H 5%		
R14	3·3 MΩ 20% ½W.	R33	1 MΩ 10% ½W.	V5	" "	C14	8 PF 20% SIL. MICA		SWITCHES		
R15	390K 5% ½W.	R34	" " "	PL1	6·3V. 0·115 AMP. M.E.S.	C15	4700 PF 5% " "	S1A	SINGLE WAFER ONE POLE 6 POS WITH SHORTENING RING.		
R16	390 KΩ 5% ½W.	R35	2·2 K Ω 10% ½W.		" " "	C16	" " "	S1B.			
R17	" " "	R36	470 K Ω 20% ½W.		TRANSFORMERS	C17	100 PF 10% " "	S2A.	ONE POLE 2 POSITIONS.		
R18	330K 10% ½W	R37	68KΩ 20% ½W.	T1	SPEC 3020 OUTPUT.	C18	·1 μF 350V TUB	S2B.	" 6 "		
R19	2·2 KΩ 10% ½W.	R38		T2	SPEC 3019 MAINS.	C19	32 μF 350V. ELECT.	S3	DOUBLE POLE.		