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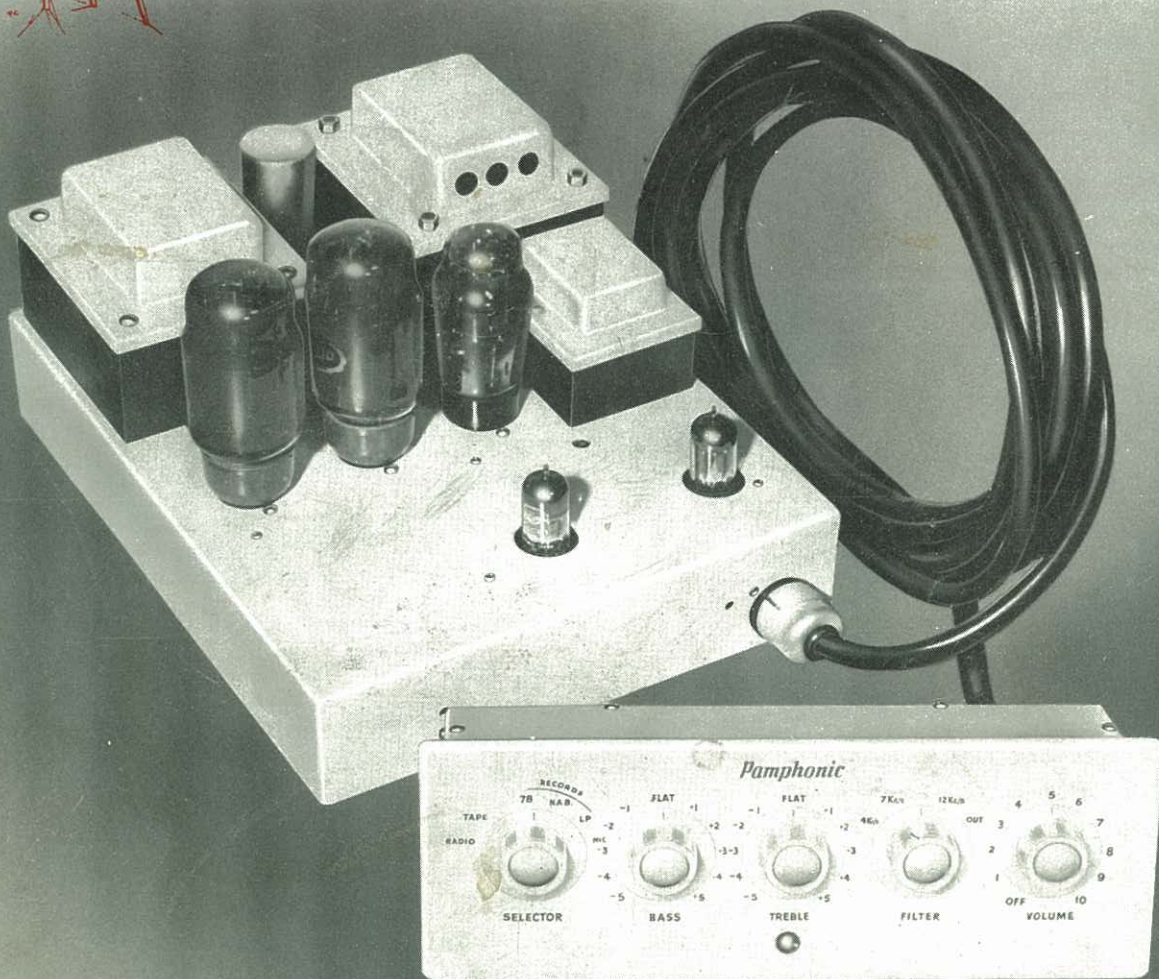


Pamphonic

"1002"

ABSOLUTE FIDELITY

AMPLIFIER



INSTALLING AND OPERATING INSTRUCTIONS

1955

Pamphonic

AMPLIFIER

TYPE 1002

PRE-AMPLIFIER

TYPE 1002A

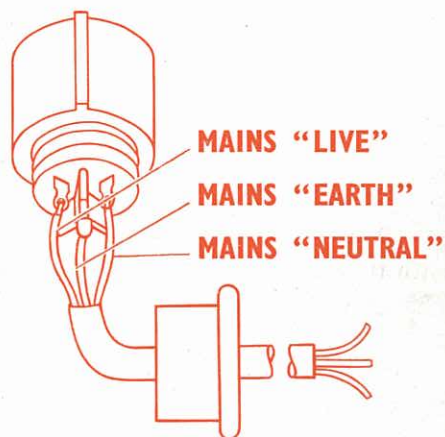
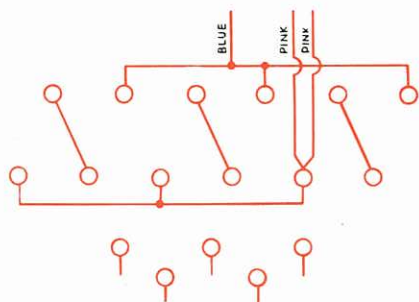
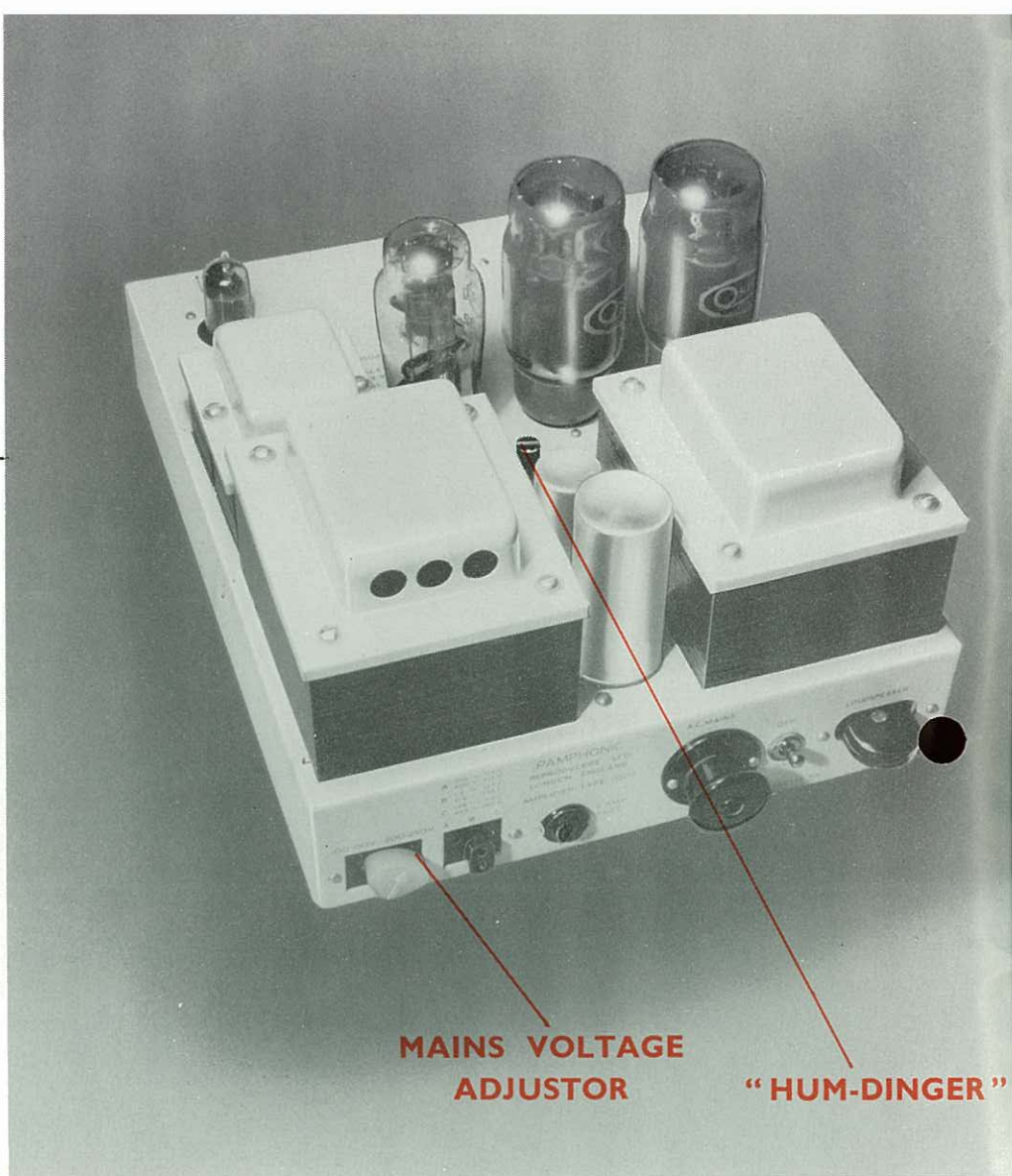


FIG 1



6.6 OHMS

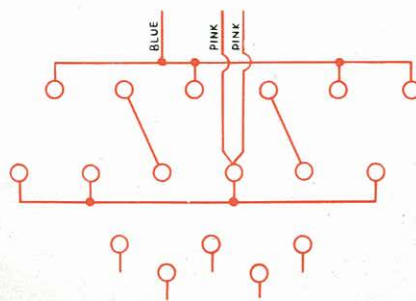
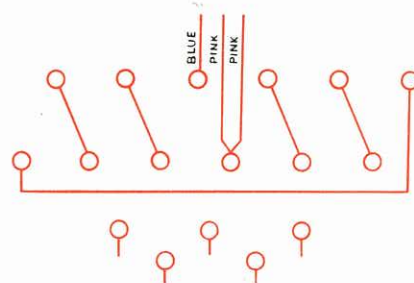
R23 = 5.6K OHMS

C12 = 200pF

60 OHMS

R23 = 27K OHMS

C12 = 45pF



3.75 OHMS

R23 = 4.7K OHMS

C12 = 270pF

15 OHMS

R23 = 10K OHMS

C12 = 140pF

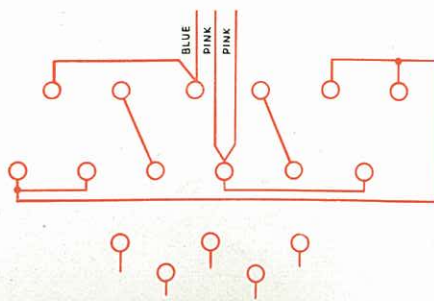


FIG 2

INSTALLATION

POWER AMPLIFIER TYPE 1002

Having removed the 1002 from its packing and inserted the valves, there are four adjustments to be made before it is put into service. These are:—

MAINS VOLTAGE ADJUSTMENT

The mains voltage ranges are 100–150V. and 200–250V. A.C., 50–60 c/s., and the 4-pin plug should first be inserted in the appropriate position. Having done so, insert the 2-pin plug in the position which matches your house supply voltage. Fig. 1 shows how to connect the mains lead to the plug supplied with the amplifier.

OUTPUT TRANSFORMER TAPPINGS

All amplifiers leave the factory with the output transformers connected to suit a 15-ohm loudspeaker. If the loudspeaker to be used is not of this impedance, select the tapping arrangement most suitable from Fig. 2 and cross-connect the secondary taps accordingly. Having made this adjustment, alter R23 and C12 to the values given for that particular connection in Fig. 2.

POSITIVE FEEDBACK ADJUSTMENT

The adjustment is correct for a 15-ohm loudspeaker when despatched from the factory. If the output transformer connections are changed, the positive feed-back control should be reset, before the amplifier is switched on, to the setting indicated for the new impedance. If an absolutely accurate setting is desired, 1000 c/s. tone should be fed into the amplifier to obtain an output of 1–2 volts, measured with a moving-coil A.C. voltmeter or oscilloscope across the output socket pins. Then, whilst alternately connecting and removing the loudspeaker load, the control should be adjusted until the output voltage remains unchanged in both conditions.

HUM LEVEL ADJUSTMENT

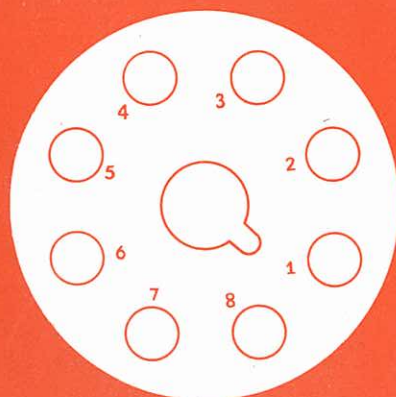
A pre-set "hum-dinger" potentiometer is provided for this purpose and can be reached with a small screwdriver. When the amplifier is used alone, pin 5 of the input socket should be connected by a short wire link to pin 6 (Fig. 3), and the control adjusted, either by means of a sensitive A.C. voltmeter connected to the loudspeaker output plug, or by ear, for minimum hum level. In cases where the amplifier is used in conjunction with the remote control unit, all the input terminals of the remote control unit should be short-circuited, the selector switch turned to "N.A.B.", and the adjustment made as above.

When the normal connections are made to the input terminals, e.g., pick-up radio tuner, etc., and the hum level is disturbing, due to external magnetic fields, a compromise may have to be struck by adjusting the "hum-dinger" with these external connections made. This should only be done as a "last resort" if efforts to trace and eliminate the cause of the external hum pick-up prove unsuccessful.

INSTALLING THE AMPLIFIER

Ventilation: The 1002 should not be installed without provision being made for adequate ventilation. If the amplifier is to be mounted on a shelf, it should be raised on $\frac{1}{2}$ -in. blocks or the shelf drilled with a series of 1-in. diameter holes to provide a free flow of air. Cool air must be permitted to circulate freely around the top deck of the amplifier.

*External view
of the Octal
Input Socket*

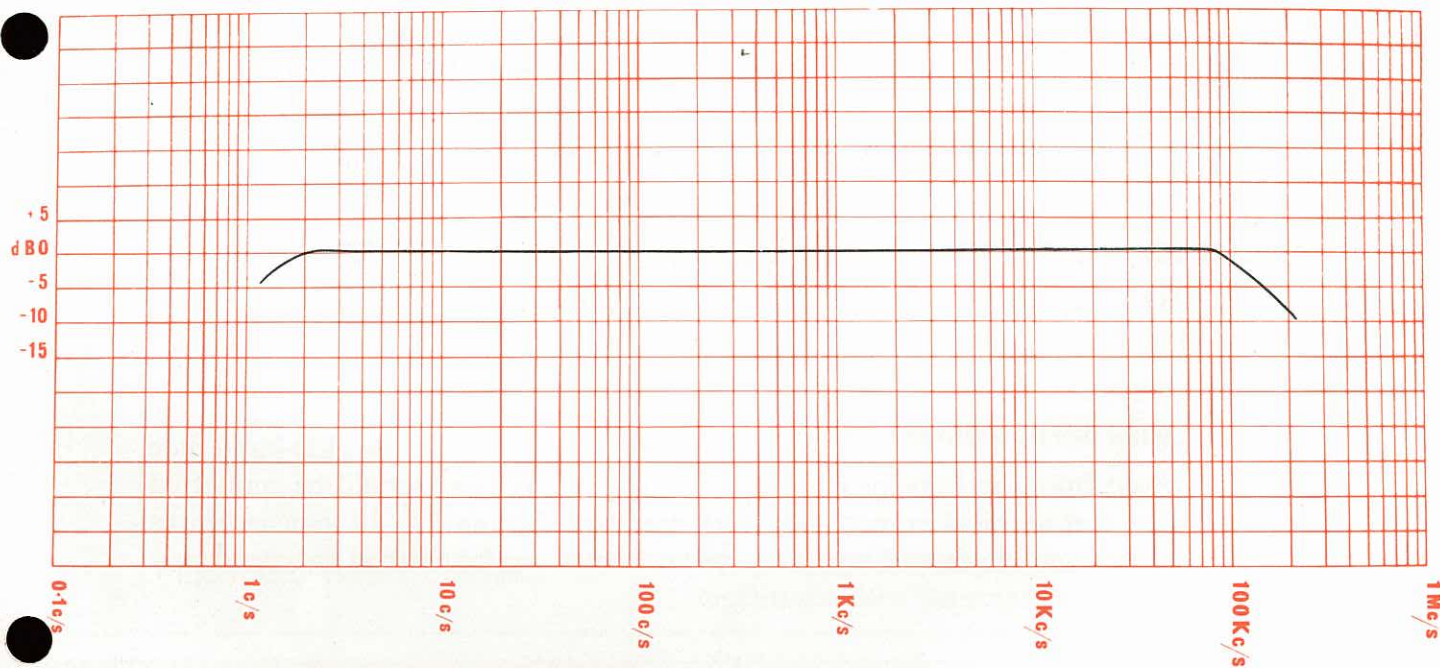


- 1 } A.C. MAINS SWITCH
- 2 }
- 3 A.C. MAINS NEUTRAL
- 4 H.T. + 450V.
- 5 INPUT
- 6 H.T. NEGATIVE AND INPUT 'EARTHY' SIDE
- 7 } 6.3V 1.3A
- 8 }

FIG 3

INPUT TO AMPLIFIER

The amplifier is designed to operate from a 600-ohm signal source, and the frequency and transient response will be impaired if a higher value is used. Fig. 3 shows the connections to the octal socket situated at one end of the chassis. Pin 5 connects to the input valve grid via a D.C. isolating condenser to facilitate direct connection to the cathode-follower in the pre-amplifier. Any external lead to Pin 5 should be screened. The input sensitivity of the 1002 is 0.35V. for 15 watts output.



FREQUENCY RESPONSE

PRE-AMPLIFIER TYPE 1002A

The unit may be plugged directly into the power amplifier to form one rigid assembly by using the fixing screws provided; or, alternatively, be used remotely, e.g., mounted in a record-player cabinet or on the control panel of a console. In the latter cases, two clips are provided to hold the unit in position in the cabinet, with a lead of up to 20 feet in length making connections to the power amplifier. The method of mounting is illustrated in Fig. 4.

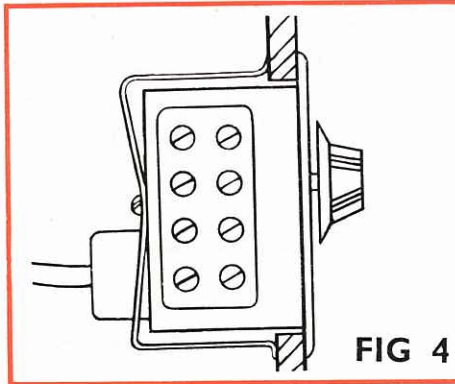


FIG 4

A.C. SUPPLY TO GRAM. MOTOR

A mains output in the form of a small 2-pin socket is provided at the reverse end to the input terminal panel on the 1002A. It is not controlled by the amplifier MAINS ON/OFF switch. A suitable plug is provided.

AUX. SUPPLIES FOR RADIO TUNER

A four-pin socket is mounted adjacent to the "GRAM MOTOR" socket, and provides 6.3V. A.C. at 2A., and 450V. H.T. at 30mA. (Fig. 5.) A plug is supplied.

★ The valve heaters of the auxiliary unit should not be connected to its chassis "EARTH" point, or to the H.T. NEG., as this will damage the 1002 Power Amplifier.

PRE-AMPLIFIER INPUT CONNECTIONS

The input terminals are at the left-hand side viewed from the front panel. Screens and earth returns should be connected to the rear terminal in each case; these are marked by an 'E'. In some instances gramophone-motor and tape-deck metal frames can be earthed independently of the input terminal with advantage.

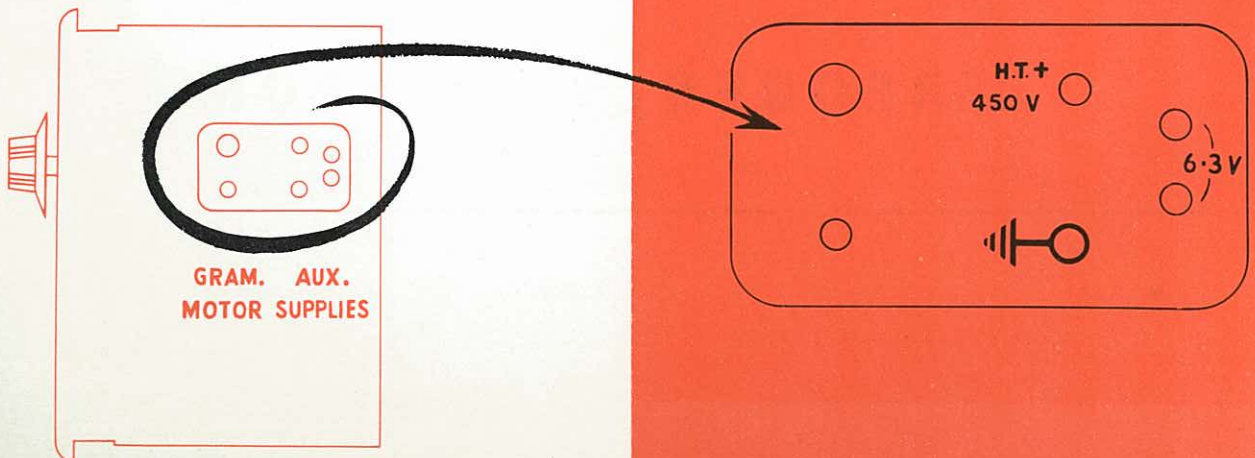


FIG 5

CONTROL CHARACTERISTICS

* Cut-off characteristics of the four positions of the filter control

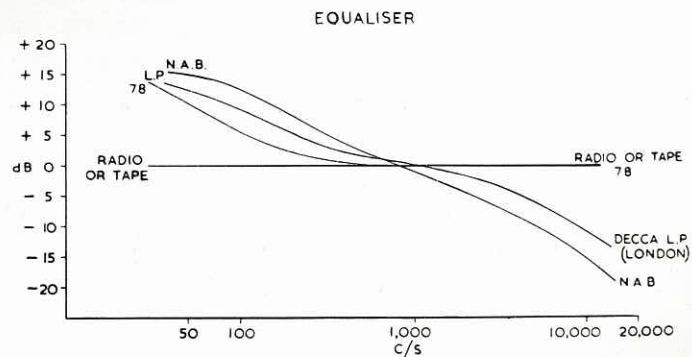
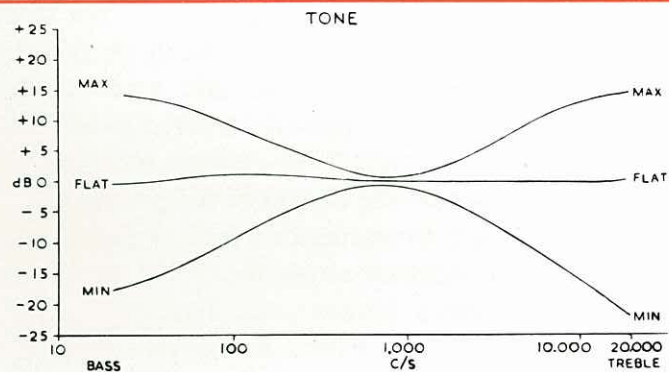
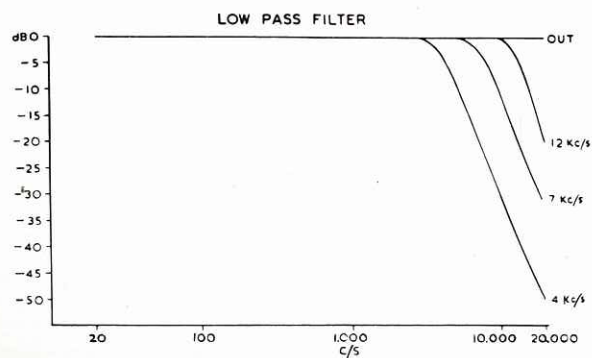
FILTER CONTROL

* Variation in bass and treble response provided by bass and treble controls

BASS AND TREBLE CONTROL

* Equaliser characteristics available on magnetic pick up input

MAGNETIC PICK-UP INPUT



OPERATING INSTRUCTIONS

MICROPHONE INPUT

This is a high impedance input (Approx. $1\text{ M}\Omega$) 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 of suitable ratio. 1 : 50 can be regarded as adequate in most instances. The sensitivity of the MIC input is approx. 3mV. for 15 watts output. When using any type of microphone keep it as far as possible from the loudspeaker, to avoid acoustic feedback.

PICK-UP INPUT

With the 'SELECTOR' switch in the '78' position the sensitivity of this input is 15mV., and in the N.A.B. and L.P. positions, 10mV. It is, therefore, suitable for direct connection to the majority of low-output, high-fidelity magnetic pick-ups. In the case of other magnetic types and crystal pick-ups designed to give a velocity response when suitably loaded, the manufacturers' data as to output and load resistance should be consulted, and a simple attenuator pad constructed to reduce the input to the pre-amplifier and present the correct *total* resistance to the pick-up. For example, if a pick-up maker quotes the output of his product to be 100mV. from an L.P. orchestral record, and recommends a load of 100,000 ohms, then a 10,000 ohm resistor should be connected across the "PU" terminals of the pre-amplifier, and a 90,000 resistor placed between the 'live' pick-up lead and the 'live' input terminal. Crystal pick-ups which are largely self-compensating and reproduce a substantially flat characteristic from LP records will probably operate more satisfactorily when connected, with suitable attenuators, to the RADIO or TAPE input of the 1002A; but even this variety may be used via the PICK-UP input if a suitable network has been evolved by the manufacturer.

A few words of explanation regarding the N.A.B. position of the 'SELECTOR' may be of assistance. A very large portion of the LP repertoire available in Gt. Britain and other parts of the world has been recorded to this American characteristic. Recent developments in the U.S.A. have led to some modifications but the N.A.B. equalization, together with judicious adjustment of the "BASS" and "TREBLE" controls, compensate for these deviations.

Most LP's of British origin will respond to the 'LP' equalization, but if the user feels that a particular record lacks bass and is shrill in the treble register, the N.A.B. position may be the one to use. The ear is the final arbiter. In all cases, try both positions before using the tone controls.

"RADIO" & "TAPE" INPUTS

These two inputs provide the same facilities and are in fact identical in response and sensitivity, the latter being 100mV. The remarks concerning input attenuation when the signal source levels are too high, made under the Pick-up Input heading, apply equally here.

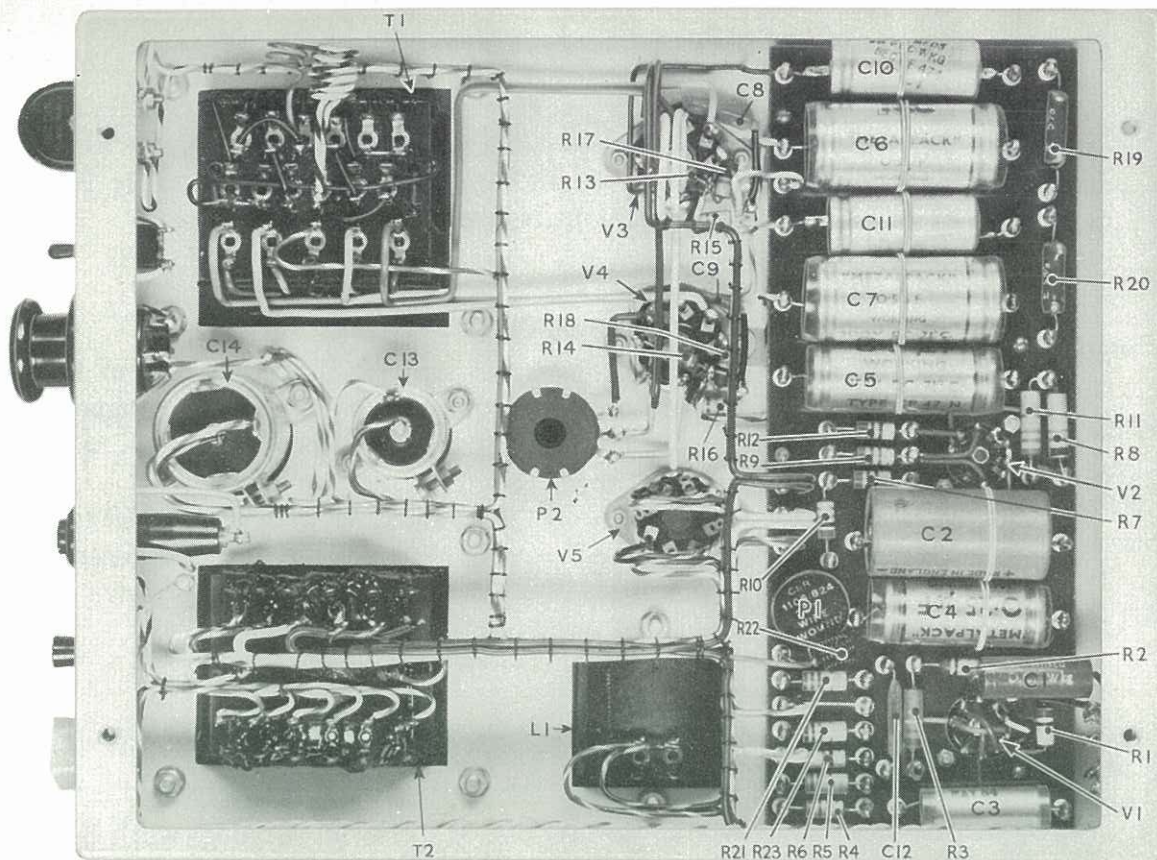
Cases may arise where a user possesses separate A.M. and F.M. radio tune units, but no tape equipment; there is, of course, no objection to connecting one of the tuner outputs to the "TAPE" input on the pre-amplifier, providing the misnomer on the 'SELECTOR' switch is borne in mind.

TONE CONTROLS

The "BASS" and "TREBLE" controls provide an extremely flexible adjustment of balance and tone colour for all programme sources. Whilst, in general, the settings are a matter for the individual listener's taste, we recommend setting both to the 'FLAT' position as a starting point, particularly when reproducing from gramophone records. It should also be emphasised that a large amount of bass 'lift' can only be employed if the ancillary equipment is free from hum or the gramophone motor mechanically quiet, i.e. rumble free. Otherwise hum and other low-frequency noises may seriously mar the reproduction.

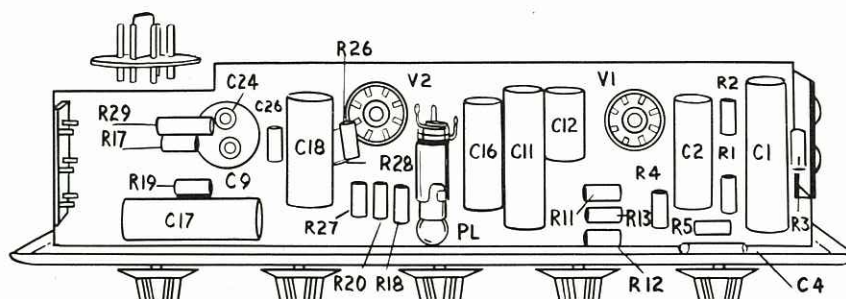
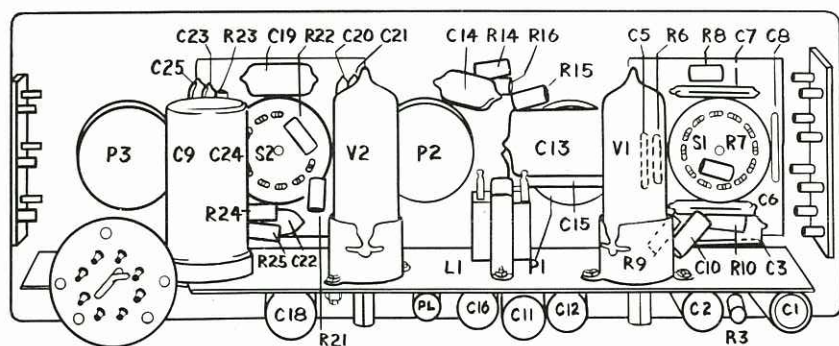
FILTER

This control provides a sharp reduction (22dB/octave) of high frequencies above the cut-off point marked on the control panel—4, 7 and 12 Kc/s. There is also an OUT or 'Flat' position which renders the filter inoperative. It is employed to reduce unpleasant high-frequency scratch from noisy records and the effects of distortion in all type of 'programme', whether records, radio or tape. The 4Kc/s. position imposes a serious restriction upon the frequency range and should be used, broadly speaking, only for old records and when radio reception is poor. It is sometimes beneficial to use the filter in conjunction with a degree of treble lift, and for this reason the two controls have not been combined as has sometimes been the case in other equipment of this type.

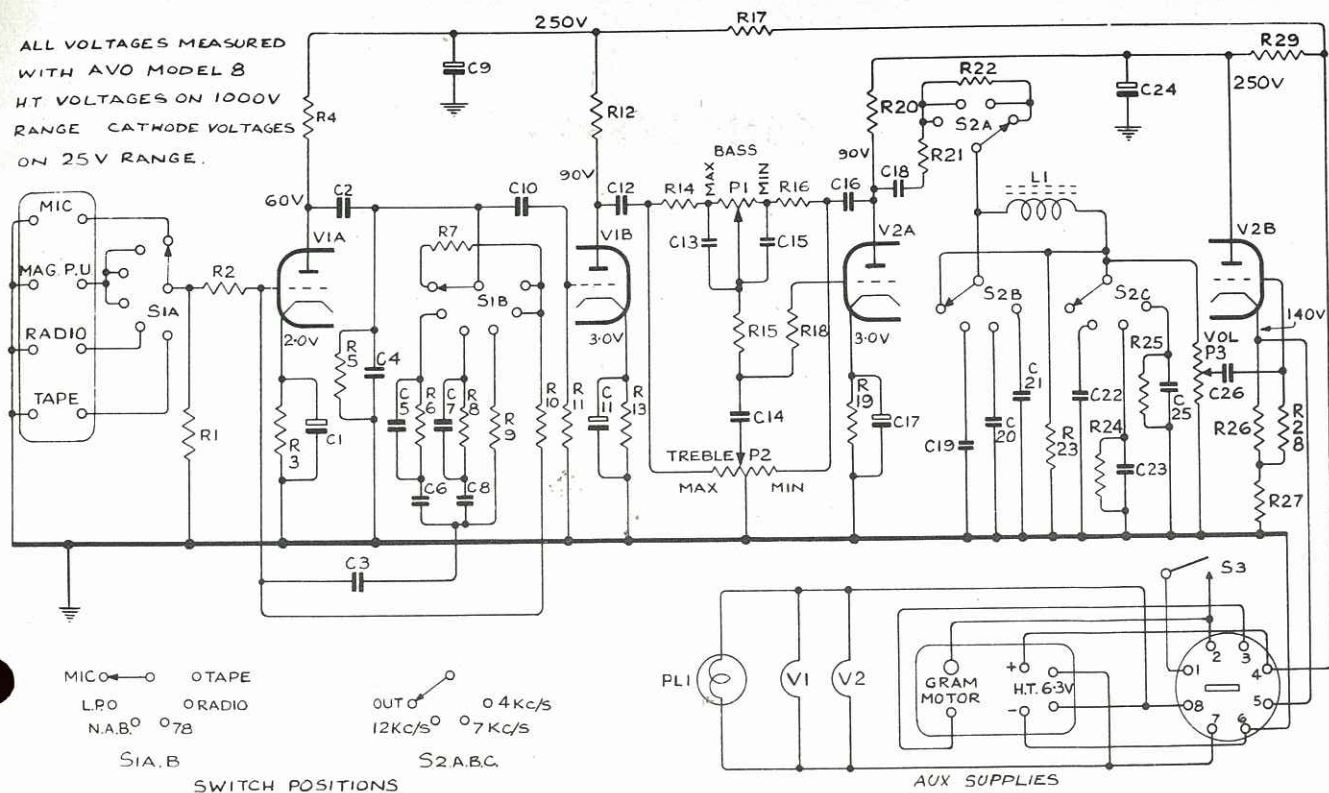


COMPONENT LAYOUT OF 1002

COMPONENT LAYOUT OF 1002A



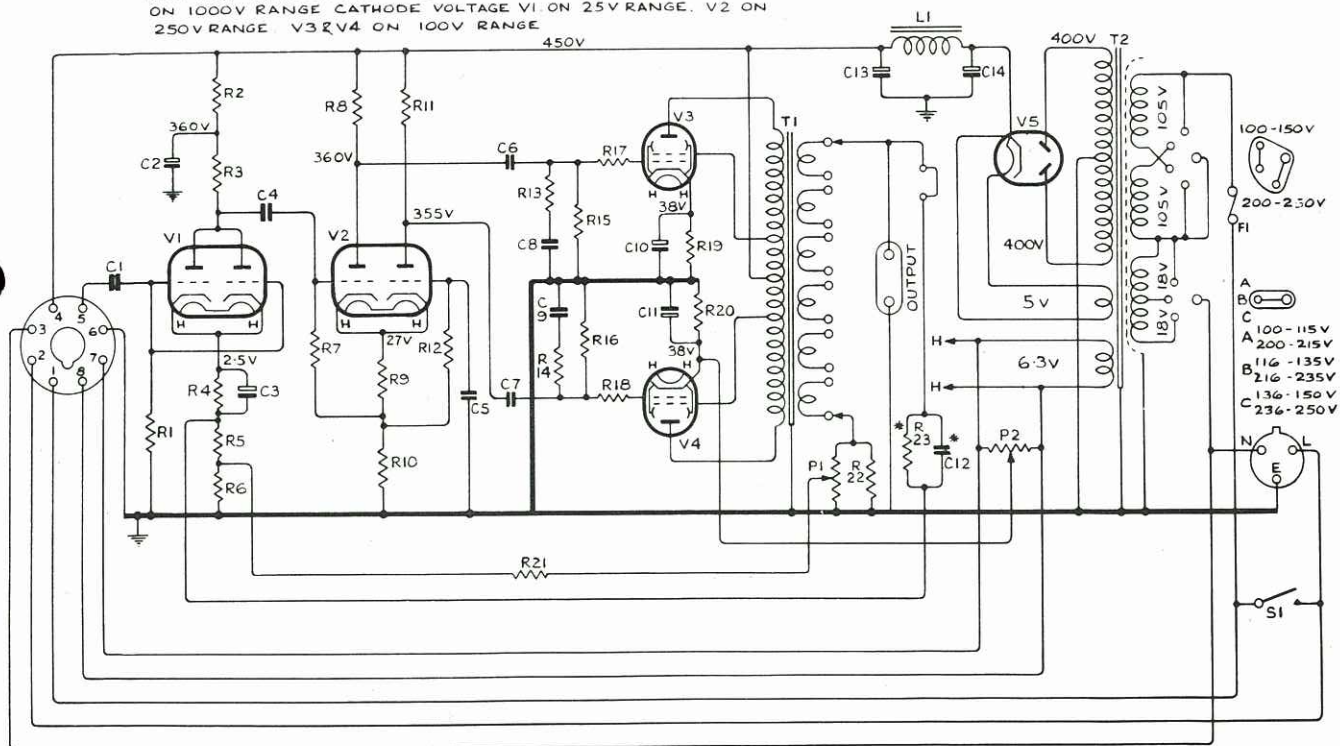
ALL VOLTAGES MEASURED
WITH AVO MODEL 8
HT VOLTAGES ON 1000V
RANGE CATHODE VOLTAGES
ON 25V RANGE.



CIRCUIT DIAGRAM FOR 1002A

CIRCUIT DIAGRAM FOR 1002

ALL TEST VOLTAGES MEASURED WITH AVO MODEL 8, HT VOLTAGES
ON 1000V RANGE CATHODE VOLTAGE V1 ON 25V RANGE, V2 ON
250V RANGE, V3 & V4 ON 100V RANGE



COMPONENTS

AMPLIFIER TYPE 1002

RESISTORS

R1	100 K	20%
R2	100 K	20%
R3	120 K	10%
R4	2.2 K	10%
R5	220 Ω	5%
R6	47 Ω	5%
R7	1.5 M Ω	20%
R8	56 K	5%
R9	1.2 K	10%
R10	10 K	10%
R11	68 K	5%
R12	1.5 M Ω	20%
R13	4.7 K	10%
R14	4.7 K	10%
R15	470 K	20%
R16	470 K	20%
R17	10 K	20%
R18	10 K	20%
R19	600 Ω W/W	5%
R20	600 Ω W/W	5%
R21	220 Ω	5%
R22	0.27 Ω W/W	
R23 *	10 K	5%

POTENTIOMETERS

P1	30 Ω Pre-Set W/W
P2	100 Ω Pre-Set

CONDENSERS

C1	.25 μ F	250V.	Tubular
C2	32 μ F	350V.	Elect.
C3	50 μ F	12V.	Elect.
C4	.25 μ F	350V.	Tubular
C5	.5 μ F	350V.	Tubular
C6	.5 μ F	500V.	Tubular
C7	.5 μ F	500V.	Tubular
C8	150 pF	5%	S/Mica
C9	150 pF	5%	S/Mica
C10	100 μ F	50V.	Elect.
C11	100 μ F	50V.	Elect.
C12 *	140 pF	5%	S/Mica
C13	32 μ F	500V.	Elect.
C14	8 μ F	750V.	Elect.

FUSE

FI	2 amp Cartridge
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VALVES

V1	ECC83 Mullard
V2	ECC81 Mullard
V3	KT66 Osram
V4	KT66 Osram
V5	GZ32 Mullard

CHOKES AND TRANSFORMERS

T1	Output Pt. No. 08290
T2	Mains Pt. No. 08291
LI	Choke Pt. No. 08563

SWITCHES

S1	On/Off Toggle
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Note * Values of C12 and R23 shown for 15 Ω Output connection. See table below for other impedances.

Impedance	C12	R23
3.75 Ω	270 pF	4.7 K
6.6 Ω	200 pF	5.6 K
60.0 Ω	45 pF	27.0 K

PRE-AMPLIFIER TYPE 1002A

RESISTORS

R1	1M Ω	20%
R2	100 K	20%
R3	2.2K	10%
R4	220 K	10%
R5	2.2 M Ω	20%
R6	560 Ω	5%
R7	3.3 M Ω	20%
R8	220 K	5%
R9	270 K	5%
R10	47 K	20%
R11	1 M Ω	20%
R12	220 K	10%
R13	3.9 K	10%
R14	100 K	10%
R15	470 K	20%
R16	100 K	10%
R17	120 K	20%
R18	1.2 K	20%
R19	3.9K	10%
R20	220 K	10%
R21	33 K	10%
R22	33 K	10%
R23	220 K	10%
R24	68 K	10%
R25	68 K	10%
R26	2.2 K	10%
R27	100 K	20%
R28	1 M Ω	20%
R29	82 K	10%

POTENTIOMETERS

P1	1 M Ω Linear
P2	500 K Linear C/T
P3	100 K Log with S/W.

CONDENSERS

C1	50 μ F	12V.	Elect.
C2	0.1 μ F	350V.	Tubular
C3	3000 pF	5%	S/Mica
C4	20 pF	20%	S/Mica
C5	120 pF	5%	S/Mica
C6	800 pF	5%	S/Mica
C7	400 pF	5%	S/Mica
C8	660 pF	5%	S/Mica
C9	24 μ F	350V.	Elect. *
C10	.02 μ F	150V.	Tubular
C11	50 μ F	12V.	Elect.
C12	.05 μ F	350V.	Tubular
C13	4700 pF	10%	S/Mica
C14	100 pF	10%	S/Mica
C15	4700 pF	10%	S/Mica
C16	.1 μ F	350V.	Tubular
C17	50 μ F	12V.	Elect.
C18	.25 μ F	350V.	Tubular
C19	300 pF	5%	S/Mica
C20	1000 pF	5%	S/Mica
C21	3000 pF	5%	S/Mica
C22	300 pF	5%	S/Mica
C23	1000 pF	5%	S/Mica

CONDENSERS

C24	16 μ F	350V.	Elect. *
C25	3000 pF	5%	S/Mica
C26	.04 μ F	150V.	Tubular

*Indicates common can.

VALVES AND LAMPS

V1	ECC40 Mullard
V2	ECC40 Mullard
PL1	6.3V. .115A. M.B.C.

SWITCHES

S1A-B	2 Pole 6 Pos.
S2-ABC	3 Pole 4 Pos.
S3	Ganged with P3

CHOKES

LI	1H Filter inductance
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