

SECTION 22

TRAP-VALVE AMPLIFIER TV/25

General Description

The TV/25 is a portable trap-valve amplifier designed for O.B. use, in particular with equipment Type OBA/9. (Section 20.) It has two separate inputs, each providing two outputs, and embodies four pentode valves. The impedance at each input is 18 kilohms nominal, and the impedance at all four outputs is 75 ohms. The gain of each unit is independently variable, with a 9.5-dB maximum,

The secondary of input transformer TR 1 (Fig. 54) is coupled to the grids of two single amplifying valves, a 100-kilohm volume control being included in the grid circuit of each valve. The two volume controls, one of which is shown in Fig. 54, are thus in parallel across TR 1 secondary, also loaded by R13 which has a value of 120 kilohms. Since the impedance ratio of TR 1 is 1 : 2, the input impedance of the TV/25 is about 18 kilohms.

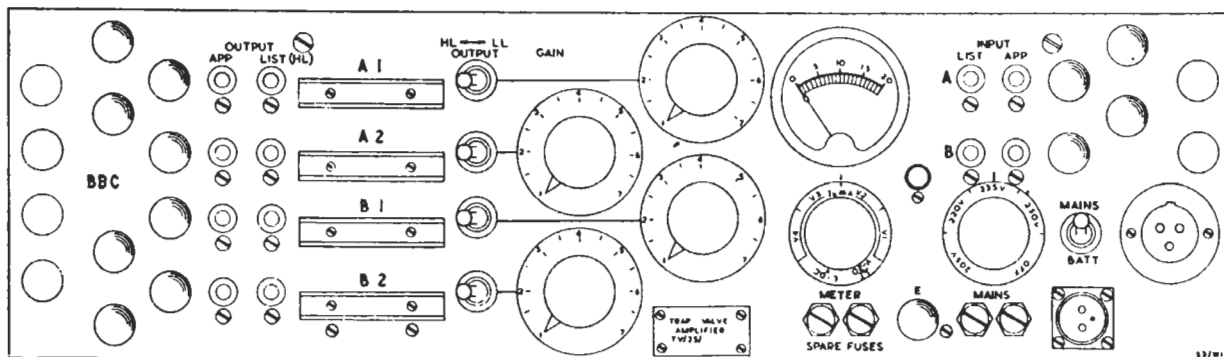


Fig. 22.1 TV/25: Face Panel

Drawing No. E.K. 8618

and provision is made for switching a 50-dB loss-pad into any output circuit to provide a low-level signal suitable for feeding an O.B. amplifier. The normal working input level is 0 dB approximately, and the normal output level (volts) either 0 to +4 dB into 240 ohms or, with the loss-pad in circuit, about -50 dB.

A built-in mains unit is provided capable of operating from 200-250 volts 45-60 c/s a.c.; where no mains supply is available, external batteries can be used.

The amplifier is built into a grooved case of similar construction and dimensions to that of the OBA/9. The total weight is about 22 lb.

Circuit Description (Fig. 54)

The two inputs of the TV/25 are referred to as A and B, the outputs being designated A1, A2, B1 and B2. Since the A and B sections of the amplifier are identical, only one will be described.

Voltage negative feedback is applied to the cathode of each valve from a tertiary winding on its output transformer, TR 2. The secondary circuit of this transformer is padded out by R5 and R6 to bring the output impedance up to 75 ohms, a value selected as being the most suitable for feeding into O.B. lines. With an input at zero programme volume, the output under normal gain conditions is intended to be in the region of zero or +4 dB, but for a low-level output the 50-dB pad R7-R9 may be switched into circuit, the output impedance remaining at 75 ohms.

Each input to the TV/25 has an *Apparatus* and a *Listen* jack, together with a set of terminals in parallel. Each output has an *Apparatus* jack with parallel terminals; the *Output Listen* jack is connected in a part of the circuit prior to the 50-dB pad to prevent an alteration in listening level when the 50-dB loss switch is thrown.

The built-in mains unit, which supplies all four

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amplifying valves, is shown in the lower part of Fig. 54. A mains-voltage switch is provided to select the appropriate primary tapping on transformer TR 3, and a pilot-lamp lights when the mains or l.t.-battery supply is on. A meter and switch are fitted for checking the h.t. voltage and the cathode currents of the valves.

Valve Data

Valve	Cathode Current mA	Heater Volts	Heater Amps
V1-V4 All CV 138	6±1 each	6.2	0.3 each
V5 CV 493		6.2	0.6

Supplies

Mains supply, 200-250 volts, 45-60 c/s.

H.T. supply, 275±10 volts, 24±4 mA.

L.T. supply to V1-V4, 6.2 volts, 1.2 amps a.c.

NOTE:—The valve and supply data relate to the use of the built-in mains unit and not to an external battery supply. The mains voltage during measurements should be accurately suited to the transformer tap in use. If batteries are used, they should provide the normal h.t. voltage and a 5-volt heater supply.

General Data

Impedances

Input $Z = 18 \text{ k}\Omega$ nominal.

Output $Z = 75\Omega \pm 5\%$ (measured by resistance substitution).

Normal load $Z = 240 \Omega$.

Normal Working Input Level

0 dB approx.

Normal Working Output Levels

Voltage levels into 240 Ω load.

Either 0 to +4 dB or -50 dB approx.

Test Data

Output Termination

240 Ω .

Maximum Voltage Gain

Test frequency, 1 kc/s.

Gain, $G = 9.5 \pm 1.0 \text{ dB}$.

Output Attenuator

When the *Output Attenuator* switch is thrown from *High Level* to *Low Level*, the level of the output should fall by $50 \pm 1 \text{ dB}$.

Frequency Response

Reference frequency, 1 kc/s. Any gain setting.

$\pm 0.5 \text{ dB}$ from 40 c/s to 15 kc/s.

Percentage Total Harmonic Distortion

Output level, +8 dB (volts) = +12 dB (power).

At 60 c/s, < 1%

At 1 kc/s, < 0.2%

Output level, +12 dB (volts) = +16 dB (power).

At 60 c/s, < 1.5%

At 1 kc/s, < 0.25%

Noise Volume

Input Termination, 600 Ω .

Noise volume (unweighted), measured with T.P.M., not greater than -60 dB.

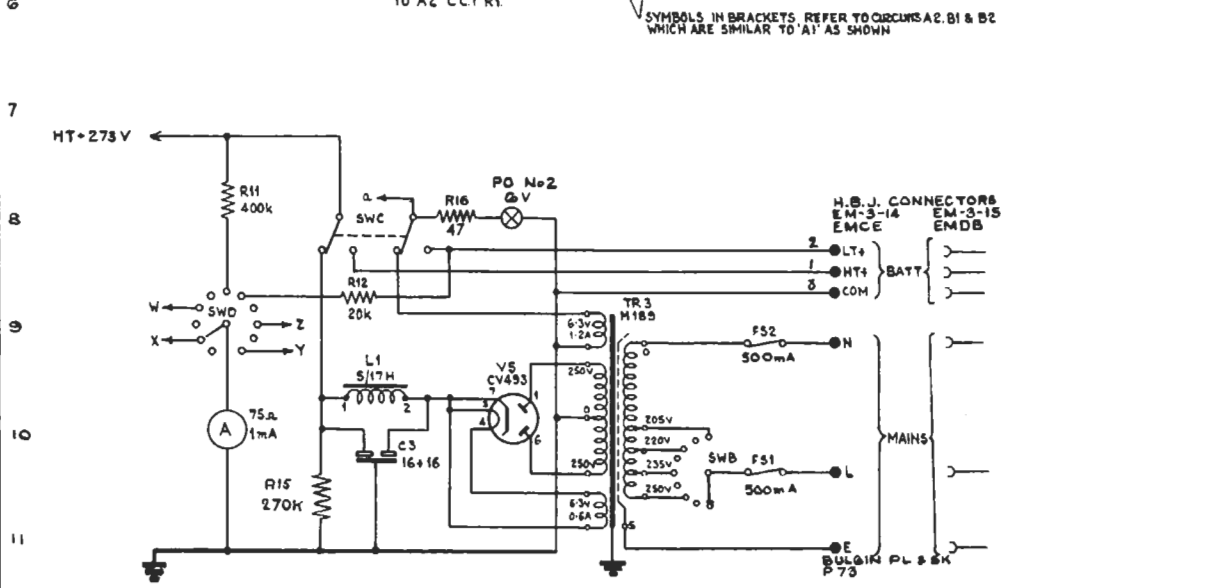
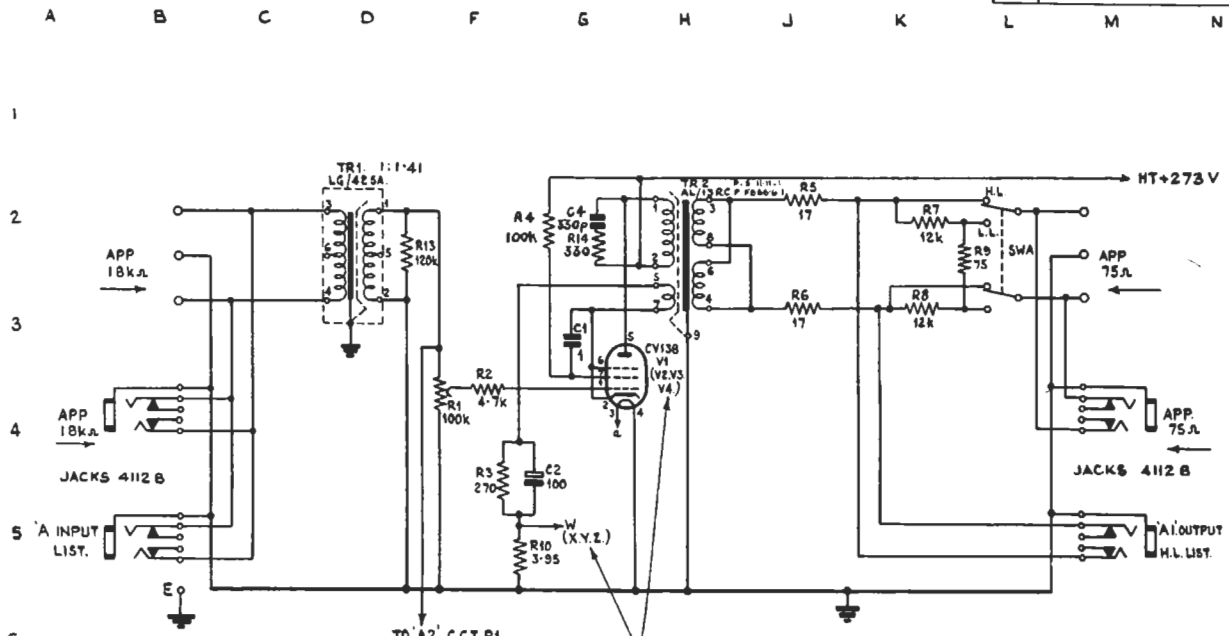
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COMPONENT TABLE: FIG. 54

COMP.	LOC.	TYPE	TOLERANCE (PER CENT)
C1	F4	T.C.C. CP142T	
C2	G3	T.C.C. CE32A	
C3	D10	B.E.C. CE816/1	
C4	G2	T.C.C. CSM20N	±5
L1	D10	S/17H	
R1	D4	Morganite HNAR 10410 26000	
R2	F4	Erie 9	±10
R3	F4	Erie 9	±10
R4	G2	Erie 9	±10
R5	J2	Painton 72	±2
R6	J3	Painton 72	±2
R7	K2	Painton 72	±2
R8	K3	Painton 72	±2
R9	K2	Painton 72	±2
R10	F5	Painton P406	±1
R11	C8	Painton 73	±2
R12	D9	Erie 108	±2
R13	D2	Erie 9	±10
R14	G2	Erie 16	±10
R15	C11	Erie 8	±10
R16	F8	Painton MV1	±5
TR 1	D2	LG/42SA	
TR 2	H2	AL/13RC	
TR 3	G10	M.189	

FIG 54 s3

ISS	CHANGE
2	TR1 RATIO WAS 1:41:1 TR2 INPUT REVERSED C4, R14, R15, ADDED



NOTE:- AMPLIFIER TV 25 HAS TWO SEPARATE INPUTS 'A' & 'B', EACH WITH TWO OUTPUTS '1' & '2'.

TRAP-VALVE AMPLIFIER TV/25: CIRCUIT

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