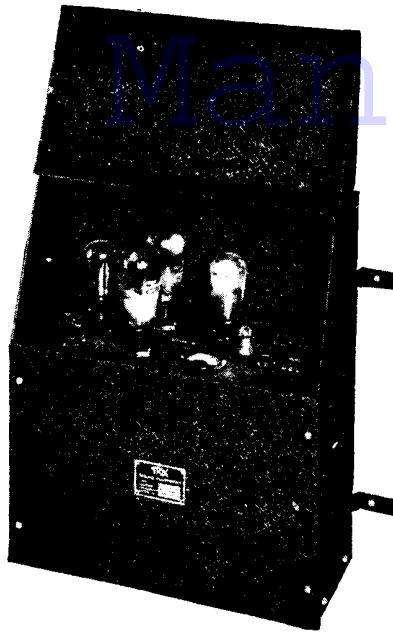


TRIX TYPE T240 P.A. AMPLIFIER



The T 240 public address amplifier, produced by the Trix Electrical Co., Ltd., has a rated undistorted output of 20 watts.

Circuit.—This is a two-stage amplifier, in which an A.C.1 HL (V1) is coupled by auto transformer to two P.M.24D'S (V2 and V3) in parallel.

The anodes of the output valves are choke capacity coupled to the output transformer, and, as separate bias supplies are used, the filter condenser is in two parts with the return leads taken to the centre tappings of the heater windings, cc and bb.

Mains equipment consists of transformer, full-wave rectifier, with a heavy duty smoothing choke and two 2,500 volt. test 4 mfd. condensers.

Special Notes.—The amplifiers are individually constructed, and particular modification may be found, such as a milliammeter connected as shown in the circuit diagrams and mounted near the output choke. Alternatively the meter may be absent and a jack for the meter leads may be shunted by a resistance of 75 ohms.

Other variations may include a tone-control switching arrangement for connecting alternative condensers in the filter circuit and by-passing the higher frequencies; or the tone control may be in the form of a variable condenser between the anode of V1 and cathode

and situated as indicated by C15, the dotted line in the diagram.

In other cases an additional output arrangement of two condensers forming a filter with the primary of the output transformer to give a 1:1 ratio may be mounted as shown at CX and CY in the layout.

The primary of the mains transformer is double wound for a 110-volt and single for 200 and over. On 100 or 110 volts the terminals B and E should be joined, and also

(Continued on next page.)

RESISTANCES

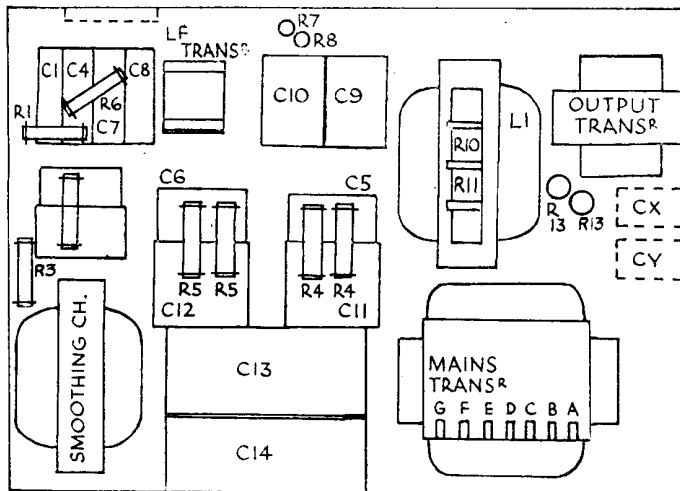
R.	Purpose.	Ohms.
1	Decoupling V1 grid ..	100,000 (1)*
2	V1 anode coupling ..	40,000 (2)
3	V1 anode decoupling ..	25,000 (2)
4	Voltage dropping to V2 aux. grid ..	**
5	Voltage dropping to V3 aux. grid ..	**
6	Decoupling V2 and V3 grids ..	25,000 (1)
7	V2 grid stabiliser ..	10,000 (1)
8	V3 grid stabiliser ..	10,000 (1)
9	V1 cathode bias ..	500 (1)
10	V2 bias } wire wound, centre	1,000
11	V3 bias } tapped, 2,000 ohms	1,000

* Denotes wattage.
** One 80,000 paralleled with one 100,000 ohms, each two watts.

CONDENSERS

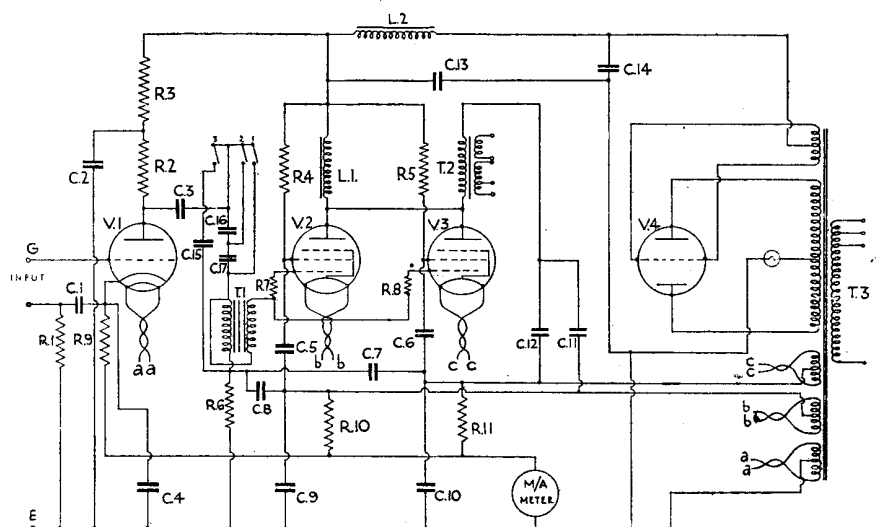
C.	Purpose.	Mfd.
1	Decoupling V1 grid input ..	1 (250)*
2	Decoupling V1 anode ..	2 (750)
3	L.F. filter to transformer ..	1 (750)
4	V1 cathode by-pass ..	1 (250)
5	V2 aux. grid by-pass ..	2 (750)
6	V3 aux. grid by-pass ..	2 (750)
7	Decoupling V3 grid ..	1 (250)
8	Decoupling V2 grid ..	1 (250)
9	Across V2 bias resistor ..	4 (250)
10	Across V3 bias resistor ..	4 (250)
11	Output cathode return of V2 ..	2 (1,200)
12	Output cathode return of V3 ..	2 (1,200)
13	H.T. smoothing ..	4 (1,200)
14	H.T. smoothing ..	4 (1,200)
15	** Part of tone control circuit	.01 mica
16	** Part of tone control circuit	.005 ,,
17	** Part of tone control circuit	.001 ,,
Cx	** Output filter for 1:1 ..	1
Cy	** Output filter for 1:1 ..	1

* Working voltages in brackets.
** See special notes.



Above: How the components are arranged on the wood "baseboard" which is placed in a vertical position underneath the valve panel. As explained in Special Notes various modifications may be found in different models.

The circuit of the Trix amplifier (right) is designed round an A.C./H.L. amplifier and two paralleled P.M.24D output pentodes. V4 is a full-wave rectifier.



TRIX TYPE T240 P.A. AMPLIFIER (Cont.)

A and C, and the mains leads connected to the links.

On 200-, 230- and 250-volts mains, C and B should be joined and the mains taken to A and the correct tapping—D for 200 v., E, 220; F, 230; and G for 250 volts.

The fuse is a 12-volt 3-watt lamp (car type is suitable), and during operation this will glow and flicker with the A.C. output. Excessive flickering usually shows that a wrong output ratio has been chosen.

Revealing Chassis.—Remove four screws from the front of the instrument and lift off the plate.

General Notes.—In handling this

VALVE READINGS				
Valve.	Type.	Electrode.	Volts.	ma.
1	AC/HL	anode	200	5-6
2	PM24D	anode	450-490	40-55
3	PM24D	aux.grid as V2	180-210	180-210

Note that the PM24D is a directly heated pentode and has the aux. grid attached to the centre pin.

apparatus, remember that the voltages across the condensers are dangerous and, in the event of defective output valves the condensers should be discharged after switching off. The resistances R13 in the layout diagram form a safety load, and may be found connected across output transformer primary. Never switch on the amplifier without a

load on the output, as damage may be done to the output valves, the choke and the condensers.

All the controls and sockets are properly labelled, and the correct transformer ratios for speakers of various impedances are:—

- 16/1 for 16-ohm speech coils.
- 25/1 for 8-ohm speech coils.
- 45/1 for 2-ohm speech coils.

The various combinations for series and parallel speakers can be computed from these.

The baseboard is of hard wood, and all the components are screwed to it except the mains transformer, which is bolted.

The output choke is model O.C.130, rated at 30 h. at 130 ma.

The smoothing choke is model C.150, rated at 30 h. at 150 ma.

MARCONIPHONE 257 BATTERY SET

Circuit.—The combined first detector oscillator, X21 (V1), is preceded by a single-tuned aerial coupling with special morse filter and image suppressor circuits.

Coupling to the next valve is by band-pass I.F. transformer (frequency 456 kc.), and bias is obtained from the A.V.C. line.

The I.F. valve, VS24 (V2), is also biased by A.V.C. and is followed by a second band-pass I.F. transformer. Reaction is applied to I.F.T.1 from the secondary. The second detector valve, HD21 (V3), is used in the conventional manner for A.V.C. and L.F., the volume control forming the L.F. diode load. The following coupling is a parallel-fed tapped secondary driver transformer.

The output valve, QP21 (V4), is a double pentode, and is operated with bias.

Special Notes.—Battery voltages (2 x 84 volt). H.T.: red lead, 159 v.; mauve, 72 v. G.B.: grey, 9 v.; blue, 1.5 v.

The pink lead should be inserted into the voltage corresponding to the lettering on the

bulb, as follows: W, 138 v.; X, 144 v.; Y, 151.5 v.; Z, 157.5 v.

The valves are graded so that the overall emissions are the same.

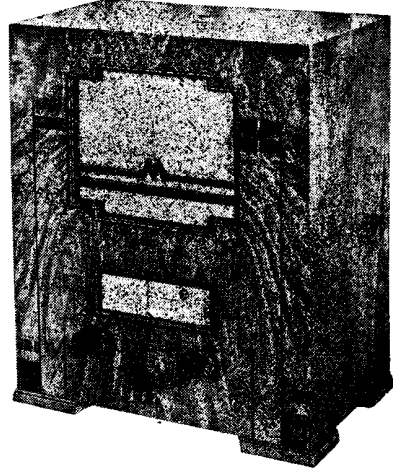
In the filter circuits, TC1 adjusts the suppression of morse interference at the top of the M.W. waveband, and TC2 the second channel.

Quick Tests.—Total H.T. current should be 9 to 9.5 ma., measured in H.T. — lead.

Removing Chassis.—Remove the knobs (self-threading grub screws), unscrew the small escutcheon round the local distance switch.

Remove two octagonal screws from underneath, release L.S. leads from the cleat and lift chassis out.

General Notes.—The L.F. trimmers are a new type, consisting of a nut and a central screw. The nut adjusts the primary trimmer, and the screw the secondary. The screening (Continued on opposite page.)



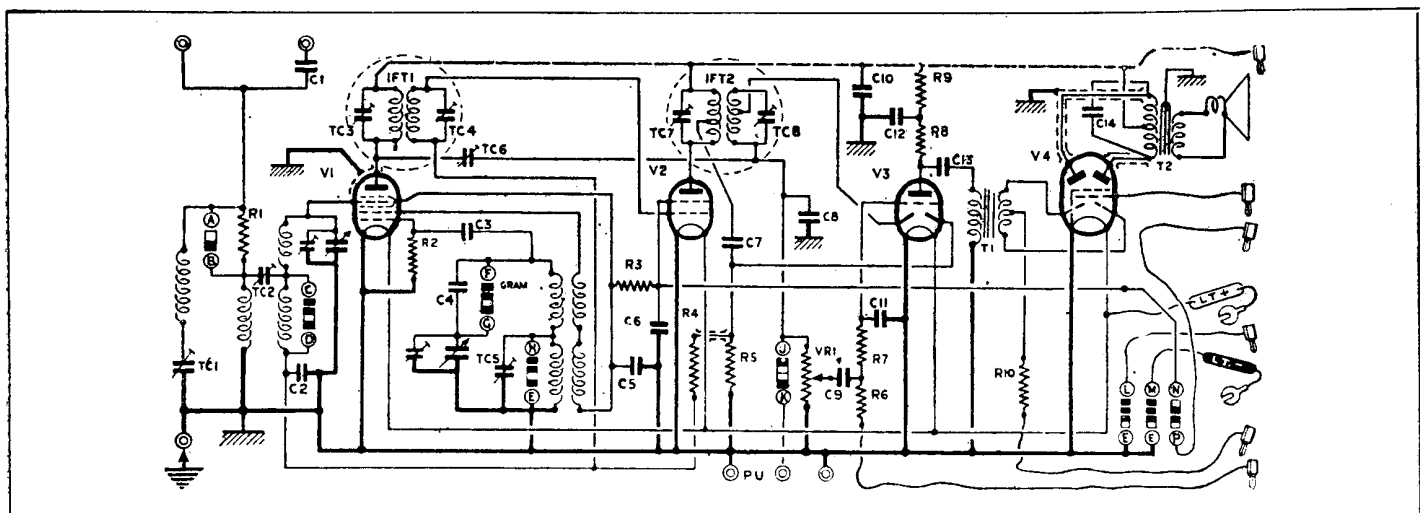
The Marconiphone 257 is a four-valve battery superhet with class B output.

RESISTANCES		
R.	Purpose.	Ohms.
1	For local distance switching	75,000
2	V.1 osc. grid-leak	50,000
3	Decoupling osc. anode	23,000
4	Decoupling A.V.C. line	.5 meg.
5	A.V.C. diode load	.5 meg.
6	V.3 grid-leak	1 meg.
7	H.F. stopper	23,000
8	V.3 anode L.F. coupling	50,000
9	V.3 anode decoupling	7,500
10	V.4 grids stabiliser	.23 meg.
V.R.1	Volume control, diode load	.5 meg.

CONDENSERS		
C.	Purpose.	Mfd.
1	Series with A.2 lead	.0005
2	Decoupling V.1 grid	.1
3	Osc. grid	.00023
4	Osc. tracking	.0005
5	Decoupling osc. anode	.1
6	V.2 screen by-pass	.1
7	I.F. feed to A.V.C. diode	.00023
8	H.F. by-pass from diode	.00023
9	L.F. coupling to triode grid	.1
10	Across H.T.	.1
11	H.F. by-pass from V.3 grid	.0001
12	V.3 anode decoupling	2
13	Filter coupling to driver trans.	.1
14	Tone compensating V.4 anodes	.001

VALVE READINGS				
Valve.	Type.	Electrode.	Volts.	M.A.
1	X.21 (7)	anode	159	.35
		screen	30**	
		osc. anode	30**	
2	V.S.24 (5)	anode	159	3.5
		screen	72	
3	H.D.21 (5)	anode	70/100**	1
		eachanode screen	159	
4	Q.P.21	eachanode screen	159	1.8-2.8

* According to tapping.
** High values of resistance in circuit.



There are a number of refinements in the Marconiphone 257 including a local-distance switch and a reaction sensitivity control.