

NUMBER EIGHTY-NINE 'TRADER' SERVICE SHEETS

PYE T/M TRANSPORTABLE 3-VALVE (Plus Rectifier) A.C. MODEL

CHASSIS and power pack are constructed as separate units in the Pye T/M 3-valve (plus rectifier) A.C. transportable receiver. It has a combined volume and reaction control and provision for both a gramophone pick-up and an extension speaker.

CIRCUIT DESCRIPTION

Tuned frame aerial input **L2, L3, C13** (with provision for external aerial coupling by **L1**) to variable-mu pentode H.F. amplifier (**V1, Ever Ready metallised A50N**). Gain control by variable cathode resistance **R5** which varies G.B. applied.

Choke-fed tuned-grid coupling by **L4, C3, L5, L6** and **C17** to triode detector valve (**V2, Ever Ready metallised A30B**) which operates on grid leak system with **C4, R7**. Reaction is applied from anode by coil **L7** and controlled by variable condenser **C15**, which is ganged with gain control **R5**. Provision for connection of gramophone pick-up in grid circuit, H.F. filtering by anode choke **L8** and by-pass condenser **C6**.

Parallel fed transformer coupling by **R9, C8** and **T1** to output pentode (**V3, Ever Ready A70C**). Tone correction by R.C. filter **R11, C9** across primary of output transformer **T2**.

H.T. current is supplied by I.H.C. full-wave rectifying valve (**V4, Ever Ready A11B**). Smoothing by speaker field winding **L11** and dry electrolytic condensers **C11, C12**. Hum balancing control is a variable potentiometer **R13** connected across the valve heaters.

DISMANTLING THE SET

Removing Chassis.—Remove back (two screws), the three control knobs (pull off), plug from power pack and plugs from speaker strip. Remove frame aerial connections (spade tags), sleeves from ornamentally-headed bolts passing through sides of cabinet and the two round-head wood screws holding front of chassis to cabinet. Chassis can now be withdrawn to the extent of speaker field leads, which is sufficient for normal purposes.

To remove the chassis entirely, remove leads to speaker field (screw terminals).

Removing Power Unit.—Remove the two bolts (with washers and spring

washers) holding it to the shelf. The cover can be taken off the unit by taking out two screws.

Removing Speaker.—Take out the shelf by removing the four bolts (with nuts and washers) holding it to the brackets, then remove nuts, washers and spring washers from the four bolts holding speaker to sub-baffle. *When replacing speaker*, see that terminals are at the bottom.

Removing Frame Aerial.—Remove shelf by taking out the three round-head wood screws holding each of the brackets to cabinet sides and remove the three round-head wood screws holding the frame to front of cabinet. The frame can now be withdrawn; in some cases it may be necessary to distort it slightly but care should be taken not to disturb windings.

The terminals on chassis for frame connections are marked with paint corresponding to the colour of the leads but as the paint may wear off the connections are given here, numbering terminals from back to front of chassis:—1, black; 2, white; 3, red.

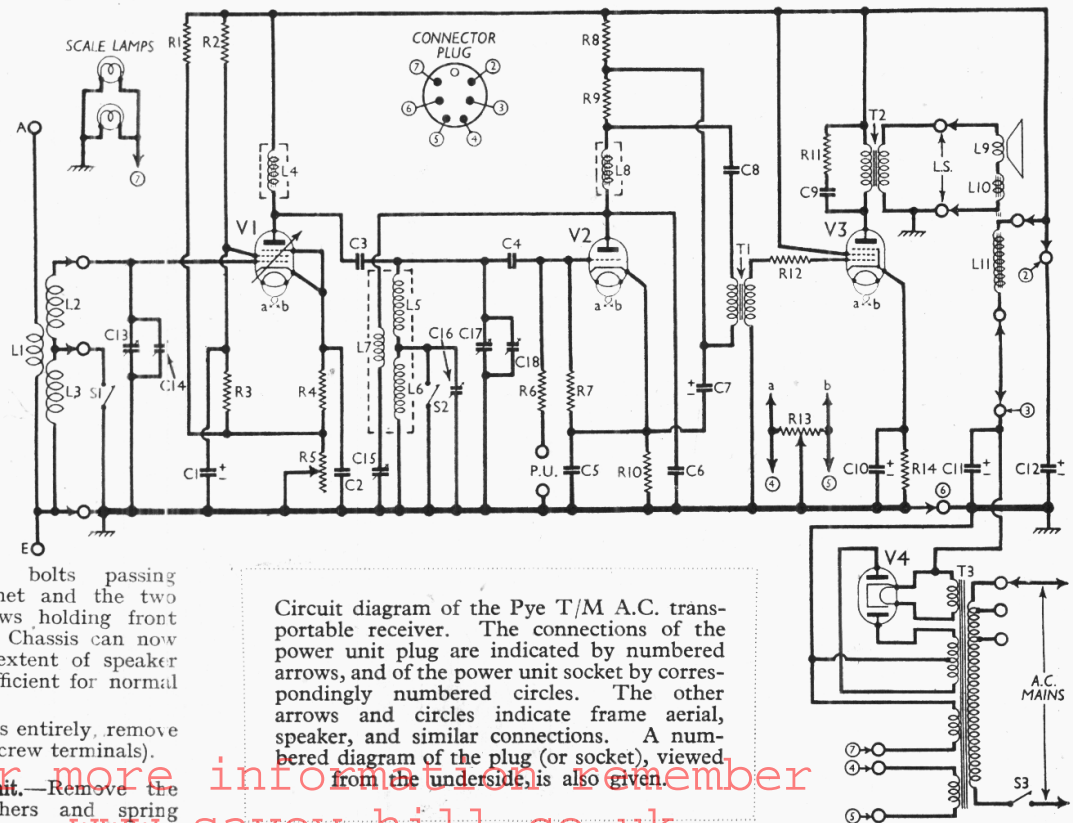
When replacing shelf, note that japanned screws go nearer front of cabinet.

COMPONENTS AND VALUES

Resistances		Values (ohms)
R1	Gain control bleeder	40,000
R2	} V1 S.G. H.T. potential divider {	20,000
R3		20,000
R4		V1 fixed G.B. resistance
R5	V1 gain control (ganged Cr5) ..	2,500
R6	Gram. pick-up series resistance ..	2,100,000
R7	V2 grid leak	510,000
R8	V2 anode decoupling	21,000
R9	V2 anode load	41,000
R10	V2 G.B. resistance (Gram.)	800
R11	Part of tone correction filter ..	11,000
R12	V3 grid H.F. stopper	26,000
R13	Hum control	140
R14	V3 G.B. resistance	150

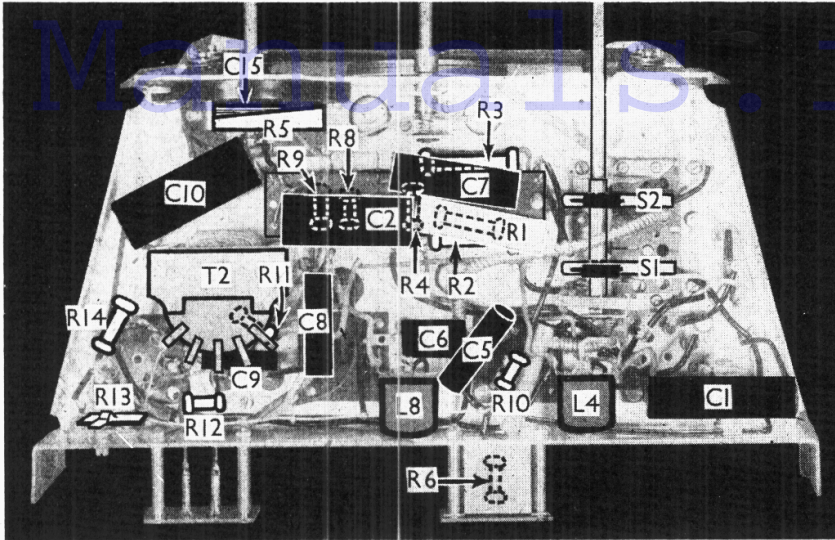
Condensers		Values (μF)
Cr*	V1 S.G. by-pass	2.0§
C2	V1 cathode by-pass	0.5
C3	H.F. coupling to L5, L6	0.00005
C4	V2 grid condenser	0.00005
C5	V2 cathode by-pass	0.1
C6	V2 anode H.F. by-pass	0.001
C7*	V2 anode decoupling	2.0
C8	L.F. coupling to T1	0.1
C9	Part of tone correction filter ..	0.005
Cr0*	V3 cathode by-pass	50.0
Cr1*	} H.T. smoothing	8.0
Cr2*		8.0
Cr3†	Frame aerial tuning	—
Cr4†	Frame aerial trimmer	—
Cr5†	Reaction condenser (ganged R5) ..	—
Cr6†	H.F. circuit L.W. trimmer	—
Cr7†	H.F. circuit tuning	—
Cr8†	H.F. circuit main trimmer	—

* Electrolytic † Variable ‡ Pre-set
§ May be 0.5 μF paper tubular.



Circuit diagram of the Pye T/M A.C. transportable receiver. The connections of the power unit plug are indicated by numbered arrows, and of the power unit socket by correspondingly numbered circles. The other arrows and circles indicate frame aerial, speaker, and similar connections. A numbered diagram of the plug (or socket), viewed from the underside, is also given.

For more information remember



Under-chassis view. Note that some of the components are beneath the horizontal component panel. C15 and R5 are ganged together. R1 is inside a length of sleeving.

GENERAL NOTES

Switches.—There are only two wave-change switches, S1 and S2, seen in the under-chassis view. Both are closed on the M.W. band and open on the L.W. band. S3, the mains switch, is mounted on one side of the power pack unit.

Coils.—Apart from the frame aerial, the remaining tuning coils are in a single screened unit on the chassis deck. This unit also contains the trimmer C16, the two small fixed condensers C3 and C4, and the resistance R7.

The chokes L4 and L8 are in screened units beneath the chassis deck.

Scale Lamps.—These are two Osram M.E.S. types, rated at 4.0 V, 0.3 A. They fit into special rubber cowls, arranged so that the glass scale is illuminated by transmitted light.

External Speaker.—This should be of the low resistance type (1.5-2.5 Ω), and may be plugged into the socketed plugs of the internal speaker. Alternatively, the internal speaker plugs may be removed, and the external speaker plugged into the L.S. sockets on the chassis.

Condenser C1.—This is a 2 μF 350 peak volts tubular dry electrolytic unit in our chassis, but may be a 0.5 μF paper type.

C15, R5.—The combined reaction condenser and volume control are in one unit, operated by a single spindle.

Condensers C11, C12.—These are two 8 μF dry electrolytics in a single unit in the power pack. The black lead is the common negative, the yellow lead the positive of C11 and the red lead the positive of C12.

CIRCUIT ALIGNMENT

First make certain that when the tuning condensers are at maximum, the scale indicator covers the end line at the higher wavelength end of the scale.

To adjust the radio frequency circuits, rotate the gang condenser to its minimum stop, which is the position for adjusting the circuits. The chassis and frame aerial need not be removed for this purpose.

Apply a modulated signal of 202 m. by coupling a coil from the signal generator to the frame aerial. Switch receiver to M.W., and adjust C14 and C18 for maximum output. Now switch receiver to L.W., and apply signal of 825 m. Adjust C16 for maximum output.

VALVE ANALYSIS

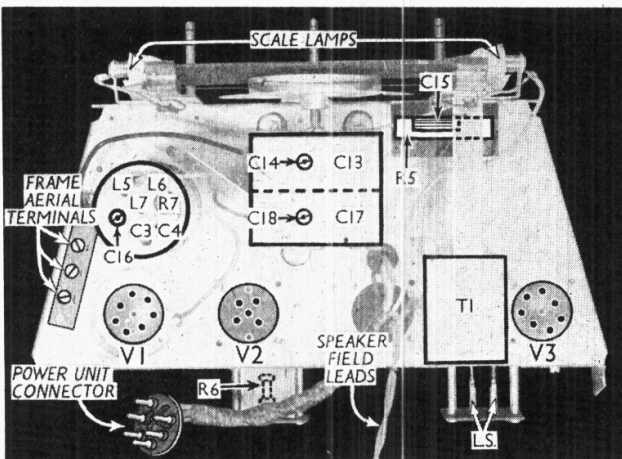
Measurements of valve voltages and currents given in the table below were made with the receiver operating on mains of 220 V, using the 216-235 V tapping. The volume control was turned so that the whole of the resistance was out of circuit (about 135 degrees towards the maximum position) and there was no signal input, the frame being disconnected and the terminals on the chassis shorted together.

Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

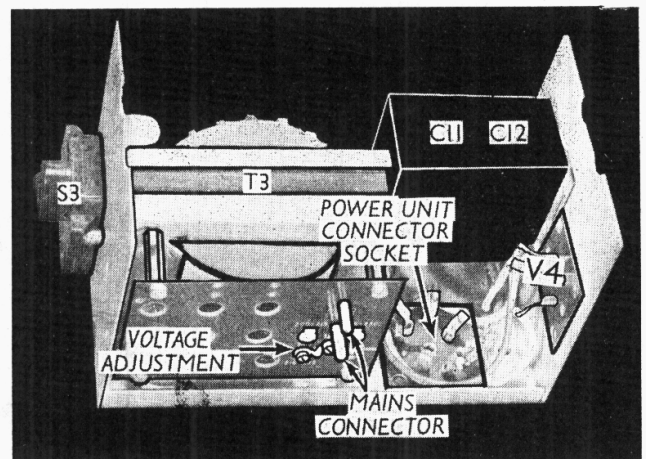
Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 A50N	250	4.6	100	1.9
V2 A30B	100	2.2	—	—
V3 A70C	220	35.0	250	3.8
V4 A11B	355†	—	—	—

† Each anode, A.C.

Other Components		Approx. Values (ohms)
L1	External aerial coupling	0.2
L2	Frame aerial windings	1.8
L3		20.8
L4	V1 anode H.F. choke	660.0
L5	Tuned grid H.F. coils	2.2
L6		16.0
L7	Reaction coil	2.4
L8	V2 anode H.F. choke	660.0
L9	Speaker speech coil	2.0
L10	Hum neutralising coil	0.2
L11	Speaker field coil	3,000.0
T1	Intervalve trans.	Pri. 770.0
		Sec. 1,900.0
T2	Output trans.	Pri. 700.0
		Sec. 0.3
T3	Mains trans.	Pri. total 44.0
		Heater sec. 0.04
		Lamp sec. 0.35
		Rect. heat. sec. 0.2
S1, S2	Waveband switches	—
		—
S3	Mains switch	—



Plan view of the chassis. The coil unit contains C3, C4, C16 and R7 in addition to the coils.



Power unit with the cover removed. Note the socket which receives the plug with the connections from the chassis.

For more information remember
www.savoy-hill.co.uk