

NUMBER 101

'TRADER' SERVICE SHEETS

AERODYNE 'THRUSH'

3-VALVE BATTERY RECEIVER

THE Aerodyne "Thrush" receiver is a simple battery-operated model with a variable-mu pentode H.F. amplifier, a triode detector and a pentode output valve. Provision is made for a gramophone pick-up and there are sockets on the speaker transformer terminal panel for an extension speaker.

The cabinet housing the receiver is a horizontal type, with the speaker on the left and the chassis on the right.

CIRCUIT DESCRIPTION

Two alternative aerial connections via fixed series condensers **C1** and **C2** to coupling coils **L1**, **L2**. Single tuned circuit **L3**, **L4**, **C10** precedes variable-mu pentode H.F. amplifier (**V1**, Mullard metallised **VP2**). Gain control by variable potentiometer **R2** which varies G.B. applied.

Tuned-anode coupling by **L6**, **L7**, **C13** to triode detector valve (**V2**, Mullard metallised **PM1HL**) operating on grid leak system with **C5** and **R4**. Reaction is applied from anode by coil **L5** and controlled by variable condenser **C12**. H.F. by-passing in anode circuit by fixed condenser **C7**. Provision for connection of gramophone pick-up in grid circuit.

Parallel-fed transformer coupling by **R6**, **C8** and **T1** to output pentode (**V3**, Mullard **PM22A**). Tone correction by

fixed condenser **C9** in anode circuit. Provision for connection of low-impedance external speaker across secondary of internal speaker transformer **T2**.

DISMANTLING THE SET

Removing Chassis.—To remove the chassis from the cabinet, first remove the back and the batteries, the two small round-head wood screws holding the top of the tuning scale to the front of the cabinet, and the four control knobs (pull off). Now remove the three bolts (with washers) holding the chassis to the bottom of the cabinet, when the chassis can be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes.

When replacing the chassis, note that the control knobs are marked with their purpose and see that they are placed on the correct spindles.

To free the chassis entirely, unsolder the leads on the speaker input transformer terminal panel.

Removing Speaker.—If it is necessary to remove the speaker from the cabinet, unsolder the leads to it and remove the small round-head wood screw (with washer) on the left-hand side and slacken

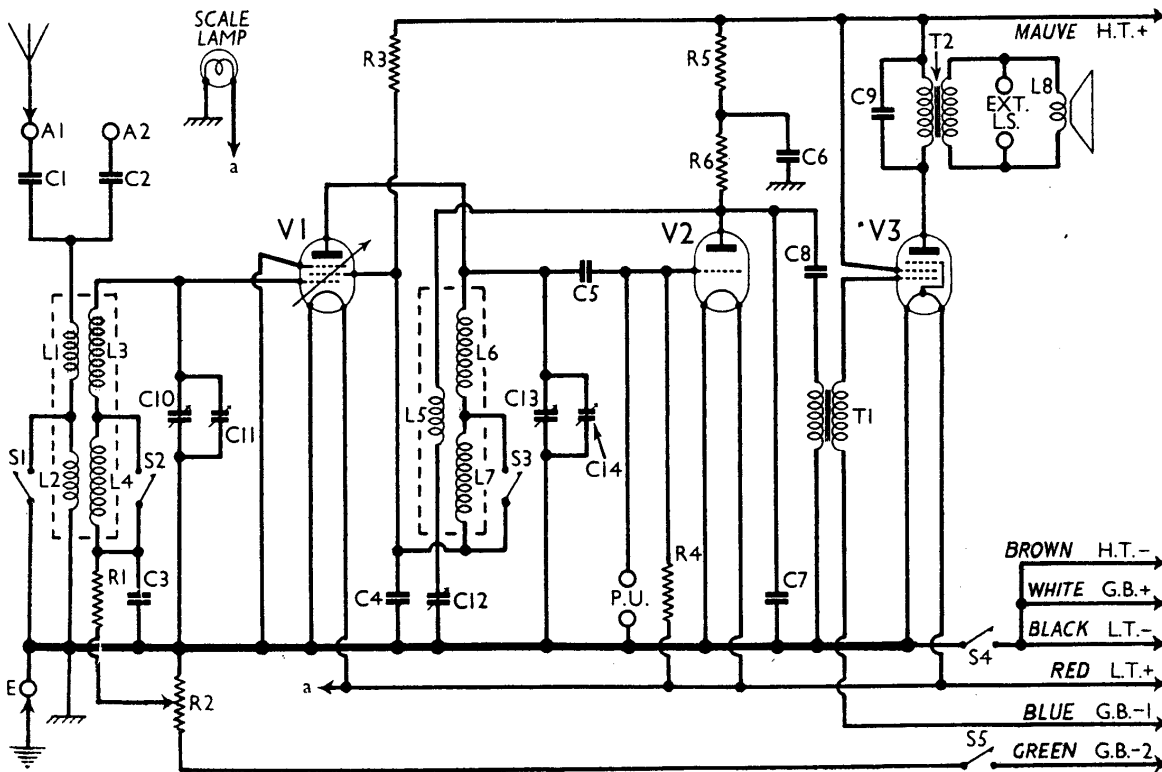
off the four clamps (with nuts and lock nuts) holding it to the sub-baffle. *When replacing, see that the input transformer is at the top.*

COMPONENTS AND VALUES

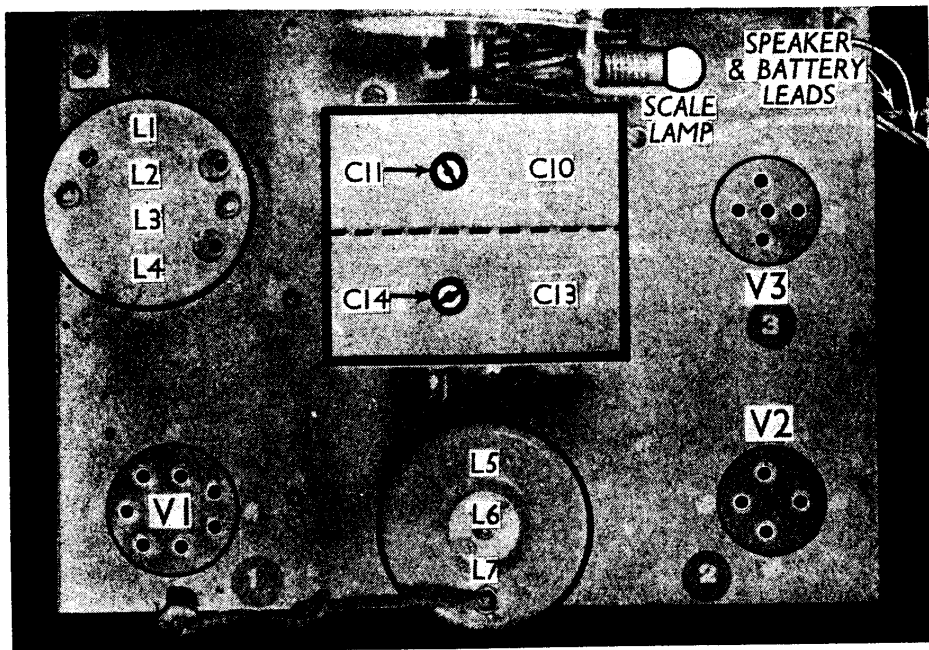
Resistances		Values (ohms)
R1	V1 C.G. decoupling	50,000
R2	V1 gain control	8,000
R3	V1 S.G. and anode decoupling	3,000
R4	V2 grid leak	1,000,000
R5	V2 anode decoupling	20,000
R6	V2 anode load	30,000

Condensers		Values (μF)
C1	Aerial series condensers	0.0002
C2		0.00005
C3	V1 C.G. decoupling	0.1
C4	V1 S.G. and anode decoupling	1.0
C5	V2 grid condenser	0.0001
C6	V2 anode decoupling	1.0
C7	V2 anode H.F. by-pass	0.0003
C8	L.F. coupling to T1	0.1
C9	Tone corrector	0.01
C10†	Aerial circuit tuning	0.0005
C11‡	Aerial circuit trimmer	—
C12†	Reaction control	0.0005
C13†	V1 anode circuit tuning	0.0005
C14‡	V1 anode circuit trimmer	—

† Variable ‡ Pre-set.



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Circuit diagram of the Aerodyne "Thrush" receiver. Note that S5 disconnects the potentiometer R2 when the set is not in use, preventing leakage of the G.B. battery. The colours of the various battery leads are indicated.
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Plan view of the chassis. A simple and straightforward layout is adopted, and all the tuning coils are in the two screened units shown.

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Battery Leads and Voltages.—Black lead, spade tag, L.T. negative. Red lead, spade tag, L.T. positive 2 V. Brown lead, black plug, H.T. negative. Mauve lead, mauve plug, H.T. positive 120 V. White lead, red plug, G.B. positive. Blue lead yellow plug, G.B. negative 1, —4.5 V. Green lead, green plug, G.B. negative 2, —9 V.

NOTE.—If the volume cannot be sufficiently reduced by means of the gain control, it is advisable to use a 15 V G.B. battery, making G.B. negative 2 —15 V.

Condenser C9.—This is not in the chassis, but is mounted on the speaker unit across the primary of T2.

Condensers C4, C6.—These are two 1 μF paper types in a single metal cased unit mounted beneath the chassis. One tag is common to each, as shown in our under-chassis view.

Other Components		Approx. Values (ohms)
L1	Aerial coupling coils ..	0.25
L2		38.0
L3		1.2
L4		13.0
L5	Reaction coil ..	6.5
L6	V1 anode tuning coils..	3.5
L7		14.5
L8	Speaker speech coil ..	2.2
T1	Intervalve trans. { Pri. ..	1,200.0
		Sec. ..
T2	Speaker input trans. { Pri. ..	650.0
		Sec. ..
Sr-S3	Waveband switches ..	—
S4	L.T. switch ..	—
S5	G.B. switch ..	—

and closed in the M.W. and L.W. positions.

Coils.—L1-L4 and L5-L7 are in two screened units on the chassis deck, and are indicated in the plan chassis view.

Scale Lamp.—This is an Osram M.E.S. type, rated at 3.5 V, 0.15 A.

External Speaker.—Two sockets are provided on the internal speaker terminal panel, into which a low resistance external speaker may be plugged. Its resistance should be about 2 O.

Batteries.—Suitable batteries are a 2 V accumulator cell, 120 V H.T. battery, and separate 9 V G.B. battery.

VALVE ANALYSIS

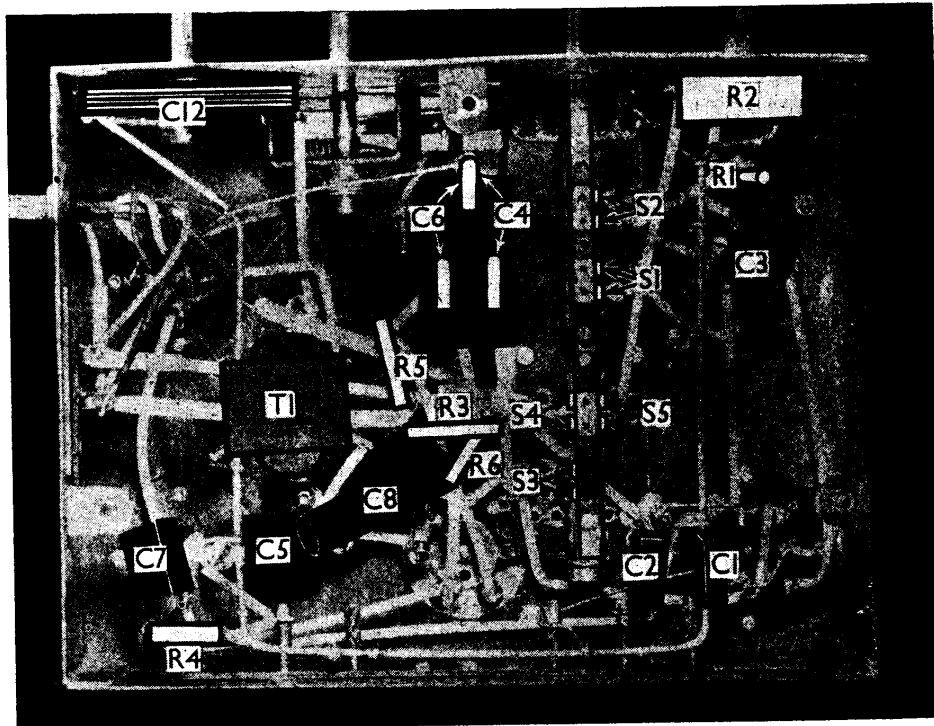
Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a new H.T. battery reading 128 V on load. The volume control was at maximum but the reaction control was at minimum, and there was no signal input.

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 VP2	118	2.0	118	0.7
V2 PM1HL	56	1.3	—	—
V3 PM22A	122	5.8	128	1.5

GENERAL NOTES

Switches.—S1-S5 are the waveband and battery switches, ganged in a single unit, and seen in the under-chassis view. S1-S3, the waveband switches, are all closed on the M.W. band and open on the L.W. band. S4 and S5, the battery switches, are open in the "off" position,



Under-chassis view. The five switches are clearly indicated. C4 and C6 are two paper condensers in a single unit, each having one common tag as shown.