

'TRADER' SERVICE SHEETS

REGENTONE AC/56

4-VALVE (Plus Rectifier) A.C. SUPERHET

A 4-VALVE (plus rectifier) superhet chassis for A.C. mains operation is embodied in the Regentone AC/56 receiver. A feature of the receiver is "Twin Thermometer" tuning, comprising two separate vertical tuning scales, one for medium waves and the other for long waves, a red coloured column moving up and down as the tuning knob is rotated.

CIRCUIT DESCRIPTION

Aerial input via coupling coils **L1, L2** to inductively-coupled band-pass filter. Primary **L3, L4** tuned by **C18**; secondary **L5, L6** tuned by **C20**; coupling coils **L7, L8**; capacitive coupling on L.W. by **C29**.

First valve (**V1, Mazda metallised AC/TP**) is a triode-pentode operating as frequency changer with cathode injection. Triode section forms separate oscillator with anode coils **L11, L12** tuned by **C23** and coupling coils **L8, L9** in common cathode circuit. Tracking by shaped condenser plates and condensers **C6, C22** (L.W.).

Second valve, a variable-mu H.F. pentode (**V2, Tungram metallised HP4115** or **Mazda AC/VP1**), operates as intermediate frequency amplifier with tuned-primary tuned-secondary transformer couplings **L13, L14** and **L15, L16**.

Intermediate frequency 123KC/S.

Diode second detector forms part of separate double diode valve (**V3, Tungram metallised DD4** or **Mazda V914**). Second diode, fed from **V2** anode by **C12**, provides D.C. potentials which are developed across load resistances **R12, R13**, and fed back through decoupling circuits as G.B. to F.C. and I.F. valves, giving automatic volume control. Delay voltage is obtained from potential divider **R14, R15, R16**.

Audio-frequency component in output from signal diode is developed across load resistance **R11** and passed via coupling condenser **C13** and manual volume control **R17** to control grid of output pentode (**V4, Tungram APP4C** or **Mazda AC/2/Pen**). Variable tone control filter **R19, C15** in anode circuit. No provision

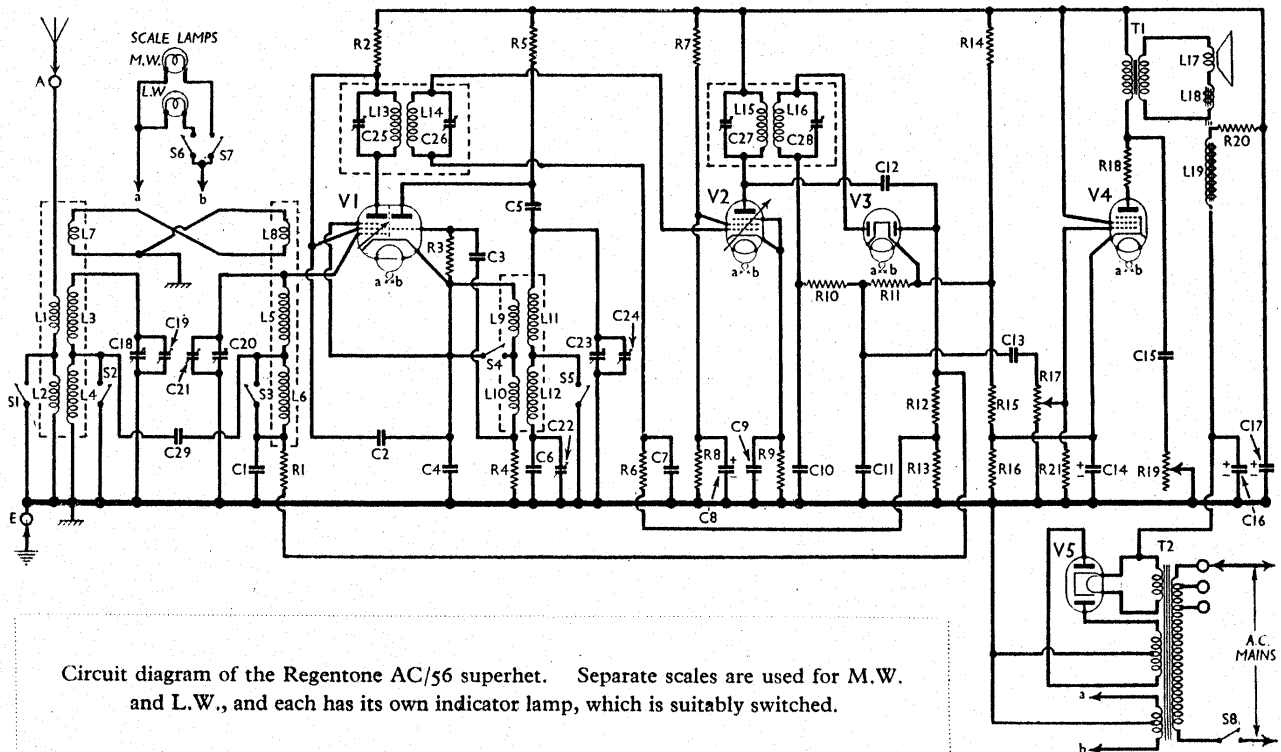
for connection of gramophone pick-up or external speaker.

H.T. current is supplied by I.H.C. full-wave rectifying valve (**V5, Tungram APV4200** or **Mazda UU3**). Smoothing by speaker field winding **L19** and dry electrolytic condensers **C16, C17**.

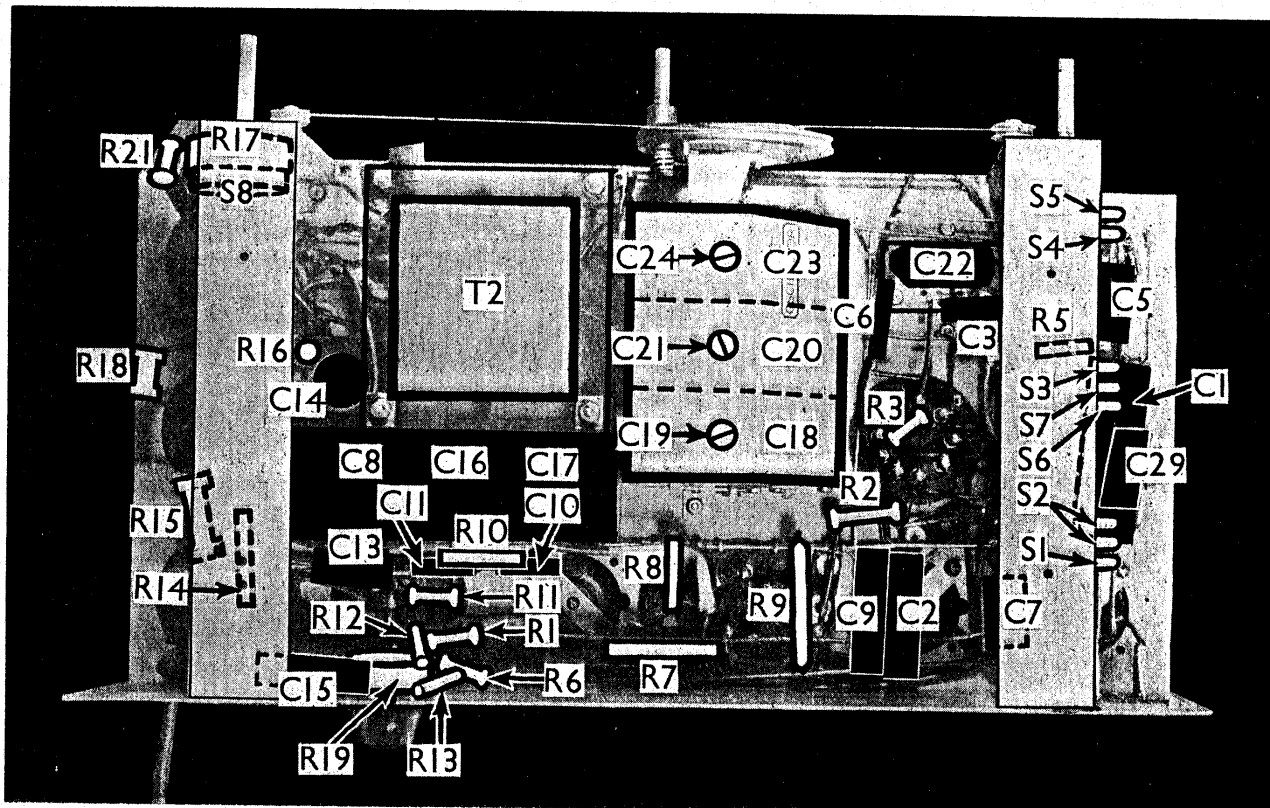
COMPONENTS AND VALUES

Resistances		Values (ohms)
R1	V1 pent. cont. grid decoupling	500,000
R2	V1 pent. anode and S.G. decoupling	5,000
R3	V1 osc. grid resistance	50,000
R4	V1 cathode resistance	500
R5	V1 osc. anode H.T. feed	50,000
R6	V2 cont. grid decoupling	500,000
R7	V2 S.G. H.T. potential divider	20,000
R8		50,000
R9	V2 fixed G.B. resistance	500
R10	I.F. stopper	250,000
R11	V3 signal diode load	500,000
R12	V3 A.V.C. diode load	250,000
R13		250,000
R14		100,000
R15	A.V.C. delay and V4 G.B. voltage potential divider	15,000
R16		140
R17	Manual volume control	500,000
R18	V4 anode circuit stabiliser	50
R19	Variable tone control	100,000
R20*	Speaker field coil ballast	500
R21*	Volume control shunt	500,000

* May not appear in some chassis.



Circuit diagram of the Regentone AC/56 superhet. Separate scales are used for M.W. and L.W., and each has its own indicator lamp, which is suitably switched.



Under-chassis view. C8, C16 and C17 are electrolytic condensers in a single unit. Note that S2 consists of two switch units paralleled. C22, the L.W. tracker, is adjusted through a hole in the chassis deck.

Condensers	Values (μF)
C1	V1 pent. cont. grid decoupling ... 0.5
C2	V1 pent. anode and S.G. decoupling ... 0.1
C3	V1 osc. grid condenser ... 0.0003
C4	V1 cathode by-pass ... 0.0003
C5	V1 osc. anode condenser ... 0.0008
C6	Oscillator L.W. tracker, fixed ... 0.0002
C7	V2 cont. grid decoupling ... 0.02
C8*	V2 S.G. by-pass ... 2.0
C9	V2 cathode by-pass ... 0.1
C10	} I.F. by-passes ... 0.0001
C11	
C12	Coupling to V3 A.V.C. diode ... 0.000015
C13	L.F. coupling to V4 ... 0.01
C14*	V4 cathode by-pass ... 50.0
C15	Part of tone control filter ... 0.03
C16*	} H.T. Smoothing ... 8.0
C17*	
C18†	Band-pass primary tuning ... 0.0005
C19†	Band-pass primary trimmer ... ---
C20†	Band-pass secondary tuning ... 0.0005
C21†	Band-pass secondary trimmer ... ---
C22‡	Oscillator L.W. tracker ... 0.00044
C23†	Oscillator tuning ... ---
C24†	Oscillator trimmer ... ---
C25†	1st I.F. trans. pri. tuning ... ---
C26†	1st I.F. trans. sec. tuning ... ---
C27†	2nd I.F. trans. pri. tuning ... ---
C28†	2nd I.F. trans. sec. tuning ... ---
C29§	Band-pass capacitance coupling ... 0.000015

* Electrolytic.
 † Variable.
 ‡ Pre-set.
 § May not appear in some chassis.

Other Components	Values (ohms)
L1	} Aerial coupling coils ... 2.4
L2	
L3	} Band-pass primary coils ... 2.6
L4	
L5	} Band-pass secondary coils ... 2.4
L6	
L7	} Band-pass coupling coils ... Very low
L8	
L9	} Oscillator coupling coils ... 1.1
L10	
L11	} Oscillator tuning coils ... 3.2
L12	
L13	} 1st I.F. trans. ... Pri. 110.0
L14	
L15	} 2nd I.F. trans. ... Pri. 102.0
L16	
L17	Speaker speech coil ... 2.25
L18	Hum neutralising coil ... 0.1
L19	Speaker field coil ... 2000.0
T1	Speaker input trans. ... Pri. 225.0
	... Sec. 9.25
T2	Mains trans. ... Pri. total 39.0
	... Heater sec. 9.05
	... Rect. heat. sec. 0.1
	... H.T. sec. 410.0
S1-S5	Waveband switches ... ---
S6, S7	Scale lamp switches ... ---
S8	Mains switch, gauged R17 ... ---

DISMANTLING THE SET

A detachable bottom is fitted to the cabinet and when it is removed (four bolts, with washers) access can be gained to most of the under-chassis components. **Removing Chassis.**—Should it be desired to remove the chassis from the

cabinet, remove the three control knobs (pull off) and the four countersunk-head wood screws holding the back of the chassis to the fillets at the side of the cabinet. The chassis can now be withdrawn, complete with the speaker.

Removing Speaker.—To remove the speaker, unsolder the leads from the terminal panel and remove the nuts from the four bolts holding it to the sub-baffle.

When replacing, do not forget the tags used on the two top bolts as cleats for the scale lamp leads, see that the transformer is on the right and connect the leads as follows, numbering the tags from top to bottom:—1, one end of 500 Ω resistance; 2, yellow; 3, red and the other end of the resistance; 4, blue.

VALVE ANALYSIS

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 AC/TP*	195	6.0	195	1.8
V2 HP4115	235	5.6	130	2.1
V3 DD4	---	---	---	---
V4 APP4C	225	36.0	235	4.5
V5 APV4200	335†	---	---	---

* Osc. anode 85 V, 2 mA.
 † Each anode, A.C.

Valve voltages and currents given in the table above were measured with the receiver operating on A.C. mains of
 (Continued overleaf)

REGENTONE AC/56 (Continued)

220 V., with the volume control at maximum but with no signal input. Voltages were measured on the 1,200 V. scale of an Avometer, with chassis as negative.

GENERAL NOTES

Switches.—S1-S5 are the waveband switches, and S6, S7 the scale lamp switches, all ganged in a single unit seen in the under-chassis view. S1-S5 are all closed on the M.W. band and open on the L.W. band. S7 is closed on the M.W. band and open on L.W., and S6 is closed on L.W. and open on M.W. Note that S2 consists of two units wired in parallel.

S8 is the Q.M.B. mains switch, ganged with the volume control, R17.

Coils.—All the coils are in five screened units on the chassis deck. Each screen is held in place by two screws at the base, and is thus easily removable. The unit containing L9-L12 also includes C4 and R4, while the second I.F. transformer (L15, L16) contains, in addition to the trimmers, the condenser C12.

Scale Lamps.—There are two of these, marked 6.0 V, 0.3 A. They are of the M.E.S. type.

External Speaker.—There is no provision for an external speaker in the set, but a high resistance model could be connected across the tags on the internal speaker transformer to which the red and yellow leads from the chassis are joined.

Trimmer C22.—This is adjustable through a hole in the chassis between the L9-L12 coil unit and the speaker mounting bracket.

Resistance R20.—This is mounted on the speaker transformer, and is wired in series with the 2,000 Ω field, bringing the D.C. resistance up to 2,500 Ω.

Condensers C8, C16, C17.—These are three dry electrolytics in a single unit. The black lead is the common negative, the green lead the positive of C8, the red lead the positive of C16 and the yellow lead the positive of C17.

Condenser C14.—This is a tubular

electrolytic condenser, and the correct polarity should be observed when replacing.

Resistance R21.—This is wired from chassis to slider of the volume control R17 in our set, but is not shown in the maker's diagram.

Condenser C29.—This condenser, forming the capacitive band-pass coupling, is not shown in the maker's diagram, and therefore may not occur in some chassis.

HINTS AND PROBLEMS

(Continued from p. IV)

Faulty H.T. and G.B. Battery

A rather unusual fault occurred in a Pye model SP/B receiver the other day. The customer complained of severe distortion which, upon investigation, sounded rather like the symptom one gets upon over-biasing an L.F. valve, i.e., choked reception.

The chassis was removed and the usual tests given, when it was noticed that the double diode triode valve (an L21DD) had an abnormal delay voltage applied to the A.V.C. diode section.

This drew the writer's attention to the H.T. battery, which seemed quite O.K. as regards the various potentials.

Service engineers who are familiar with the above-mentioned receiver, will no doubt remember that the H.T. battery in this particular case is in three separate sections, i.e., 13½ V for the delay voltage, 4½ V for grid bias, and 129 V for high tension. As a further test a meter was connected between the sections, when it was found that a leakage had occurred between the grid bias and the delay sections. Obviously the insulation had broken down between the cells causing a leakage of current to the delay battery

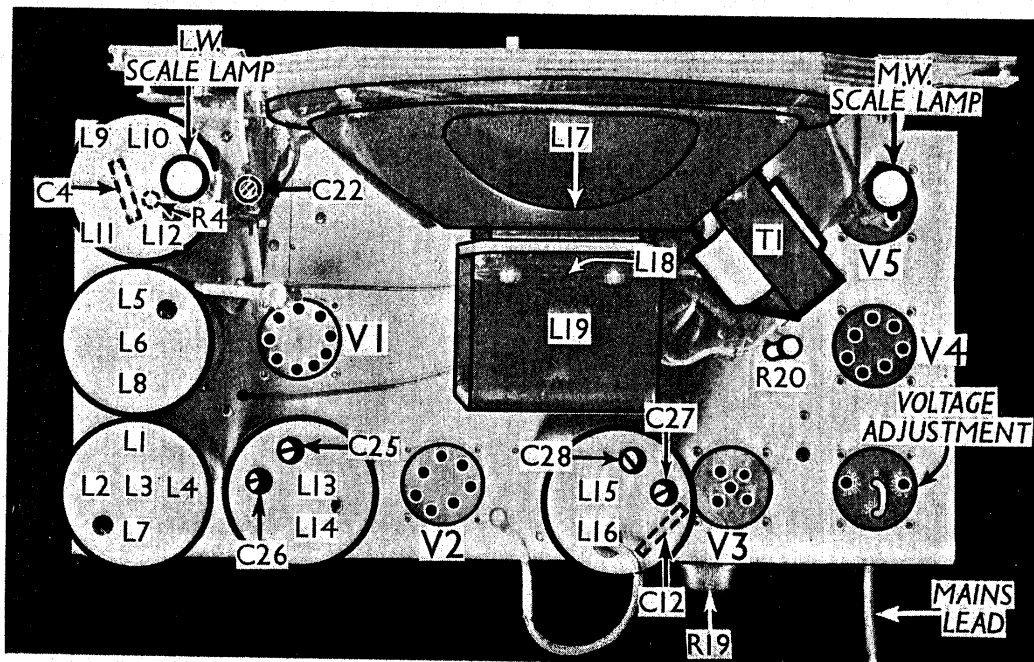
which upset its normal working voltage, also causing the double diode triode valve to cease functioning correctly. H.R.A.C.

Another Inspection Lamp

Various types of miniature inspection lamps have been described from time to time, but in spite of their novelty or ingenuity they all appear to suffer from some drawback.

The one described herewith has been found eminently satisfactory and very cheap to make. Most service engineers can put their hands on a pair of broken headphones and all that is required of them is the metal or leather-covered headband itself. To the centre of one of the bands is soldered the top portion of an ordinary pocket torch, to include the slip-on bullseye and bulb-holder. A miniature reflector can be fitted over the bulb to concentrate the light.

From the flashlight holder a short length of flex with crocodile clips leads to a battery placed in a convenient pocket. With this arrangement slipped over the forehead one can delve into the most awkwardly placed chassis and have both hands at liberty to make necessary adjustments.—A. Mc. L.



Plan view of the chassis. Note the screw adjusting C22. C4 and R4 are inside the L9-L12 coil unit, while C12 is inside the second I.F. transformer unit.