

SUNBEAM UNIVERSAL RECEIVER (Cont.)

lead to provide the correct voltage. The filaments are wired in series in the following order from the resistance (+ on D.C.) :- V3, V1, Rect., V2.

Special Notes.—There are two pilot lamps, which are in series between the resistance and filaments.

CAUTION.—The full mains voltage exists between the holders and chassis when either a lamp or a valve is removed or has a disconnected filament.

Quick Tests.—Voltages between ter-

minals on L.S. transformer and chassis (make connection to screw or rivet as the coating is an insulator) looking from the back :-
 Right hand (1) H.T. + unsmoothed, 210 volts
 " " (2) V3 anode 186 "
 " " (3) blank, " "
 " " (4) H.T. smoothed, 195 "
 Left " (5) chassis.

Note that the L.S. field is between 1 and 5 (.7500 ohms).

Removing Chassis.—Remove knobs (grub screw) and unscrew locking nut and washer from wave-change switch spindle.

Remove one screw from underneath cabinet. Unsolder lead to internal aerial and slide the chassis out.

The L.S. leads need not be disconnected if the chassis has only to be examined.

General Notes.—The tapped filament resistance R9 at the end of the chassis gives the following readings when cold: A to B, 600 ohms; A to C, 670 ohms; A to D, 800 ohms. These are substantially higher when the resistance is warm.

In our model an additional resistance Rx, of .25 megohm, was connected between H.T. + and the cathode of V3.

Replacing Chassis.—Slide chassis into cabinet and replace the one screw underneath. Replace knobs and resolder the internal aerial.

BLUE SPOT CLASS B 4

Circuit.—The H.F. valve, VS2 (V1), is preceded by a single-tuned aerial circuit and is coupled to the next valve by a band-pass circuit. The variable- μ characteristic of the valve is used for volume control by means of a potentiometer across the grid-bias battery.

As bias for the driver valve is also taken from the same battery, the grid bias to V1 is decoupled. The feed to the first band-pass intervalve coil is by H.F. choke and condenser.

The detector valve, HL2 (V2), is a leaky grid type with reaction, and the usual H.F. filter is included in the anode circuit. Coupling to the driver valve is by "straight" transformer with a tone correction circuit consisting of a resistance and condenser in series across the primary.

The driver valve, 215P (V3), is coupled to the output valve by a typical class B input

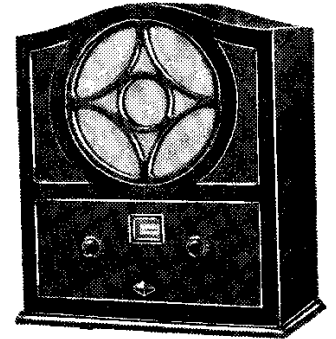
transformer. The anode circuit of this valve is decoupled, as is that of the detector.

The output valve, PM2B, operates at zero bias and is compensated for top note accentuation by condensers

Extra Speaker.—Provision is made for an external speaker, which can be used either with or without the internal one by means of reversing the L.S. plug supplied. This plug must be in the correct position.

The external speaker must be of the low-impedance type like that in the set, but if

(Continued on opposite page.)



The table model of the British Blue Spot Co.'s four-valve Class B receiver.

VALVE READINGS

Valve.	Type.	Electrode.	Volts.	M.A.
1	VS2	anode	116	1.6
		screen	70	
2	HL2	anode	75	2.1
3	215P	anode	75	2.1*
4	PM2B	each anode	120	

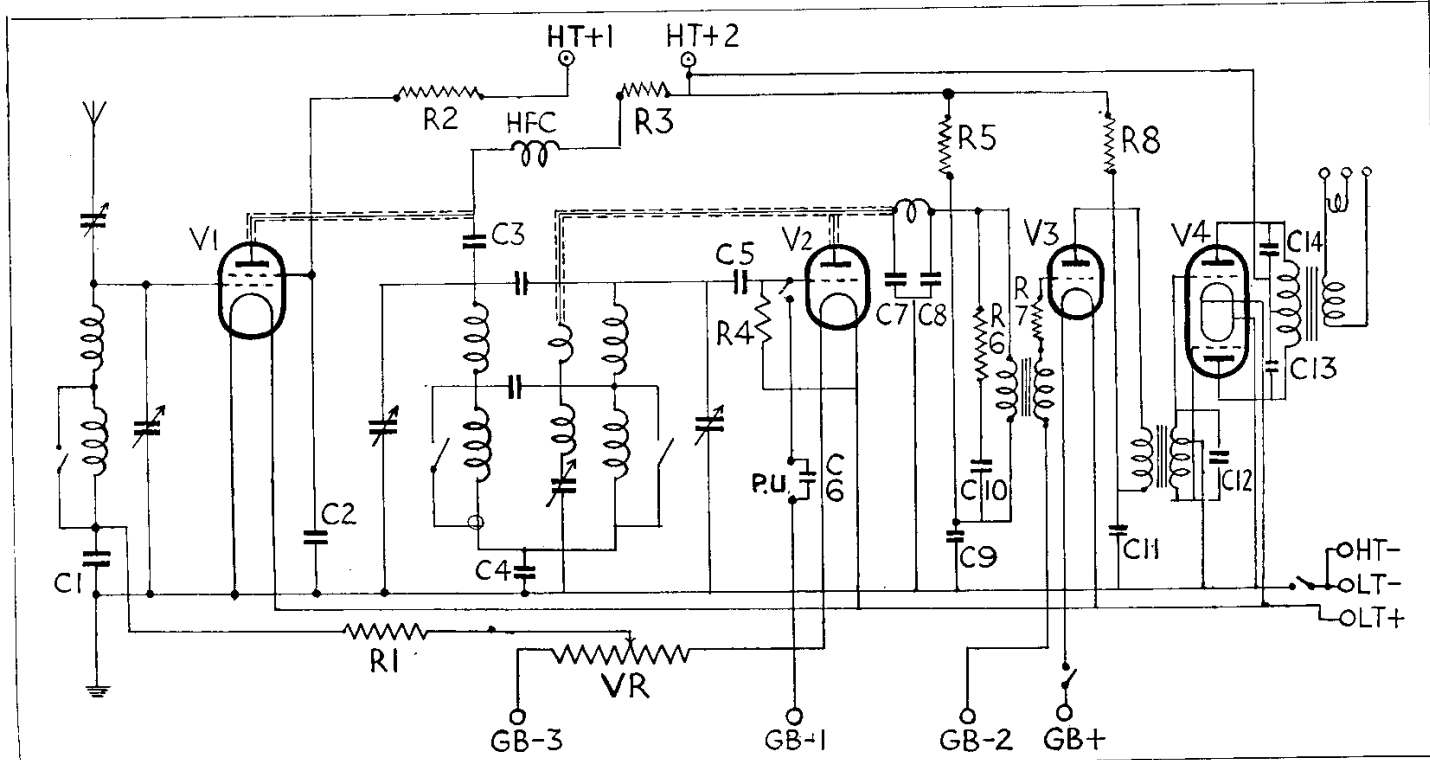
* With -4.5 v. bias.

RESISTANCES

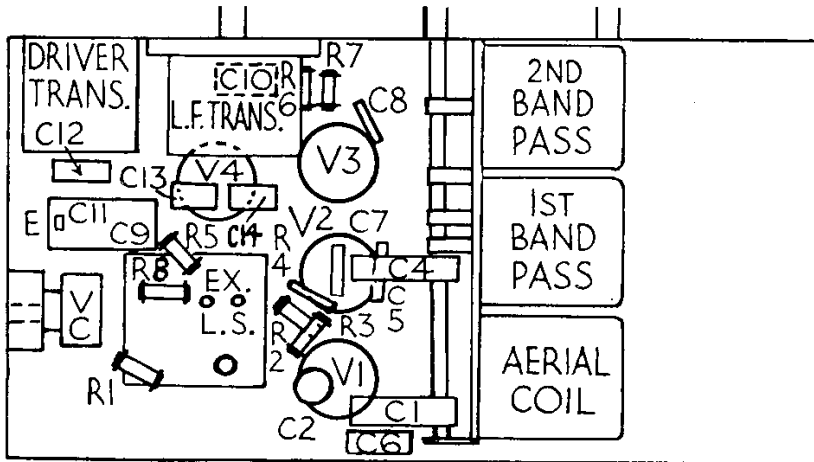
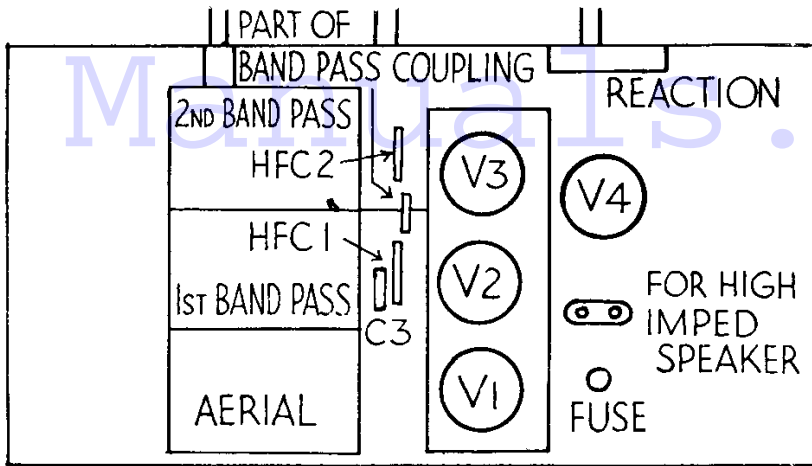
R.	Purpose.	Ohms.
1	Decoupling bias for V1	5,000
2	Decoupling screen V1	5,000
3	Decoupling anode V1	5,000
4	V2 grid leak	1 meg.
5	Decoupling anode V2	5,000
6	Tone correction circuit anode V2	40,000
7	H.F. stopper grid V3	100,000 or 200,000
8	Decoupling anode V3	5,000
VR	Volume control (bias pot.)	25,000
	Primary of output transformer	160 each half approx.
	Primary of driver transformer	420
	Secondary of driver transformer	180 each half approx.
	Primary of L.F. transformer	1350
	Secondary of L.F. transformer	6,000

CONDENSERS

C	Purpose.	Mfd.
1	Decoupling bias V1	.1
2	Decoupling screen V1	.1
3	H.F. filter to 1st Band pass	.0001
4	Coupling band pass coils	.1
5	V2 grid condenser	.0002
6	Across P.U. jack	.005
7		.0001
8	H.F. filter anode V2	.0005
9	Decoupling anode V2	.1
10	Tone correction circuit anode V2	.01
11	Decoupling anode V3	.1
12	Between grids of V4 (stabiliser)	.02
13		.002
14	Tone correction anodes of V4	.002



A band-pass stage is placed between the screen-grid and detector valves in the Blue Spot Class B Four.



On the top of the Blue Spot Class B chassis, the layouts of which are given above, the three first valves are totally enclosed in a screen.

BLUE SPOT CLASS B FOUR (Cont.)

a high-impedance one must be connected there are two terminals between the fuse and the output valve which can be connected to the ends of the primary of the output transformer.

Aerial Compensator.—The series aerial condenser is mounted so that the adjustment can be made from the outside. The screw is situated almost above the aerial terminal, and a small ebonite screw-driver is supplied with the set. The adjustment of this control is critical for any particular aerial.

Quick Tests.—The quickest way to test this set is by taking the current in the negative H.T. lead. With no signal the steady current should be 7.5 to 8 m.a. If this reading is low, test the H.T. and L.T. batteries.

Operating Voltages.—

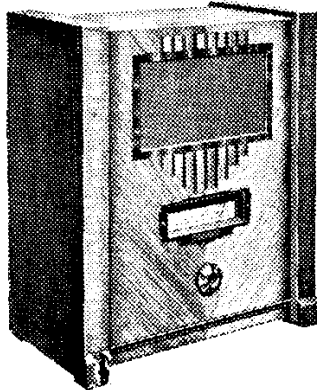
- H.T. + 1, + 70-75 volts.
- H.T. + 2, + 120 "
- G.B. - 1, - 1.5 "
- G.B. - 2, - 4.5 or " - 6 volts.
- G.B. - 3, - 16 volts.

Removing Chassis.—Undo the knobs in front (but not the VC at side). Release volume control by undoing grub screw on extension spindle inside the chassis. This can be reached through the circular hole in the back. Remove four screws underneath and lift chassis out.

General Remarks.—The majority of the resistances are of 5,000 ohms, which complicates tracing them. As they are suspended in the wiring, only the approximate positions can be given.

There are one or two lengths of wide gauge Systoflex that might appear to contain resistances, but actually they are used to insulate the wiring only.

Replacing Chassis.—Lay chassis inside the cabinet, replace four holding screws underneath, replace knobs and VC.



A straight "four" circuit with metal rectification is utilised in the Regentone Quadradyne.

REGENTONE QUADRADYNE

Pick-up connections are included in the cathode lead, and a short lead with a wander-plug is used to connect the low H.T. potential end of the cathode circuit to earth.

Resistance capacity coupling is employed, the resistance being .25 meg. with a decoupling resistance of 100,000 ohms. The screen potential is obtained through a 2-megohm resistance.

The output valve, Pen 4VA, a seven-pin pentode, has a tone control condenser operated by a switch connected between the grid and earth.

Full-wave metal rectification is on the voltage doubler principle, and the LS field is in the positive H.T. lead, with 8-mfd. electrolytic condensers as smoothing.

Special Notes.—When the set fails to operate first, see that the black wander-plug at the back is in the right-hand P.U. socket (looking from the back).

When this is out the detector cathode circuit is broken and, as there are very high

resistances in the anode lead and there will be a considerable voltage across them, even with a high resistance meter, the reading obtained may lead one to suppose the valve is drawing current.

Quick Tests.—Between two joined top terminals of output transformer and chassis, 230 volts (H.T. smoothed).

Between third terminal and chassis, 210 v. (V4 anode).

Between lowest terminal and chassis, 330 v. H.T.+ unsmoothed

Removing Chassis.—The receiver is in two sections, consisting of (1) the H.F. and detector valves on one large chassis, and (2) the output valve and mains equipment on the smaller chassis. Both are bolted to a wood baseboard, and must be removed together.

Remove six countersunk screws from flat section of bottom of cabinet (the screw holding the cleat for the mains lead will hold the chassis securely when the cabinet is lying on its side).

Remove the screw holding the cleat between the two chassis, and unscrew the wave-change switch lever (below VC).

Remove the tuning knob (grub screws) and manoeuvre the chassis out past the volume control. The leads to the latter and the speaker are sufficiently long to allow testing when they are connected.

To examine either of the chassis, remove the four screws holding it to the baseboard. The connecting leads between the chassis are also long.

(Continued on next page.)

VALVE READINGS

V.C. max, no signal.

Valve.	Type.	Electrode.	Volts.	M.A.
1	VM4V	anode ...	225	4
		screen ...	90	—
2	VM4V	anode ...	230	4
		screen ...	90	—
3	SP4*	anode ...	—	.1-.2
4	Pen4VA	anode ...	207	30
		aux. grid ...	230	5

* Anode bend detector with high resistances in circuit causes entirely misleading readings even with high resistance meters.

Circuit.—The first H.F. valve, VM4V (V1), is preceded by a loose-coupled aerial transformer with tuned secondary. The volume control circuit consists of a variable resistance and a series bias-limiting resistance which are common to both H.F. valves.

To increase and stabilise the current flowing through the biasing circuit a 50,000-ohm resistance is connected between H.T.+ and the cathodes. The anode of the first valve is decoupled, and the condenser is taken to cathode instead of chassis. Tuned secondary transformer coupling is used to the next valve.

The second H.F. valve, VM4V (V2), is coupled to the detector by a similar tuned secondary transformer.

The detector valve, SP4 (V3), is an H.F. pentode, working on the anode-bend principle.