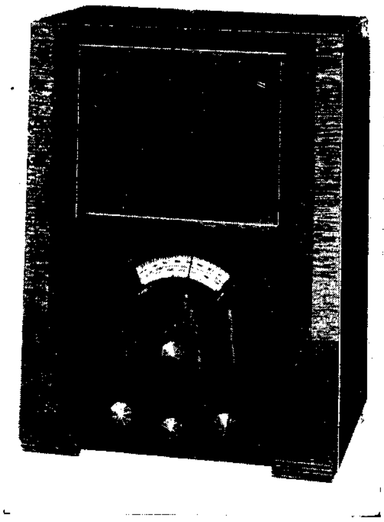
"AUSTIN" BATTERY SET BY CITY ACCUMULATOR CO.



The battery Austin receiver produced by the City Accumulator Co. Ltd., is an example of the completely modern super-heterodyne receiver for battery operation. The circuit incorporates five-valves among which are heptode, double-diode triode and class B types.

Circuit.—The combined detector oscillator valve VHT2 met. (V1), a heptode, is preceded by a band-pass aerial tuner with link coupling. The tuned oscillator coil is in the grid circuit of the oscillator section, and bias is obtained from the A.V.C. line. Coupling to the next valve is by band-pass I.F. transformer (frequency 110 k.c.).

The I.F. valve, VP 215 (V2) met., is also biased from the A.V.C. line, and is coupled to the following valve by another band-pass I.F. transformer, the anode lead being taken from a tapping on the primary.

The second detector and L.F. amplifier valve, L2DD met. (V3), utilises one diode anode for L.F. purposes and the other for A.V.C. The latter is fed through a condenser from the anode of the I.F. valve and is biased negatively to give the "delay" action.

A quarter-megohm potentiometer forms the diode load and volume control and the L.F. coupling condenser is connected to the slider. Note that the load resistance of this diode is connected to L.T.+.

The triode section is coupled to the next valve by parallel-fed transformer, and a tone control circuit consisting of a condenser in series with a variable resistance is connected across the primary.

The anode of the driver valve P220 (V4) is properly decoupled from the H.T. and is followed by a typical class B driver transformer.

The output valve, PD220A (V5) (Class B), operates with an initial bias. It is tone compensated by a condenser between each anode and H.T.+, which is properly by-passed earthed through a 2 mfd. condenser.

The switching breaks the H.T.— and L.T.— leads, and at the same time connects a "bleeder" resistance across the G.B. battery

(*Continued on next page.*)

VALVE READINGS

[No Signal.]

Valve.	Type.	Electrode.	Volts.	M.A.
1	VHT 2 met.(7)	anode	123	1.4
		screen	75	
		osc. anode	82*	
2	VP 215 met.(7)	anode	123	2
		aux. grid	80	
3	L2DD met. (5)	anode	88	1.5
4	P 220 (5) ...	anode	102	2.6
5	PD220A (7) ...	each anode	121	1.35

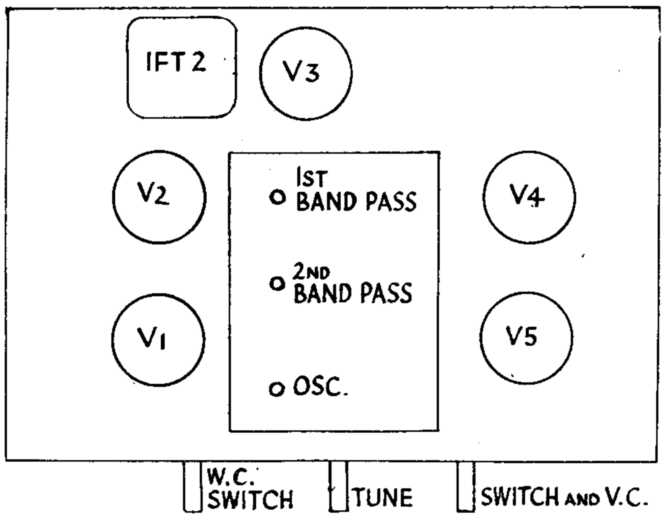
* A high value of resistance in circuit may cause a deceptive reading.

RESISTANCES

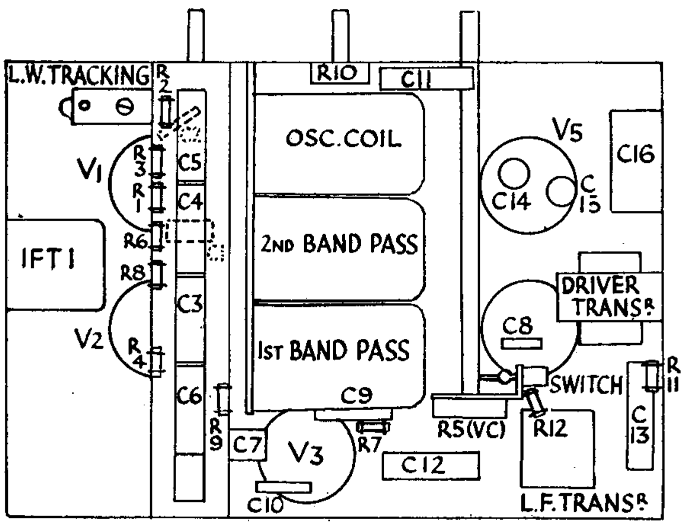
R.	Purpose.	Ohms.
1	V1 grid leak	2 meg.
2	V1 osc. grid leak	1 meg.
3	V1 osc. anode coupling	20,000
4	Voltage dropping to V2 aux. grid.	100,000
5	Diode load ptr. (V.C.)	.25 meg.
6	Decoupling A.V.C. to V1 and V2	1 meg.
7	V3 grid leak	1 meg.
8	V3 A.V.C. diode load and bias decoupler.	2 meg.
9	V3 anode L.F. coupling ...	20,000
10	Var. tone control...	25,000
11	V4 anode decoupling	7,500
12	Causing current drain on G.B. battery.	1,500

CONDENSERS

C.	Purpose.	Mfd.
1	V1 grid	.0001
2	V1 osc. grid	.0003
3	Decoupling V1 grid	.1
4	Reaction feed condenser V1 osc. anode.	.1
5	V1 screen	.1
6	V2 aux. grid.	.1
7	I.F. feed to A.V.C. diode ...	.0001
8	Diode reservoir	.0001
9	L.F. coupling to V3 grid ...	.01
10	V3 anode by-pass	.0003
1	Part of tone control circuit ...	.03
2	Filter feed to L.F. transformer	.1
	V4 anode decoupling	1
	Stabilising one anode of V5 ...	.005
	Stabilising other anode of V5 ...	.005
	Across H.T.	2



As the above layout diagram shows, the "top deck" design of the C.A.C. "Austin" battery set is particularly clean.



Inside, the C.A.C. chassis is both compact and logical. Small components are placed near the larger parts to which they are connected.

BATTERY "AUSTIN" BY C.A.C. (Cont.)

so that the voltage will drop in proportion to the H.T. battery as it runs down.

Special Notes.—The battery connections are :—

Drydex H1073 combined H.T. and G.B.

H.T. : H.T.+1, 123 volts; H.T.+2, 75 volts.

G.B. : G.B.—1, 1.5 volts; G.B.—2, 3 volts; G.B.—3, 4.5 volts; G.B.—4, 9 volts.

Note that H.T.— and G.B.+ have separate sockets on the battery. For greater economy in battery use, with a slightly lower output G.B.—3 may be plugged into the —6-volt tapping.

Quick Tests.—Set current, with no signal, taken in negative H.T. lead should be approximately 10 m.a. with voltages as above. Take individual valve readings.

Removing Chassis.—It is more convenient to unsolder the L.S. leads than to leave them attached.

Remove knobs (grub screw) and undo the two wood screws at the back of the flanges at the side of the chassis.

Remove the battery shelf and lift the chassis out.

General Notes.—The driver transformer is situated between V4 and V5 sockets. The two primary tappings are on one side, and of the five secondary tappings on the V5 side only the three middle ones are used. The centre tapping is connected to the I.S. (G.B.) tag on the L.F. transformer.

In the L2DD the grid terminal is at the top of the bulb, and the pin that is ordinarily connected to the grid is one diode anode, while the centre pin is the other diode anode.

For convenience, the condenser C8 is mounted in front of the switch instead of across the volume control, across which it is connected through the L.T.+ wiring.

Switch contacts are of the wiping type, and can be cleaned by turning them alternately towards the chassis base plate and cleaning them with a clean duster.

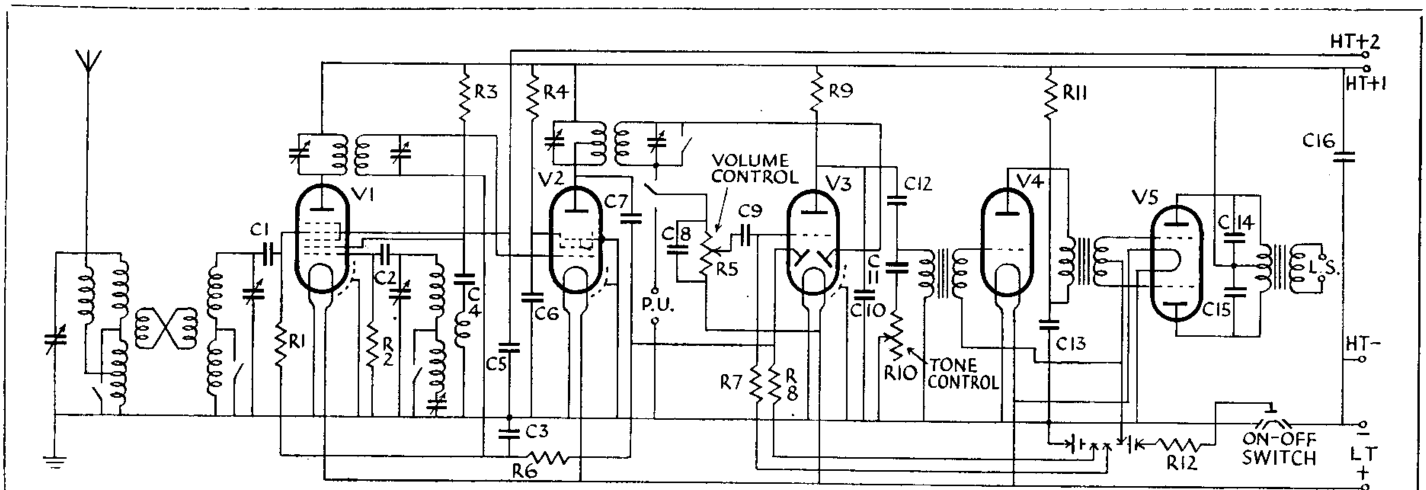
Replacing Chassis.—Lay chassis inside cabinet, and replace two holding screws.

Resolder the L.S. transformer leads with the green lead in the middle, and replace the knobs.

Replace the battery shelf and push the battery leads through the hole next the accumulator holder.

November "Service Engineer"

Receivers dealt with in the next issue of SERVICE ENGINEER will include the Aerodyne "Swan," Burgoyne Five-valve Battery Superhet, McMichael Duplex Transportable, and Ultra "44."



A Ferranti heptode frequency-changer forms the first valve in the C.A.C. battery "Austin" and the other types are respectively an H.F. pentode I.F. amplifier, a double-diode triode for detection and A.V.C., a driver and a class B output valve.

ADDITIONAL NOTES ON PHILCO

MODELS 260, 261, 263, 264 AND 1263

Models 260-261, 5-valve A.C. superhet.—This chassis was described in the January issue of the SERVICE ENGINEER. Two important modifications have been incorporated in the latest models, and dealers are recommended to alter the sets so as to include the second item if and when they are returned for service.

First Modification.—It has been found that the suppressor coil allowed break-through of the local station when left in circuit for the long waves. In some models an extra contact will be found on the switch to connect the cathode return direct to earth instead of to the suppressor coil when the switch is turned to L.W.

As the revised circuit involves a larger switch, dealers should charge the customer for the improvement, as they themselves will have to pay for the switch.

Second Modification.—In some cases the 6A7 (V1) refuses to oscillate at one end of the tuning range. This can be cured in most cases by connecting the oscillator grid return lead to earth instead of to cathode.

Whenever it is necessary to remove the chassis for any other purpose the engineer should change this lead.

Model 264.—Dealers who recognise that the chassis used in the 264 is the same as in the 260 and 261 may be surprised to find

(*Continued on next page.*)

VALVE READINGS

[No signal.]

Valve.	Type.	Electrode.	Volts.	Ma.
1	6A7 ...	anode ...	240	
		screen ...	51	
		osc. anode	247	
2	78E ...	anode ...	240	
		screen ...	88	
3	75	anode ...	153	
4	42E ...	anode ...	230	
		aux. grid ...	245	

RESISTANCES

R.	Purpose.	Ohms.
1	Across aerial coil	10,000
2	Decoupling V1 grid	70,000
3	V1 cathode bias	500
4	Decoupling V1 osc. grid ...	51,000
5	V2 cathode bias	300
6	Lower part of screen ptr. ...	13,000
7	Part of screen ptr.	10,000
8	Part of screen ptr.	25,000
9	H.F. stopper from diode ...	51,000
10	Diode load (variable V.C.) ...	350,000
11	V3 grid leak	1 meg.
12	V3 grid decoupling	99,000
13	V3 grid H.F. stopper	25,000
14	V3 anode, L.F. coupling ...	70,000
15	V3 anode, decoupling	70,000
16	V4 grid leak	490,000
17	Part of V3 bias ptr.	235
18	Part of V3 bias ptr.	32

CONDENSERS

C.	Purpose.	Mfd.
1	Band-pass coupling	.05
2	V1 cathode	.09
3	V1 anode decoupling	.25
4	V2 cathode	.09
5	V2 screen	.09
6	L.F. coupling to V3 triode grid	.01
7	V3 grid decoupling	.09
8	V1 screen decoupling	.09
9	V3 anode by-pass	.00025
10	L.F. coupling V3 to V4 ...	.01
11	V3 anode decoupling	.25
12	V4 anode, tone compensating	.01
13	V4 anode, tone compensating (switched on).	.01
17	H.T. smoothing	8 el.
18	H.T. smoothing	8 el.
19	Mains H.F. by-pass	0.15
20	Across V3 bias ftr.	.05
22	H.F. filter from diode	.00025
23	H.F. filter from diode	.00025
24	Decoupling AVC to V1... ...	.05
25	H.F. by-pass from V3 grid ...	.0001