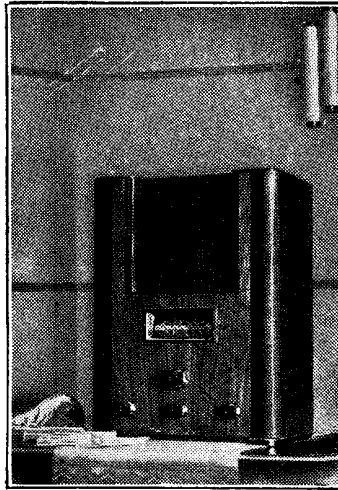


# SERVICE ENGINEER

## BURGOYNE DRAGON A.C. MAINS SUPERHET "FOUR"

**CIRCUIT.**—A four-valve plus rectifier superhet A.C. mains receiver operating on the usual medium and long waves. The aerial coupling to V1, a frequency changer, is through a series aerial condenser C1, a resistance R1, which is shorted by a switch and acts as a sensitivity control, a wave trap and an inductively-coupled aerial coil with an iron-dust core.



An attractive cabinet houses the Burgoyne Dragon, an A.C. mains receiver which employs a four-valve plus rectifier superhet circuit. It is designed to operate on the medium and long wavebands and incorporates a sensitivity switch operating on the aerial input circuit.

V1 is coupled to V2, an H.F. pentode, through an I.F. transformer tuned to 473 kc. V2 is coupled to V3, a double diode, through a second I.F. transformer. Both I.F. transformers have iron cores.

One diode of V3 is used to supply A.V.C. bias to the preceding valves in

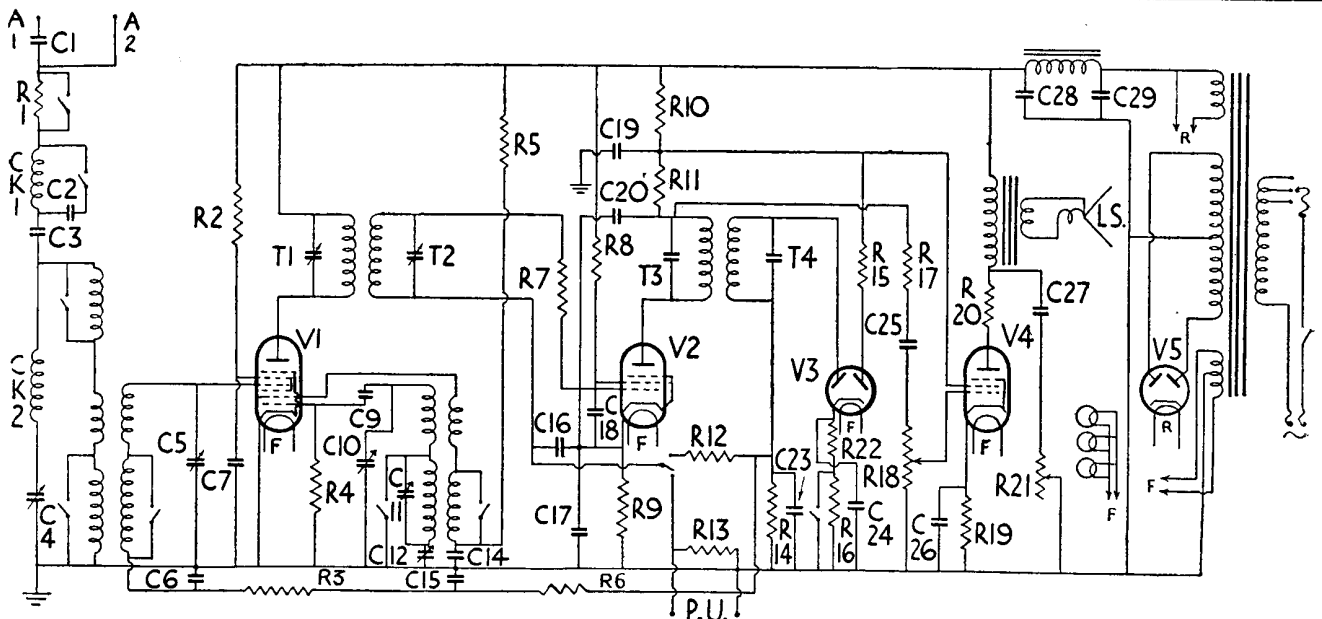
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### RESISTANCES

R.	Purpose.	Ohms.
1	Sensitivity control	50,000
2	V1 screen decoupling	50,000
3	V1 A.V.C. decoupling	100,000
4	V1 osc. grid leak	250,000
5	V1 osc. anode decoupling	50,000
6	A.V.C. decoupling	500,000
7	V2 grid stabiliser	500
8	V2 screen decoupling	100,000
9	V2 cathode bias	200
10	V4 screen decoupling	5,000
11	V2 anode coupling	30,000
12	Diode output decoupling	100,000
13	Pick-up shunt	750,000
14	A.V.C. diode and demodulator load	500,000
15	Idle diode feed	5 meg.
16	Sensitivity control	20,000
17	H.F. stopper	100,000
18	Volume control	500,000
19	V1 cathode bias	140
20	V4 anode stabiliser	100
21	Tone control	10,000
22	V3 cathode bias	20,000

### CONDENSERS

C.	Purpose.	Mfd.
1	Series aerial	.00005
2	Wave trap	.00005
3	Series aerial	.0001
4	Wave trap	.0001
5	H.F. tuning	.0005
6	V1 A.V.C. decoupling	.1
7	V1 screen decoupling	.1
9	V1 osc. grid	.0001
10	Oscillator tuning	.0005
11	Long wave trimmer	.00007
12	Long wave padder	.00055
14	V1 osc. anode decoupling	.1
15	A.V.C. decoupling	.1
16	H.F. by-pass	.001
17	V2 screen decoupling	.1
18	V2 screen decoupling	.1
19	V2 anode and V4 screen decoupling	.2
20	H.F. by-pass	.0005
23	H.F. by-pass	.001
24	V3 bias decoupling	.1
25	L.F. coupling	.01
26	V4 bias decoupling	.25
27	Tone control	.025
28	H.T. smoothing	12
29	H.T. smoothing	8



The circuit of the Burgoyne Dragon A.C. superhet. The aerial coupling to the first valve, a frequency changer, is through a series aerial condenser, while there is also a resistance which is shorted by a switch to act as the sensitivity control.

# BURGOYNE DRAGON A.C. SUPERHET. (Continued)

the orthodox manner, and also serves as a demodulator.

After demodulation the L.F. output of V3 is reflexed and fed back to the grid of V2 via R12. After amplification the signal is passed to V4, an output pentode, through the volume control. V4 is tone controlled by C27 and R21.

Mains equipment consists of transformer, full-wave rectifier, electrolytic condensers and the speaker field.

**Removing Chassis.**—Remove the four knobs from the front of the cabinet, and the four bolts that are reached through holes in the bottom of the cabinet.

The chassis may then be removed far enough for the usual inspection and test without disconnecting the speaker leads.

**Special Notes.**—The dial lamps are rated at 6 volts .3 amps. The holders are clipped on the dial assembly and are removed by lifting vertically.

The switch on the back of the chassis is the sensitivity control and is in shunt with R1.

## ALIGNMENT NOTES

**I.F. Circuits.**—Connect a modulated oscillator tuned to 473 kc. to the grid cap of V1, via a dummy aerial, and to the chassis. Connect an output meter across the speaker terminals.

Adjust T1, T2, T3 and T4 for maximum reading on meter.

**Medium Waves.**—Transfer oscillator to aerial and earth terminals, and tune it and the receiver to 210 metres. Adjust T5 and T6 for maximum reading.

Tune set and oscillator to 500 metres, and retrim T5 and T6.

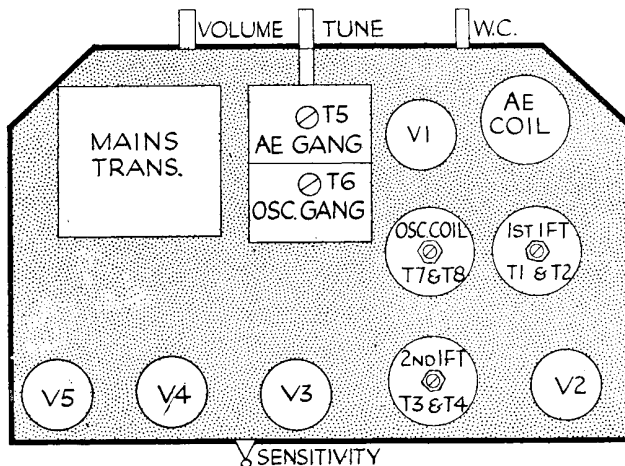
Repeat at 210 metres for check.

**Long Waves.**—Tune set and oscillator to 1,000 metres, and adjust T7 and T8 for maximum.

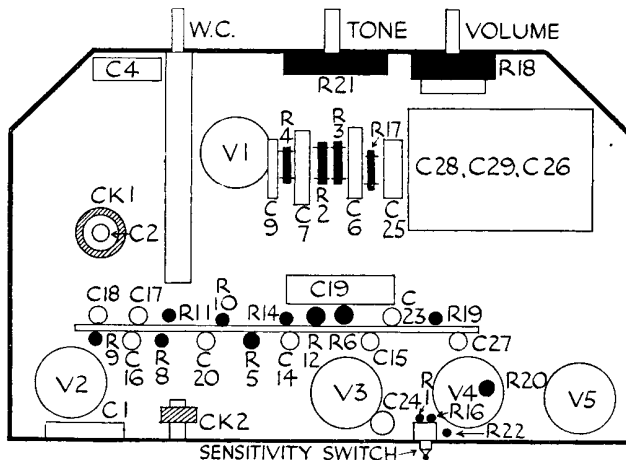
### QUICK TESTS

Voltages read between the terminal strip on the speaker and the chassis should be:—

- (1) Top, 380 v., unsmoothed H.T.
- (2) Bottom, 270v., smoothed H.T.
- (3) Bottom, 260 v., smoothed H.T.

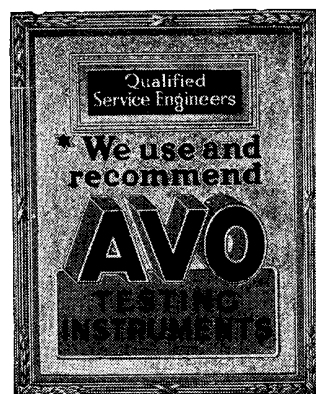


The layout of the top of the chassis of the Burgoyne Dragon A.C. superhet on the left is particularly clean, and key components and valves can be readily identified. The position of the sensitivity switch on the chassis is also clearly indicated.



The accessibility of the various components in the Burgoyne Dragon can be gathered from the diagram on the right, which shows the underside layout of the chassis used in this instrument. The various resistors and condensers employed can be readily spotted, the former being shown "solid" black.

VALVE READINGS				
No signal. Volume maximum. Selectivity maximum. 200 volts A.C. mains.				
V.	Type.	Electrode.	Volts.	M.a.
1	All Tungram V04 (7) Met.	anode ...	280	5.1
		screen ...	110	3.1
		osc. anode ...	100	2.8
2	VP4B (7) Met.	anode ...	80	1.7
		screen ...	80	4.9
3	DD4 (5) Met.	diode	80	—
4	APP4C (7) ...	anode ...	260	30.
		screen ...	230	3.4
5	AVP4 (4) ...	filament ...	380	—



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