

SERVICE ENGINEER

ULTRA MODEL 101 A.C. SUPERHET

CIRCUIT.—A three-valve A.C. superhet receiver covering the usual medium and long wavelengths.

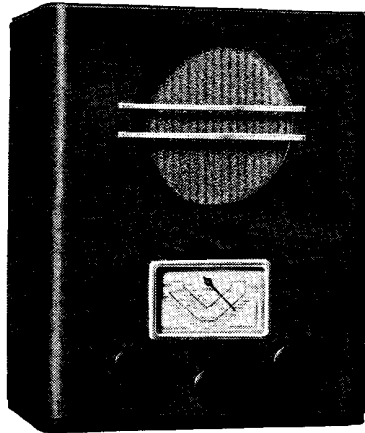
The aerial input to V1, a frequency changer, is through an inductively coupled band-pass filter, incorporating a special winding which is open-ended.

Signals are then fed through an I.F. transformer, tuned to 456kc to V2, an H.F. pentode, the output of which is fed through a further I.F. transformer to the diode portion of V3, a double-diode output pentode.

One diode is used as a demodulator and the other supplies A.V.C. bias to the preceding valves in the orthodox manner. The rectified signal is applied to the grid of the pentode portion of V3 through the volume control.

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

Special Notes.—The dial lamp is rated at 4.5 volt. .3 amps. To replace it,



The Ultra 101 is an A.C. superhet three covering medium and long wavebands.

remove the board from underneath the cabinet (four wood screws), and the holder will be seen clipped on to the front of the chassis.

The external speaker is connected on the low resistance side of the output transformer, and should have a speech coil impedance of about 5 ohms.

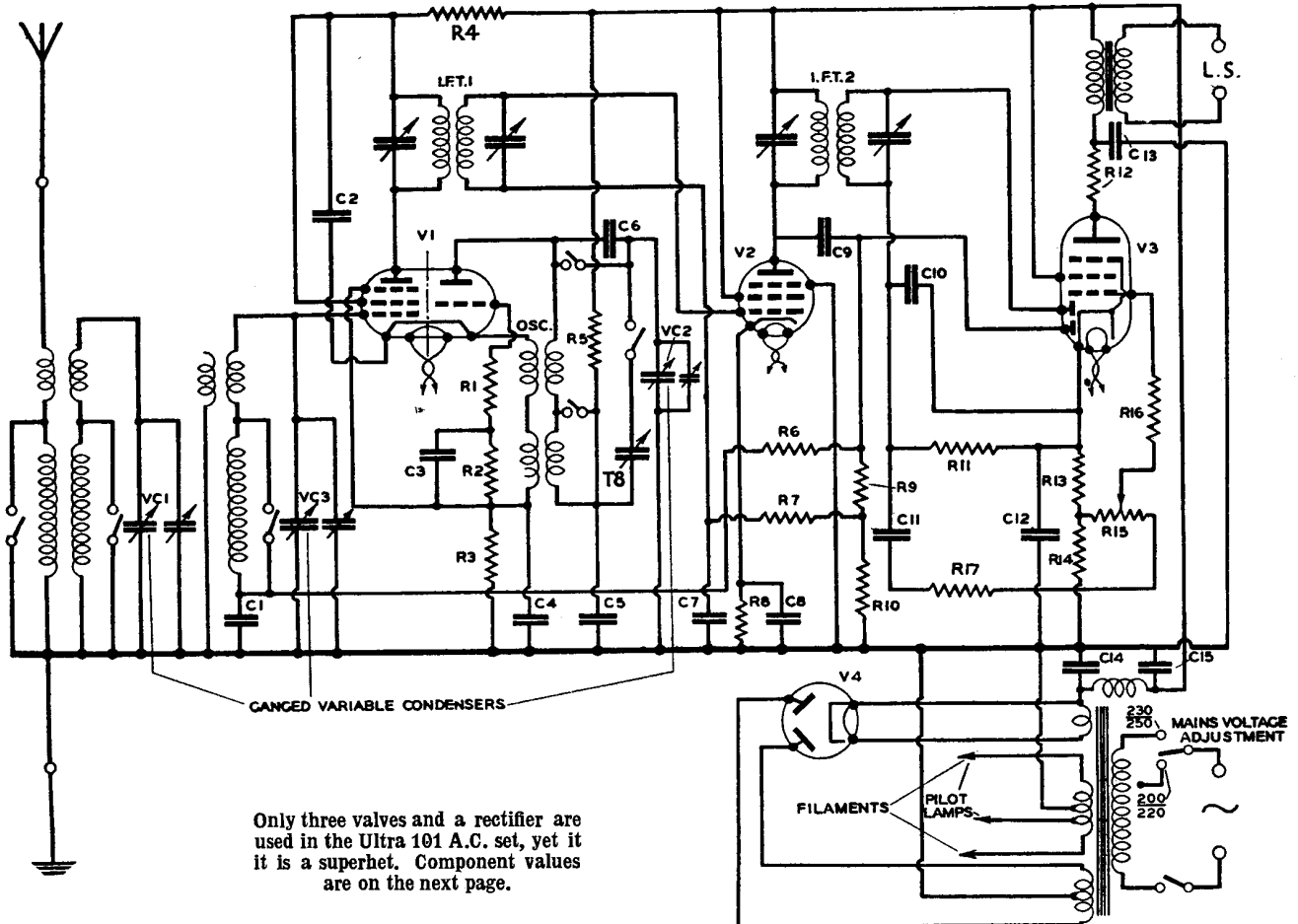
Exposing Chassis.—Practically all the service work necessary on this receiver can be done without removing the chassis, by simply unscrewing the base board.

To remove the chassis take off the three knobs (grub screws) and remove the three chassis fixing bolts from underneath.

The chassis will then slide out.

ALIGNMENT NOTES

I.F. Circuits.—Connect a modulated oscillator tuned to 456kc. to the grid of V1 and earth through a small fixed condenser and an output meter across the external (Continued on next page.)



Only three valves and a rectifier are used in the Ultra 101 A.C. set, yet it is a superhet. Component values are on the next page.

ULTRA MODEL 101 A.C. SUPERHET (Continued)

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

Medium-wave Band.—Turn the pointer to the top of the scale and check that it lies parallel to the horizontal line on the scale, if not, adjust it by loosening the grub screw on the condenser spindle.

Inject a signal of 200 metres through a dummy aerial to the aerial and earth terminals, and tune in the signal and trim T5, T6 and T7 for maximum reading on output meter.

Repeat at 500 metres and again at 350 for check.

Long-wave Band.—Tune the oscillator and receiver to 1,000 metres, and adjust T8 for maximum reading on the output meter.

CONDENSERS

C.	Purpose.	Mfd.
1	V1 A.V.C. decoupling...	.05
2	V1 screen and anode decoupling...	.1
3	Part V1 osc. grid network...	.0002
4	V1 cathode bias shunt...	.5
5	V1 osc. anode decoupling...	.1
6	Long-wave padding...	.0003
7	V2 A.V.C. decoupling...	.05
8	V2 cathode bias shunt...	.1
9	A.V.C. diode feed...	.0002
10	H.F. filter...	.0002
11	L.F. coupling...	.01
12	V3 cathode bias shunt...	.50
13	Pentode compensating...	.01
14	H.T. smoothing...	8
15	H.T. smoothing...	16

RESISTANCES

(Continued from previous column)

5	V1 osc. anode decoupling	...	80,000
6	V1 A.V.C. decoupling	...	1 meg.
7	V2 A.V.C. decoupling	...	1 meg.
8	V2 cathode bias	...	30
9	A.V.C. diode load part	...	250,000
10	A.V.C. diode load part	...	750,000
11	Demodulator diode load	...	500,000
12	V3 anode stabiliser	...	60
13	V3 cathode bias potr.	...	130
14	V3 cathode bias potr.	...	138
15	Volume control	...	1 meg.
16	V3 grid stopper	...	1,000
17	V3 grid stopper	...	10,000

QUICK TESTS

Quick tests are available on this receiver on the terminal strip at the back of the speaker. Volts measured between this and the chassis should be:—

Red lead, 360 volts, unsmoothed H.T.
Black lead, 245 volts, smoothed H.T.

RESISTANCES

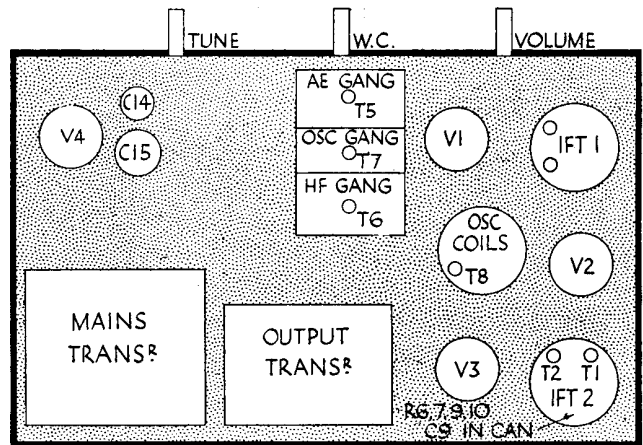
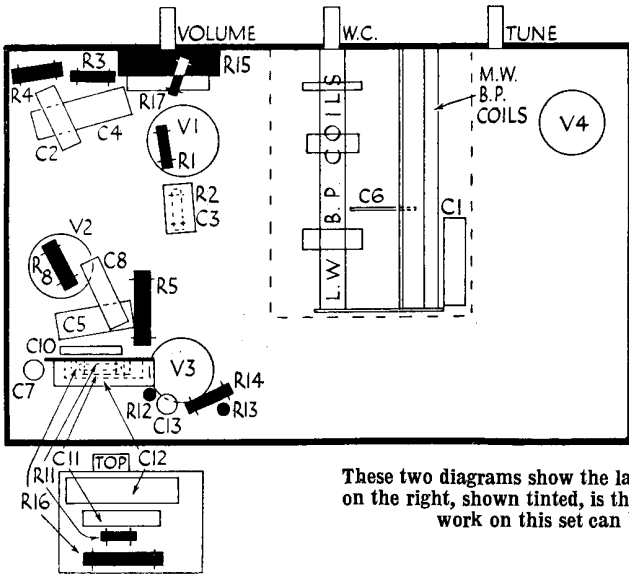
R.	Purpose.	Ohms.
1	V1 osc. grid network part	1,000
2	V1 osc. grid network part	50,000
3	V1 cathode bias	480
4	V1 screen and anode decoupling	7,000

(Continued in next column)

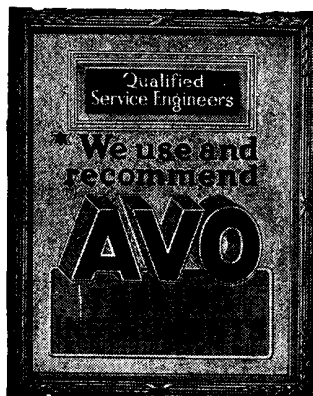
VALVE READINGS

No signal. Volume at maximum. 200 volt A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	AC/TP Met.(9)	anode ...	185	6
		screen ...	185	1.5
		osc. anode	80	2
2	AC/VP1 Met.(7)	anode ...	225	17
		screen ...	220	5
3	AC2/Pen. DD (7)	anode ...	230	34
		screen ...	240	7
4	UU3 (4) (All Mazda)	filament...	360	—



These two diagrams show the layout of the chassis of Ultra's 101 A.C. superhet three. That on the right, shown tinted, is the top; on the left is the underside view. Practically all service work on this set can be done without removing the chassis from the cabinet.



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