

# G.E.C. "FIDELITY" ALL-WAVE SET

**CIRCUIT.**—Signals are fed to the grid of the H.F. valve, V1, by a tuned aerial coil, which incorporates a wave trap T9 and CK1. They are then passed through a signal-frequency coil to the hexode part of a triode-hexode, V2, and then to an H.F. pentode, V3, which is the first I.F. amplifier.

Through an I.F. band-pass transformer tuned to 445 kc., the I.F. signal passes to a second H.F. pentode, V4, followed by a second I.F. transformer. The gain of these valves is regulated by a variable resistance, R22, which acts as a sensitivity control.

The detector diode of a double-diode triode, V5, is coupled to the grid of the triode section through an H.F. filter and R28, which acts as a volume control.

The rectified signal is then fed to a push-pull transformer which is coupled to two output pentodes, V6 and V7, which are tone controlled by C41 and variable resistance R38.

A.V.C. is derived from a diode of the double-diode triode in the orthodox manner.

Mains equipment consists of: transformer, full-wave U14 directly heated rectifier, V8, electrolytic condensers, an L.F. choke and the speaker field, which is in the positive H.T. lead.

**Special Notes.**—The external speaker is connected on the low-resistance side of the transformer, and should have an impedance of 2 ohms.

R39 is on the external speaker switch.

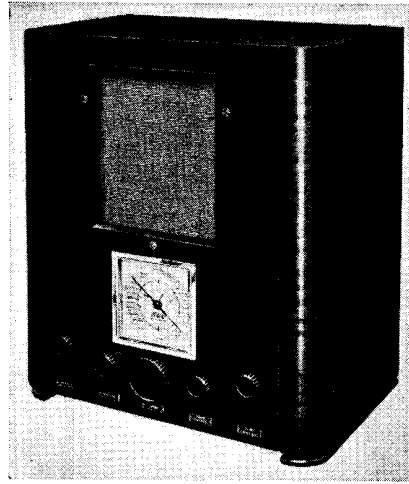
The pilot lamps are rated at 3.5 v., .3 amp.

**Removing Chassis.**—Remove knobs. The tuning knob is removed by undoing the grub screw, the others are secured by spring clips and pull off.

## QUICK TESTS

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

Unsmoothed H.T. (white lead) ..	300V.
Smoothed H.T. (red lead) ..	360V.
Centre tap (orange lead) ..	254V.



Push-pull pentode output is a feature of the G.E.C. All-wave "Fidelity" Receiver.

Remove four fixing bolts from underneath cabinet. Wire screening of chassis is removed by undoing four screws found at ends of chassis.

Chassis will then pull out far enough for usual test and inspection without disconnecting speaker leads.

## ALIGNMENT

**Preliminary Procedure.**—Insert aerial coupling link so that normal aerial is in operation.

Minimum capacity must be used on all oscillator trimmers when more than one peak is obtained. When major alterations are made to trimmers repeat procedure.

Check that scale pointer is not bent.

Turn tuning condenser to minimum and see that pointer is in line with zero index mark. Swing condenser through 90 degrees and check pointer again.

Turn sensitivity and volume controls to maximum and tone control to dull.

**I.F. Circuits.**—To align I.F. transformers, first short circuit the oscillator section of V2 by earthing the oscillator grid. Switch set to L.W. and connect output meter across speaker and modulated oscillator between signal grid of V2 and earth.

Set oscillator to 445 kc. and adjust I.F.T. trimmers with insulated tool to give maximum reading. Re-seal I.F. trimmers.

**Long-Wave Band.**—Connect modulated oscillator to A and E terminals.

(1) Set modulated oscillator and receiver to 1,000 m. and adjust trimmers O4, H4 and A4 for maximum response. (2) Tune set and modulated oscillator to 1,818 m., adjust trimmer T2 for maximum response. (3) Tune set to 1,000 m. and readjust O4, H4 and A4. (4) Check these adjustments.

**Medium-wave Band.**—(1) Set modulated oscillator and receiver to 214 m. and adjust trimmers O3, H3 and A3 for maximum response. (2) Tune set and oscillator to 500 m. and adjust trimmer T1. Repeat (1).

**S1-wave Band.**—Tune set and modulated oscillator to 37.5 m. and adjust trimmers O2, H2 and A2 for maximum response.

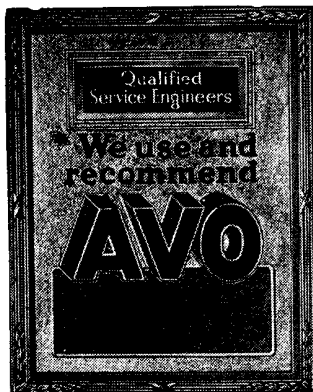
**S2-wave Band.**—Tune set and modulated oscillator to 16.7 m. and adjust trimmers O1, H1 and A1 for maximum response.

(Continued on next page.)

## VALVE READINGS

No signal and volume, sensitivity and tone controls tuned fully clockwise.

V.	Type.	Electrode.	Volts.	Ma.
1	(All Osram)	VMS4 .. Anode ..	240	5.5
		Screen grid ..	65	2
2	X41 ..	Anode ..	250	1
		Aux. grid ..	60	1
		Osc. anode ..	90	1.5
3	VMP4 G	Anode ..	260	1
		Aux. grid ..	85	.5
		Anode ..	245	1.75
4	VMP4 G	Aux. grid ..	100	Inaccessible.
		Anode ..	320	do.
5	MH4 ..	Anode ..	100	35
6	MPT4 ..	Anode ..	250	6
		Aux. grid ..	260	34
7	MPT4 ..	Anode ..	250	6.5
		Aux. grid ..	260	—
8	U14 ..	Filament ..	320	—

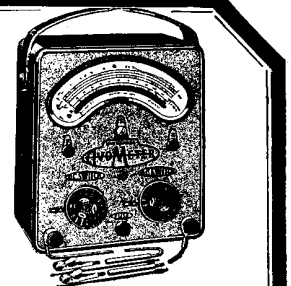


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# G.E.C. ALL-WAVE SET (Continued)

RESISTANCES		
R.	Purpose.	Ohms.
1	V1 grid stabilising ..	1 meg. (1)
2	V1 screen decoupling ..	30,000 (2)
3	Part V1 screen ptr. ..	15,000 (1)
4	V1 cathode bias ..	200 (4)
5	V1 anode decoupling ..	4,000 (1)
6	V2 grid leak ..	1 meg. (4)
7	Part V2 screen ptr. ..	55,000 (1)
8	Part V2 screen ptr. ..	22,000 (4)
9	V2 cathode bias ..	990 (4)
10	Part V2 bias ptr. ..	200 (4)
11	Part V2 bias ptr. ..	55,000 (1)
12	V2 osc. anode decoupling ..	55,000 (4)
13	V2 osc. grid leak ..	24
14	V2 osc. grid stabilising ..	150 (4)
15	V2 osc. grid stabilising ..	4,000 (4)
16	V2 anode H.T. decoupling ..	220,000(4)
17	Part A.V.C. ptr. ..	220,000(4)
18	V3 screen decoupling ..	220,000(4)
19	V3 and V4 cathode bias ..	55,000 (2)
20	V4 screen decoupling ..	99,000 (4)
21	V3 and V4 cathode bias decoupling ..	990 (4)
22	Sensitivity control ..	1,000
23	V4 H.T. decoupling ..	4,000 (4)
24	A.V.C. decoupling ..	440,000(4)
25	Part A.V.C. Ptr. ..	440,000(4)
26	Part H.F. filter ..	55,000(4)
27	Part H.F. filter ..	220,000(4)
28	Volume control ..	.5 meg.

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CONDENSERS		
C.	Purpose.	Mfd.
1	Series aerial ..	.001
2	A.V.C. decoupling ..	.0037
3	V1 grid ..	.6001
4	V1 screen by-pass ..	.1
5	H.F. filter ..	.25
6	H.F. filter ..	.25
7	V1 cathode by-pass ..	.25
8	V1 anode decoupling ..	.1
9	H.F. coupling ..	.0005
10	A.V.C. decoupling ..	.0037
11	V2 grid ..	.0001
12	V2 aux. grid by-pass ..	.1

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RESISTANCES (Continued)		
R.	Purpose.	Ohms.
29	V5 grid bias ..	1 meg. (4)
30	V5 cathode bias ..	990 (4)
31	V5 cathode decoupling ..	990 (4)
32	V4 anode decoupling ..	9,900 (4)
33	V4 anode decoupling ..	55,000 (4)
34	V6 grid stabiliser ..	99,000 (4)
35	V7 grid stabiliser ..	99,000 (4)
36	V6 cathode bias ..	390
37	V7 cathode bias ..	390
38	Tone control ..	50,000
39	Speech coil shunt ..	8
40	Part A.V.C. ptr. ..	220,000(4)

Bracketed figures denote wattage.

C. Condensers (Continued)			Mfd.
13	V2 cathode by-pass ..	.25	
14	V2 osc. anode coupling ..	.0005	
15	V2 osc. grid reservoir ..	.0005	
16	H.T. decoupling ..	.1	
17	Short wave 1, padding ..	.00415	
18	Short wave 2, padding ..	.0026	
19	Medium-wave padding ..	.00065	
21	V2 osc. grid coupling ..	.0001	
22	V2 anode decoupling ..	.02	
23	A.V.C. decoupling ..	.02	
24	V3 screen decoupling ..	.1	
25	V4 screen by-pass ..	.05	
26	A.V.C. decoupling ..	.05	
27	V3 cathode by-pass ..	.25	
28	L.F. coupling to A.V.C. ..	.0001	
29	V4 anode decoupling ..	.05	
30	H.F. filter ..	.0001	
31	H.F. filter ..	.0001	
32	L.F. coupling ..	.02	
33	Pick-up coupling ..	.02	
34	V5 L.F. coupling ..	.02	
35	V5 cathode by-pass ..	.1	
36	V5 anode decoupling ..	.1	
37	L.F. coupling to P.P. trans ..	.1	
38	H.T. smoothing ..	.8	
39	V6 cathode by-pass ..	.10	
40	V7 cathode by-pass ..	.10	
41	Tone control ..	.04	
42	H.T. smoothing ..	.8	
43	H.T. smoothing ..	.8	
44	H.F. filter ..	.01	
45	H.F. filter ..	.01	
46	A.V.C. decoupling ..	.05	

