

GENERAL ELECTRIC CO.'S A.C. SUPER FOUR

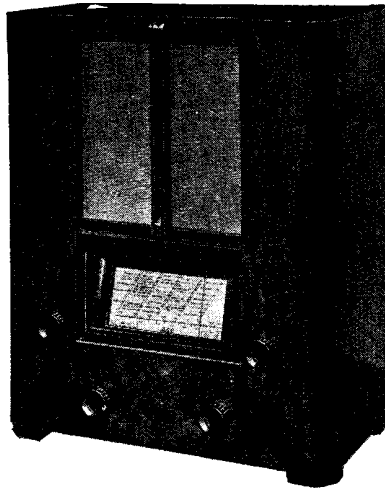
CIRCUIT.—This is a four-valve A.C. mains receiver covering the usual medium and long waves.

The aerial is inductively coupled to the grid of V1, a frequency changer, the output of which is passed to V2, an H.F. pentode, through an I.F. transformer tuned to 125 kc.

V2 is coupled to V3, a double diode valve, through a further I.F. transformer, one diode of V3 being used to supply A.V.C. bias to the preceding valves in the orthodox manner.

The L.F. output of V3 then passes to the output pentode V4 via the volume control and, after amplification, to the speaker via a matching transformer. V4 is tone controlled by C17 and R19.

Mains equipment consists of trans-



The speaker is of the permanent magnet type.

Removing Chassis.—Remove the four knobs from the front of the cabinet (spring clips) and four bolts from under-
(Continued on opposite page.)

VALVE READINGS				
No signal. Volume at maximum. 200 volt A.C. mains.				
V.	Type.	Electrode.	Volts.	Ma.
1	All Osram. X41 (7) Met.	anode ...	250	1.25
		screen ...	60	2
		osc. anode... ..	85	2.95
2	VMP4G (7) Met.	anode ...	250	3.85
		screen ...	85	2.3
3	D41 (5) Met.	diode ...	—	—
4	N41 (7) ...	anode ...	270	37
		screen ...	250	8.25
5	U12 (4) ...	filament ...	330	—

CONDENSERS		
C.	Purpose.	Mft.
1	Aerial coupling ... ..	.000011
2	V1 A.V.C. decoupling ... ..	.05
3	V1 screen decoupling ... ..	.1
4	V1 cathode bias shunt ... ..	.05
5	V1 oscillator grid ... ..	.0001
6	V1 osc. anode decoupling ... ..	.001
7	Long-wave padding ... ..	.0005
8	A.V.C. decoupling (part) ... ..	.05
9	V2 screen decoupling ... ..	.1
10	V2 A.V.C. decoupling ... ..	.05
11	V2 cathode bias shunt ... ..	.1
12	V2 anode decoupling... ..	.000011
13	H.F. filter ... ..	.0003
14	L.F. coupling ... ..	.02
15	V4 cathode bias shunt ... ..	.30
16	V4 anode shunt ... ..	.002
17	Tone control ... ..	.02
18	H.T. smoothing	7
19	H.T. smoothing	7
20	H.T. shunt	3
21	A.V.C. decoupling (part) ... ..	.1

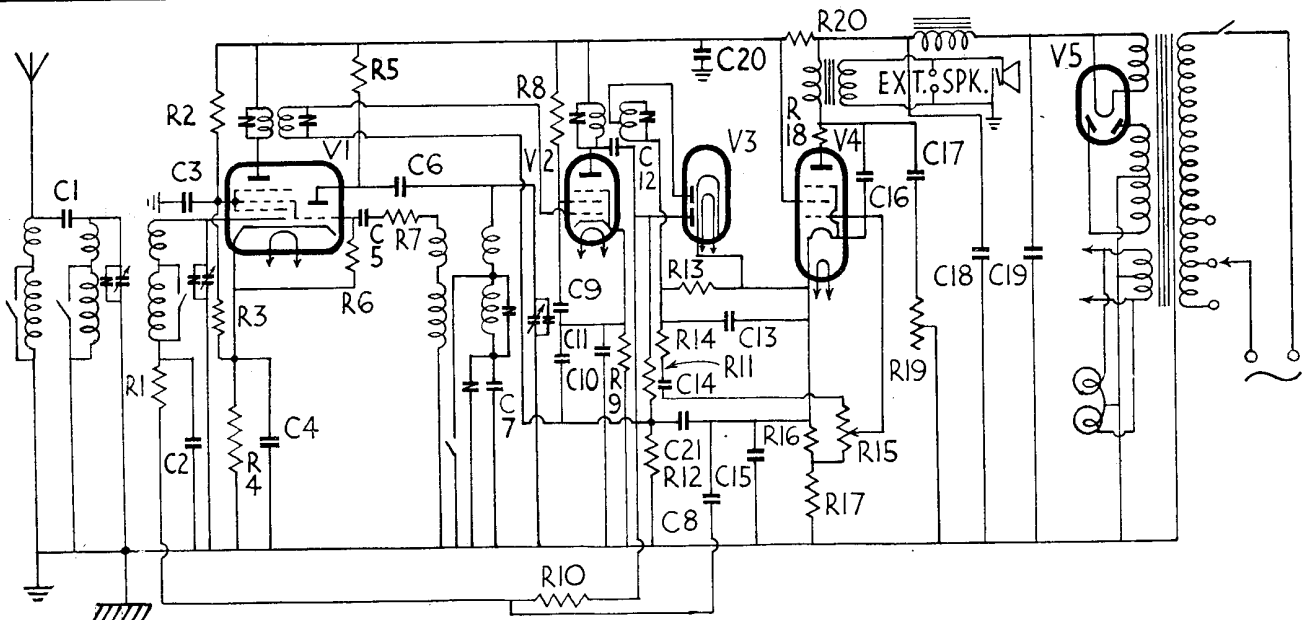
This G.E.C. receiver, the A.C. Super Four, is a "short" four-valve plus rectifier superhet covering the usual medium and long wavelengths. Waveband and volume indicators are included in the floodlit dial.

former, electrolytic condensers and smoothing choke.

Special Notes.—The dial lamps are rated at 3.5 volts .3 amp. The holders are clipped on to the dial assembly.

The external speaker is connected on the secondary of the output transformer and should be of low speech coil impedance.

RESISTANCES		
R.	Purpose.	Ohms.
1	V1 A.V.C. decoupling	220,000
2	V1 screen decoupling potr.	33,000
3	V1 screen decoupling potr.	22,000
4	V1 cathode bias	300
5	V1 osc. anode coupling	55,000
6	V1 osc. grid leak	55,000
7	V1 osc. grid stopper	2,200
8	V2 screen decoupling	66,000
9	V2 cathode bias	500
10	V1 A.V.C. decoupling	440,000
11	V3 A.V.C. diode load potr.	660,000
12	V3 A.V.C. diode load potr.	220,000
13	V3 demodulator diode load.	440,000
14	H.F. filter	77,000
15	Volume control	400,000
16	V4 cathode bias potr.	99
17	V4 cathode bias potr.	400
18	V4 anode stabiliser	99
19	Tone control	50,000
20	V1 and V2 H.T. dropper	1,500



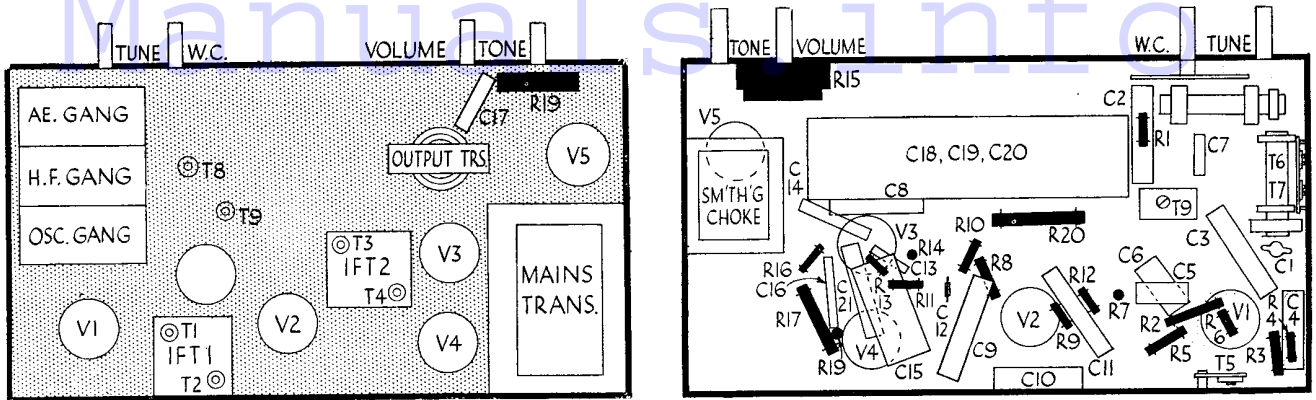
Frequency changer, I.F., double diode and output pentode valves are used in an orthodox manner in the A.C. Super Four.

There are, however, a number of refinements in design.

For more information remember

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GENERAL ELECTRIC CO.'S A.C. SUPER FOUR (Continued)



As these diagrams show, the arrangement of parts on the chassis is rather original in the A.C. Super Four. The design as a whole is orthodox, however, and presents a straightforward service job. The plan view is on the left and the underneath layout on the right.

neath. Unsolder the two leads to the speaker and the chassis will come out.

It is then necessary to remove the screen from the right-hand side of the chassis. This is secured by four bolts.

ALIGNMENT NOTES

I.F. Circuits.—Tune set to medium waves and the tuning control to the top of the waveband. Set the receiver volume control to maximum, short circuit the oscillator anode coil, and connect modulated oscillator to the grid (top cap) of X41. Connect output meter across the primary of the output transformer. If a multiple meter is used, set this to the 100 or 120 volt A.C. range.

Tune modulated oscillator to 125 kc., and adjust the four trimmers in the I.F. transformers for maximum.

Medium-wave Band.—(1) Set tuning condenser to minimum and check that the scale is central. Connect modulated oscillator to the aerial socket via the dummy aerial, as described in Service Bulletin No. 23. Set modulated oscillator to 1,500 kc., and adjust oscillator trimmer on the end of set. If two peaks are found use the one with the lower capacity.

(2) Tune receiver to 214 metres, and set modulated oscillator to 1,400 k.c. Adjust hexode grid trimmer on the end of chassis and aerial trimmer on the back of the set for maximum response, but do not alter oscillator trimmer.

Long-wave Band.—(1) Disconnect the oscillator tuning condenser and connect an external variable condenser between the disconnected lead and chassis. Adjust the modulated oscillator to 300 kc., and adjust receiver tuning control and the external variable condenser simultaneously to give a maximum reading on the output meter. Disconnect the external variable condenser, reconnect the oscillator tuning condenser, and adjust the long-wave parallel oscillator trimmer for maximum response.

(2) Disconnect oscillator tuning condenser as before. Connect external variable condenser as before, adjust modulated oscillator to 165 kc. and adjust the

(Continued in next column.)

Practical Jottings

IN some instances, the side-contact universal valves have been found to make rather poor contact in the sockets. As the contacts are bent or otherwise adjusted, the only practical way of overcoming the trouble is to tin the side of the contact heavily with solder.

Hold the valve sideways with the required contact at the bottom and tin with the iron underneath the side of the contact. The contact will then be large enough to make a firm electrical and mechanical fit in the socket.

* * *

WHEN a receiver fitted with a local-distance switch has been sold, the purpose of this switch should be fully explained to the customer.

Through some member of the family, throwing this switch over to "distance", several service calls have been made in response to the complaint that the set has gone wrong and will only get about two programmes.

Explanation in the first instance reduces the possibility of fruitless calls of this type.

* * *

FREQUENTLY, when a receiver chassis is removed from the cabinet, it is found that the speaker connections are not long enough to allow the speaker to be used with the chassis on the bench.

Removing the speaker wastes a lot of time and the bench speaker probably has

(Continued from previous column.)

receiver tuning control and the external variable condenser simultaneously to give a maximum reading. Disconnect the external variable condenser, reconnect the oscillator tuning condenser and adjust the long-wave pad trimmer for maximum.

(3) Repeat the procedure given previously at 300 kc., and carefully seal the trimmers with a suitable cellulose adhesive, and reconnect oscillator lead

an impedance which won't match or the field coil has an incorrect resistance.

Turn the cabinet on its side and so bring the speaker nearer the bench. The cord will then probably be long enough to reach the chassis. M. B.

THERE is a real need at this stage for an unbiased account of what television is, what it can do to-day, how it does it, and what its possibilities are for to-morrow. And I have tried to do this in the present book in a simple and interesting way, assuming no previous knowledge of electricity or radio or television on the part of the reader, yet basing all explanations on sound and modern scientific principles. The beginner can really 'begin at the beginning' and acquire an intelligent and correct grasp of this fascinating subject.

These words by the author himself, R. W. Hutchinson, M.Sc., provide an excellent idea of the nature of "Television Up-to-Date," a revised edition of which has been published by the University Tutorial Press at 2s. 6d. The volume is available post free at 2s. 9d., from the Technical Book Department, Odhams Press, Ltd., 85, Long Acre, London, W.C.2.

The first forty odd pages of the book provide a lucid description of the principles of electricity, radio and optics. Mr. Hutchinson begins with the "bricks" of the science—electrons, protons and atoms—and so affords a groundwork on which a proper understanding can be built up.

Getting to television itself, the book first provides the "A.B.C."—that is, describes the principles of simple apparatus, such as scanning desks, magnetic synchronisers, and glow discharge lamps. Passing through the chapters on the Kerr Cell and Nicol Prism, Mr. Hutchinson proceeds to high-definition television.

These pages summarise modern methods very ably and comprehensively. Finally, there is a useful chapter on ultra short-wave aerials and an interesting one on future developments.