GILBERT MODEL A63 SUPERHET

CIRCUIT.—The aerial is inductively coupled to the grid of a pentagrid which acts as a frequency changer. When the set is switched to the short wavebands, the first set of coils is not used, the aerial being switched over to an auxiliary contact which brings into operation a short-wave coil.

The output of the frequency changer passes to an H.F. pentode through the usual I.F. transformer, which acts as an I.F. amplifier. The signal then passes to the demodulating half of a double diode, the other half of the double diode providing A.V.C. in the usual manner.

The low-frequency section of the set consists of a triode resistance capacity coupled to an indirectly heated output pentode, in the grid of which is connected a volume control.

Mains equipment consists of mains transformer, indirectly heated full-wave rectifier, and the usual electrolytic smoothing condensers.

Special Notes.—In the actual set tested. R18 was found to be 500 ohms, and not 400 ohms, as specified. C9 is mounted inside the second I.F. coil.

VALVE READINGS

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

V.	Type.	Electrode.	Volts.	Ma.
	All Mazda.			
1	AC/TH1	Anode ..	262	.95
	Met. (7)	Screen ..	52	2.6
		Osc. anode	65	4.7
2	AC/VP2	Anode ..	260	3.6
	Met. (7)	Screen ..	160	1.2
3	V916 (5) ..	Diode ..	—	—
4	AC1HL (5)	Anode ..	87	1.2
5	AC/Pen (7)..	Anode ..	255	28
		Screen ..	255	5.2
6	UU4 (4) ..	Filament ..	350	—

The tone control R25 is mounted on the base of the cabinet.

The dial lights are rated at 6 volts and are fixed in the usual type of screw mountings on the wavelength dial holder.

An extension speaker can be used if required. This should have an impedance of 6,500 ohms. An adjacent pair of sockets provides the input for a pick-up.

Removing Chassis.—First remove the back, which will come off with a slight pull, and the three control knobs (grub screws). Then turn the set on one side, unscrew the four fixing bolts and tone control knob of the base. The underside of the chassis is then available for all the usual service work.

If it is found necessary to completely

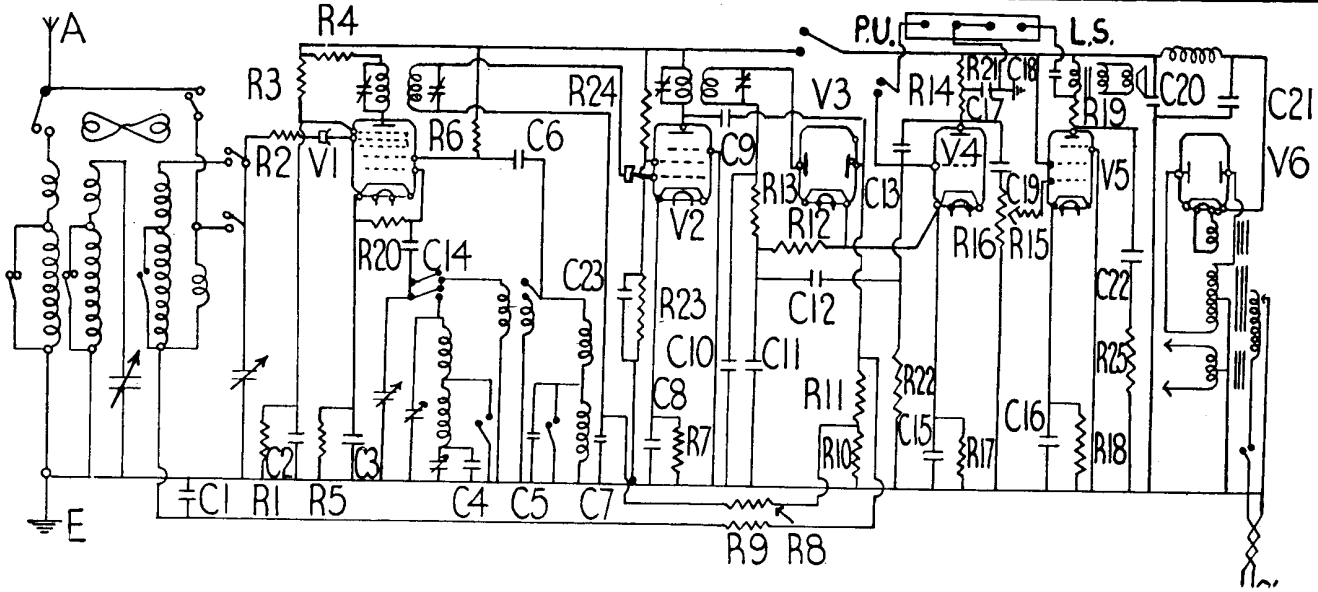
RESISTANCES

R.	Purpose.	Ohms.
1	V1 screen potentiometer (part).	25,000
2	V1. series grid	50
3	V1 screen potr. (part) ..	50,000
4	V1 anode decoupling ..	5,000
5	V1 cathode bias	250
6	Osc. anode load	50,000
7	V2 cathode bias	500
8	V2 A.V.C. decoupling ..	½ meg.
9	V1 A.V.C. decoupling ..	2 meg.
10	A.V.C. diode load (part) ..	2 meg.
11	A.V.C. diode load (part) ..	¼ meg.
12	Demod. diode load (part) ..	⅓ meg.
13	Demod. diode load (part) ..	¼ meg.
14	V4 anode load	100,000
15	V5 grid stopper	50,000
16	Volume control	½ meg.
17	V4 cathode bias	2,000
18	V5 cathode bias	400
19	V5 anode stabiliser	50
20	Osc. grid leak..	50,000
21	V4 anode decoupling ..	10,000
22	V4 grid leak	¼ meg.
23	V2 screen decoupling (part)..	20,000
24	V2 screen decoupling (part)..	50,000
25	Tone control	50,000

The A63 is a three waveband five valve plus rectifier A.C. receiver marketed by C. Gilbert and Co., Ltd., of Sheffield. A basically similar console model incorporates a fourth waveband and a different output valve.

CONDENSERS

C.	Purpose.	Mfds.
1	V1 A.V.C. decoupling ..	.5
2	V1 screen decoupling ..	.1
3	V1 cathode bias shunt ..	.1
4	Long-wave padder	.0002
5	Long-wave regen. shunt ..	.0001
6	V1 osc. anode feed	.0008
7	V2 A.V.C. decoupling ..	.02
8	V2 cathode bias shunt ..	.1
9	A.V.C. diode coupling ..	.00015
10	H.F. by-pass	.0001
11	H.F. by-pass	.0003
12	L.F. coupling	.01
13	V4 anode grid coupling ..	.00005
14	V1 ocs. grid	.00005
15	V4 cathode bias shunt ..	.1
16	V5 cathode bias shunt ..	50
17	V4 anode decoupling ..	2
18	External speaker coupling ..	.01
19	L.F. coupling	.01
20	H.T. smoothing	16
21	H.T. smoothing	8
22	Tone control	.05
23	V2 screen decoupling ..	.1



Although a "five," the A63 has an orthodox "short" circuit, the extra valve being accounted for by the use of separate diode and triode valves.

remove the chassis, the tone control and speaker must be unscrewed. The tone control is fixed by two screws on the inside of the cabinet base, and the speaker can be removed by taking out the four fixing screws.

Circuit Alignment Notes

I.F. Circuits.—Inject a frequency of 122.5 kc. between the grid of the frequency changer and earth. Set the trimmers in the I.F. transformer cans to maximum signal, reducing the input from the oscillator as the circuits come into line to render the A.V.C. inoperative.

Short Waves.—Switch the set to 20 metres (15 mc.) and inject a signal of 20 metres between the aerial and earth sockets in the usual manner.

Adjust the trimmer of the oscillator section of the three-gang condenser to get maximum strength, then check for calibration at 40 metres (7.5 mc.).

Medium Waves.—Switch the set to medium waves, put pointer to 250 metres, and inject a signal of 250 metres (1,200 kc.). Adjust oscillator trimmer on the wavechange switch on the underside of the chassis for signal. Then adjust the trimmers on the top of the band-pass and aerial sections of the gang condenser (do not touch the oscillator gang trimmer). Check on 400 metres (750 kc.).

Long Waves.—Tune the set to 1,300 metres (230 kc.) and inject a signal of 1,300 metres. Adjust the long-wave padding condenser (screw exposed through chassis) to maximum signal. Check again at 1,800 metres (167 kc.).

QUICK TESTS

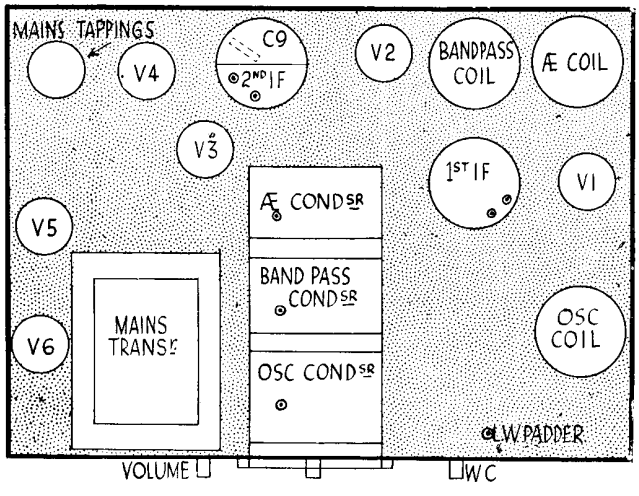
Quick tests are available on this receiver between the speaker leads and the chassis. Volts measured should be :—

Black lead, 350 volts, unsmoothed H.T.
Yellow lead, 255 volts, smoothed H.T.
Red lead, 262 volts, smoothed H.T.

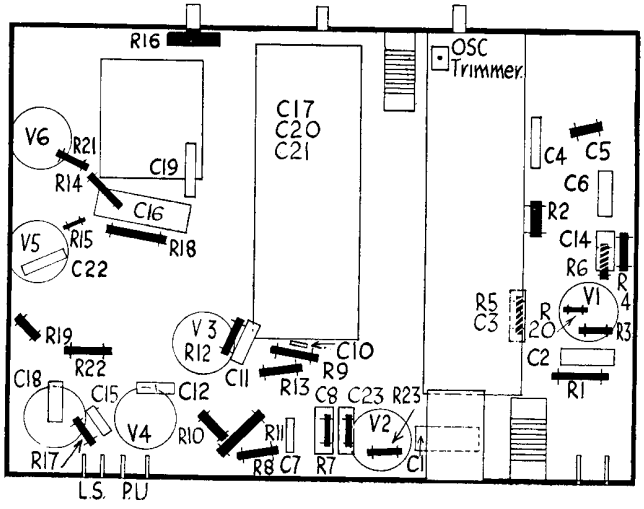
Replacement Condensers

TWO exact service replacement condensers are made for the Gilbert A63 by A. H. Hunt, Ltd., of Garratt Lane, Wandsworth, London, S.W.18.

The first is the block containing C.s 17, 20 and 21. This is known as list 3568, and the retail price is 10s. The second condenser is for C16. List number 2915, it is priced at 1s. 9d.



The "tinted" diagram on the left identifies the valves, coils and other parts on the top of the Gilbert chassis. It will be seen most of the trimmers are accessible from above.



Below deck the chassis (right) is orderly and comparatively simple. Most of the parts are suspended in the wiring and are, therefore, in logical positions.

Gilbert A63 on Test

MODEL A63.—Standard model for A.C. mains operation, 200-250 volts, 40-100 cycles. Price 12 gns.

DESCRIPTION.—A three-waveband table type five-valve plus rectifier superhet. Walnut cabinet.

FEATURES.—Full-vision scale, calibrated in wavelengths and station names, with aeroplane type dial. Volume, concentric tuning, tone and wave selection controls. Pick-up and extension speaker sockets.

LOADING.—74 watts.

Sensitivity and Selectivity

SHORT WAVES (18-50 metres).—Sensitivity good and selectivity up to standard. Oscillator has no appreciable drift and the tuning control handles easily.

MEDIUM WAVES (225-600 metres).—Average sensitivity and selectivity, spread on channels adjacent to the local stations. Reasonably quiet background. Some whistles.

LONG WAVES (900-2,000 metres).—Reasonable gain and average selectivity. Main stations easily received.

Acoustic Output

Ample output for an ordinary room, with the usual type of well-balanced tone. Reasonable amount of radiation at both ends of the scale and very little colouration on speech.

S.W. MICROPHONY

ALL-WAVE sets, particularly the larger mains types, sometimes develop a severe noise, which occurs as soon as one begins to tune in a strong short-wave station. Usually this is caused by microphony—that is, electro-mechanical reaction.

Vibration set up by the speaker makes parts of the set vibrate and so change their electrical value. This causes the output of the set to vary at the very frequency at which the moving parts resonate. Consequently, the noise rapidly builds up and cannot be checked until the set is detuned, and, perhaps, the amplification is turned down.

Condenser vanes are most frequently the cause of this form of microphony, and for this reason condenser gangs are usually mounted on rubber. When the fault appears, therefore, the first step should be to see that the condenser is still reasonably free, and has not, for example, come into contact with the cabinet through the drive mechanism.

Even comparatively short lengths of wire can bring about this trouble, however. A good plan, if it can be carried out, is to set the receiver "buzzing" and lightly touch condenser vanes and wires associated with tuning circuits with an insulating rod. By damping the vibrating part the rod will stop or modify the noise.

Once the origin has been located, a cure can be effected by altering the tension or supports of a wire. In the case of a condenser, a replacement may be necessary.