CLIMAX MODEL S5 SUPERHET (Cont.)

(1) and (5) are L.S. field. (2) and (4) are primary of output transformer.

Removing the Chassis.—To reach the components underneath the chassis simply remove the cover from underneath the cabinet.

When the chassis has to be removed completely: Remove the knobs (grub screw), and remove four holding screws underneath.

General Notes.—Mains transformer connections: A and C, rectifier anodes; B, centre tap to chassis.

On outside, three in line next chassis:—

(1) Front, mains O. to switch.
(2) Middle, rectifier heater.
(3) C.T. of rectifier heater winding (H.T.+ to C11).

Single lead 16 gauge set heaters.

On inside in slot: Lower (black) rectifier heater; upper, set heaters.

The rectifier and set heater wires can be differentiated by the gauges of the wire, the set heater being the heavier.

Small components are suspended in the wiring and are easily recognised.

The switch contacts are of the wiping type. To clean them use a little benzine on a fine brush, and, after turning switch to open circuit positions for contacts, rub insides of springs and rotate switch spindle.

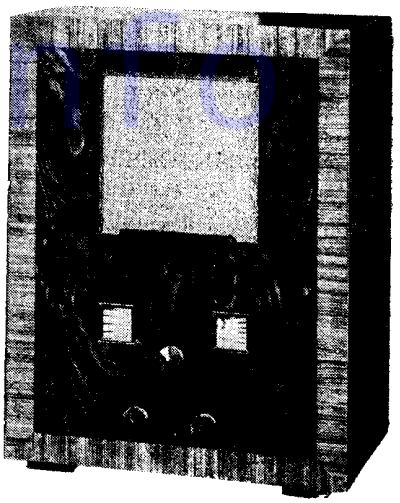
When the oscillator anode voltage on V1 is much under the figure given check that the resistance R1 is in order. If a replacement is required use a 2-watt type.

Replacing the Chassis.—Place chassis inside cabinet. Replace holding screws and knobs.

VALVE READINGS

No signal. V.C. max.

Valve.	Type.	Electrode.	Volts.	M.A.
1	F.C.4 met. (7)	anode ..	250	1.3
		aux. grid	80	
		osc. anode	80	1.5
2	MM4V or VP4 met. (5)	anode ..	250	4 or 2.3
		screen ..	80	
3	354V.met.(5)	anode ..	120	5
4	AC2 Pen.(7)	anode ..	250	34
		aux. grid	260	7



Twin escutcheons are a feature of the S5 receiver by Climax Electric, Ltd.

McMICHAEL MAINS TRANSPORTABLE

Circuit.—The H.F. valve, A.C./VP1 met. (V1) is preceded by the frame aerial, of which the long wave section is short-circuited during reception on the medium waves.

Bias is by fixed cathode resistance and A.V.C., which is fed to the grid through R19 and not through the frame aerial. The following coupling is a tuned secondary H.F. transformer.

Oscillator tuning in the oscillator anode circuit of the combined first detector oscillator, A.C./TP met. (V2) and the grid circuit contains an harmonic stopper, R13. Coupling to the next valve is by band-pass I.F. transformer (intermediate frequency 110KC).

The I.F. valve A.C./VP1 met. (V3) is also biassed by fixed cathode resistance and from the A.V.C. line, and is followed by another band-pass I.F. transformer.

The combined second detector and L.F. valve A.C./HL/DD has one diode anode connected through a condenser to the primary of I.F.T.2, and provides A.V.C. for the preceding valves. L.F. impulses are fed from the low potential end of the secondary through the coupling condenser C6 to the potentiometer grid leak of the triode section.

VALVE READINGS

(No Signal.)

V.	Type.	Electrode.	Volts.	M.A.
1	ACVP1 met (7)	anode ..	210	2
		aux.-grid..	105	
2	ACTP met. (9)	anode ..	220	1.1
		aux.-grid..	105	
		osc.-anode*	110	2
3	ACVP1 met. (7)	anode ..	240	2.85
		aux.-grid..	105	
4	AC/HL/DD met. (7).	anode** ..	70	1.7
5	AC Pen ..	anode ..	235	24
		aux.-grid..	250	4.5

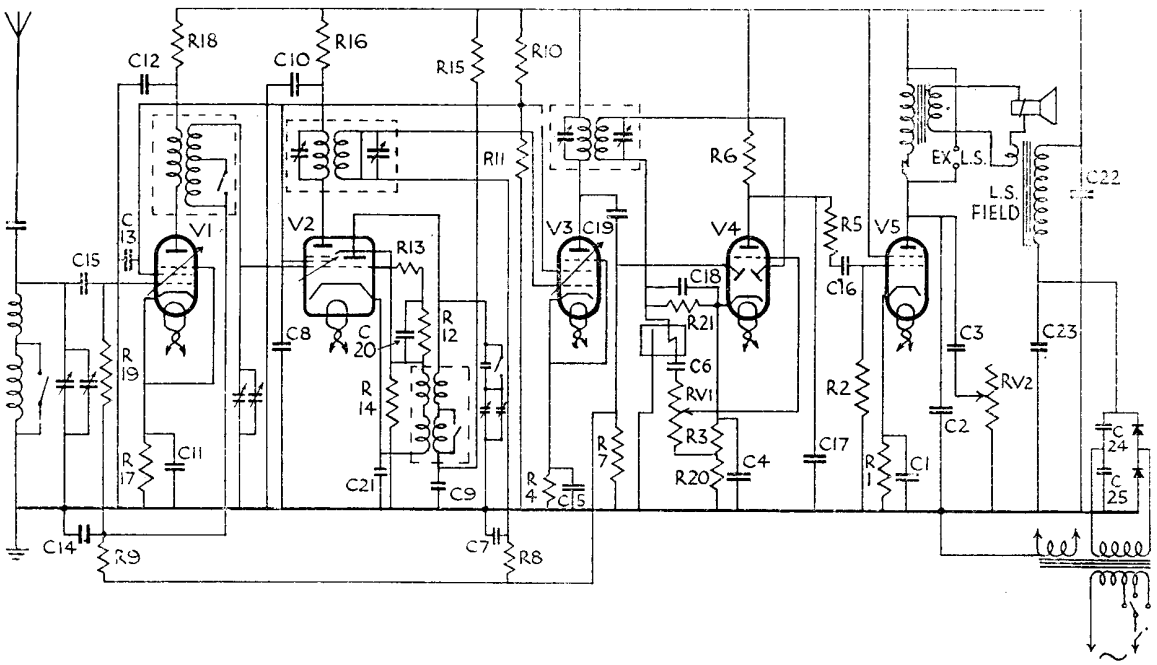
* Stable reading.
** High value of resistance in circuit; current is the important factor.

The delay A.V.C. bias is made greater than that applied to the triode grid by taking the grid return to a tapping on the bias potentiometer consisting of R3 and R20. A resistance capacity filter forms the L.F. coupling to the output valve.

This is an A.C./Pen (V5), which is tone compensated by a fixed condenser between the anode and chassis as well as by a condenser in series with a variable resistance to form a tone control.

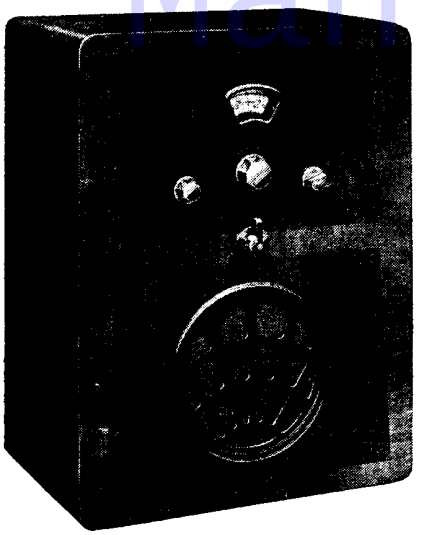
Mains equipment consists of transformer, Westinghouse rectifier, used as a voltage doubler, and the L.S. field in the positive

(*Continued on opposite page.*)



The straightforward circuit of the Superhet Transportable made by McMichael. An H.F. amplifier precedes the triode-pentode frequency changer.

McMICHAEL MAINS TRANSPORTABLE



A mains receiver with self-contained aerial, the Superhet "Mains Transportable" is made by McMichael Radio, Ltd.

H.T. lead, together with two electrolytic condensers for smoothing.

Special Notes.—In some cases the additional resistance, R20, in the V4 cathode lead is omitted. When included it is placed as shown by the dotted lines on the resistance panel diagram.

An H.F. choke may be found in the lead from the diode anode that is used for L.F. purposes.

Quick Tests.—Between the following terminals on the L.S. transformer and chassis :—

Top : (1) Red, H.T. unsmoothed, 370 volts.
(2) Black, V5 anode, 235 volts.
(3) and (4) Red, H.T. smoothed, 250 volts.

Between the case of the middle electrolytic condenser on the power pack chassis, and chassis, 185 volts (half H.T.).

Removing Chassis.—If trouble develops in the power pack only the one unit need be removed, but if a fault occurs in the set chassis, both units must be withdrawn from the cabinet.

For testing outside the cabinet, the speaker can be removed by undoing the clamps and leaving the leads intact.

To take out the power pack, unsolder the leads to the speaker. These are :—

Red lead from pack to top tag.
Black lead from set to second top tag.
Red lead from set to tags 3 and 4, and
Black lead from pack to earthing tag on base of speaker transformer.

Remove the knobs (grub screw) and four holding screws underneath. This frees the power pack.

To remove the set, remove the two octagonal-headed screws holding the lower

(*Continued on next page.*)

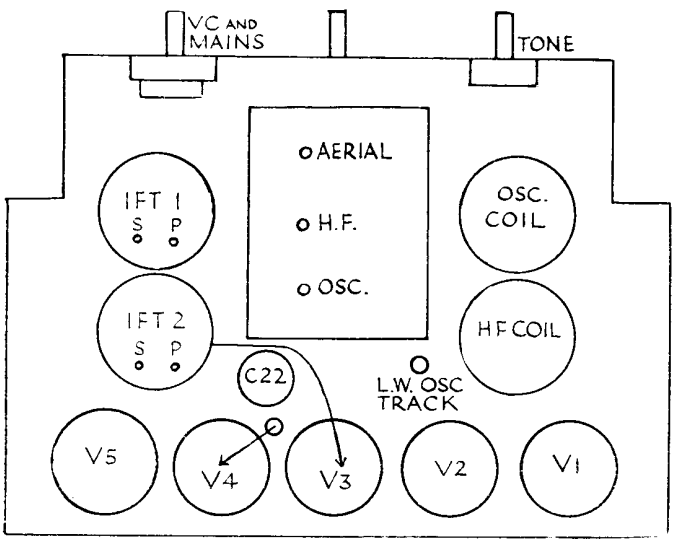
CONDENSERS

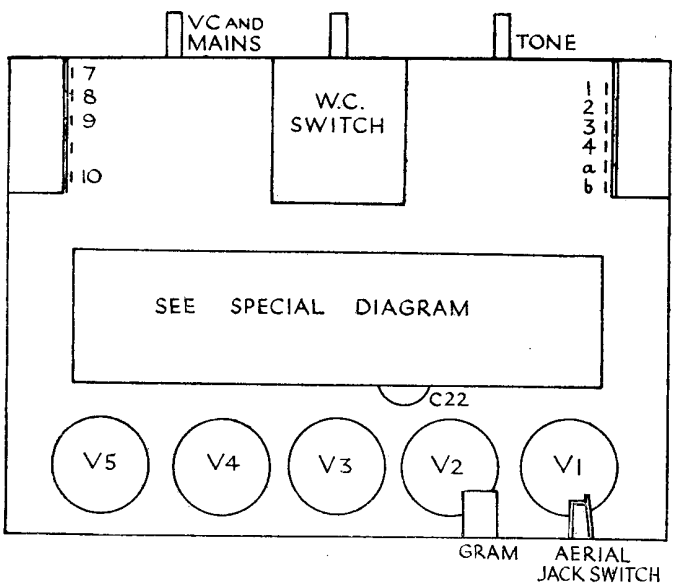
C.	Purpose.	Mfd.
1	V5 cathode by-pass	25 el (25 v.)
2	Tone compensating V5 anode	.002
3	Tone control circuit	.03
4	V4 cathode by-pass	.5
5	V3 cathode by-pass	.1
6	L.F. coupling diode to V4 grid	.1
7	Decoupling A.V.C. to V3	.1
8	V1, V2 and V3 aux.-grid by-pass	.1
9	V2 osc. anode decoupling	.1
10	Decoupling V2 anode	.1
11	V1 cathode by-pass	.1
12	Decoupling V1 anode	.1
13	Decoupling V1 aux.-grid	.1
14	Decoupling A.V.C. to V1 and V2	.1
15	V1 grid	.01
16	L.F. coupling V4 to V5	.01
17	V4 anode H.F. by-pass	.001
18	Diode reservoir	.0001
19	L.F. feed to A.V.C. diode anode	.0001
20	V2 osc. grid reservoir	.0002 or .0005
21	V1 cathode by-pass	.0002
22	H.T. smoothing	8 el. (440 v.)
23	H.T. smoothing	8 el. (440 v.)
24	Voltage doubler circuit	4 el. (425 v.)
25	Voltage doubler circuit	4 el. (425 v.)

RESISTANCES

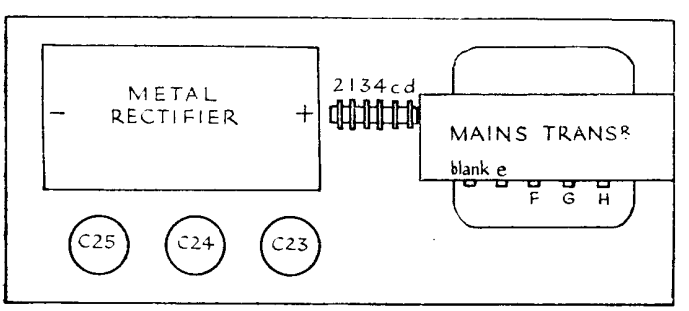
R.	Purpose.	Ohms.
1	V5 cathode bias	500
2	V5 grid leak	.5 meg.
3	V4 cathode bias	500
4	V3 cathode bias	500
5	H.F. stopper	100,000
6	V4 anode, L.F. coupling	100,000
7	A.V.C. diode load	2 meg.
8	A.V.C. decoupling to V3	.5 meg.
9	A.V.C. decoupling to V1 and V2	.5 meg.
10	Part of V1, V2 and V3 aux.-grid ptr.	20,000
11	Part of V1, V2 and V3 aux.-grid ptr.	20,000
12	V2 osc. grid leak	50,000
13	Harmonic suppressor V2 osc. grid	2,000
14	V2 cathode bias	2,000
15	V2 osc. anode decoupling	50,000
16	V2 anode decoupling	10,000
17	V1 cathode bias	1,000
18	V1 anode decoupling	10,000
19	V1 grid leak	.5 meg.
20	Part of V4 bias ptr.*	2,000
	L.S. Field	2,500

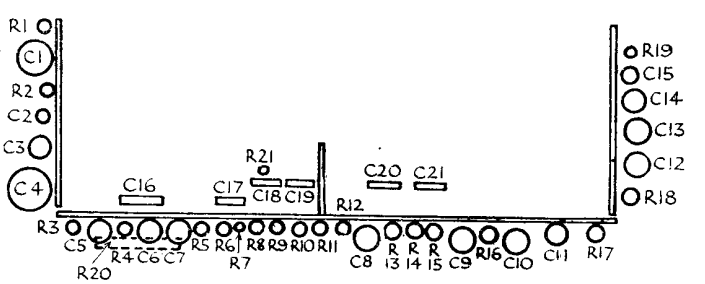
* May not be in some models.





All the trimmers in the "Mains Transportable" are accessible from above.





In the power pack (left) C.24 is insulated from the chassis. Right is the resistance and condenser assembly detail diagram.

McMICHAEL MAINS TRANSPORTABLE

side of the frame aerial to the cabinet and remove the holder for the mains plug.

Take out the two wood screws at each end of the back plate of the chassis and slide the aerial and chassis assembly out, lower end first.

General Notes.—The resistances and condensers are numbered consecutively as they are mounted on the panel, not as they appear in the circuit diagram.

The leads connecting the two chassis are labelled to correspond to the tags on the set chassis.

The leads from the tags on the mains transformer (see diagram) are :

(e) yellow, and (f) black, high voltage winding to rectifier top and junction of C24 and C25;

(g) green, and (h) red, set heaters to terminals (3) and (4) on strip.

Replacing Chassis.—Slip chassis into cabinet. It may be necessary to remove the plate for the switch control to allow the spindle through. Replace the holding screws and knobs.

Resolder the L.S. leads and replace the two holding screws on the base of the frame aerial.

Lay the power pack in position and replace the four holding screws. Replace the mains plug holder.

PYE MODEL E/A.C. SUPERHET

Circuit.—The H.F. valve A.C./S.G./V.M. met (V1), is preceded by a tuned secondary aerial transformer. Bias is obtained entirely from the A.V.C. line and coupling to the next valve is by choke capacity H.F. filter.

The first detector oscillator valve, A.C./S2/Pen. met. (V2), operates with cathode injection, and bias is fixed by cathode resistance. The I.F. coupling is by band pass I.F. transformer (frequency 114 K.C.).

The intermediate frequency valve, A.C./SI/VM met. (V3), is also biassed by A.V.C., and is followed by a second band pass I.F. transformer.

The second detector and L.F. valve, A.C./HL/DD met (V4), is used for amplified A.V.C., the L.F. coupling to the triode grid being through C31 and R13, while the D.C. is applied through R12. The cathode is connected to the H.T. through R16 and R17, which give the "amplified" voltage. The L.F. coupling is a parallel fed transformer.

The output valve, PP3/250 (V5), is a triode. Tone control is provided by a variable condenser between the grid and chassis.

Mains equipment consists of transformer with screened primary and H.F. by-pass condenser, full wave Westinghouse rectifier used as voltage doubler, while the L.S. field is inserted in the negative lead.

Special Notes.—The following details included in the circuit diagram differ from those in the first 3,000 sets manufactured.

C34, C35 and R18 are omitted.

C42 of .01 mfd. and R25 of 2 meg. are added and the following have been altered to these values; C31, .25 mfd.; C.37, 4 mfd.; R12, 2 meg.; and R.19, 15,000 ohms.

The positions of some of the components have been changed, such as C36 and C39, which are now found in the positions shown in the accompanying diagrams.

VALVE READINGS

(No Signal.)

V.	Type.	Electrode.	Volts.	M.a.
1	AC/SG/VM met. (5).	anode ..	145	6.9
		screen	45	
2	AC/S2/Pen met. (7).	anode	185	4.8
		aux.-grid	186	
3	AC/S1/VM met. (5).	anode ..	200	5.3
		screen	63	
4	AC/HL/DD met. (7).	anode ..	146	7.7
5	PP3/250 ..	anode ..	275	24.7

Quick Tests.—As the speaker is covered and the output transformer is inside the set the most convenient method of ascertaining that the rectifier voltage and the current taken by the set are correct is by measuring between the positive end of the rectifier and chassis and between the negative end and chassis.

These voltages should be (no signal) :—

Positive end, 285 volts positive.

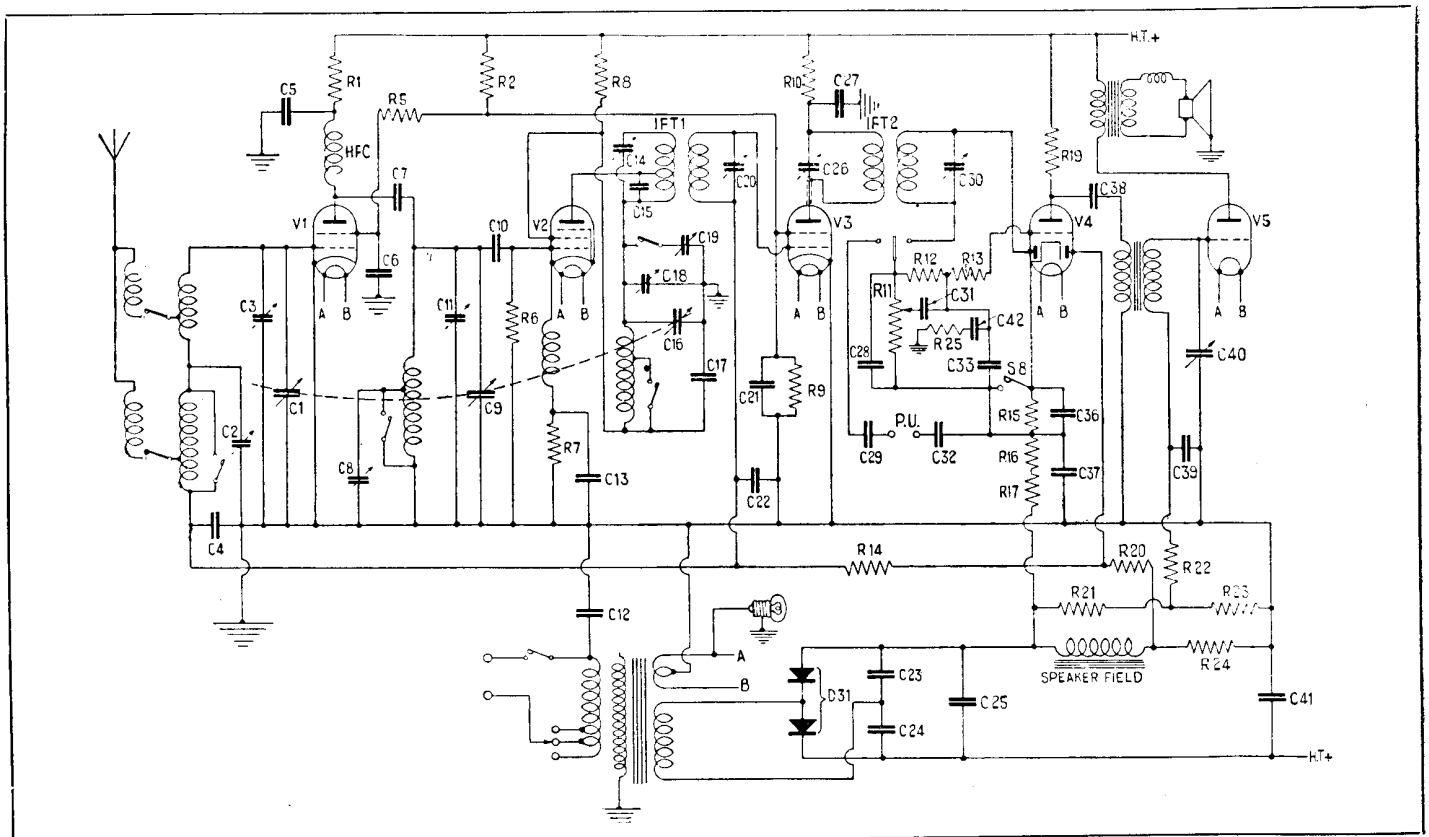
Negative end, 95 volts negative.

The latter represents the voltage drop across the L.S. field in parallel with the bias potentiometer.

Removing Chassis.—To reach the components shown in the view of the back of the chassis it is necessary only to remove the back panel by undoing the four *outer* screws, *i.e.*, two at each end.

Pull off the knobs, release the L.S. leads from their sockets, remove the screws holding the mains switch, remove the two screws at the top corners of the front of the chassis, and, reaching them through the holes in the bottom of the cabinet, remove the four screws through the fillets at the sides of the cabinet.

Remove the two upper catches from the



Amplified A.V.C. is provided by the double-diode-triode in the E/A.C. receiver by Pye Radio. The triode section is coupled to an output triode through a parallel-fed transformer.