

SERVICE ENGINEER

McMICHAEL MODEL 365 A.C. SUPERHET RADIOGRAM

CIRCUIT.—This model is a 4-valve radiogram for operation on 200-250 volt A.C. mains.

Signals from the aerial are coupled to the grid of V1, a triode pentode frequency-changer, through a series condenser and a band-pass network. V1 is coupled to V2 through an air-cored I.F. transformer tuned to 128.5 kc.

V2 is an H.F. pentode, and is coupled to V3, a double-diode triode, through a second I.F. transformer. One diode of V3 is used to supply A.V.C. volts to V1 and V2 in the orthodox manner.

The L.F. output of V3 is fed to V4, a pentode, through a resistance and capacity network, the output of which passes to the dual speakers through matching transformers, V4 being tone-controlled by RV2 and C25.

Special Notes.—The dial lamps are



The 365 model by McMichael Radio, Ltd., is a four-valve plus rectifier A.C. superhet radiogram housed in a novel cabinet and feeding dual speakers.

loosen the two knurled nuts at either end of the holder and the whole unit will then slip out.

The external speaker is connected on the low-resistance side of the output transformer, and should have a speech coil impedance of about 8 ohms.

C36 and R30 are situated on the output transformers below the main speaker, and the block condenser C29 and C30 are on the tweeter baffle.

Exposing Chassis. — Remove three hexagonal nuts from underneath cabinet, slacken one screw on each control knob coupling rod, pointer spindle from its rubber coupling, release speaker lead from the cleat holding it to the bottom of the cabinet underneath the chassis, and unsolder the lead and earthing wire to C1. The chassis can then be turned about sufficiently for the usual inspection.

Should it be necessary to remove the chassis, proceed as above, and then unsolder the five wires from the right-hand terminal board and the six wires from the left-hand board, taking a careful

(Continued on next page.)

VALVE READINGS				
No signal. Volume at maximum. 200v. A.C. mains.				
V.	Type.	Electrode.	Volts.	Ma.
1	AC/TP (9) Met.	anode ...	153	4.2
		screen ...	160	1.15
		osc. anode ...	90	1.5
2	AC/VP1 (7) Met.	anode ...	200	10
		screen ...	170	2.5
3	AC/HL/DD (7) Met.	anode ...	185	1.5
		screen ...	245	40
4	AC/2 Pen. ... (Above are Mazda)	anode ...	245	40
		screen ...	255	7
5	U12 (4) ... (Osram)	Filament ...	330	—

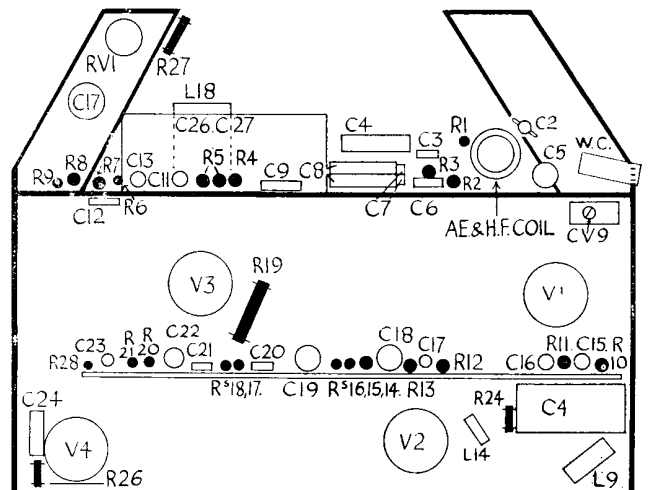
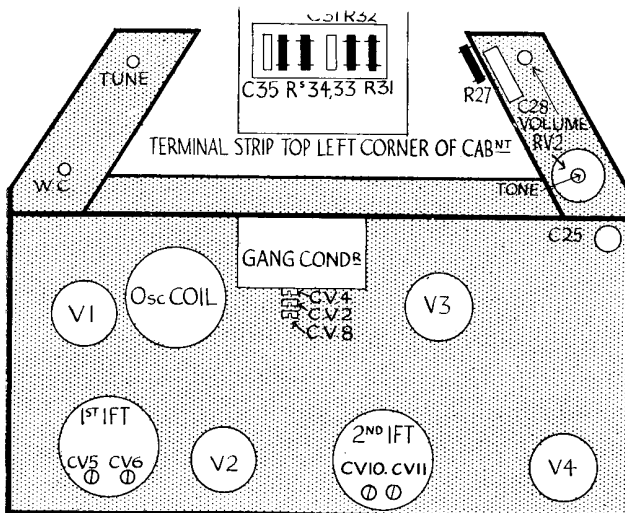
rated at 6.2 volts .3 amp. To remove them, take hold of the screwed portion of the holder and pull vertically downwards.

To remove the gramophone light holder

QUICK TESTS

Quick tests are available on this receiver on the terminal strip on the right-hand side of the chassis. Volts measured between this and the chassis should be:—

- Top F, 250 volts, smoothed H.T.
- Top 4, 330 volts, unsmoothed H.T.
- Top 3, 250 volts, smoothed H.T.
- Top 2, 200 volts, smoothed H.T.
- Top 1, 0 volts, earth connection to chassis.



These diagrams show how the components are situated on the 365 chassis. The "arms" are above the level of the chassis and carry the controls which are in a horizontal position. For component values see next page.

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note of their correct positions for replacement. In the model under review, these were as follows:—

Right-hand board: Top F, blue; 4, yellow; 3, red; 2, green; 1, black; lower F, blank.

Left-hand board: Top F, heavy red lead; 1, bare wire from above lead; 2, green; 3, red; 4, brown-red; lower F, brown-black and yellow.

ALIGNMENT NOTES

Connect a .1 mfd. or larger condenser between the oscillator section of the gang condenser and earth to swamp out local oscillation.

Connect modulated oscillator tuned to 128.5 kc. to the grid cap of V1 and output meter across external speaker terminals.

Adjust CV11, CV10, CV6 and CV5 for maximum deflection on output meter.

Remove swamp condenser.

Medium Wave Band.—(1) With modulated oscillator tuned to 200 metres, tune in the signal and check that the pointer is correctly placed. If it is not, it can be adjusted by turning it slightly in its rubber coupling.

(2) Adjust CV8 for maximum deflection. Two points will be found, the correct one is in the slacker position.

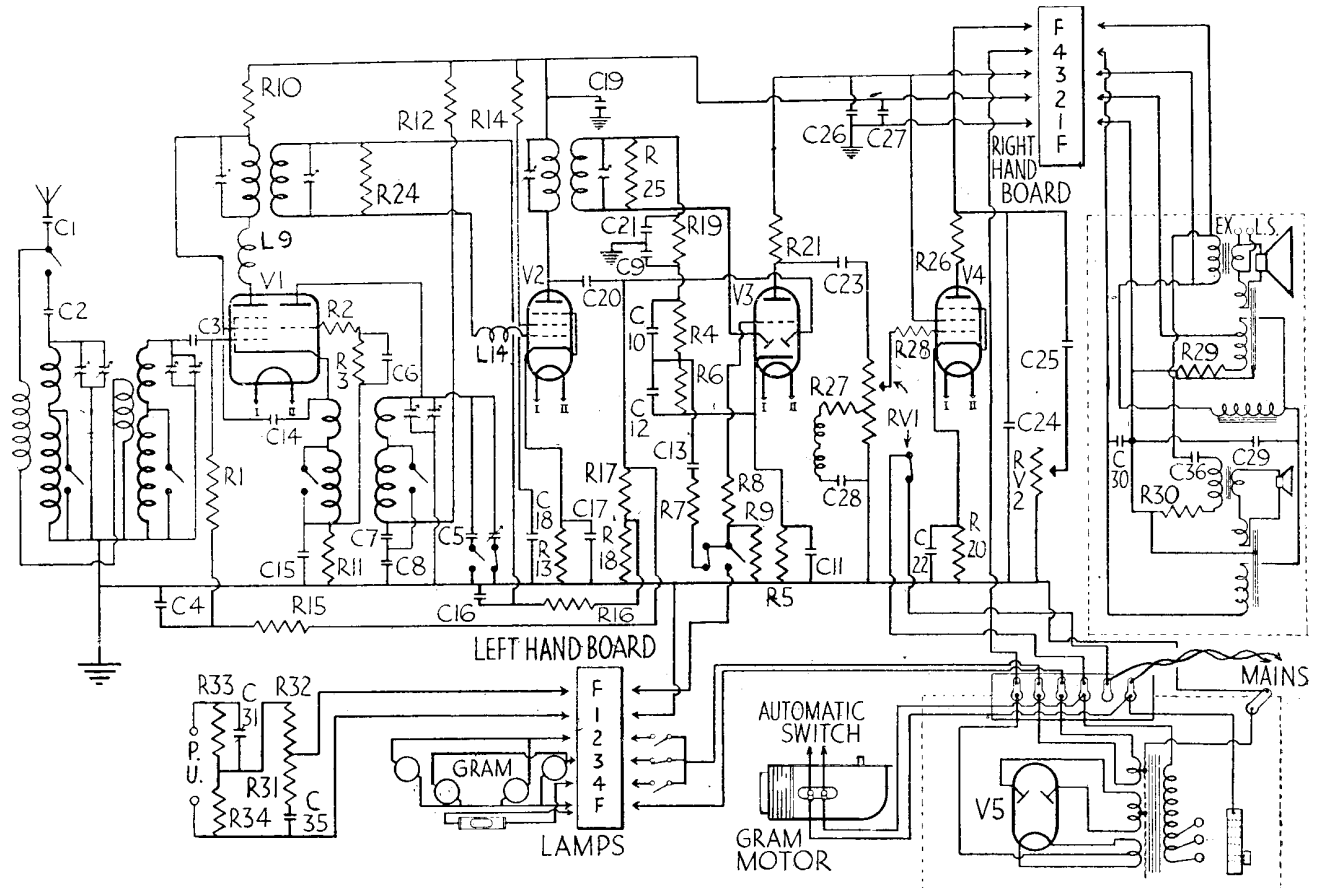
(3) Transfer oscillator to aerial and earth

terminals, tune it and the set to 214 metres and adjust CV2 and CV4 for maximum deflection.

Long Wave Band.—With oscillator and set tuned to 1,000 metres, adjust CV9 for maximum deflection on output meter.

CONDENSERS		
C.	Purpose.	Mfd.
1	Series aerial0002
2	Series aerial00001
3	V1 grid...	.001
4	V1 A.V.C. decoupling	.1
5	V1 osc. anode decoupling	.1
6	V1 osc. grid	.0002
7	Long-wave padding	.001258
8	Medium-wave padding	.0023
9	H.F. filter	.0001
10	H.F. by-pass	.0003
11	V3 cathode by-pass	.50
12	H.F. by-pass	.0001
13	L.F. coupling	.01
14	V1 screen decoupling	.5
15	V1 cathode by-pass	.1
16	V2 A.V.C. decoupling	.1
17	V2 cathode by-pass	.1
18	V2 screen decoupling	.1
19	V2 anode decoupling	.1
20	L.F. coupling	.0001
21	H.F. filter	.0001
22	V4 cathode by-pass	.50
23	L.F. coupling	.1
24	V4 anode decoupling	.002
25	Tone control	.03
26	H.T. smoothing	8
27	H.T. smoothing	8
28	H.F. filter	.1
29	H.T. smoothing	8
30	H.T. smoothing	8
31	Part tone control circuit	.001
35	Part tone control circuit	.00075
36	Pentode compensator	.005

RESISTANCES		
R.	Purpose.	Ohms.
1	V1 A.V.C. decoupling	1 meg. (4)
2	V1 triode grid...	1,500 (4)
3	Osc. grid lead...	50,000 (4)
4	Diode load, part of	1 meg. (4)
5	V3 cathode bias	1,350 (1)
6	Diode load, part of	70,000 (4)
7	H.F. stopper	10,000 (1)
8	H.F. stopper	50,000 (1)
9	Pick up shunt...	1/2 meg. (4)
10	V1 anode decoupling	5,000 (1)
11	V1 cathode bias	750 (1)
12	V1 osc. anode decoupling	60,000 (1)
13	V2 cathode bias	100 (1)
14	V2 screen decoupling	10,000 (1)
15	V1 A.V.C. decoupling	1 meg. (4)
16	V2 A.V.C. decoupling	1/2 meg. (4)
17	A.V.C. diode load, part	1/2 meg. (4)
18	A.V.C. diode load, part	1/2 meg. (4)
19	Filter	50,000 (1)
20	V4 cathode bias	150 (1)
21	V3 anode decoupling	50,000 (1)
24	Transformer load	1/2 meg. (4)
25	Transformer load	1 meg. (4)
26	V4 anode decoupling	50 (4)
27	Tone compensating	500 (4)
28	V4 grid stopper	100,000 (4)
29	Tone compensating	1,000 (1)
30	Tone compensating	3,000 (1)
31	Part of tone control circuit	30,000 (4)
32	Part of tone control circuit	30,000 (4)
33	Part of tone control circuit	60,000 (4)
34	Part of tone control circuit	70,000 (4)
RV1	Volume control	35,000
RV2	Tone control	1 meg.



The superhet circuit of the 365 is designed round a triode-pentode frequency changer, an H.F. pentode, a double-diode triode and an output pentode.