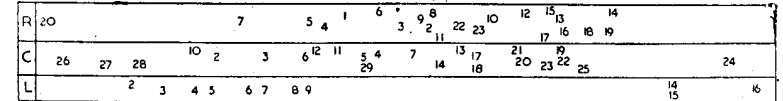
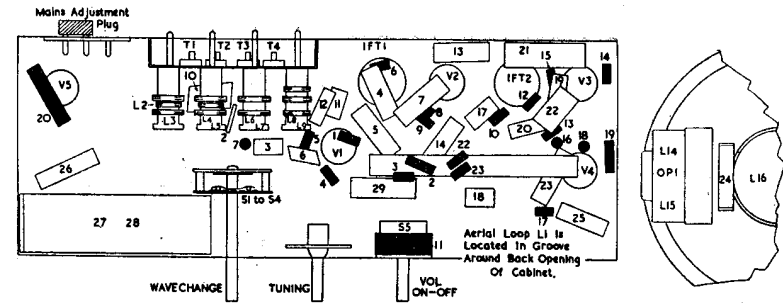
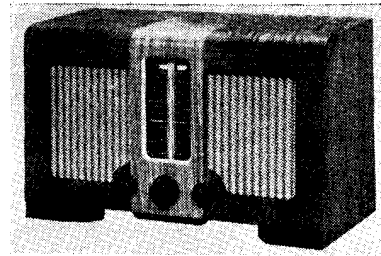


McMICHAEL 851 and radio unit of 512R



MODEL 512 employs a television chassis which is identical to that used in table model TM51—a service chart for this was published in our December 1951 supplement. Service chart of radio unit given below and the TM51 service chart will therefore provide complete information for servicing model 512. The same radio chassis is used in the 851 table model.

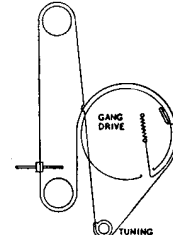
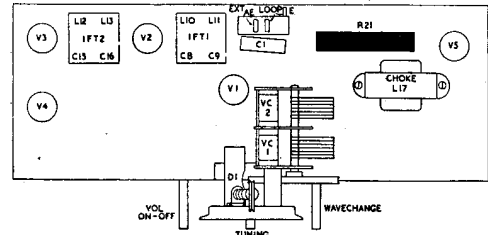
Aerial. A self-contained frame L1 consisting of three turns of insulated wire mounted around inside of back of cabinet is provided for reception of the more powerful transmissions. In bad areas or for reception of weak stations a socket is provided on rear panel for an external aerial.

Signal from either L1 or external aerial is fed by S1 to aerial coupling coils L2 (MW), L4 (LW). Grid coils L3 (MW), L5 (LW) which are trimmed by T1 T2 C2 respectively, are switched by S2 to aerial tuning capacitor VC1 and coupled by C3 to g1 of triode hexode frequency changer V1.

AVC decoupled by R12, C29 is fed through R1 to g1 of V1. Cathode bias is provided by R4 decoupled by C5. Screen voltage is obtained from potential divider R2, R3 and decoupled by C4. Primary L10, C8 of IFT1 is in the hexode anode circuit.

Oscillator is connected in a tuned grid series fed circuit. Grid coils L6 (MW), L8 (LW) which are trimmed by T3, T4 and padded by C10, C12

Five-valve two-waveband superhet chassis with self-contained frame aerial, employed in model 851 table radio and also in model 512 radio-television receiver. Socket is provided for an external aerial. Housed together with its own separate loudspeaker immediately below television chassis in cabinet of 512R. Suitable for 190-250 volts AC/DC. Made by McMichael Radio Ltd., 190 Strand London, WC2.



VI - UCH42	V2 - UF41	V3 - UBC41	V4 - UL41	V5 - UY41	DIAL LAMP

RESISTORS

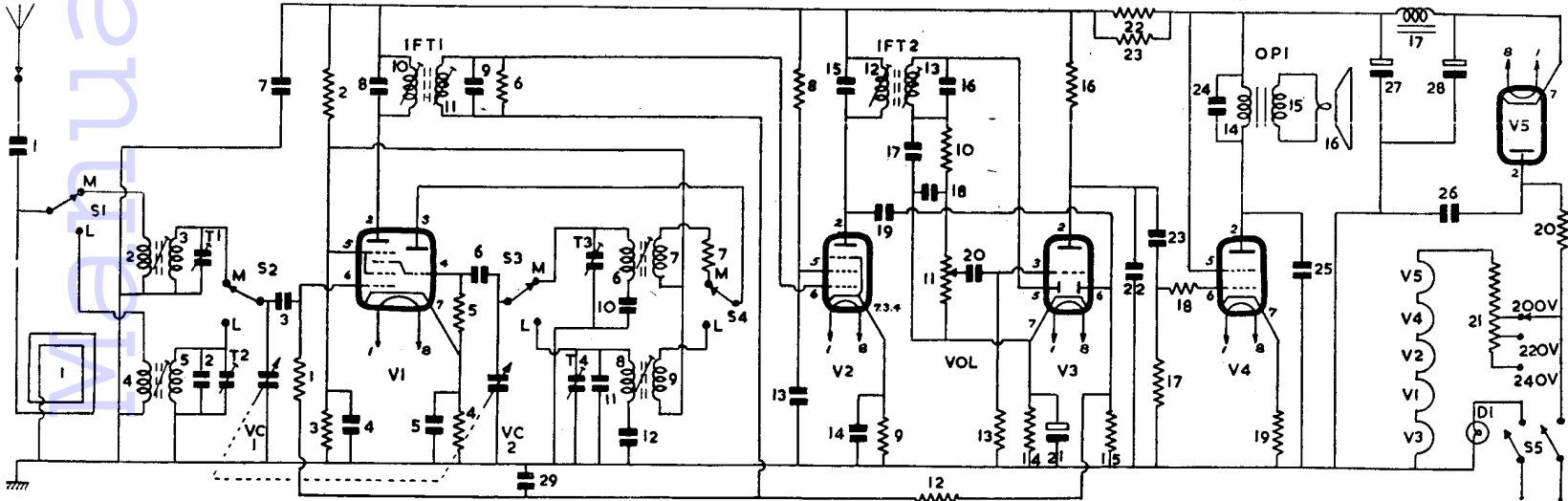
R	Ohms	Watts
1	470K	...
2	12K	...
3	27K	...
4	220	...
5	47K	...
6	1M	...
7	470	...
8	47K	...
9	220	...
10	27K	...
11	250K	Potr. with DP switch
12	470K	...
13	2.2M	...
14	2.2K	...
15	1M	...
16	100K	...
17	470K	...
18	27K	...
19	150	...
20	250	...

CAPACITORS

C	Capacity	Type
1	.005 Tubular	1000V
2	75pF Silver Mica	
3	100pF Silver Mica	
4	.1 Tubular	350V
5	.1 Tubular	350V
6	100pF Silver Mica	
7	.1 Tubular	350V
8	125pF Silver Mica	
9	125pF Silver Mica	
10	590pF Silver Mica	
11	100pF Silver Mica	
12	220pF Silver Mica	
13	.1 Tubular	350V
14	.1 Tubular	350V
15	125pF Silver Mica	
16	125pF Silver Mica	
17	75pF Silver Mica	
18	75pF Silver Mica	
19	25pF Silver Mica	
20	.01 Tubular	350V
21	50 Electrolytic	12V
22	500pF Silver Mica	
23	.01 Tubular	350V
24	.01 Tubular	1000V
25	.005 Tubular	1000V
26	.01 Tubular	1000V
27	32 Electrolytic	350V
28	32 Electrolytic	350V
29	.1 Tubular	350V

INDUCTORS

L	Ohms
1	Very low
2	.25
3	2.25
4	.4
5	16.5
6	.3
7	1.5
8	.7
9	2.5
10	5.5
11	5.5
12	5.5
13	5.5
14	400
15	.25
16	2.5
17	230



McMICHAEL

respectively, are switched by S3 to oscillator tuning capacitor VC2 and coupled by C6 to oscillator grid (gt) of V1. Automatic bias for grid is developed on C6 with R5 as leak resistor.

Anode reaction voltages are obtained inductively from L7 (MW), L9 (LW). Oscillator anode (at) of V1 is switched by S4 through L7 or L8 to HT supply which is obtained from potential divider R2, R3. R7 is a series MW limiter.

IF amplifier operates at a frequency of 470kc/s. Secondary L11, C9 of IFT1 which is damped by R6 feeds signal and AVC voltages, decoupled by R12 C29 to IF amplifier V2. Cathode bias is provided by R9 decoupled by C14. Screen voltage is obtained from R8 and decoupled by C13. Suppressor is internally strapped to cathode. Primary L12, C15 of IFT2 is in the anode circuit.

Signal rectifier. Secondary L13, C16 of IFT2 feeds signal to one of diode of V3. R11 the volume control is the diode load and R10 C17 C18 an IF filter circuit.

AVC. Signal at anode of IF amplifier V2 is fed through C19 to second diode of V3 of which R15 is the load resistor. AVC voltages are decoupled by R12, C29 and fed to g1 of V1, V2. Bias developed across cathode load R14 provides a delay voltage for the AVC line.

AF Amplifier. Rectified signal developed across volume control R11 is fed by C20 to grid of triode portion of V3 of which R13 is grid resistor. Cathode bias is provided by R14 decoupled by C21. R16 is the anode load and C22 anode RF bypass capacitor.

Output Stage. C23 feeds signal at anode of V3 through grid stopper R18 to g1 of beam-tetrode output amplifier V4. R17 is its grid resistor and R19 provides cathode bias and negative feedback. Screen voltage is obtained direct from HT line, decoupling being provided by C27. Primary L14 of output matching transformer OP1 is in the anode circuit. C24 is a fixed tone correction capacitor and C25 gives further HF filtering.

Secondary L15 of OP1 feeds output to 6½ in. PM speaker L16.

Cases of Low Volume and Distortion

THESE were two rather odd faults. The first was in an old Pyle console. Output was very low, although all normal stations could be received. Voltages appeared normal; there was no apparent distortion—in fact, everything seemed O.K.

Suspicion centred on the output stage, whose valve checked O.K. After some head scratching the OP transformer was removed. Vigorous prodding on the bobbin gave a primary resistance variation of approximately 100 ohms.

As a quick check the primary was connected in series with a limit resistor (40W lamp) across the mains, with the secondary O/C, whereupon frying noises were heard. On stripping the transformer one turn was found to have slipped down the side of the bobbin, causing a "short" on several layers.

Replacing the transformer cured the fault. The surprising thing was the lack of any indication in the shape of distortion even though the primary had

Apply signal as stated below	Tune Receiver to	Trim in Order stated for Max. Output
(1) 470kc/s to g1 of V1 via .01 capacitor	—	Cores L13, L12, L11, L10
(2) With gang at maximum capacity set dial cursor to coincide with datum marks at bottom of scale.		
(3) 1.58 mc/s to AE socket via dummy aerial	190 metres	T3, T1
(4) 600kc/s as above	500 metres	Cores L6, L3 and repeat (3) and (4)
(5) 333kc/s as above	900 metres	T4, T2
(6) 150kc/s as above	2000 metres	Cores L8, L5 and repeat (5) and (6)

HT is provided by an indirectly-heated half-wave rectifier V5. Its anode voltage is obtained from the mains input through current limiter R20. Choke-capacity smoothing is given by L17, C27, C28. Reservoir smoothing capacitor C28 should be rated to handle 150mA ripple current.

Heaters of V1 to V5 are connected in series and obtain their current of 100mA from the mains through tapped dropper resistor R21.

Dial Lamp is wired in series with mains lead to chassis. S5, which is ganged to volume control spindle is radio receiver on/off switch.

Chassis removal. Remove the three control knobs and lower rear panel of cabinet. Disconnect lead from external aerial socket on rear panel. Unsolder the two receiver leads from frame aerial tag panel mounted on underside of cabinet rail and also lead to both loudspeakers. Undo LS fixing nuts and withdraw both loudspeakers out of cabinet.

Undo and remove the two chassis fixing nuts protected by small plywood cover plates on underside. Chassis can now be withdrawn from cabinet.

been operating as an auto-transformer with its "secondary" (the S/C section) short circuited.

Second was a Bush console. There was plenty of volume and plenty of distortion, which sounded like over-biasing, i.e., bottom-bend cut-off.

The LS became suspect—it was a Rola energised type with the usual hum—bucking winding over the field coil in series with the speech coil.

The necessary connections were made on a tag panel. On connecting the test LS across the speech coil tags perfect results were obtained. A resistance measurement showed about 20 ohms across these tags! Placing the meter on the pigtail lead-outs gave about 2 ohms.

This seemed ridiculous—until I decided to measure between the eyelet which held the solder tag and through which the pigtails were soldered, and the solder tag proper. There was the fault. Although the eyelets were bright and clean and very tight. Soldering the eyelet to the tag on each connection cured the trouble.—W. EASTON, Whitby.

TRIMMING INSTRUCTIONS

CARRON H3 COOKER—Continued from page 20

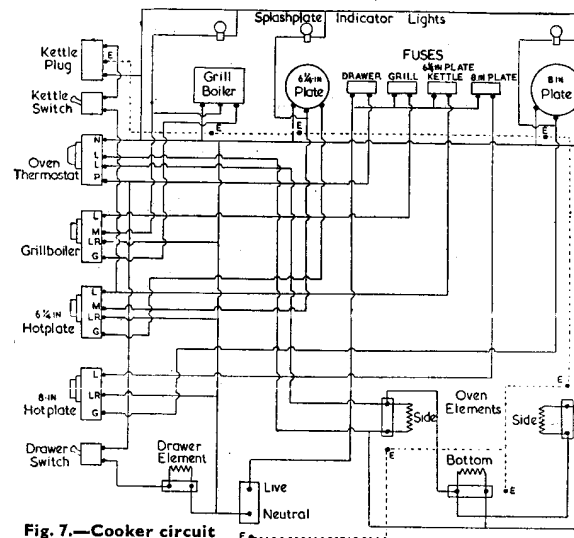


Fig. 7.—Cooker circuit

by three screws tapped into the black stove-enamelled sheet-iron backplate—the latter being secured by three screws into rear stretcher bar above oven and base below oven.

Pressed sheet-iron bottom drawer is fitted with cream vitreous-enamelled cast-iron front panel with Bakelite handle. Drawer rides in pressed-steel runners bolted between front frame and rear uprights of skid bars.

The 500W sheathed tubular drawer heater, controlled by separate on/off switch on front, is mounted immediately below baseplate and wired to terminal block on top of baseplate alongside oven (Fig. 6). A 15A kettle socket with an on/off switch below is fitted to front of cooker. Removable cast-aluminium kettle holder is fitted to side of hob by two prongs.

A cast-aluminium towel rail can be attached to opposite side of hob but is not removable.

ELECTRICAL SYSTEM

Main input cable is fed through bush in rear panel and attached to terminals on bracket at lower righthand side of cooker (Fig. 6).

Live lead is taken through two separate wires to the four fuseholders under removable cover plate under hob (Fig. 2). Grill-boiler and 8 in. hotplate each have a separate fuse whilst bottom drawer is connected to oven fuse and kettle socket to 6½ in. plate fuse. Oven pilot light is wired across a low resistance coil in neutral side of oven element circuit.

Earth pins of oven hotplate and kettle sockets and frame of cooker are connected through a continuous earth bonding wire to an earthing terminal situated just below mains input terminals.

MAINTENANCE

First make sure wall control switch is off.

Renewal of fuses.—Close splashplate down on top of hob and open hotcupboard door and undo and remove winged hob fixing nut under top rail of front frame at lefthand side. Raise hob and place support strut in cavity provided. Fuses are

accessible when metal cover plate at righthand side is removed (Fig. 2). Fuses, from front to back, are for oven/bottom drawer, grill boiler, 6½ plate/kettle, 8 in. plate.

Removal of plates and grill.—Raise hob as described. Plates can be removed by pulling directly upward, holding plates level.

Removal of oven elements.—Remove oven shelves and withdraw side plates by raising slightly then tilting and pressing downwards—this action disengages hook-on plate from side hangers on oven wall (Fig. 4). Remove bottom tray by raising front edge first and then withdrawing outwards whilst continuing to raise.

Elements (Fig. 5) are removed by sliding towards front, to disengage slot on element casing from stud fixed to interior of oven, and then raising slightly and pulling until plug pins are free.

Renewal of thermostat pilot lamp.—Remove thermostat knob and cover-plate below. Slide out Bakelite

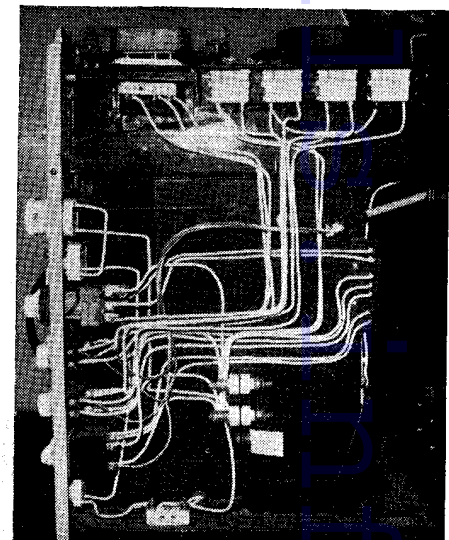


Fig. 6.—With side and rear panels removed all wiring is accessible. (Circuit, Fig. 7)

lampholder and remove faulty lamp. Replace with 3.5V, .3A MES bulb and replace cover and knob.

Removal of bottom drawer element.—Remove righthand side, disconnect drawer element leads from terminal block fitted to base. Remove wing nut holding element to base and withdraw element.

Access to wiring.—All wiring is exposed when righthand side (Fig. 6) and rear panel are removed. Side is held by three screws tapped into rear panel.

Renewal of splashplate indicator lamps.—By removing one screw at either end of splashplate, lamp housing can be taken out for renewals.