

"TRADER" SERVICE SHEET
876

McMICHAEL 484

Covering 487 Console and 486 Radiogram

FOUR wavebands are covered in the McMichael 484, a 4-valve battery-operated superhet in a table cabinet, with Q.P.P. output. The wavebands are: 16.5-50 m (S.W.1); 50-175 m (S.W.2); 170-550 m (M.W.); 750-2,000 m (L.W.). There is provision for the connection of a gramophone pick-up and an external speaker.

The 487 is a console employing an identical chassis, and the 486 is a radiogram conforming electrically to the 484 chassis but with a different scale assembly which is equipped with scale lamps.

Release dates and original prices: 484, March, 1948, £23 17s 9d; 487, May, 1948, £28 13s 8d; 486, May, 1948, £50 14s 9d, without batteries and plus purchase tax in each case.

CIRCUIT DESCRIPTION

Aerial input via I.F. rejector **L1, C1** and coupling coils **L2 (S.W.1), L3 (S.W.2), L4 (M.W.)** and **L5 (L.W.)** to single-tuned circuits **L6, C35 (S.W.1), L7, C35 (S.W.2), L8, C35 (M.W.)** and **L9, C35 (L.W.)**, which precede an octode valve (**V1, Mull-**

lard metallized KK32) operating as frequency changer with electron coupling.

Triode oscillator grid coils **L10 (S.W.1), L11 (S.W.2), L12 (M.W.)** and **L13 (L.W.)** are tuned by **C36**, with parallel trimming by **C37 (S.W.1), C38 (S.W.2), C39 (M.W.)** and **C12, C40 (L.W.)**; series tracking by **C13 (S.W.1), C14 (S.W.2), C15 (M.W.)** and **C16 (L.W.)**. Reaction coupling from anode, via **C17**, by anode coils on all bands, with additional coupling on S.W.1 and S.W.2 due to the common impedance of the trackers in the grid and anode circuits.

Second valve (**V2, Mullard metallized KF35**) is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C8, L18, L19, C9** and **C19, L20, L21, C20, C21**, in which the tuning capacitors are fixed and alignment adjustments are carried out by varying the positions of the iron-dust cores.

Intermediate frequency 465 kc/s.

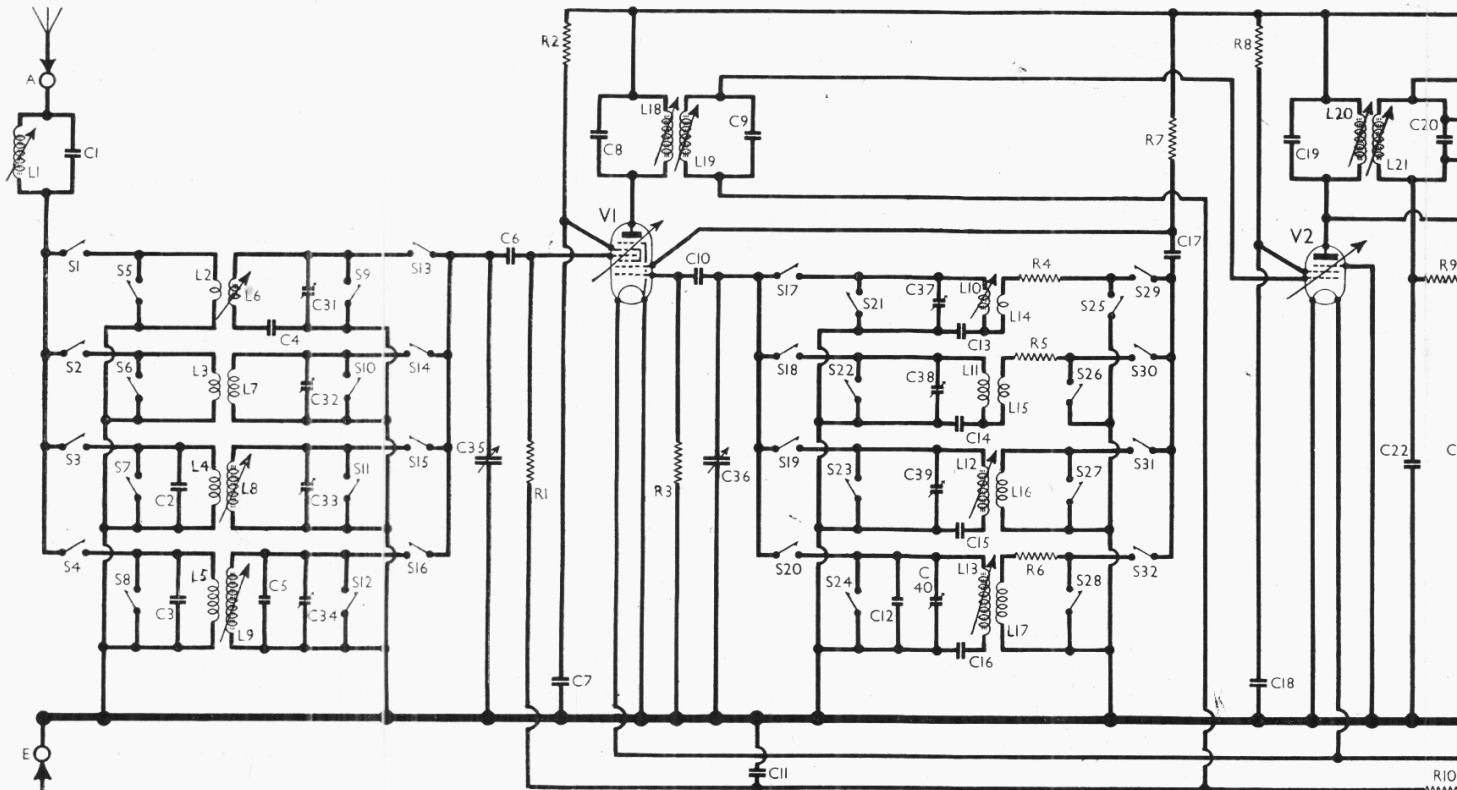
Diode second detector is part of double diode triode valve (**V3, Mullard metallized KBC32**). Audio frequency component in rectified output is developed across diode

load resistor **R11** and passed via A.F. coupling capacitor **C25** and manual volume control **R12** to C.G. of triode section, which operates as A.F. amplifier. I.F. filtering by **C22, R9, C23** in diode circuit, and provision for the connection of a gramophone pick-up across **R12**, via **S34**. A switch, **S35**, is provided to disconnect the filament circuit of **V1** and **V2** from the L.T. accumulator when the receiver is switched to "Gram."

Second diode of **V3**, fed from **V2** anode via **C24**, provides D.C. potential which is developed across load resistor **R14** and fed back through a decoupling circuit **R10, C11** as G.B. to F.C. and I.F. valves, giving automatic volume control.

Parallel-fed transformer coupling by **C26** and **T1**, between **V3** triode and double pentode quiescent push-pull output valve (**V4, Mullard KLL35**). Fixed tone correction in anode circuit by **C27**, and two-position tone control by **C28, C29** and **S36, S37**. Provision for the connection of a low impedance external speaker across **T2** secondary winding.

G.B. potential for **V4** is obtained from the drop across **R18** in the H.T. negative lead to chassis.



Circuit diagram of the McMichael 484, which applies equally to the 486 and 487. **C21** is connected in parallel with **C20**, but it is beneath the chassis, outside the I.F. transformer assembly. The numbers associated with the speaker transformer **T2** connections refer

COMPONENTS AND VALUES

CAPACITORS		Values (μF)	Locations
C1	I.F. rejector tune	0.0005	J7
C2	Aerial M.W. shunt	0.0001	J4
C3	Aerial L.W. shunt	0.001	G4
C4	Aerial S.W.1. track	0.0015	G5
C5	Aerial L.W. trim...	0.000025	G4
C6	V1 pent C.G. ...	0.00015	C2
C7	V1 S.G. decoup. ...	0.1	H7
C8	1st I.F. transformer tuning ...	0.0001	A3
C9		0.0001	A3
C10	V1 osc. C.G. ...	0.00015	H7
C11	A.V.C. decoupling ...	0.1	K7
C12	Osc. L.W. trim. ...	0.000025	G6
C13	Osc. S.W.1. track ...	0.001	G6
C14	Osc. S.W.2. track ...	0.0018	J7
C15	Osc. M.W. track ...	0.000538	J6
C16	Osc. L.W. track ...	0.00016	G6
C17	Osc. anode coup ...	0.0002	H7
C18	V2 S.G. decoup ...	0.1	K5
C19	2nd I.F. transformer tuning ...	0.0001	A2
C20		0.0001	A2
C21	I.F. by-passes ...	0.000005	K5
C22		0.0001	K5
C23	A.V.C. coupling ...	0.000025	K5
C24	A.F. coupling capa-	0.01	K5
C25	itors	0.1	F5
C26		0.002	F4
C27	Tone corrector	0.005	F4
C28		0.02	F4
C29	Tone control capa-	0.5	K7
C30		0.00004	G5
C31†	Aerial S.W.1. trim.	0.00004	J5
C32†	Aerial S.W.2. trim.	0.00004	J5
C33†	Aerial M.W. trim.	0.00004	G5
C34†	Aerial L.W. trim...	0.00004	C2
C35†	Osc. tuning ...	—	C2
C36†	Osc. S.W.1. trim....	0.00004	G7
C37†	Osc. S.W.2. trim....	0.00004	J7
C38†	Osc. M.W. trim.	0.00004	J7
C39†	Osc. L.W. trim.	0.00004	G7
C40†			



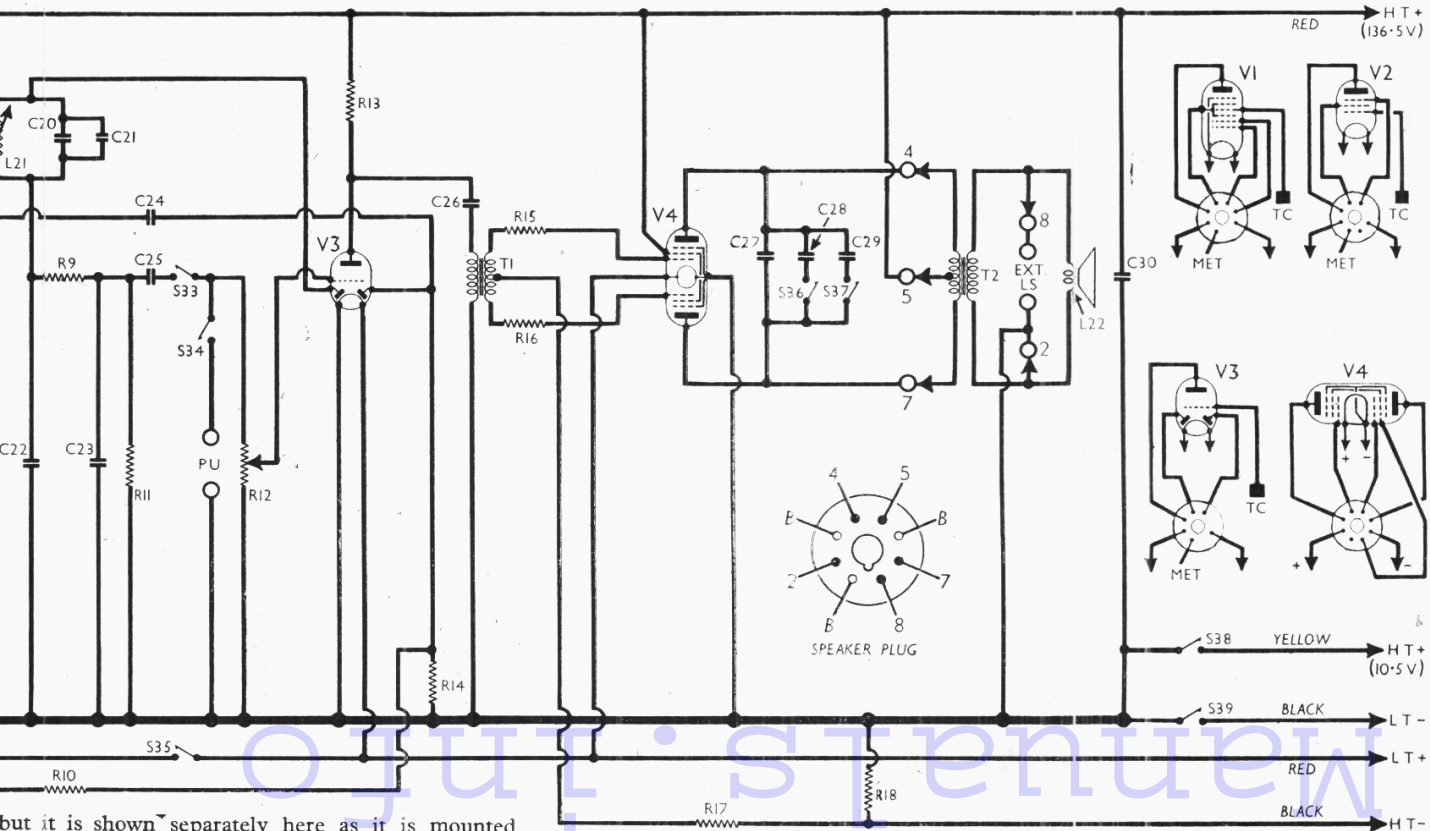
The appearance of the McMichael 484 table superhet.

RESISTORS		Values (ohms)	Locations
R1	V1 pent. C.G. ...	470,000	C3
R2	V1 S.G. feed ...	47,000	H7
R3	V1 osc. C.G. ...	33,000	H7
R4	Oscillator stabiliz-	22	H7
R5		ing resistors ...	270
R6	Osc. H.T. feed ...	470	H6
R7	V2 S.G. feed ...	22,000	H7
R8	V2 S.G. feed ...	120,000	K6
R9	V1 stopper ...	22,000	K5
R10	A.V.C. decoupling ...	470,000	K4
R11	Sig. diode load ...	470,000	K5
R12	Volume control ...	1,000,000	K4
R13	V3 triode load ...	120,000	K4
R14	A.V.C. diode load ...	470,000	K4
R15	V4 grid stoppers	1,200	F6
R16		1,200	F6
R17	V4 G.B. decoup. ...	33,000	F6
R18	V4 G.B. resistor ...	1,200	F6

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	I.F. rejector coil ...	4.0	J7
L2	Aerial coupling coils	Very low	G5
L3		0.6	J5
L4		16.0	J4
L5		27.0	G4
L6		Very low	G5
L7	Aerial tuning coils	0.5	J5
L8		2.6	J4
L9		19.0	G4
L10		Very low	G7
L11	Oscillator tuning coils ...	0.4	J7
L12		1.7	J6
L13		7.3	G6
L14		0.5	G7
L15	Oscillator reaction coils ...	1.2	J7
L16		1.4	J6
L17		3.0	G6
L18	1st I.F. trans. { Pri.	10.0	A3
L19		Sec.	10.0
L20	2nd I.F. trans. { Pri.	10.0	A2
L21		Sec.	9.5
L22	Speech coil ...	2.0	—
T1	Intervalve Pri. ...	850.0	F7
	trans. { Sec., total	2,600.0	F7
T2	Speaker Pri. ...	820.0	—
	trans. { Sec. ...	0.4	—
S1-	W/band switches ...	—	—
S32		—	—
S33-		—	—
S35		—	—
S36,	Radio/Gram. switches	—	—
S37		—	—
S38	Tone cont. switches	—	F4
S39		Battery switches, {	—
	ganged R12 ... }	—	K4

VALVE ANALYSIS

Valve voltages and currents in the table overleaf are those measured in our receiver when it was operating from a new H.T. battery measuring 144 V on load. The receiver was tuned to the (Continued col. 1 overleaf)



but it is shown separately here as it is mounted

ons refer to the pins of the speaker plug, a diagram of which is inset in the circuit diagram. S35 opens on gram to economise in L.T. current.

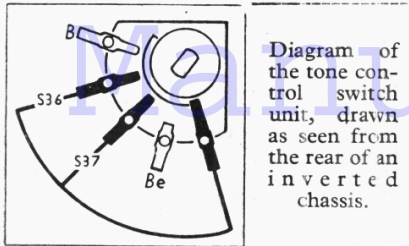


Diagram of the tone control switch unit, drawn as seen from the rear of an inverted chassis.

lowest wavelength on the M.W. band, and the volume control was at maximum, but there was no signal input.

Voltages were measured on the 400 V scale of a model 7 Avometer, chassis being the negative connection.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 KK32	132 83	1.1 2.0	53	1.5
V2 KF35	132	2.4	48	0.7
V3 KBC32	53	0.6	—	—
V4 KLL35	130*	2.0*	132	0.8

* Each anode.

DISMANTLING THE SET

Removing Chassis.—Remove the four control knobs (recessed grub screws); withdraw the speaker plug from its socket on the chassis deck;

remove the two large hexagon head screws (with metal washers) securing the chassis to the base of the cabinet, and withdraw the chassis from the cabinet, lifting the rear edge slightly while doing so.

Removing Speaker.—Withdraw the connecting plug from its socket on the chassis deck;

remove the four nuts (with metal washers) holding the speaker to the sub-baffle.

When replacing, the transformer should be on the left, and if the leads have been unsoldered they should be reconnected as follows, numbering the tags on the connecting panel from left to right when viewed from the rear: 1,

black; 2, yellow; 3, red; 4, yellow; 5, black.

GENERAL NOTES

Switches.—S1-S35 are the waveband and radio/gram change-over switches, ganged in three rotary units beneath the chassis. These units are indicated in our under-chassis view, where they are identified by numbers in diamonds. Arrows there indicate the direction in which they are viewed in the diagrams (next col.) where they are shown in detail.

Although these arrows point to the front faces of the wafers, the units are actually viewed in this direction from the rear of the chassis, and to do this the chassis must be tilted up so that the deck is vertical. The upper "pip" on the units in our diagrams is then the one close to the chassis deck.

The table below gives the switch positions for the five control settings, starting from the fully anti-clockwise position of the control knob. A dash indicates open, and C, closed.

S36, S37 are the tone control switches, in a 3-position unit beneath the chassis, indicated in our under-chassis view. A diagram in col. 1 shows the unit in detail. Starting from the fully anti-clockwise position of the control knob, the settings are: Treble (both switches open); Normal (S36 closed); Bass (S37 closed).

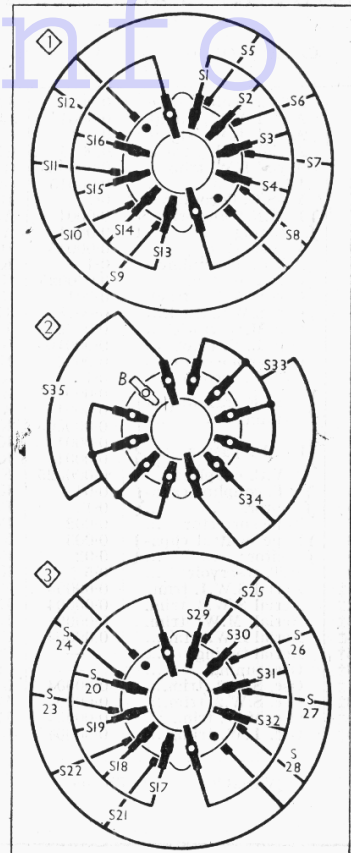
External Speaker.—Two sockets are provided at the rear of the chassis for a low impedance (about 2-4 Ω) external speaker.

Speaker Plug.—The primary and secondary connections of the output transformer T2, which is mounted on the speaker, are taken to the chassis via a five-way cable which is terminated in an octal-type valve base adaptor with a socket on the chassis deck.

The connections are indicated in our circuit diagram by arrows and circles, these being identified by the numbers conventionally assigned to their pins on an octal base, a diagram of which, viewed from the free ends of the pins, is inset just beneath them.

The lead colours in our sample were: 2, black; 4, yellow; 5, red; 7, yellow; 8, black. Pins 1, 3 and 6 are not used.

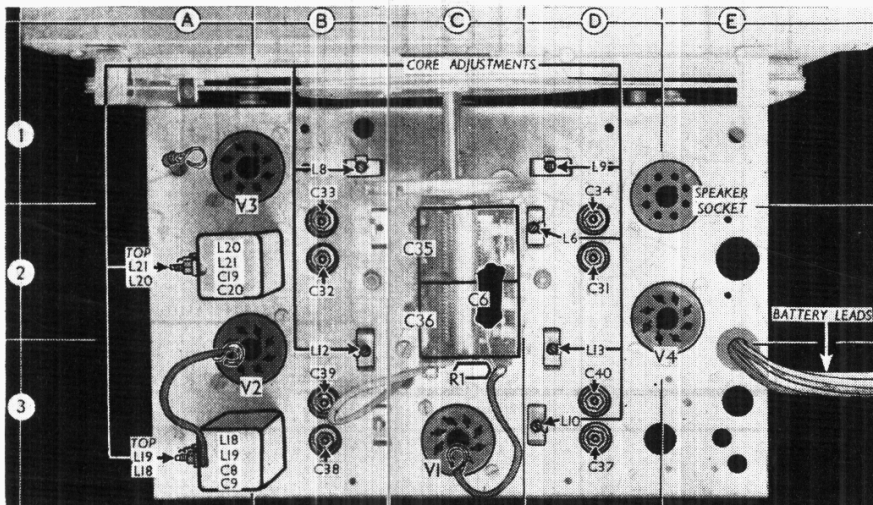
Switch Diagrams and Table



Diagrams of the three waveband switch units. These are the front sides, drawn as seen from the rear of an inverted chassis after tilting up the front of it sufficiently to show them.

Below is the associated table.

Switch	S.W.1.	S.W.2.	M.W.	L.W.	Gram
S1	C	—	—	—	—
S2	—	C	—	—	—
S3	—	—	C	—	—
S4	—	—	—	C	—
S5	—	C	C	C	C
S6	—	C	C	C	C
S7	—	C	C	C	C
S8	—	C	C	C	C
S9	—	C	C	C	C
S10	—	C	C	C	C
S11	—	C	C	C	C
S12	—	C	C	C	C
S13	—	C	C	C	C
S14	—	C	—	—	—
S15	—	C	—	—	—
S16	—	C	—	C	—
S17	C	—	—	—	—
S18	—	C	—	—	—
S19	—	C	C	C	C
S20	—	C	C	C	C
S21	—	C	C	C	C
S22	—	C	C	C	C
S23	—	C	C	C	C
S24	—	C	C	C	C
S25	—	C	C	C	C
S26	—	C	C	C	C
S27	—	C	C	C	C
S28	—	C	C	C	C
S29	—	C	C	C	C
S30	—	C	—	—	—
S31	—	C	—	—	—
S32	—	C	—	C	—
S33	C	C	C	C	—
S34	—	—	—	—	C
S35	C	C	C	C	—



Plan view of the chassis showing all the alignment adjustments (except Lt).

