

# McMICHAEL - M103BT

Intermediate frequency 470 kc/s

Transistor	Emitter (V)	Base (V)	Collector (V)
TR1 OC44 ..	1.1	0.82	7.3
TR2 OC45 ..	0.56	0.64	7.3
TR3 OC45 ..	0.87	1.06	7.3
TR4 OC71 ..	0.79	0.9	1.2
TR5 OC81D ..	1.05	1.2	8.1
TR6 OC81 ..	4.5	4.6	9.0
TR7 OC81 ..	0	0.11	4.5

## Resistors

R1	56kΩ	B1
R2	10kΩ	B1
R3	3.3kΩ	B2
R4	68kΩ	B2
R5	1kΩ	B2
R6	1.2kΩ	B2
R7	3.9kΩ	B2
R8	680Ω	B2
R9	8.2kΩ	B2
R10	1kΩ	B2
R11	5kΩ	B1
R12	10kΩ	C1
R13	6.8kΩ	C1
R14	470Ω	B2
R15	470Ω	C1
R16	2.7kΩ	B2
R17	91Ω	C2
R18	2.7kΩ	C2
R19	91Ω	C1
R20	150kΩ	C2
R21	1kΩ	C1

## Capacitors

C1	—	A1
C2	—	A1
C3	—	A1

C4	0.04μF	B1
C5	0.1μF	B2
C6	250pF	A2
C7	0.01μF	A2
C8	160pF	A2
C9	160pF	A2
C10	—	A1
C11	—	A1
C12	0.04μF	A2
C13	56pF	B2
C14	0.1μF	B2
C15	250pF	B2
C16	100μF	C1
C17	0.1μF	B2
C18	250pF	B2
C19	18pF	B2
C20	10μF	A2
C21	0.04μF	B2
C22	50μF	A2
C23	0.01μF	B2
C24	0.1μF	C1
C25	100μF	C2
C26	100μF	B2

## Coils\*

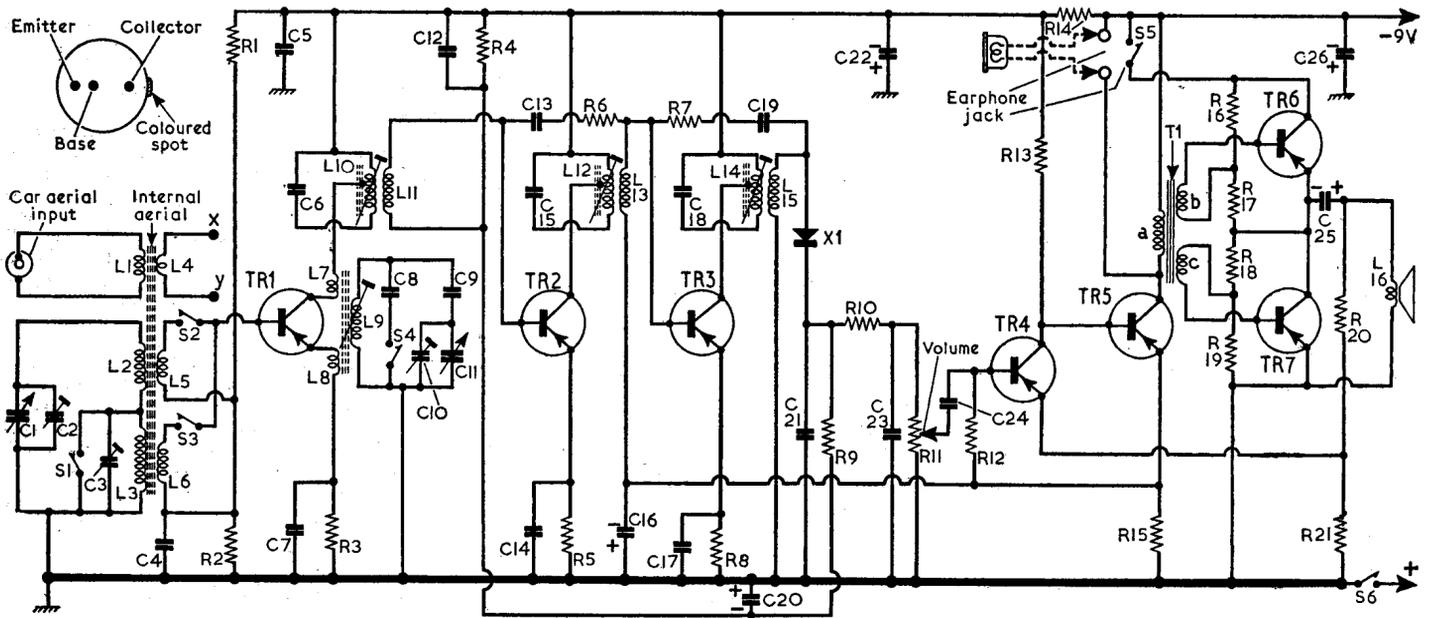
L1	1.5	B1
L2	3.0	C1

L3	12.0	A1
L4	—	A1
L5	—	C1
L6	—	A1
L7	—	A2
L8	—	A2
L9	—	A2
L10	4.0	A2
L11	—	A2
L12	4.0	B2
L13	—	B2
L14	3.5	B2
L15	—	B2
L16	30.0	—

## Miscellaneous\*

T1	{ a 350.0 } b — c —	C2
X1	OA70	B2
S1-S4	—	A2
S5	—	B2
S6	—	B1

\*Approximate D.C. resistance in ohms.



## CIRCUIT ALIGNMENT

**Equipment Required.**—An A.M. signal generator with a low impedance output and modulated 30 per cent at 400 c/s; an output meter; a non-metallic trimming tool and, if L4 is not fitted, a dummy aerial. The latter can be made up of two capacitors, a 25pF and a 47pF. These are connected in series across the output of the signal generator, the 22pF to the "live" lead, and output is taken from across the 47pF. During the alignment process the output should not be allowed to exceed 20mW, and where two peaks occur, the core should be adjusted to the one nearer the outer of the former.

Instead of using a milliwatt output meter, the alignment procedure may be carried out using a 0.50 mA meter inserted in the battery supply lead. The total current during alignment should not be allowed to exceed 18.0mA.

1.—Switch receiver to M.W. and connect signal generator between TR1 base and an earthy point. Connect the mW output meter in place of the speech coil. Feed in a 30 per cent modulated signal at 470kc/s and adjust L14, L12 (location reference B2) and L10 (A2) in that order for maximum output, reducing the signal generator output if necessary as each circuit is brought into line. Repeat these adjustments until no further improvement can be obtained.

2.—Transfer the signal generator output leads to points X and Y on the ferrite rod (A1) or, if L4 is not fitted, to the car aerial socket via the dummy aerial. Tune receiver to 517 metres (tuning capacitance at maximum). Feed in a 580kc/s signal and adjust L9 (A2) for maximum output. Tune the receiver to 200 metres (minimum capacitance), feed in a 1,500kc/s signal, and adjust C10 (A1) for maximum output. Repeat these adjustments until no further improvement can be obtained.

3.—Tune receiver to 500 metres (mark on scale), feed in a 600kc/s signal and adjust L2 (C1) for maximum output by sliding it along the ferrite rod. Tune the receiver to 214 metres, feed in a 1,400kc/s signal, and adjust C2 (A1) for maximum output. Repeat adjustments until no further improvement can be obtained.

4.—Switch receiver to L.W. and tune to 1,760 metres (mark on scale). Feed in a 170kc/s signal and adjust L3 (A1) for maximum output by sliding it along the ferrite rod. Reset tuning to 1,250 metres, feed in a 240kc/s signal, and adjust C3 (A1) for maximum output. Repeat adjustments until no further improvement can be obtained.

**Switches.**—S1-S4 are the waveband switches, housed in a slide-type unit and shown in our sketch of the receiver panel at location reference A2. In the M.W. position S1 and S2 are closed, and in the L.W. position S3 and S4 are closed. The battery supply on/off switch S6 is ganged with the volume control R11.

**Transistors.**—When replacing a transistor it is important to provide a heat shunt on the connecting wire between the transistor and the point being soldered. If the connecting wire is held by a suitable pair of pliers while soldering, they will act as a heat shunt. The receiver should never be connected to a battery with an output of more than 9V, and the battery connections must not be reversed.

When making continuity tests, the voltage of the battery within the meter may be connected in such a manner as to result in damage to a transistor, particularly if the battery voltage is applied with incorrect polarity. It is inadvisable therefore to make continuity tests with transistors in circuit. The manufacturers warn that failure to observe the above precautions may result in damage.

**Battery.**—The battery recommended by the manufacturers is Ever Ready PP6, Exide DT6 or Vidor T6006.

**Modifications.**—In early production models of this receiver L4 was omitted, R16 and R18 were 3.3kΩ, and R17 and R19 were 100Ω.