

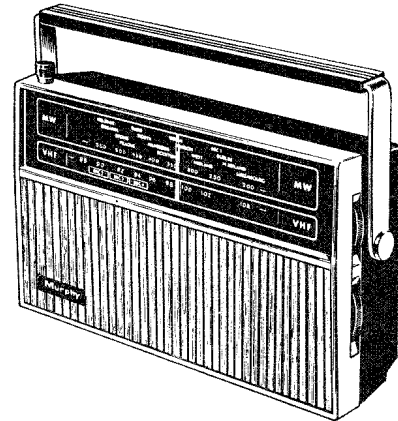
SERVICE INSTRUCTIONS

Murphy

MODEL B833

RADIO

RECEIVER



SPECIFICATION

GENERAL

Model B833 is a battery operated AM/FM radio receiver designed to cover the Medium Wave and VHF bands. It uses ten transistors and four diodes and incorporates a built-in rod aerial for the Medium waveband and a telescopic rod aerial for the VHF band.

BATTERY AND CONSUMPTION

Four 1½ volts cells, HP7 type or equivalent.
Average battery consumption is 21mA quiescent (26mA normal listening level).

WAVEBANDS

MW: 1620 kHz to 515 kHz (185 to 581 metres)
VHF: 87.5 to 104 MHz

INTERMEDIATE FREQUENCIES

AM Bands: 470 kHz, oscillator high with respect to the signal frequency.
VHF Band: 10.7 MHz, oscillator low with respect to the signal frequency.

VOLTAGES

Input 6 Volts D.C.

Measurement Conditions

- 1 Receiver switched to MW except where indicated otherwise.
- 2 Volume Control to minimum.
- 3 Voltages and Currents taken on Digital Multimeter input 10 MΩ.
- 4 All voltages are negative and are taken with reference to the positive chassis line.

Ref.	Type	eV	bV	cV	Remarks
Q1	2SC394(Y)	3.8	3.2	0	FM
Q2	2SC394(O)	4.1	3.5	0	
Q3	2SC380(O)	5.1	4.4	0.8	
Q4	2SC380(Y)	4.5	3.8	2.3	AM
Q5	2SC380(O)	—	—	—	
Q6	2SC371(R)	4.6	3.9	1.2	FM
Q7	2SB54	4.5	4.0	2.9	
Q8	2SB54	0.45	0.57	4.53	AM
Q9	2SB56	1.1	1.3	5.1	
Q10	2SB56	2.9	3.1	6.0	
	2SB56	*0	0.2	2.9	

*Very low voltage, approx. 3mV.

PHONE SOCKET

A socket is provided at the rear of the cabinet into which may be plugged an earpiece of 20 to 1000 ohms.

Alternatively, this socket may be used for an external loudspeaker of 8 ohms impedance or for tape recording. The internal loudspeaker is automatically muted when the plug is inserted in the socket.

SOUND OUTPUT

300mW r.m.s. at 1000 Hz for 10% T.H.D.

LOUDSPEAKER

Frame size: 90 × 60mm (3.54 × 2.36 in.) elliptical
Cone : Impedance 8 ohms

DIMENSIONS

Height: 116mm (4.56 in.)
Width: 185mm (7.29 in.)
Depth: 53mm (2.08 in.)
Weight: 0.445 Kg (1 lb.)
The above are overall dimensions with the handle down.

CORD DRIVE

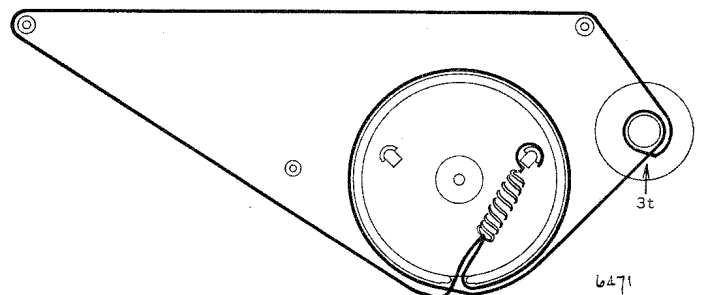


Fig. 1 Cord drive.

ALIGNMENT PROCEDURE

AM CIRCUITS

Preliminary Notes.

- (i) Equipment required.
 - (a) A suitable signal generator to cover 140 kHz to 1650 kHz, modulated 30% at 400 Hz.
 - (b) A power output meter with ranges to cover up to 1 watt with 4 ohms impedance.
 - (c) Loop aerial (see (iv) below).
- (ii) Set the Volume control fully clockwise unless otherwise stated.
- (iii) Disconnect the loudspeaker and connect the power output meter in its place.
- (iv) The signal generator should be coupled to the receiver by a 10 in. diameter loop of insulated wire in series with a resistor of a value to match the output impedance of the generator. The loop should be placed at right angles to the ferrite rod aerial.
- (v) The output of the receiver should be maintained at a level of 50mW by reducing the input signal as necessary.

I.F. ALIGNMENT

- 1 Switch the receiver to Medium waveband and set the tuning pointer to the high frequency end of the tuning scale.
- 2 Inject a signal of 470 kHz modulated 30% at 400 kHz via a 0.1µF capacitor to the base of Q6 and align T6, T7 and T8 for maximum output.

R.F. ALIGNMENT

Notes.

- (a) See AM circuits preliminary notes (i) to (v) above.

Operation	Waveband	Sig. Gen. freq.	Tuning setting	Adjust for max. output
1	MW	505 kHz	LF end	L6
2	MW	1650 kHz	HF end	TC4
3	Repeat 1 and 2 until no improvement can be obtained.			
4	MW	600 kHz		L5
5	MW	1400 kHz		TC3
6	MW	1000 kHz	1000 kHz	Check tracking

FM CIRCUITS

Preliminary Notes.

- (i) Equipment required.
 - (a) 10.7 MHz sweep generator.
 - (b) Oscilloscope.
 - (c) FM Signal Generator to cover 87.2 MHz to 105 MHz.
 - (d) A power output meter with ranges to cover up to 1 watt with 4 ohms impedance.
- (ii) Disconnect the loudspeaker and connect the power output meter in its place.
- (iii) Connect the oscilloscope at the junction of Volume control/C28 and chassis.

I.F. ALIGNMENT

Notes. See notes (ia), (ib), (id), (ii) and (iii) above.

- 1 Switch the receiver to VHF, set the tuning pointer to a no signal position near 88 MHz and the Volume control at minimum.
- 2 Connect the sweep generator to a loop of wire placed near L3 (FM-I.F. trap). Inject 10.7 MHz and align T1, T2, T3 and T4 for maximum gain and symmetry at 10.7 MHz.
- 3 As 2 above but with 30% amplitude modulation and T5 adjusted for symmetrical "S" curve centred at 10.7 MHz marker.
- 4 Repeat 2 and 3 until no further improvement can be obtained

R.F. ALIGNMENT

Notes. See notes (ib), (ic), (id), (ii) and (iii) above.

- 1 Connect the FM Signal Generator between the telescopic aerial and adjacent chassis tag on printed board (wire from aerial disconnected).

Operation	Sig. Gen. freq.	Tuning setting	Adjust for max. output
1	87 MHz	LF end	Turns spacing of L4
2	105 MHz	HF end	TC2
Repeat (1) and (2) until no further improvement can be obtained and seal L4 with wax.			
3	87.5 MHz	maximum	L3
4	104.5 MHz	maximum	TC1
Repeat (3) and (4) to reduce tracking error.			

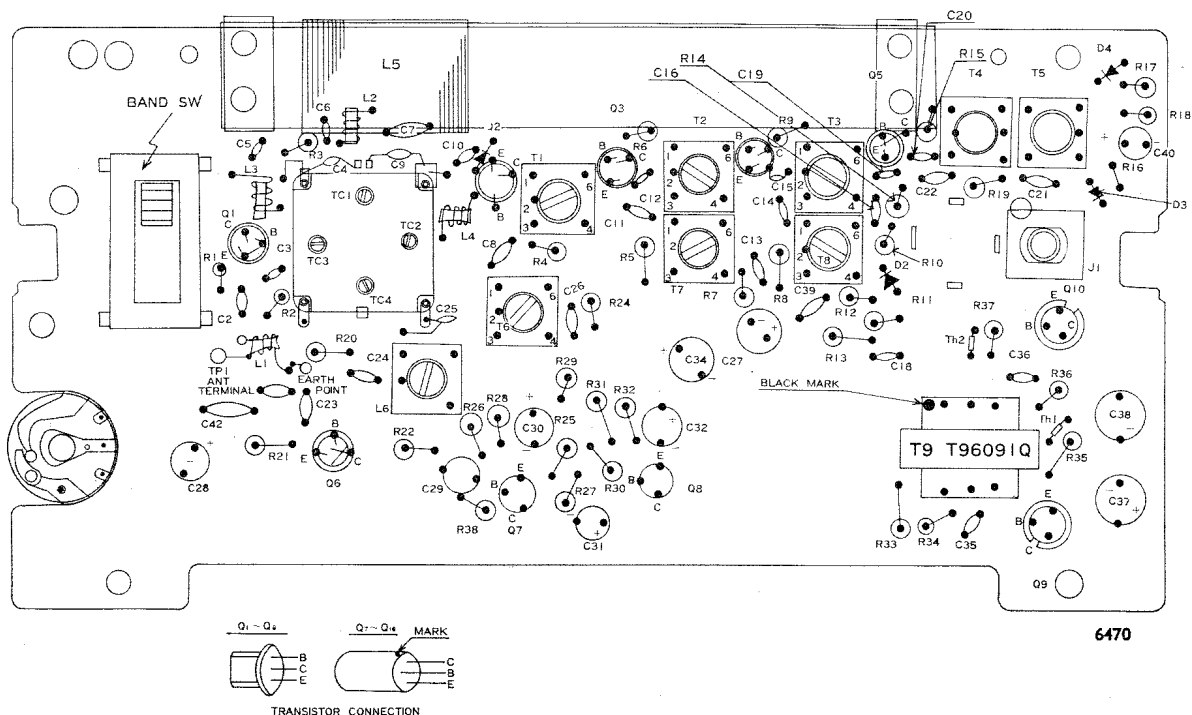


Fig. 2 Component layout.

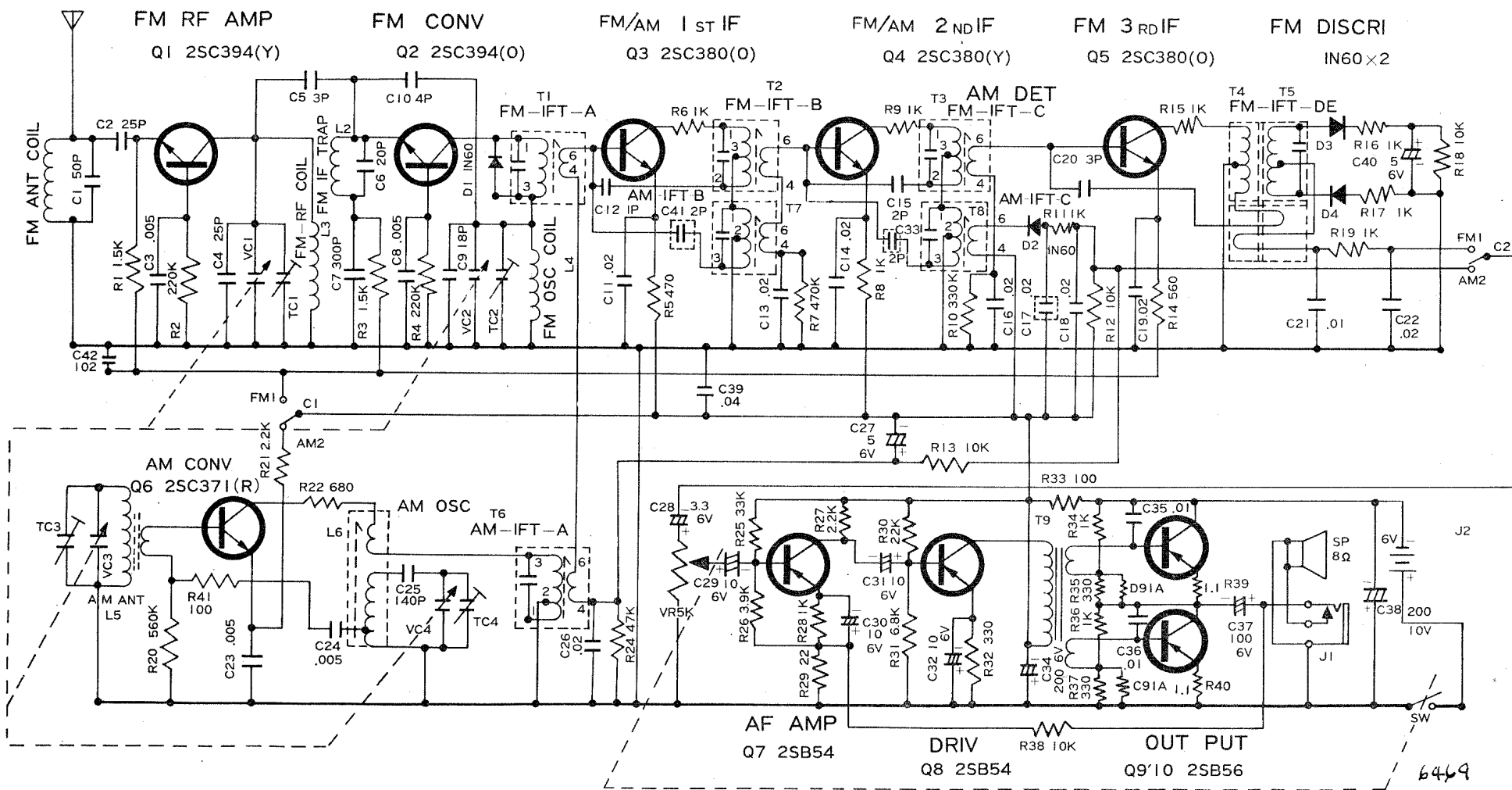


Fig. 3 B833 Circuit diagram. See page 1 for Voltages.

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PARTS LIST

ABBREVIATIONS

C—CARBON/CERAMIC E—ELECTROLYTIC

CAPACITORS

CCT No.	Value (pF)	Type	Tol. (%)	Rating (volts)	Part Number
C1	50	C	10		AP92206
C2	25	C	10		AP92207
C3	0.005	C	+80-20		AP92208
C4	25	C	10		AP92207
C5	3	C	5		AP92216
C6	20	C	10		AP92210
C7	300	C	5		AP92211
C8	0.005	C	+80-20		AP92208
C9	18	C	10		AP92209
C10	4	C	0.5		AP92212
C11	4	C	0.5		AP92212
C12	1	C	0.5		AP92214
C13	4	C	0.5		AP92212
C14	4	C	0.5		AP92212
C15	2	C	5		AP92215
C16	0.01	C	+80-20		AP92213
C17	—	—	—		—
C18	0.02	C	+80-20		AP92213
C19	—	—	—		—
C20	3	C	5		AP92216
C21	0.01	C	+80-20		AP92217
C22	0.02	C	80		AP92213
C23	0.005	C	+80-20		AP92208
C24	0.005	C	+80-20		AP92208
C25	140	C	±20		AP92218
C26	0.02	C	+80-20		AP92213
C27	5	E		6	AP92220
C28	3.3	E		6	AP92224
C29	10	E		6	AP92221
C30	10	E		6	AP92221
C31	10	E		6	AP92221
C32	10	E		6	AP92221
C33	2	E	5		AP92215
C34	200	C		10	AP92223
C35	0.01	C	+80-20		AP92217
C36	0.01	C	+80-20		AP92217
C37	100	E		6	AP92222
C38	200	E		10	AP92223
C39	0.04	C	+80-20		AP92219
C40	5	E		6	AP92220
C41	2	E	5		AP92215
C42	0.02	E	+80-20		AP92213

RESISTORS

CCT No.	Value	Type	Tol. (%)	Rating (watts)	Part Number
R1	1.5k	C	10	1/4	AP92225
R2	220k	C	10	1/4	AP92226
R3	1.5k	C	10	1/4	AP92225
R4	220k	C	10	1/4	AP92226
R5	270	C	10	1/4	AP92227
R6	1k	C	10	1/4	AP92228
R7	470k	C	10	1/4	AP92229
R8	1k	C	10	1/4	AP92228
R9	1k	C	10	1/4	AP92228
R10	350k	C	10	1/4	AP92230
R11	1k	C	10	1/4	AP92228
R12	10k	C	10	1/4	AP92231
R13	10k	C	10	1/4	AP92231
R14	1k	C	10	1/4	AP92228
R15	1k	C	10	1/4	AP92228

RESISTORS—Continued

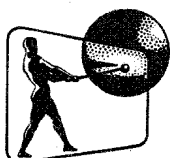
CCT No.	Value	Type	Tol. (%)	Rating (watts)	Part Number
R16	1k	C	10	1/4	AP92228
R17	1k	C	10	1/4	AP92228
R18	10k	C	10	1/4	AP92231
R19	1k	C	10	1/4	AP92228
R20	560k	C	10	1/4	AP92232
R21	2.2k	C	10	1/4	AP92234
R22	680	C	10	1/4	AP92235
R23	—	—	—	—	—
R24	47k	C	10	1/4	AP92236
R25	33k	C	10	1/4	AP92237
R26	3.9k	C	10	1/4	AP92238
R27	2.2k	C	10	1/4	AP92234
R28	1k	C	10	1/4	AP92228
R29	22	C	10	1/4	AP92239
R30	47k	C	10	1/4	AP92236
R31	6.8k	C	10	1/4	AP92240
R32	330	C	10	1/4	AP92241
R33	100	C	10	1/4	AP92242
R34	1.2k	C	10	1/4	AP92243
R35	330	C	10	1/4	AP92241
R36	1.2k	C	10	1/4	AP92243
R37	330	C	10	1/4	AP92241
R38	3.3	C	10	1/4	AP92244

MISCELLANEOUS

CCT No.	Description	Part Number
Q1	Transistor Type 2SC394 (Y)	AP92245
Q2	Transistor Type 2SC394 (O)	AP92375
Q3	Transistor Type 2SC380 (O)	AP92246
Q4	Transistor Type 2SC380 (Y)	AP92383
Q5	Transistor Type 2SC380 (O)	AP92246
Q6	Transistor Type 2SC371 (R)	AP92247
Q7	Transistor Type 2SB54	AP92369
Q8	Transistor Type 2SB54	AP92369
Q9	Transistor Type 2SB56	AP92248
Q10	Transistor Type 2SB56	AP92248
D1	Diode Type IN60	AP92249
D2	Diode Type IN60	AP92249
D3	Diode Type IN60	AP92249
D4	Diode Type IN60	AP92249
D91A	Thermistor	AP92250
	Speaker	AP91558

Title	Part Number
FM Ant. Coil	AP92379
FM R.F. Coil	AP92380
FM I.F. Trap	AP92381
FM Osc. Coil	AP92382
AM Osc. Coil	AP92378
AM I.F.T. (A)	AP92370
AM I.F.T. (B)	AP92371
AM I.F.T. (C)	AP92372
FM I.F.T. (A)	AP92373
FM I.F.T. (B) + (C)	AP92374
FM I.F.T. (D)	AP92376
FM I.F.T. (E)	AP92377
Volume Control	AP92260
Tuning Capacitor	AP92259

THE SERVICE DEPARTMENT



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