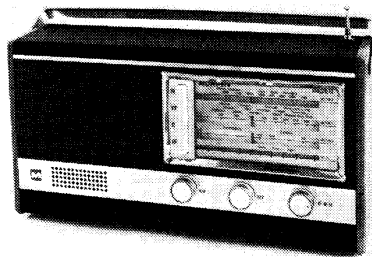


E R T

SERVICE CHART 1704



Murphy B837 battery portable receiver has wood cabinet covered in leather cloth with sides of oiled teak. Control panel of brushed aluminium matches ribbed aluminium handle and baffle is covered with charcoal grey fabric

MURPHY B837 PORTABLE

Additional copies of this chart 1s. 6d. including postage. Payment with order please to E R T, 33-39 Bowling Green Lane, London EC1.

PORTABLE radio using nine transistors and three diodes and tuning LW, MW, MW Bandsread and FM/VHF bands. A car aerial socket is fitted and some early models incorporated a battery economy switch.

Batteries. One 9V Ever Ready PP9 or equivalent.

Consumption. 25mA quiescent, 30mA average listening level.

Transistors. TR1 RF FM amplifier AF114; TR2 FM mixer oscillator AF115; TR3 AM mixer/oscillator FM IF amplifier AF115; TR4 IF amplifier AF116; TR5 IF amplifier AF116; TR6 AF amplifier OC71; TR7 driver OC81D; TR8 output OC81; TR9 output OC81.

Diodes. D1 AM detector OA90; D2, D3 FM detector OA79.

Wavebands. LW 1070-1900m (280-158kc/s); MW 187-570m (1605-525kc/s); MW bandsread 187-210m (1605-1430kc/s); VHF/FM 87.5-100mc/s.

IFs. AM 470kc/s; FM 10.7mc/s.

Aerials. Internal ferrite rod for three AM bands and telescopic rod aerial for FM band. Car aerial socket is provided, covering all bands.

Outlet. Socket is provided for earpiece with impedance 20-1000ohms. May alternatively be used for 15ohm external speaker or tape recording.

Output. 1W normal; 100mW economy operation.

Speaker. 7x4in. elliptical, flux density 8000 lines per square centimetre. Impedance 15ohms.

Dimensions. 8 $\frac{3}{8}$ x 15 $\frac{7}{8}$ x 4 $\frac{3}{8}$ in. Total height with carrying handle erected is 9 $\frac{3}{8}$ in.

Weight. 6 $\frac{1}{2}$ lb.

Manufacturer. Rank Bush Murphy Ltd.
Service Department. Drayton Road, Boreham Wood, Hertfordshire. Tel: 01-953 6151. Telex: 262741. Cables: Rankboom Boreham Wood.

DISMANTLING

RF chassis. Withdraw three control knobs, remove cabinet back and disconnect battery. Undo three 4BA nuts securing RF chassis to cabinet blocks and withdraw chassis to extent of leads. Release ferrite rod aerial from its mounting clips.

AF panel. Undo single knurled 4BA nut at left hand side of printed wiring panel and lift assembly clear from slot in cabinet side. If complete removal of both units is required, release interconnecting leads from cabinet baffle and unsolder as necessary.

VHF unit. Remove scale backing plate. Unsolder connections to VHF unit. Set tuning capacitor CV1/2 to minimum and remove locking screw on VHF calibration adjuster. Slip loop of FM tuning cord from boss of calibration adjuster. Remove four cross-head screws securing unit to its mounting bracket, also single screw holding unit next to tuning cord entry point. Lift unit clear of chassis and slip cord loop through hole in bracket. Ensure that earthing tags are correctly positioned under respective screws when reassembling.

SERVICE NOTES

Output stage. Replacement of components in output stage may necessitate resetting RV5. Set Avo model 8 to 50microamp DC range and connect it

across R39, observing polarity. With volume control set to minimum, adjust RV5 in accordance with following table:

Ambient temperature °C	Meter reading °F	Equiv- valent 50µA fsd mV	Output pair Iq in mA
22	71.6	9.2	21.45
27	80.6	11.6	29.04
34	93.2	14.2	35.64

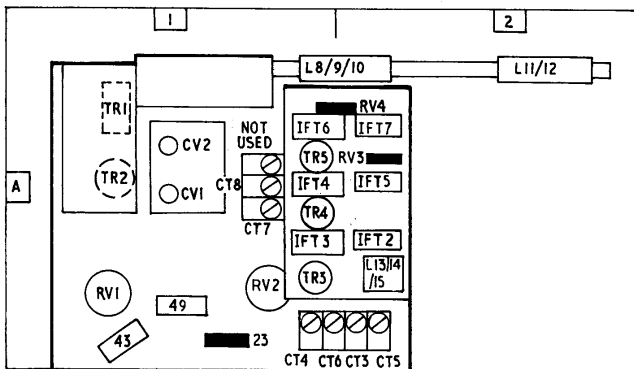
ALIGNMENT

Equipment required. AM signal generator covering 158-1605kc/s and 10.7-100mc/s, with provision for modulated and unmodulated signals; power output meter with ranges covering 0-1W, matching 15ohms impedance; Avo model 8 or a 0-2.5V DC valve voltmeter and a 5-0-5 microamp centre-zero meter; aerial loop; matched pair 220K $\frac{1}{4}$ W resistors; 100KpF capacitor; polystyrene cement; trimming tools.

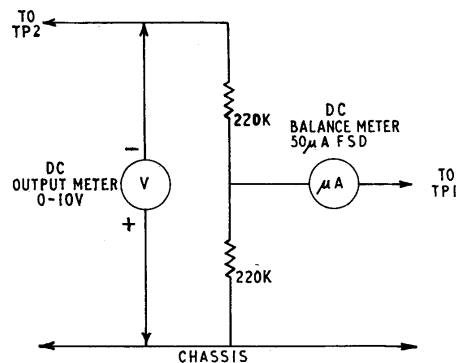
General. Allow signal generator to warm up for 15 minutes before starting alignment. Connect output meter to receiver using earphone socket if suitable plug is available.

Set volume control to maximum and tone control to maximum treble response. If a battery economy switch is fitted make sure that it is in the normal (H) position.

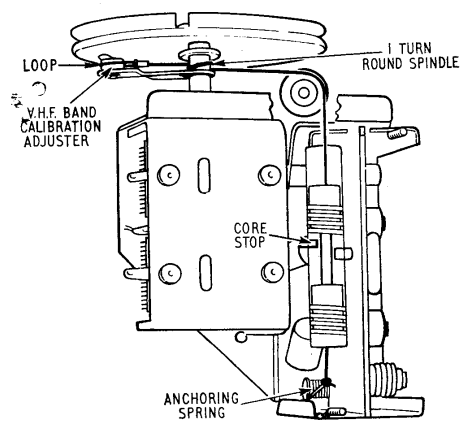
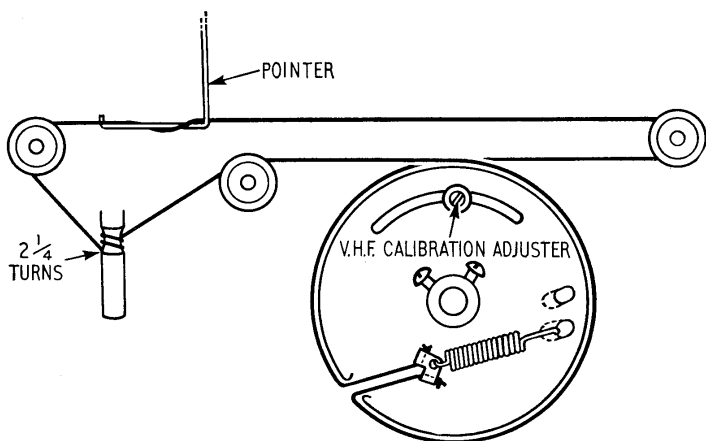
Note. Before starting alignment make sure that battery supply voltage is at least 9V. Under no signal conditions and with volume control set to minimum, check with Avo 8 that voltage across R17 is 1V DC. The correct reading may be obtained by adjusting RV3.



General layout of components on RF circuit board, resistors are shown solid black, capacitors in outline only



Connections for DC output meter and centre-zero balance meter used in FM alignment



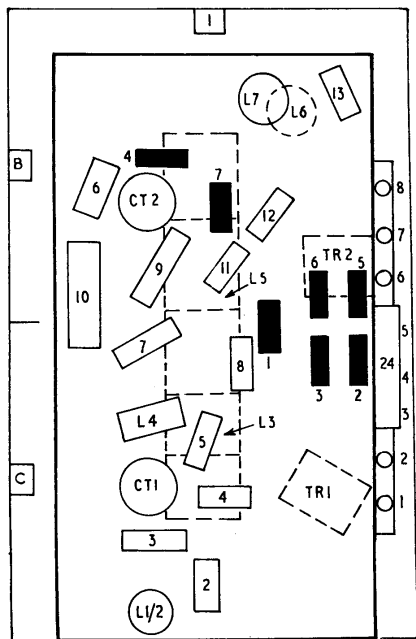
Above, AM drive cord layout; left, FM drive cord layout. Note turns around spindles

AM IF circuits. Outer alignment peak is correct one for these adjustments. Ensure that receiver output is kept at 50mW level by altering IF input signal as required.

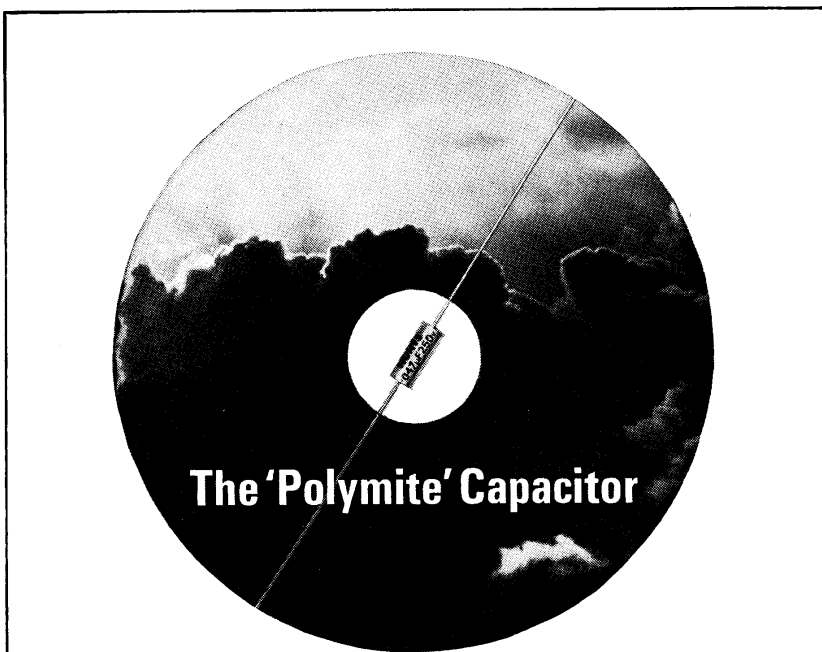
Switch receiver to MW and tune pointer to about 1000kc/s. Set signal generator to 470kc/s, modulated at 400c/s. Inject signal via 100KpF capacitor to base of TR3 and align IFT7, IFT5 and IFT2 in turn, to get maximum output.

FM IF circuits. Connect DC output meter and balance meter and two 220K resistors into circuit as shown in diagram. TP1 is junction of R24/C51 and TP2 is top end of C53. Set slider of balance control RV4 about half way along its track. Maintain input signal at level to give output voltage 0.5-1V on DC output meter.

Detune IFT3 by screwing in primary core one or two turns, and IFT4 by unscrewing secondary core by same amount. Switch receiver to VHF and



Layout of components on VHF/FM tuner unit



The capacitor that is undaunted by moisture and has no elaborate casing

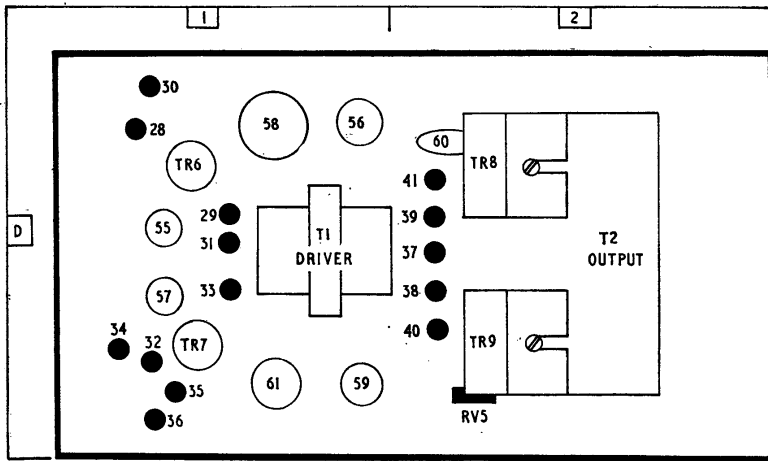
The * Hunt's M310 miniature 'Polymite' metallised film tubular capacitor suffers no ill effects from high humidity conditions. There is a rapid recovery of insulation resistance after exposure to moisture. Physical size is down, and a useful range of capacitance values is available. Impermeable 'polyester' film dielectric with the exclusive 'castellated' metallising is used to produce a sound capacitor which is truly miniature, while offering good electrical parameters.

Capacitance range: 100 pf to 47,000 pf
 Voltage ratings: 250 V.d.c. 500 V.d.c. 750 V.d.c.



ERIE ELECTRONICS LTD
 SOUTH DENES, GREAT YARMOUTH, NORFOLK
 Telephone: 0493 4911 Telex: 97421
 *Polymite' is a registered trademark





tune pointer to about 94mc/s. Set volume control to minimum.

Adjust signal generator to give 10.7mc/s signal modulated 30 per cent at 400c/s and inject this via 100KpF capacitor to base of TR3. Adjust primary core of IFT6 for maximum audio output, selecting the outer peak.

Adjust secondary core to get zero reading on DC balance meter, selecting the outer peak. Adjust primary and secondary cores of IFT3 for maximum output, selecting outer and inner peaks respectively. Readjust primary core for maximum. In same way adjust cores of IFT4, ending with readjustment of primary cores.

Set volume control to maximum and adjust RV4 for minimum audio output. Return volume control to minimum. Readjust IFT6 primary core for maximum output and secondary core for zero reading on DC balance meter.

Switch off modulation at signal generator, transfer IF signal to external aerial socket and adjust secondary core of IFT1 for maximum DC output.

AM RF circuits. Couple signal generator to receiver by aerial coupling loop about three feet from set. Line tuning pointer with datum dots at low frequency end of scale when tuning capacitor is fully meshed.

Set volume control to maximum and tone control to maximum treble response. Set battery economy switch to normal (H) position. Signal input level should be adjusted to give about 50mW output each time a final trimming adjustment is made.

Tune receiver to 500m MW and inject 600kc/s signal, 30 per cent modulated at 400c/s. Adjust L13/L14/L15 for maximum output.

Tune receiver to 200m and signal generator to 1500kc/s. Adjust CT3 for maximum output. Repeat adjustments at 600 and 1500kc/s to get tracking and calibration correct.

Tune receiver to 1400m LW. Inject 214kc/s signal and adjust CT5 for maximum output. Tune set to centre of "m" in "Luxembourg" on bandspread MW.

Inject 1439kc/s signal and adjust CT7 for maximum output. Check calibration at 1500kc/s using letter "o" of "Caroline" as reference point. Adjust CT3 if necessary.

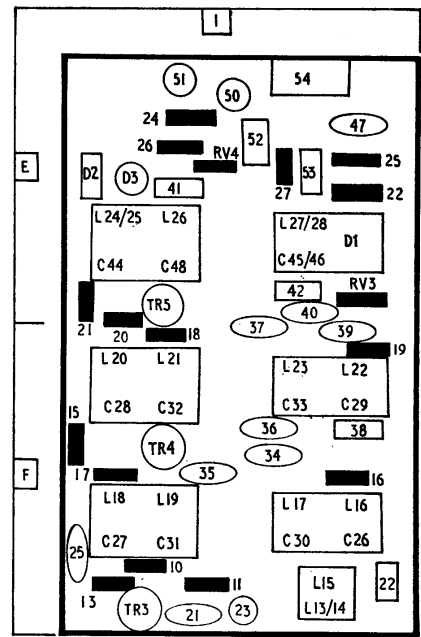
Select MW band and tune to 200m. Inject 1500kc/s signal and adjust CT4 for maximum output. Tune receiver to 500m and inject 600kc/s signal.

Adjust L11/12 by sliding former along ferrite rod to get maximum output.

Repeat adjustments at 1500kc/s and 600kc/s to get optimum gain at both points. Reseal L11/12 to ferrite rod using polystyrene cement.

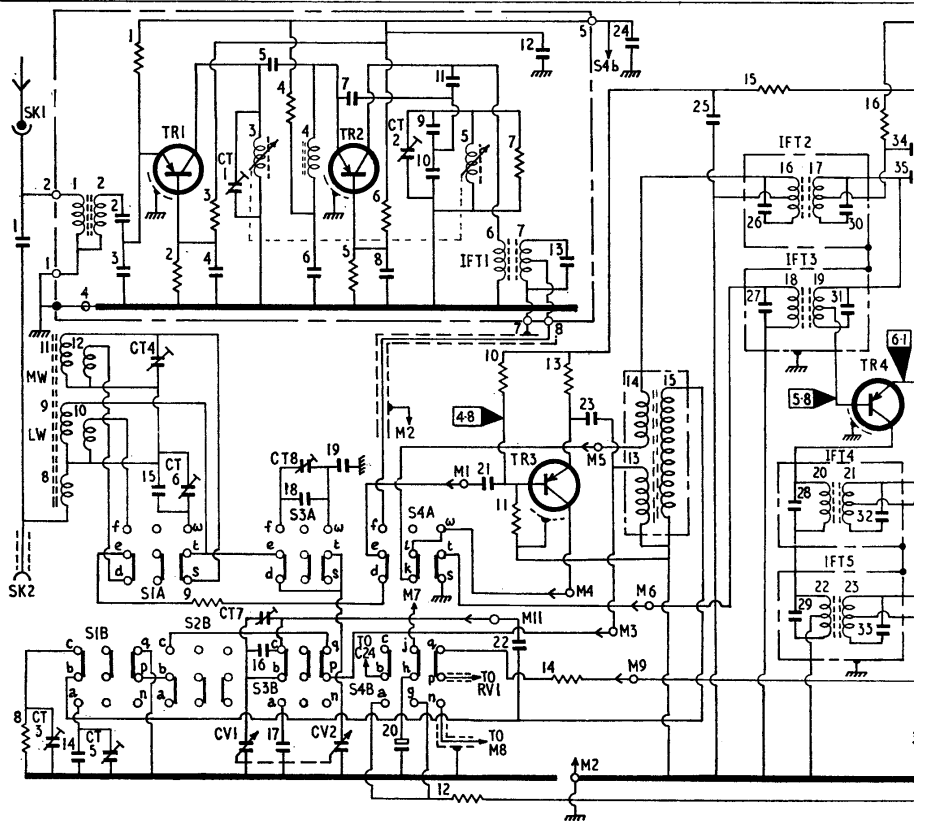
Switch receiver to LW and tune pointer to 1400m. Inject 214kc/s signal and adjust CT6 for maximum output. Select BS band and set tuning pointer to centre of letter "m" in "Luxembourg". Inject 1439kc/s signal and adjust CT8 for maximum output.

FM circuits. First ensure that screening cover of VHF unit is securely in position.



Components on audio panel, above left, and directly above, component layout on IF panel

R	8		1	2	9	3	4	5	6	12	10	7	13		15	16															
C	1	14	CT3	CT5	2	CT4	CT6	4	CT1	CV1	5	CT8	19	7	8	CT2	9	11	12	13	24	25	26	28	30	32	34				
L	11	1	2					3	4													14	15		16	17	20	21	31	33	35
		9	8	12	10						5	6	7									13			18	19	22	23			



CAPACITORS			RESISTORS			POTENTIOMETERS								
C1	10pF	—	C31	180pF	F1	CT1	6-25pF	C1	R20	680	E1	R35	68	D1
C2	47pF	—	C32	180pF	F1	CT2	3-10pF	B1	R21	220	E1	R36	820	D1
C3	22pF	—	C33	560pF	F1	CT3	3-30pF	A2	R22	15K	E1	R37	150	D2
C4	1KpF	C1	C34	47KpF	F1	CT4	3-30pF	A1	R23	1K8	A1	R38	3K9	D2
C5	5.6pF	C1	C35	3KpF	F1	CT5	3-30pF	A2	R24	1K8	E1	R39	3.3	D2
C6	470pF	B1	C36	47KpF	F1	CT6	3-30pF	A2	R25	330	E1	R40	150K	D2
C7	4.7pF	C1	C37	3KpF	F1	CT7	3-40pF	A1	R26	1K	E1	R41	150	D2
C8	1KpF	C1	C38	8mF	F1	CT8	3-40pF	A1	R27	12K	E1			
C9	47pF	B1	C39	3KpF	F1	CV1	gang	A1	R28	15K	D1	POTENTIOMETERS		
C10	47pF	B1	C40	3KpF	E1	CV2	gang	A1	R29	82K	D1	RV1	5K	A1
C11	220pF	B1	C41	300pF	E1				R30	1K	D1	RV2	10K	A1
C12	1KpF	B1	C42	1KpF	E1				R31	5K6	D1	RV3	50K-160K	E1 A2
C13	70pF	B1	C43	47KpF	A1				R32	8K2	D1	RV4	500-1K8	E1 A1/2
C14	470pF*	—	C44	300pF	E1				R33	39K	D1	RV5	1K5-5K	D2
C15	150pF	—	C45	250pF	E1				R34	330	D1			
C16	33pF	—	C46	10KpF	E1									
C17	33pF	—	C47	10KpF	E1									
C18	12pF	—	C48	50pF	E1									
C19	33pF	—	C49	220KpF	A1									
C20	350mF	—	C50	20KpF	E1									
C21	10KpF	F1	C51	4mF	E1									
C22	560pF	F1	C52	1KpF	E1									
C23	20KpF	F1	C53	8mF	E1									
C24	20KpF	C1	C54	100KpF	E1									
C25	47KpF	F1	C55	8mF	D1									
C26	560pF	F1	C56	120mF	D1									
C27	180pF	F1	C57	8mF	D1									
C28	180pF	F1	C58	350mF	D1									
C29	560pF	F1	C59	100mF	D1									
C30	560pF	F1	C60	100KpF	D2									
			C61	100mF	D1									

Check that tuning pointer is in line with datum dots at low frequency end of scale when tuning capacitor is fully meshed.

Switch receiver to VHF band and connect signal generator to car aerial socket. Connect DC output meter into circuit as for FM IF alignment. Calibration is effected by means of a pivoted-lever core adjuster (see drive cord lacing

diagram). A locking screw is provided on tuning drum of CV1/2 so that lever may be released during calibration and locked after adjustment is completed.

FM oscillator and RF. Set tuning pointer to 94mc/s and inject unmodulated signal of 94mc/s. Slacken pivoted-lever locking screw and adjust lever for maximum DC output. Tighten locking screw.

This adjusts cores of L3 and L5.

FM aerial. With receiver and generator set as above adjust core of L1/2 for maximum DC output. Check calibration at 87.5mc/s and 100mc/s.

Note: RF trimmer CT1 and oscillator trimmer CT2 have been pre-set at 94mc/s during production. It is unlikely that these settings will subsequently vary and therefore no procedure is given for them.

Circuit diagram for Murphy B837 showing switches in MW position. Voltages with respect to chassis, measured with Avo 8 on 10V range under no signal conditions on VHF with volume control on minimum

