

MURPHY B818

portable transistor receiver

This receiver uses seven transistors and one diode. It covers l.w. (1070m, to 1900m, 280kc/s to 158kc/s); m.w. (187m to 570m, 1605kc/s to 525kc/s); and there is pre-set tuning of Radio Luxembourg on 208m (1439kc/s). The receiver is fitted with two sockets, one for use with a car aerial and the other for use with an earpiece of between 20Ω and 1000Ω impedance, or an extension l.s. of 15Ω impedance.

The quiescent current consumption is 15mA and the consumption for average listening-levels is about 25mA. The audio output is 1W maximum from the 15Ω elliptical loudspeaker.

The transistors employed are: AF117, mixer/oscillator; AF117, first i.f. amplifier; AF117, second i.f. amplifier; OC71, audio amplifier; OC81D, driver; two OC81, push-pull output pair. The detector diode is an OA90.

The Bush TR130 is equivalent to the Murphy B818.

DISMANTLING

Remove the bottom of the cabinet by turning the two fasteners and pulling it off. Remove and disconnect the battery. Place the receiver on a soft surface, loudspeaker grille downwards, and separate the two halves of the cabinet. Lift off the top half. Unscrew the two 4 B.A. nuts which fasten the bottom edge of the chassis and loosen the two screws which secure the top edge of the scale-surround. Lift out the chassis to the extent permitted by the leads of the loudspeaker.

To replace the chassis in the cabinet, reverse the above procedure.

Replacing The Drive-cord

Remove the tuning-pointer, reflector, tuning capstan and the two halves of the nylon bearing. Fit a 36in length of drive-cord; start by looping the mid-point of the cord around the spigot of the drive-drum. Before replacing the capstan, assemble the cord as shown in Fig. 2, finally tying off the ends with an eyelet while maintaining the tension against the tension-pulley.

Refit the pointer-carrier, reflector and pointer, and the check calibration by

replacing the chassis in the cabinet and moving the pointer to correspond with the datum marks on the right of the tuning-scale when the tuning capacitor is fully meshed.

ALIGNMENT PROCEDURE

Connect a 15Ω output wattmeter in place of the loudspeaker, or leave the loudspeaker connected and connect an a.c. voltmeter of high sensitivity (5V range) across it. During the alignment, keep the levels of the injected signals such as to give about 50mW output from the receiver—this corresponds to a reading of about 0.87V on the voltmeter.

I.F. Stages

Switch the receiver to m.w. and tune it to about 300m. Tune the signal generator to 470kc/s modulated to 30% at 400c/s. Connect the output via an isolating capacitor of $0.1\mu\text{F}$ to the junction of R1 and SAe. Adjust the cores of i.f.t.3, i.f.t.2, and i.f.t.1, in that order, for maximum output. Align each i.f.t. once only. Note that the outer peak is the correct one for all i.f.t. adjustments.

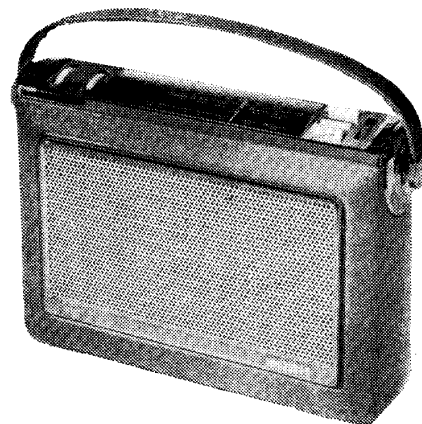
R.F. Stages

Turn the tuning capacitor to maximum capacity and make sure that the pointer lines up with the datum mark at the l.f.-end of the scale. Connect the signal generator to the car-aerial socket of the receiver via a capacitor of 10pF . In order to make the r.f. alignment easier, the receiver may be reduced in sensitivity if require by connecting an $8.2\text{k}\Omega$ resistor between the junction of R7 and R11 and chassis.

Switch the receiver to m.w. and tune it to 500m. Inject 600kc/s and adjust L11/L12/L13 for maximum output. Tune the receiver to 200m and the generator to 1500kc/s. Adjust C14 for maximum output. Repeat these two operations for optimum calibration.

Switch the receiver to l.w. and inject 214kc/s, tuning the receiver to 1400m. Adjust C16 for maximum output.

Switch the receiver to 'Luxembourg' and inject a 1mV signal (80% modul-



The Bush TR130

RELEASE DATES AND ORIGINAL PRICES

Murphy B818: August 1965; 15gn

Bush TR130: August 1965; 15gn

ated) at 1439kc/s. Adjust the core of L8/L9/L10 for *minimum* output—the output will rise on each side of the correct tuning point. For this adjustment, it is essential for the signal generator to be tuned accurately to 208m and this should be checked during transmission hours by the usual 'beat' method. It is advisable to check the tuning of the receiver against the actual Radio Luxembourg transmissions to confirm the accuracy of the adjustments.

Switch the receiver to m.w. and tune it to 500m. Tune the signal generator to 600kc/s and adjust the position of L2/L3 on the ferrite rod for maximum output. Tune the receiver to 200m and the generator to 1500kc/s and adjust C1 for maximum output. Repeat these two adjustments for optimum results.

Switch the receiver to l.w. and tune it to 1400m. Tune the signal generator to 214kc/s and adjust C6 for maximum output.

Switch the receiver to 'Luxembourg' and inject 1439kc/s. Adjust C3 for maximum output.

Finally, seal L2/L3 into position on the ferrite rod. Note that the position of L/4L5/L6 on the ferrite rod should not be altered.

Replacement of Aerial

If the ferrite rod or aerial coils are replaced, make sure that the original sleeving is kept in position between the coil-formers and the rod. Position the m.w. coil (L2/L3) at the end of the rod nearest the tone and volume controls, and the l.w. coil (L4/L5) at the end of

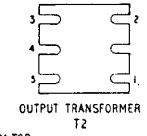
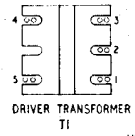
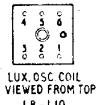
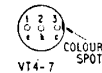
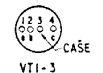
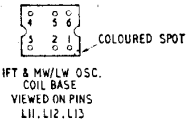
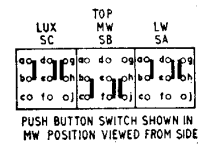
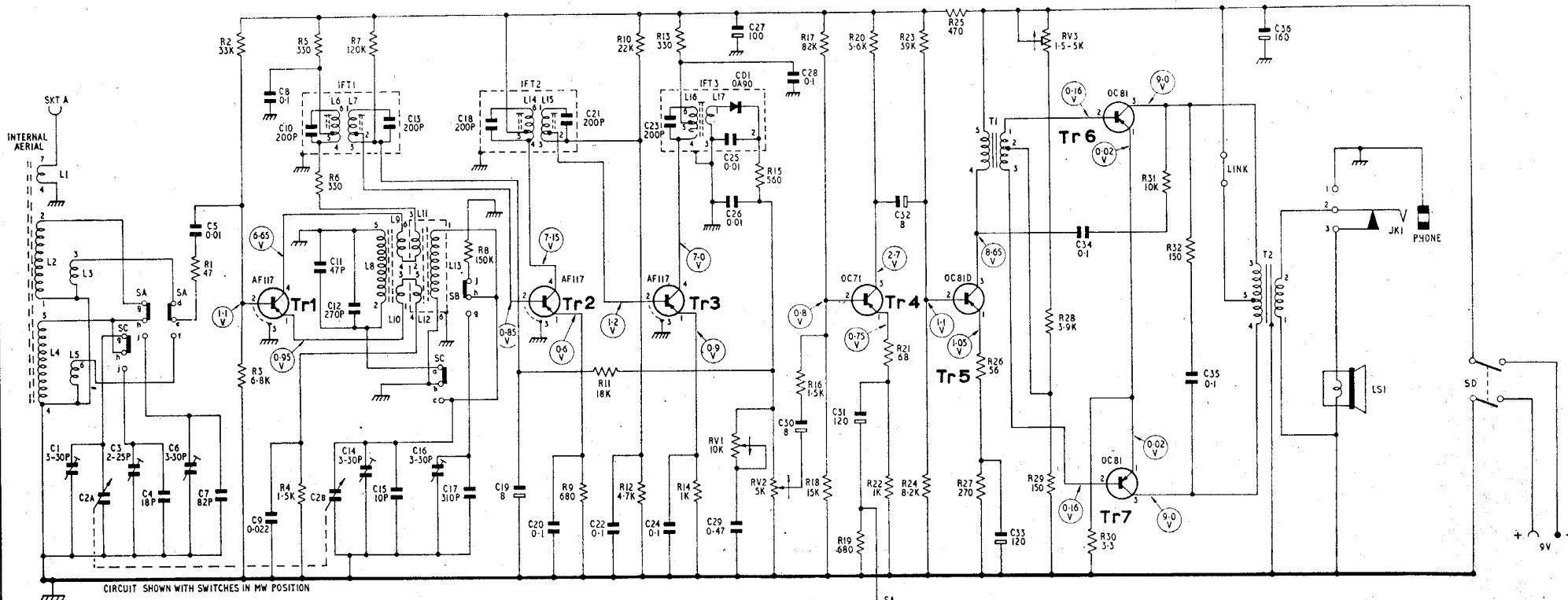


Fig. 1 (above)—The circuit diagram of the receiver. The voltages shown were measured with no signal input and are negative with respect to chassis; the volume control was at its minimum setting.

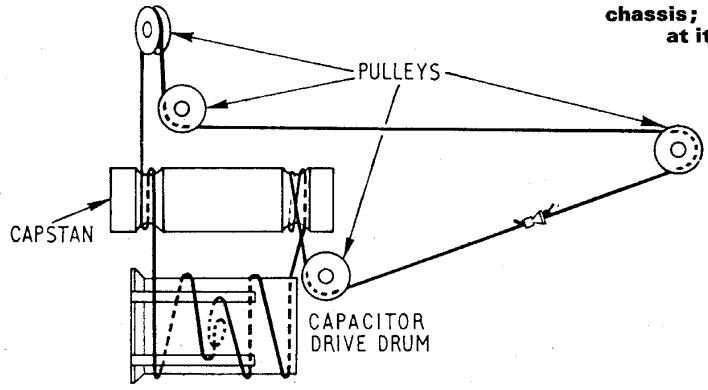


Fig. 2 (left)—The drive-cord system viewed with the reflector removed.

the rod nearest the tuning knob. The m.w. coil should be $\frac{3}{8}$ in from the end of the rod and the l.w. coil-former should be 1 in from the end of the rod.

Inject signals via a 10pF capacitor to the car-aerial socket. Switch the receiver to l.w. and inject 176kc/s, tuning the receiver to 1700m. Adjust the position of L4/L5 on the ferrite rod for maximum output. Tune the receiver to 1200m and the generator to 250kc/s. Adjust C6 for maximum output. Repeat the above two adjustments for optimum results, and then follow with the alignment procedure given earlier

After the alignment, seal the aerial coils into position on the ferrite rod.

Adjustment Of RV3

If components are replaced in the output stage, it may be necessary to adjust RV3. Connect the receiver to a 9V power supply and connect a millivoltmeter of high sensitivity across R30, with the positive lead connected to chassis. Adjust RV3 for a reading of 23mV, corresponding to a current of 7mA through R30. This adjustment should be made at an ambient temperature of 65°F.