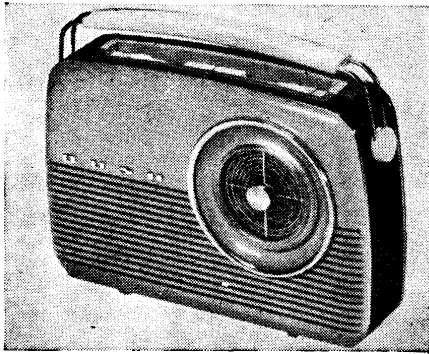


"TRADER" SERVICE SHEET

1459

BUSH TR82B

2-band 7-transistor Portable Receiver



Appearance of the Bush TR82B.

THE Bush TR82B is a 2-band transistor portable receiver housed in a plastics case. It is fitted with seven Mullard transistors, a Mullard germanium diode, a press-button waveband switch, and an internal aerial. A co-axial socket is provided for the connection of a car aerial. The waveband ranges are 187-570m (M.W.) and 1,070-1,900m (L.W.).

The TR82C employs a similar chassis to the TR82B. The finish of the cases differs: C, chrome and blue; B, brown and brass.

Release date and original price: both models, May 1959, £17 8s 11d. Purchase tax extra.

TRANSISTOR ANALYSIS

Transistor voltages given in the table (col. 2) are those derived from the manufacturers' information. They were measured on a model 8 Avometer, chassis being the positive connection in each case. There was no signal input and the volume control was at minimum.

Battery consumption is between 20mA

and 30mA on an average programme and varies according to the volume control setting.

Transistor*	Emitter (V)	Base (V)	Collector (V)
TR1 OC44	1.1	1.0	6.4
TR2 OC45	0.25	0.35	7.2
TR3 OC45	0.45	0.6	7.0
TR4 OC71	1.0	1.1	1.5
TR5 OC78d	1.3	1.5	8.3
TR6 OC78†	—	0.2	9.0
TR7 OC78†	—	0.2	9.0

*See "Early Versions" overleaf. †Matched pair.

CIRCUIT DESCRIPTION

L1-L5 are mounted on a ferrite rod. For L.W. reception, aerial coil L3 is tuned by C1, C3-C5; for M.W. reception, L2 and L3 are connected in parallel and tuned by C1, C2. A socket is provided for the connection of an external aerial, which is coupled to the aerial coils via L1. L4 (M.W.) and L5 (L.W.) are placed adjacent to the aerial coils and provide low impedance coupling to the base of the self-oscillating mixer TR1.

Local oscillations are produced by feedback from the collector to the emitter

Resistors

R1	22kΩ	F4
R2	20kΩ	F4
R3	1kΩ	F4
R4	1.8kΩ	F4
R5	180kΩ	F4
R6	10kΩ	F4
R7	220Ω	F4
R8	7kΩ	F4
R9	2kΩ	F4
R10	270Ω	F4
R11	2.2kΩ	F4
R12	470Ω	F4
R13	15kΩ	F4
R14	5kΩ	C1
R15	1.8kΩ	F4
R16	7.5kΩ	F4
R17	330Ω	D3
R18	5.6kΩ	B2
R19	1.2kΩ	F4
R20	470Ω	B2
R21	10kΩ	A1
R22	9.1kΩ	C1
R23	9.1kΩ	C1

Capacitors

C1	523pF	A1
C2	30pF	B1
C3	30pF	B1
C4	30pF	B1
C5	150pF	E3
C6	0.04μF	F3
C7	0.04μF	F4

C8	0.02μF	F4
C9	400pF	A2
C10	200pF	A2
C11	30pF	B1
C12	10pF	E4
C13	490pF	E4
C14	30pF	B1
C15	30pF	B1
C16	556pF	F4
C17	523pF	A1
C18	0.04μF	F4
C19	6.8pF	F4
C20	400pF	A2
C21	200pF	A2
C22	0.04μF	E4
C23	8μF	F4
C24	0.04μF	E4
C25	200pF	B2
C26	0.04μF	E4
C27	27pF	F4
C28	0.01μF	B2
C29	8μF	B2
C30	0.04μF	B1
C31	100μF	E4
C32	100μF	E4
C33	500μF	D3
C34	0.01μF	C1
C35	0.25μF	A1
C36	100μF	C2

Coils*

L1	0.8	F3
L2	0.5	D3

L3	12.0	F3
L4	—	D3
L5	1.5	F3
L6	—	A2
L7	—	A2
L8	2.0	A2
L9	5.5	A2
L10	8.0	A2
L11	5.5	A2
L12	8.0	A2
L13	9.0	B2
L14	0.8	B2
L15	3.0	C2

Transformers*

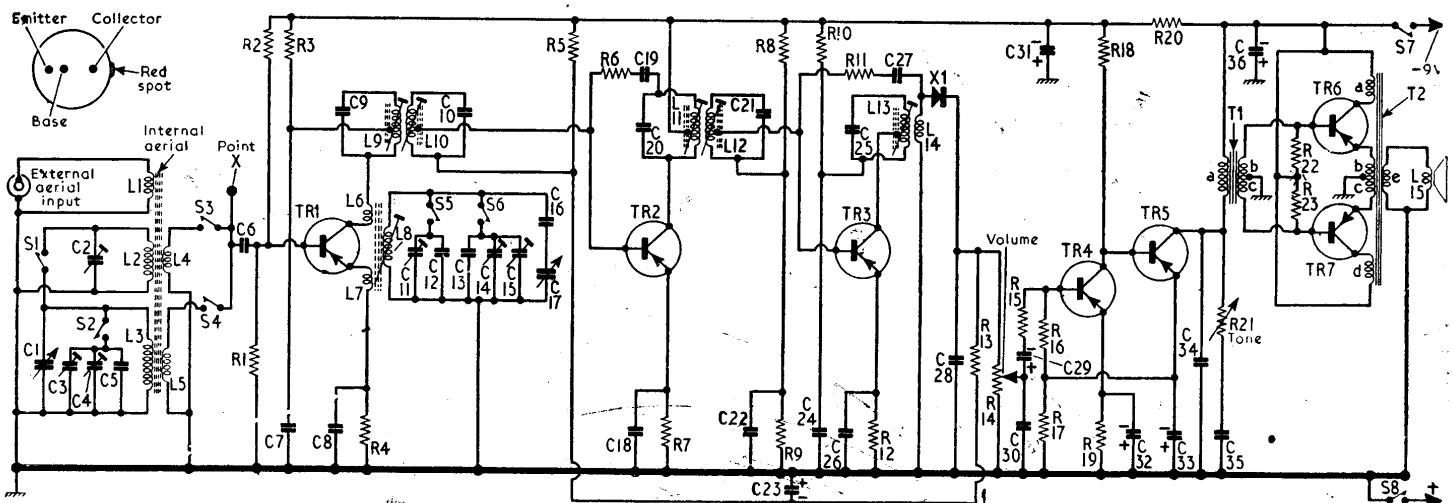
T1	170.0	C1
a	200.0	
b	200.0	
c	200.0	
T2	2.6	C2
a	10.0	
b	10.0	
c	2.6	
d	0.19	

Miscellaneous

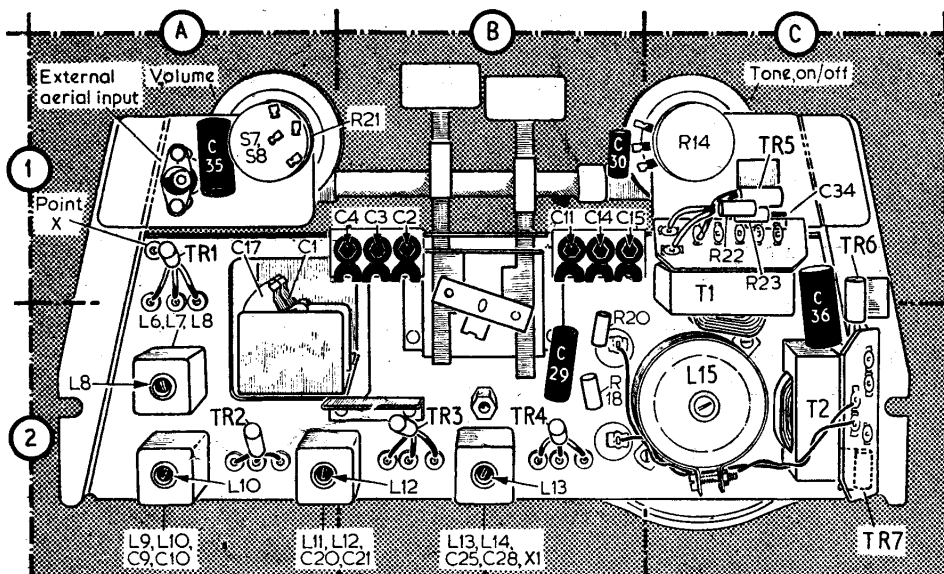
X1	OA70	B2
S1-S4	—	E3
S5, S6	—	E4
S7, S8	—	A1

*Approximate D.C. resistance in ohms.

If component numbers in these tables are used when ordering spares, the fact should be mentioned, as these numbers may differ from those used by the manufacturer.



Circuit diagram of the Bush TR82B together with a diagram of the transistor base connections. Waveband switches S1, S3 and S5 close on M.W., connecting L2 and L3 in parallel. Switches S2, S4 and S6 close on L.W.

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Rear view of the chassis. Point X in location reference A1 is provided for the connection of a signal generator during I.F. alignment. Output transistors TR6 and TR7 are mounted on the right of the chassis; TR7 is hidden by T2 and is shown dotted in this illustration.

circuits of TR1. Oscillator coil L8 is tuned by C16, C17, C11 and C12 (M.W.) and by C16, C17, C13-C15 (L.W.).

The output of TR1 is coupled via a two-stage intermediate frequency amplifier comprising earthed-emitter transistors TR2, TR3, double-tuned transformers L9, L10 and L11, L12, and single-tuned transformer L13, L14 to germanium diode detector X1. Base bias for TR1, TR2 and TR3 is provided by the potential divider R2, R1; R5, R13, R14; and R8, R9 respectively. Collector currents are stabilized by emitter resistors R4, R7 and R12. TR2 and TR3 are neutralized by R6, C19 and R11, C27.

Intermediate frequency 470kc/s.

The audio frequency component in the rectified output of X1 is developed across volume control R14 and passed via C29, R15 to the A.F. amplifier TR4. A.G.C. bias is derived from the D.C. component of the rectified signal developed across R14, which is fed back to the base circuit of TR2 via decoupling components R13, C23.

The output of TR4 is D.C. coupled to the base of driver stage TR5, and thence via T1 to the bases of the Class B push-pull output transistors TR6, TR7.

CIRCUIT ALIGNMENT

Equipment Required.—A signal generator covering the frequency range 214kc/s to 1,500kc/s, modulated 30 per cent at 400c/s; an A.C. voltmeter for use as an output meter; a length of insulated wire to form a coupling loop; a 0.1µF capacitor; and a non-metallic trimming tool having a small screwdriver blade for adjusting the cores of the I.F. transformers.

Allow the signal generator to warm up for at least 15 minutes before commencing the alignment operations. If two peaks are found when adjusting the cores of the I.F. transformers, the correct one is that nearer the adjusting end of the coil can. Maintain the signal generator out-

put as low as practicable at all times during the alignment procedure in order to avoid A.G.C. action.

- 1.—Remove the chassis from the cabinet as described under "Dismantling" in col. 3.
- 2.—Switch the receiver to M.W. and tune it to approximately 300m. Set the volume control to maximum and the tone control for maximum top response. Connect the output meter across the speaker and the signal generator to point X (location reference A1), via the 0.1µF capacitor.
- 3.—Feed in a modulated 470kc/s signal and adjust the cores of L13 (B2), L12 (B2), L11 (E4), L10 (A2) and L9 (F4) in that order for maximum output.
- 4.—Replace the chassis in the case and check that with the tuning gang set at maximum capacitance the pointers coincide with the horizontal datum line on the tuning scale.
- 5.—Connect the generator output leads to the length of insulated wire, formed into a loop about 7in across. Place the loop 3

feet from the chassis and with its plane at right angles to the ferrite rod aerial.

- 6.—Switch the receiver to M.W. and tune it to 500m. Feed in a 600kc/s signal and adjust L8 (A2) for maximum output. The M.W. aerial coil L2 (D3) is unlikely to require adjustment. However, should this be found necessary, feed in a 600kc/s signal and slide the former of L2 along the ferrite rod for maximum output.
- 7.—Tune the receiver to 200m. Feed in a 1,500kc/s signal and adjust C11 and C2 (location reference B1) for maximum output.
- 8.—Repeat operations 6 and 7.
- 9.—Switch the receiver to L.W. and tune it to 1,400m. Feed in a 214kc/s signal and adjust C14, C15 and C3, C4 (location reference B1) for maximum output. The L.W. aerial coil L3 (F3) should not be disturbed.

DISMANTLING

Removing Chassis.—Loosen the large screw in the centre of the back cover and remove the cover; disconnect and remove the battery;

remove the tuning control knob and pointer. As the tuning knob is difficult to grip with the hand, the manufacturers' recommend that it be pulled off with the aid of a rubber suction pad sink cleaner. Do not use a screwdriver or other tool as a lever; move four Phillips head chassis retaining screws;

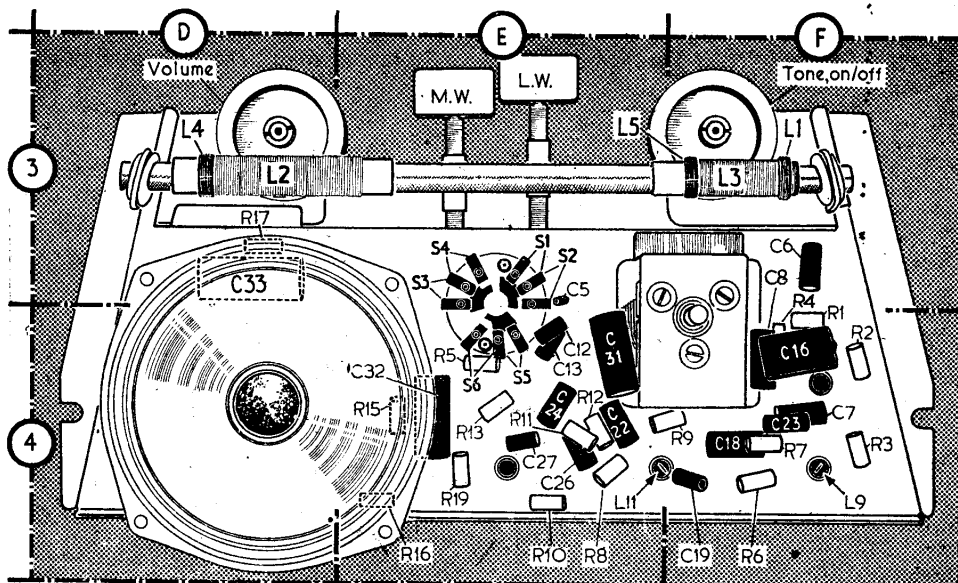
pull the lower edge of the chassis outwards and then downwards to allow the tuning gang spindle and control knobs to clear the holes in the case.

GENERAL NOTES

Switches.—The waveband switches S1-S6 are ganged in a single rotary unit and are operated by means of two press-buttons. The unit is shown in our front view illustration of the chassis in location references E3, E4, where the contacts are identified. S1, S3 and S5 close on M.W. and S2, S4 and S6, on L.W.

Batteries.—The batteries recommended by the manufacturers are an Ever Ready PP9, a Vidor T6009, or a Drydex DT9, rated at 9V each.

Early Versions.—In early versions of this receiver TR4-TR7 are Mullard OC72's. C12 is 22pF; C13, 470pF; C23, 4µF; R16, 8.2kΩ; R18, 6.8kΩ; and R22, R23 are 10kΩ.



Front view of the chassis. Components which are hidden by the speaker are shown dotted. The waveband switch unit S1-S6 is shown in E3, E4, where the contacts are identified.