

**C · R · T · S**

SERVICING ORGANISATION FOR

**R101**  
REGENTONE

**R · G · D**

**ARGOSY**

**EMERSON**

# SERVICE MANUAL

**PERSONAL PORTABLE**

**REGENTONE**

**MODEL BT18**

FOR TECHNICAL INFORMATION

OR SPARE PARTS

TELEPHONE ROMFORD 64571

OR WRITE TO:

**COMBINED RADIO AND TELEVISION SERVICE LIMITED**

BRIDGE CLOSE · OLDCHURCH ROAD · ROMFORD · ESSEX

## GENERAL DESCRIPTION

This transistor personal radio receiver employs six transistors and a crystal diode. Printed Circuit technique is used.

A ferrite rod aerial located behind the linear scale ensures adequate sensitivity. A jack socket for connecting a light-weight earpiece is provided in the side of the case.

**Voltage** Is supplied by an Ever Ready PP3 battery or a direct equivalent.

**I.F.** 470 Kc/s.

### Waveband Coverage

Long Wave 164-280 Kc/s.  
Medium Wave 540-1600 Kc/s.

### Controls

(From Front)  
Left Hand Side Volume ON/OFF.  
Earpiece Socket.  
Right Hand Side. Tuning.  
Wavechange Switch.

### Battery Consumption

No Signal 6.4-8 mA.  
Operating 19 mA for 50 mW continuous Sine Wave.

**Loudspeaker** 2" round 80 ohms impedance.

**Overall size** 5 $\frac{1}{16}$ " x 3 $\frac{1}{8}$ " x 1 $\frac{1}{4}$ " **Weight** 11 $\frac{1}{2}$  oz.

## CIRCUIT DESCRIPTION

The M.W. space wound aerial coil is situated in the middle of the ferrite rod with the L.W. aerial coil and the M.W. tuning coil at opposite ends. Tuning on M.W. is provided by C18, C18A. On L.W. CI is added in parallel.

Signals from the secondary windings of the ferrite aerial are fed to the base of XI operating as a mixer oscillator.

The Emitter of XI is connected to L5 a low impedance winding on the oscillator transformer. Oscillator tuning is obtained from C4, C19, C19A on M.W. with the addition of TCI, C17 in parallel on L.W.

Signals from the collector of XI are passed via L4 to L6, the tuned primary winding of the first I.F.T. From the low impedance secondary winding L7, signals are fed to X2 and X3 operating as common emitter I.F. amplifiers. Neutralising for X2 and X3 is by C6, R6, C7, R10 respectively.

A.V.C. is fed back from SCR1 via R5 L7 to the base of X2. Audio Signals from the diode SCR1 are passed via RVI (volume) to the base of the driver stage X4.

The collector of X4 has the primary winding of the step down transformer TI directly fed from the negative nine volt supply. The two secondary windings of TI are connected to X5, X6, each operating in a common emitter Class B condition, to form a single ended push pull stage.

No output transformer is required as the high impedance loudspeaker is connected via C16 to the emitter/collector of X5, X6. Negative feedback is also taken from this point to the emitter of X4 via R22.

In series with the loudspeaker is the switched jack socket for use with an earpiece which should be of 80 ohm impedance (or higher).

## CHASSIS REMOVAL

Remove the back cover by pulling. Unclip the battery from the contact strip, taking care not to break the flying leads. Remove the three screws holding the Printed Circuit board to the case. Unscrew the jack socket retaining ring located on the outside of the case, and push the jack socket free of the cabinet. Remove the chassis and speaker from the case.

## ALIGNMENT

**I.F.** The alignment can be carried out with the chassis in the cabinet.

1. Connect an 80 ohm impedance output meter or an AVO 8 meter switched to the 10V A.C. range in place of the speaker (by connecting via the jack socket).
2. Set the tuning capacitor to minimum capacity and the volume control to maximum output.
3. Wind three turns of P.V.C. covered wire around the cabinet (at right angles across the ferrite rod).
4. Inject a 470 Kc/s signal 30% mod. at 400 c/s from a low impedance signal generator source to the wire loop via a 390 ohm resistor.
5. Adjust the cores of L10, L8, L6 for maximum output - sensitivity approximately 40  $\mu$ V for 3.2 V. R.M.S. (1K load) across speaker jack (or 50 mW on an 80 ohm output meter).

## R.F.

1. Switch to M.W.
2. Tune the receiver to 500 metres on the scale and inject 600 Kc/s from the generator to the wire loop.
3. Adjust the core of L3 and the M.W. tuning coil L1A for maximum output.
4. Tune the receiver and generator to 200 metres (1500 Kilocycles) and adjust C18A, C19A for maximum output.
5. Repeat operations 3 and 4 until no further improvement results.
6. Switch to L.W.
7. Tune to 1330 metres and inject 225 Kc/s and adjust TCI for maximum output.
8. Retune to 1500 metres and adjust L.W. aerial coil for maximum output on Droitwich or 200 Kc/s Signal.

## SPARE PARTS

DESCRIPTION	SPARE PARTS	PART NO.
Cabinet Front White	.. .. .	158/0042
Cabinet Back - Salmon Pink	.. .. .	158/0043/1
" " Black	.. .. .	158/0043/2
" " Blue	.. .. .	158/0043/3
Trim Scale Grey	.. .. .	757/0090
" " Yellow	.. .. .	757/0090/1
" " Orange	.. .. .	757/0090/2
Wave Change Switch	.. .. .	818/0014
Scale backing plate	.. .. .	633/0015
Drum Drive	.. .. .	324/0008
Knob Tuning	.. .. .	519/0052
Transformer Driver	.. .. .	908/0047
Volume Control On/Off switch	.. .. .	649/0035
Speaker	.. .. .	787/0046
Aerial Coil Assembly	.. .. .	204/0623
Oscillator Coil Assembly	.. .. .	203/0080
1 FT(1), 1 FT(2)	.. .. .	206/0044
1 FT(3)	.. .. .	206/0045
Diode OA70	.. .. .	715/0011
Connector Battery Dual	.. .. .	227/0030
Socket jack miniature	.. .. .	779/0025

## CAPACITORS

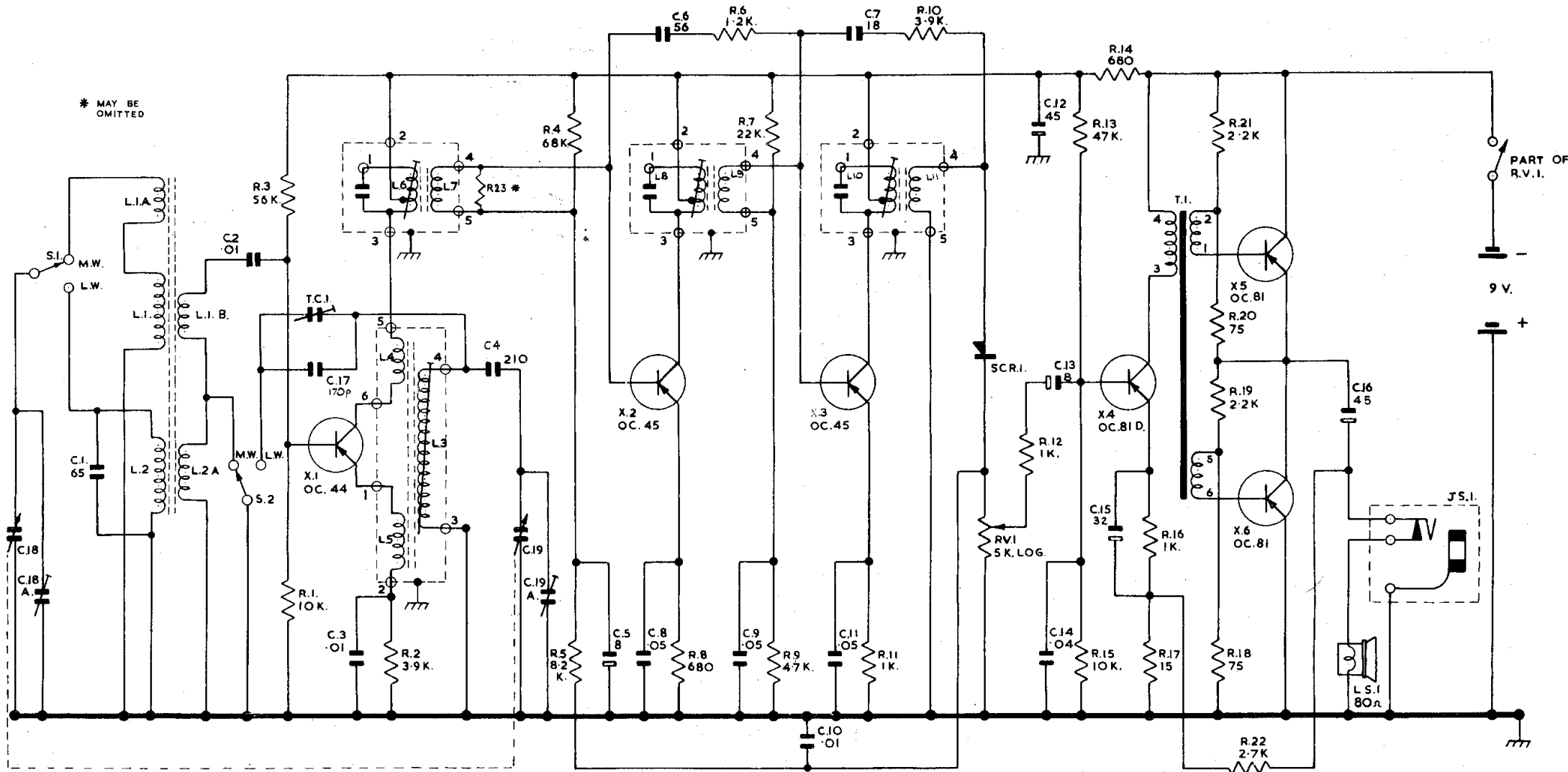
Circuit Ref.	Value	Tol. %	Type	Volts	Part No.
CI	65 pF	2%	G.E.C. Poly Foil	125 V	224/0077
C2, 3, 10	.01 $\mu$ F	-	Hunts GSX710	30 V	222/9013
C4	210 pF	2%	G.E.C. Poly Foil	125 V	224/0079
C5, 13	8 $\mu$ F	-	Plessey	6 V	215/0132
C6	56 pF	5%	Erie Y	-	224/0080
C7	18 pF	5%	Erie N 330/831	-	222/0220
C8, 9, 11	.05 $\mu$ F	+80 -20	Hunts GSY712	30 V	222/9014
C12, 16	45 $\mu$ F	-	Plessey	10 V	213/0134
C13	8 $\mu$ F	-	Plessey	6 V	213/6132
C14	.04 $\mu$ F	20%	Hunts W99	150 V	219/4045
C15	32 $\mu$ F	-	Plessey	6 V	213/0133
C17	170 pF	10%	G.E.C. Poly Foil	125 V	224/0078
Trimmer TCI					220/0025
Tuning C18, C19, C18A, C19A					217/0025

## TRANSISTORS

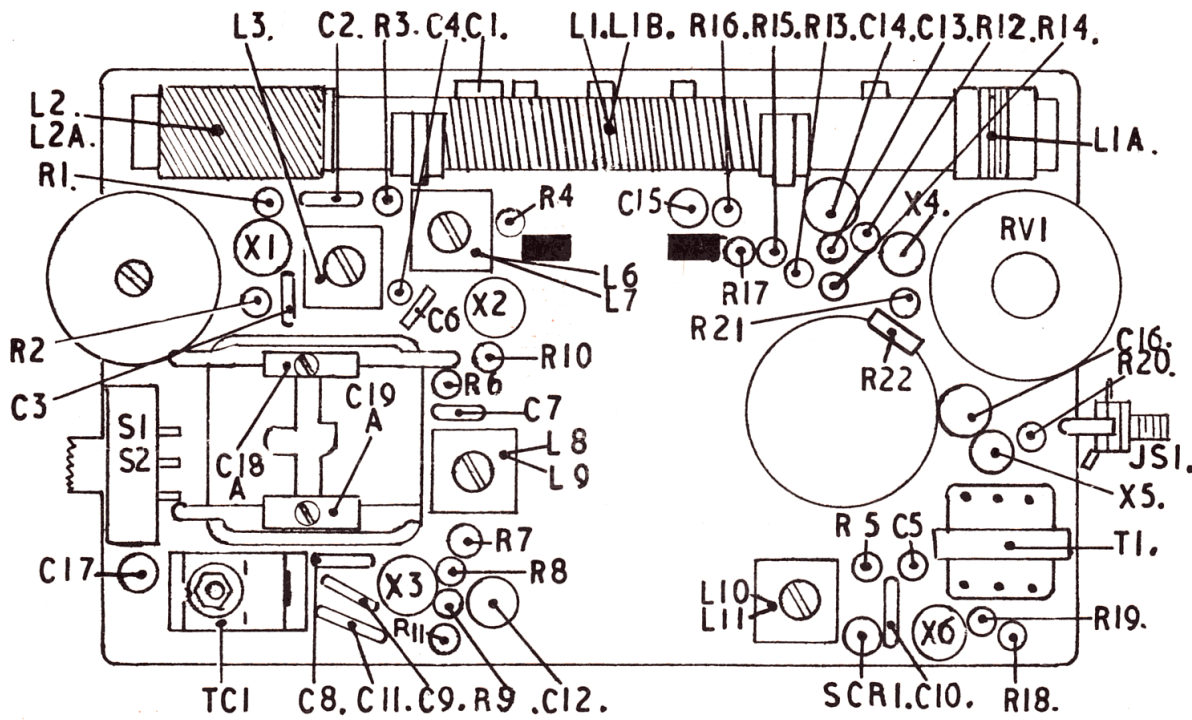
Circuit Ref.	Type	Part No.
X1	OC44	930/0008
X2, X3	OC45	930/0007
X4	OC81D	930/0017
X5, X6	OC81	930/0016

X4 May be OC75

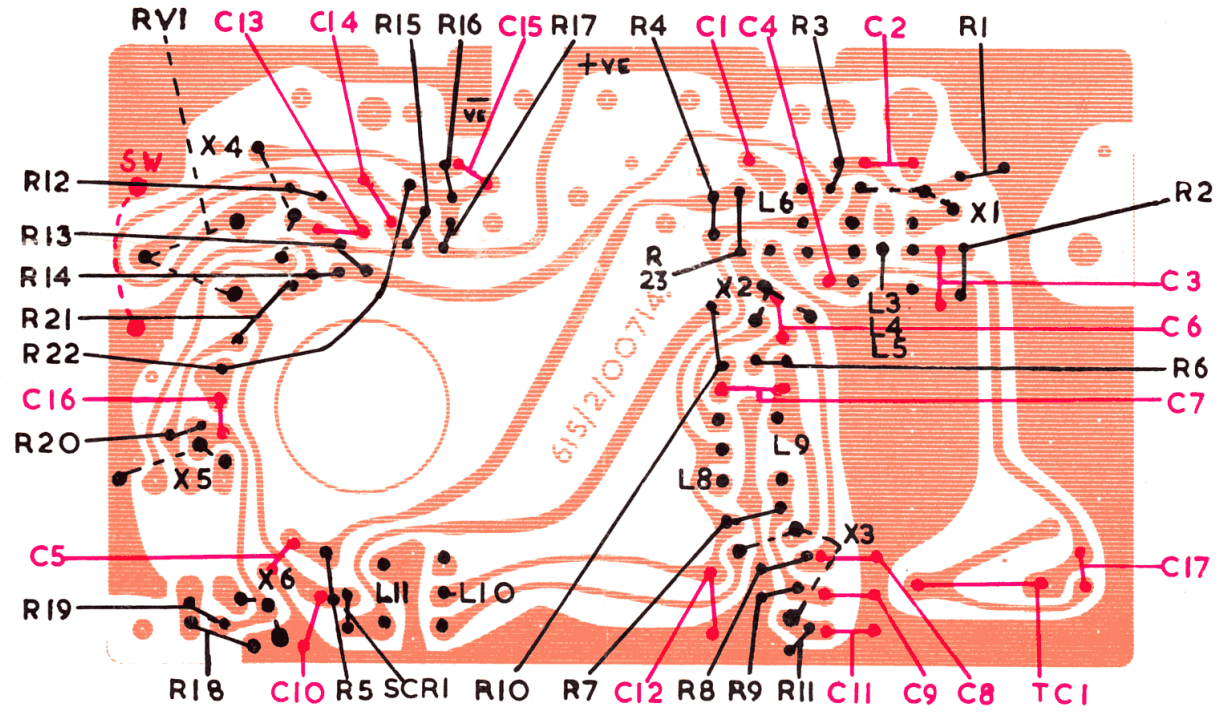
X5, X6 May be OC74



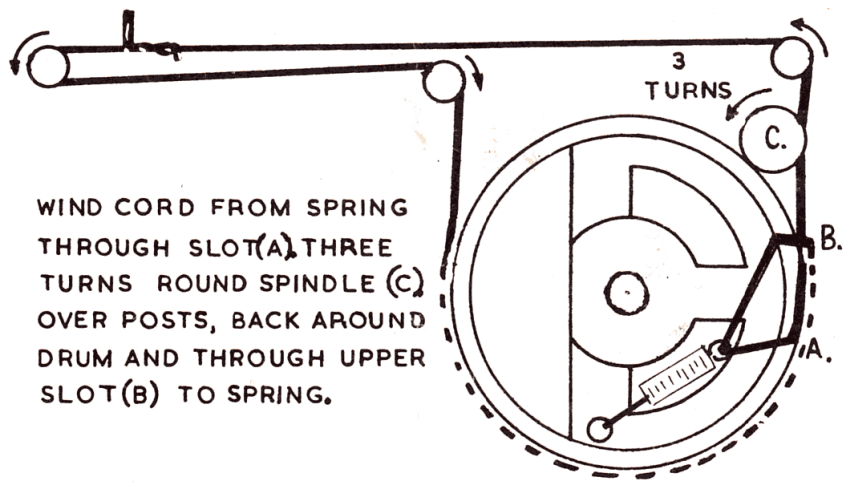
CIRCUIT DIAGRAM



TOP CHASIS LAYOUT



UNDER CHASIS LAYOUT



WIND CORD FROM SPRING THROUGH SLOT(A) THREE TURNS ROUND SPINDLE (C) OVER POSTS, BACK AROUND DRUM AND THROUGH UPPER SLOT(B) TO SPRING.

DIAL DRIVE