

# MIDGET RECEIVER. TYPE 31/1.

The apparatus consists of a receiver, high tension and low tension batteries contained in a separate box, earphones and aerial and earth wires. Spare batteries are provided.

The receiver is intended primarily for listening to powerful broadcast stations in the 25 to 50 metre band (12 to 6 megacycles per second) for short periods of the order of half an hour or an hour a day. The low tension battery provided (4½ volts) is sufficient for about 50 hours intermittent operation, while the high tension battery (30 volts) is sufficient for about 150 hours intermittent operation. The keeping qualities of both batteries are good and little deterioration will occur if the set is kept in store for not more than six months without being used. The batteries can be stored at a low temperature (not less than -20° C) if kept dry, but the set should not be operated at less than room temperature (between 0° C and 20° C), since otherwise the batteries will have a short working life.

## Method of Assembly and Operation

Place the receiver on a table with the knobs towards the operator; insert the aerial and earth wires and the earphone connector into the appropriate sockets on the back of the receiver in the rear of the set. Insert the three pin battery lead from the receiver into the socket on the battery box, pushing it well home. Screw the earphones tightly into the ears to exclude external noise.

The left hand knob is the tuning knob, to which is connected the tuning dial marked in metres, while the right hand knob controls the reaction condenser. First rotate the right hand (reaction) knob fully anti-clockwise and set the left hand (tuning) knob so that the wave length indicated is approximately that of the required station. Next rotate the right hand (reaction) knob very slowly clockwise until a slight hiss is heard. Next search for the station by moving the tuning knob until a howl is heard. Both knobs are then nearly in their correct positions, and best results will be obtained by manipulating both knobs simultaneously, remembering that only slight movements are necessary. When the receiver howls, turn the right hand knob very slightly counter-clockwise until the howl disappears. Then move the left hand knob until the howl occurs again, and repeat the process until the best results are obtained, which will be when the receiver is just on the threshold of howling.

Some skill in manipulation is required, since, unless searching is carried out slowly and methodically, it is possible to miss the station altogether.

## Hints

The aerial socket is marked A.

The earth socket is marked E.

The aerial wire provided is 10 metres long and should give good results in most cases. It is desirable that the aerial should be stretched out and erected as high as possible. The earth wire provided is 3 metres long, and has an earth clip at one end. If this clip cannot be connected to a good conductor such as a water pipe, the earth wire should be stretched out and laid upon the floor.

Reception will be poor in steel framed buildings if an indoor aerial is used, but in other buildings an indoor aerial should be satisfactory.

The battery plug and socket are so constructed that the plug can only be inserted in one way. In order to preserve the batteries it is essential to disconnect them when the receiver is not being used, since this is the only way in which the receiver can be switched off.

The earphones are fragile and must be treated with great care. They must not be flown higher than 15,000 ft. unless the earphones are in a sealed air-tight tin.

It is desirable to slide the earphone connector upwards and not downwards into its socket, so that the earphone lead is not bent sharply by being forced against the table and being thereby rendered liable to damage.

Care should be taken to see that the left earpiece is inserted in the left ear and the right earpiece in the right ear. The earpieces are marked L and R on the inside of the transparent ear-moulds, but it is easy to distinguish the earpieces by trial.

The transparent ear-moulds can be removed for washing purposes. The connector can be slid out of the socket on the earpiece if repairs are necessary.

## Battery Box

The shorter (positive) terminal strip of the low tension battery must be in contact with the battery box, while the longer (negative) terminal must be connected to the metal strip leading to the three pin socket, as shown in the diagram.

The white (positive) lead from the high tension battery must be joined to the red wire from the three pin socket as shown in the diagram. The black (negative) lead must be connected to the box by means of the screw provided.

It is essential to ensure that all contacts are clean and tight. If the terminal strips of the low tension battery do not make good contact, bend them outwards to improve the contact.

If low tension batteries cannot be obtained which will fit into the box, any battery such as a flash lamp battery having a voltage between 2 and 4½ volts (but preferably not less than 3 volts) can be used provided that the proper connections are made to the three pin socket. Connect the positive terminal to a pair of the battery box free from paint and connect the negative terminal to the correct socket.

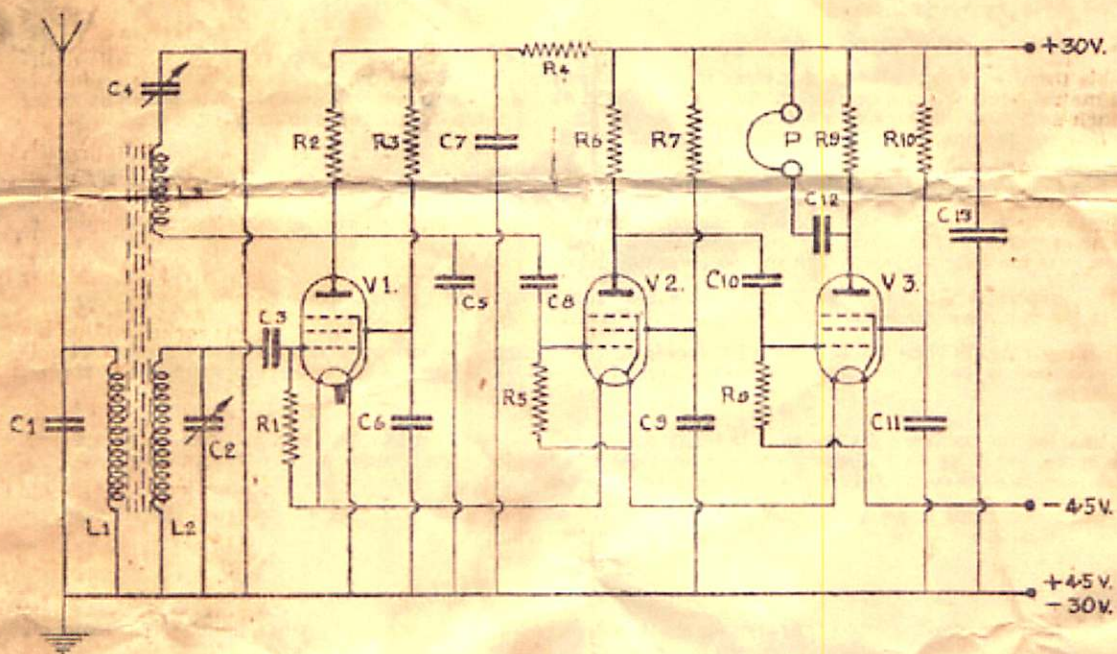
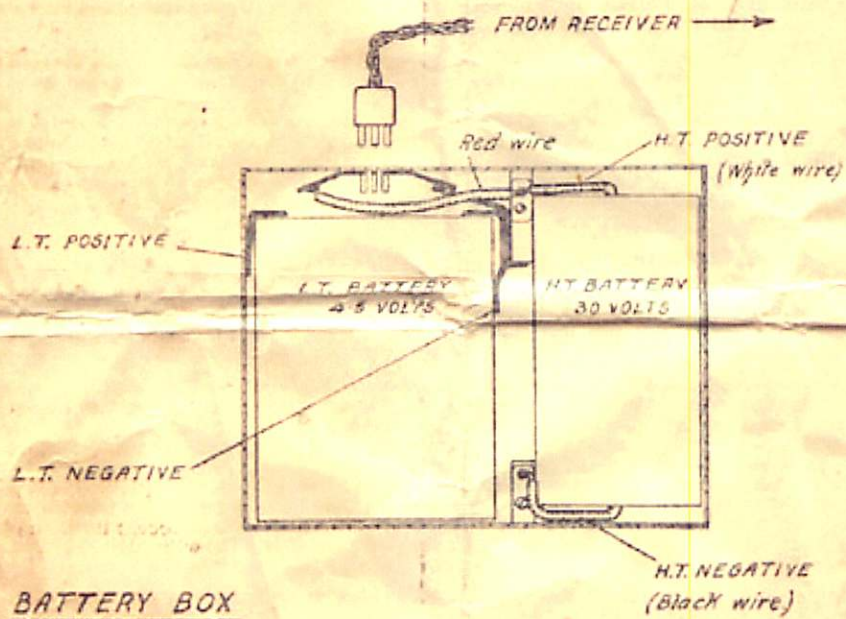
High tension batteries can be built up by arranging a number of low tension batteries in series so that a voltage of at least 24 volts is obtained. The terminals must then be connected to the battery box and the three pin socket as explained above.

It will be necessary to change the low tension batteries more often than the high tension batteries.

## Earphones

If the earphones are lost, an ordinary pair of high impedance telephones can be used if C12 and R10 are shorted out. The high tension consumption will be increased about 3 times by this modification.





L1	85 $\mu$ H. 80 TURNS 36 SWG. D.S.C. WAVE WOUND. $\frac{1}{2}$ " INTERNAL DIAMETER.		
L2	7 $\mu$ H. 18 $\frac{1}{2}$ TURNS 30 SWG. D.S.C. 1 LAYER $\frac{1}{2}$ " INTERNAL DIAMETER.		
L3	14.5 $\mu$ H 25 $\frac{1}{8}$ TURNS 38 SWG D.S.C. 1 LAYER $\frac{1}{2}$ " INTERNAL DIAMETER.		
C1	10PF CERAMIC	C10	.01 $\mu$ F PAPER
C2	100PF MIDGET VARIABLE	C11	.01 $\mu$ F PAPER
C3	100 PF CERAMIC TUBULAR	C12	.01 $\mu$ F PAPER
C4	60PF MIDGET VARIABLE	C13	.1-0 $\mu$ F ELECTROLYTIC. 200PV.
C5	25PF CERAMIC	R1	4M $\Omega$
C6	.01 $\mu$ F PAPER	R2	56K $\Omega$
C7	.1 $\mu$ F PAPER	R3	100K $\Omega$
C8	.01 $\mu$ F PAPER	R4	47K $\Omega$
C9	.01 $\mu$ F PAPER	R5	1M $\Omega$
		R6	.33 M $\Omega$
		R7	1M $\Omega$
		R8	1M $\Omega$
		R9	.22 M $\Omega$
		R10	.5M $\Omega$
		V1	1T4 R.C.A. MINIATURE TUBE
		V2	1T4 R.C.A. MINIATURE TUBE
		V3	1T4 R.C.A. MINIATURE TUBE
		P	BRUSH CRYSTAL EARPHONE