

FIELD WIRELESS SET - ZC8 MARK 1

GENERAL DESCRIPTION: The type ZC8 Mark 1 Field Wireless Set is a self contained portable seven valve radio-telephone transmitter and receiver. The set is carried on the back, suspended by means of a leather harness. A demountable aerial is used, supported at an angle of 45 degrees. Provision is made for the set to be operated by the carrier.

FREQUENCY RANGE: Both sender and receiver cover a frequency range of 6.0 (six) to 9.0 (nine) megacycles per second. The aerial is completely demountable, consisting of 7 (seven) spigotted sections, including the base connector. Fully extended the length is 6 ft. 7 in.. measured from the top of the set. When not in use the aerial is strapped to the lid of the set.

SENDER: Circuit: The Sender Circuit comprises a master-oscillator and a modulated power amplifier. The oscillator and amplifier valves are type 1Q5GT.

MODULATION: Anode modulation of the power amplifier is employed, using a type 1D8GT valve as modulator.

NETTING: A netting switch is fitted.

RECEIVER The receiver is of 5 (five) valves their functions and types being:-

R.F. Amplifier Type1N5GT
Frequency Changer 1A7GT
1st I.F. Amplifier 1N5GT
2nd I.F. Amplifier...1N5GT
2nd Detector, 1st A.F., Output 1D8GT
The type 1D8GT valve also serves as the speech amplifier- modulator for the Sender.

POWER SUPPLY: The necessary operating voltages are obtained from 2 - 45 volt light duty 'B' batteries and 1-1.5.volt 'A' battery, types 762 and C116 'EVEREADY' respectively. The total H.T. current when sending is 18 milliamperes. In the Receive position the H.T. current is 6.5 milliamperes.

HARNESS: The carrying harness, of the rucksack type, is fitted with buckles, spring clips and pins to make possible quick adjustment. The harness is completely removable.

HEADPHONES: The Headphones are of the high impedance type (4,000 ohms). A switch is fitted enabling the selection of either a high (4,000 ohm) or low (60 ohm) impedance matching transformer. Clips in the lid of the set hold the headphones.

REMOTE CONTROL: A remote control cable is fitted to operate the set whilst it is in position on his back. By means of this control the carrier can switch the set to either 'send', 'receive' or 'off'.

DIMENSIONS: The measurements of the case are:-

Height 12"
Width 9 ¾"
Depth 10"

CONTROLS: Six controls are fitted, their function being:-

- (1) Sender tuning.
- (2) Receiver tuning.
- (3) Aerial tuning.
- (4) Volume (receiver).
- (5) Netting.
- (6) Send - off - receive Switch.

The position of each control is shown in Fig. 3.

MICROPHONE: A standard N.Z. Post and Telegraph Dept. type single button carbon microphone is used, fitted with an Army type No. 10 plug.

BATTERY CONNECTION: A four wire cable is used. The connections are:-
Red H.T. + (90V) Black H.T. -
Brown L.T. + (1.5V) Yellow L.T. -
A diagram of connections is affixed to the inside of the battery compartment door

OPERATION

HARNESS FITTING & ADJUSTMENT:

The harness is fitted to the set by means of the hinge pins 'A', clips 'G', and the straps 'B' of Fig. 1. straps 'B' and 'C' are adjustable to suite the carrier.

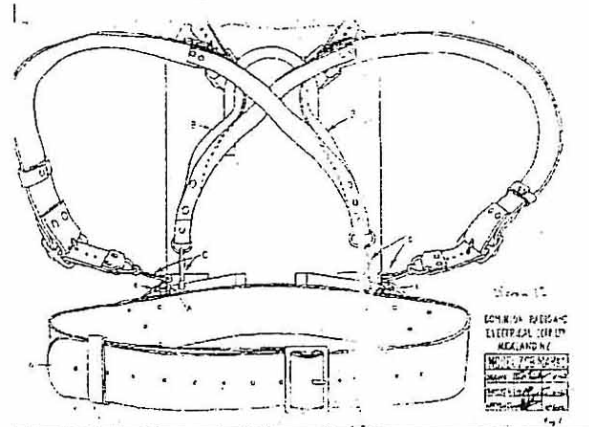


Fig 1

REMOTE CONTROL :

The remote control spindle is inserted through the sides of the case at 'B' Fig. 2. The 'send - off - receive' switch must be in the 'OFF' or centre position before the spindle can be inserted. It is important that the groove in the spindle is engaged by the locking spring in the switch bushing and that the spade end of the spindle enters fully the slot in the switch shaft. After inserting the remote control spindle, the cable lock 'D' is clipped into the cable lock bracket 'E'. The set can now be switched to 'receive' by pulling, and 'send' by pushing the remote control knob while holding the sheathing near the moving sleeve.

AERIAL: The aerial is fitted according to Fig. 2, after turning the rain cover 'C' away from the aerial socket 'F'. The knurled nut 'K' is for connecting an aerial wire to the set, when required.

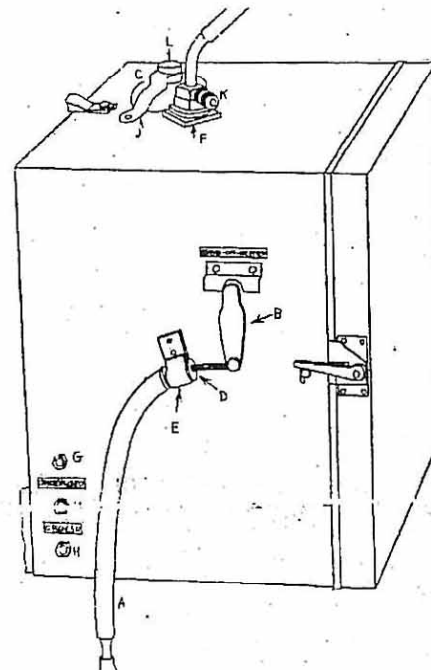


Fig 2

MICROPHONE: The microphone is connected by inserting the No.10 plug into the microphone (upper) jack 'G', Fig. 2. During operation, it is important that the mouthpiece be held in such a position that the mouthpiece is facing in a horizontal direction. Failure to observe this precaution will result in low volume, poor quality speech at the receiving station.

HEADPHONES: The headphones are connected by inserting the No.9 plug into either of the two lower jacks 'H', Fig. 2. Two pairs of phones may be operated simultaneously. When it is desired to use low impedance headphones the correct transformer impedance is selected by means of the switch mounted near the jacks in the battery compartment 'G', Fig. 3. To operate the switch,

remove the battery compartment door and the L.T. Battery. The switch arm should be moved towards the front of the set and locked in position by means of the knurled nut. In this position correct impedance match is obtained for a 60 ohm headset.

RECEIVER: To operate the 'receiver' the 'send - off- receive' switch is moved to the 'receive' position. The tuning control is located directly underneath the receiver dial. If required, the

receiver can be locked at any dial setting by means of the knurled dial lock nut. The Intermediate Frequency is 455 K.C. For alignment purposes the R.F. check frequencies are 8.5 M.C. and 6.2 M.C., the 'dummy' aerial being a fixed capacitor of .00005 mfd. connected between the aerial base connector and the signal generator.

SENDER: The 'send.. off' - receive' switch is moved to the 'send' position. The meter should show a reading. The required frequency of transmission is selected by means of the 'sender' tuning control. Aerial resonance is obtained by adjusting the 'aerial' tuning control until the meter shows minimum reading on the resonance 'dip'. It is of importance to note that any alteration in aerial length (due to removal or addition of aerial sections) must be compensated for by adjustment of the aerial tuning control. Accurate adjustment of this control, as indicated by minimum reading of the meter, is essential to efficient 'sender' operation. Even slight mistuning of the aerial will result in low power output and poor radiation. Any alteration of the 'sender' dial must be followed by readjustment of the aerial tuning control. To changeover from 'send' to 'receive' the remote control knob is pulled outwards as far as it will move.

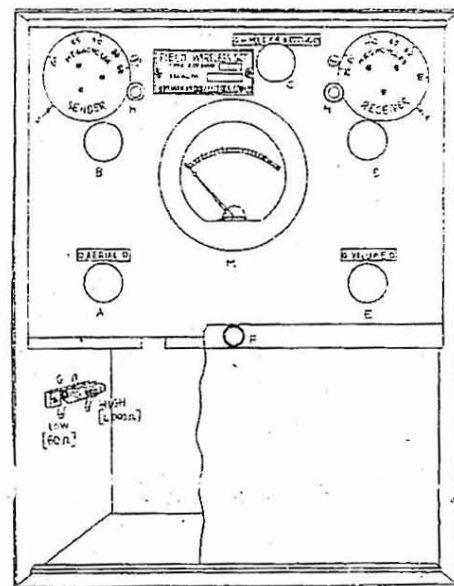


Fig 3

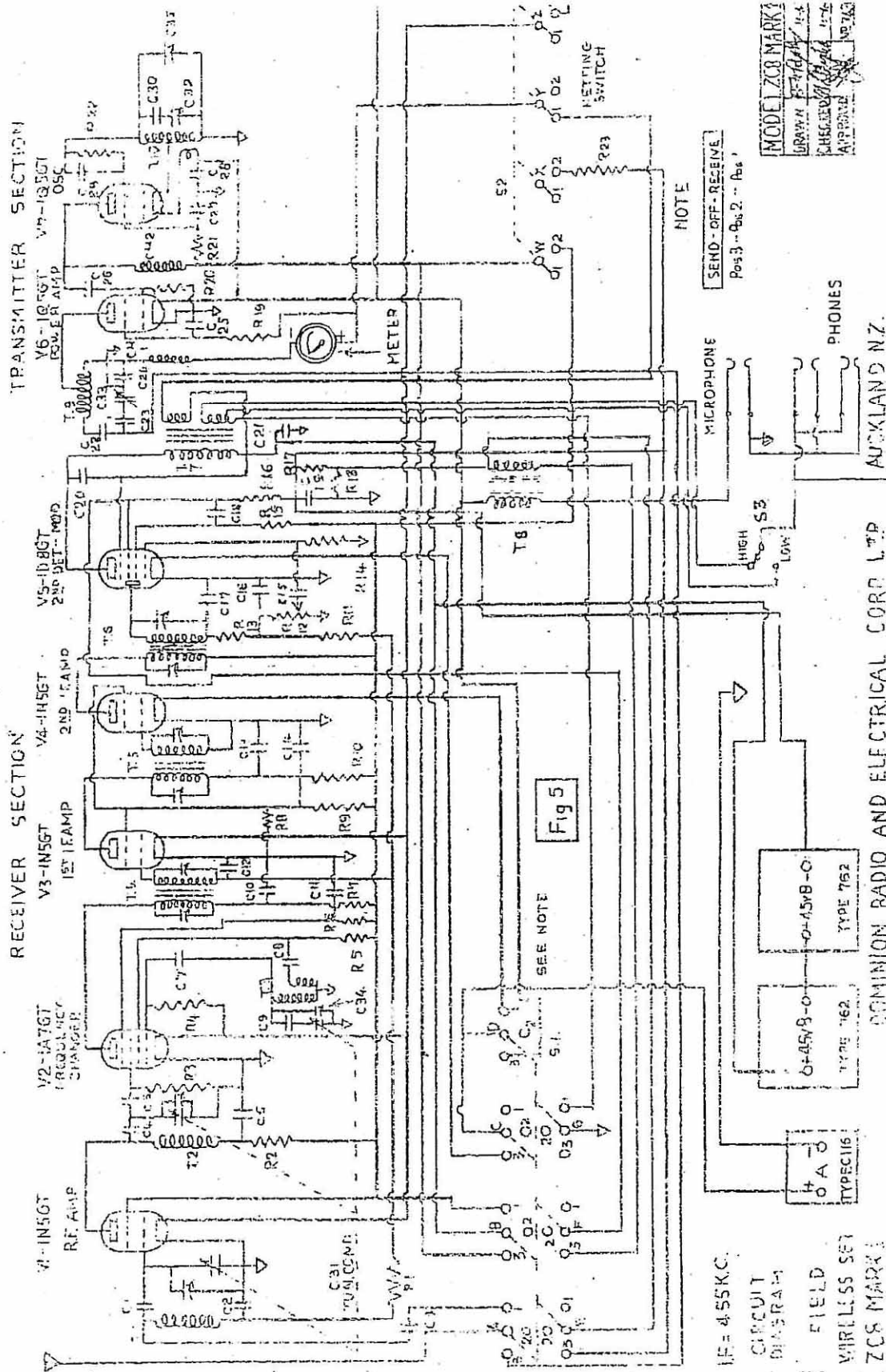
NETTING: Netting adjustments are carried out with the set in its 'receive' position. Tune in a signal of the required frequency. Turn the knob marked 'hold for netting' in a clockwise direction, and holding in position against the tension of the self return spring, adjust the 'sender' tuning dial to 'zero beat' with the incoming signal. As the 'sender' dial is rotated two positions will be found on which a heterodyne or beat note is heard. The lower megacycle reading on the 'sender' dial is the correct one. Careful adjustment is necessary to ensure accurate 'sender' frequency netting. The 'sender' dial may be locked in position by means of the knurled nut 'G' of Fig.3.

REMOVAL OF CHASSIS FROM CASE: To remove the chassis from the case, disconnect the remote control and completely dismantle the aerial. Unscrew the battery compartment door. All battery connections must be removed and the plug on the rubber covered cable withdrawn. The chassis can be removed from the case. When replacing the chassis care is necessary to ensure that all battery connections are correctly made. The battery connections are shown on the diagram affixed to the battery compartment door. Incorrect battery connections will render the set inoperative.

From this point the manual lists fault finding suggestions, voltages at selected points and a detailed list of components. It also contains blueprints showing the layout of parts within the cabinet which have not been reproduced here.

The original instruction book from which the above information was extracted came to light in a pile of manuals and other papers given to me by Bruce Gibson, ZL2UFR. Obviously it is a preliminary draft. Presumably, at least one prototype was constructed and it would be interesting to know whether any survived to this day.

The quality of the original blueprint diagrams has been badly affected by exposure to light. Every effort has been made to render them readable but regrettably some lines have been lost completely- Ed.



MODE ZCR MARK I
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DATE 10/10/34