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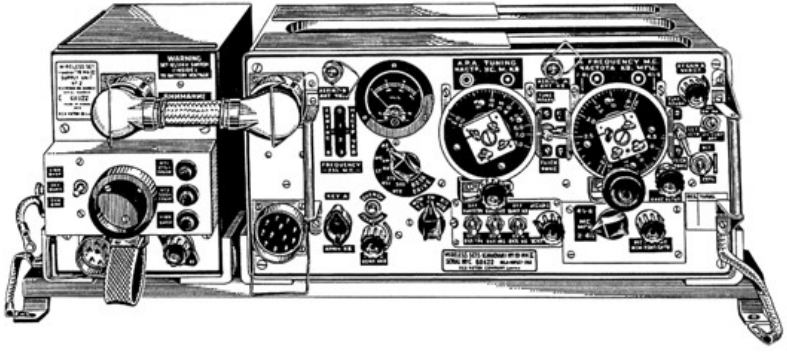

Wireless Set No 19 Mk.3 (Canadian)


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# BATTLE BATTERIES

## SECOND TO FOURTH ECHELON WORK

### ELECTRICAL TESTING IN STORE

**Can type : No. 1 (WB1870), No. 2 (WB2731)**

**Layer type : No. 1 (WB2730), No. 2 (WB2733)**

**General**

1. In order to detect and eliminate unserviceable battle batteries which are held for prolonged periods in store, and also to eliminate those which are likely to become unserviceable after issue but before they are put into service, test procedure, as detailed in paras. 6 to 17, will be adopted.

## CAUSES OF UNSERVICEABILITY

**Can type batteries**

2. Investigations have shown that by far the most prevalent cause of unserviceability in the can type batteries is insulation breakdown between adjacent cells or rows of cells, due to electrolyte leakage from the corroded zinc cans, with consequent self-discharge.

3. In the initial stages the self-discharge current is very small, but, since the electrolyte leakage is progressive, this current rapidly increases. The cells so discharged perforate in turn and further electrolyte leakage occurs, so that the fault rapidly spreads throughout the battery.

4. In general, once self-discharge has begun, total collapse of the battery occurs in a week or so. It is therefore important, when testing, to eliminate all batteries which show the slightest sign of self-discharge.

**Layer type batteries**

5. The most common causes of failure in layer type batteries are :—

(*a*) Corrosion of the positive terminal plate of a stack of cells, or defective sealing at this plate, leading to corrosion of the soldered connection or connecting lead and electrolyte leakage.

(*b*) Paper tapes binding a stack of cells stretching or bursting.

In either case the result is increased and possibly variable resistance or in the extreme, disconnection. The voltage on load is therefore depressed (in the extreme to nil) and may be unstable. A load voltage test applied over a period of several seconds is therefore most convenient.

## TESTING

**Method of test (in storage)**

6. The most sensitive test is an open-circuit voltage test and a fall of even, say, 2 volts in the open-circuit voltage of the H.T. section is a clear indication that self-discharge has begun.

7. A load test will not reject faulty batteries at such an early stage since initially the self-discharge current will be so small, and the extent to which it has discharged the few cells first affected so slight, that the effect will be negligible compared with the external load.

8. It will be appreciated that these remarks apply to the testing of can type battle batteries at an intermediate stage between manufacture and use, where some further storage life is required.

**Method of test (immediately before use)**

9. When testing immediately before use it is perfectly satisfactory, and even preferable, to apply a load test. Since the working life of these batteries is only a matter of hours, the effect of any self-discharge which may be taking place will be negligible over such a short period. A battery which gives a good load voltage, even though its open-circuit voltage is slightly down, will be serviceable if used *at once*.

10. In combined H.T./L.T. batteries there is always the possibility, although generally remote, that a leak between H.T. and L.T. may develop.

11. A voltmeter connected between the H.T. sockets and L.T. sockets should show no reading. If a reading is shown, the battery should be rejected to avoid possible damage to wireless set.

**Procedure when testing battle batteries in store**

*Can type :*

*Batteries, dry, H.T./L.T., 162/3V, No. 1 (WB1870)*
*Batteries, dry, H.T./L.T., 150/3V, No. 2 (WB2731)*

12. These batteries will be tested with an accurate voltmeter (resistance not less than 500Ω per volt of scale), and any batteries which show a no-load voltage lower than the nominal figure (162 or 150 volts respectively) will be rejected as unserviceable.

*Layer type :*

*Batteries, dry, H.T./L.T., 162/3V, No. 2 (WB2733)*
*Batteries, dry, H.T./L.T., 150/3V, No. 1 (WB2730)*

13. These batteries will be tested with an accurate voltmeter (resistance not less than 500Ω per volt of scale), shunted with a resistance of 10,000Ω. Batteries which fail to show a steady voltage not more than 5 volts below the nominal voltage (i.e., the minimum load voltage must be not less than 157 or 145 volts respectively), will be rejected as unserviceable.

**Frequency of tests**

14. Testing should commence in the fourth month after manufacture for both can and layer types, and repeated monthly thereafter.

**Percentage of number of batteries to be tested**

15. The appropriate tests, as described in paras. 12 and 13, will be applied to sample batteries taken from each batch (batteries from each individual manufacturer for each separate month of manufacture constituting a batch).

16. If the result of tests on these samples indicates that more than 5% of the batch are unserviceable, then all the batteries in that batch will be examined.

**Test equipment**

17. Suitable equipment for the testing of battle batteries as described above is :—

Instrument, testing, Ferranti universal, 16-range, Mk. I*. Sect. W4. Cat. No. WY0806.
Resistor, 10,000Ω, 1W. Sect. Z1. Cat. No. ZA8877

M.E.6—CR/DME/855/44.

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ELECTRICAL AND MECHANICAL ENGINEERING REGULATIONS
(By Command of the Army Council)

TELECOMMUNICATIONS
J 269 Misc Inst No. 1

# BATTLE BATTERIES

## TECHNICAL HANDBOOK - MISCELLANEOUS INSTRUCTION

## Redesignation of EMERs

### Information

1. To maintain the proper sequence of EMER numbers, it is intended that:-

   (a) all future issues of EMERs on this equipment will be published in the series Tels J 260 - J 269 and

   (b) the current EMERs will be redesignated.



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Action

2. The following EMERs will be redesignated as shewn.

| | Present designation | | | | New designation |
|---|---|---|---|---|---|
| | EMER designation (a) | Pages (b) | Issue No. (c) | Date (d) | (e) |
| 1 | Tels A 484 | 1 | 1 | 28 Feb 45 | Tels J 264 |

57/Maint/6670

END