

SPECIFICATION  
FOR  
BATTERY, DRY (LECLANCHÉ), 90/60/4.5 V, NATO STOCK NO 6135-99-901-3065  
(NATO TYPE DESIGNATION NBA 070)

This Supplement supersedes SUPPLEMENT NO 76 to  
DEF STAN 61 - 3 (PART 1), dated 19 March 1968

1. This Supplement is to be read in conjunction with the General Specification for primary batteries (Leclanché, mercury, and manganese alkaline types) contained in **DEF STAN 61 - 3 (PART 1)**.

2. NOMINAL VOLTAGE

a. Cell.

1.5

b. Battery.

(1) HT 1 section: 90

(2) HT 2 section: 60

(3) LT section: 4.5

3. DIMENSIONS

Dimensions shall be in accordance with the requirements of the attached drawing.

4. MASS

Mass shall not exceed 16 pounds (7.26 kilograms).

5. MARKINGS

Marking shall be in accordance with the requirements of the General Specification contained in DEF STAN 61 - 3 (PART 1), clause 11. and the attached drawing.

6. CONSTRUCTION

a. Assembly.

(1) Two independent HT sections of 90 and 60 volts respectively, and one LT section of 4.5 volts, combined in a single insulating container.

(a) The HT 1 section normally being 60 layer-type cells connected in series.

(b) The HT 2 section normally being 40 layer-type cells connected in series.

DEF STAN 61 - 3 (PART 1)  
SUPPLEMENT NO 76/2

6. a. (1) (c) The LT section normally being 12 cylindrical cells connected in series-parallel.
- (2) Inter-cell connections between cylindrical cells shall be soldered, using wire not thinner than 0.028 in (22 s.w.g.) (0.71 mm).
- (3) Inter-stack connections for layer-type cells and cell-socket connections shall be soldered, using insulated stranded wire.
- (4) The whole assembly shall be blocked securely to prevent internal movement.
- (5) The hole in the outer container shall be concentric with the socket and shall be sealed in such a manner that the seal may be removed and replaced effectively to permit testing of the battery during storage.
- (6) After sealing, the battery shall be dipped in micro-crystalline wax at a temperature of not less than 100°C, for not less than five seconds, in such a manner that the battery is covered completely with a smooth and continuous protective wax film.

b. Cell details.

(1) Size.

(a) HT 1: F100 (BS 397).

(b) HT 2: 2.3/64 in (51.99 mm) x 1.3/8 in (34.93 mm) x 3/16 in (4.76 mm), nearest equivalent F92 (BS 397).

(c) LT: R25 (BS 397).

(2) Zinc thickness for cylindrical type.

Shall be not less than 0.014 in (0.36 mm).

c. Terminations.

Special socket to be in accordance with the requirements of the attached drawing.

7. STORAGE AND PERFORMANCE TESTS

a. Allocation of sample batteries.

(1) For Qualification Approval testing.

Shall be in accordance with the requirements of the General Specification contained in DEF STAN 61 - 3 (PART 1), clause 6.b.

(2) For Quality Assurance testing.

Number of sample batteries supplied shall be in accordance with the requirements of the General Specification contained in DEF STAN 61 - 3 (PART 1), clause 14.b. and shall be divided between tests shown in the table below as follows:

10% Jungle with the balance divided equally between the other four types of storage.

7. b. Storage conditions and performance requirements.

TYPE OF STORAGE	GENERAL SPECIFICATION CLAUSE	STORAGE PERIOD (WEEKS)	MINIMUM DISCHARGE LIFE AFTER STORAGE (HOURS)
Temperate (Short term)	17.a.	4	32
Temperate (Long term)	17.a.	78	22
∕ Jungle	17.c.	8	30
∅ Desert	17.b.	26	24
Temperate (Spare)	18.d.	-	-

Notes:

1. ∕ indicates insulation resistance after Jungle storage (General Specification DEF STAN 61 - 3 (PART 1), clause 19.) to be not less than 2 megohms.
2. ∅ batteries stored singly.

c. Discharge test conditions.

(1) Resistance loads and discharge cycle.

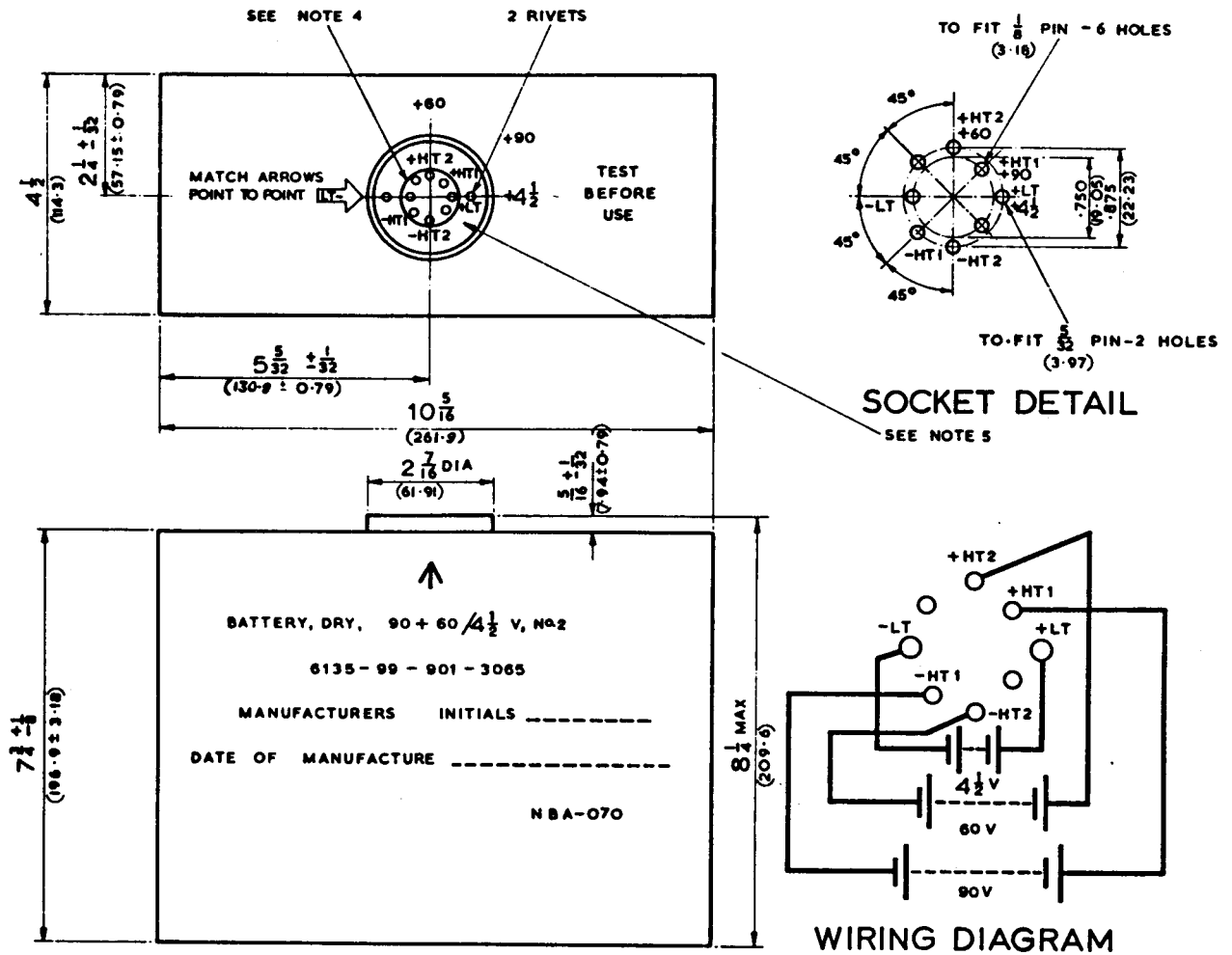
- (a) The LT section shall be discharged for two minutes through 10 ohms, followed by four minutes through 16 ohms. This cycle shall be repeated continuously.
- (b) The HT 1 section shall be discharge continuously through 3300 ohms; ie, this resistance will remain connected across the HT 1 section throughout the test.
- (c) With the 3300 ohms applied continuously across the HT 1 section, the HT 1 and HT 2 sections connected in series shall be discharged for two minutes through 2800 ohms, followed by four minutes on open circuit. This cycle shall be repeated continuously.

(2) Voltage readings during discharge.

On the LT section and the HT 1 and HT 2 sections connected in series, voltage readings shall be taken during the last minute of the two minute period. The HT 1 section voltage readings shall be taken during the last minute of the four minute period.

DEF STAN 61 - 3 (PART 1)  
SUPPLEMENT NO 76/2

7. c.      (3) On-load voltage end-points.
- (a) HT 1 section:                      65 volts.
  - (b) HT 1 and HT 2                      105 volts.  
    connected in series:
  - (c) LT section:                         3.6 volts.



NOTES:-

1. ALL DIMENSIONS ARE IN INCHES WITH mm EQUIVALENTS AND SHALL INCLUDE THICKNESS OF MICRO-CRYSTALLINE WAX COATING.
2. UNLESS OTHERWISE SPECIFIED ALL TOLERANCES ARE :- FRACTIONS  $\pm \frac{1}{16}$ . (1.59) DECIMALS  $\pm .005$  ANGLES  $\pm \frac{1}{2}^\circ$
3. TEST VOLTAGES MARKED AROUND THE SOCKET SHALL BE  $n \times 1.5$  VOLTS, WHERE  $n$  IS THE NUMBER OF CELLS CONNECTED IN SERIES
4. DIAMETER OF HOLE IN BRASS SOCKET SUPPORT SHALL BE  $1\frac{1}{4}$  (31.75)
5. FOR FURTHER DETAILS OF SOCKET ASSEMBLY SEE LATEST ISSUE OF E.QQ DRAWING LIST FOR IT/A. 197390.

THIRD ANGLE PROJECTION



# Procurement Executive, Ministry of Defence

Directorate of Standardization

Room 1138, Kentigern House, 65 Brown Street, GLASGOW, G2 8EX

Telephone: 0141-224 2595 (Direct Dialling)  
0141-248 7890 (Switchboard)

Fax: 0141-224 2503

Internet e-mail address: t.leaver@dstan.mod.uk

---

Your Reference :

Our Reference : D/DStan/11/2

Date : 9 November 1998

---

## **Removal of Product Qualification Approval**

### **IMPORTANT ANNOUNCEMENT**

1. This Standard contains a Product Qualification Approval (PQA) scheme. <sup>i</sup>MOD policy requires that all PQA schemes are removed from Defence Standards called up in contracts placed after 1<sup>st</sup> January 1998.
2. Users of this Standard are to contact the Project Manager (PM), Equipment Support Manager (ESM) or Technical Service Authority (TSA) named in the contract or order, to identify whether there is a continuing need for an approvals scheme.
3. <sup>ii</sup>Product Conformity Certification (PCC) is a risk based process that replaces PQA. Once a risk has been identified PCC can be included as a contract clause. In exceptional circumstances agreement can be sought from AD/Stan for PCC to be included in a Defence Standard.
4. At the next revision of this Standard the PQA scheme will be removed.

T R Leaver  
Head of Standards Programme Management  
Tel: 0141 224 2595 FAX: 0141 224 2503

---

<sup>i</sup> Defence Council Instruction (General) 197/97; Quality Temporary Memorandum 5/98; Chief of Defence Procurement Instruction CDPI/TECH/250 (draft)

<sup>ii</sup> PCC is certification that a product meets its specification. When PC is required by the contract, the contractor is responsible for obtaining the necessary PCC. Certification shall be provided from a NAMAS accredited laboratory when appropriate. PCC shall apply where a Risk Assessment has been identified by the PM; ESM or TSA.