

# GP Batteries

## Product Specifications

Model No.: GP1604S

Document Number: S006

Revision:08

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## 1. APPLICABILITY

This specification is applicable to GP Supercell, Super Heavy Duty Grade Batteries. (GP model no.: GP1604S).

## 2. TYPE

Six layers built zinc carbon batteries

## 3. NOMINAL VOLTAGE

9 Volts

## 4. TERMINALS

Nickel plated miniature snap fasteners

## 5. SHELL

Printed metal jacket

## 6. IDENTIFICATION

Expiry code of 6 digits will be printed on the bottom of each battery (e.g. 03-2007 represents expiry date of March, 2007).

® Warranty Period: 24 months.

## 7. QUALITY REQUIREMENT

7.1 Conventions:

n = number of batteries shall be tested.

c = permissible number of defects.

k = Actual number of defects.

x = Average of (n-k) good result.

N0 = test shall be commenced within 30 days of delivery.

N12 = Test shall be commenced within 12 months after manufacture code.

N24 = Test shall be commenced within 24 months after manufacture code.

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### 7.2 Test conditions:

- 7.2.1 All tests (Voltage, Storage, Service life etc) shall be performed at the ambient temperature of  $20\pm 2^{\circ}\text{C}$  and at the relative humidity of  $60\%\pm 15\%$
- 7.2.2 The voltmeter shall have an accuracy of 0.5 percent and with a internal impedance of  $10\text{M}\Omega$  or above.
- 7.2.3 Unless otherwise stated, samples for acceptance testing shall be selected per MIL-STD-105E, LEVEL II normal inspection.

### 7.3 Open circuit voltage

	Minimum voltage	AQL
N0	9.5	0.25
N12	9.3	0.65
N24	9.0	1.00

### 7.4 Closed circuit voltage (Load $100\Omega$ for $2\pm 0.2$ seconds).

	Minimum voltage	AQL
N0	7.5	0.25
N12	7.2	0.65
N24	7.0	1.00

### 7.5 Service life (Batteries tested shall be complied with either one of the following requirements.)

#### 7.5.1 Requirements

Condition			Minimum (H)		
Resistance	Daily Period	End Point	N0	N12	N24
$620\Omega$	2H	5.4V	26.5	22.0	20.0
$270\Omega$	1H	5.4V	9.0	8.5	7.5
$180\Omega$	30M	4.8V	7.0	6.0	5.0

H: Hour M: Minute

- 7.5.2 A battery is considered defective when the service life is less than 70% of the minimum average x.
- 7.5.3  $n=10$ ,  $c=1$ . In case of  $k=2$ , one retest is allowed.

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### 7.6 External leakage

7.6.1 No battery shall leak during the service life tests before the end point voltage is reached.

7.6.2 For undischarged batteries.

	AQL
N0	0.25
N12	1.00
N24	1.50

### 7.7 Appearance

	AQL
Major defects	1.0
Minor defects	4.0

Major defects 1) Loose or damaged terminals

2) Incorrect polarity.

3) Visible rust on metal parts.

Minor defects 1) Substandard appearance.

2) Heavy scratches.

3) Serious deformation.

4) Serious displacement of artworks.

## 8. CONTENT OF MERCURY AND CADMIUM

8.1 Mercury - 1ppm maximum per battery weight.

8.2 Cadmium - 10ppm maximum per battery weight.

## 9. OPERATING TEMPERATURE

0°C to 45°C

## 10. STORAGE TEMPERATURE

-20°C to 30°C

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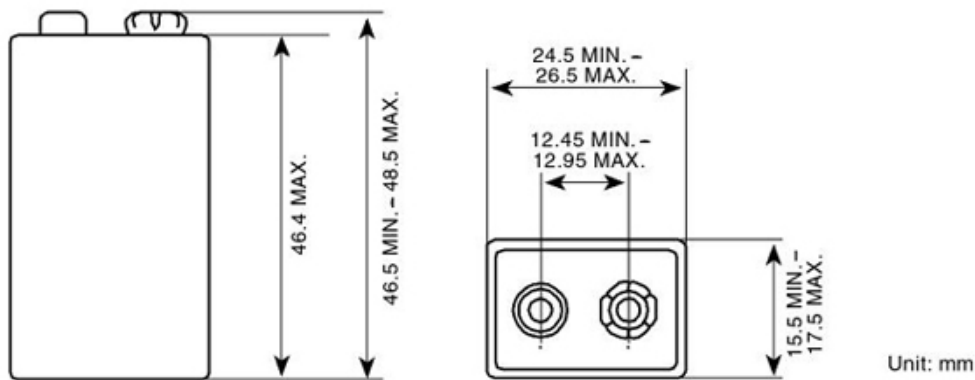
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## 11.BATTERY DIMENSION



## 12.BATTERY WEIGHT

Typical: 35 grams

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## Precaution & Handling

1. Do not attempt to take batteries apart or subject them to pressure or impact. Heat may be generated or fire may result. The alkaline electrolyte is harmful to eyes and skin, and it may damage clothing upon contact.
2. Keep away from children. If swallowed, contact a physician at once.
3. Do not mix GP batteries with other battery brands or batteries of a different chemistry such as alkaline and zinc carbon.
4. Do not short circuit batteries, permanent damage to batteries may result.
5. Do not incinerate or mutilate batteries, may burst or release toxic material.
6. Do not solder directly to cells or batteries.
7. Store batteries in a cool dry place.
8. If find any noise, excessive temperature or leakage from a battery, please stop its use.
9. When not using a battery, disconnect it from the device.
10. Do not mix new batteries in use with semi-used batteries.
11. When find battery power down during use, please switch off the device and take batteries out.
12. Never put a battery into water or seawater.
13. Do not recharge batteries.

## Storage

1. Store in a cool, dry place before use.
2. Do not keep batteries at temperature of 30°C or above.
3. Do not keep batteries at relative humidity of 75% or above.