Automotive parts - Terminals of 36 V lead-acid batteries

1. Scope

This standard specifies performance requirements, configuration and dimensions, and materials of the stud bolt terminals (hereinafter referred to as "terminals") on lead-acid batteries with a nominal voltage of 36 V used in vehicles with 42 V systems.

2. Terms and definitions

For the purpose of this document, the following terms and definitions apply.

a) 36 V lead-acid battery: An integral lead-acid battery with a nominal voltage of 36 V used in vehicles with 42 V systems.

b) Stud bolt terminal: A terminal consisting of a bolt thread section and terminal base in which the bolt thread section protrudes from the seat.

c) Terminal base: The base at the bottom of the terminal.

d) Seat: The top face of the terminal base. The face on which the load directly acts when tightening the thread section.

3. Performance

There shall be no deformation to the terminal or lead-acid battery cover when the terminal is tightened to a torque of 16.0 Nm.

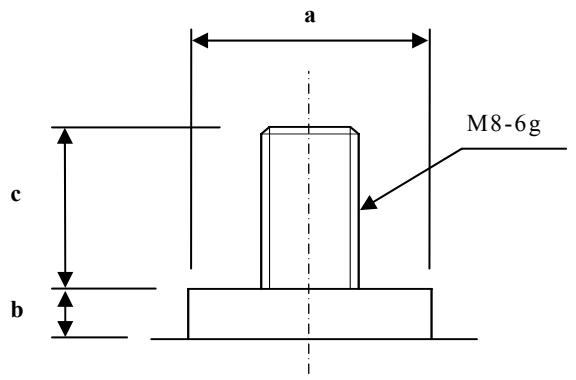
4. Configuration and dimensions

4.1 Terminal

The terminal construction and dimensions shall be in accordance with Table 1.

Table 1—Terminal

Unit: mm



a(Seat size)	b(Terminal base height)	c(Thread length)
ϕ 20.0±3.0	2.0+0.6/-0	15.5±0.5

4.2 Terminal peripheral construction

There shall be no protrusions higher than the terminal base within a radius of 12 mm of the center of the terminal thread.

5. Materials

5.1 Bolt

The bolt material shall be solder-plated brass or stainless steel.

5.2 Terminal base

The terminal base material shall be tin-plated or solder-plated brass, or lead or lead alloy.

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Explanatory notes

on

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This explanatory notes explain the details stipulated or mentioned in the main document, together with related details, and does not form part of the standard.

1. Concept and background behind standard

1.1 Concept behind standard

Vehicles with 42 V systems use lead-acid batteries with a nominal voltage of 36 V (hereinafter referred to as "36 V lead-acid batteries") not previously used in automobiles. It was therefore important to prescribe the standard configuration at an early stage to ensure standardization of 36 V lead-acid batteries, and this standard prescribes the terminal construction that works as the interface between the 36 V lead-acid batteries and the vehicle.

Standardization of items other than the terminals will be left until a later date, as it was considered desirable not to impose technical restrictions where possible on 42 V systems which are still in a state of development.

1.2 Background behind standard

Taking into consideration previous practices, reliability, safety, and cost, the stud bolt terminals prescribed for batteries in electric vehicles demanding particularly high reliability were decided on for the construction of terminals of 36 V lead-acid batteries. The performance, construction, dimensions, and materials are stipulated in this standard. This stud bolt construction also draws a clear distinction between 36 V lead-acid batteries and lead-acid starter batteries.

While it was considered desirable to prescribe a standard configuration for the terminal positions at an early stage, the optimum positions for terminals vary depending on the individual configuration, the layout or manufacturing process of the individual cells, and so this was omitted from the standard at this point in time.

2. Objectives of standard

This standard stipulates the performance, construction, dimensions, and materials for the terminals of 36 V lead-acid batteries, and is intended to ensure rapid expansion of mass production vehicles with 42 V systems by promoting the standardization of vehicle harness terminals and 36 V lead-acid batteries.

3. Scope (1. in main text)

36 V lead-acid batteries have positive and negative terminals, but these standards apply to both.

4. Standard details

The details for each section are as follows.

4.1 Performance (3. in main text)

Prescribed taking into account the maximum terminal tightening torque standards specified by vehicle manufacturers and the strength of lead-acid battery covers at low temperatures.

4.2 Construction and dimensions (4. in main text)

The terminal base height value "b" was prescribed to prevent water penetration (corrosion) when subjected to water. The thread length "c" was prescribed taking into account the nut thickness and clearance with two harness connectors on top of each other.

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