



SURFACE VEHICLE RECOMMENDED PRACTICE

J2981™

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Starter Battery Identification and Classification

RATIONALE

The identification standard was removed from SAE J537 and the Starter Battery Committee has determined that this is a necessary component to the starter battery standard.

1. SCOPE

To provide the industry with the means to apply a set of rules for identifying and providing a common numbering system for lead acid starting batteries.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J537 Storage Batteries

2.2 Other Publications

BCIS-04 BCI Battery Technical Manual - BCI Recommended Storage Battery Specifications Starting, Lighting and Ignition Types

The Battery Council International's Method and The Data Book Committee's Informal Guidelines for the Assignment of Group and Assembly Numbers
<http://www.batteryCouncil.org/>

EN 50342-1 Lead-Acid Starter Batteries, Part 1: General Requirements and Methods of Test

EN 50342-2 Lead-Acid Starter Batteries, Part 2: Dimensions of Batteries and Dimensions and Marking of Terminals
<http://shop.bsigroup.com/> - EN (European Standard)

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Full document details: SAE J2981_201605

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Documents

Document Sharing Hub

IEC 60095-1 Lead-Acid Starter Batteries, Part 1: General Requirements and Methods of Test

IEC 60095-2 Lead-Acid Starter Batteries, Part 2: Dimensions of Batteries and Dimensions and Marking of Terminals
<http://www.iec.ch/> - IEC (International Electrotechnical Commission)

JIS D5301 Lead-Acid Starter Batteries <http://www.webstore.ansi.org/> - JIS (Japanese Industrial Standards - Japanese Standards Association)

3. DEFINITIONS

3.1 CCA

Cold Cranking Ampere at -18 °C as defined in SAE J537 and Battery Council International (BCI) (BCIS-04).

3.2 RC

Reserve capacity in minutes at 25 °C as defined in SAE 537 and Battery Council International (BCI) (BCIS-04).

3.3 PROCEDURE

Assignment of Group Numbers and Inclusion of Batteries in this Standard.

NOTE: The term "Group Number" implies the particular assembly number that is assigned to a particular battery with attributes listed in Table 4.

3.4 GROUP NUMBERS - PURPOSE

Group Numbers are assigned to assist the industry in the orderly presentation of battery attributes for classification.

A battery group number may not be changed, once it becomes official unless it is determined that there is an error in the definition or assignment of the battery number.

3.5 SIZE OF NEW GROUP NUMBERS

A new Group Number will contain not more than three numerical digits, without prefix. The only suffix permitted is the letter "R" to be used in situations where the positive terminal is located on the right front corner of the battery. In absence of a SAE/BCI Group Size Number, the BCI Data Book or SAE Battery Standards Committee may choose to recognize another industry.

EXEMPTION: A suffix will be added to Group 31 to designate terminals as "T" for "Threaded Stud" and "A" for "SAE Automotive Post".

If the positive terminal is located on the left front, a group number will be assigned consisting of numbers only (no letters).

If the positive terminal is located on the right front, a group number will be assigned consisting of numbers and may include the letter suffix "R" or "F". The letter suffix "R" and "F" is used to designate right hand positive and also reverse polarity as generally accepted in the industry.

Group sizes exempt from this rule are group 47, 48, 49, 90, 91, 92 and 93 which are established numbers and as such exempt from the R and F designation rule.

The lowest vacant number is normally used, however, a new Group Number may be selected from a block of numbers reserved for batteries of similar characteristics and intended for similar applications.

3.6 SIGNIFICANCE OF A GROUP NUMBER

A Group Number will represent:

- a. Maximum Overall Dimensions
- b. Assembly Number

3.7 DIMENSIONING

3.7.1 Dimensions will be expressed in millimeters and inches.

When any Maximum Overall Dimension varies by 6 mm/0.25 inch from the listed dimensions for an existing Group, a new Group Number is required.

Group Numbers are not intended to indicate the electrical performance characteristics or the applications of the batteries listed.

Dimensions for new batteries will be based on millimeters, and then converted to the next higher 2 mm / 0.0625 inch, when required.

3.7.2 Definition of Maximum Overall Dimensions

Maximum Overall Dimensions shall include hold-downs, lifting ledges, posts, studs, vent caps or any other protrusion that may affect battery fit and aftermarket interchangeability.

3.8 PRESENCE OF SPECIAL FEATURES

The presence of such special features that do not affect battery fit and interchangeability may be indicated by a letter suffix to the Assembly Number, and/or by a footnote.

3.9 BATTERIES WITH SPECIAL FEATURES

Battery types with special features (protruding ledges, hold downs, etc.) that do not affect aftermarket fit and interchangeability, will take the Group Number for a similar battery without a feature. Such features may be indicated by a letter suffix to the Assembly Number and/or footnote.

3.10 SIGNIFICANCE OF AN ASSEMBLY NUMBER

Assembly Numbers will indicate:

- a. Cell Layout
- b. Terminal design and general location
- c. Special features that may affect battery fit and interchangeability.

3.11 SIGNIFICANCE OF ASSEMBLY NUMBERS

When special features not identified in an Assembly Number affect aftermarket fit or interchangeability, a new group number and associated new Assembly Number with or without suffix is required.

3.12 SIZE OF NEW ASSEMBLY NUMBERS

Assembly Numbers will have not more than two numerical digits without prefix continuing with the next consecutive number.

3.13 ASSEMBLY NUMBERS MAY HAVE SUFFIXES TO ASSEMBLY NUMBERS

Assembly Numbers may have suffixes to indicate special features.

3.14 SUFFIXES

Suffixes to Assembly Numbers may be used to indicate such special features as flange hold-downs, recesses, lifting ledges, special terminals, etc. See Table 3 “Assembly Numbers, Cell Layouts and Terminals” page for suffixes in current use.

3.15 ASSEMBLY NUMBER MAY DEFINE SEVERAL GROUP NUMBERS

An Assembly Number may be assigned to more than one Group Number; but no Group Number may have more than one Assembly Number.

An existing Assembly Number may be assigned to any Group Number having the configuration indicated by a particular layout.

When considering assignment of an existing Assembly Number for a new Group Number, suffixes can be ignored, unless they apply to the new Group Number.

3.16 THE RULE OF REASON

In order to minimize the quantity of Group Numbers, the “Rule of Reason” shall be applied to all borderline situations.

EXAMPLE: When various terminal designs all accomplish the same purpose, they will be assigned the same Assembly Number.

3.17 WHEN NEW GROUP NUMBER IS “OFFICIAL”

The Assignment of a Group Number for a new battery size and/or configuration will become official only upon recommendation by the SAE/BCI Committee.

3.18 APPLICATIONS FOR NEW GROUP NUMBERS

Any manufacturer or individual seeking the assignment of a new Group Number must petition the SAE or BCI Committee, giving all details of the physical characteristics of the battery, and the applications for which it is intended.

Based on the information supplied, the SAE Committee will determine whether a battery should be classified in an established Group, assigned a new Group Number, or not listed at all.

3.19 DIRECTION OF COMMUNICATIONS

Communications should be in writing, directed to the appropriate SAE committee.

3.20 RECOGNITION OF JIS, EN, IEC BATTERY GROUP NUMBERS

When a new battery size originates through either Japanese or European battery specifications and vehicle registrations in North America are in significant quantities, then SAE J2981 may recognize and list the original battery identification number (either JIS, EN, IEC specification). SAE/BCI numbering protocol should be used whenever possible.

3.21 NON-SAE/BCI GROUP SIZE RECOGNITION

Use of Japanese and European Community generated battery group numbers is permitted. This is in recognition of the increasing number of vehicles that contain batteries that are described by Japanese and European specifications. When approved by committee action, the appropriate JIS, EN and IEC battery number will be listed in the SAE J2981 standard.

4. EXCEPTIONS

4.1 GUIDELINE A

4.1.1 Delisting of Group Numbers

Group Numbers are delisted from the SAE Table 3 and 4 as necessary to avoid complexity.

4.2 GUIDELINE B

4.2.1 Reassignment of Group Numbers

A Group Number that has been delisted from the SAE Identification table as deemed necessary by the committee.

4.3 GUIDELINE C

4.3.1 Approximate Performance Ranges

The “Approximate Performance Ranges” in the table will reflect the lowest and highest ratings for the OE batteries in a Group.

Table 1

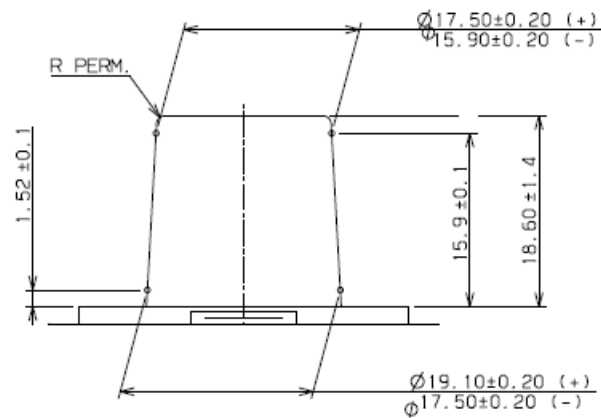
Performance Standards References*:	
SAE	J537
IEC	IEC 50342-1
EN	EN 50342-1:2006
JIS	D 5301:2006

* The latest issue of the publications shall apply.

Table 2 - Termination

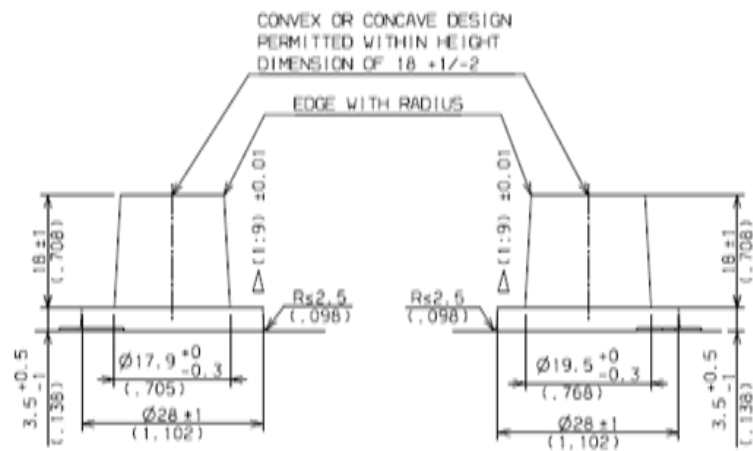
Terminal Index				
	SAE	Automotive Post		Figure 1
	IEC Standard	Per IEC60095-2		Figure 2
	EN Standard	Per EN60095-2		Figure 2
	JIS D5301	T1 (Thin)		Figure 3
	JIS D5301	T2 (Thick)		Figure 3
	SAE	Side Terminal		Figure 4
	SAE	Side Terminal Thread Detail		Figure 4
	SAE	Stud Heavy Duty		Figure 5

Table 2 (cont.)



TERMINAL POST DIMENSIONS

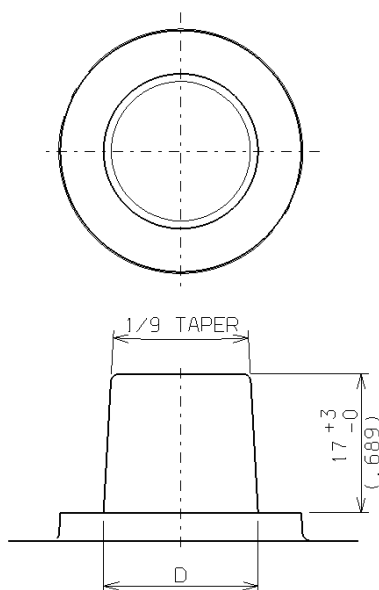
Figure 1 - SAE terminal - type A



NEGATIVE TERMINAL

POSITIVE TERMINAL

Figure 2 - IEC/EN terminal - type A1

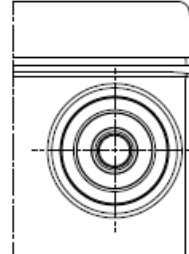
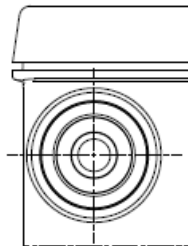
Table 2 (cont.)**Figure 3 - JIS terminal - type A2, A3**

Terminal Type	D, mm	D, mm
	Positive Terminal	Negative Terminal
A ₂	14.7 ⁰ / -0.3	13.0 ⁰ / -0.3
A ₃	19.5 ⁰ / -0.3	17.9 ⁰ / -0.3

Table 2 (cont.)

POS (LEFT)

NEG (RIGHT)



3/8 - 16 UNC-2B
THREAD
HOLE DEPTH - 7.9(0.31) MIN

3/8 - 16 UNC-2B
THREAD
HOLE DEPTH - 7.9(0.31) MIN

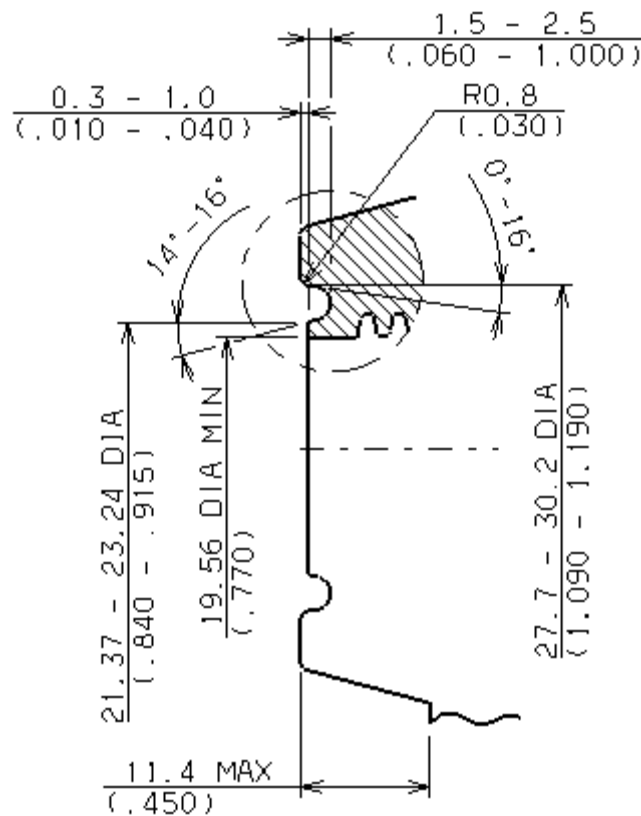


Figure 4 - SAE side terminal - type S