

AIS-040

AUTOMOTIVE INDUSTRY STANDARDS

**Battery Operated Vehicles -
Method of Measuring the Range**

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ON BEHALF OF :
AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE

UNDER
CENTRAL MOTOR VEHICLE RULES – TECHNICAL STANDING COMMITTEE

SET-UP BY
MINISTRY OF ROAD TRANSPORT & HIGHWAYS
GOVERNMENT OF INDIA

September 2003

Status chart of the Standard to be used by the Purchaser for updating the record.

Sr. No.	Corrigenda	Amendment	Revision	Date	Remark	Misc.

General Remarks :

Introduction

The Government of India felt the need for a permanent agency to expedite the publication of Standards and development of test facilities in parallel when the work of preparation of Standards is going on, as the development of improved safety critical parts can be undertaken only after the publication of the Standard and commissioning of test facilities. To this end, the Ministry of Surface Transport (MoST) has constituted a permanent Automotive Industry Standard Committee (AISC) vide order no. RT-11028/11/97-MVL dated September 15, 1997. The Standards prepared by AISC will be approved by the permanent CMVR Technical Standing Committee (CTSC) after approval, The Automotive Research Association of India, (ARAI), Pune, being the secretariat of the AIS Committee, has published this Standard. For better dissemination of this information, ARAI may publish this document on their website.

This Standard prescribes the requirements for the measurement of range of battery operated vehicle.

Considerable assistance has been taken from ECE 101.

The Committee responsible for preparation of this standard is given in Annexure- 1.

Battery Operated Vehicles - Method Of Measuring The Range

1.0 SCOPE

This standard specifies the method for measurement of range of battery operated vehicles (BoVs) expressed in km.

2.0 TERMINOLOGY

Refer Annexure – E of AIS – 049 for the definitions.

3.0 VEHICLE PREPARATION

Vehicle preparation shall be as per details given in para 3 of AIS-039.

4.0 TEST CONDITIONS

All the tests shall be conducted in ambient conditions.

5.0 TEST PROCEDURE

5.1 Test Sequence as per the details given in para 5.1 of AIS-039.

5.2 Power setting of the chassis dynamometer shall be as per the details given in para 5.2 of AIS-039.

5.3 Test Method

5.3.1 Principle

The test method described hereafter permits to measure the range of the Battery Operated Vehicle expressed in km

5.3.2 Parameters , Units and Accuracy of Measurements shall be as per para 5.3.2 of AIS-039.

5.3.3 Operating Modes

The test method includes the following steps:

- a) Initial charge of the battery as described in the 3.5 of AIS 039.
- b) Application of the cycle and measurement of the range.

Between the steps, if the vehicle has to be moved, it is pushed to the following test area (without regenerative charging).

5.3.4 The first charge of the battery need not be carried out if the vehicle manufacturer has certified that manufacturer has carried out the same.

5.3.5 The application of the cycle specified in above can be started if the vehicle manufacturer certifies that the battery is fully charged. If not, the charging procedure as per para 3.5 shall be followed.

5.4 Application of the Cycle and Measurement of the Range

The test sequence shall be followed as per 5.1 above.

The end of test criteria shall be when the vehicle is not able to meet the target curve up to 85% of the maximum speed of the driving cycle or 85 % of the maximum speed of the vehicle, whichever is less or when the on-board indication is given to the driver to stop the vehicle, which ever occurs first.

To respect human needs, up to three interruptions shall be permitted between test sequences of not more than 15 minutes in total.

At the end, measured distance covered in km is the range of the electric vehicle.

5.5 Test Result

The Test Result of the Range Test may be expressed in kilometer (km), rounded off to the nearest whole number.

Observed value shall be within 10 % of the declared value by the manufacturer. If it is not so, the second test shall be carried out using the same procedure. The result will be the average of two tests.

In case the difference between the two test readings is felt to be substantial, test will be repeated as agreed between the manufacturer and test agency.

6.0 TECHNICAL SPECIFICATIONS

The details of technical specification, approvals of changes in specification shall be as per para 6.0 of AIS-049.

Annexure – 1
(See Introduction)
COMMITTEE COMPOSITION
Automotive Industry Standards Committee

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