

AMENDMENT NO. 1
TO
AIS – 046
Automotive Vehicles - Hand-Holds for Three, Four and more than Four
Wheeled Motor Vehicles - Specification

- 1.0** Page No. III, Introduction, Paragraph 3:

Add following text at the end:

EEC Directive 70/387/EEC as amended by Directives 98/90/EC and 2001/31/EC on the approximation of the laws of the Member States relating to the doors of motor vehicles and their trailers

- 2.0** Page No. 1/6, cl. 2.2 :

Delete the clause.

- 3.0** Page No. 2/6, cl. 4.1.1:

Substitute following text for the existing text:

“The hand-holds shall be fitted for all the occupants, sitting outboard except driver”.

- 4.0** Page No. 3/6, cl. 4.2.2 (b):

Substitute following text for entire existing text:

“The height of the lower edge of at least one handrail or handhold or equivalent holding device, measured from the ground with the vehicle in running order on a horizontal and flat surface, shall not be more than 1850 mm.

However, for off-road vehicles, such distance may be increased upto 1950 mm”.

- 5.0** Page No. 3/6, cl. 4.2.2 (c):

Add following sentence at the end of the clause:

“Alternatively, the hand-hold shall comply with cross sectional area requirement of 130 - 1500 mm² at the center of the handhold”.

- 6.0** Page 3/6, cl. 4.3.1:

Substitute following text for entire existing text:

“ 4.3.1 Grab-handle and hand-hold

The grab-handle and hand-hold for individual passenger shall be designed in such a way that they shall be able to withstand, without snapping, a traction force of 70 kgf applied statically in the direction of application to the centre surface of the grab handle and hand-hold. The compliance of the strength of grab handle and handhold is to be demonstrated, either when installed on the vehicle or separately on the test fixture, simulating vehicle installation condition.

7.0 Page 3/6, clauses 4.3.2 :

Substitute following text for entire existing text:

“ 4.3.2 Straps

The straps and its attachments shall be designed in such a way that they shall be able to withstand, without snapping, a traction force of 70 kgf applied statically in the direction of application to the centre surface of the strap. The compliance of the strength of the strap is to be demonstrated, either when installed on the vehicle or on separately on the test fixture, simulating vehicle installation condition.”

8.0 Page 4/6, clauses 4.3.3 :

Substitute following text for entire existing text:

“ 4.3.3 Hand-rail

The hand-rail(s) shall be designed in such a way that they shall be able to withstand, without snapping, a traction force of 140 kgf applied statically in the direction of application to the centre surface of the hand-rail(s) between the two successive support points. The compliance of the strength of the hand-rail is to be demonstrated either when installed on the vehicle or separately on the test fixture, simulating vehicle installation condition.

9.0 Page 5/6, Annexure - A:

Add new sub clause c) as follows after cl A1.2 b):

“c) In case of clause no. 4.2.2 (b) of the standard, any increase in the height for which a minimum value is specified or any decrease for which a maximum value is specified, verification on the prototype is not required if the difference between the modified height declared by the manufacturer and the requirement specified in this standard is more than 25 mm.”

PRINTED BY

THE AUTOMOTIVE RESEARCH ASSOCIATION OF INDIA
P. B. NO. 832, PUNE 411 004

ON BEHALF OF
AUTOMOTIVE INDUSTRY STANDARDS COMMITTEE

UNDER
CENTRAL MOTOR VEHICLE RULES - TECHNICAL STANDING COMMITTEE

SET-UP BY
MINISTRY OF SHIPPING, ROAD TRANSPORT & HIGHWAYS
(DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS)

GOVERNMENT OF INDIA

February 2008

AUTOMOTIVE INDUSTRY STANDARD

**Automotive Vehicles - Hand-Holds for
Three, Four and more than
Four Wheeled Motor Vehicles -
Specification**

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December 2005

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

Sr. No.	Corr- igenda.	Amend- ment	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 on the preparation of the 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 Standards 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 Web site.

This standard is prepared to lay down a uniform testing procedure and requirements for evaluation of hand-holds provided in vehicles.

While preparing this standard, considerable assistance has been taken from ECE R 36 : Uniform provisions concerning the approval of Large Passenger Vehicles with regard to their General Construction.

The Committee responsible for preparation of this standard is given in Annexure : B

Automotive Vehicles – Hand-Holds for Three, Four and more than Four Wheeled Motor Vehicles - Specification

1. SCOPE

This standard specifies dimensional and strength requirements for hand-holds for occupants in three, four and more than four-wheeled motor vehicles as defined in AIS-053, mentioned below, excluding, agricultural tractors and construction equipment vehicles (CEVs) :

- a) 3-wheelers of Category L5M.
- b) 3-Wheelers of Category L5N having designated seating position besides driver seat.
- c) Four wheeled vehicles registered as Transport Vehicles of categories M1 without doors *, M2 and M3.
* M1 category vehicles without doors means vehicles in which open passage is provided for occupant's ingress and egress.
- d) N category of vehicles

Note: The type approval for the vehicle will be granted only after testing the vehicle submitted by the vehicle manufacturer and its satisfactory compliance to this standard. The fitment of hand-holds as approved by the test agency shall be ensured while registration of the vehicle as Transport Vehicle by Regional Transport Authorities.

2. REFERENCES

- 2.1 AIS-053 : Automotive Vehicles - Types - Terminology
- 2.2 AIS-052 : Code of Practice for Bus Body Design and Approval.

3. DEFINITIONS

- 3.1 **Hand-hold:** Means a device provided to assist passenger (s) while ingress and egress from the vehicle when vehicle is in stand still condition and for their stability during travel of vehicle
- 3.1.1 **Grab-handle :** Means a device provided to assist passenger (single user) for his stability inside the vehicle during travel.
- 3.1.2 **Strap :** Means a device (in flexible form) provided to assist passenger (single user) for his stability in sitting / standing position in vehicle during travel

3.1.3 **Hand-rail** : Means a device for ingress & egress from vehicle to assist passenger (single user at a time) when vehicle is in stand still condition and to assist the passenger(s) (more than single user at a time) in sitting or standing position for their stability when the vehicle is running or in stand still condition.

4. REQUIREMENTS

4.1 **General Requirements:** The hand-holds shall be fitted in any of the forms described in para 3 depending on its intended purpose.

4.1.1 The hand-holds shall be fitted for the occupants sitting outboard except Driver.

4.1.2 The fitment shall be such that it is convenient for the passenger(s) to make use of it in his normal sitting / standing position and during ingress and egress from the vehicle.

4.1.3 The hand-hold shall be a section enabling passengers to grasp them easily and firmly.

4.1.4 The hand-hold shall be such that it can be easily identifiable and having a slip free surface.

4.1.5 The hand-hold shall be so designed and installed as to present no risk of injury to passengers.

4.2 Dimensional Requirements:

4.2.1 Dimensional requirements for vehicles of category L5M, L5N and four wheelers of category M1 which are without doors, M2 upto GVW 3.5 tonnes and N1 category

- a) The length of the hand-hold shall be at least 100 mm to accommodate a hand of passenger.
- b) The clearance between hand-hold(s) and the adjacent part of vehicle body or wall shall be of at least 25 mm
- c) The cross sectional area measured at the middle of the length of the hand-holds other than strap shall be between 130 mm^2 and 1500 mm^2 , enabling passenger to grasp them easily and firmly
- d) In case of straps, width measured at the middle of the length of the strap shall be $40 \pm 5 \text{ mm}$

4.2.2 Dimensional requirements for vehicles of category M2 above 3.5 tonne GVW, M3 Category of vehicles and vehicles of categories N2 and N3

- a) The driver door aperture shall have minimum two hand-holds with one on each side.
- b) The hold on the left-hand side shall be positioned such that the lower edge of the grip is at a height not more than 1600 mm. The right side hand-hold shall be located at a height not greater than 2168 mm from the floor level.
- c) The cross section of the hand-hold shall not be less than 20mm and not more than 38 mm in diameter. In case of rectangular sections, the size of the section shall be of size 25 mm by 15 mm.
- d) The steering wheel shall be deemed to qualify as a hand-hold for ingress and egress of the driver from the vehicle. The dimensional requirements shall not apply to the cross section of the steering wheel.
- e) The corners of the hand-holds shall be round and smooth.
- f) Hand clearance to the mounting surface i.e. the gap for inserting the palm shall not be less than 30 mm.
- g) The hand-holds shall be placed such that the projection will not cause injury while climbing in or out through the door. No sharp corners, pointed edge shall be permitted.

4.3 Strength Requirements

4.3.1 Grab-handle

The grab-handle shall be designed in such a way that they shall be able to withstand, under installed condition, without snapping, a traction force of 70 kgf applied statically in the direction of application to the centre surface of the grab handle.

4.3.2 Straps

The straps and its attachments shall be designed in such a way that they shall be able to withstand, under installed condition, without snapping, a traction force of 70 kgf applied statically in the direction of application to the centre surface of the strap.

4.3.3 Hand-rail

The hand-rail(s) shall be designed in such a way that they shall be able to withstand, under installed condition, without snapping, a traction force of 140 kgf applied statically in the direction of application to the centre surface of the hand-rail(s) between the two successive support points.

5. TESTING CRITERIA / GUIDELINES OF EXTENSION OF TYPE APPROVAL

5.1 Testing Criteria shall be as given in Annexure-A.

ANNEXURE : A
(clause 5.1)

TESTING CRITERIA

- A.1 This Annexure gives the factors to be considered while selecting a hand-hold system to represent a range of variants for Type Approval as per this standard and the extension of Type-Approval Certificate of one model to its variants.
- A.1.1 In general, when changes in the technical specifications of hand-holds do not affect the requirements given in the standard adversely and is still within the stipulated limits the Type Approval Certificate shall be extended.
- A.1.2 The Testing Agencies shall extend Type Approval of a model to other models / variants without additional test in case of following
- a) Section dimensions of strap or hand-grips or hand-rail used on other models / variants are not reduced.
 - b) Size and number of fasteners used in attachments is not reduced.
- A.1.3 In all other cases testing needs to be carried out.

Annexure: B
(See Introduction)
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* At the time of approval of this Automotive Industry Standard (AIS)