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Indian Standard

AUTOMOTIVE VEHICLES — HAND-HOLDS FOR THREE, FOUR AND MORE THAN FOUR WHEELED MOTOR VEHICLES — SPECIFICATION

ICS 43.040.60
FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Automotive Body, Chassis, Accessories and Garage Equipments Sectional Committee had been approved by the Transport Engineering Division Council.

This standard has been formulated to lay down a uniform testing procedure and requirements for evaluation of hand-holds provided in the vehicles.

In the formulation of this standard, considerable assistance has been derived from the following International Standards:

- ECE R 36 ‘Uniform provisions concerning the approval of large passenger vehicles with regard to their general construction’.
- AIS 046 : 2005 ‘Automotive vehicles — Hand-holds for three, four and more than four wheeled motor vehicles — Specification’.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (revised)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.
Indian Standard

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 following three, four and more than four wheeled motor vehicles as defined in IS 14272:2011 ‘Automotive vehicles — Types — Terminology (first revision)’, excluding agricultural tractors and construction equipment vehicles (CEVs):

a) Three-wheelers of category L5M;
b) Three-wheelers of category L5N having designated seating position besides driver seat;
c) Four-wheelers of M2 and M3 categories, which are registered as public transport vehicles; and
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 public transport vehicle by regional transport authorities.

2 DEFINITIONS
For the purpose of this standard the following definitions shall apply.

2.1 Hand-Hold — 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.

2.1.1 Grab Handle — A device provided to assist passenger (single user) for his stability inside the vehicle during travel.

2.1.2 Strap — A device (in flexible form) provided to assist passenger (single user) for his stability in sitting/standing position in vehicle during travel.

2.1.3 Hand Rail — A device for ingress and 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.

2.2 Outboard Seating Position — A seating position nearest to the side door/exit/wall/opening in case of forward/rearward facing seat of a body shell and in the case of a side facing seat of a body shell a seating position nearest to the rear door/tail gate/exit/wall/opening.

3 REQUIREMENTS
3.1 General Requirements
The hand-holds shall be fitted in any of the forms described in 2 depending on its intended purpose.

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

3.1.2 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.

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

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

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

3.2 Dimensional Requirements
3.2.1 Following are the dimensional requirements for vehicles of category L5M, L5N and four-wheelers of category M2 and M3 up to GVW 3.5 t and N1 category:

a) Length of the handhold shall be at least 100 mm to accommodate a hand of passenger;
b) Clearance between hand-hold(s) and the adjacent part of vehicle body or wall shall be of at least 25 mm;
c) Cross-sectional area measured at the middle of the length of the hand-holds other than strap shall be between 130 mm² and 1 500 mm², enabling passenger to grasp them easily and firmly; and

d) In case of straps, width measured at the middle of the length of the strap shall be 40 ± 5 mm.

3.2.2 Following are the dimensional requirements for vehicles of category M2 above 3.5 t GVW, M3 category of vehicles and vehicles of categories N2 and N3:

a) Driver door aperture shall have minimum two hand-holds with one on each side;
b) Height of the lower edge of at least one handrail or hand-hold 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 up to 1950 mm;

c) Cross-section of the hand-hold shall not be less than 20 mm and not more than 38 mm in diameter. In case of rectangular sections, the size of the section shall be of size 25 mm × 15 mm. Alternatively, the hand-hold shall comply with cross-sectional area requirement of 130 mm² to 1500 mm² at the centre of the hand-hold;

d) 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) Corners of the hand-holds shall be round and smooth;

f) Hand clearance to the mounting surface, that is, the gap for inserting the palm shall not be less than 30 mm; and

g) 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.

3.3 Strength Requirements

3.3.1 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 hand-hold is to be demonstrated, either when installed on the vehicle or separately on the test fixture, simulating vehicle installation condition.

3.3.2 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. The compliance of the strength of strap is to be demonstrated, either when installed on the vehicle or separately on the test fixture, simulating vehicle installation condition.

3.3.3 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. The compliance of the strength of hand-rail is to be demonstrated, either when installed on the vehicle or separately on the test fixture, simulating vehicle installation condition.

4 TESTING CRITERIA/GUIDELINES OF EXTENSION OF TYPE APPROVAL

Testing criteria shall be as given in Annex A.
ANNEX 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 this 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; and

c) In case of 3.2.2 (b), 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.

A-1.3 In all other cases testing needs to be carried out.
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This Indian Standard has been developed from Doc No.: TED 6 (641).

Amendments Issued Since Publication

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Published by BIS, New Delhi