

Finalised Draft

AUTOMOTIVE INDUSTRY STANDARD

**Type Approval Requirement for
Moped with Three Wheels of
category L1-1**

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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 Road Transport & Highways (MoRT&H) 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.

The topic was first raised in 57th CMVR-TSC. Government has received number of presentations from person with disabilities, highlighting the problem being faced by them due to non-availability of disability friendly mobility scooters in the market. It was decided to deliberate the subject in AISC to propose a way forward. In 65th AISC secretariat requested panel to study the requirements of this vehicle and adoption in India. ICAT was nominated as a panel convener. In 59th CMVR-TSC, panel was informed to formulate a new standard and recommend the required changes in CMVR. In 66th AISC, secretariat agreed for EU boundary conditions.

This Standard prescribes the requirements for the construction and functional safety of L1-1 category Vehicles. While formulating this standard a considerable assistance has been derived from the criteria & requirements specified for L2e category in Regulation (EU) 168/2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles.

The Committee responsible for preparation of this standard is given in the Annex- A and B.

Type Approval Requirement for Moped with Three Wheels of category L1-1

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| Type Approval Requirement for Moped with Three Wheels of category L1-1 | |
|---|---|
| 1.0 | Scope |
| 1.1 | <p>This standard lays down the type approval requirements applicable to moped with three wheels of category L1-1 as defined in CMV rule 2.</p> <p>Note: Vehicles fitted with pedal assistance and tyres (other than referred in IS 15627) are not covered under the scope of this standard.</p> |
| 2.0 | References |
| 2.1 | IS 14272 : 2011 – Automotive Vehicles – Types – Terminology |
| 2.2 | AIS-065 : 2005 - Statutory Plates and Inscriptions for Motor Vehicles, their Location and Method of attachment Vehicle Identification Numbering System |
| 3.0 | Definitions |
| 3.1 | “Arm Rest” means a padded support for forearms of the occupants, as attached to the seat of the vehicle. |
| 3.2 | “Mass in running order” means a vehicle kerb weight as determined in accordance with IS 11422: 2001 as amended by time to time. |
| 3.3 | <p>Category L1-1 means a moped with three wheels having:</p> <ul style="list-style-type: none"> (i) Engine capacity not exceeding 50 cc in case of thermic engines or Maximum net power not exceeding 4 kW if fitted with electric power train; and (ii) Maximum design vehicle speed not exceeding 45km/h; and (iii) Kerb weight not exceeding 270 kg (excluding mass of traction batteries); and (iv) Equipped with a maximum of two seating positions, including the seating position for the driver (75 kg). |
| 3.3.1 | Category L1-1M means a category L1-1 vehicle on account of its technical features intended to carry passengers. |
| 3.3.2 | <p>Category L1-1N means a category L-1-1 vehicle on account of its technical features intended to carry goods that meets the following criteria:</p> <ul style="list-style-type: none"> (a) $\text{length}_{\text{loading bed}} \times \text{width}_{\text{loading bed}} = 0.3 \times \text{Length}_{\text{vehicle}} \times \text{maximum Width}_{\text{vehicle}}$ or (b) An equivalent loading bed area as defined above in order to install machines and/or equipment; and (c) Designed with a loading bed area which is clearly separated by a rigid partition from the area reserved for the vehicle occupant; and |

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| | (d) The loading bed area shall be able to carry a minimum volume represented by a 600 mm cube, maximum permissible pay-mass of 300 kg in addition to driver.” |
| 3.4 | “Pay-mass” means the difference between the technically permissible maximum laden mass and the actual mass of the vehicle; |
| 3.5 | “Seating” may be classified based on: |
| 3.5.1 | “Continuous Seat Vehicle” means L1-1M category vehicle with single seat over the vehicle length with seating capacity of two persons only. |
| 3.5.2 | “Split Seat Vehicle” means L1-1M category vehicle with two separate seats (refer Fig. 1) complying with the requirements of Table 1. |
| 3.6 | For definitions related to Type Approval terminologies i.e. Manufacturer, type approval, base vehicle, etc. the definitions given in AIS-017 shall apply. |
| 4.0 | General Requirements |
| 4.1 | Dimensional Requirements: The overall dimension of the L1-1 category vehicle shall be as notified under rule 93 of CMVR 1989. |
| 5.0 | APPLICATION FOR TYPE APPROVAL |
| 5.1 | Application for Type Approval shall be submitted to the test agency as specified in Table 1 of this standard. |
| 5.1.1 | Vehicle manufacturer shall submit Information in AIS-007 (Rev. 5) as amended from time to time. |
| 6.0 | Type Approval Requirements |
| 6.1 | The L1-1 category vehicle manufacturers shall submit their prototype vehicle to any of the testing agencies as referred in CMV rule 126. |
| 6.1.1 | All L1-1 category vehicle shall comply with the provisions specified under clause 6.2 below. |
| 6.2 | CMVR Requirements for L1-1 category Vehicles. |
| 6.2.1 | L1-1 category vehicle as defined in this standard shall comply with the requirements of Table - 1 of this standard. |
| 6.2.2 | The L1-1 category vehicle shall comply with test requirements as per this standard, in addition to those notified under CMVR 1989. Wherever, there is difference in the test requirements given in other standards notified under CMVR 1989 and this standard, then requirements of this standard shall be applicable. |

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| 6.3 | Specific Requirements |
| 6.3.1 | All vehicles of L1-1 category shall be tested as per category 3-2 referred in IS 14664:2010 for brake performance. In case vehicle maximum speed is less than 25 km/h, then IS 14664:1999 shall be applicable. |
| 6.3.2 | All vehicles of L1-1 category shall not exceed 75 dB noise limit when tested as per IS 3028:1998. |
| 6.3.3 | Arm rest shall be provided such that the right arm rest shall be fixed and left arm rest shall be swivel along the vertical axis for the movement of the passenger, in case of split seat vehicles. |
| 6.3.4 | In case of split seat vehicles of L1-1M category, left arm rest shall comply with the load requirements of AIS 046. |
| 6.4 | Seat Requirements (refer Fig. 1) |
| 6.4.1 | Seat requirement shall meet the requirements of this clause. Seats shall be installed in such a way that occupant shall always face towards the steering control of the vehicle. |
| 6.4.2 | Seat Base height for both driver and passenger shall be between 300mm to 450mm (This height may however be reduced to not less than 250 mm in case of body design constraints such as wheel arches, engine compartment, battery compartment, etc.) |
| 6.4.3 | Seat width: 350 mm to 450mm for both driver & passenger (if applicable).. |
| 6.4.4 | Seat back height: Minimum height of upper edge of seat back shall be 325 mm measured from H-point. The seat back height shall be 200 mm minimum |
| 6.4.5 | Leg Space for passenger seat: A minimum Leg space of 280 mm shall be provided measuring from the front edge of the seat cushion to any part of the vehicle towards front. |
| 6.4.6 | A minimum foot/floor space of 280 mm shall be provided for each passenger. |



Fig. 1

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| 7.0 | Criteria for Extension of Approval |
| 7.1 | Every modification to the type approved vehicle shall be intimated by the manufacturer to the Testing Agency. |
| 7.2 | <p>On review of the modifications carried out, the Test Agency shall grant the extension of type approval or conduct additional tests as required for granting extension of type approval.</p> <p>Note: In case of additional tests required only those parameters need to be tested which are modified.</p> |
| 7.3 | For the purpose of clause 7.2, Changes in parameter affecting performance requirements of CMVR (e.g. brakes, noise etc.) shall be as per details given in the individual standards. |

Table -1
Requirements for Type Approval of L1-1 category Vehicles
(Clause 6.2.1)

| (1) | (2) | (3) | (4) | (5) |
|-------|---|----------|--|--------------------|
| S.No. | Parameters | CMV Rule | Reference Standard | Test Applicability |
| 1 | Overall Dimensions of the vehicle | 93 | - | ✓ |
| 2 | Selection and fitment of tyres | 95 | AIS 050:2004 | ✓ |
| 3 | Size & Ply ratings of Tyres | 95 | IS:15627:2005 | ✓ |
| 4 | Brake test | 96 | IS: 14664: 2010 or IS 14664 : 1999 | ✓ |
| 5 | Fitted with ABS or CBS if vehicle's Maximum design speed \geq 25 Km/h | | | ✓ |
| 6 | Forward and Backward motion | 99 | - | ✓ |
| 7 | Signaling Device ,Direction indicators and Stop Light | 102 | - | ✓ |
| 8 | Position of indicator | 103 | - | ✓ |
| 9 | Fitment of Reflectors | 104 | - | ✓ |
| 10 | Automatic head lamp ON (AHO) / DRL | 105 | - | ✓ |
| 11 | Deflection of Light | 106 | - | ✓ |
| 12 | Use of Red or White lights | 108 | - | ✓ |
| 13 | Parking Light | 109 | - | ✓ |
| 14 | Prohibition of spot light | 111 | - | ✓ |
| 15 | Exhaust gases | 114 | - | ✓ |
| 16 | Location of Exhaust Pipes | 114 | - | ✓ |
| 17 | Emission Test | 115 | AIS 137 (Part 1) | ✓ |
| 18 | Specific Requirements for L Category Electric Power Train Vehicles | 124 | AIS 156 | ✓ |

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|----|--|-------------|-------------------------------------|---|
| 19 | Speedometer calibration | 117 | IS:11827:2008 | ✓ |
| 20 | Horn Installation | 119 | IS:15796:2008 | ✓ |
| 21 | Horn Performance | | IS:1884:1993 | ✓ |
| 22 | Pass by Noise Measurement | 120 | IS 3028:1998 | ✓ |
| 23 | Embossment of the chassis number & Engine number or in case of Battery operated Vehicles, motor number and month of manufacture(VIN) | 122 | AIS-065-2005 | ✓ |
| 24 | *Safety devices in Motor cycle (saree guard) | 123 | AIS 166 DF | ✓ |
| 25 | Pillion Hand holds | 123 | IS:14495:1998 or AIS-046:2005 | ✓ |
| 26 | Footrests as designed for the rider and footrests on both the sides for pillion rider | 123 | AIS-148:2018 | ✓ |
| 27 | 2W External projection | 123 | AIS-147:2018 | ✓ |
| 28 | Brake hose (if fitted) | 124 | IS : 7079:2008 | ✓ |
| 29 | Brake fluid (if fitted) | 124 | IS : 8654 :1986 | ✓ |
| 30 | Control Cables fitted on engine capacity less than 50 cc | 124 | IS 10791:1983 | ✓ |
| 31 | Tell tale symbols | 124 | AIS 126:2014 | ✓ |
| 32 | EMC (including electric power train vehicles) | 124 | AIS 004(Part 3) : 2009 | ✓ |
| 33 | Gradeability | 124(1) (23) | AIS-003-1999 | ✓ |
| 34 | Installation requirements for Lighting & Signaling devices | 124 | AIS 009(Rev 1):2011 | ✓ |
| 35 | *Spray Suppression System (less than 11kW) | 124 | AIS-103-2009 | ✓ |
| 36 | Rear View Mirror - Specification | 125 | AIS-001- rev.1:2011 | ✓ |
| 37 | Rear View Mirror - Installation | 125 | AIS-002- rev.1:2011 | ✓ |
| 38 | Seat Requirements | 125 | AIS-134-2016 | ✓ |
| 39 | *Windscreen Wiping System | 124 | AIS-045-2004 | ✓ |
| 40 | *Windscreen Wiper Blade | 101 | IS 15802:2008 | ✓ |

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|----|--|-----|--|---|
| 41 | *Safety Glass | 100 | IS 2553 (Part 2) (Rev. 1): 2019 (Windows may be of acrylic or plastic transparent sheet) | ✓ |
| 42 | Wheel Rims | 124 | AIS- 073- 2005 Or IS 16192 | ✓ |
| 43 | Measurement of Electrical Energy Consumption | 124 | AIS-039 (Rev.1)-2015 | ✓ |
| 44 | Method of Measuring the Range | 124 | AIS-040 (Rev.1)-2015 | ✓ |
| 45 | Measurement of Net Power and Maximum 30 Minute Power | 124 | AIS-041 (Rev.1)-2015 | ✓ |
| 46 | Lighting and Light Signaling Devices (Performance) | 124 | AIS-010- rev1:2010 | ✓ |
| 47 | Fitment of Lamps | 105 | - | ✓ |
| 48 | Anti-Theft device | 124 | AIS-074-2005 | ✓ |
| 49 | Traction batteries | 124 | AIS-048-2009 or AIS 156:2020 | ✓ |
| 50 | Vehicle Weighment | - | IS: 11825 :1986 | ✓ |
| 51 | Type Approval requirements for Electric power train vehicles | 124 | AIS-049(Rev. 1) | ✓ |

* Component, if fitted to comply with the requirements

Note : All the standards (AIS/IS) referred above in the Table shall be applicable as amended and revised from time to time.

ANNEX A
COMPOSITION OF AISC PANEL ON*
(See Introduction)

| | |
|--------------------------------|---|
| Convener | |
| Ms. Vijayanta Ahuja | International Centre for Automotive Technology (ICAT) |
| Members | Representing |
| Mr. Manoj Desai | The Automotive Research Association of India (ARAI) |
| Ms. Sheetal Bakle | The Automotive Research Association of India (ARAI) |
| Mr. S. H. Nikam | The Automotive Research Association of India (ARAI) |
| Mr. V. P. Rawal | The Automotive Research Association of India (ARAI) |
| Mr. Konaki Ramu | The Automotive Research Association of India (ARAI) |
| Ms. Shubhangi Dalvi | Central Institute of Road Transport (CIRT) |
| Mr. V. M. Dhanasekar | Global Automotive Research Centre (GARC) |
| Mr. Tarun Sharma | International Centre for Automotive Technology (ICAT) |
| Mr. Mayank Sharma | International Centre for Automotive Technology (ICAT) |
| Mr. Arvind Kumbhar | SIAM (Bajaj Auto Ltd.) |
| Mr. Piyush Chowdhry | SIAM (Hero Moto. Corp. Ltd.) |
| Mr. Danish Gazali | SIAM (Hero Moto. Corp. Ltd.) |
| Mr. Navneet Kaushik | SIAM (Honda Motorcycle & Scooter India Pvt. Ltd.) |
| Mr. Subrat Dash | SIAM (Hero Moto. Corp. Ltd.) |
| Mr. Karan Rajput | SIAM (Honda Motorcycle & Scooter India Pvt. Ltd.) |
| Mr. R. S. Mulay | SIAM (Piaggio Motor) |
| Mr. M. S. Anandkumar | SIAM (TVS Motor Company Ltd.) |
| Mr. S. Gururajan | SIAM (TVS Motor Company Ltd.) |
| Mr. Pawan Kumar | SIAM (India Yamaha Motor Pvt. Ltd.) |
| Mr. M. Kansal | SIAM (India Yamaha Motor Pvt. Ltd.) |
| Representative from M/s Tunwal | M/s Tunwal |
| Mr. Nikhil | TEMPL |
| Mr. Santosh Meghani | Ather Energy |

ANNEX B

(See Introduction)

COMMITTEE COMPOSITION *

Automotive Industry Standards Committee

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| Chairperson | |
| Dr. Reji Mathai | Director, The Automotive Research Association of India, |
| Members | Representing |
| Representative from | Ministry of Road Transport and Highways |
| Representative from | Ministry of Heavy Industries |
| Representative from | Office of the Development Commissioner, MSME, Ministry of Micro, Small and Medium Enterprises, New Delhi |
| Shri Shrikant R. Marathe | Former Chairman, AISC |
| Shri P. V. Srikanth | Bureau of Indian Standards |
| Director | Central Institute of Road Transport |
| Director | Global Automotive Research Centre |
| Director | International Centre for Automotive Technology |
| Director | Indian Institute of Petroleum, Dehra Dun |
| Director | Vehicles Research and Development Establishment |
| Director | Indian Rubber Manufacturers Research Association |
| Representatives from | Society of Indian Automobile Manufacturers |
| Representative from | Tractor Manufacturers Association |
| Representative from | Automotive Components Manufacturers Association of India |
| Representative from | Indian Construction Equipment Manufacturers' Association |
| Member Secretary | |
| Shri Vikram Tandon | The Automotive Research Association of India |

* At the time of approval of this Automotive Industry Standard (AIS)