

AMENDMENT NO. 1 17 September 2013
TO
AIS-050:2004
Requirements for Vehicles with regard to Selection and Approval
for use of Tyres for Two and Three-Wheelers

1.0 Page No. 1, Clause No. 2.1, (a)

Substitute following text for existing text

- a)
- i) IS 15636:2005 Automotive Vehicles – Pneumatic Tyres for Commercial Vehicles – Diagonal and Radial Ply – Specification
 - ii) IS 15633: 2005 Automotive Vehicles – Pneumatic Tyres for Passenger Car Vehicles – Diagonal and Radial Ply – Specification.
 - iii) IS 15627:2005 Automotive Vehicles – Pneumatic Tyres for Two and Three wheeled vehicles – Specification

2.0 Page No. 1, Clause No. 2.2.3

Substitute the words and figures “IS: 15633:2005 and IS:15627:2005” for the words and figures “AIS-044 Part 2 and 3”.

3.0 Page No. 2, Clause No. 4.1

Substitute the words and figures “IS: 15627:2005” for the words and figures “AIS-044 (Part 3)”.

4.0 Page No. 2, Clause No. 4.2

Substitute the words and figures “IS: 15627:2005” for the words and figures “AIS-044 Part 3” and the words and figures “IS: 15633:2005” for AIS-044 Part 2” wherever it appears.

5.0 Page No. 3, Clause No. 6.1

Substitute the words and figures “IS: 15633:2005 or IS: 15627:2005” for the words and figures “AIS-044 (Part 2 or 3)”.

6.0 Page No. 3, Clause No. 6.2

Substitute the words and figures “IS: 15633:2005 or IS: 15627:2005” for the words and figures “AIS-044 (Part 2 or 3)”.

7.0 Page No. 4, Clause No. 7.4

Substitute the words and figures “IS: 15633:2005 or IS: 15627:2005” for the words and figures “AIS-044 (Part 2 or 3)”.

8.0 Page No. 4, Clause No. 8.0, 9th Line

Substitute the words and figures “IS: 15636:2005, IS: 15633:2005 and IS: 15627:2005” for “AIS-044”.

9.0 Page No. 4, Clause No. 8.0, Note

Substitute words “IS: 15633:2005 and IS: 15627:2005” for “AIS-044 (Part 2 and 3)”.

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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 ROAD TRANSPORT & HIGHWAYS
(DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS)
GOVERNMENT OF INDIA

17 September 2013

AIS-050

AUTOMOTIVE INDUSTRY STANDARD

**Requirements for Vehicles
with regard to Selection and Approval
for use of Tyres for Two and
Three -Wheelers**

PRINTED BY:

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GOVERNMENT OF INDIA

June 2004

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.

The selection and fitment of pneumatic tyre is important for the safe operation of vehicles. With the new generation vehicles and development in road infrastructure facilities the vehicle speeds are increasing day by day. To ensure, safety of operation of tyres and vehicles by proper selection of tyres, there was a need for a standard specifying the selection and fitment requirements of the pneumatic tyres to vehicles, based on their speed and load carrying capabilities.

Considerable assistance has been taken from 97/24/EC Chapter 1 “Tyres for two or three-wheeled motor vehicles and their fittings” and other national standard.

The Automotive Industry Standards Committee responsible for preparation of this standard is given in Annexure : A.

Requirements for Vehicles with regard to Selection and Approval for use of Tyres for Two and Three-Wheelers

1.0 SCOPE

This standard specifies the guidelines for selection and approval for use of tyres for two wheelers, three wheelers.

2.0 REFERENCES AND DEFINITIONS:

2.1 References

Following standards are necessary adjuncts to this standard:

- a) AIS-044 Part 1 to 3 Automotive Industry Standard: Tyres for motor vehicles
- b) AIS 007 (Revision 1) Information on Technical Specifications to be submitted by the Manufacturer
- c) IS 11422 - 2001 Terms and definitions of weights of two wheeled motor vehicles.
- d) ETRTO Standards manual

2.2 Definitions:

For the purpose of this standard the following definitions shall apply:

- 2.2.1 **Maximum Axle Weight** means the “maximum axle weight” as defined in IS 11422 - 2001 and as declared by the manufacturer in the formats prescribed in AIS 007 (Rev.1).
- 2.2.2 **Maximum design speed of the vehicle** means the maximum speed of the vehicle as declared by the vehicle manufacturer in the technical specification submitted as per AIS 007 Rev.1
- 2.2.3 Definitions given in AIS 044 Part 2 and 3 are also applicable.

3.0 TYPE APPROVAL

3.1 Application for Type Approval

- 3.1.1 The specification submitted by the manufacturer at the time of Type Approval of the vehicle to this standard shall contain at least the information listed in following paragraphs of AIS007 Rev.1. **1.0**, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6 and 1.7, **2.0**, 2.1, 2.2, 3.2, 4.2, 4.3, 4.3.1, 4.3.2, 4.4, 4.5, 4.6, 4.6.1 and 4.6.2, **34.0**, 34.1, 34.1.1, 34.1.2, 34.1.3, 34.2, 34.2.1, 34.2.2, 34.2.3, 34.3, 34.3.1, 34.3.2, 34.4, 34.4.1, 34.4.2, 34.4.3, 34.5, 34.5.1, 34.5.2, 34.5.3, 34.6, 34.6.1, 34.6.2, 34.6.3 and 34.7.

3.1.2 If the above information is submitted in a consolidated form, for the type approval of the whole vehicle, it is not necessary to submit this information again.

3.2 Modifications/changes in Technical Specification.

3.2.1 Every functional modification in technical specifications pertaining to fitment of tyres, declared in accordance with para 3.1, shall be intimated to the testing agency. Testing agency may then consider, whether,

3.2.1.1 vehicle with modifications complies with specified requirements, or,

3.2.1.2 any further verification is required.

3.2.2 For considering whether testing/verification is required or not, guidelines given in para 7.0 shall be followed.

3.2.3 In case of 3.2.1.2, checks for those parameters, which are affected by the modifications, only need to be carried out.

3.2.4 In the event of 3.2.1.1 or in the case of 3.2.1.2 after successful compliance to requirements, the certificate of compliance shall be validated for the modified version.

3.2.5 These conditions are applicable irrespective of any change in commercial name of the model.

4.0 GENERAL REQUIREMENTS

4.1 All the tyres fitted on the vehicle shall comply with the requirements of AIS-044 (Part 3) and shall have speed capability and load carrying capacity as given in para 5.0 and 6.0.

4.2 The size designation of the tyre used on the vehicle shall be one covered by AIS-044 (Part 3).

In the case of three wheelers the tyres with size designation covered by AIS-044 (part 2) may also be used, provided these tyres meet the requirements of AIS-044 (part 2)

4.3 All tyres fitted on the same axle shall be identical in following respects:

- a) Tyre size designation,
- b) Structure (diagonal or bias ply (cross-ply), bias-belted, radial),
- c) Speed category
- d) Load-capacity index/ply rating and maximum load rating

5.0 SPEED CAPABILITY

5.1 Every tyre which is fitted on the vehicle shall have a speed category symbol compatible with the maximum design speed of the vehicle as declared by the vehicle manufacturer or the applicable load/speed combination, as detailed in para 6.0.

- 5.2 The speed corresponding to the speed category of the tyre may be equal to or more than the maximum design speed of the vehicle.
- 5.3 The load carrying capacity of the tyre shall be corrected as a relation to its speed category and the maximum design speed of the vehicle as detailed in para 6.2.

6.0 LOAD CAPACITY

6.1 The load carrying capacity corresponding to the load capacity of tyre (see AIS-044 Part 2 or 3) that is fitted on the vehicle, taking into account the permitted variation as given in para 6.2, shall be equal to or more than the following:

- a) The maximum axle weight declared by the vehicle manufacturer, where the axle is equipped with only one tyre
- b) Half the maximum axle weight declared by the vehicle manufacturer, where the axle is equipped with two tyres in single formation.
- c) 0.54 times the maximum axle weight declared by the vehicle manufacturer, where the axle is equipped with two tyres in dual (twin) formation.
- d) 0.27 times the maximum axle weight declared by the vehicle manufacturer, where the axle is equipped with two sets of tyres in dual (twin) formation.

6.2 Correction to load carrying capacity based on the maximum speed:

The permitted variation in the load carrying capacity for tyres of various speed categories is indicated in AIS-044 (part 2 or 3).

For the purpose of verification of compliance to para 6.1 above, the load carrying capacity of the tyre shall be the maximum permitted load corresponding to the load capacity index/ply rating of the tyre with the permitted variation added or subtracted as applicable as per AIS-044 (part 2 or 3) corresponding to the maximum design speed of the vehicle.

7.0 CRITERIA FOR EXTENSION OF APPROVAL

7.1 In case of following changes, the verification shall be carried out for establishing compliance of the changed parameters to the requirements specified in this standard:

7.2 Requirements of speed and load capacity:

7.2.1 In the case of following changes, the requirements of para 5.0 and 6.0 shall be verified:

- a) Use of tyre having speed category symbol of a lower maximum designated speed.
- b) Use of a tyre with a decrease in the load capacity index/ply rating.

- c) Increase in the maximum axle weights of the vehicle.
 - d) Increase in the maximum design speed of the vehicle
- 7.2.2 For use of tyre having speed category symbol of a higher maximum designated speed or increased load capacity index/ply rating or a decrease in the maximum design speed or maximum axle weights of the vehicle, no verification is required.
- 7.3 In case of a change of the tyre size designation, for the purpose of this standard, requirements of verification shall be as per para 7.2.
- 7.4 All tyres fitted on vehicles shall have approval to AIS-044 (part 2 or 3). In addition, if there are changes in the speed category or load capacity index/ply rating or tyre size designation, the requirements specified in para 7.2 and 7.3 shall apply.
- 7.5 Changes other than the above are not considered to affect the compliance to this standard adversely.
- 8.0 For the purpose of type approval of the vehicle, the dynamic rolling radius shall be calculated as:

$$\text{Dynamic rolling radius} = \frac{\text{Rolling circumference (Cr)}}{2 \pi}$$

Where "Rolling circumference (Cr)" means the theoretical distance covered by the center (axis) of the wheel of a vehicle in motion during one complete revolution of the tyre and obtained from the following formula:

where: $Cr = f \times D$,

D = Design overall diameter of the tyre in accordance with the tyre size designation as defined in AIS-044.

f = 3.02 for tyres, the rim diameter code for which is greater than, or equal to, 13

3.03 for radial ply tyres, the rim diameter code for which is not more than 12.

2.99 for diagonal or bias-ply (cross ply) tyres or bias belted tyres, the rim diameter code for which is not more than 12.

Note: This formula is applicable in the cases where the dynamic rolling radius is a parameter affecting the vehicle test results. This is based on the details given in ETRTO Standards manual.

In case the information is available in the documents referred to in AIS-044 (part 2 and 3) the same may be used instead of using the above formula.

Annexure : A
(See Introduction)
COMMITTEE COMPOSITION
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