

For comments only

Draft
Indian Standard
AUTOMOTIVE VEHICLES- METHOD OF
TEST FOR ARTICULATION
(*first revision of IS 13506*)

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FOREWORD

(formal clauses will be added later on)

The over all performance of an automotive vehicle is a function of the performance of its various components, systems etc. The performance of a vehicle should not deteriorate even in adverse conditions of operation of the vehicle. The value of articulation height given in this standard will be reviewed as and when further data would be available. The standard gives a uniform method to establish the height of articulation achievable by an automotive vehicle.

This standard was first published in 1992. The revision of this standard has been taken up for updating based on latest developments in the field.

1 SCOPE

1.1 This standard specifies the method of test for articulation of M & N category vehicles as defined in IS 14272.

2 REFERENCES

The following standards contain provisions, which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

<i>IS No</i>	<i>Title</i>
IS 14272:2009	Automotive Vehicles – Types – Terminology - Three and four wheelers (<i>under print</i>).

3 TERMINOLOGY

3.1 Height of Articulation

3.1.1 *For 2 Axle Vehicles*

It is the maximum height to which the diagonally opposite wheels to be raised till one of the remaining wheels starts lifting up or the suspension is compressed to the maximum limit allowed by the stoppers, if provided.

3.1.2 For Vehicles With More Than 2 Axles

It is the maximum height to which the farthest & innermost diagonally opposite wheels to be raised till one of the remaining wheels starts lifting up or the suspension is compressed to the maximum limit allowed by the stoppers, if provided.

4 PREPARATION OF THE VEHICLE

4.1 The vehicle shall conform in all its parts and components to the design and/or production series as applicable.

4.2 The tyres fitted on the vehicle shall not have done more than 10 per cent of its life and shall be inflated to the pressure recommended by the vehicle manufacturer. Tread depth measurement may be used to assess tyre life.

4.3 The vehicle shall be loaded to the manufacturers' maximum total weight and the load distribution between the axles shall be as recommended by the manufacturer & the articulation test may be carried out in unladen condition also. .

5 TEST PROCEDURE

5.1 The vehicle shall be placed on a level surface. In case of two axled vehicles, the diagonally opposite wheels and for vehicles with more than two axles, the farthest & innermost wheels shall be raised up by equal amounts by jacking directly under the wheel. Alternatively, these wheels may be raised from the ground and suitable planks placed under the wheel. The wheels then may be lowered or any other method by which the diagonally opposite wheels shall be raised by equal height from the ground may be followed. The lifting shall be done till the conditions given in **3.1** are established. The maximum articulation height shall be measured and recorded as per Annex A

5.2 The following operations shall be checked with above mentioned conditions of the vehicle:

- a) Closing and opening of doors;
- b) Closing and opening of bonnet cover;
- c) Functioning of controls like clutch, brake and accelerator pedals, change speed operation in stationary condition without fouling of their respective linkages; and

5.3 The following observations shall be made when the vehicle is in the articulated condition as in **5.1**.

- a) Fouling of brake lines or fuel lines against chassis frame cross members etc ;
- b) Observation of any cracks on the chassis frame, cross members etc;
- c) Fouling of steering linkages with wheels, load springs or brake pipings;
- d) Observation of any leakages, cracks on Shock absorbers
- e) Closing and opening of luggage compartment or enclosed loading compartment.
- f) Fouling of fan - cowl / ring while starting the engine

5.4 The above test shall be repeated for the other pair of diagonally opposite wheels in fully laden condition & articulation test may be carried out in unladen condition.

ANNEX A
(Clause 5.1)

VEHICLE PARAMETERS	RECORD OBSERVATION
A-1 Vehicle configuration :	
A-2 Number of axles (Steered / Non-steered) :	
A-3 Tyre pressure : (psi / kpa)	
A-4 Tread depth : (mm)	
A-5 Maximum Gross vehicle weight : (kg)	
A-6 Maximum permissible axle weights : (kg) {FAW1 / FAW2 / RAW3 / RAW4}	
A-7 Unladen Front Axle weight (kg) {FAW1 / FAW2}	
A-8 Unladen Rear axle weight (kg) {RAW1 / RAW2}	
A-9 Articulation Height - (mm) <ul style="list-style-type: none">a) shall not be less than 200mm for Off road vehicles (like Tippers)b) shall not be less than 150mm for other vehicles	
A-9.1 Lift of farthest diagonally opposite wheels for all vehicles : (mm) RH Front & LH Rear : LH Front & RH Rear :	

- A-9.2** Lift of innermost diagonally opposite wheels for vehicles with more than two axles - (mm)
RH Front & LH Rear :
LH Front & RH Rear :

- A-10** Parameters to be checked in articulated condition - (Clearances as observed by OEMs)
 - A-10.1** Opening & closing of doors / bonnet cover / luggage compartment-

 - A-10.2** Functioning of clutch pedals / brake pedals / accelerator pedals

 - A-10.3** Starting & stopping of Engine-
 - A-10.4** Fouling of brake lines / fuel lines / Exhaust line/ Electrical line / steering line with chassis frame & cross members?

 - A-10.5** Any cracks observed on chassis frame , cross members-(Y / N)

 - A-10.6** Fouling of steering linkages with wheels / leaf springs / shock absorber pipings / wiring - (Y / N)

 - A-10.7** Any deformation / fouling / leakage observed on shock absorbers / Track rod / drag link- (Y / N)