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Indian Standard

AUTOMOTIVE VEHICLES — LATERAL PROTECTION (SIDE GUARDS) — TECHNICAL REQUIREMENTS

(First Revision)

ICS 43.040.60

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 2004
FOREWORD

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

This standard has been developed to cover the requirements of the safety to unprotected road users, mainly pedestrians, cyclists and two wheeler riders to protect them against the risk of falling under the sides of vehicles and being caught under the wheels.

In preparation of this standard considerable assistance has been derived from the ECE Regulation 73 'Uniform provisions concerning the approval of goods vehicles trailers, trailers and semi-trailers with regard to their lateral protection'.

In this revision, clause on General Requirement has been included and Scope has been modified.

The composition of the Committee responsible for formulation of this standard is given in Annex B.

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—LATERAL PROTECTION (SIDE GUARDS)—TECHNICAL REQUIREMENTS
(First Revision)

1 SCOPE

1.1 This standard applies to the lateral protection of complete vehicles offered by categories M2, M3, N2, N3, T3 and T4 as defined in IS 14272 (Part 1).

1.2 This standard does not apply to:
- Tractors for semi-trailers,
- Trailers specially designed and constructed for the carriage of very long loads of indivisible length, such as timber, steel bars, etc, and
- Vehicles designed and constructed for special purpose where it is not possible, for practical reasons, to fit such lateral protection.

1.3 Purpose
Vehicles covered by this standard shall be so constructed and/or equipped as to offer effective protection to unprotected road users against risk of falling under the sides of the vehicle and being caught under the wheels.

2 REFERENCES
2.1 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:

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<td>13942:1994</td>
<td>Automotive Vehicles—External projections — Performance requirements</td>
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3 DEFINITIONS
3.1 Vehicle — Means any motor vehicle intended for use on the road, with or without bodywork, having at least four wheels and a maximum design speed exceeding 25 km/h and its trailers with the exception for vehicles which run on rails, agricultural tractors and construction machinery.

3.2 Vehicle Type — Means a category of vehicles which do not differ with respect to the essential points such as the width of the rear axle, the overall width, the dimensions, the shape and the materials of the whole side of the vehicle (including the cab, if fitted) and the characteristics of the suspension in so far as they have a bearing on the requirements specified in 4 of the standard.

3.3 Unladen Vehicle — Means the vehicle in running order, unoccupied and unladen but complete with fuel, coolant, lubricant tools, spare wheel (if supplied by the vehicle manufacturer as standard equipment) and the fuel tank 90 percent full.

3.4 Unprotected Road Users — Means pedestrians, cyclists or motorcyclists using the road in such a way that they are liable to fall under the sides of the vehicle and be caught under the wheels.

4 REQUIREMENTS
4.1 General
4.1.1 Vehicles M2, M3, N2, N3, T3 and T4 must be so constructed and/or equipped as to offer effective protection to unprotected road users against risk of falling under the sides of the vehicle and being caught under the wheels.

4.1.1.1 If the vehicle is equipped with a special lateral protection device (side-guards) in accordance with the requirement given in 5.1 to 5.10.

4.1.1.2 If the vehicle is so designed and/or equipped at the side that, by virtue of their shape and characteristics, its component parts can be incorporated and/or regarded as replacing lateral protective device. Components whose combined function satisfies the requirements given in 5.1 to 5.10 are considered to form a lateral protective device. One such recommended lateral protection device (side-guard) configuration for M2, M3 vehicles, for example buses is given in Annex A.

4.2 Positioning of the Vehicle During Testing
When tested for compliance with the technical specifications set out in 5.1 to 5.10, the position of the vehicle shall be as follows:

a) On a horizontal and flat surface,
b) The steered wheels shall be in a straight-ahead position,
c) The vehicle shall be unladen, and
d) Semi-trailers shall be positioned on their supports with the loading surface horizontal.

5 TECHNICAL REQUIREMENTS OF SPECIFIC DEVICE (SIDE GUARD) FOR LATERAL PROTECTION

5.1 The device shall not exceed the overall width of the vehicle and the main part of its outer surface shall not be more than 120 mm inboard from the outermost plane (maximum width) of the vehicle. Its forward end may be turned inwards on some vehicles in accordance with 5.4.2 and 5.4.3. Its rearward end shall not be more than 30 mm inboard from the outermost edge of the rear tyres (excluding any bulging of the tyres close to the ground) over at least the rearmost 250 mm.

5.2 The outer surface of the device shall be smooth, substantially flat or horizontally corrugated and so far as possible continuous from front to rear. Adjacent part may however overlap, provided that the overlapping edge faces rearward and/or downwards, or a gap of not more than 25 mm, measured longitudinally, may be left provided the rearward part does not protrude outboard of the forward part. Domed heads of bolts or rivets may protrude beyond the surface to a distance not exceeding 10 mm and other parts may protrude to the same extent provided they are smooth and similarly rounded. All external edges and corners shall be rounded with a radius not less than 2.5 mm when tested as prescribed in IS 13942.

5.3 The device may consist of a continuous flat surface, or of one or more horizontal rails, or a combination of surface and rails. When rails are used, they shall not be more than 300 mm apart and not less than:
- 50 mm high in the case of category M2, N2 and T3 vehicles, and
- 100 mm high and essentially flat in the case of M3, N3 and T4 vehicles.

Combinations of surface and rails shall form a continuous side guard subject to the provisions of point given in 5.2.

5.4 The forward edge of the side guard shall be constructed as given in 5.4.1 to 5.4.4.

5.4.1 Its position shall be as follows:

a) On a motor vehicle: not more than 300 mm to the rear of the transverse vertical plane tangential to the rearmost part of the tyre on the wheel immediately forward of the guard;
b) On a drawbar trailer: not more than 500 mm to the rear of the plane defined in 5.4.1 (a); and
c) On a semi-trailer: not more than 250 mm to the rear of the transverse median plane of the support legs, if support legs are fitted. But in any case the distance of the front edge to the transverse plane passing through the centre of the kingpin in its rearmost position may not exceed 2.7 m.

5.4.2 Where the forward edge lies in otherwise open space, the edge shall consist of a continuous vertical member extending over the whole height of the guard. The outer and forward faces of this member shall measure at least 50 mm rearward and be turned 100 mm inwards in the case of M2, N2 and T3 and at least 100 mm rearwards and be turned 100 mm inwards incase of M3, N3 and T4.

5.4.3 On a motor vehicle where the 300 mm dimension referred in 5.4.1 (a) falls within the cab, the guard shall be so constructed that the gap between its forward edge and the cab panels does not exceed 100 mm and if necessary, shall be turned in through an angle not exceeding 45°. In this case, the provision given in 5.4.2 are not applicable.

5.4.4 On a motor vehicle where the 300 mm dimension referred in 5.4.1 (a) falls behind the cab and the side guard is extended forward to within 100 mm of the cab, as an option to the manufacturer, then the provisions of 5.4.3 shall be met.

5.5 The rearward edge of the side guard shall not be more than 300 mm forward of the transverse vertical plane tangential to the foremost part of the tyre on the wheel immediately to the rear; a continuous vertical member is not required on the rear edge.

5.6 The lower edge of the side guard shall at no point be more than 550 mm above the ground.

5.7 The upper edge of the guard shall not be more than 350 mm below that part of the structure of the vehicle, cut or contacted by a vertical plane tangential to the outer surface of the tyres, excluding any bulging close to the ground, except in the following cases.

5.7.1 Where the plane in 5.7 does not cut the structure of the vehicle, then the upper edge shall be level with the surface of the load-carrying platform, or 950 mm from the ground, whichever is less.

5.7.2 Where the plane in 5.7 cuts the structure of the vehicle at a level more than 1.3 m above the ground, then the upper edge of the side guard shall not be less than 950 mm above the ground.

5.7.3 On a vehicle specially designed and constructed, and not merely adapted, for the carriage of a container or demountable body, the upper edge of the guard may be determined in accordance with 5.7.1 and 5.7.2.
container or body being considered as part of the vehicle.

5.8 Side guards shall be essentially rigid, securely mounted (they shall not be liable to loosening due to vibration in normal use of the vehicle) and, except as regards the parts listed in 5.9, made of metal or any other suitable material.

The side guard shall be considered suitable if it is capable of withstanding a horizontal static force of 1 kN applied perpendicularly to any part of its external surface by the centre of the ram the face of which is circular and flat, with a diameter of $220 \pm 10$ mm, and if the deflection of the guard under load is not more than:

- 30 mm over the rearmost 250 mm of the guard;
- 150 mm over the remainder of the guard.

5.8.1 The above requirement may be checked by means of calculations.

5.9 Components permanently fixed to the vehicle, for example battery box, air tanks, fuel tanks, lamps, reflectors, spare wheels and tool boxes may be incorporated in the side guard provided that they meet the dimensional requirements of the standard. As regards to gaps between the protective device and fixed components, the requirements set out in 5.2 shall apply.

5.10 The side guard may not be used for the attachment of brake air or hydraulic pipes.

5.11 By derogation from the above provisions, vehicle of the following types need comply only as indicated in each case:

a) An extendible trailer shall comply with all the requirements of 5.1 to 5.10, when closed to its minimum length. When the trailer is extended, the side guards shall comply with 5.6 to 5.8, and with either 5.4 or 5.5 but not necessarily both. Extensions of the trailer shall not produce gaps in the length of the side guards;

b) A tank-vehicle that is a vehicle designed solely for the carriage of fluid substance in a closed tank permanently fitted to the vehicle and provided with hose or pipe connections for loading or unloading, shall be fitted with side guards which comply so far as is practicable with all the requirements of 5.1 to 5.10. Strict compliance may be waived only where operational requirement make this necessary;

c) On a vehicle fitted with extendible legs to provide additional stability during loading, unloading or other operations for which the vehicle is designed, the side guard may be arranged with additional gaps where these are necessary to permit extension of the legs;

d) On a vehicle equipped with anchorage points for road transport, gaps shall be permitted within the side guard to accept the passage and tensioning of fixing lashings; and

e) If the vehicles are so designed and/or equipped that by their shape and characteristics, the component parts together meet the requirements of 5.1 to 5.10, they may be regarded as replacing the side guards.
ANNEX A
(Clause 4.1.1.2)

NOTE:

DIMN 'H' SHOULD BE LESS THAN 550 IN UNLADEN CONDITION

All dimensions in millimetres.

Fig. 1 A TYPICAL RECOMMENDED LATERAL PROTECTION DEVICE (SIDE GUARD) CONFIGURATION FOR M2 AND M3 CATEGORY BUSES
## ANNEX B

(Foreword)

**COMMITTEE COMPOSITION**

Automotive Body, Chassis, Accessories and Garage Equipment Sectional Committee, TED 6

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Headquarters:
Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 website : www.bis.org.in

Regional Offices:

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002
  { 2323 7617
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KOLKATA 700054
  { 2337 8499, 2337 8561
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  { 260 3843
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