

AMENDMENT NO. 2

TO

AIS-053: Automotive Vehicles-Types-Terminology

1. Page No. 8/14, after cl. No. 3.10.

Insert new clause 3.11 as follows :

“Hybrid Electric Vehicles (HEV)” means vehicle in which "power train" comprises a combination of two different drive train types:

- an internal combustion engine, and
- one (or several) electric drive train(s)

HEV for the purpose of mechanical propulsion, draws energy from both of the following on-vehicle sources of stored energy/power:

- a consumable fuel
- an electrical energy/power storage device (e.g.: battery, capacitor, flywheel/generator etc.)”

PRINTED BY
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

November 2009

AMENDMENT NO. 1 to AIS-053
Automotive Vehicles – Types – Terminology

1. Page 8/14, cl. 3.9,

Substitute following text for existing text:

“A Category

Agricultural and Forestry Tractor

A power-driven vehicle, either wheeled or track laying, which has at least two-axles, whose function depends essentially on its tractive power, and which is specially designed to pull, push, carry or actuate certain implements, machines or trailers intended for use in agriculture or forestry.

Such a tractor may be arranged to carry load and attendants.”

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MINISTRY OF SHIPPING, ROAD TRANSPORT & HIGHWAYS
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GOVERNMENT OF INDIA

July 2009

AUTOMOTIVE INDUSTRY STANDARD

**Automotive Vehicles –
Types – Terminology**

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GOVERNMENT OF INDIA

December 2005

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 erstwhile Ministry of Surface Transport (MOST) 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 Web site.

Need was felt to establish standard on technical classification of motor vehicles. The definitions and categories referred in this standard would be cross-referred in other standards while defining scope or deciding applicability, etc. Some of the definitions contained in this standard are also already contained in Motor Vehicle Act or CMVR. An attempt is made to avoid any conflicting references. There is therefore a need to amend corresponding clauses in CMVR as when this standard is notified.

While preparing this standard, guidance has been taken from 92/53/EC, 92/61/EC and ISO 3833. Reference is also taken from IS 14272 (Part 1). Discussions were also held till date with various organizations concerned in executing and implementing this standard to bring in the current trends and requirements. The committee has also taken into account the recent trends in WP. 29, which is the world body under UN-ECE, working on harmonization of automotive standards.

The Automotive Industry Standards Committee responsible for preparation of this standard is given in Annex - 3.

Automotive Vehicles – Types – Terminology

1 Scope

This standard defines types, terminology relating to road vehicles based on their design and technical characteristics. The provisions of this standard apply to some types of vehicles designed for operation on road, namely, motor vehicle, towed vehicle, combination vehicles, agricultural tractor and construction equipment vehicle.

These definitions are intended for use in classifying the vehicles in the standards for specifying the technical requirements of the performance of the vehicle and its subassemblies.

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:

IS 9211: 2003	Terms and definitions of weights of road vehicles other than 2 and 3 wheelers
IS 9435:1980	Terms and definitions relating to dimensions of road vehicles (<i>Under revision</i>)
IS 12218:1987	Methods of measurement of approach, departure and ramp angles of automotive vehicles
AIS003/1999	Automotive vehicles – Measurement of starting gradeability – Method of measurement
IS 11422: 2001	Terms and definitions of weights of two wheeled motor vehicles. (<i>First revision & amalgamation of IS 9726</i>)
ISO 3833-1977	Road Vehicles- Types- Terms and definitions

3 Terms and Definitions

3.1 Motor Vehicle

“Motor vehicle” or “vehicle” means any mechanically propelled vehicle adopted for use upon roads whether the propulsion is transmitted thereto from an external or internal source and includes a chassis to which body has not been attached and a trailer; but does not include a vehicle running upon fixed rails or a vehicle of special type adopted for use in factory or enclosed premises or a vehicle having less than four wheels fitted with engine capacity of not exceeding twenty five cubic centimeters.

3.1.1 M category

A Motor vehicle with at least four wheels used for carrying passengers.

3.1.1.1 M1 category

A vehicle used for carriage of passengers, comprising not more than eight seats in addition to the driver's seat.

Definitions of type of bodywork for passenger cars of M1 Category are given in **Annex 1**.

3.1.1.2 M2 category

A vehicle used for carriage of passengers, comprising nine or more seats in addition to the driver's seat, and having a maximum Gross Vehicle Weight (GVW) not exceeding five ton.

3.1.1.3 M3 category

A vehicle used for the carriage of passengers, comprising nine or more seats in addition to the driver's seat and having a GVW exceeding 5 ton.

3.1.2 N category

Means a Motor vehicle with at least four wheels used for carrying goods. These vehicles can carry persons in addition to the goods subject to the conditions in **3.2** are met.

3.1.2.1 N1 category

Means a vehicle used for carriage of goods and having a GVW not exceeding 3.5 ton.

3.1.2.2 N2 category

A vehicle used for the carriage of goods and having a GVW exceeding 3.5 ton but not exceeding 12 ton.

3.1.2.3 N3 category

Means a vehicle used for the carriage of goods and having a GVW exceeding 12 ton.

3.1.3 Off road vehicles (Cross country vehicles) –Symbol 'G'

Means a vehicle of category M or N satisfying the requirements given **3.1.3.1** to **3.1.4**

3.1.3.1 N1 with a GVW not exceeding 2 ton and M1

Vehicles in Category N1 with a GVW not exceeding 2 ton and vehicles in Category M1 are considered to be off- road vehicles if they:

- a) have at least one front axle and at least one rear axle designed to be driven simultaneously, including vehicles where the drive to one axle can be disengaged, and
- b) shall be capable of climbing a 30% gradient with vehicle in the solo condition. (see **3.1.4.1**)

- c) have at least one differential locking mechanism or at least one mechanism having similar effect.

3.1.3.1.1 In addition, they shall satisfy at least five of the following six requirements: (*see 3.1.4.2*)

- a) The approach angle shall be at least 25 degree,
- b) The departure angle shall be at least 20 degree,
- c) The ramp angle shall be at least 20 degree,
- d) The ground clearance under the front axle shall be at least 180 mm,
- e) The ground clearance under the rear axle shall be at least 180 mm,
- f) The ground clearance between the axles shall be at least 200 mm.

3.1.3.2 N1 with a GVW exceeding 2 ton, N2, M2, or M3 with a GVW not exceeding 12 ton

Vehicles in Category N1 with a GVW exceeding 2 ton or in category N2, M2, or M3 with a GVW not exceeding 12 ton are considered to be off-road vehicles either if all their wheels are designed to be driven simultaneously, including vehicles where the drive to one axle can be disengaged, or if the following three requirements are satisfied:

- a) At least one front axle and at least one rear axle are designed to be driven simultaneously including vehicles where the drive to one axle can be disengaged.
- b) There is at least one differential locking mechanism or at least one mechanism having a similar effect.
- c) They shall be capable of climbing a 25% gradient with vehicle in the solo condition. (*see 3.1.4.1*)

3.1.3.3 M3 with a GVW exceeding 12 ton and N3

Vehicles in category M3 with a GVW exceeding 12 ton or in N3 are considered to be off-road vehicles either if the wheels are designed to be driven simultaneously, including vehicles where the drive to one axle can be disengaged, or if the following requirements are satisfied:

- a) At least half the wheels are driven.
- b) There is at least one differential locking mechanism or at least one mechanism having a similar effect.
- c) They shall be capable of climbing a 25% gradient with vehicle in the solo condition. (*see 3.1.4.1*)

3.1.3.3.1 In addition to the above, at least four of the following six requirements are satisfied: (*see 3.1.4.2*)

- a) The approach angle shall be at least 25 degree.
- b) The departure angle shall be at least 25 degree.
- c) The ramp angle shall be at least 25 degree.

- d) The ground clearance under the front axle shall be at least 250 mm.
- e) The ground clearance between the axles shall be at least 300 mm.
- f) The ground clearance under the rear axle shall be at least 250 mm.

3.1.4 Conditions for the above

3.1.4.1 Gradeability

- a) The “solo” condition of the vehicle means the vehicle in the kerb weight condition (as defined in IS 9211:1979) + 75 (kg).
- b) The test procedure for gradeability shall be as given in AIS 003/1999, except for the loading condition, which shall be as specified in this standard.

3.1.4.2 Ground clearance, approach angles, etc

- a) In the case of vehicles covered in **3.1.3.1**, the requirements given in **3.1.3.1.1** shall be checked with the vehicle in solo condition.
- b) In the case of vehicles covered in **3.1.3.3**, the requirements given in **3.1.3.3.1** shall be checked with the vehicle loaded to its Gross Vehicle Weight.
- c) When measuring approach and departure angles and ramp angles, no account is taken of under-run protective devices.
- d) For definitions and method of measurement, refer to the following standards:
 - IS 9435:1980 Terms and definitions relating to dimensions of road vehicles.
 - IS 12218: 1987 Methods of measurement of approach, departure and ramp angles of automotive vehicles.

3.1.5 Combined designation

Symbol “G” for indication of Off road vehicles (Cross country vehicles) shall be combined with either symbol “M” or “N”. For example, a vehicle of category N1, suitable for cross-country use shall be designated as “N1G”.

3.1.7 Special Purpose vehicles

A vehicle of category M, N or T for carrying passengers or goods and for performing a special function for which special body arrangements and/ or equipment are necessary.

3.1.7.1 Motor Caravan

A special purpose M1 category vehicle constructed to include living accommodation that contains at least the following equipment:

- Seats and table,
- Sleeping accommodation which may be converted from the seats
- Cooking facilities, and
- Storage facilities

This equipment shall be rigidly fixed to the living compartment; however, the table may be designed to be easily removed.

3.1.7.2 Armoured vehicle

A vehicle intended for protection of conveyed passengers and/or goods and complying with armour plating anti-bullet requirements.

3.1.7.3 Ambulance

A vehicle of category M intended for the transport of sick or injured people and having special equipment for such purpose.

3.1.7.4 Hearse

A motor vehicle intended for the transport of deceased people and having special equipment for such purpose.

3.2 Classification under M / N categories

3.2.1 A vehicle which is designed to carry persons in addition to goods shall be considered as N category vehicle if the following conditions are met:

- a) The number of seating positions excluding the driver is not more than six.
- b) A seating position shall be regarded as existing if the vehicle is provided with “accessible” seat anchorages.

“Accessible” shall mean those anchorages, which can be used. In order to prevent anchorages being “accessible”, the manufacturer shall physically obstruct their use, for example by welding over cover plates or by fitting similar permanent fixtures which cannot be removed by use of normally available tools.

- c) The weight of goods carried by the vehicle is more than weight of persons carried, as calculated by following formula:

$$P - (A + B \times 68) > B \times 68$$

Where P = Technically permissible maximum laden weight (GVW) (kg)

A = Vehicle weight in the kerb weight condition (as defined in IS 9211: 2003) + 68(kg)

In the case of electric vehicles, the weight of traction batteries is to be subtracted from the kerb weight.

B = Number of seating positions excluding the driver.

3.3 Category T- Towed Vehicle (Trailers):

3.3.1 A non-self propelled driven road vehicle having at least two wheels which on account of its design and technical features is used to transport persons or goods and is intended to be towed by a motor vehicle; semi-trailer is included in this category.

A full trailer means a towed vehicle having at least two axles, and equipped with a towing device which can move vertically in relation to the trailer and controls the direction of the front axle(s), but which transmits no significant static load to the towing vehicle.

Center-axle trailer means a towed vehicle, equipped with a towing device which cannot move vertically in relation to the trailer) and in which the axle(s) is (are) positioned close to the center of gravity of the trailer (when uniformly loaded) such that only a small static vertical load, not exceeding 10 percent of that corresponding to the maximum mass of the trailer or a load of 1,000 daN (which ever is lesser) is transmitted to the towing vehicle.

A semi-trailer means a trailer, which is intended to be connected to a motor vehicle and which is so constructed that a portion of it is superimposed on and a part of whose weight is borne by the haulage tractor.

In case a semi-trailer, the weight to be taken into consideration when classifying that vehicle, shall be the maximum weight of the trailer in running order, minus the weight transferred to the tractor by the laden semi-trailer in static condition.

3.3.1.1 T1 category

A Trailer having a maximum weight not exceeding 0.75 ton.

3.3.1.2 T2 category

A trailer having a maximum weight exceeding 0.75 ton but not exceeding 3.5 ton.

3.3.1.3 T3 category

A trailer having a maximum weight exceeding 3.5 ton but not exceeding 10 ton.

3.3.1.4 T4 category

a trailer having a maximum weight exceeding 10 ton.

3.3.1.5 T5 category

a semi-trailer intended to be drawn by a three-wheeled haulage tractor.

3.4 Combination of vehicles

A motor vehicle as defined in **3.1** coupled with one or more towed vehicles as defined in **3.3**. Various combinations are illustrated in Annex 2.

3.5 Haulage Tractor

A vehicle constructed essentially for hauling another vehicle namely a semi trailer or trailer.

A tractor may have provision-carrying load, in addition to hauling a vehicle, especially in the case of tractors hauling a trailer.

In case of vehicles designed to be coupled to a semi-trailer, the GVW to be taken into consideration when classifying that vehicle, shall be the maximum weight of the tractor in running order, the weight carried in the tractor, if any, plus the weight transferred to the tractor by the laden semi-trailer in static condition.

3.6 L5 category-Three wheeler

A three wheeled motor vehicle with maximum speed exceeding 25 kmph and engine capacity exceeding 25 cc if fitted with a thermic engine, or motor power exceeding 0.25 kW if fitted with electric motor. This vehicle is normally used for:

- carrying persons or
- carrying goods

Semi-trailer may be attached,
and where:

- a) Handle bar or steering wheel may be fitted.
- b) Gross vehicle weight will be limited to 1500 kg, subject to the conditions given in para (d) below.
- c) In the case of semi-trailers being attached to a three-wheeled tractor, the gross combination weight will be limited to 2500 kg subject to the conditions given in Para (d) below.
- d) The weight of traction batteries in the case of battery operated three wheelers, shall not be taken into account for the limitation the GVW/GCW and for the purpose of classification

3.6.1 L5M category-Passenger carrier (Autorickshaw)

A three-wheeler on account of its technical features intended to carry passengers.

3.6.2 L5N category -Goods carrier

A three wheeler on account of its technical features intended to carry goods.

3.6.3 A three wheeler may fall under the category of L5M- 'Passenger carrier (Autorickshaw)' or L5N- 'Goods Carriage' depending on whether the weight of persons including driver for whom seating arrangements are provided is more than or less than the weight of goods carried.

If the following conditions are satisfied, a three wheeler comes under the category of L5N, (Goods Carriage) and not L5M (Passenger carrier (Autorickshaw):

- a) A separate load body or compartment is provided for carrying the goods.
- b) The number of seating positions excluding the driver is not more than three.
- c) The weight of goods carried by the vehicle is more than weight of persons carried, as calculated by following formula:

$$P - (A + B \times 68) > B \times 68$$

Where:

P = Technically permissible maximum laden weight (GVW) (kg)

A = Vehicle weight in the kerb weight condition (as defined in IS 9211: 2003) + 68 (kg).

In the case of electric vehicles, the weight of traction batteries is to be subtracted from the kerb weight.

B = Number of seating positions excluding the driver.

3.8 Two wheeler

A two wheeled motor vehicle with maximum speed exceeding 25 kmph and engine capacity exceeding 25 cc if fitted with a thermic engine, or motor power exceeding 0.25 kW if fitted with electric motor.

The seating capacity is limited to two persons.

A sidecar may be attached to a two-wheeler. The seating capacity of the sidecar will be limited to one person.

3.8.1 L1 Category

A two-wheeler with maximum speed not exceeding 45 km/h and engine capacity not exceeding 50 cc if fitted with a thermic engine or motor power not exceeding 0.5 kW if fitted with electric motor

3.8.2 L2 Category

A two wheeler other than L1 category

3.9 A Category

Agricultural Tractor

Means any mechanically propelled 4-wheel vehicle designed to work with suitable implements for various field operations and / or trailers to transport agricultural material.

Power tillers are included in this category

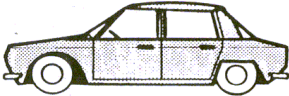
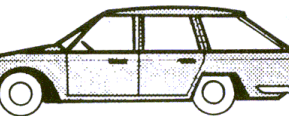
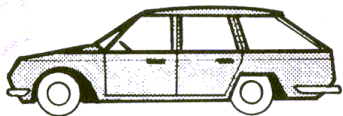
3.10 C Category

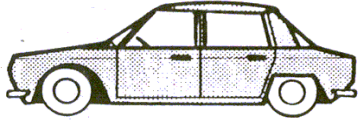
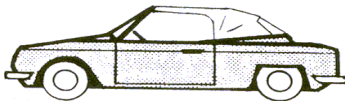
Construction Equipment Vehicle

Means rubber tyred (including pneumatic tyred), rubber padded or steel drum wheel mounted, self propelled, excavator, loader, backhoe, compactor roller, dumper, motor grader, mobile crane, dozer, fork lift truck, self loading concrete mixer or any other construction equipment vehicle or combination thereof designed for off-highway operations in mining, industrial undertaking, irrigation and general construction but modified and manufactured with “on or off” or “on and off” highway capabilities.

Annex 1
(See 3.1.1.1)

DEFINITION OF TYPE OF BODY WORK FOR PASSENGER CARS (M1)
(Only for complete/completed vehicles)

Term	Definition	Drawing
<p>AA Saloon</p>	<p><i>Body</i> Closed with or without central pillar to side window</p> <p><i>Hood/Roof</i> Fixed, rigid roof. A portion of the roof may however be openable.</p> <p><i>Accommodation</i> 4 or more seats in at least 2 rows</p> <p><i>Doors</i> 2 or 4 side doors. There may also be a rear opening.</p> <p><i>Windows</i> 4 or more side windows</p>	
<p>AB Hatchback</p>	<p>Saloon (AA) with a hatch at the rear end of the vehicle.</p>	
<p>AC Station Wagon</p>	<p><i>Body</i> Closed. Rear shape is designed in order to give a larger interior volume.</p> <p><i>Hood/Roof</i> Fixed, rigid roof. A portion of the roof may however be openable.</p> <p><i>Accommodation</i> 4 or more seats in at least 2 rows. The row or rows of seats may have forward- foldable backs or be removable to provide a load platform.</p> <p><i>Doors</i> 2 or 4 side doors and a rear opening.</p> <p><i>Windows</i> 4 or more side windows</p>	

<p>AD Coupé</p>	<p><i>Body</i></p> <p>Closed. Usually, limited rear volume.</p> <p><i>Hood/Roof</i></p> <p>Fixed, rigid roof. A portion of the roof may however be openable.</p> <p><i>Accommodation</i></p> <p>2 or more seats in at least 1 row.</p> <p><i>Doors</i></p> <p>2 side doors. There may also be a rear opening.</p> <p><i>Windows</i></p> <p>2 or more side windows</p>	
<p>AE Convertible</p>	<p><i>Body</i></p> <p>Openable.</p> <p><i>Hood/Roof</i></p> <p>The roof, soft or rigid, at least 2 positions: in the first one it covers the body; in the second one it is retracted.</p> <p><i>Accommodation</i></p> <p>2 or more seats in at least 1 row.</p> <p><i>Doors</i></p> <p>2 or 4 side doors.</p> <p><i>Windows</i></p> <p>2 or more side windows</p>	

**Annex 2
(See 3.4)**

Illustrations regarding trailers and vehicle trains.

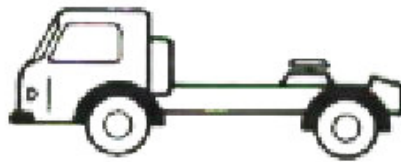
1. **Trailer Towing vehicle:** A motor vehicle designed for towing trailers. It may carry goods on a load body/ platform (See Figure 1)

Figure 1



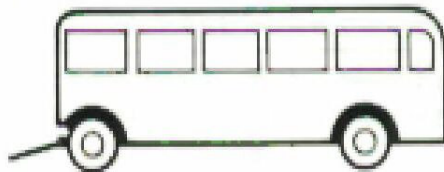
2. **Semi-Trailer Towing vehicle:** A motor vehicle designed for towing semi-trailer. (See Figure 2)

Figure 2



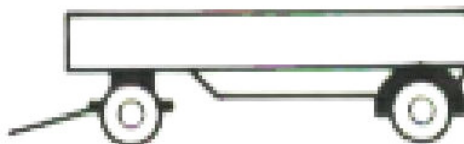
3. **Bus Trailer:** Trailer intended for carrying passengers. (See Figure 3)

Figure 3



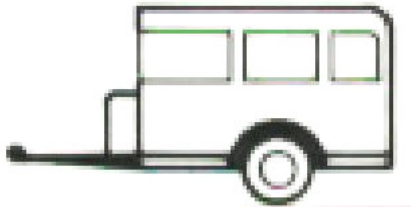
4. **General Purpose Trailer:** Trailer intended for carrying goods. (See Figure 4)

Figure 4



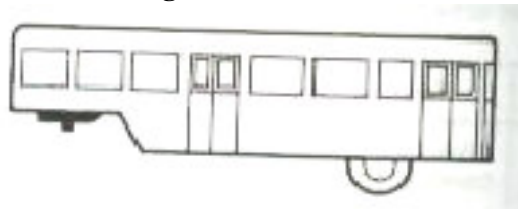
5. **Caravan:** Trailer which is designed for road use and provides mobile living accommodation. (See Figure 5)

Figure 5



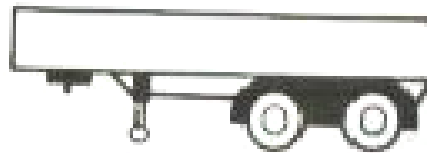
6. **Bus Semi-Trailer:** A semi-Trailer intended for carrying passengers (See Figure 6)

Figure 6



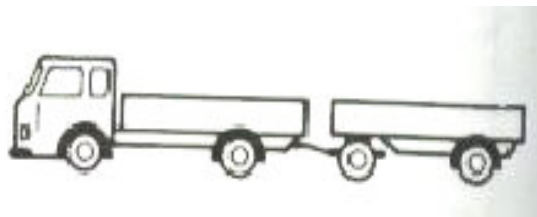
7. **General purpose Semi-Trailer:** A semi-Trailer intended for carrying goods (See Figure 7)

Figure 7



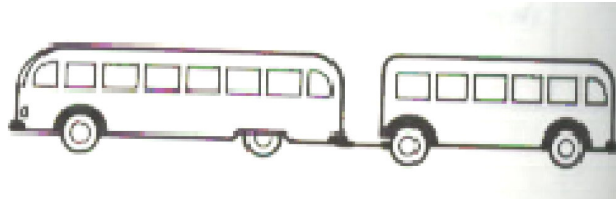
8. **Road Train:** Combination of a motor vehicle with one or more independent trailers connected by a draw bar. (See Figure 8)

Figure 8



9. **Passenger Road Train:** Combination of a bus with one or more independent trailers connected by a draw bar for passenger transportation. The Passenger accommodation space is not continuous throughout the combination. (See Figure 9)

Figure 9



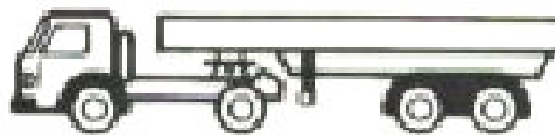
10. **Articulated bus:** A bus which is composed of two rigid sections connected by an articulated joint, with passenger accommodation spaces situated in each rigid section communicate. The free circulation of passengers from one rigid section to the other is assured through the articulated joint. (See Figure 10)

Figure 10



11. **Articulated Road Train:** A combination of semi-trailer-towing vehicle with a semi-trailer. (See Figure 11)

Figure 11



12. **Double Road Train:** A combination of semi-trailer-towing vehicle with a semi-trailer and a trailer. (See Figure 12)

Figure 12



Annex: 3

(See Introduction)

COMMITTEE COMPOSITION *
Automotive Industry Standards Committee

Chairman	
Shri B. Bhanot	Director The Automotive Research Association of India, Pune
Members	Representing
Shri Alok Rawat	Ministry of Shipping, Road Transport & Highways, (Department of Road Transport & Highways) New Delhi
Shri Sushil Kumar	Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises, New Delhi
Shri. Chandan Saha	Office of the Development Commissioner Small Scale Industries, Ministry of Small Scale Industries, New Delhi
Shri. S. Dasgupta Shri S. K. Bhatia (Alternate)	Bureau of Indian Standards, New Delhi
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Shri R.C. Sethi Shri N. Karuppaiah (Alternate)	Vehicles Research & Development Establishment, Ahmednagar
Shri Dilip Chenoy	Society of Indian Automobile Manufacturers
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Shri K.N.D. Nambudiripad	Automotive Components Manufacturers Association
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* At the time of approval of this Automotive Industry Standard (AIS)