IS 14272 (2011): AUTOMOTIVE VEHICLES — TYPES — TERMINOLOGY [TED 6: Automotive Body, Chassis, Accessories and Garage Equipments]

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*भारतीय मानक*

# स्वचालित वाहन — टाईप — शब्दावली

*( पहला पुनरीक्षण )*

*Indian Standard*

# AUTOMOTIVE VEHICLES — TYPES — TERMINOLOGY

*( First Revision )*

ICS 43.040



**BUREAU OF INDIAN STANDARDS**
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NEW DELHI 110002

*May 2011* **Price Group 4**

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

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 Equipments Sectional Committee had been approved by the Transport Engineering Division Council.

This standard was first published as IS 14272 (Part 1) : 1995 'Automotive vehicles — Types — Terminology: Part 1 Three and four wheelers'. Previously this standard was intended to be brought out in two parts. Now, this standard has been revised to cover all types of road vehicles including two wheelers and vehicles such as trailers, caravans and agricultural and forestry tractors, etc.

In the formulation of this standard considerable assistance has been derived from AIS-053 'Automotive vehicles — Types — Terminology', and ISO 3833-1977 'Road vehicles — Types — Terms and definitions'.

For terms, definitions and weights of vehicles, reference may be made to IS 11422 : 2001 'Terms and definitions of weights of two wheeled motor vehicles (*first revision*)'.

# *Indian Standard*

# AUTOMOTIVE VEHICLES — TYPES — TERMINOLOGY

## *( First Revision )*

### 1 SCOPE

This standard defines types and 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 sub-assemblies.

### 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 No.* | *Title* |
|---|---|
| 9211 : 2003 | Terms and definitions of weights of road vehicles other than 2 and 3 wheelers (*second revision*) |
| 9435 : 2004 | Terms and definitions relating to dimensions of road vehicles other than 2 and 3 wheelers (*first revision*) |
| 12218 : 1987 | Method of measurement of approach, departure and ramp angles of automotive vehicles |
| 13988 : 2002 | Automotive vehicles — Starting gradeability — Method of measurement (*first revision*) |

### 3 TERMS AND DEFINITIONS

For the purpose of this standard the following terms and definitions shall apply.

**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 25 $cm^3$.

**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 A.

**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 5 t.

**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 t.

**3.1.2** *N Category* — 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* — A vehicle used for carriage of goods and having GVW not exceeding 3.5 t.

**3.1.2.2** *N2 category* — A vehicle used for the carriage of goods and having a GVW exceeding 3.5 t but not exceeding 12 t.

**3.1.2.3** *N3 category* — A vehicle used for the carriage of goods and having GVW exceeding 12 t.

**3.1.3** *Off Road Vehicles (Cross Country Vehicles) — Symbol 'G'* — 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 GVW not exceeding 2 t and M1* — Vehicles in category N1 with GVW not exceeding 2 t 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;

b) shall be capable of climbing a 30 percent gradient with vehicle in the solo condition (*see* **3.1.4.1**); and

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) Approach angle shall be at least 25°;

b) Departure angle shall be at least 20°;

c) Ramp angle shall be at least 20°;

d) Ground clearance under the front axle shall be at least 180 mm;

e) Ground clearance under the rear axle shall be at least 180 mm; and

f) Ground clearance between the axles shall be at least 200 mm.

**3.1.3.2** *N1 with GVW exceeding 2 t, N2, M2, or M3 with GVW not exceeding 12 t* — Vehicles in category N1 with GVW exceeding 2 t or in category N2, M2, or M3 with a GVW not exceeding 12 t 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; and

c) They shall be capable of climbing a 25 percent gradient with vehicle in the solo condition (*see* **3.1.4.1**).

**3.1.3.3** *M3 with GVW exceeding 12 t and N3* — Vehicles in category M3 with a gross vehicle weight (GVW) exceeding 12 t 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; and

c) They shall be capable of climbing a 25 percent 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) Approach angle shall be at least 25°;

b) Departure angle shall be at least 25°;

c) Ramp angle shall be at least 25°;

d) Ground clearance under the front axle shall be at least 250 mm;

e) Ground clearance between the axles shall be at least 300 mm; and

f) 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) + 75 kg; and

b) The test procedure for gradeability shall be as given in IS 13988, 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; and

d) For definitions and method of measurement of ground clearance, approach angles, etc (*see* IS 9435 and IS 12218).

**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.

**3.1.6** *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.

**3.1.6.1** *Motor caravan* — A special purpose M category vehicle constructed to include living accommodation that contains at least the following equipment:

a) Seats and table;

b) Sleeping accommodation which may be converted from the seats;

c) Cooking facilities; and

d) Storage facilities.

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

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

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

**3.1.6.4** *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

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) 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;

NOTE — 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), in kg;

$A$ = vehicle weight in the kerb weight condition (as defined in IS 9211) + 68 kg; and

NOTE — 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.

Centre-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 centre 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 (whichever 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 of a semi-trailer or centre-axle trailer, the maximum mass to be considered for classifying the trailer corresponds to the static vertical load transmitted to the ground by the axle or axles of the semi-trailer or centre-axle trailer when coupled to the towing vehicle and carrying its maximum load.

**3.3.1.1** *T1 category* — A trailer having a maximum weight not exceeding 0.75 t.

**3.3.1.2** *T2 category* — A trailer having a maximum weight exceeding 0.75 t but not exceeding 3.5 t.

**3.3.1.3** *T3 category* — A trailer having a maximum weight exceeding 3.5 t but not exceeding 10 t.

**3.3.1.4** *T4 category* — A trailer having a maximum weight exceeding 10 t.

**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 B.

**3.5 Haulage Tractor** — A vehicle constructed essentially for hauling another vehicle, namely a semi-trailer or trailer.

A tractor may have provision for 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 km/ph 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,

a) carrying persons; or
b) 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 1 500 kg, subject to the conditions given in (4);
c) in the case of semi-trailers being attached to a three wheeled tractor, the gross combination weight will be limited to 2 500 kg subject to the conditions given in (4); and
d) 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 (Auto-Rickshaw)* — 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 (Auto-rickshaw)] 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 (Auto-rickshaw)]:

a) A separate load body or compartment is provided for carrying the goods;
b) Number of seating positions excluding the driver is not more than three; and
c) 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), in kg;

$A$ = vehicle weight in the Kerb weight condition (as defined in IS 9211) + 68 kg; and

$B$ = number of seating positions excluding the driver.

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

**3.7 Two-Wheeler** — A two wheeled motor vehicle with maximum speed exceeding 25 km/h 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 side car may be attached to a two-wheeler. The seating capacity of the side car will be limited to one person.

**3.7.1** *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.

**3.7.2** *L2 Category* — A two-wheeler other than L1 category.

**3.8 A Category**

**3.8.1** *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.

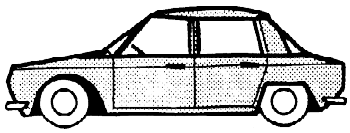
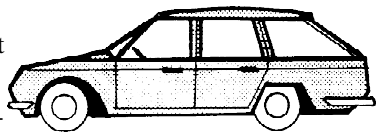
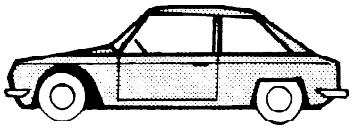
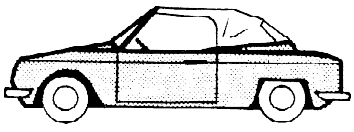
**3.9 C Category**

**3.9.1** *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 A

(*Clause* 3.1.1.1)

## DEFINITION OF TYPE OF BODY WORK FOR PASSENGER CARS (M1) (ONLY FOR COMPLETE/COMPLETED VEHICLES)

| *Sl No.* | *Term* | *Definition* | *Drawing* |
|---|---|---|---|
| (1) | (2) | (3) | (4) |
| i) | **AA Saloon** | a) *Body* — Closed with or without central pillar to side window.<br>b) *Hood/Roof* — Fixed, rigid roof. A portion of the roof may however be openable.<br>c) *Accommodation* — 4 or more seats in at least 2 rows.<br>d) *Doors* — 2 or 4 side doors. There may also be a rear opening.<br>e) *Windows* — 4 or more side windows. |  |
| ii) | **AB Hatchback** | Saloon (AA) with a hatch at the rear end of the vehicle. | |
| iii) | **AC Station Wagon** | a) *Body* — Closed. Rear shape is designed in order to give a larger interior volume.<br>b) *Hood/Roof* — Fixed, rigid roof. A portion of the roof may however be openable.<br>c) *Accommodation* — 4 or more seats in at least 2 rows.<br>The row or rows of seats may have forward-foldable backs or be removable to provide a load platform.<br>d) *Doors* — 2 or 4 side doors and a rear opening.<br>e) *Windows* — 4 or more side windows. |  |
| iv) | **AD Coupé** | a) *Body* — Closed. Usually, limited rear volume.<br>b) *Hood/Roof* — Fixed, rigid roof. A portion of the roof may however be openable.<br>c) *Accommodation* — 2 or more seats in at least 1 row.<br>d) *Doors* — 2 side doors. There may also be a rear opening.<br>e) *Windows* — 2 or more side windows. |  |
| v) | **AE Convertible** | a) *Body* — Openable.<br>b) *Hood/Roof* — The roof, soft or rigid, at least 2 positions: in the first one it covers the body; in the second one it is retracted.<br>c) *Accommodation* — 2 or more seats in at least 1 row.<br>d) *Doors* — 2 or 4 side doors.<br>e) *Windows* — 2 or more side windows. |  |

# ANNEX B

(*Clause* 3.4)

## ILLUSTRATIONS REGARDING TRAILERS AND VEHICLE TRAINS

### B-1 TRAILER TOWING VEHICLE

A motor vehicle designed for towing trailers. It may carry goods on a load body/platform (*see* Fig. 1).

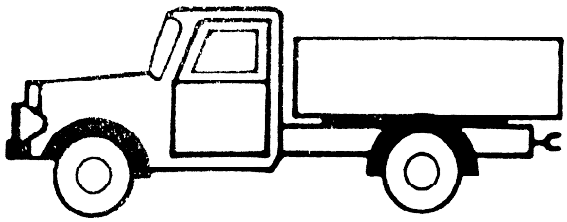


FIG. 1 TRAILER TOWING VEHICLE

### B-2 SEMI-TRAILER TOWING VEHICLE

A motor vehicle designed for towing semi-trailer (*see* Fig. 2).

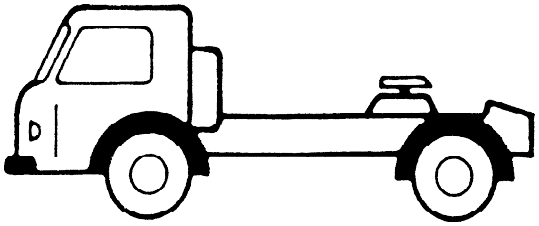


FIG. 2 SEMI-TRAILER TOWING VEHICLE

### B-3 BUS TRAILER

Trailer intended for carrying passengers (*see* Fig. 3).

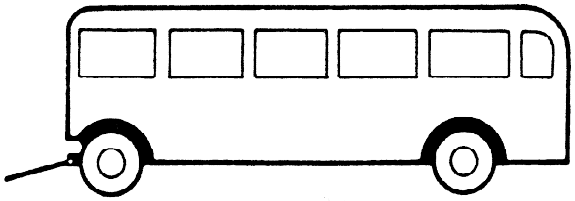


FIG. 3 BUS TRAILER

### B-4 GENERAL PURPOSE TRAILER

Trailer intended for carrying goods (*see* Fig. 4).

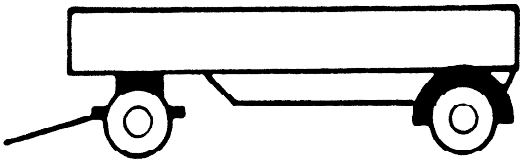


FIG. 4 GENERAL PURPOSE TRAILER

### B-5 CARAVAN

Trailer which is designed for road use and provides mobile living accommodation (*see* Fig. 5).

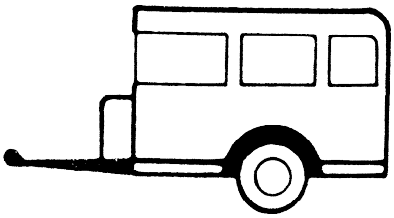


FIG. 5 CARAVAN

### B-6 BUS SEMI-TRAILER

A semi-trailer intended for carrying passengers (*see* Fig. 6).

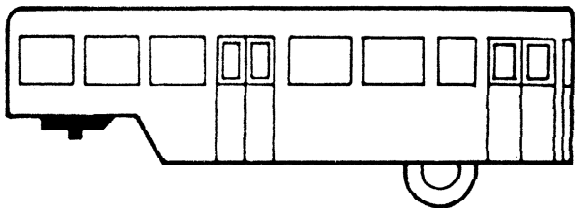


FIG. 6 BUS SEMI-TRAILER

### B-7 GENERAL PURPOSE SEMI-TRAILER

A semi-trailer intended for carrying goods (*see* Fig. 7).

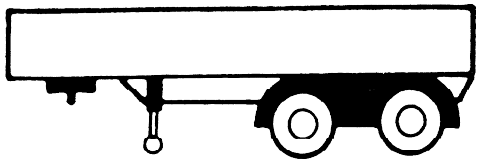


FIG. 7 GENERAL PURPOSE SEMI-TRAILER

### B-8 ROAD TRAIN

Combination of a motor vehicle with one or more independent trailers connected by a draw bar (*see* Fig. 8).

### B-9 PASSENGER ROAD TRAIN

Combination of a bus with one or more independent trailers connected by a draw bar for passanger transportation. The passenger accommodation space is not continuos throughout the combination (*see* Fig. 9).

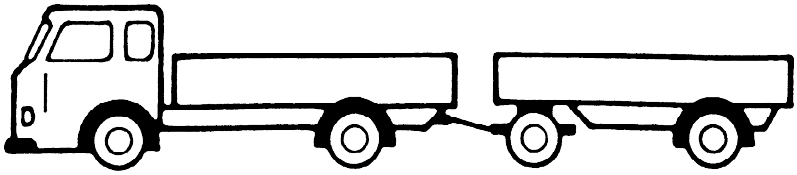


FIG. 8 ROAD TRAIN

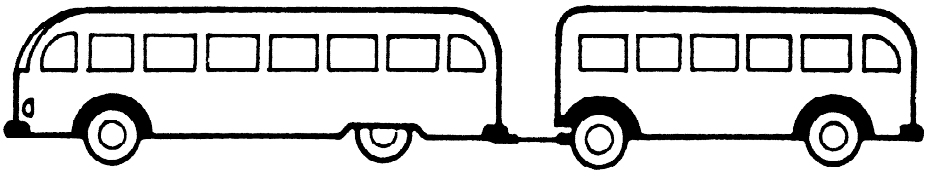


FIG. 9 PASSENGER ROAD TRAIN

**B-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* Fig. 10).

**B-11 ARTICULATED ROAD TRAIN**

A combination of semi-trailer-towing vehicle with a semi-trailer (*see* Fig. 11).

**B-12 DOUBLE ROAD TRAIN**

A combination of semi-trailer-towing vehicle with a semi-trailer and a trailer (*see* Fig. 12).

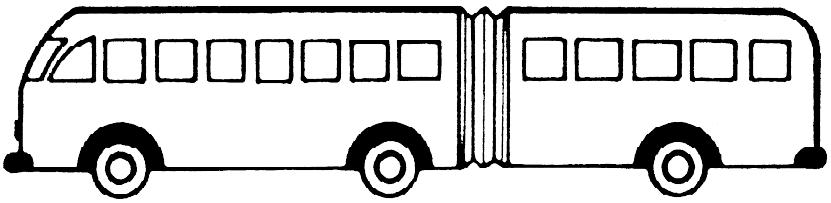


FIG. 10 ARTICULATED BUS

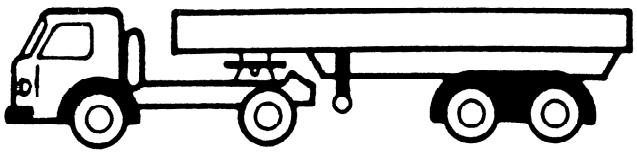


FIG. 11 ARTICULATED ROAD TRAIN

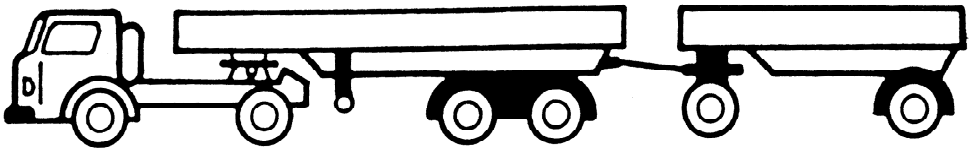


FIG. 12 DOUBLE ROAD TRAIN

**Bureau of Indian Standards**

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.



**Review of Indian Standards**

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc No.: TED 6 (722).

**Amendments Issued Since Publication**

| Amend No. | Date of Issue | Text Affected |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

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