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INTERNATIONAL STANDARD ISO 612-1978 (E)/ERRATUM

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Road vehicles — Dimensions of motor vehicles and towed vehicles — Terms and definitions

ERRATUM

Page 14

Clause 6.28, second paragraph : Should read "It is positive when p is ahead of q in the direction of normal travel."

INTERNATIONAL STANDARD 612

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Road vehicles — Dimensions of motor vehicles and towed vehicles — Terms and definitions

Véhicules routiers — Dimensions des automobiles et véhicules tractés — Dénominations et définitions

First edition — 1978-03-15

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Descriptors : road vehicles, motor vehicles, towed road vehicles, dimensions, vocabulary.

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 612 was developed by Technical Committee ISO/TC 22, *Road vehicles*, and was circulated to the member bodies in november 1976.

It has been approved by the member bodies of the following countries :

Austria	Iran	New Zealand
Brazil	Italy	Poland
Bulgaria	Japan	Romania
France	Korea, Dem. P. Rep. of	South Africa, Rep. of
Germany	Korea, Rep. of	Spain
Hungary	Mexico	Sweden
India	Netherlands	Switzerland

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Australia
Belgium
United Kingdom

This International Standard cancels and replaces ISO Recommendation R 612-1967, of which it constitutes a technical revision.

Printed in Switzerland

CONTENTS

Road vehicles — Dimensions of motor vehicles and towed vehicles — Terms and definitions

1 SCOPE

This International Standard defines terms relating to dimensions of motor vehicles and towed vehicles.

It does not deal with methods of measurement, the units used in reporting the results or the accuracy required or the order of magnitude of the dimensions defined.

NOTE — Other terms, definitions and symbols are given in the following International Standards :

ISO 3877/I, *Tyres, valves and tubes — List of equivalent terms — Part I : Tyres.*

ISO 3877/II, *Tyres, valves and tubes — List of equivalent terms — Part II : Tyres valves.*

ISO 3877/III, *Tyres, valves and tubes — List of equivalent terms — Part III : Tubes.*

ISO 3911, *Wheels/rims — Nomenclature, designation, marking, and units of measurement.*

ISO 4131, *Road vehicles — Dimensional symbols for passenger cars.* [1)]

ISO 4223/I, *Definitions of some terms used in the tyre industry — Part I : Pneumatic tyres.*

2 FIELD OF APPLICATION

The provisions of this International Standard apply to motor vehicles and towed vehicles as defined in ISO 3833 (terms 3.1 and 3.2).

This International Standard does not cover road vehicles such as motorcycles and mopeds, or other vehicles, such as agricultural tractors, which are only incidentally used for the carriage of persons or goods by road or for towing on the road vehicles used for the carriage of persons or goods.

3 REFERENCES

ISO 1176, *Road vehicles — Weights — Vocabulary.*

ISO 1726, *Road vehicles — Mechanical coupling between tractors and semi-trailers — Interchangeability.*

ISO 3833, *Road vehicles — Types — Terms and definitions.*

ISO 4130, *Road vehicles — Three-dimensional reference system and fiducial marks.* [1)]

4 GENERAL

Unless otherwise stated with regard to one or more of the items mentioned below, it should be understood that :

a) the supporting surface is horizontal; lengths and widths are measured in the horizontal plane, and heights in the vertical plane;

b) the total weight of the vehicle is the maximum authorized total weight (see ISO 1176), the load being distributed according to the manufacturer's instructions;

c) the tyres are inflated to the pressure corresponding to the maximum authorized total weight of the vehicle;

d) the vehicle is stationary; its doors and windows are closed, and its wheels and articulated elements are in positions corresponding to movements in a straight line;

e) the vehicle is new from the factory and normally equipped;

f) all wheels of the vehicle are resting on the ground;

g) the expression "mid-plane of the wheel", that occurs in a number of definitions, designates the plane equidistant from the inner edges of the rim.

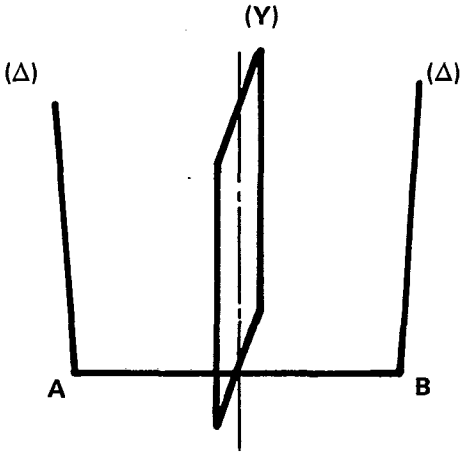
1) At present at the stage of draft.

5 DEFINITION OF THE LONGITUDINAL MEDIAN PLANE (OF THE VEHICLE)

longitudinal median plane (of the vehicle) : The vertical plane Y passing through the mid-points of AB, perpendicular to AB, A and B being defined as follows : as follows :

— for each wheel, the vertical plane passing through its axis cuts the mid-plane of the wheel [see g), clause 4] following a straight line Δ which meets the supporting surface of the vehicle at one point;

— A and B are two points thus defined which correspond to two wheels, both of which are either steering or powered wheels, situated respectively at the two ends of the same real or imaginary axle.



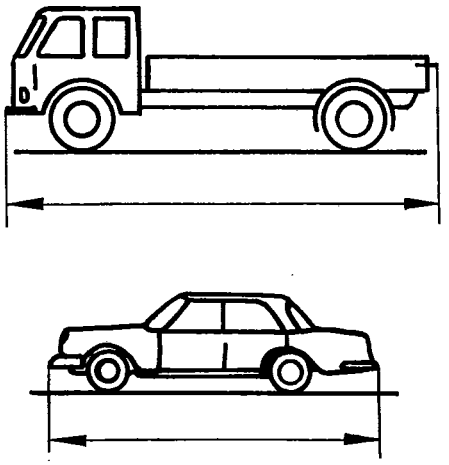
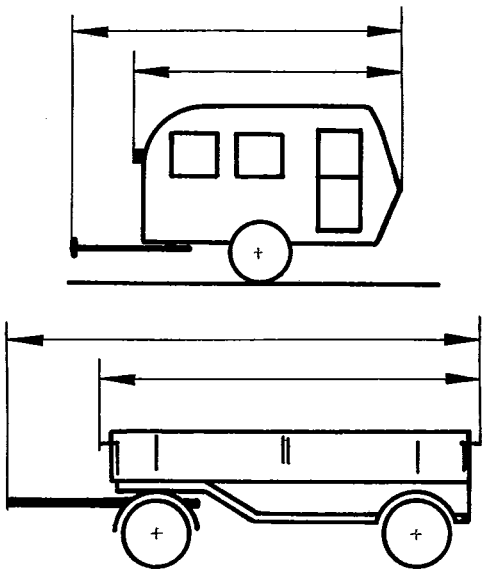
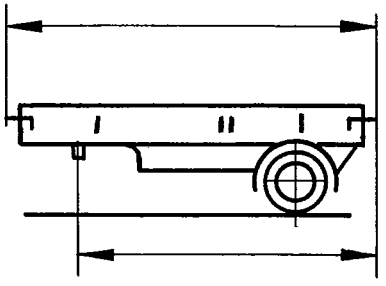
NOTES

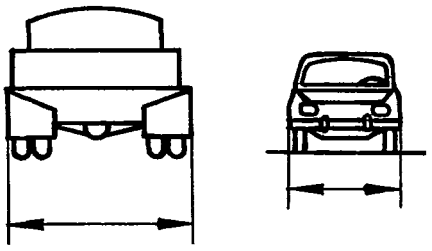
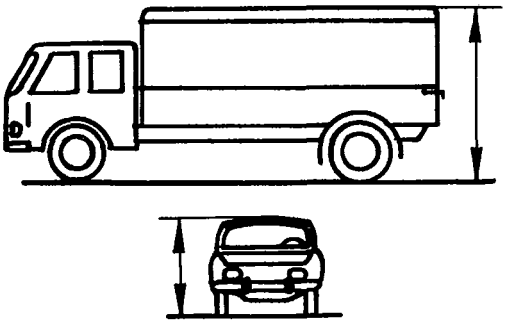
1 The longitudinal median plane (of the vehicle) is also called the "longitudinal plane of symmetry" or "zero Y plane" (see ISO 4130).

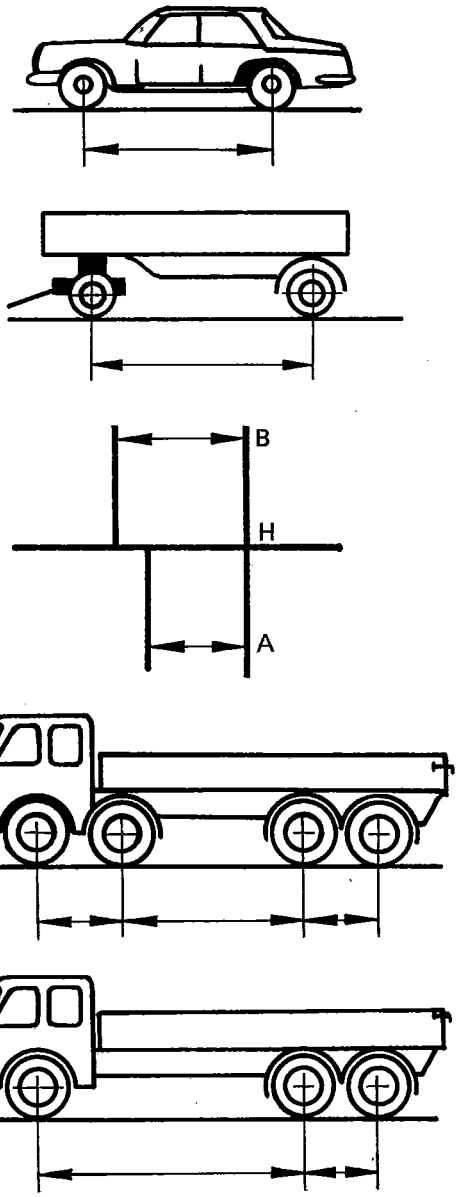
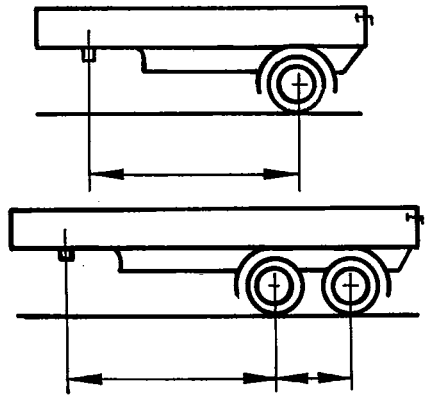
2 *Case of dual wheels*

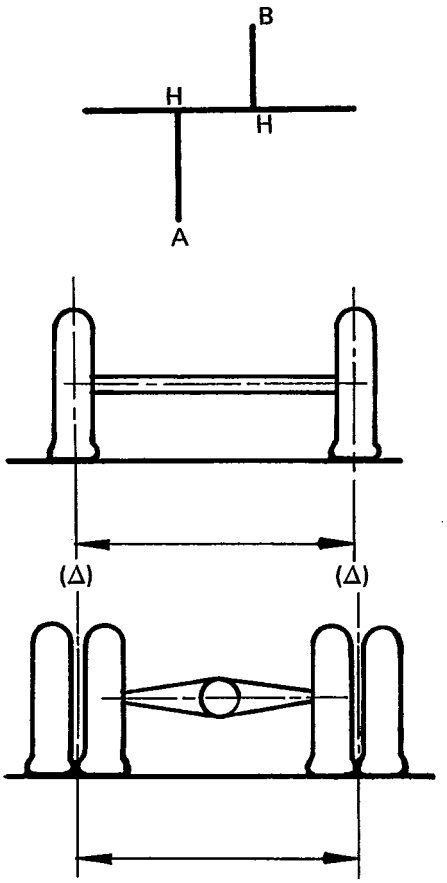
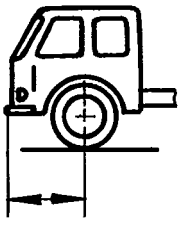
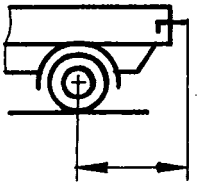
The mid-plane of the dual wheels is equidistant from the inner edge of one wheel and the outer edge of the other. The straight line Δ is, in this particular case, the intersection of the mid-plane of the dual wheels and the vertical plane passing through the axis of the axle pin.

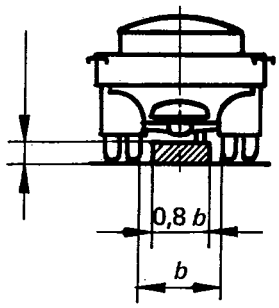
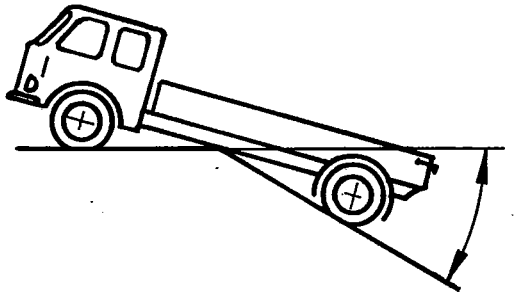
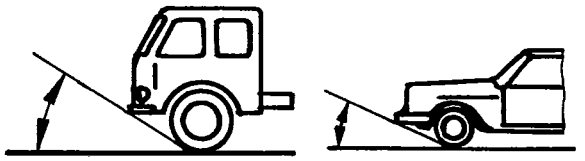
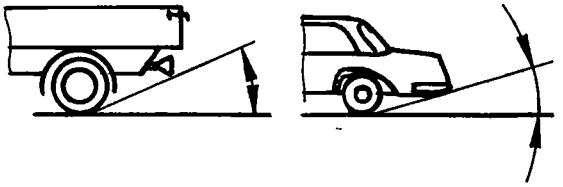
6 TERMS AND DEFINITIONS OF MOTOR VEHICLES AND TOWED VEHICLES

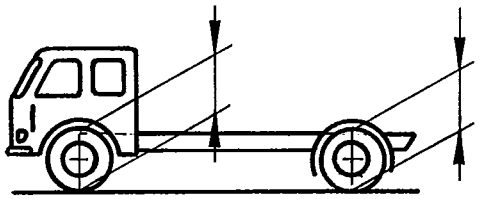
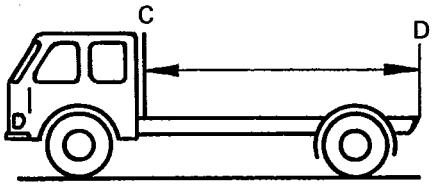
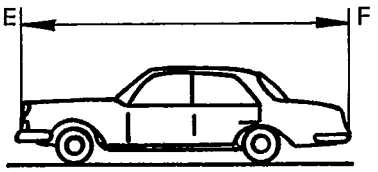
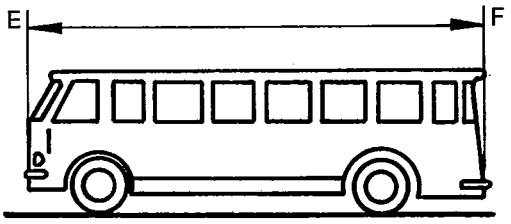
No.	Term	Definition	Drawing
6.1	**vehicle length**	See 6.1.1 to 6.1.3.	
6.1.1	**motor vehicle length**	The distance between two vertical planes perpendicular to the longitudinal median plane (of the vehicle) (see clause 5) and touching the front and rear of the vehicle respectively. NOTE — All parts of the vehicle, including any parts projecting from front or rear (towing-hooks, bumpers, etc.) are contained between these two planes.	
6.1.2	**trailer length**	The lengths with and without drawgear, defined as in 6.1.1, the second value being placed in parentheses : *Example* : 5 500 (3 700) NOTE — To determine the length with drawgear, the drawbar is assumed to be located so that the axis of the drawbar eye or coupling head is vertical and lies within the foremost vertical plane.	
6.1.3	**semi-trailer length**	The length of the semi-trailer, defined as in 6.1.1, and the distance between kingpin axis and rear end of semi-trailer, the second value being placed in parentheses : *Example* : 10 800 (7 800)	

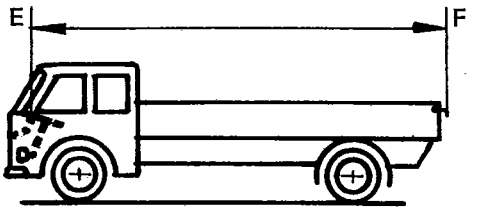
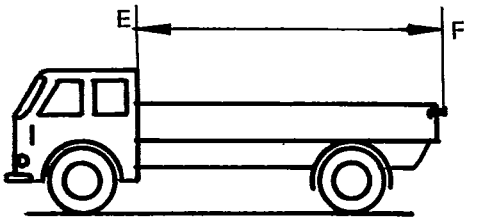
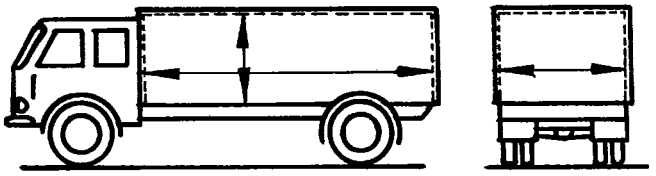
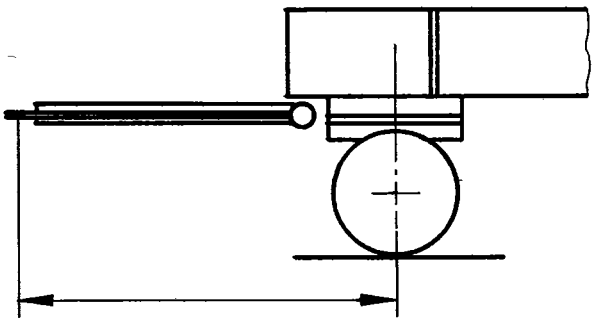
No.	Term	Definition	Drawing
6.2	**vehicle width**	The distance between two planes parallel to the longitudinal median plane (of the vehicle) (see clause 5) and touching the vehicle on either side of the said plane. NOTE — All parts of the vehicle, including any lateral projections of fixed parts (wheel hubs, door-handles, bumpers, etc.) are contained between these two planes, except the rear-view mirrors, side marker lamps, tyre pressure indicators, direction indicator lamps, position lights, customs seals, flexible mud-guards, retractable steps, snow chains and the deflected part of the tyre walls immediately above the point of contact with the ground.	
6.3	**vehicle height (unladen)**	The distance between the supporting surface and a horizontal plane touching the topmost part of a vehicle. NOTES 1 All fixed parts of the vehicle are contained between these two planes. 2 The vehicle is in operating order and unladen.	

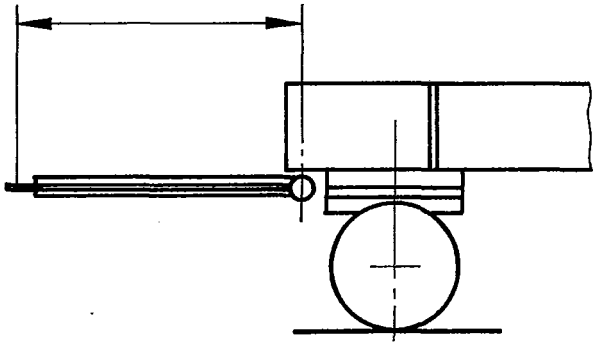
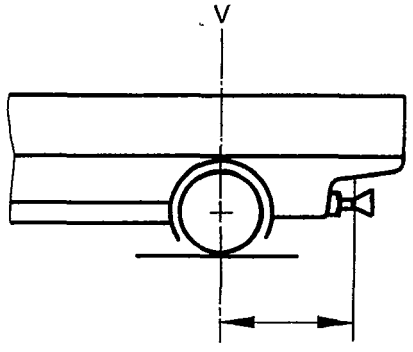
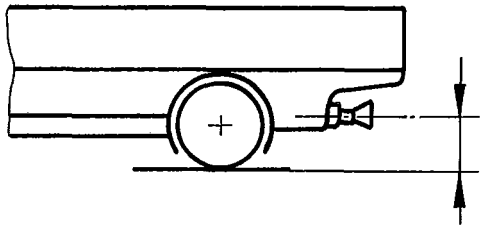
No.	Term	Definition	Drawing
6.4	**wheel space**	See 6.4.1 and 6.4.2.	
6.4.1	**motor vehicle or trailer wheel space**	The distance between the perpendicular lines constructed to the longitudinal median plane (of the vehicle) (see clause 5) from the previously defined points A or B corresponding to two consecutive wheels situated on the same side of the vehicle. NOTES 1 If the values of right and left wheel spaces are different, both dimensions are stated, separated by a dash, the first corresponding to the left wheels. 2 For vehicles with three or more axles, the wheel spaces between consecutive wheels are indicated, going from the foremost to the rearmost wheel : the total wheel space for right or for left is the sum of these distances.	
6.4.2	**semi-trailer wheel space**	The distance from the axis of the fifth wheel kingpin in a vertical position to the vertical plane through the axis of the semi-trailer's first axle. NOTE — In the case of a semi-trailer with two or more axles, the same rule should be applied as for vehicles with three or more axles.	

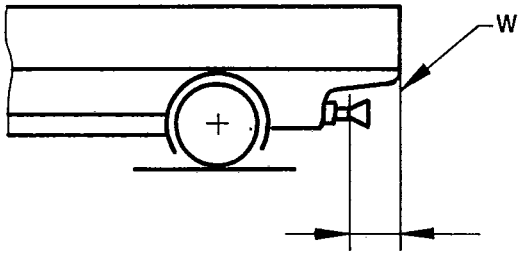
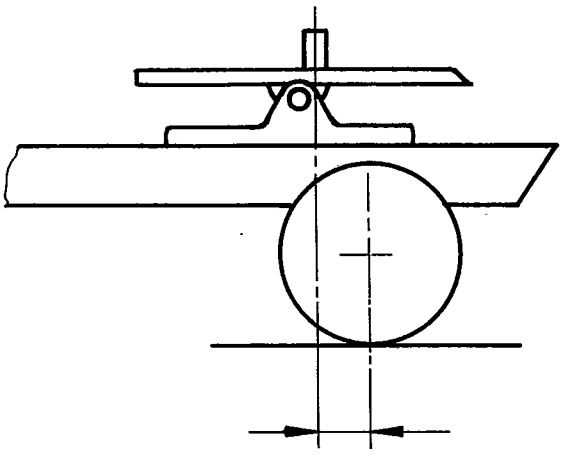
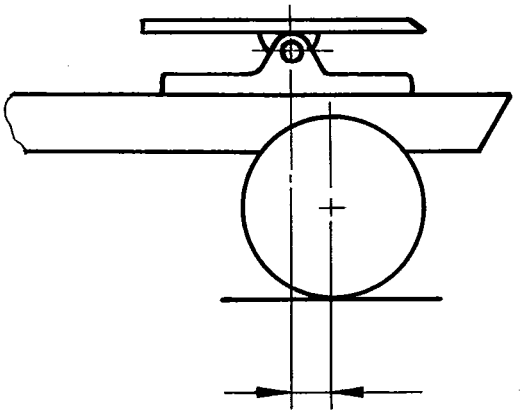
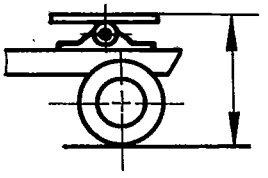
No.	Term	Definition	Drawing
6.5	**track**	The track corresponding to a real or imaginary axle is the sum of the two distances AH and BH in relation to the two wheels connected to this axle, AH and BH being the distances from points A and B defined in clause 5 to the longitudinal median plane (of the vehicle). NOTES 1 *Practical brief definition* : In the case of two single wheels corresponding to the same real or imaginary axle, the track is represented by the distance between the axes of the traces left by the wheels on the supporting surface. 2 *Case of dual wheels* See note 2 of clause 5.	
6.6	**front overhang**	The distance between the vertical plane passing through the centres of the front wheels and the foremost point of the vehicle, taking into consideration lashing hooks, registration number plate, etc., and any parts rigidly attached to the vehicle.	
6.7	**rear overhang**	The distance between the vertical plane passing through the centres of the rearmost wheels and the rearmost point of the vehicle, taking into consideration the towing attachment, registration number plate, etc., and any parts rigidly attached to the vehicle.	

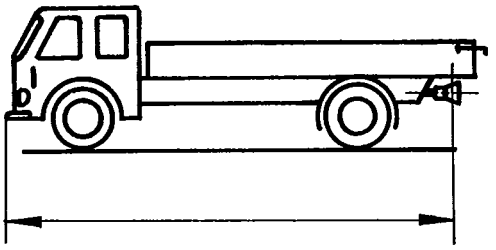
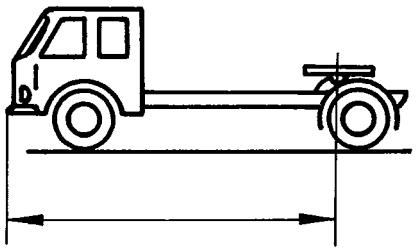
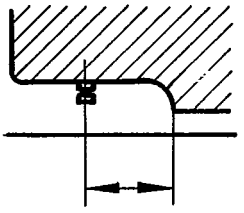
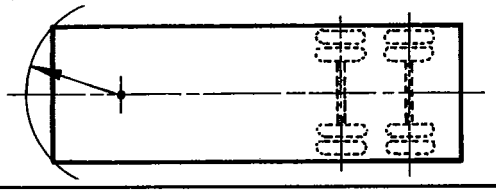
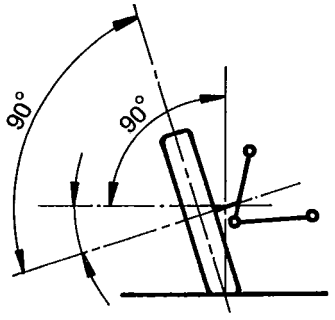
No.	Term	Definition	Drawing
6.8	**ground clearance**	The distance between the ground and the lowest point of the centre part of the vehicle. The centre part is that part contained between two planes parallel to and equidistant from the longitudinal median plane (of the vehicle) (see clause 5) and separated by a distance which is 80 % of the least distance between points on the inner edges of the wheels on any one axle.	 
6.9	**ramp angle**	The minimum acute angle between two planes, perpendicular to the longitudinal median plane of the vehicle, tangential, respectively, to the tyres of the front and the rear wheels, static loaded, and intersecting at a line touching the lower part of the vehicle, outside these wheels. This angle defines the largest ramp over which the vehicle can move.	
6.10	**approach angle**	The greatest angle between the horizontal plane and planes tangential to the static loaded front wheel tyres, such that no point of the vehicle ahead of the axle lies below these planes and that no part rigidly attached to the vehicle lies below these planes.	
6.11	**departure angle**	The greatest angle between the horizontal plane and planes tangential to the static loaded rear wheel tyres, such that no point of the vehicle behind the axle lies below these planes and that no part rigidly attached to the vehicle lies below these planes.	

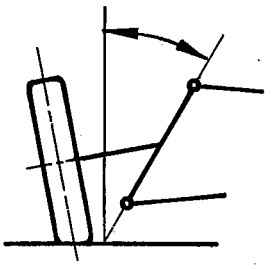
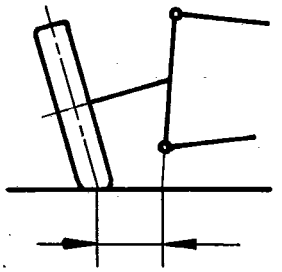
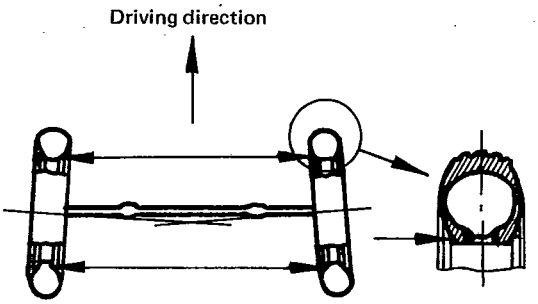
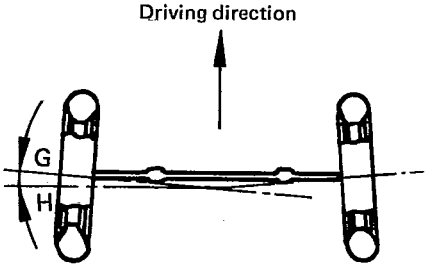
No.	Term	Definition	Drawing
6.12	**height of chassis above ground** (commercial vehicles)	The distance from the ground to the horizontal line perpendicular to the longitudinal median plane (of the vehicle) (see clause 5) and touching the upper surface of the chassis measured at the axle centre line. NOTES 1 In the case of vehicles with more than two axles, the distance is measured at the outermost axles (excluding lifting axles). 2 The height of the chassis above the supporting surface should be determined not only with the vehicle loaded to its maximum permissible weight, but also with the vehicle unladen.	
6.13	**maximum usable length of chassis behind cab** (vehicle with cab)	The distance between two vertical planes C and D perpendicular to the longitudinal median plane (of the vehicle) (see clause 5) : — plane C is the foremost plane which can be used for the bodywork; — plane D touches the rear end of the chassis.	
6.14	**bodywork length**	The distance between two planes E and F perpendicular to the longitudinal median plane (of the vehicle) (see clause 5) defined as in 6.14.1 to 6.14.3. NOTE — The bodywork length does not include lashing hooks, towing attachments of trailers, rear registration number plates, bumpers, etc., unless these are an integral part of the body.	
6.14.1	**passenger cars and chassis without cab and without any enclosure for the engine or other components which are intended to form an external part of the vehicle**	— plane E passes through the foremost part of the body; — plane F passes through the rearmost part of the body.	 

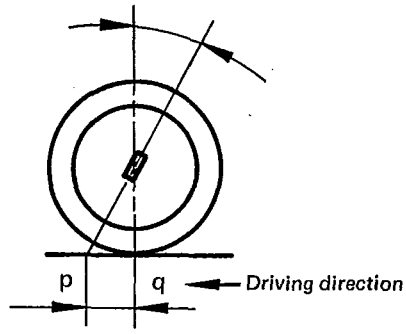
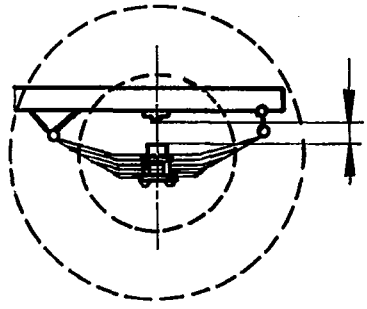
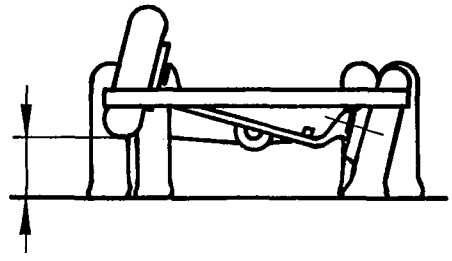
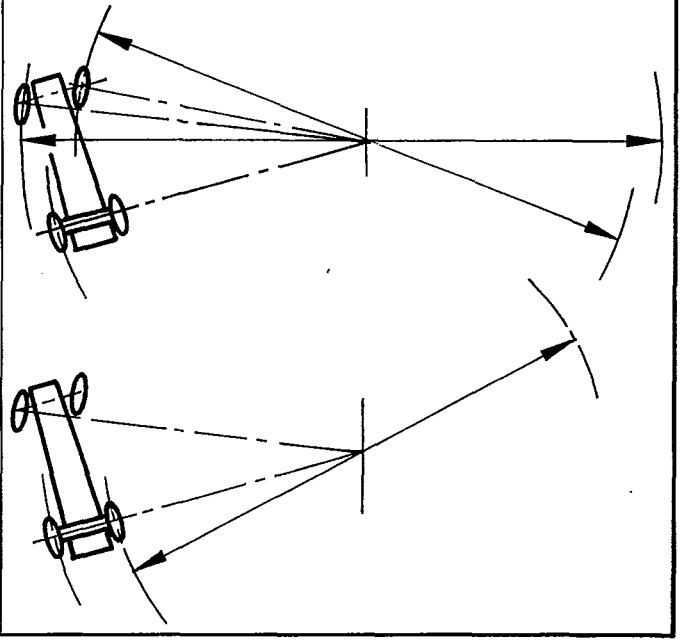
No.	Term	Definition	Drawing
6.14.2	**chassis without cab but with an enclosure for the engine intended to form an external part of the vehicle**	— plane E touches the back of the foremost predominating surface of the dash panel in the area directly ahead of the driving position of the vehicle, disregarding flanges and localized depressions; — plane F is defined as in 6.14.1.	
6.14.3	**chassis supplied complete with driver's cab**	— plane E passes through the foremost part of the body which is behind the driver's cab; — plane F is defined as in 6.14.1.	
6.15	**maximum internal dimensions of body** (commercial vehicles)	The interior length, width and height of the body without taking into account internal projections (wheelboxes, ribs, hooks, etc.). NOTES 1 However, the presence of internal projections should be noted. 2 If the walls or roof are curved, each dimension is measured between the planes (vertical or horizontal, depending on the case) tangential to the apices of the curved surfaces concerned, the dimensions being measured inside the body.	
6.16	**drawgear length**	The distance between the axis of the drawbar eye (in a vertical position) and the vertical plane passing through the axes of the front wheels of the trailer.	

No.	Term	Definition	Drawing
6.17	**drawbar length**	The distance between the drawbar eye (in a vertical position) and the vertical plane passing through the axis of the pin fixing the drawbar to the trailer [plane perpendicular to the longitudinal median plane (see clause 5) of the trailer].	
6.18	**position of towing attachment**	This attachment assumes as its plane of symmetry the longitudinal median plane (of the vehicle) (see clause 5). Its position is defined by the dimensions defined in 6.18.1 to 6.18.3.	
6.18.1	**overhang of attachment**	The distance from the attachment to the vertical plane perpendicular to the longitudinal median plane (see clause 5) and passing through the axis of the rearmost axle (plane V), i.e. the distance to plane V : a) for a ball, from the centre of the ball; b) for a jaw, from the vertical plane passing through the axis of the pin and parallel to plane V; c) for a hook, from the centre of the meridian section of the corresponding toroidal ring, the axis of the section being vertical.	
6.18.2	**height of attachment**	The distance from the attachment to the supporting plane, i.e. the distance from the supporting plane : a) for a ball, to the centre of the ball; b) for a jaw, to the horizontal plane equidistant from the two inner faces of the shackle with the pin vertical; c) for a hook, to the centre of the meridian section of the corresponding toroidal ring, the axis of this section being vertical.	

No.	Term	Definition	Drawing
6.18.3	**distance of towing attachment in front of rear of vehicle**	The distance from the attachment as defined in 6.18.1 a), b) or c) to the vertical plane W perpendicular to the longitudinal median plane (see clause 5) and passing through the rear of the body. NOTE — In determining the position of plane W, minor projections such as tail-gate hinges, latches, etc., are disregarded.	
6.19	**fifth wheel lead**	See 6.19.1 and 6.19.2. NOTE — For towing vehicles with two or more rear axles, the distance is measured to the vertical plane passing through the centre line of the rearmost wheel.	
6.19.1	**fifth wheel lead for calculation of length**	The distance from the vertical axis passing through the centre of the seating on the towing vehicle for the fifth wheel coupling pin to the vertical plane passing through the axis of the rear wheel of the towing vehicle, perpendicular to the longitudinal median plane (of the vehicle) (see clause 5).	
6.19.2	**fifth wheel lead for calculation of load distribution**	The distance from the horizontal axis of the pivot of the fifth-wheel on the towing vehicle to the vertical plane passing through the axis of the rear wheel of the towing vehicle, perpendicular to the longitudinal median plane (of the vehicle) (see clause 5).	
6.20	**height of coupling face**	The maximum distance from the centre of the seating of the fifth wheel coupling pin to the bearing plane. This point is situated in the horizontal plane touching the upper part of the seat.	

No.	Term	Definition	Drawing
6.21	**distance between towing device and front end of towing vehicle**	See 6.21.1 and 6.21.2.	
6.21.1	**distance between jaw and front end of towing vehicle**	The distance from the axis of the pin in the jaw or centre of the ball or, for a hook, from the centre of the meridian section of the corresponding toroidal ring, to a vertical plane perpendicular to the longitudinal median plane (of the vehicle) (see clause 5) and touching the front part of the towing vehicle.	
6.21.2	**distance between fifth wheel coupling pin and front end of towing vehicle**	The distance from the vertical axis passing through the centre of the seating on the towing vehicle for the fifth wheel coupling pin to the vertical plane perpendicular to the longitudinal median plane (of the vehicle) (see clause 5) and touching the front end of the vehicle.	
6.22	**rear tractor clearance radius of semi-trailer**	The distance from the axis of the fifth wheel coupling pin to the surface of the cylindrical part of the gooseneck or other downward projection. NOTE — The outline of the gooseneck is indicated in ISO 1726.	
6.23	**front fitting radius of semi-trailer**	The distance from the axis of the kingpin to the farthest point of the front part of the semi-trailer from this axis.	
6.24	**camber angle**	The acute angle between the axis of the axle-pin and a horizontal line in the vertical plane through that axis. The angle is positive when the point of the V formed by straight lines supporting the wheel axles is directed downwards. NOTE — This angle is equal to the acute angle formed by a vertical line and the mid-plane of the wheel. These two angles, considered in the same plane, have their sides perpendicular to each other.	

No.	Term	Definition	Drawing
6.25	**kingpin inclination**	The projection onto a plane perpendicular to the longitudinal median plane (of the vehicle) (see clause 5) of the acute angle, formed by the vertical and the real or imaginary swivelling axis of the stub axle.	
6.26	**kingpin offset**	The distance from the extension of the swivelling axis of the stub axle onto the supporting surface to the extension onto the same plane of the mid-plane of the wheel. The kingpin offset shown on the drawing is positive.	
6.27	**toe-in**	See 6.27.1 and 6.27.2.	
6.27.1	**toe-in (length)**	The length defined as follows : The ends of the horizontal diameters of the interior contours of the rims corresponding to the same axle are the apices of an isosceles trapezium. The difference between the length of the rear base and that of the forward base of the trapezium is the toe-in, the difference being positive when the wheels are closer together in front than behind, and negative in the contrary case.	
6.27.2	**toe-in (angle)**	The angle formed by the horizontal diameter of the wheel and the longitudinal median plane (of the vehicle) (see clause 5) or the acute angle formed by the vertical plane G passing through the axis of the axle-pin and a vertical plane H perpendicular to the longitudinal median plane (of the vehicle).	

No.	Term	Definition	Drawing
6.28	**castor**	The distance between two points p and q : this distance is the projection onto a plane parallel to the longitudinal median plane (of the vehicle) (see clause 5) of the acute angle formed by the vertical and the real or imaginary swivelling axis of the stub axle. It is positive when q is ahead of p in the direction of normal travel.	
6.29	**vertical clearance**	The vertical displacement of a wheel in relation to the suspended part of the vehicle from the position corresponding to the maximum permissible load to the position from which any additional vertical travel is impossible.	
6.30	**lift**	The height to which a wheel may be lifted without any other wheels leaving their supporting surface.	
6.31	**turning circles**	The diameters of the circles circumscribing the extensions on the supporting plane of the mid-planes of the steered wheels (the steering wheel being turned to full lock). NOTES 1 The smaller diameter of the circle circumscribing the extension on the supporting plane of the mid-plane of an inner non steered wheel is also of practical interest. 2 Each vehicle has left-hand and right-hand turning circles.	

No.	Term	Definition	Drawing
6.32	**turning clearance circles**	The turning clearance circles (the steering wheel being turned to full lock) are : 1) The diameter of the smallest circle enclosing the projections onto the supporting plane of all points of the vehicle. 2) The diameter of the largest circle beyond which are located the projections onto the supporting plane of all the points of the vehicle. NOTE — Each vehicle has right-hand and left-hand turning clearance circles.