





**DIRECTIVE 97/27/EC OF THE EUROPEAN PARLIAMENT AND  
OF THE COUNCIL**

**of 22 July 1997**

**relating to the masses and dimensions of certain categories of motor  
vehicles and their trailers and amending Directive 70/156/EEC**

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN  
UNION,

Having regard to the Treaty establishing the European Community, and  
in particular Article 100a thereof,

Having regard to the proposal from the Commission<sup>(1)</sup>,

Having regard to the opinion of the Economic and Social Committee<sup>(2)</sup>,

Acting in accordance with the procedure laid down in Article 189b of  
the Treaty<sup>(3)</sup>,

- (1) Whereas the total harmonization of technical requirements for motor vehicles is necessary in order to achieve the smooth functioning of the internal market, while ensuring a high level of safety for the public;
- (2) Whereas the technical requirements which certain vehicle categories must satisfy pursuant to national laws relate, *inter alia*, to their masses and dimensions;
- (3) Whereas these requirements differ from one Member State to another; whereas it is therefore necessary that all Member States adopt the same requirements either in addition to or in place of their existing rules in order to allow, in particular, the EC type-approval procedure which was the subject of Council Directive 70/156/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers<sup>(4)</sup>, to be applied in respect of each type of vehicle;
- (4) Whereas it is desirable to harmonize the maximum masses and dimensions of motor vehicles and their trailers to be registered in the Member States in accordance with Directive 96/53/EC of 25 July 1996 laying down, for certain road vehicles circulating within the Community, the maximum authorized dimensions in national and international traffic and the maximum authorized weights in international traffic<sup>(5)</sup>; whereas the aforementioned Directive applies only to the traffic on the territories of the Member States and not to technical requirements as laid down in Directive 70/156/EEC;
- (5) Whereas Directive 96/53/EC lays down certain maximum authorized dimensions for both national and international traffic in the Member States with a certain lead time for their entry into force; whereas some other maximum authorized dimensions, as well as maximum authorized masses, remain applicable only to international traffic;
- (6) Whereas, as a consequence, the harmonization of the maximum authorized masses of motor vehicles and their trailers to be registered in the Member States does not appear to be feasible in the short term; whereas on the other hand it does now appear feasible to achieve, as far as possible, the harmonization of their maximum dimensions, to deal with the question of masses by

<sup>(1)</sup> OJ No C 230, 4. 9. 1991, p. 46.

<sup>(2)</sup> OJ No C 49, 24. 2. 1992, p. 5.

<sup>(3)</sup> Opinion of the European Parliament of 12 February 1992 (OJ No C 67, 16. 3. 1992, p. 81), Council common position of 28 November 1996 (OJ No C 41, 10. 2. 1997, p. 5), Decision of the European Parliament of 9 April 1997 (OJ No C 132, 28. 4. 1997) and Council Decision of 21 May 1997.

<sup>(4)</sup> OJ No L 42, 23. 2. 1970, p. 1. Directive as last amended by Directive 96/79/EC (OJ No L 18, 21. 1. 1997, p. 7).

<sup>(5)</sup> OJ No L 235, 17. 9. 1996, p. 59.

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providing for the possibility of a uniform procedure to determine the registration/in-service maximum permissible masses of vehicles in each Member State, and to pursue the constant improvement of safety, in particular with regard to certain categories of trailers;

- (7) Whereas, according to Article 4 (3) and (4) of Directive 96/53/EC, Member States may allow the circulation on their territory of category N vehicles with dimensions exceeding the limits laid down in that Directive, either for the carriage of indivisible loads or for the purpose of certain national transport operations that do not significantly affect international competition in the transport sector; whereas, as far as category M<sub>2</sub> and M<sub>3</sub> vehicles are concerned, Directive 96/53/EC applies only to international traffic; whereas it is therefore necessary by way of derogation to allow approvals for vehicles of dimensions exceeding the maximum dimensions authorized by this Directive and for certain other characteristics, together with the possibility for Member States to refuse vehicles approved under those derogating provisions;
- (8) Whereas this Directive is one of the separate directives which must be complied with in order to ensure the conformity of vehicles with the requirements of the EC type-approval procedure established by Directive 70/156/EEC; whereas, consequently, the provisions laid down in Directive 70/156/EEC relating to vehicle systems, components and separate technical units apply to this Directive;
- (9) Whereas, in particular, pursuant to Articles 3 (4) and 4 (3) of Directive 70/156/EEC, each separate directive must have attached to it an information document incorporating the relevant items of Annex I to that Directive and also a type-approval certificate based on Annex VI thereto so that type-approval can be computerized;
- (10) Whereas special provisions have been incorporated as regards incomplete vehicles in order to facilitate second-stage approval of completed vehicles;
- (11) Whereas special provisions are introduced in this Directive to take account of retractable or loadable axles; whereas it is acknowledged that such axles should also be taken into account in Council Directive 71/320/EEC of 26 July 1971 on the approximation of the laws of the Member States relating to the braking devices of certain categories of motor vehicles and of their trailers<sup>(1)</sup> and in Council Directive 70/311/EEC of 8 June 1970 on the approximation of the laws of the Member States relating to steering equipment for motor vehicles and their trailers<sup>(2)</sup>;
- (12) Whereas special provisions should also be incorporated into Directive 71/320/EEC in order to take better account of the technical conditions under which vehicles of categories M<sub>2</sub>, M<sub>3</sub> and N may tow trailers;
- (13) Whereas special provisions should also be incorporated into Council Directive 76/114/EEC of 18 December 1975 on the approximation of the laws of the Member States relating to statutory plates and inscriptions for motor vehicles and their trailers, and their location and method of attachment<sup>(3)</sup> to take account of the fact that vehicles may be registered at different masses in the Member States,

<sup>(1)</sup> OJ No L 202, 6. 9. 1971, p. 37. Directive as last amended by Directive 91/422/EEC (OJ No L 233, 22. 8. 1991, p. 21).

<sup>(2)</sup> OJ No L 133, 18. 6. 1970, p. 10. Directive as last amended by Directive 92/62/EEC (OJ No L 199, 18. 7. 1992, p. 33).

<sup>(3)</sup> OJ No L 24, 30. 1. 1976, p. 1. Directive as last amended by Directive 78/507/EEC (OJ No L 155, 13. 6. 1978, p. 31).

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HAVE ADOPTED THIS DIRECTIVE:

*Article 1*

For the purposes of this Directive, 'vehicle' means any motor vehicle or trailer as defined in Article 2 of and Annex II to Directive 70/156/EEC, with the exception of vehicles of category M<sub>1</sub>.

*Article 2*

No Member State may refuse to grant EC type-approval or national type-approval of a vehicle type, or refuse or prohibit the sale, registration, entry into service or use of a vehicle on grounds relating to its masses and dimensions if these satisfy the requirements set out in Annex I hereto.

*Article 3*

However, a Member State may refuse to grant national type-approval of a vehicle type, or refuse or prohibit the sale, registration, entry into service or use of a vehicle, or consider its certificate of conformity as not valid within the meaning of Article 7 (1) of Directive 70/156/EEC, or authorize it only for the carriage of indivisible loads if, having been granted approval under this Directive, it benefits from the derogation provided for in Article 7 thereof and that derogation conflicts with the national requirements in force in that Member State.

*Article 4*

When Member States grant national type-approval of vehicles approved under this Directive or permit the registration, entry into service or use of such vehicles, they assign to them national registration/in-service maximum permissible masses according to their relevant national maximum authorized masses. For the determination of these registration/in-service maximum permissible masses, no Member State may refuse to apply the procedure provided for in Annex IV, should the manufacturer request its application.

*Article 5*

By way of derogation from Article 2, Member States may submit loadable and retractable axles to national technical requirements. However, no Member State may refuse to apply the technical requirements laid down in section 3 of Annex IV should the manufacturer request their application.

*Article 6*

By way of derogation from Article 2 and section 7.3.2.1 of Annex I, Member States may refuse to grant national type-approval of, or refuse or prohibit the sale, registration or entry into service or use of buses or coaches the width of which exceeds 2,50 m until 31 December 1999, as provided by Article 9 of Directive 96/53/EC.

*Article 7*

By way of derogation from Article 2 and section 7.3 of Annex I, and without the requirements of section 7.6 of Annex I having to be fulfilled, Member States may approve vehicles with dimensions exceeding those laid down in those sections. Details of the derogation shall be included in the type-approval certificate in Annex III to this Directive and the provisions of Article 3 shall apply.

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*Article 8*

Directive 70/156/EEC is amended as follows:

(a) Annex I is supplemented as follows:

1. Footnote (j) shall be supplemented as follows: 'for vehicles other than those of category M<sub>1</sub>, Directive 97/27/EC, Annex I, section 2.4.1'.
2. Footnote (k) shall be supplemented as follows: 'for vehicles other than those of category M<sub>1</sub>, Directive 97/27/EC, Annex I, section 2.4.2'.
3. Footnote (l) shall be supplemented as follows: 'for vehicles other than those of category M<sub>1</sub>, Directive 97/27/EC, Annex I, section 2.4.3'.

(b) Item 48 of Annex IV is replaced by the following text:

	'Subject	Directive	OJ No	Applicability										
				M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	N <sub>1</sub>	N <sub>2</sub>	N <sub>3</sub>	O <sub>1</sub>	O <sub>2</sub>	O <sub>3</sub>	O <sub>4</sub>	
48	Masses and dimensions (other than vehicles referred to in item 44)	97/27/EC	L 233 25. 8. 1997		X	X	X	X	X	X	X	X	X	X

*Article 9*

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 22 July 1999 at the latest. They shall forthwith inform the Commission thereof.

When Member States adopt these measures, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such a reference shall be laid down by the Member States.

2. Member States shall communicate to the Commission the texts of the main provisions of national law which they adopt in the field governed by this Directive.

*Article 10*

This Directive shall enter into force on the 20th day following its publication in the *Official Journal of the European Communities*.

*Article 11*

This Directive is addressed to the Member States.

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## ANNEX I

1. This Directive applies to the masses and dimensions of motor vehicles of categories M<sub>2</sub>, M<sub>3</sub> and N and of trailers of category O, as defined in Annex II (A) to Directive 70/156/EEC.
2. DEFINITIONS
 

For the purposes of this Directive:

  - 2.1. 'Motor vehicle' means any power-driven vehicle as defined in Annex II (A) to Directive 70/156/EEC.
    - 2.1.1. Motor vehicles of category N:
      - 2.1.1.1. 'Lorry' means a motor vehicle of category N<sub>1</sub>, N<sub>2</sub>, or N<sub>3</sub> which is designed and constructed exclusively or principally for conveying goods. It may also tow a trailer;
      - 2.1.1.2. 'Towing vehicle' ('tractor') means a motor vehicle of category N<sub>1</sub>, N<sub>2</sub>, or N<sub>3</sub>, which is designed and constructed exclusively or principally to tow trailers;
        - 2.1.1.2.1. 'Trailer towing vehicle' ('road tractor') means a towing vehicle which is designed and constructed exclusively or principally to tow trailers other than semi-trailers. It may be equipped with a loading platform,
        - 2.1.1.2.2. 'Semi-trailer towing vehicle' ('semi-trailer tractor') means a towing vehicle which is designed and constructed exclusively or principally to tow semi-trailers,
      - 2.1.1.3. Complete or completed vehicles of category N other than lorries and towing vehicles are considered to be special purpose vehicles.
    - 2.1.2. Motor vehicles of category M<sub>2</sub> or M<sub>3</sub>:

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- 2.1.2.1. 'Bus or coach' means a vehicle defined in paragraph 1 of Annex I to Directive .../.../EC.
- 2.1.2.2. 'Class' of bus or coach means a vehicle of a Class defined in paragraphs 2.1.1 and 2.1.2 of Annex I to Directive .../.../EC.
- 2.1.2.3. 'Articulated bus or coach' means a vehicle defined in paragraph 2.1.3 of Annex I to Directive .../.../EC.
- 2.1.2.4. 'Double-deck bus or coach' means a vehicle defined in paragraph 2.1.6 of Annex I to Directive .../.../EC.

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- 2.1.2.2. Vehicles of category M<sub>2</sub> or M<sub>3</sub> other than buses or coaches are considered to be special purpose vehicles (e.g.: ambulances).
- 2.2. Vehicles of category O:
  - 2.2.1. 'Towed vehicle' ('Trailer') means a non-self-propelled vehicle which is designed and constructed to be towed by a motor vehicle.
  - 2.2.2. 'Semi-trailer' means a towed vehicle which is designed to be coupled to a semi-trailer towing vehicle or to a dolly axle and to impose a substantial vertical load on the towing vehicle or on the dolly axle.
  - 2.2.3. 'Drawbar trailer' means a towed vehicle with at least two axles, of which at least one is a steered axle, and:
    - equipped with a towing device which can move vertically (in relation to the trailer),
    - which transmits no significant static vertical load to the towing vehicle (less than 100 daN).

When a semi-trailer is coupled to a dolly axle it is considered to be a drawbar trailer.
  - 2.2.4. 'Centre-axle trailer' means a rigid drawbar trailer where the axle(s) is (are) positioned close to the centre of gravity of the vehicle (when uniformly loaded) so that only a small static vertical load, not exceeding 10 % of that corresponding to the maximum mass of the trailer or a load of 1 000 daN (whichever is the lesser) is transmitted to the towing vehicle.

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- 2.3. ‘*Group of axles*’ means axles being part of a bogie. A two-axle group is called a tandem and a tri-axle group a tri-axle bogie. By convention, a solo axle is considered as a group of one axle.
- 2.4. ‘*Vehicle dimensions*’ means the dimensions of the vehicle based on its construction, as stated by the manufacturer.
- 2.4.1. ‘*Vehicle length*’ is a dimension which is measured according to ISO standard 612-1978, term No 6.1.

In addition to the provisions of that standard, when measuring the vehicle length the following devices must not be taken into account:

- wiper and washer devices,
- front or rear marking plates,
- customs sealing devices and their protection,
- devices for securing the tarpaulin and their protection,
- lighting equipment,
- rear-view mirrors,
- rear-space watching aids,
- air-intake pipes,
- length stops for demountable bodies,
- access steps,
- ram rubbers,
- lifting platforms, access ramps and similar equipment in running order, not exceeding 200 mm, provided that the loading capacity of the vehicle is not increased,
- coupling devices for motor vehicles.

- 2.4.2. ‘*Vehicle width*’ is a dimension which is measured according to ISO standard 612-1978, term No 6.2.

In addition to the provisions of that standard, when measuring the vehicle width the following devices must not be taken into account:

- customs sealing devices and their protection,
- devices for securing the tarpaulin and their protection,
- tyre failure tell-tale devices,
- protruding flexible parts of a spray-suppression system (see Council Directive 91/226/EEC)<sup>(1)</sup>,
- lighting equipment,
- for vehicles of categories M<sub>2</sub> and M<sub>3</sub>, access ramps in running order, lifting platforms and similar equipment in running order provided that they do not exceed 10 mm from the side of the vehicle and the corners of the ramps facing forwards or rearwards are rounded to a radius of not less than 5 mm; the edges must be rounded to a radius of not less than 2,5 mm,
- rear-view mirrors,
- tyre-pressure indicators,
- retractable steps,
- the deflected part of the tyre walls immediately above the point of contact with the ground.

- 2.4.3. ‘*Vehicle height*’ is a dimension which is measured according to ISO standard 612-1978, term No 6.3.

In addition to the provisions of that standard, when measuring the vehicle height the following devices must not be taken into account:

- aerials,
- pantographs in their elevated position.

For vehicles with an axle-lift device, the effect of this device must be taken into account.

- 2.4.4. ‘*Length of the loading area*’ of a vehicle other than a semi-trailer tractor or semi-trailer means the distance from the foremost external point of the loading area to the rearmost external point of the vehicle, measured horizontally in the longitudinal plane of the vehicle.

<sup>(1)</sup> OJ No L 103, 23. 4. 1991, p. 5.

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The distance is to be measured not taking into account:

- the loading area forward of the rearmost point of the cabin,
- the devices mentioned in 2.4.1, or
- protruding cooling units and other auxiliaries situated forward of the loading area.

2.5. ‘*Mass of the vehicle in running order*’ means the mass of the unladen vehicle with bodywork, and with coupling device in the case of a towing vehicle, in running order, or the mass of the chassis with cab if the manufacturer does not fit the bodywork and/or coupling device (including coolant, oils, 90 % fuel, 100 % other liquids except used waters, tools, spare wheel and driver (75 kg), and, for buses and coaches, the mass of the crew member (75 kg) if there is a crew seat in the vehicle).

2.6. ‘*Technically permissible maximum laden mass (M)*’ means the maximum mass of the vehicle based on its construction and performance, stated by the manufacturer.

The technically permissible maximum laden mass is used to determine the vehicle category in accordance with Annex II to Directive 70/156/EEC, except for centre-axle trailers and semi-trailers where the mass to use is the mass corresponding to the load exerted on the axles when the vehicle is loaded to its technically permissible maximum laden mass.

By definition, only one technically permissible maximum laden mass may be attributed to a given technical configuration of the vehicle type as defined by one set of the possible values of the items laid down in the information document in Annex II to this Directive. This definition — one value only — applies to the relevant technical requirements of sections 2.7, 2.8, 2.10, 2.11 and 2.12 as appropriate.

2.7. ‘*Technically permissible maximum mass on the axle (m)*’ means the mass corresponding to the maximum permissible static vertical load exerted by the axle on the road surface, based on the construction of the vehicle and of the axle and as stated by the vehicle manufacturer.

2.8. ‘*Technically permissible maximum mass on a group of axles (μ)*’ means the mass corresponding to the maximum permissible static vertical load exerted by the group of axles on the road surface, based on both the construction of the vehicle and of the group of axles and as stated by the vehicle manufacturer.

2.9. ‘*Towable mass*’ means either the mass of a drawbar-trailer or semi-trailer with dolly axle coupled to the motor vehicle, or the mass corresponding to the load exerted on the axles of a centre-axle trailer or semi-trailer coupled to the motor vehicle.

2.10. ‘*Technically permissible maximum towable mass (TM)*’ means the maximum towable mass stated by the manufacturer.

2.11. ‘*Technically permissible maximum mass on the coupling point of a motor vehicle*’ means the mass corresponding to the maximum permissible static vertical load on the coupling point based on the construction of the motor vehicle and/or coupling device and as stated by the manufacturer. By definition, this mass does not include the mass of the coupling device for towing vehicles in running order, but includes the mass of any coupling device to be fitted for other vehicles.

2.12. ‘*Technically permissible maximum mass on the coupling point of a semi-trailer or centre-axle trailer*’ means the mass corresponding to the maximum permissible static vertical load to be transferred by the trailer to the towing vehicle at the coupling point, as stated by the manufacturer of the trailer.

2.13. ‘*Technically permissible maximum laden mass of the combination (MC)*’ means the maximum value of the sum of the masses of the laden motor vehicle and of the laden towed trailer, based on the construction of the motor vehicle, and as stated by the manufacturer.

2.14. ‘*Axle-lift device*’ means a device permanently fitted to a vehicle for the purpose of reducing or increasing the load on the axle(s), according to the loading conditions of the vehicle:

- either by raising the wheels clear off the ground/lowering them to the ground,



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— or without raising the wheels off the ground, (e.g. in the case of air suspension systems, or other systems),

in order to reduce the wear on the tyres when the vehicle is not fully laden, and/or make starting (moving off) on slippery ground easier for motor vehicles or vehicle combinations, by increasing the load on the driving axle.

- 2.15. ‘*Retractable axle*’ means an axle which can be raised/lowered by the axle-lift device in accordance with 2.14, first indent.
- 2.16. ‘*Loadable axle*’ means an axle the load on which can be varied without the axle being raised by using the axle-lift device in accordance with 2.14, second indent.
- 2.17. ‘*Air suspension*’ means a suspension system on which at least 75 % of the spring effect is caused by the air spring.
- 2.18. ‘*Suspension recognized to be equivalent to air suspension*’ means a suspension system for a vehicle axle or group of axles which complies with the requirements of 7.11.
- 2.19. ‘*Vehicle type*’ means vehicles which do not differ in such essential respects as:
- manufacturer,
  - vehicle category as defined in Annex II to Directive 70/156/EEC,
  - essential aspects of construction and design such as:
    - for vehicles of categories M<sub>2</sub> and M<sub>3</sub>:
      - chassis/self supporting body, single/double deck, rigid/articulated (obvious and fundamental differences),
      - suspension on the driving axle: pneumatic or equivalent/non-air and non-equivalent,
      - number of axles,
    - for vehicles of category N:
      - chassis/floor pan (obvious and fundamental differences),
      - suspension on the driving axle: air or equivalent/non-air and non-equivalent,
      - number of axles,
    - for vehicles of category O:
      - chassis/self-supporting body (obvious and fundamental differences), drawbar trailer/semi-trailer/centre-axle trailer,
      - braking system: unbraked/inertia/continuous,
      - number of axles.

For the purpose of this section, aspects of construction and design, such as in particular the wheelbase, axle design, suspension, steering, tyres and the corresponding modifications of the brake correcting device for the axles, or the adjunction or suppression of reduction valves in relation to semi-trailer tractor and lorry configurations, and equipment related to the chassis (e.g. engine, fuel tanks, transmission, etc.) are not considered to be essential.

3. APPLICATION FOR EC TYPE-APPROVAL
- 3.1. The application for EC type-approval pursuant to Article 3 of Directive 70/156/EEC of a vehicle type with regard to its masses and dimensions is submitted by the vehicle manufacturer.
- 3.2. It must be accompanied by an information document, for which a model is given in Annex II to this Directive.
- 3.3. A vehicle or vehicles conforming to the characteristics described in Annex II to this Directive and chosen to the satisfaction of the technical service in charge of the approval tests or checks as representative of the type to be approved, must be submitted to that technical service.
4. EC TYPE-APPROVAL
- 4.1. If the relevant requirements are satisfied, EC type-approval pursuant to Article 4 (3) of Directive 70/156/EEC is granted.

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- 4.2. A model for the EC type-approval certificate is given in Annex III to this Directive.
- 4.3. Notice of approval or of extension or refusal of approval of a vehicle type pursuant to this Directive must be communicated to the Member States in accordance with the procedure laid down in Article 4 (6) of Directive 70/156/EEC.
- 4.4. An approval number in accordance with Annex VII to Directive 70/156/EEC is assigned to each type of vehicle approved. The same Member State must not assign the same number to another type of vehicle.

## 5. AMENDMENTS TO APPROVALS

- 5.1. In the case of amendments to approvals granted pursuant to this Directive, the provisions of Article 5 of Directive 70/156/EEC are applicable.

## 6. CONFORMITY OF PRODUCTION

- 6.1. Measures to ensure the conformity of production must be taken in accordance with the provisions laid down in Article 10 of Directive 70/156/EEC.

## 7. REQUIREMENTS

7.1. **Measurement of the mass of the vehicle in running order and of its distribution among the axles**

The mass of the vehicle in running order and its distribution on the axles are measured on the vehicles submitted in accordance with 3.3, placed in a stationary position with their wheels set straight ahead.

If the measured masses differ by no more than 3 % from the masses stated by the manufacturer for the corresponding technical configurations within the type, or by no more than 5 % if the vehicle is of categories N<sub>1</sub>, O<sub>1</sub>, O<sub>2</sub>, or M<sub>2</sub> not exceeding 3,5 t, the masses in running order and their distribution among the axles as stated by the manufacturer are used for the purpose of the requirements below. Otherwise the measured masses must be used and the technical service may then, if necessary, carry out additional measurements on vehicles other than those submitted in accordance with 3.3.

7.2. **Measurement of dimensions**

Measurement of the overall length, width and height is carried out in accordance with the provisions of 2.4 on the vehicle(s) in running order submitted in accordance with 3.3.

If the measured dimensions differ from those stated by the manufacturer for the corresponding technical configurations within the type, the measured dimensions are used for the purpose of the requirements below and the technical service may then, if necessary, carry out additional measurements on vehicles other than those submitted in accordance with 3.3.

7.3. **Maximum authorized dimensions for vehicles**7.3.1. *Maximum length*

- 7.3.1.1. Motor vehicle: as per section 1.1 of Annex I to Directive 96/53/EC.

- 7.3.1.2. Trailer (excluding semi-trailer): as per section 1.1 of Annex I to Directive 96/53/EC.

- 7.3.1.3. Articulated bus or coach: as per section 1.1 of Annex I to Directive 96/53/EC.

- 7.3.1.4. Semi-trailer:

The distance referred to in 7.3.1.4.1 is measured without taking account of the devices mentioned in 2.4.1, and the distance referred to in 7.3.1.4.2 must be measured with no exemption at all.

- 7.3.1.4.1. The distance between the axis of the fifth-wheel king-pin and the rear of a semi-trailer must not exceed the limit laid down in section 1.6 of Annex I to Directive 96/53/EC, measured horizontally in the longitudinal plane of the vehicle.

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- 7.3.1.4.2. The distance between the axis of the fifth-wheel king-pin and any foremost point at the front of the semi-trailer must not exceed 2,04 m as per section 4.4 of Annex I to Directive 96/53/EC, measured horizontally.
- 7.3.2. *Maximum width*
- 7.3.2.1. Any vehicle: as per section 1.2 of Annex I to Directive 96/53/EC.
- 7.3.2.2. Fixed or mobile superstructures of the vehicles of categories N and O specially designed for the controlled temperature transportation of goods, the thickness of the side walls of which exceeds, including the insulation, 45 mm: as per section 1.2 of Annex I to Directive 96/53/EC.
- 7.3.3. *Maximum height*
- 7.3.3.1. Any vehicle: as per section 1.3 of Annex I to Directive 96/53/EC.
- 7.4. **Mass distribution calculations**
- 7.4.1. *Calculation procedure*
- 7.4.1.1. For the purpose of the mass distribution calculations hereafter laid down, the manufacturer must provide the technical service in charge of the tests with the information (in tabular or any other appropriate form) necessary to identify — for each technical configuration within the vehicle type as defined by each set of the possible values of all the items in Annex II to this Directive — the corresponding technically permissible maximum laden mass of the vehicle, the technically permissible maximum masses on the axles and groups of axles, the technically permissible maximum towable mass, and the technically permissible maximum laden mass of the combination.
- 7.4.1.2. Suitable calculations must be carried out in order to make sure that the following requirements are fulfilled for each technical configuration within the type. For this purpose, the calculations may be limited to the worst cases.
- 7.4.1.3. In the following requirements, the notations  $M$ ,  $m_i$ ,  $\mu_j$ ,  $TM$ , and  $MC$  respectively designate the following parameters, for which the requirements of 7.4 must be fulfilled:
- $M$  = the technically permissible maximum laden mass of the vehicle,
- $m_i$  = the technically permissible maximum mass on the axle designated 'i', where 'i' varies from 1 to the total number of axles of the vehicle,
- $\mu_j$  = the technically permissible maximum mass on the solo axle or group of axles designated 'j', where 'j' varies from 1 to the total number of solo axles and groups of axles,
- $TM$  = the technically permissible maximum towable mass, and
- $MC$  = the technically permissible maximum laden mass of the combination.
- 7.4.1.4. In the case of a solo axle, designated 'i' as an axle and 'j' as a group of axles,  $m_i = \mu_j$  by definition.
- 7.4.1.5. In the case of vehicles fitted with loadable axles, the following calculations must be carried out with the suspension of the axles loaded in the normal running configuration. In the case of vehicles fitted with retractable axles, the following calculations are carried out with the axles lowered.
- 7.4.1.6. For groups of axles, the manufacturer must indicate the laws of distribution among the axles of the total mass applied on to the group (for instance by stating the distribution formulae or producing distribution graphs).
- 7.4.1.7. In the case of semi-trailers and centre-axle trailers, and for the purpose of the following calculations, the coupling point is considered as an axle designated 'O', and the corresponding masses  $m_o$  and  $\mu_o$  defined, by convention, as the technically permissible maximum mass on the coupling point of the trailer.
- 7.4.2. *Requirements for vehicles of categories N and O, except trailer caravans*
- 7.4.2.1. The sum of the masses  $m_i$  must not be less than the mass  $M$ .

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- 7.4.2.2. For each group of axles designated 'j', the sum of the masses  $m_j$  on its axles must not be less than the mass  $\mu_j$ . In addition, each of the masses  $m_i$  must not be less than the part of  $\mu_i$  applying on the axle 'i' as determined by the mass distribution laws for that group of axles.
- 7.4.2.3. The sum of the masses  $\mu_j$  must not be less than the mass M.
- 7.4.2.4. The mass in running order, plus the mass corresponding to 75 kg multiplied by the number of passengers, plus the technically permissible maximum mass on the coupling point, must not exceed the mass M.
- 7.4.2.5. When the vehicle is laden to its mass M according to any one of the relevant situations described in 7.4.2.5.1 to 7.4.2.5.3, the mass corresponding to the load on the axle 'i' must not exceed the mass  $m_i$  on that axle, and the mass corresponding to the load on the solo axle or group of axles 'j' must not exceed the mass  $\mu_j$ . Moreover, the mass corresponding to the load on the driving axle or the sum of the masses corresponding to the loads on the driving axles must be at least 25 % of M.
- 7.4.2.5.1. Towed vehicles and motor vehicles other than towing vehicles:
- 7.4.2.5.1.1. Uniform distribution of mass in the case of complete or completed vehicles with the exception of those referred to in 7.4.2.5.1.2: the vehicle in running order with a mass of 75 kg positioned on every passenger seat is laden to its mass M, the payload being uniformly distributed on the area designed for the transportation of goods.
- 7.4.2.5.1.2. Extreme distribution of mass (non-uniform load) in the case of vehicles either incomplete or intended for a special purpose involving the carriage of only non-uniformly distributed loads: the manufacturer must state the extreme permissible possible positions of the centre of gravity of the payload and/or body and/or equipment or interior fittings (for instance: from 0,50 m to 1,30 m in front of the first rear axle). The verification must be carried out in such a way as to cover all the possible positions of this centre of gravity, the vehicle in running order with a mass of 75 kg positioned on every passenger seat being laden to its mass M.
- 7.4.2.5.2. Trailer towing vehicles (road tractors) and lorries also intended to tow a centre-axle trailer.
- 7.4.2.5.2.1. The same calculations as per 7.4.2.5.1.1 in the case of complete or completed vehicles other than special purpose vehicles, or 7.4.2.5.1.2 in the case of incomplete or specialpurpose vehicles, are carried out in all those of the following possible scenarios which are relevant:
- (a) without any load on the coupling point (except, for road tractors, that corresponding to the mass of the coupling device if fitted by the manufacturer, which is included in the mass in running order in accordance with 2.5);
  - (b) a load corresponding to the maximum mass of the coupling device stated by the manufacturer, if he does not fit the coupling device, being applied on to the coupling point (and deducted from the payload);
  - (c) a load corresponding to the technically permissible maximum mass on the coupling point being applied on to the coupling point (and deducted from the payload).
- 7.4.2.5.3. Semi-trailer towing vehicles (semi-trailer tractors).
- 7.4.2.5.3.1. In the case of a complete or completed vehicle: the manufacturer must state the extreme positions of the axis of the fifth wheel. The verification must be carried out in such a way as to cover all the possible positions of the axis of the fifth wheel, the vehicle in running order with a mass of 75 kg positioned on every passenger seat being laden to its mass M (with the payload applied to the axis of the fifth wheel).
- 7.4.2.5.3.2. In the case of an incomplete vehicle: the same verifications as per 7.4.2.5.3.1 must be carried out on the basis of the extreme permissible positions of the axis of the fifth wheel as stated by the manufacturer.
- 7.4.2.6. When a vehicle of category N is laden to its mass M and its rear axle (designated 'n' as an axle) or rear group of axles (designated 'q' as a group of axles) is laden to its mass  $m_n$  or  $\mu_q$ , the mass

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bearing on the steering axle or axles must not be less than 20 % of M.

7.4.2.7. MC must not exceed  $M + TM$ .

7.4.3. *Requirements for buses and coaches*

7.4.3.1. The requirements of 7.4.2.1 to 7.4.2.3, and of 7.4.2.7, apply.

7.4.3.2. The mass of the vehicle in running order, plus the mass Q defined in the table in 7.4.3.3.1 multiplied by the total number of passengers, plus the technically permissible maximum mass on the coupling point, plus the masses B and BX defined in 7.4.3.3.1 must not exceed the mass M.

7.4.3.3. When the incomplete vehicle is laden to its mass M according to the situation described in 7.4.2.5.1.2 or when the complete or completed vehicle in running order is laden as described in 7.4.3.3.1 the mass corresponding to the load on each axle must not exceed the mass  $m_i$  on each axle, and the mass corresponding to the load on each solo axle or group of axles must not exceed the mass  $\mu_j$  on that group of axles. Moreover, the mass corresponding to the load on the driving axle or the sum of masses corresponding to the loads on the driving axles must be at least 25 % of M.

7.4.3.3.1. The vehicle in running order is loaded with a mass Q on each passenger seat, a number SP, corresponding to the number of standing passengers, of masses Q uniformly distributed over the surface available for standing passengers  $S_1$ , a mass equal to B (kg) uniformly distributed in the baggage compartments and, where appropriate, a mass equal to BX (kg) uniformly distributed over the surface area of the roof equipped for the carriage of baggage, where:

$S_1$  is the area for standing passengers, as defined in the forthcoming European Parliament and Council Directive concerning special provisions for vehicles of categories  $M_2$  and  $M_3$ . Pending the adoption of that Directive,  $S_1$  is determined as defined in the UN/ECE Regulations No 36 (doc. E/ECE/TRANS/505/Rev. 1, Add 35) and No 52 (doc. E/ECE/TRANS/505/Rev. 1, Add 51).

SP, declared by the manufacturer, must not exceed the value  $S_1/S_{sp}$ , where  $S_{sp}$  is the conventional space provided for one standing passenger specified in the table below.

B (kg), declared by the manufacturer, must have a numerical value not less than  $100 \times V$  (V is the total volume of baggage compartments, in  $m^3$ ).

BX, declared by the manufacturer, must exert a specific load of not less than  $75 \text{ kg/m}^2$  over the whole surface area of the roof equipped for the carriage of baggage.

Q and  $S_{sp}$  have the values laid down in the following table:

Vehicle class	Q (kg) mass of one passenger	$S_{sp}$ ( $m^2$ /passenger) conventional space for one standing passenger
Classes I and A (**)	68	0,125
Class II	71 (*)	0,15
Classes III and B	71 (*)	No standing passenger

(\*) Including 3 kg for hand baggage.

(\*\*) If a vehicle of Class II or Class III or Class B is also to be approved as a Class I or Class A vehicle, the mass of luggage carried in luggage compartments accessible only from outside the vehicle is not to be taken into account for the purpose of the approval for these latter classes.

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- 7.4.3.4. When the vehicle is in running order to laden as specified in 7.4.3.3.1, the mass corresponding to the load on the front axle or group of axles must not be less than the percentage of M laid down in the following table:

Loading conditions	Classes I and A		Class II		Classes III and B	
	Rigid	Articulated	Rigid	Articulated	Rigid	Articulated
Unladen	20	20	25	20	25	20
Laden	25	20	25	20	25	20

- 7.4.4. *Requirements for vehicles of category M<sub>2</sub> or M<sub>3</sub> other than buses and coaches, and for trailer caravans*

The requirements of 7.4.2.1 to 7.4.2.4 and of 7.4.2.7 apply. In addition, when the incomplete vehicle is laden to its mass M according to the situation described in 7.4.2.5.1.2, or when the complete or completed vehicle in running order is laden to its mass M as described in the Appendix to Annex II to Council Directive 92/21/EEC<sup>(1)</sup>, the mass corresponding to the load on each axle must not exceed the mass  $m_i$  on this axle, and the mass corresponding to the load on each solo axle or on the group of axles must not exceed the mass  $\mu_j$  on this group of axles. Moreover, the mass corresponding to the load on the driving axle or the sum of the masses corresponding to the loads on the driving axles must be at least 25 % of M.

- 7.5. **Conditions to be verified for the classification of a vehicle as an off-road vehicle (Annex II, section 4 of Directive 70/156/EEC)**

- 7.5.1. The technical service must verify if the complete or completed vehicle, or the semi-trailer towing vehicle (semi-trailer tractor) without fifth wheel is to be considered as an off-road vehicle according to the requirements laid down in Annex II to Directive 70/156/EEC.

- 7.5.2. For other incomplete vehicles, this verification is carried out only at the request of the manufacturer.

- 7.6. **Manoeuvrability**

- 7.6.1. Any motor vehicle and any semi-trailer must be able to manoeuvre on either side for a complete circular trajectory of 360 ° inside an area defined by two concentric circles, the outer circle having a radius of 12,50 m and the inner circle having a radius of 5,30 m, without any of the vehicle's outermost points (with the exception of the protruding parts prescribed for the vehicle width in 2.4.2) projecting outside the circumferences of the circles.

For motor vehicles and semi-trailers with axle-lift device (see 2.14) this requirement also applies with the axle(s) in the lifted position (within the meaning of 2.14).

The abovementioned requirements must be verified as follows:

- 7.6.1.1. *Motor vehicles*

The outermost front point of the motor vehicle must be guided along the contour of the outer circle (see figure A).

- 7.6.1.2. *Semi-trailers*

A semi-trailer is deemed to comply with the requirements of 7.6.1 if its wheelbase is not greater than

$$\sqrt{(12,50 - 2,04)^2 - (5,30 + L/2)^2}$$

<sup>(1)</sup> OJ No L 129, 14. 5. 1992, p. 1. Directive as last amended by Directive 95/48/EC (OJ No L 233, 30. 9. 1995, p. 73).

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where  $L$  is the semi-trailer's width, the wheelbase being measured for the purpose of this section as the distance of the axis of the semi-trailer fifth wheel king-pin to the centre line of the non-steering bogie axles; if one or more of the non-steering bogie axles has an axle lift device (see 2.14), then the wheelbase with lowered/lifted axle(s), whichever is the longer, is taken into account. In case of doubt, the approval authority can require a test to be carried out as described at 7.6.1.

7.6.2. *Additional requirements for vehicles of categories  $M_2$  or  $M_3$  and  $N$* 

When the vehicle is stationary and has its steered wheels so directed that if the vehicle moved, its outermost forward point would describe a circle of 12,50 m radius, a vertical plane tangential to the side of the vehicle which faces outwards from the circle must be established by marking a line on the ground. In the case of an articulated vehicle of category  $M_2$  or  $M_3$ , the two rigid portions must be aligned with the plane.

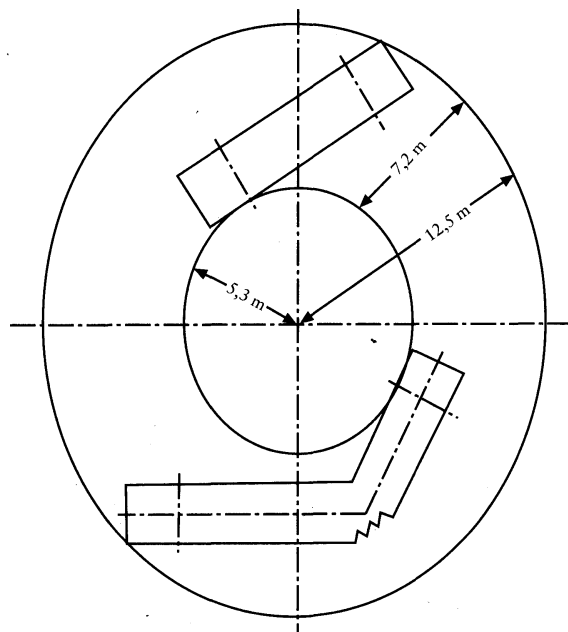
When the vehicle moves forward on either side following the circle of 12,50 m radius, no part of it may move outside the vertical plane by more than 0,80 m (see figure B) in the case of a rigid vehicle or by more than 1,20 m (see figure C) in the case of an articulated vehicle of category  $M_2$  or  $M_3$ .

For vehicles with an axle-lift device this requirement also applies with the axle(s) in the lifted position (within the meaning of 2.14).

For vehicles of category  $N$  with retractable axles in the lifted position, or loadable axles in the unladen condition, the figure of 0,80 m is replaced by 1,00 m.

## 7.6.3. The requirements of 7.6.1 and 7.6.2 may also be verified, at the request of the manufacturer, with an appropriate equivalent calculation or geometric demonstration.

Figure A



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Figure B

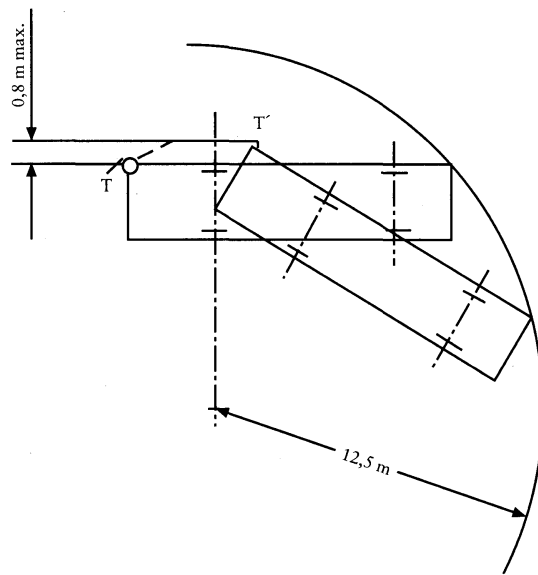
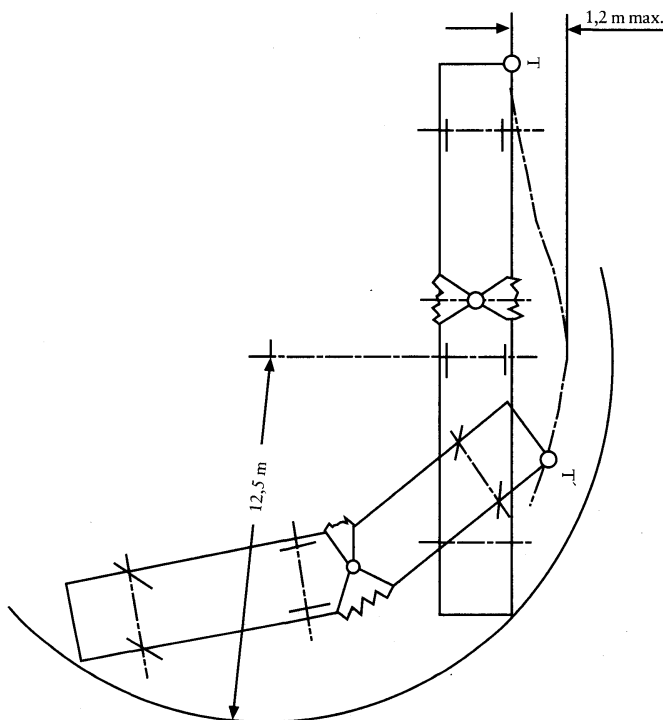


Figure C



- 7.6.4. In the case of incomplete vehicles, the manufacturer must declare the maximum permissible dimensions for which the vehicle is to be checked against the requirements of 7.6.1 and 7.6.2.
- 7.7. **Additional requirements for motor vehicles of categories M<sub>2</sub> and M<sub>3</sub>**  
The technically permissible maximum towable mass must not exceed 3 500 kg.
- 7.8. **Technically permissible maximum mass on the coupling point of motor vehicles and mounting instructions for couplings**
- 7.8.1. The technically permissible maximum mass on the coupling point of a motor vehicle designed to tow a centre-axle trailer and with a technically permissible maximum towable mass exceeding 3,5



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tonnes must be at least equal to 10 % of its technically permissible maximum towable mass or 1 000 kg, whichever is the lesser, plus, for motor vehicles other than towing vehicles, the mass of the coupling device if fitted by the manufacturer, or the maximum permissible mass of the coupling device if not fitted by the manufacturer.

- 7.8.2. The technically permissible maximum mass on the coupling point of a motor vehicle designed to tow a centre-axle trailer and with a technically permissible maximum towable mass not exceeding 3,5 tonnes must be at least equal to 4 % of its technically permissible maximum laden mass, or 25 kg, whichever is the lesser, plus, for motor vehicles other than towing vehicles, the mass of the coupling device if fitted by the manufacturer, or the maximum permissible mass of the coupling device if not fitted by the manufacturer.
- 7.8.3. In the case of a motor vehicle with a technically permissible maximum laden mass not exceeding 3,5 tonnes, the manufacturer must specify in the owner's manual the conditions for the attachment of the coupling device to the motor vehicle.

Where the case occurs the above conditions must include the technically permissible maximum mass on the coupling point of the motor vehicle, the maximum permissible mass of the coupling device, the mounting points of the coupling device on the motor vehicle and the maximum permissible overhang of the coupling device.

7.9. **Hill-starting ability**

Motor vehicles towing a trailer and laden to their technically permissible maximum laden mass of the combination, must be capable of starting five times within five minutes at an up-hill gradient of at least 12 %.

7.10. **Engine power/maximum mass ratio**

Motor vehicles must provide an engine power output of at least 5 kW/t of the technically permissible maximum laden mass of the combination. The engine power is measured according to the provisions of Council Directive 80/1269/EEC<sup>(1)</sup>.

7.11. **Conditions relating to the equivalence between certain non-air suspension and air suspension systems for vehicle driving axle(s)**

- 7.11.1. At the request of the manufacturer, the technical service must verify the equivalence of a non-air suspension to an air suspension for driving axle(s).

In order to be recognized as equivalent to air suspension, a non-air suspension must comply with the following requirements:

- 7.11.1.1. During free transient low-frequency vertical oscillation of the sprung mass above a driving axle or group of axles, the measured frequency and damping with the suspension carrying its maximum load must fall within the limits defined in 7.11.1.2 to 7.11.1.5.
- 7.11.1.2. Each axle must be fitted with hydraulic dampers. On groups of axles, the dampers must be positioned to minimize the oscillation of the groups of axles.
- 7.11.1.3. The mean damping ratio  $D_m$  must be more than 20 % of critical damping for the suspension in its normal condition with hydraulic dampers in place and operating.
- 7.11.1.4. The damping ratio  $D_r$  of the suspension with all hydraulic dampers removed or incapacitated must be not more than 50 % of  $D_m$ .
- 7.11.1.5. The frequency of the sprung mass above the driving axle or group of axles in a free transient vertical oscillation must not be higher than 2,0 Hz.
- 7.11.1.6. The frequency and damping of the suspension are defined in 7.11.2. The test procedures for measuring the frequency and damping are laid down in 7.11.3.

<sup>(1)</sup> OJ No L 375, 31. 12. 1980, p. 46. Directive as last amended by Directive 89/491/EEC (OJ No L 238, 15. 8. 1989, p. 43).

▼ **B**7.11.2. *Definition of frequency and damping*

In this definition a sprung mass  $M$  (kg) above a driving axle or group of axles is considered. The axle or group of axles has a total vertical stiffness between the road surface and the sprung mass of  $K$  newton/metre (N/m) and a total damping coefficient of  $C$  newton second per metre (N.s/m). The vertical displacement of the sprung mass is  $Z$ . The equation of motion for free oscillation of the sprung mass is:

$$M \frac{d^2Z}{dt^2} + C \frac{dZ}{dt} + KZ = 0$$

The frequency of oscillation of the sprung mass  $F$  (Hz) is:

$$F = \frac{1}{2\pi} \sqrt{\frac{K}{M} - \frac{C^2}{4M^2}}$$

The damping is critical when  $C = C_0$ ,

where

$$C_0 = 2\sqrt{KM}$$

The damping ratio as a fraction of critical is  $C/C_0$ .

During free transient oscillation of the sprung mass the vertical motion of the mass will follow a damped sinusoidal path (figure 2). The frequency can be estimated by measuring the time for as many cycles of oscillation as can be observed. The damping can be estimated by measuring the heights of successive peaks of the oscillation in the same direction. If the peak amplitudes of the first and second cycles of the oscillation are  $A_1$  and  $A_2$ , then the damping ratio  $D$  is

$$D = \frac{C}{C_0} = \frac{1}{2\pi} \ln \frac{A_1}{A_2}$$

'ln' being the natural logarithm of the amplitude ratio.

7.11.3. *Test procedure*

To establish by test the damping ratio  $D_m$ , the damping ratio  $D_r$  with hydraulic dampers removed, and the frequency  $F$  of the suspension, the loaded vehicle is either:

- (a) driven at low speed ( $5 \text{ km/h} \pm 1 \text{ km/h}$ ) over an 80 mm step with the profile shown in figure 1. The transient oscillation to be analysed for frequency and damping occurs after the wheels of the driving axle have left the step; or
- (b) pulled down by its chassis so that the driving axle load is 1,5 times its maximum static value. The vehicle held down is suddenly released and the subsequent oscillation analysed; or
- (c) pulled up by its chassis so that the sprung mass is lifted by 80 mm above the driving axle. The vehicle held up is suddenly dropped and the subsequent oscillation analysed; or
- (d) subjected to other procedures insofar as it has been proved by the manufacturer, to the satisfaction of the technical service, that they are equivalent.

The vehicle must be fitted with a vertical displacement transducer between driving axle and chassis, directly above the driving axle. From the trace, the time interval between the first and second compression peaks can be measured to obtain the damping. For twin driving groups of axles, vertical displacement transducers must be fitted between each driving axle and the chassis directly above it.

The tyres must be inflated to the appropriate pressure recommended by the manufacturer for the test mass of the vehicle.

The test for verifying the equivalence of the suspensions is made at the technically permissible maximum mass on the axle or group of axles, and the equivalence assumed to cover all the lower masses.

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Figure 1

Step for suspension tests

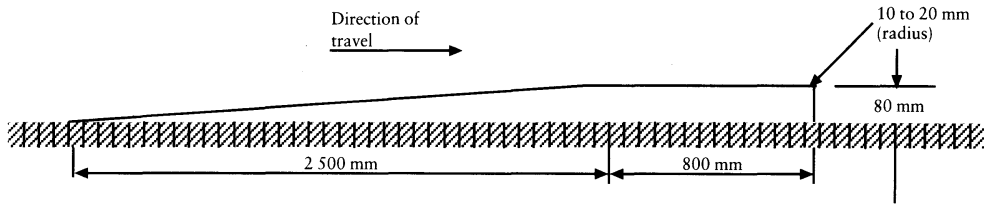
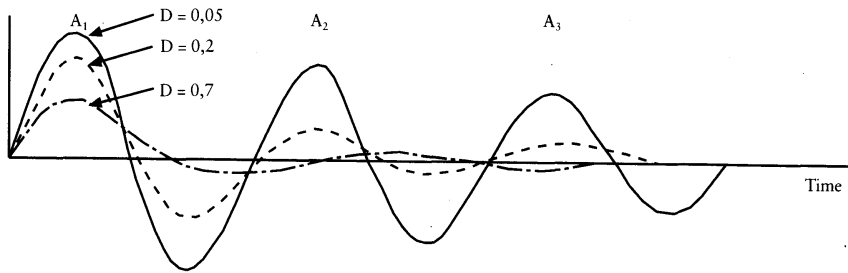


Figure 2

A damped transient response





ANNEX II

INFORMATION DOCUMENT No ...

pursuant to Annex I to Council Directive 70/156/EEC relating to the EC type-approval of certain categories of motor vehicles and their trailers with respect to their masses and dimensions

(European Parliament and Council Directive 97/.../EC)

The following information, if applicable, must be supplied in triplicate and include a list of contents. Any drawings must be supplied in appropriate scale and in sufficient detail on a model with maximum format A 4 (210 × 297 mm) or a folder of A 4 format. Photographs, if any, must show sufficient detail.

If the systems, components or separate technical units have electronic controls, information concerning their performance must be supplied.

- 0. GENERAL
- 0.1. Make (trade name of manufacturer): .....
- 0.2. Type of vehicle: .....
- 0.2.1. Commercial name(s): .....
- 0.3. Means of identification of type, if marked on the vehicle <sup>(b)</sup>: .....
- 0.3.1. Location of that marking: .....
- 0.4. Category of vehicle <sup>(c)</sup>: .....
- 0.5. Name and address of manufacturer: .....
- 0.6. Location of statutory plates and inscriptions and method of affixing: .....
- 0.6.1. On the chassis: .....
- 0.6.2. On the bodywork: .....
- 0.8. Address(es) of assembly plant(s): .....
- 1. GENERAL CONSTRUCTION CHARACTERISTICS OF THE VEHICLE
- 1.1. Photographs and/or drawings of a representative vehicle: .....
- 1.2. Dimensional drawing of the whole vehicle: .....
- 1.3. Number of axles and wheels: .....
- 1.3.1. Number and position of axles with double wheels: .....
- 1.3.2. Number and position of steered axles: .....

Footnotes:

General: the item numbers and footnotes used in this information document correspond to those set out in Annex I to Directive 70/156/EEC. Items not relevant for the purpose of this Directive are omitted.

Footnote (e) means 'Set out in such a way as to make the actual value clear for each technical configuration of the vehicle type'.

Footnote (nd) means 'ISO standard 612—1978, term No 6.18.1'.

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- 1.3.3. Powered axles (number, position, interconnection): .....
- 1.4. Chassis (if any) (overall drawing): .....
- 1.6. Position and arrangement of the engine: .....
- 1.7. Driving cab (forward control or bonneted) <sup>(z)</sup>: .....
- 1.9. Specify if the motor vehicle is intended to tow semi-trailers or other trailers and if the trailer is a semi-, drawbar or centre-axle trailer; specify vehicles specially designed for the controlled-temperature carriage of goods.
2. MASSES AND DIMENSIONS <sup>(e)</sup> (in kg and mm) (refer to drawing where applicable)
- 2.1. Wheelbase(s) (fully loaded) <sup>(f)</sup>: .....
- 2.1.1. In the case of semi-trailers: .....
- 2.1.1.1. Distance between the axis of the fifth wheel king-pin and the rear of the semi-trailer: .....
- 2.1.1.2. Maximum distance between the axis of the fifth wheel king-pin and any point on the front of the semi-trailer: .....
- 2.1.1.3. Semi-trailer wheelbase as defined in point 7.6.1.2 of Annex I to this Directive: .....
- 2.2. In the case of semi-trailer towing vehicles: .....
- 2.2.1. Fifth-wheel lead (maximum and minimum; indicate the permissible values in the case of an incomplete vehicle) <sup>(g)</sup>: .....
- 2.2.2. Maximum height of the fifth wheel (standardized) <sup>(h)</sup>: .....
- 2.3. Axle track(s) and width(s): .....
- 2.3.1. Track of each steered axle <sup>(i)</sup>: .....
- 2.3.2. Track of all other axles <sup>(i)</sup>: .....
- 2.3.3. Width of the widest rear axle: .....
- 2.4. Range of vehicle dimensions (overall)
- 2.4.1. For chassis without bodywork
- 2.4.1.1. Length <sup>(j)</sup>: .....
- 2.4.1.1.1. Maximum permissible length: .....
- 2.4.1.1.2. Minimum permissible length: .....
- 2.4.1.2. Width <sup>(k)</sup>: .....
- 2.4.1.2.1. Maximum permissible width: .....
- 2.4.1.2.2. Minimum permissible width: .....
- 2.4.1.3. Height (in running order) <sup>(l)</sup> (for suspension adjustable for height, indicate normal running position): .....
- 2.4.1.4. Front overhang <sup>(m)</sup>: .....
- 2.4.1.5. Rear overhang <sup>(n)</sup>: .....
- 2.4.1.5.2. Minimum and maximum permissible overhang of the coupling point <sup>(nd)</sup>: .....

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- 2.4.1.8. Extreme permissible positions of the centre of gravity of the body and/or interior fittings and/or equipment and/or payload: .....
- 2.4.1.9. Distance between axles (if multi-axled): .....
- 2.4.2. For chassis with bodywork
- 2.4.2.1. Length <sup>(i)</sup>: .....
- 2.4.2.1.1. Length of the loading area: .....
- 2.4.2.2. Width <sup>(k)</sup>: .....
- 2.4.2.2.1. Thickness of the walls (in the case of vehicles specially designed for the controlled temperature carriage of goods): .....
- 2.4.2.3. Height (in running order) <sup>(l)</sup> (For suspensions adjustable for height, indicate normal running position): .....
- 2.4.2.4. Front overhang <sup>(m)</sup>: .....
- 2.4.2.5. Rear overhang <sup>(n)</sup>: .....
- 2.4.2.8. Extreme permissible positions of the centre of gravity of the payload (in the case of non-uniform load): .....
- 2.4.2.9. Distance between axles (if multi-axled): .....
- 2.6. Mass of the vehicle with bodywork, and with coupling device in the case of a towing vehicle of a category other than M<sub>1</sub>, in running order, or the mass of the chassis with cab if the manufacturer does not fit the bodywork and/or coupling device (including coolant, oils, fuel, 100 % other liquids except used waters, tools, spare wheel and driver, and, for buses and coaches, the mass of the crew member (75 kg) if there is a crew seat in the vehicle) <sup>(o)</sup> <sup>(e)</sup>: .....
- 2.6.1. Distribution of this mass among the axles and, in the case of a semi-trailer or centre-axle trailer, load on the coupling point <sup>(e)</sup>: .....
- 2.7. Minimum mass of the completed vehicle as stated by the manufacturer, in the case of an incomplete vehicle: .....
- 2.7.1. Distribution of this mass among the axles and, in the case of a semi-trailer or centre-axle trailer, load on the coupling point: .....
- 2.8. Technically permissible maximum laden mass stated by the manufacturer <sup>(y)</sup> <sup>(e)</sup>: .....
- 2.8.1. Distribution of this mass among the axles, and, in the case of a semi-trailer or centre-axle trailer, load on the coupling point <sup>(e)</sup>: .....
- 2.9. Technically permissible maximum mass on each axle <sup>(e)</sup>: .....
- 2.10. Technically permissible maximum mass on each group of axles <sup>(e)</sup>: .....
- 2.11. Technically permissible maximum towable mass of the motor vehicle <sup>(e)</sup>: .....
- 2.11.1. Drawbar trailer: .....
- 2.11.2. Semi-trailer: .....
- 2.11.3. Centre-axle trailer: .....
- 2.11.3.1. Maximum ratio of the coupling overhang <sup>(p)</sup> to the wheelbase: .....
- 2.11.4. Technically permissible maximum laden mass of the combination: .....
- 2.11.6. Maximum mass of the unbraked trailer: .....
- 2.12. Technically permissible maximum mass on the coupling point: .....
- 2.12.1. of the motor vehicle: .....

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- 2.12.2. of the semi-trailer or centre-axle trailer: .....
- 2.13. Maximum permissible mass of the coupling device (if not fitted by the manufacturer):  
.....
- 2.14.1. Engine power/technically permissible maximum laden mass of the combination ratio (in kW/kg) (as defined at point 7.10 of Annex I to this Directive): .....
- 2.16. Intended registration/in-service maximum permissible masses (optional: where these values are given, they must be verified in accordance with the requirements of Annex IV)<sup>(1)</sup>: .....
- 2.16.1. Intended registration/in-service maximum permissible laden mass (several entries possible for each technical configuration)<sup>(e)</sup>: .....
- 2.16.2. Intended registration/in-service maximum permissible laden mass on each axle and in the case of a semi-trailer or centre-axle trailer, intended load on the coupling point stated by the manufacturer if lower than the technically permissible maximum mass on their coupling point (several entries possible for each technical configuration)<sup>(e)</sup>: .....
- 2.16.3. Intended registration/in-service maximum permissible mass on each axle group (several entries possible for each technical configuration)<sup>(e)</sup>: .....
- 2.16.4. Intended registration/in-service maximum permissible towable mass (several entries possible for each technical configuration)<sup>(e)</sup>: .....
- 2.16.5. Intended registration/in-service maximum permissible mass of the combination (several entries possible for each technical configuration)<sup>(e)</sup>: .....
5. AXLES
- 5.1. Description of each axle: .....
- 5.2. Make: .....
- 5.3. Type: .....
- 5.4. Retractable axle(s): .....
- 5.4.1. Location, make and type: .....
- 5.5. Loadable axle(s): .....
- 5.5.1. Location, make and type: .....
6. SUSPENSION
- 6.1. Drawing of the suspension arrangements: .....
- 6.2. Type and design of the suspension of each axle or group of axles or wheel: .....
- 6.2.1. Level adjustment: yes/no
- 6.2.3. Air-suspension for driving axle(s): yes/no
- 6.2.3.1. Suspension of driving axle(s) equivalent to air suspension: yes/no
- 6.2.3.2. Frequency and damping of the vertical oscillation of the sprung mass: .....
- 6.3. Characteristics of the springing parts of the suspension (design, characteristics of the materials and dimensions): .....
- 6.4. Stabilizers: yes/no
- 6.5. Dampers: yes/no

<sup>(1)</sup> Points 2.16.1 to 2.16.5 do not preclude additional registration/in-service maximum masses being accepted by the national registration authorities.

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- 6.6. TYRES AND WHEELS
- 6.6.1. Tyre/wheel combination(s) (for tyres indicate size designation, minimum load-capacity index, minimum speed category symbol; for wheels indicate rim size(s) and off-set(s)) <sup>(e)</sup>:  
.....
- 6.6.1.1. Axle 1: .....
- 6.6.1.2. Axle 2: .....
- etc.
- 6.6.3. Tyre pressure(s) as recommended by the vehicle manufacturer ..... kPA <sup>(e)</sup>
8. BRAKES
- 8.3. Control and transmission of trailer braking systems in vehicles designed to tow a trailer:  
.....
9. BODYWORK
- 9.1. Type of bodywork: .....
- 9.10.3. Seats: .....
- 9.10.3.1. Number: .....
- 9.10.3.2. Position and arrangement: .....
- 9.17. Statutory plates: .....
- 9.17.1. Photographs and/or drawings of the locations of the statutory plates and inscriptions and of the chassis number: .....
- 9.17.2. Photographs and/or drawings of the official part of the plates and inscriptions (completed example with dimensions): .....
11. CONNECTIONS BETWEEN TOWING VEHICLES AND TRAILERS AND SEMITRAILERS
- 11.1. Class and type of the coupling device(s) fitted or to be fitted: .....
- 11.2. Characteristics D, U, S and V of the coupling device(s) fitted or minimal characteristics D, U, S and V of the coupling device(s) to be fitted: ..... daN
- 11.3. Instructions for attachment of the coupling type to the vehicle and photographs or drawings of the fixing points at the vehicle as stated by the manufacturer; additional information, if the use of the coupling type is restricted to special types of vehicles: ....
- 11.4. Information on the fitting of special towing brackets or mounting plates: .....
- .....
13. SPECIAL PROVISIONS FOR BUSES AND COACHES
- 13.1. Class of bus or coach: .....
- 13.2. Number of standing places: .....
- 13.3. Number of passenger and crew seats: .....
- 13.3.1. Crew seat: yes/no <sup>(1)</sup>

<sup>(1)</sup> Delete where inapplicable.



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- 13.6. Volume of luggage compartment: ..... m<sup>3</sup>  
 13.7. Area for luggage transportation on the roof: ..... m<sup>2</sup>

## ADDITIONAL INFORMATION IN THE CASE OF OFF-ROAD VEHICLES

- 2.4.1. For chassis without bodywork
- 2.4.1.4.1. Approach angle (na): ..... degrees
- 2.4.1.5.1. Departure angle (nb): ..... degrees
- 2.4.1.6. Ground clearance (as defined in section 4.5 of Part A of Annex II to Council Directive 70/156/EEC)
- 2.4.1.6.1. Between the axles: .....
- 2.4.1.6.2. Under the front axle(s): .....
- 2.4.1.6.3. Under the rear axle(s): .....
- 2.4.1.7. Ramp angle (nc): ..... degrees
- 2.4.2. For chassis with bodywork
- 2.4.2.4.1. Approach angle (na): ..... degrees
- 2.4.2.5.1. Departure angle (nb): ..... degrees
- 2.4.2.6. Ground clearance (as defined in section 4.5 of Part A of Annex II to Council Directive 70/156/EEC):
- 2.4.2.6.1. Between the axles: .....
- 2.4.2.6.2. Under the front axle(s): .....
- 2.4.2.6.3. Under the rear axles(s): .....
- 2.4.2.8. Ramp angle (nc): ..... degrees
- 2.15. Hill-starting ability (solo vehicle ..... per cent)
- 4.9. Differential lock: yes/no/optional<sup>(1)</sup>

<sup>(1)</sup> Delete where inapplicable.

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## ANNEX III

## MODEL

maximum format: A4 (210 × 297 mm)

## EC TYPE-APPROVAL CERTIFICATE(vehicle)

Stamp of approval authority
--------------------------------

Communication concerning the

- type-approval
- extension of type-approval<sup>(1)</sup>
- refusal of type-approval<sup>(1)</sup>
- withdrawal of type-approval<sup>(1)</sup>

of a type of a vehicle with regard to Directive 97/.../EC relating to the masses and dimensions of motor vehicles and their trailers, and amending Directive 70/156/EEC.

EC type-approval No: .....

Reason for extension: .....

## SECTION I

- 0.1. Make (trade of manufacturer): .....
- 0.2. Type of vehicle(s): .....
- 0.2.1. Commercial name(s): .....
- 0.3. Means of identification of type, if marked on the vehicle: .....
- 0.3.1. Location of that marking: .....
- 0.4. Category of vehicle: .....
- 0.5. Name and address of manufacturer: .....
- Name and address of manufacturer of the latest-built stage of the vehicle: .....
- 0.8. Name(s) and address(es) of assembly plant(s): .....

<sup>(1)</sup> Delete where inapplicable.

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SECTION II

1. Additional information (where applicable): see Appendix
2. Technical service responsible for carrying out the tests: .....
3. Date of test report: .....
4. Number of test report: .....
5. Remarks (if any): See Appendix
6. Place: .....
7. Date: .....
8. Signature: .....
9. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

▼B*Appendix**to EC type-approval certificate No ...*

concerning the type-approval of certain categories of motor vehicles and their trailers with regard to Directive 97/27/EC

1. Additional information
- 1.0. Dimensions exceeding the maximum dimensions authorized in section 7.3 of Annex I to Directive 97/27/EC pursuant to Articles 3 and 7 of that Directive: yes/no<sup>(1)</sup>
  - 1.1. Length (overall): ... mm (complete or completed vehicle)
    - 1.1.1. Length of the loading area
    - 1.1.2. Distance from the fifth wheel king-pin to any foremost point of the semi-trailer
    - 1.1.3. Distance from the fifth wheel king-pin to the rear of the semi-trailer
  - 1.2. Width (overall): ... mm (complete or completed vehicle)
  - 1.3. Height (overall): ... mm (complete or completed vehicle)
  - 1.4. Maximum permissible length: ... mm (incomplete vehicle)
  - 1.5. Maximum permissible width: ... mm (incomplete vehicle)
  - 1.6. Extreme permissible positions of the centre of gravity of the body and/or interior fittings and/or equipment and/or payload (incomplete vehicle or non-uniform load)
  - 1.7. Mass of the vehicle in running order<sup>(2)</sup>
    - 1.7.1. Technically permissible maximum laden mass of the vehicle<sup>(2)</sup>: ... kg
  - 1.9. Technically permissible maximum mass on the axle<sup>(2)</sup>:
    - 1.9.1. 1st axle ... kg
    - 2nd axle<sup>(1)</sup> ... kg
    - 3rd axle<sup>(1)</sup> ... kg
    - 4th axle<sup>(1)</sup> ... kg
    - 5th axle<sup>(1)</sup> ... kg
  - 1.11. Technically permissible maximum mass on the group of axles<sup>(2)</sup>
    - 1.11.1. First group of axles: ... kg
    - Second group of axles<sup>(1)</sup>: ... kg
  - 1.13. Technically permissible maximum laden mass of the combination:
  - 1.14. Retractable axles
  - 1.15. Loadable axles
  - 1.17. Technically permissible maximum towable mass of the motor vehicle<sup>(1)(2)</sup>
    - 1.17.1. Drawbar trailer<sup>(1)</sup>
    - 1.17.2. Semi-trailer<sup>(1)</sup>
    - 1.17.3. Centre-axle trailer<sup>(1)</sup>
    - 1.17.4. Unbraked trailer<sup>(1)</sup>

<sup>(1)</sup> Delete where inapplicable.<sup>(2)</sup> Set out in such a way as to make the actual value clear for each technical configuration of the vehicle type.

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- 1.18. Technically permissible maximum mass on the coupling point of the motor vehicle/of the semi-trailer or centre-axle trailer<sup>(1)</sup>(<sup>2</sup>): ... kg
- 1.19. Maximum permissible mass of the coupling device (if not fitted by the manufacturer):... kg
- 1.20. Intended registration/in-service maximum permissible masses<sup>(2)</sup>(<sup>3</sup>)
  - 1.20.1. Intended registration/in-service maximum permissible laden mass (several entries possible for each technical configuration)<sup>(2)</sup>
  - 1.20.2. Intended registration/in-service maximum permissible laden mass on each axle and, in the case of a semi-trailer or centre-axle trailer, intended load on the coupling point stated by the manufacturer if lower than the technically permissible mass on their coupling point (several entries possible for each technical configuration)<sup>(2)</sup>
  - 1.20.3. Intended registration/in-service maximum permissible mass on each axle group (several entries possible for each technical configuration)<sup>(2)</sup>
  - 1.20.4. Intended registration/in-service maximum permissible towable mass (several entries possible for each technical configuration)<sup>(2)</sup>
  - 1.20.5. Intended registration/in-service maximum permissible mass of the combination (several entries possible for each technical configuration)<sup>(2)</sup>
- 1.21. Air-suspension for driving axle: yes/no<sup>(1)</sup>
- 1.22. Suspension of driving axle recognized to be equivalent to air-suspension: yes/no<sup>(1)</sup>
- 1.23. Off-road vehicle: yes/no<sup>(1)</sup>
- 1.24. Number of passengers
  - 1.24.1. Number of seats<sup>(2)</sup>
  - 1.24.2. Number of standing places for category M<sub>2</sub> and M<sub>3</sub> vehicles<sup>(2)</sup>
- 1.25. Photographs or drawings of the mounting points of the coupling device on the vehicle.

<sup>(1)</sup> Delete where inapplicable.

<sup>(2)</sup> Set out in such a way as to make the actual value clear for each technical configuration of the vehicle type.

<sup>(3)</sup> To be filled in only when this information is given in the information document.



ANNEX IV

This Annex contains the uniform procedure referred to in Article 4 of this Directive for the determination of the 'registration/in-service maximum permissible masses' in each Member State and the uniform technical requirements for loadable and retractable axles referred to in Article 5 of this Directive:

1. **Definitions**

The following concepts are applicable in the framework of Article 4 of this Directive, until it is amended to incorporate harmonized maximum authorized masses. For the purpose of this Annex:

- 1.0. *'Indivisible load'* means a load that cannot, for the purposes of carriage by road, be divided into two or more loads without undue expense or risk of damage and which, owing to its mass or dimension, cannot be carried by a vehicle the masses and dimensions of which comply with the maximum authorized masses and dimensions in force in a Member State.
- 1.1. *'Registration/in-service maximum permissible laden mass'* means the maximum mass of the laden vehicle at which the vehicle itself can be registered or put into service in a Member State at the request of the vehicle manufacturer.
- 1.1.1. For any technical configuration of the vehicle type, as defined by one set of the possible values of the items laid down in the information document in Annex II to this Directive, a set of intended registration/in-service maximum permissible laden masses may be given by the vehicle manufacturer at the time of the approval under this Directive so that they can be verified beforehand according to the requirements of section 2 of this Annex by the approval authority.
- 1.1.2. Each of the Member States' authorities must, for their respective country, determine the registration/in-service maximum permissible laden mass of a given vehicle according to the following principles:
- by definition, only one registration/in-service maximum permissible laden mass may be attributed to one given technical configuration of the vehicle type as defined by one set of the possible values of the items laid down in the information document in Annex II to this Directive,
  - the registration/in-service maximum permissible laden mass is determined as the greatest mass inferior or equal to the technically permissible maximum laden mass and to the relevant vehicle maximum authorized mass in force in that Member State (or a lower mass at the request of the manufacturer in agreement with the Member State's authorities), and which complies with the requirements laid down in section 2 of this Annex.
- This does not preclude the possibility for Member States to allow a higher mass either for the purpose of carriage of indivisible loads or for the purposes of certain national transport operations that do not significantly affect international competition in the transport sector, within the limits of the technically permissible maximum laden mass of the vehicle.
- 1.1.3. For the application of the separate directives listed in Annex IV to Directive 70/156/EEC, Member States may require that the vehicle complies with the provisions of those directives applicable to the category which corresponds, according to Annex II to Directive 70/156/EEC, to the actual value of the registration/in-service maximum permissible laden mass of the vehicle, and, for centre-axle trailers and semi-trailers, to the actual value of the mass corresponding to the load on the axles when the vehicle is loaded to its registration/in-service maximum permissible laden mass.
- 1.1.4. Member States may require the registration/in-service maximum permissible laden mass not to depend on the tyres fitted.
- 1.2. *'Registration/in-service maximum permissible mass on the axle in a Member State'* means the maximum laden mass on the axle stated by that Member State's authorities and at which the vehicle itself is to be registered or put into service in that Member State at the request of the vehicle manufacturer.
- 1.2.1. For any technical configuration of the vehicle type, as defined by one set of the possible values of the items laid down in the information document of Annex II to this Directive, a set of intended registration/in-service maximum permissible masses on the axles may be given by the vehicle manufacturer at the time of the approval under this Directive so that they

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can be verified beforehand according to the requirements of section 2 of this Annex by the approval authority.

- 1.2.2. Each of the Member States' authorities must, for their respective country, determine the registration/in-service maximum permissible mass on the axle according to the following principles:
- by definition, only one registration/in-service maximum permissible mass may be attributed to each axle for one given technical configuration of the vehicle type as defined by one set of the possible values of the items laid down in the information document of Annex II to this Directive,
  - the registration/in-service maximum permissible mass on the axle is determined as the greatest mass inferior or equal to the technically permissible maximum mass on the axle and to the relevant maximum authorized mass on the axle in force in that Member State (or a lower mass at the request of the manufacturer in agreement with the Member State's authorities) and which complies with the requirements laid down in section 2 of this Annex.

This does not preclude the possibility for Member States to allow a higher mass either for the purpose of carriage of indivisible loads or for the purposes of certain national transport operations that do not significantly affect international competition in the transport sector, within the limits of the technically permissible maximum mass on the axle.

- 1.2.3. Member States may require the registration/in-service maximum permissible mass on the axle not to depend on the tyres fitted.
- 1.3. *'Registration/in-service maximum permissible mass on the group of axles in a Member State'* means the maximum laden mass on the group of axles stated by that Member State's authorities and at which the vehicle itself is to be registered or put into service in that Member State at the request of the vehicle manufacturer.

- 1.3.1. For any technical configuration of the vehicle type, as defined by one set of the possible values of the items laid down in the information document of Annex II to this Directive, a set of intended registration/in-service maximum permissible masses on the group of axles may be given by the vehicle manufacturer at the time of the approval under this Directive so that they can be verified beforehand by the approval authority according to the requirements of section 2 of this Annex.

- 1.3.2. Each of the Member States' authorities must, for their respective country, determine the registration/in-service maximum permissible mass on the group of axles according to the following principles:
- by definition, only one registration/in-service maximum permissible mass may be attributed to each group of axles for one given technical configuration of the vehicle type as defined by one set of the possible values of the items laid down in the information document of Annex II to this Directive,
  - the registration/in-service maximum permissible mass on the group of axles is determined as the greatest mass inferior or equal to the technically permissible maximum mass on the group of axles and to the relevant maximum authorized mass on the group of axles in force in that Member State (or a lower mass at the request of the manufacturer in agreement with the Member State's authorities) and which complies with the requirements laid down in section 2 of this Annex.

This does not preclude the possibility for Member States to allow a higher mass for either the purpose of carriage of indivisible loads or for the purposes of certain national transport operations that do not significantly affect international competition in the transport sector, within the limits of the technically permissible maximum mass on the group of axles.

- 1.3.3. Member States may require the registration/in-service maximum permissible mass on the group of axles not to depend on the tyres fitted.
- 1.4. *'Registration/in-service maximum permissible towable mass in a Member State'* of a motor vehicle means the maximum mass to be towed by the motor vehicle, given by that Member State's authorities, and at which the motor vehicle is to be registered or put into service in the Member State at the request of the vehicle manufacturer.
- 1.4.1. For any technical configuration of the vehicle type, as defined by one set of the possible values of the items laid down in the information document of Annex II to this Directive, a set of intended registration/in-service maximum permissible towable masses may be given by the vehicle manufacturer at the time of the approval under this Directive so that they

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can be verified beforehand by the approval authority according to the requirements of section 2 of this Annex.

- 1.4.2. Each of the Member States' authorities must, for their respective country, determine the registration/in-service maximum permissible towable mass of a given vehicle according to the following principles:
- by definition, only one registration/in-service maximum permissible towable mass may be attributed to one given technical configuration of the vehicle type as defined by one set of the possible values of the items laid down in the information document of Annex II to this Directive,
  - the registration/in-service maximum permissible towable mass is determined as the greatest mass inferior or equal to the technically permissible maximum towable mass and to the relevant maximum authorized masses in force in that Member State (or a lower mass at the request of the manufacturer in agreement with the Member State's authorities) and which complies with the requirements laid down in section 2 of this Annex.

This does not preclude the possibility for Member States to allow a higher mass for either the purpose of carriage of indivisible loads or for the purposes of certain national transport operations that do not significantly affect international competition in the transport sector, within the limits of the technically permissible maximum towable mass of the vehicle.

- 1.5. '*Registration/in-service maximum permissible laden mass of the combination in a Member State*' means the sum of the masses of the laden vehicle and of its laden trailer at which the motor vehicle is to be registered or put into service in that Member State at the request of the vehicle manufacturer.
- 1.5.1. For any technical configuration of the vehicle type, as defined by one set of the possible values of the items laid down in the information document of Annex II to this Directive, a set of intended registration/in-service maximum permissible laden masses of the combination may be given by the vehicle manufacturer at the time of the approval under this Directive so that they can be verified beforehand by the approval authority according to the requirements of section 2 of this Annex.
- 1.5.2. Each of the Member States' authorities must, for their respective country, determine the registration/in-service maximum permissible laden mass of the combination of a given vehicle according to the following principles:
- by definition, and in principle, only one registration/in-service maximum permissible laden mass of the combination may be attributed to one given technical configuration of the motor vehicle type as defined by one set of the possible values of the items laid down in the information document of Annex II to this Directive. However, according to the practice in force in the Member State, there may be distinguished one registration/in-service maximum permissible laden mass of the combination per total intended number of axles of the combination and this mass may also depend on other characteristics of the intended combination, such as the intended kind of transport (e.g. ISO 40-foot containers in combined transport, etc.),
  - the registration/in-service maximum permissible laden mass of the combination is determined as the greatest mass inferior or equal to the technically permissible maximum laden mass of the combination and to the relevant maximum authorized masses in force in that Member State (or a lower mass at the request of the manufacturer in agreement with the Member State's authorities) and which complies with the requirements laid down in section 2 of this Annex.

This does not preclude the possibility for Member States to allow a higher mass either for the purpose of carriage of indivisible loads or for the purposes of certain national transport operations which do not significantly affect international competition in the transport sector, within the limits of the technically permissible maximum laden mass of the combination.

2. **Determination of the registration/in-service maximum permissible masses**
- 2.1. The provisions of section 7.4 of Annex I to this Directive apply for the determination by the Member States' authorities of the different registration/in-service maximum permissible masses. For this purpose, the notations  $M$ ,  $m_i$ ,  $\mu_j$ ,  $TM$  and  $MC$  of that paragraph respectively designate the registration/in-service maximum permissible laden mass of the vehicle, the registration/in-service maximum permissible mass on the axle designated 'i', on the solo axle or group of axles designated 'j', the registration/in-service maximum permissible towable mass, and the



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registration/in-service maximum permissible laden mass of the combination.

- 2.2. Determination of the registration/in-service maximum permissible towable mass of a motor vehicle:
- 2.2.1. The registration/in-service maximum permissible towable mass of a motor vehicle intended to tow a trailer, whether it is a towing vehicle or not, is the lowest of the following values:
- (a) the technically permissible maximum towable mass based on the construction and performance of the vehicle and/or the strength of the mechanical coupling device;
  - (b) vehicles only intended to tow trailers without service brakes: half of the mass of the vehicle in running order with a maximum of 0,750 t;
  - (c) vehicles with a maximum mass not exceeding 3,5 t only intended to tow trailers with service brakes: the registration/in-service maximum permissible laden mass of the vehicle, or, for off-road vehicles (see section 7.5 of Annex I), 1,5 times that mass with a maximum of 3,5 t;
  - (d) vehicles with a maximum mass exceeding 3,5 t only intended to tow trailers with inertia (overrun) service brakes: 3,5 t;
  - (e) vehicles with a maximum mass exceeding 3,5 t intended to tow trailers with a continuous braking system: 1,5 times the registration/in-service maximum permissible laden mass of the vehicle;

provided that all the relevant technical provisions of Directive 96/53/EC are fulfilled.

By way of derogation from the provisions of section 1.4 of this Annex, for vehicles intended to tow more than one of the kinds of trailers referred to in subparagraphs (b), (c), (d) and (e) above, up to three different registration/in-service maximum permissible towable masses may be defined for each technical configuration of the vehicle type, according to the characteristics of the brake connectors of the motor vehicle: one for trailers without service brakes, one for trailers with inertia brakes, and one for trailers with a continuous braking system. These masses are determined as mentioned above, by respectively applying subparagraphs (b), (c), (d) and (e).

A mass lower than the one so determined may be accepted by the Member State at the request of the manufacturer.

3. **Technical requirements for the installation of retractable or loadable axles on vehicles (Annex I, sections 2.14 to 2.16)**
- 3.1. Any vehicle may be permitted with one or more retractable or loadable axles.
- 3.2. If a vehicle is fitted with one or more retractable or loadable axles (Annex I, sections 2.14 to 2.16) it must be ensured that under all driving conditions with the exception of those mentioned in point 3.5 below the registration/in-service maximum permissible masses on the axles and groups of axles are not exceeded. To that end, the retractable or loadable axle must lower to the ground automatically if the nearest axle(s) of the group or the front axle of the motor vehicle is (are) laden to its (their) registration/in-service maximum permissible mass(es).
- 3.3. Yellow control lamp(s) in the cab must indicate to the driver that the retractable or loadable axle(s) of the motor vehicle or of the trailer are lifted.
- 3.4. Every axle-lift device fitted to a vehicle to which this Directive applies, as well as the systems for its operation, must be designed and installed in such a manner as to protect them against any improper use or tampering.
- 3.5. Requirements for the starting (moving off) of motor vehicles on slippery surfaces.
- 3.5.1. By way of derogation from provisions of 3.2, and to help motor vehicles or vehicle combinations move off on slippery ground, and to increase the traction of the tyres on these surfaces, the axle lift may also actuate the retractable or loadable axle of a motor vehicle or semi-trailer to increase the mass on the driving axle of the motor vehicle, subject to the following conditions:
- the mass corresponding to the load on each axle of the vehicle may exceed the relevant maximum authorized mass on the axle in force in the Member State by up to 30 % provided it does not exceed the value stated by the manufacturer for this special purpose,

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- the mass corresponding to the remaining load on the front axle must remain above zero (i.e. in case of a rear loadable axle with long rear overhang, the vehicle must not tip up),
- the retractable or loadable axle must be actuated only by a special control device,
- after the motor vehicle has moved off and reached a speed of 30 km/h, the axle must automatically lower again to the ground or be reloaded.