

## COUNCIL DIRECTIVE 92/23/EEC

of 31 March 1992

relating to tyres for motor vehicles and their trailers and to their fitting

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

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

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

In cooperation with the European Parliament <sup>(2)</sup>,

Having regard to the opinion of the Economic and Social Committee <sup>(3)</sup>,

Whereas measures should be adopted in order gradually to establish the internal market during a period expiring on 31 December 1992; whereas the internal market comprises an entity without internal frontiers within which the free movement of goods, persons, services and capital shall be guaranteed;

Whereas the total harmonization method will be essential in order fully to achieve the single market;

Whereas this method will have to be used at the time of the revision of the entire EEC type-approval procedure, taking account of the spirit of the Council resolution of 7 May 1985 concerning a new approach to the question of technical harmonization and standardization;

Whereas the technical requirements which motor vehicles and their trailers must satisfy pursuant to national laws relate, *inter alia*, to pneumatic tyres;

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 permit, in particular, the EEC 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>, as last amended by Directive 87/403/EEC <sup>(5)</sup>, to be introduced in respect of each type of vehicle;

Whereas rules on tyres should lay down common requirements concerning not only their characteristics, but also the requirements for the equipment of vehicles and their trailers with regard to their tyres;

Whereas, consequently, a common procedure for granting an EEC mark to any tyre type complying with the common characteristics and test requirements should be established; whereas, at the Community level, to ensure the free movement of tyres, the conformity of the tyres with the common requirements is assured by the affixing on each tyre of an EEC mark which has been granted to the manufacturer in accordance with the abovementioned procedure; whereas any Member States may, in order to check the conformity of the tyres with the common requirements, carry out controls at any moment; whereas, in the case of a statement of non-conformity, the Member States need to take the necessary steps to ensure the conformity of the tyres with the requirements; whereas these measures may result in the withdrawal of the abovementioned EEC mark;

Whereas it is desirable to take into account the technical requirements adopted by the UN Economic Commission for Europe in its Regulation No 30 ('Uniform provisions concerning the approval of pneumatic tyres for motor vehicles and their trailers'), as amended <sup>(6)</sup>, and in its Regulation No 54 ('Uniform provisions concerning the approval of pneumatic tyres for commercial vehicles and their trailers') <sup>(7)</sup> and in its Regulation No 64 ('Uniform provisions concerning the approval of vehicles equipped with temporary-use spare wheels/tyres') <sup>(8)</sup>, which are annexed to the Agreement of 20 March 1958 concerning the adoption of uniform conditions for approval and reciprocal recognition of approval for motor vehicle equipment and parts;

Whereas the approximation of national laws relating to motor vehicles entails reciprocal recognition by Member States of the checks carried out by each of them on the basis of the common requirements,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

For the purposes of this Directive:

— 'tyre' means any new pneumatic tyre designed for the equipment of vehicles of which Council Directive 70/156/EEC applies;

<sup>(1)</sup> OJ No C 95, 12. 4. 1990, p. 101.

<sup>(2)</sup> OJ No C 284, 12. 11. 1990, p. 81 and Decision of 12. 2. 1992 (not yet published in the Official Journal).

<sup>(3)</sup> OJ No C 225, 10. 9. 1990, p. 9.

<sup>(4)</sup> OJ No L 42, 23. 2. 1970, p. 1.

<sup>(5)</sup> OJ No L 220, 8. 8. 1987, p. 44.

<sup>(6)</sup> Economic Commission for Europe document E/ECE/324 (E3/ECE/TRANS/505) REV 1 — ADD 29, 1. 4. 1975 and its amendments 01, 02 and supplements.

<sup>(7)</sup> Economic Commission for Europe document E/ECE/324 (E/ECE/TRANS/505) REV 1 — ADD 53 and supplements.

<sup>(8)</sup> Economic Commission for Europe document E/ECE/324 (E/ECE/TRANS/505) REV 1 — ADD 63 and supplements.

- 'vehicle' means any vehicle to which Council Directive 70/156/EEC applies;
- 'manufacturer' means the holder of the trade name or mark of vehicles or tyres.

#### Article 2

1. Member States shall grant EEC component type-approval under the conditions of Annex I for any tyre type which satisfies the requirements of Annex II and shall grant a EEC component type-approval number as specified in Annex I.
2. Member States shall grant EEC type-approval for a vehicle with regard to its tyres under the conditions of Annex III for any vehicle for which all the tyres (including the spare tyre, if any) satisfy the requirements of Annex II and also the requirements with regard to vehicles of Annex IV and shall grant an EEC vehicle type-approval number as specified in Annex III.

#### Article 3

The approval authority of a Member State shall, within one month of issuing or refusing an EEC component (tyre) or vehicle type-approval, send a copy of the relevant certificate, models of which are given in the Appendices to Annex I and Annex III, to the other Member States and, if requested, send the test report on any type of tyre approved.

#### Article 4

No Member State may prohibit or restrict the placing on the market of tyres bearing the EEC component type-approval mark.

#### Article 5

No Member State may refuse to grant EEC type-approval or national type-approval to a vehicle on grounds relating to its tyres if these bear the EEC component type-approval mark and are fitted in accordance with the requirements laid down in Annex IV.

#### Article 6

No Member State may refuse or prohibit the sale, registration, entry into service or use of a vehicle on grounds relating to its tyres if these bear the EEC component type-approval mark and are fitted in accordance with the requirements laid down in Annex IV.

#### Article 7

1. If, on the basis of a substantiated justification, a Member State considers that a tyre type or a vehicle type is

dangerous although complying with the requirements of this Directive, it may, within its territory, provisionally prohibit the marketing of that product or subject it to special conditions. It shall immediately inform the other Member States and the Commission thereof, stating the grounds for its decision.

2. The Commission shall, within six weeks, consult the Member States concerned, following which it shall deliver its opinion without delay and take the appropriate steps.

3. If the Commission is of the opinion that technical adaptations to the Directives are necessary, such adaptations shall be adopted by either the Commission or the Council in accordance with the procedure laid down in Article 10. In this event, the Member State which has adopted safeguard measures may maintain them until the entry into force of the adaptations.

#### Article 8

1. The Member State which has granted the EEC component (tyre) or vehicle type-approval shall take the measures required in order to verify that production models conform to the approved type in so far as this is necessary and if need be in cooperation with the approval authorities in the other Member States. For this purpose, this Member State may at any time check the conformity of the tyres or vehicles to the requirements of this Directive. Such verification shall be limited to spot checks.

2. If this Member State finds that a number of tyres or vehicles with the same approval marking do not conform to the approved type, it shall take the necessary measures to ensure that production models so conform. Where there is a consistent failure to conform, these measures may extend to a withdrawal of EEC type-approval. The said authorities shall take the same measure if they are informed by the approval authorities of another Member State of such failure to conform.

3. The approval authorities of the Member States shall within one month notify each other using the relevant form shown in the Appendices to Annex I and Annex III of any withdrawal of EEC type-approval and of the reasons for such a measure.

#### Article 9

Any decision taken pursuant to the provisions adopted in implementation of this Directive to refuse or withdraw EEC component type-approval for a tyre or EEC type-approval of a vehicle with regard to the fitting of its tyres implying a prohibition of marketing or of use shall set out in detail the reasons on which it is based. Every such decision shall be notified to the party concerned, who shall at the same time be informed of the remedies available to him under the laws in force in the Member States and of the time limits allowed for the exercise of such remedies.

*Article 10*

Any amendments necessary to adapt the requirements of the Annexes to technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Directive 70/156/EEC.

*Article 11*

1. Member States shall adopt and publish the provisions necessary to comply with this Directive before 1 July 1992 and shall forthwith inform the Commission thereof.

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

They shall apply these measures from 1 January 1993.

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

*Article 12*

This Directive is addressed to the Member States.

Done at Brussels, 31 March 1992.

*For the Council*  
*The President*  
Vitor MARTINS

## LIST OF ANNEXES

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<sup>(1)</sup> The technical requirements for tyres are similar to those of Regulations Nos 30 and 54 of the Economic Commission for Europe.

## ANNEX I

## ADMINISTRATIVE PROVISIONS FOR THE COMPONENT TYPE-APPROVAL OF TYRES

## 1. APPLICATION FOR THE EEC COMPONENT TYPE-APPROVAL OF A TYPE OF TYRE

- 1.1. Application for EEC component type-approval for a type of tyre is submitted by the tyre manufacturer or by his authorized representative.
- 1.2. It is accompanied, in triplicate, by a description of the tyre as described in the information document in Appendix 1.
- 1.3. On request of the approval authority, the tyre manufacturers or his representative must also submit a complete technical file for each tyre type containing in particular the test reports, drawings or photographs (three copies) of the side walls and of the tread of the tyre, as well as a dimensioned drawing of the cross-section of the tyre and/or one or two samples of each tyre type. The photographs or drawings must show the proposed position of the EEC component type-approval mark.
- 1.4. The manufacturer or his representative may apply for the EEC component type-approval to be extended to include modified tyre types.

## 2. INSCRIPTIONS

Specimens of a type of tyre submitted for EEC component type-approval must bear the applicant's clearly visible and indelible trade mark or name and must allow sufficient space for the inscription of the EEC component type-approval mark; this space must be indicated in the documents referred to in 1.2.

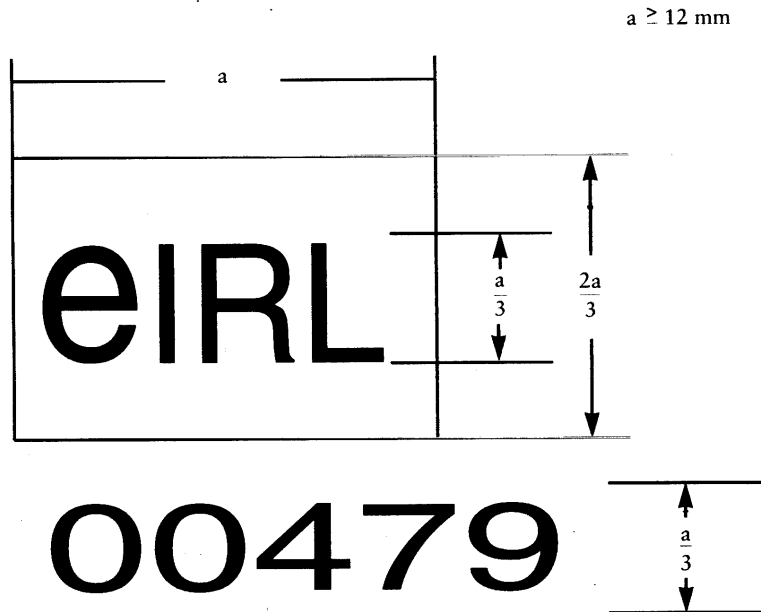
## 3. EEC COMPONENT TYPE-APPROVAL (TYRES)

- 3.1. EEC component type-approval is granted and a component type-approval number issued in respect of any tyre type submitted in accordance with 1.1 which satisfies the requirements of this Directive.
- 3.2. Notice of approval or of extension or of refusal of approval of a tyre type pursuant to this Directive must be communicated to the Member States by means of a form conforming to the model in Appendix 2.
- 3.3. An approval number is assigned to each tyre type approved. The same Member State must not assign the same number to another tyre type.

## 4. EEC COMPONENT TYPE-APPROVAL MARKING OF TYRES

- 4.1. Any tyre conforming to a type in respect of which component type-approval has been granted pursuant to this Directive must bear an EEC component type-approval mark.
- 4.2. The EEC component type-approval mark consists of a rectangle surrounding the lower case letter 'e' followed by the distinguishing letter(s) or number of the Member State which has granted the component type-approval: 1 for Germany, 2 for France, 3 for Italy, 4 for the Netherlands, 6 for Belgium, 9 for Spain, 11 for the United Kingdom, 13 for Luxembourg, 18 for Denmark, 21 for Portugal, IRL for Ireland, EL for Greece. The EEC component type-approval number consists of the component type-approval number shown on the certificate completed for the type, preceded by two figures indicating the sequence number of the latest amendment to this Council Directive on the date EEC component type-approval was granted. The amendment sequence number in this Directive is 00 for commercial vehicle tyres, 02 for passenger car tyres.
- 4.3. The EEC component type-approval mark and number, as well as additional markings required in Annex II, section 3 must be affixed as prescribed in that section.
- 4.4. The rectangle forming the EEC mark must have a minimum length of 12 mm and a minimum height of 8 mm. Letters and number(s) must be at least 4 mm in height.

4.5. An example of the EEC mark is given below:



The tyre bearing the EEC mark shown above is a tyre satisfying the EEC requirements (e), for which the EEC mark has been granted under the number (479) in Ireland (IRL) on the basis of this Directive.

*Note:* The number 479 (component type-approval number of the EEC mark) and the letters IRL (letters of the Member State which has granted the EEC mark) are for guidance only.

The approval number must be placed close to the rectangle and either above or below or to the left or the right. The digits of the approval number must all be on the same side of the 'e' and face in the same direction.

## 5. MODIFICATION OF A TYRE TYPE

- 5.1. Every modification of a tyre type must be notified to the approval authority which approved the tyre type. That approval authority may then either:
- 5.1.1. consider that the modifications made are unlikely to have an appreciable adverse effect and that in any case the tyre still meets the requirements, or
- 5.1.2. require a further test report from the technical service responsible for carrying out the tests.
- 5.2. A modification of the tread pattern of a tyre is deemed as not necessitating a repetition of the tests prescribed in Annex II.
- 5.3. Confirmation or refusal of approval, specifying the alterations, is communicated to the other Member States by the procedure specified in 3.2.

## 6. CONFORMITY OF PRODUCTION OF TYRES

- 6.1. Every production tyre bearing the EEC component type-approval mark in accordance with this Directive must be so manufactured that it conforms to all of the relevant requirements of this Directive.
- 6.2. In order to verify that the requirements of 6.1 are met, suitable checks on the production must be carried out.
- 6.3. The holder of the approval must in particular:
- 6.3.1. ensure existence of procedures for the effective control of the quality of products,
- 6.3.2. have access to the the control equipment necessary for checking the conformity to each approved type,

- 6.3.3. ensure that data of test results are recorded and that annexed documents remain available for a period to be determined in accordance with the approval authority,
- 6.3.4. analyse the results of each type of test, in order to verify and ensure the stability of the product characteristics making allowance for variation of an industrial production,
- 6.3.5. ensure that for each type of tyre at least the tests prescribed in this Directive are carried out,
- 6.3.6. ensure that any sampling of samples or test-pieces giving evidence of non-conformity with the type of test considered give rise to another sampling and another test. All the necessary steps must be taken to re-establish the conformity of the corresponding production.
- 6.4. The approval authority which has granted component type-approval may at any time verify the conformity control methods applicable to each production unit.
  - 6.4.1. In every inspection, the test books and production survey records must be presented to the visiting inspector.
  - 6.4.2. The inspector may take samples at random which will be tested in the manufacturer's laboratory. The minimum number of samples may be determined according to the results of the manufacturer's own verification.
  - 6.4.3. When the quality level appears unsatisfactory or when it seems necessary to verify the validity of the tests carried out in application of 6.4.2 the inspector must select samples to be sent to the technical service which has conducted the type-approval tests.
  - 6.4.4. The approval authority may carry out any test prescribed in this Directive.
  - 6.4.5. The normal frequency of inspections authorized by the approval authority is one per year. In the case where negative results are recorded during one of these visits, the approval authority must ensure that all necessary steps are taken to re-establish the conformity of production as rapidly as possible.

## 7. PRODUCTION DEFINITELY DISCONTINUED

If the holder of an approval completely ceases to manufacture a type of tyre approved in accordance with this Directive, he must so inform the authority which granted the approval. Upon receiving the relevant communication that authority must inform thereof the other approval authorities by means of a copy of the approval form bearing at the end, in large letters, the signed and dated annotation 'PRODUCTION DISCONTINUED'.

Appendix 1

INFORMATION DOCUMENT No . . . . . RELATING TO EEC COMPONENT TYPE-APPROVAL FOR A TYRE  
(DIRECTIVE 92/23/EEC)

The following information, if applicable, must be supplied in triplicate and include a list of contents. Drawings, if any, must be supplied in appropriate scale and in sufficient detail on size A4 or folded to that size. In the case of microprocessor controlled functions supply relevant performance-related information.

- 0. GENERAL
- 0.1. Make (trade name of manufacturer): .....
- 0.2. Commercial description(s): .....
- 0.3. Means of identification (tyre-size designation): .....
- 0.5. Name and address of applicant: .....
- 0.7. Address(es) of manufacturing plant(s): .....
  
- 6. TYRES
- 6.1. The category of use: .....
- 6.2. The structure: .....
- 6.3. The speed category: .....
- 6.4. The load-capacity index (indices):
  - single formation: .....
  - dual (twin) formation: .....
- 6.5. Whether the tyre is to be fitted with or without an inner tube: .....
- 6.7. Whether the tyre is: .....
- 6.7.1. Passenger car 'standard' or 'reinforced' or 'T-type temporary use spare' tyre: .....
- 6.7.2. Commercial vehicle 'regroovable' tyre: .....
- 6.8. The ply-rating number (if applicable) of diagonal (bias-ply) tyres: .....
- 6.9. The overall dimensions: overall section width and outer diameter: .....
- 6.10. The rim(s) on which the tyre can be mounted: .....
- 6.11. The measuring rim and test rim: .....
- 6.12. The measuring pressure (bar): .....
- 6.13. The additional load/speed combinations in cases where section 6.2.5 of Annex II is applied: .....
- 6.14. The test pressure where the manufacturer requests the application of section 1.3 of Appendix 7, Part A of Annex II or the 'PSI' pressure index: .....
- 6.15. The factor x referred to in section 2.20 of Annex II or the applicable table of Appendix 5 to Annex II: .....



Appendix 2

MODEL

(maximum format: A 4 (210 x 297 mm))

EEC COMPONENT TYPE-APPROVAL CERTIFICATE  
(tyre)

STAMP  
OF ADMINISTRATION

Communication concerning the:

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

of a component with regard to Directive 92/23/EEC relating to tyres.

EEC component type-approval No: ..... Extension No: .....

SECTION I

- 0. General
- 0.1. Make (trade name of manufacturer): .....
- 0.2. Commercial description(s): .....
- 0.3. Means of identification marked on the component (tyre) <sup>(a)</sup>: .....
- 0.4. List of applicable annexes: .....
- 0.5. Name and address of applicant: .....
- 0.6. Address(es) of manufacturing plant(s): .....

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

(a) The means of identification of type, if used, must appear only on those tyres covered by the individual approval.  
 If the means of identification of type contains characters not relevant to describe the tyre types covered by this component type-approval certificate (e.g. a date code) such characters must be represented in the documentation by the symbol: '?' (e.g. ABC ?? 123 ??)

- the size designation,
- the category of use,
- the load capacity index,
- the speed category,
- whether or not the tyre may be used tubeless,
- whether or not the tyre is 'reinforced' or 'T-type temporary use spare tyre' in the case of passenger car tyres,
- whether or not the tyre is 'regroovable' in the case of commercial vehicle tyres,
- additional load capacity index/indices and speed category symbol.

SECTION II

1. **Additional information**
- 1.1. The list of rims on which the tyres may be fitted: .....
2. Technical service responsible for carrying out the tests: .....
3. Date of test report: .....
4. Number of test report: .....
5. Grounds for extending component type-approval (where appropriate): .....  
.....
6. Comments (if any): .....
7. Place: .....
8. Date: .....
9. Signature: .....
10. A list of documents making up the component type-approval file lodged with the authority that has granted the approval and which may be obtained on request, is attached.

\_\_\_\_\_

## ANNEX II

## REQUIREMENTS FOR TYRES

## 1. DEFINITIONS

2. For the purposes of this Directive:

2.1. 'type of tyre' means a category of tyres which do not differ in such essential respects as:

2.1.1. manufacturer's name or trade mark;

2.1.2. tyre-size designation;

2.1.3. category of use:

— normal: normal road-use tyre,

— special: special-use tyre, e.g. tyre for mixed use (both on and off the road) and at restricted speed,

— snow tyre,

— temporary-use spare tyre;

2.1.4. structure (diagonal (bias-ply), bias-belted, radial-ply);

2.1.5. speed category;

2.1.6. load capacity index;

2.1.7. tyre cross-section;

2.2. 'snow tyre' means a tyre the tread pattern and structure of which are primarily designed to ensure in mud and fresh or melting snow a performance better than that of a normal tyre. The tread pattern of a snow tyre generally consists of groove (rib) and/or solid-block elements more widely spaced than on a normal tyre;

2.3. 'structure' of a tyre means the technical characteristics of the tyre's carcass. The following structures are distinguished in particular:

2.3.1. 'diagonal' or 'bias-ply' describes a tyre structure in which the ply cords extend to the bead and are laid at alternate angles of substantially less than 90° to the centreline of the tread;

2.3.2. 'bias-belted' describes a tyre structure of diagonal (bias-ply) type in which the carcass is restricted by a belt comprising two or more layers of substantially inextensible cord material laid at alternate angles close to those of the carcass;

2.3.3. 'radial' describes a tyre structure in which the ply cords extend to the beads and are laid substantially at 90° to the centreline of the tread, the carcass being stabilized by an essentially inextensible circumferential belt;

2.3.4. 'reinforce' describes a tyre structure in which the carcass is more resistant than that of the corresponding standard tyre;

2.3.5. 'temporary-use spare tyre' means a tyre different from a tyre intended to be fitted to any vehicle for normal driving conditions; but intended only for temporary use under restricted driving conditions;

2.3.6. 'T-type temporary-use spare tyre' means a type of temporary-use spare tyre designed for use at inflation pressure higher than those established for standard and reinforced tyres;

2.4. 'bead' means the part of a tyre which is of such shape and structure as to fit the rim and hold the tyre on it <sup>(1)</sup>;

2.5. 'cord' means the strands forming the fabric of the plies in the tyre <sup>(1)</sup>;

2.6. 'ply' means a layer of rubber-coated parallel cords <sup>(1)</sup>;

2.7. 'carcass' means that part of a tyre other than the tread and the rubber sidewalls which, when inflated, bears the load <sup>(1)</sup>;

2.8. 'tread' means that part of a tyre which comes into contact with the ground <sup>(1)</sup>;

2.9. 'sidewall' means the part of the tyre, excluding the tread, which is visible when the tyre, fitted to a rim, is viewed from the side <sup>(1)</sup>;

<sup>(1)</sup> See explanatory figure, Appendix 1.

- 2.10. 'lower sidewall' means the area below the line of maximum section width of the tyre, which is visible when the tyre, fitted to a rim, is viewed from the side <sup>(1)</sup>;
- 2.11. 'tread groove' means the space between the adjacent ribs or blocks in the tread pattern <sup>(1)</sup>;
- 2.12. 'section width' means the linear distance between the outsides of the sidewalls of an inflated tyre, excluding elevations due to labelling (marking), decoration or protective bands or ribs <sup>(1)</sup>;
- 2.13. 'overall width' means the linear distance between the outsides of the sidewalls of an inflated tyre, including labelling (marking), decoration and protective bands or ribs <sup>(1)</sup>;
- 2.14. 'section height' means a distance equal to half the difference between the outer diameter of the tyre and the nominal rim diameter <sup>(1)</sup>;
- 2.15. 'nominal aspect ratio Ra' means one hundred times the number obtained by dividing the number expressing the nominal section height in millimetres by the number expressing the nominal section width in millimeters;
- 2.16. 'outer diameter' means the overall diameter of an inflated new tyre <sup>(1)</sup>;
- 2.17. 'tyre-size designation':
- 2.17.1. means a designation showing:
- 2.17.1.1. the nominal section width. This width must be expressed in mm, except in the case of tyres for which the size designation is shown in the first column of the tables in Appendix 5;
- 2.17.1.2. the nominal aspect ratio, except in the case of tyres for which the size designation is shown in the first column of the tables in Appendix 5;
- 2.17.1.3. a conventional number 'd' (the 'd' symbol) denoting the nominal rim diameter and corresponding to the diameter of the rim expressed either in inches (number below 100 — see table) or in mm (numbers above 100) but not both.

The exhaustive range of values is shown in the table below:

Nominal rim diameter (the 'd' symbol)	
Expressed in inches (code)	Equivalence in mm (reference section 6.1.2.1)
10	254
11	279
12	305
13	330
14	356
15	381
16	406
17	432
18	457
19	483
20	508
21	533
22	559
24	610
25	635
14,5	368
16,5	419
17,5	445
19,5	495
20,5	521
22,5	572
24,5	622

<sup>(1)</sup> See explanatory figure, Appendix 1.

- 2.17.1.4. the letter 'T' in front of the nominal section width in case of T-type temporary-use spare tyres;
- 2.18. 'nominal rim diameter (d)' means the diameter of the rim on which a tyre is designed to be mounted <sup>(1)</sup>;
- 2.19. 'rim' means the support for a tyre-and-tube assembly, or for a tubeless tyre, on which the tyre beads are seated <sup>(1)</sup>;
- 2.20. 'theoretical rim' means the notional rim whose width would be equal to x times the nominal section width of a tyre; the value 'x' must be specified by the tyre manufacturer;
- 2.21. 'measuring rim' means the rim on which a tyre must be fitted for size measurements;
- 2.22. 'test rim' means the rim on which a tyre must be fitted for testing;
- 2.23. 'chunking' means the breaking away of pieces of rubber from the tread;
- 2.24. 'cord separation' means the parting of the cords from their rubber coating;
- 2.25. 'ply separation' means the parting of adjacent plies;
- 2.26. 'tread separation' means the pulling away of the tread from the carcass;
- 2.27. 'tread-wear indicators' mean projections within the tread-grooves designed to give a visual indication of the degree of wear of the tread;
- 2.28. 'load-capacity index' means one or two numbers which indicate the load the tyre can carry in single or in single and dual formation at the speed corresponding to the associated speed category and when operated in conformity with the requirements governing utilization specified by the manufacturer. The list of these indices and their corresponding masses is given in Annex II, Appendix 2;
- 2.28.1. on passenger car tyres there must be one load index only;
- 2.28.2. on commercial vehicle tyres there may be one or two load indices, the first one for single formation and the second one, when present, for dual (twin) formation in which case the two indices are divided by a slash (/);
- 2.28.3. a type of tyre may have either one or two sets of load capacity indices depending on whether or not the provisions of section 6.2.5 are applied;
- 2.29. 'speed category', expressed by the speed category symbol as shown in the table in 2.29.3;
- 2.29.1. in the case of a passenger car tyre, the maximum speed which the tyre can sustain;
- 2.29.2. in the case of a commercial vehicle tyre, the speed at which the tyre can carry the mass corresponding to the load capacity index;
- 2.29.3. The speed categories are as shown in the table below:

Speed category symbol	Corresponding speed (km/h)
F	80
G	90
J	100
K	110
L	120
M	130
N	140
P	150
Q	160
R	170
S	180
T	190
U	200
H	210
V	240

<sup>(1)</sup> See explanatory figure, Appendix 1.

- 2.29.4. tyres suitable for maximum speeds higher than 240 km/h are identified by means of the letter code 'Z' placed within the tyre size designation;
- 2.29.5. a type of tyre may have either one or two sets of speed category symbols depending on whether or not the provisions of section 6.2.5 are applied;
- 2.30. '*table: Variation of load capacity with speed*' means: the table, in Annex II Appendix 8, showing as a function of the load capacity indices and nominal speed category symbols the load variations which a tyre can withstand when used at speeds different from that corresponding to its speed category symbol;
- 2.30.1. the load variations do not apply in the case of passenger car tyres nor, in the case of commercial vehicle tyres, to the additional load capacity indices and speed category symbol when the provisions of section 6.2.5 are applied;
- 2.31. '*maximum load rating*' means the maximum mass the tyre is rated to carry:
- 2.31.1. in the case of passenger car tyres suitable for speeds not exceeding 210 km/h, the maximum load rating must not exceed the value associated with the load capacity index of the tyre;
- 2.31.2. in the case of passenger car tyres suitable for speeds exceeding 210 km/h, but not exceeding 240 km/h (tyres classified with speed category symbol 'V'), the maximum load rating must not exceed the percentage of the value associated with the load capacity index of the tyre, indicated in the table below, with reference to the speed capability of the vehicle to which the tyre is fitted;

Maximum speed (km/h)	Load (%)
215	98,5
220	97
225	95,5
230	94
235	92,5
240	91

for intermediate maximum speeds linear interpolations of the maximum load rating are allowed;

- 2.31.3. for speeds exceeding 240 km/h ('Z tyres') the maximum load rating must not exceed the value specified by the tyre manufacturer with reference to the maximum speed capability of the vehicle to which it is fitted;
- 2.31.4. in the case of commercial vehicle tyres, the maximum load rating, both for single and for dual formation, must not exceed the percentage of the value associated with the relevant load capacity index of the tyre as indicated in the table '*Load-capacity variation with speed*' (see 2.30), with reference to the speed category symbol of the tyre and the speed capability of the vehicle to which the tyre is fitted. When additional load capacity indices and speed category symbols apply, those too are considered to determine the maximum load rating of the tyre;
- 2.32. '*passenger car tyre*' means a tyre designed primarily, but not only, for passenger cars (motor vehicles in category M1) and their trailers (01 and 02);
- 2.33. '*commercial vehicle tyre*' means a tyre designed primarily, but not only, for vehicles other than passenger cars (motor vehicles in categories M2, M3, N) and their trailers (03, 04);
- 2.34. '*tyre ground pressure (F/Ac)*' means the average until load transmitted by the tyre, through its contact area, to the road surface expressed as the ratio between the vertical force (F), in static conditions on the axis of the wheel and the tyre contact area (Ac) measured with the tyre inflated at the cold inflation pressure recommended for the intended type of service. It is expressed in kN/m<sup>2</sup>;
- 2.35. '*tyre contact area (Ac)*' means the area of the flat surface contained within the virtual perimeter of the tyre footprint. It is expressed in m<sup>2</sup>;
- 2.36. '*virtual perimeter of the tyre footprint*' means the convex polygonal curve circumscribing the smallest area containing all points of contact between the tyre and the ground;
- 2.37. '*cold inflation pressure*' means the internal pressure of the tyre with the tyre at ambient temperature and does not include any pressure build up due to tyre usage. It is expressed in bar kPa.

### 3. MARKING REQUIREMENTS

- 3.1. Tyres must bear:
- 3.1.1. the manufacturer's name or trade mark;
  - 3.1.2. the tyre-size designation as defined in section 2.17;
  - 3.1.3. an indication of the structure as follows:
    - 3.1.3.1. on diagonal (bias-ply) tyres, no making or the letter 'D';
    - 3.1.3.2. on radial-ply tyres, the letter 'R' placed in front of the nominal in diameter marking and, optionally, the word 'RADIAL';
    - 3.1.3.3. on bias-belted tyres, the letter 'B' placed in front of the nominal rim diameter marking and, in addition, the words 'BIAS-BELTED';
  - 3.1.4. an indication of the tyre's speed category by means of the symbol shown in section 2.29; in the case of tyres suitable for speeds higher than 240 km/h the speed category of the tyre must be indicated by the letter code 'Z' placed in front of the indication of the structure (see section 3.1.3);
  - 3.1.5. the inscription 'M + S' (for alternatively 'M.S.' or 'M & S') in the case of a snow tyre;
  - 3.1.6. the load-capacity index as defined in section 2.28;
    - 3.1.6.1. however, in the case of tyres suitable for speeds higher than 240 km/h the indication of the load capacity index may be omitted;
  - 3.1.7. the word 'TUBELESS' if the tyre is designed for use without an inner tube;
  - 3.1.8. the word 'REINFORCED' if the tyre is a reinforced tyre;
  - 3.1.9. the date of manufacture in the form of a group of three digits, the first two showing the week and the last one the year of manufacture;
  - 3.1.10. in the case of commercial vehicle tyres which can be regrooved, the symbol 'U' at last 20 mm in diameter, or the word 'REGROOVABLE', moulded into or on to each sidewall;
  - 3.1.11. in the case of commercial vehicles tyres, an indication, by the 'PSI' index (see Appendix 4), of the inflation pressure to be adopted for the load/speed tests, as explained in Appendix 7 Part B;
  - 3.1.12. the additional load capacity index/indices and the speed category symbol in the case where the provisions of section 6.2.5 are applied.
- 3.2. Appendix 3 gives examples of the arrangement of tyre markings.
- 3.3. The tyre must also bear the EEC component tyre-approval mark, the model of which is given in Annex I, section 4.5.

### POSITION OF MARKINGS

- 3.4. The markings referred to in section 3.1 and 3.3 must be clearly and legibly moulded into or on to both sidewalls, and at least on one side on the lower sidewall, as follows:
- 3.4.1. in the case of symmetrical tyres, all the markings referred to above must be located on both sidewalls except the markings referred to in sections 3.1.9, 3.1.11 and 3.3 which may be on one sidewall only;
  - 3.4.2. in the case of asymmetrical tyres all the markings must be located on at least the outer sidewall.

(4.)

(5.)

(6.)

### 6.1. Dimensional requirements

#### 6.1.1. Section width of a tyre

- 6.1.1.1. Except as provided by section 6.1.1.2, the section width is calculated by the following formula:

$$S = S_1 + K (A - A_1),$$

where:

S = the 'section width' expressed in mm <sup>(1)</sup> and measured on the measuring rim;

S<sub>1</sub> = the 'nominal section width' in mm as shown on the sidewall of the tyre in the tyre-size designation as prescribed;

A = the width (expressed in mm) of the measuring rim, as shown by the manufacturer in the descriptive note, (see section 6.11 of Annex I, Appendix 1);

A<sub>1</sub> = the width (expressed in mm) of the theoretical rim; it is taken to equal S<sub>1</sub> multiplied by the factor x as specified by the tyre manufacturer (see section 6.15 of Annex I, Appendix 1); and K is taken to equal 0.4.

6.1.1.2. However, for the types of tyre for which the size designation is given in the first column of the tables in Appendix 5 A or 5 B, the measuring rim width (A) and the section width (S) are those given opposite the tyre size designation in those tables.

6.1.2. *Outer diameter of a tyre*

6.1.2.1. Except as provided by section 6.1.2.2, the outer diameter of a tyre is calculated by the following formula:

$$D = d + 0,02 H$$

where:

— D is the outer diameter expressed in mm,

— d is the conventional number defined in section 2.17.1.3, expressed in mm,

— H is the nominal section height in mm and is equal to S<sub>1</sub> × 0,01 Ra;

where:

— Ra is the nominal aspect ratio,

all as shown on the sidewall of the tyre in the tyre-size designation in conformity with the requirements of section 3.

6.1.2.2. However, for the types of tyres for which the size designation is given in the first column of the tables of Appendix 5 the outer diameter is that given opposite the tyre size designation in those tables.

6.1.3. *Method of measuring tyre dimensions*

The actual dimensions of tyres are measured as prescribed in Appendix 6.

6.1.4. *Tyre section width: specification of tolerance*

6.1.4.1. The overall width of a tyre may be less than the section width determined pursuant to section 6.1.1 or shown in Appendix 5;

6.1.4.2. It may not exceed that value by more than the following:

6.1.4.2.1. diagonal (bias-ply) tyres: 6% for passenger car tyres, 8% for commercial vehicle tyres;

6.1.4.2.2. radial-ply tyres: 4%; and

6.1.4.2.3. in addition, if the tyre has a special protective band, the figure as increased by the above tolerances may be exceeded by 8 mm.

6.1.4.2.4. However, for tyres of a section width exceeding 305 mm intended for dual (twin) mounting the nominal value must not be exceeded by more than 2% for radial-ply or 4% for diagonal (bias-ply) tyres.

6.1.5. *Tyre outer diameter: specification of tolerance*

The outer diameter of a tyre must not be outside the values D<sub>min</sub> and D<sub>max</sub> obtained from the following formulae:

$$D_{min} = d + (2H \times a)$$

$$D_{max} = d + (2H \times b)$$

6.1.5.1. for sizes listed in Appendix 5:

$$H = 0,5 (D - d) \text{ — (for references see section 6.1.2.2).}$$

6.1.5.2. for other sizes not listed in Appendix 5:

'H' and 'd' are as defined in section 6.1.2.1.

6.1.5.3. coefficients 'a' and 'b' are respectively:

6.1.5.3.1. coefficient 'a' = 0,97;

6.1.5.3.2. coefficient 'b' for normal, special, snow or temporary-use spare tyres

<sup>(1)</sup> Equivalence factor from inches to mm is 25,4.



Category of use	Passenger car tyres		Commercial vehicle tyres	
	Radial	Bias	Radial	Bias
Normal	1,04	1,08	1,04	1,07
Special	—	—	1,06	1,09
Snow	1,04	1,08	1,04	1,07
Temporary-use	1,04	1,08	—	—

6.1.5.4. For snow tyres the outer diameter (Dmax) established in conformity with the above may be exceeded by 1 %.

#### 6.2. *Load/speed test requirement*

6.2.1. The tyre must undergo a load/speed test carried out in accordance with the relevant procedure described in Appendix 7.

6.2.2. A tyre which, after undergoing the relevant load/speed test, does not exhibit any tread separation, ply separation, cord separation, chunking or broken cords is deemed to have passed the test.

6.2.3. The outer diameter of the tyre, measured six hours after the load/speed test, must not be more than 3,5 % greater than the outer diameter as measured before the test.

6.2.4. Where application is made for the approval of a type of commercial vehicle tyre the load/speed combinations given in the table in Appendix 8 apply and, the load/speed test prescribed in section 6.2.1 need not be carried out for load and speed values other than the nominal values.

6.2.5. Where application (see section 6.13 of Annex 1, Appendix 1) is made for the approval of a type of commercial vehicle tyre which has a load/speed combination in addition to the one that is subject to the variation of load with speed given in the table in Appendix 8, the load/speed test prescribed in section 6.2.1 must also be carried out on a second tyre of the same type at the additional load/speed combination.

6.2.6. Where a tyre manufacturer produces a range of tyres it is not considered necessary to carry out a load/speed test on every type of tyre in the range. Worst-case selection may be made, at the discretion of the approval authority.

#### 6.3. *Tread-wear indicators*

6.3.1. In the case of passenger car tyres the tread of the tyre must include not less than six transverse rows of tread-wear indicators, approximately equally spaced and situated in the wide grooves in the central zone of the tread, which covers approximately three quarters of the tread width. The tread-wear indicators must be such that they cannot be confused with the rubber ridges between the ribs or blocks of the tread.

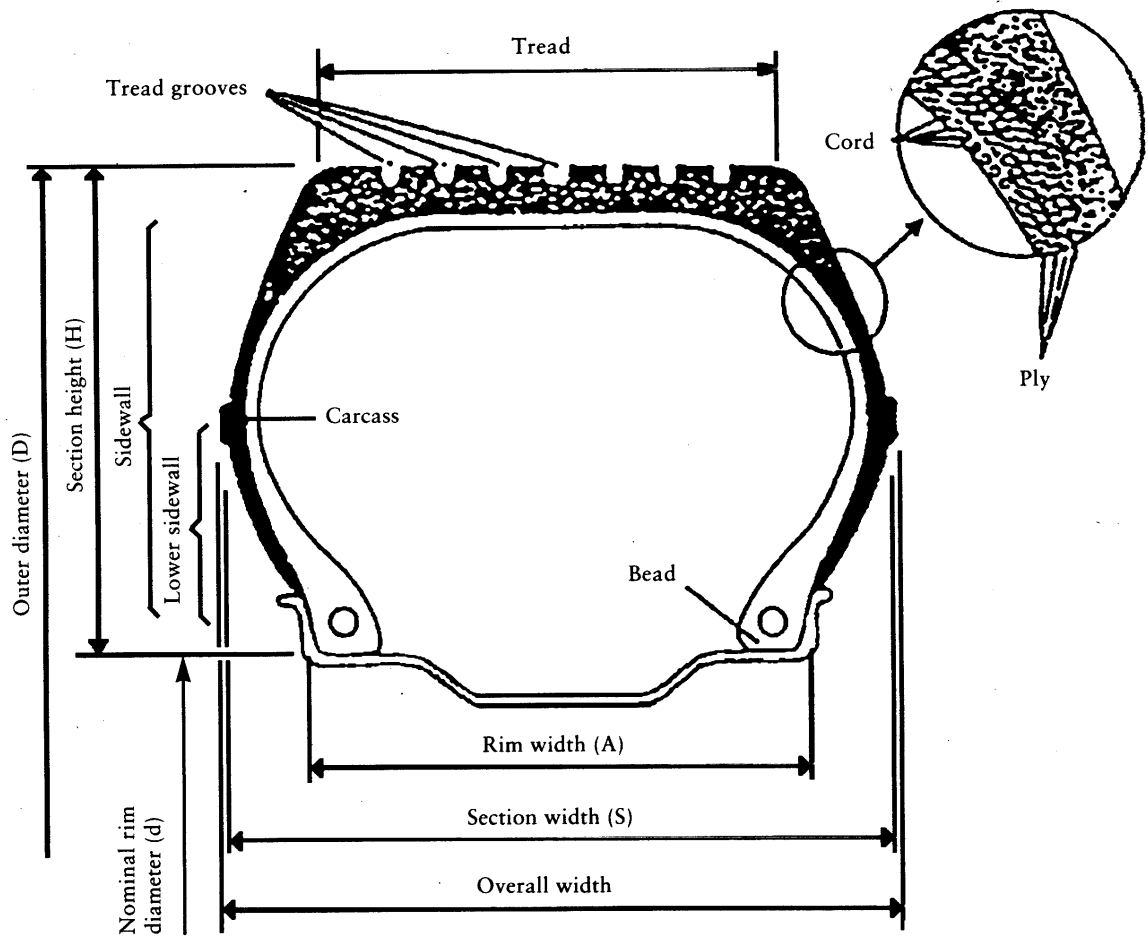
6.3.2. However, in the case of tyres of dimensions appropriate for mounting on rims of a nominal diameter of 12" or less, four rows of tread-wear indicators are acceptable.

6.3.3. The tread-wear indicators must give visual warning when the depth of the corresponding tread grooves has been reduced to 1,6 mm with a tolerance of + 0,6/ - 0 mm.

Appendix 1

Explanatory figure

(see Annex II, sections 2 and 6.1)



## Appendix 2

**LIST OF SYMBOLS OF LOAD-CAPACITY INDICES (LI)  
AND CORRESPONDING MAXIMUM MASS TO BE CARRIED (GK)**

(see Annex II, section 2.28)

LI	Maximum	LI	Maximum	LI	Maximum	LI	Maximum
0	45	51	195	101	825	151	3 450
1	46,2	52	200	102	850	152	3 550
2	47,5	53	206	103	875	153	3 650
3	48,7	54	212	104	900	154	3 750
4	50	55	218	105	925	155	3 875
5	51,5	56	224	106	950	156	4 000
6	53	57	230	107	975	157	4 125
7	54,5	58	236	108	1 000	158	4 250
8	56	59	240	109	1 030	159	4 375
9	58	60	250	110	1 060	160	4 500
10	60	61	257	111	1 090	161	4 625
11	61,5	62	265	112	1 120	162	4 750
12	63	63	272	113	1 150	163	4 875
13	65	64	280	114	1 180	164	5 000
14	67	65	290	115	1 215	165	5 150
15	69	66	300	116	1 250	166	5 300
16	71	67	307	117	1 285	167	5 450
17	73	68	315	118	1 320	168	5 600
18	75	69	325	119	1 360	169	5 800
19	77,5	70	335	120	1 400	170	6 000
20	80	71	345	121	1 450	171	6 150
21	82,5	72	355	122	1 500	172	6 300
22	85	73	365	123	1 550	173	6 500
23	87,5	74	375	124	1 600	174	6 700
24	90	75	387	125	1 650	175	6 900
25	92,5	76	400	126	1 700	176	7 100
26	95	77	412	127	1 750	177	7 300
27	97,5	78	425	128	1 800	178	7 500
28	100	79	437	129	1 850	179	7 750
29	103	80	450	130	1 900	180	8 000
30	106	81	462	131	1 950	181	8 250
31	109	82	475	132	2 000	182	8 500
32	112	83	487	133	2 060	183	8 750
33	115	84	500	134	2 120	184	9 000
34	118	85	515	135	2 180	185	9 250
35	121	86	530	136	2 240	186	9 500
36	125	87	545	137	2 300	187	9 750
37	128	88	560	138	2 360	188	10 000
38	132	89	580	139	2 430	189	10 300
39	136	90	600	140	2 500	190	10 600
40	140	91	615	141	2 575	191	10 900
41	145	92	630	142	2 650	192	11 200
42	150	93	650	143	2 725	193	11 500
43	155	94	670	144	2 800	194	11 800
44	160	95	690	145	2 900	195	12 150
45	165	96	710	146	3 000	196	12 500
46	170	97	730	147	3 075	197	12 850
47	175	98	750	148	3 150	198	13 200
48	180	99	775	149	3 250	199	13 600
49	185	100	800	150	3 350	200	14 000

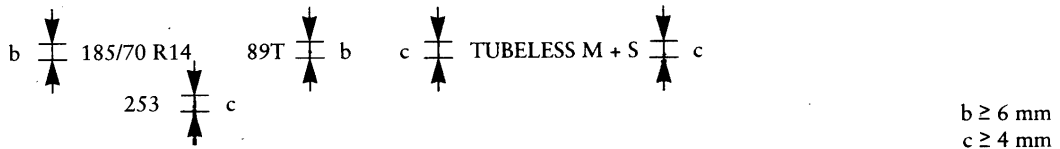
## Appendix 3

## ARRANGEMENT OF TYRE MARKINGS

(see Annex II, section 3.2)

## PART A: PASSENGER CAR TYRES

Example of the markings to be borne by types of tyres placed on the market after notification of this Directive



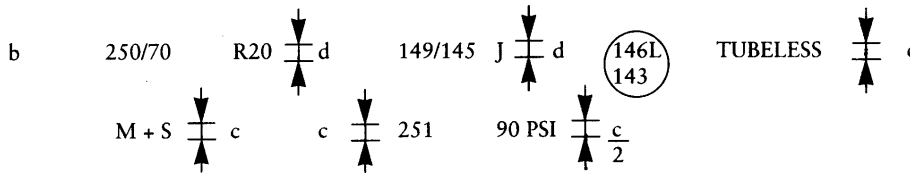
These markings define a tyre:

- having a nominal section width of 185,
- having a nominal aspect ratio of 70,
- of radial-ply structure (R),
- having a nominal rim diameter of 14,
- having a load capacity of 580 kg, corresponding to load index 89 in Appendix 2,
- classified in the speed category T (maximum speed 190 km/h),
- for fitting without an inner tube ('tubeless'),
- of 'snow' type,
- manufactured during the twenty-fifth week of the year 1993.

The positioning and order of the markings constituting the tyre designation are as follows:

- (a) the size designation, comprising the nominal section width, the nominal aspect ratio, the type of structure symbol (where applicable) and the nominal rim diameter, must be grouped as shown in the above example: 185/70 R 14;
- (b) the load index and the speed category symbol are placed near the size designation. They may either precede or follow it or be placed above or below it;
- (c) the symbols 'tubeless', 'reinforced', and 'M + S' may be at a distance from the size designation.

## PART B: COMMERCIAL VEHICLE TYRES



MINIMUM HEIGHTS OF MARKINGS (mm)		
	Tyres of rim diameter < 20" or < 508 mm or of section width ≤ 235 mm or ≤ 9"	Tyres of rim diameter ≥ 20" or ≥ 508 mm or of section width > 235 mm or > 9"
b	6	9
c	4	
d	6	

These markings define a tyre:

- having a nominal section width of 250,
- having a nominal aspect ratio of 70,
- of radial-ply structure (R),
- having a nominal rim diameter of 508 mm, for which the symbol is 20,
- having load capacities of 3 250 kg when single and 2 900 kg when twinned (dual), corresponding respectively to the load capacity indices 149 and 145 shown in Appendix 2,
- classified in the nominal speed category J (reference speed 100 km/h),
- able to be used additionally in speed category L (reference speed 120 km/h) with a load capacity of 3 000 kg when single and 2 725 kg when twinned (dual), corresponding respectively to the load capacity indices 146 and 143 shown in Appendix 2,
- for fitting without an inner tube 'tubeless',
- of 'snow' type,
- manufactured during the twenty-fifth week of the year 1991, and
- requiring to be inflated to 620 kPa for load/speed endurance tests, for which the PSI symbol is 90.

The positioning and order of the markings constituting the tyre designation are as follows:

- (a) the size designation, comprising the nominal section width, the nominal aspect ratio, the type-of-structure symbol (where applicable) and the nominal rim diameter, must be grouped as shown in the above example: 250/70 R 20;
- (b) the load indices and the speed category symbol are placed together near the size designation. They may either precede or follow it or be placed above or below it;
- (c) the symbols 'Tubeless', 'M+S' and 'REGROOVABLE' may be at a distance from the size designation;
- (d) if section 6.2.5 of Annex II is applied the additional load-capacity indices and speed-category symbol must be shown inside a circle near the nominal load-capacity indices and speed category symbol appearing on the tyre sidewall.

## Appendix 4

## RELATIONSHIP BETWEEN THE PRESSURE INDEX AND THE UNITS OF PRESSURE

(see Annex II, Appendix 7, Part B, section 1.3)

Pressure Index (PSI)	bar	kPa
20	1,4	140
25	1,7	170
30	2,1	210
35	2,4	240
40	2,8	280
45	3,1	310
50	3,4	340
55	3,8	380
60	4,2	420
65	4,5	450
70	4,8	480
75	5,2	520
80	5,5	550
85	5,9	590
90	6,2	620
95	6,6	660
100	6,9	690
105	7,2	720
110	7,6	760
115	7,9	790
120	8,3	830
125	8,6	860
130	9,0	900
135	9,3	930
140	9,7	970
145	10,0	1 000
150	10,3	1 030

## Appendix 5

## MEASURING RIM, OUTER DIAMETER AND SECTION WIDTH OF TYRES OF CERTAIN SIZE DESIGNATIONS

(see Annex II, sections 6.1.1.2 and 6.1.2.2)

## PART A: PASSENGER CAR TYRES

TABLE 1

## Tyres in diagonal construction

Tyre size designation	Measuring rim width (inches)	Outer diameter <sup>(1)</sup> (mm)	Section width <sup>(1)</sup> (mm)
<i>Super balloon series</i>			
4.80-10	3,5	490	128
5.20-10	3,5	508	132
5.20-12	3,5	558	132
5.60-13	4	600	145
5.90-13	4	616	150
6.40-13	4,5	642	163
5.20-14	3,5	612	132
5.60-14	4	626	145
5.90-14	4	642	150
6.40-14	4,5	666	163
5.60-15	4	650	145
5.90-15	4	668	150
6.40-15	4,5	692	163
6.70-15	4,5	710	170
7.10-15	5	724	180
7.60-15	5,5	742	193
8.20-15	6	760	213
<i>Low section series</i>			
5.50-12	4	552	142
6.00-12	4,5	574	156
7.00-13	5	644	178
7.00-14	5	668	178
7.50-14	5,5	688	190
8.00-14	6	702	203
6.00-15 L	4,5	650	156
<i>Super low section series <sup>(2)</sup></i>			
155-13/6.15-13	4,5	582	157
165-13/6.45-13	4,5	600	167
175-13/6.95-13	5	610	178
155-14/6.15-14	4,5	608	157
165-14/6.45-14	4,5	626	167
175-14/6.95-14	5	638	178
185-14/7.35-14	5,5	654	188
195-14/7.75-14	5,5	670	198
<i>Ultra low section</i>			
5.9-10	4,5	483	148
6.5-13	4,5	586	166
6.9-13	4,5	600	172
7.3-13	5	614	184

<sup>(1)</sup> Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.<sup>(2)</sup> The following size designations are accepted:  
185-14/7.35-14 or 185-14 or 7.35-14 or 7.35-14/185-14.

TABLE 2  
Tyres in radial construction

Tyre size designation	Measuring rim width (inches)	Outer diameter <sup>(1)</sup> (mm)	Section width <sup>(1)</sup> (mm)
5.60 R 13	4	606	145
5.90 R 13	4,5	626	155
6.40 R 13	4,5	640	170
7.00 R 13	5	644	178
7.25 R 13	5	654	184
5.90 R 14	4,5	654	155
5.60 R 15	4	656	145
6.40 R 15	4,5	690	170
6.70 R 15	5	710	180
140 R 12	4	538	138
150 R 12	4	554	150
150 R 13	4	580	149
160 R 13	4,5	596	158
170 R 13	5	608	173
150 R 14	4	606	149
180 R 15	5	676	174

<sup>(1)</sup> Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.



TABLE 3

## Millimetric series — radial

Tyre size designation <sup>(2)</sup>	Measuring rim width (inches)	Outer diameter <sup>(1)</sup> (mm)	Section width <sup>(1)</sup> (mm)
125 R 10	3,5	459	127
145 R 10	4	492	147
125 R 12	3,5	510	178
135 R 12	4	522	184
145 R 12	4	542	
155 R 12	4,5	550	155
125 R 13	3,5	536	127
135 R 13	4	548	137
145 R 13	4	566	147
155 R 13	4,5	578	157
165 R 13	4,5	596	167
175 R 13	5	608	178
185 R 13	5,5	624	188
125 R 14	3,5	562	127
135 R 14	4	574	137
145 R 14	4	590	147
155 R 14	4,5	604	157
165 R 14	4,5	622	167
175 R 14	5	634	178
185 R 14	5,5	650	188
195 R 14	5,5	666	198
205 R 14	6	686	208
215 R 14	6	700	218
225 R 14	6,5	714	228
125 R 15	3,5	588	127
135 R 15	4	600	137
145 R 15	4	616	147
155 R 15	4,5	630	157
165 R 15	4,5	646	167
175 R 15	5	660	178
185 R 15	5,5	674	188
195 R 15	5,5	690	198
205 R 15	6	710	208
215 R 15	6	724	218
225 R 15	6,5	738	228
235 R 15	6,5	752	238
175 R 16	5	686	178
185 R 16	5,5	698	188
205 R 16	6	736	208

<sup>(1)</sup> Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

<sup>(2)</sup> On certain tyres the rim diameter can be expressed in mm:

10" = 255    12" = 305    13" = 330    14" = 355  
 15" = 380    16" = 405    (example: 125 R 225).

TABLE 4  
70 Series — Radial (\*)

Tyre size designation	Measuring rim width (inches)	Outer diameter <sup>(1)</sup> (mm)	Section width <sup>(1)</sup> (mm)
145/70 R 10	3,5	462	139
155/70 R 10	3,5	474	146
165/70 R 10	4,5	494	165
145/70 R 12	4	512	144
155/70 R 12	4	524	151
165/70 R 12	4,5	544	165
175/70 R 12	5	552	176
145/70 R 13	4	538	144
155/70 R 13	4	550	151
165/70 R 13	4,5	568	165
175/70 R 13	4,5	580	176
185/70 R 13	5	598	186
195/70 R 13	5,5	608	197
205/70 R 13	5,5	625	204
145/70 R 14	4	564	144
155/70 R 14	4	576	151
165/70 R 14	4,5	592	165
175/70 R 14	5	606	176
185/70 R 14	5	624	186
195/70 R 14	5,5	636	197
205/70 R 14	5,5	652	206
215/70 R 14	6	665	217
225/70 R 14	6	677	225
235/70 R 14	6,5	694	239
245/70 R 14	6,5	705	243
145/70 R 15	4	590	144
155/70 R 15	4	602	151
165/70 R 15	4,5	618	165
175/70 R 15	5	632	176
185/70 R 15	5	648	186
195/70 R 15	5,5	656	197
205/70 R 15	5,5	669	202
215/70 R 15	6	682	213
225/70 R 15	6	696	220
235/70 R 15	6,5	712	234
245/70 R 15	6,5	720	239

(\*) Dimensional data applicable to some tyres in existence. For new approvals, dimensions calculated according to sections 6.1.1.1 and 6.1.2.1 of Annex II apply.

<sup>(1)</sup> Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

**TABLE 5**  
**60 Series radial (\*)**

Tyre size designation	Measuring rim width (inches)	Outer diameter (1) (mm)	Section width (1) (mm)
165/60 R 12	5	504	167
165/60 R 13	5	530	167
175/60 R 13	5,5	536	178
185/60 R 13	5,5	548	188
195/60 R 13	6	566	198
205/60 R 13	6	578	208
215/60 R 13	6	594	218
225/60 R 13	6,5	602	230
235/60 R 13	6,5	614	235
165/60 R 14	5	554	167
175/60 R 14	5,5	562	178
185/60 R 14	5,5	574	188
195/60 R 14	6	590	198
205/60 R 14	6	604	208
215/60 R 14	6	610	215
225/60 R 14	6	620	220
235/60 R 14	6,5	630	231
245/60 R 14	6,5	642	237
265/60 R 14	7	670	260
185/60 R 15	5,5	600	188
195/60 R 15	6	616	198
205/60 R 15	6	630	208
215/60 R 15	6	638	216
225/60 R 15	6,5	652	230
235/60 R 15	6,5	664	236
255/60 R 15	7	688	255
205/60 R 16	6	654	208
215/60 R 16	6	662	215
225/60 R 16	6	672	226
235/60 R 16	6,5	684	232

(\*) Dimensional data applicable to some tyres in existence. For new approvals, dimensions calculated according to sections 6.1.1.1 and 6.1.2.1 of Annex III apply.

(1) Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

**TABLE 6**  
**High flotation tyres — radial**

Tyre size designation	Measuring rim width (inches)	Outer diameter (1) (mm)	Section width (1) (mm)
27 × 8.50 R 14	7	674	218
30 × 9.50 R 15	7,5	750	240
31 × 10.50 R 15	8,5	775	268
31 × 11.50 R 15	9	775	290
32 × 11.50 R 15	9	801	290
33 × 12.50 R 15	10	826	318

(1) Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

## PART B: COMMERCIAL VEHICLE TYRES

TABLE 1

## Commercial vehicle tyres

RADIAL  
NORMAL SECTION SIZES MOUNTED  
ON 5°-TAPERED OR FLAT BASE RIMS

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (mm)	Section width (mm)
6.50 R 20	5.00	860	181
7.00 R 16	5.50	784	198
7.00 R 18	5.50	842	198
7.00 R 20	5.50	892	198
7.50 R 16 and/or A16 or 1-16	6.00	802	210
7.50 R 17 and/or A17 or 1-17	6.00	852	210
7.50 R 20 and/or A20 or 1-20	6.00	928	210
8.25 R 16 and/or B16 or 2-16	6.50	860	230
8.25 R 17 and/or B17 or 2-17	6.50	886	230
8.25 R 20 and/or B20 or 2-20	6.50	962	230
9.00 R 16 and/or C16 or 3-16	6.50	912	246
9.00 R 20 and/or C20 or 3-20	7.00	1 018	258
10.00 R 20 and/or D20 or 4-20	7.50	1 052	275
10.00 R 22 and/or D22 or 4-22	7.50	1 102	275
11.00 R 16	6.50	980	279
11.00 R 20 and/or E20 or 5-20	8.00	1 082	286
11.00 R 22 and/or E22 or 5-22	8.00	1 132	286
11.00 R 24 and/or E24 or 5-24	8.00	1 182	286
12.00 R 20 and/or F20 or 6-20	8.50	1 122	313
12.00 R 22	8.50	1 174	313
12.00 R 24 and/or F24 or 6-24	8.50	1 226	313
13.00 R 20	9.00	1 176	336
14.00 R 20 and/or G20 or 7-20	10.00	1 238	370
14.00 R 22	10.00	1 290	370
14.00 R 24	10.00	1 340	370

Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 2

## Commercial vehicle tyres

DIAGONAL  
NORMAL SECTION SIZES MOUNTED ON  
5°-TAPERED OR FLAT BASE RIMS

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
7.00-16	5.50	774	198
7.00-20	5.50	898	198
7.50-16 and/or A16 or 1-16	6.00	806	210
7.50-17 and/or A17 or 1-17	6.00	852	210
7.50-20 and/or A20 or 1-20	6.00	928	213
8.25-16 and/or B16 or 2-16	6.50	860	234
8.25-17 and/or B17 or 2-17	6.50	895	234
8.25-20 and/or B20 or 2-20	6.50	970	234
9.00-16	6.50	900	252
9.00-20 and/or C20 or 3-20	7.00	1 012	256
9.00-24 and/or C24 or 3-24	7.00	1 114	256
10.00-20 and/or D20 or 4-20	7.50	1 050	275
10.00-22 and/or D22 or 4-22	7.50	1 102	275
11.00-20 and/or E20 or 5-20	8.00	1 080	291
11.00-22 and/or E22 or 5-22	8.00	1 130	291
11.00-24 and/or E24 or 5-24	8.00	1 180	291
12.00-18	8.50	1 070	312
12.00-20 and/or F20 or 6-20	8.50	1 120	312
12.00-22 and/or F22 or 6-22	8.50	1 172	312
12.00-24 and/or F24 or 6-24	8.50	1 220	312
13.00-20	9.00	1 170	342
14.00-20 and/or G20 or 7-20	10.00	1 238	375
14.00-22 and/or G22 or 7-22	10.00	1 290	375
14.00-24 and/or G24 or 7-24	10.00	1 340	375
15.00-20	11.25	1 295	412
16.00-20	13.00	1 370	446

Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 3

## Commercial vehicle tyres

RADIAL  
NORMAL SECTION SIZES  
MOUNTED ON 15°-TAPERED RIMS  
(DROP-CENTRE)

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
8 R 17.5	6.00	784	208
8.5 R 17.5	6.00	802	215
9 R 17.5	6.75	820	230
9.5 R 17.5	6.75	842	240
10 R 17.5	7.50	858	254
11 R 17.5	8.25	900	279
7 R 19.5	5.25	800	185
8 R 19.5	6.00	856	208
8 R 22.5	6.00	936	208
9 R 19.5	6.75	894	230
9 R 22.5	6.75	970	230
9.5 R 19.5	6.75	916	240
10 R 19.5	7.50	936	254
10 R 22.5	7.50	1 020	254
11 R 19.5	8.25	970	279
11 R 22.5	8.25	1 050	279
11 R 24.5	8.25	1 100	279
12 R 19.5	9.00	1 008	300
12 R 22.5	9.00	1 084	300
13 R 22.5	9.75	1 124	320

TABLE 4

DIAGONAL  
NORMAL SECTION SIZES  
MOUNTED ON 15°-TAPERED RIMS  
(DROP-CENTRE)

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
8-19.5	6.00	856	208
9-19.5	6.75	894	230
9-22.5	6.75	970	230
10-22.5	7.50	1 020	254
11-22.5	8.25	1 054	279
11-24.5	8.25	1 100	279
12-22.5	9.00	1 084	300

*Tolerance:* see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 5

## Commercial vehicle tyres

RADIAL  
 'WIDE BASE' SIZES MOUNTED ON 15°-TAPERED RIMS  
 (DROP-CENTRE)

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
14 R 19.5	10.50	962	349
15 R 19.5	11.75	998	387
15 R 22.5	11.75	1 074	387
16.5 R 19.5	13.00	1 046	425
16.5 R 22.5	13.00	1 122	425
18 R 19.5	14.00	1 082	457
18 R 22.5	14.00	1 158	457
19.5 R 19.5	15.00	1 134	495
21 R 22.5	16.50	1 246	540

TABLE 6

DIAGONAL  
 'WIDE BASE' SIZES MOUNTED ON 15°-TAPERED RIMS  
 (DROP-CENTRE)

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
15 -19.5	11.75	1 004	387
15 -22.5	11.75	1 080	387
16.5-19.5	13.00	1 052	425
16.5-22.5	13.00	1 128	425
18 -19.5	14.00	1 080	457
18 -22.5	14.00	1 156	457
19.5-19.5	15.00	1 138	495
21 -22.5	16.50	1 246	540

*Tolerances:* see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 7

## Commercial vehicle tyres

## RADIAL

## '80' SERIES MOUNTED ON 5° TAPERED OR FLAT-BASE RIMS

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
12/80 R 20	8.50	1 008	305
13/80 R 20	9.00	1 048	326
14/80 R 20	10.00	1 090	350
14/80 R 24	10.00	1 192	350
14.75/80 R 20	10.00	1 124	370
15.5 /80 R 20	10.00	1 158	384

TABLE 8

## RADIAL

## '70' SERIES MOUNTED ON 15° TAPERED RIMS (DROP-CENTRE)

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
9/70 R 22.5	6.75	892	229
10/70 R 22.5	7.50	928	254
11/70 R 22.5	8.25	962	279
12/70 R 22.5	9.00	999	305
13/70 R 22.5	9.75	1 033	305

TABLE 9

## RADIAL

## '80' SERIES MOUNTED ON 15° TAPERED RIMS (DROP-CENTRE)

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
12/80 R 22.5	9.00	1 046	305

Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.



TABLE 10

## Commercial vehicle tyres

RADIAL  
TYRES FOR LIGHT COMMERCIAL VEHICLES MOUNTED ON RIM OF  
16" DIAMETER AND OVER

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
6.00 R 16 C	4.50	728	170
6.00 R 18 C	4.00	782	165
6.50 R 16 C	4.50	742	176
6.50 R 17 C	4.50	772	176
6.50 R 17 LC	4.50	726	166
6.50 R 20 C	5.00	860	181
7.00 R 16 C	5.50	778	198
7.50 R 16 C	6.00	802	210
7.50 R 17 C	6.00	852	210

TABLE 11

DIAGONAL  
TYRES FOR LIGHT COMMERCIAL VEHICLES MOUNTED ON RIM OF  
16" DIAMETER AND OVER

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
6.00-16 C	4.50	730	170
6.00-18 C	4.00	786	165
6.00-20 C	5.00	842	172
6.50-20 C	4.50	748	176
6.50-17 LC	4.50	726	166
6.50-20 C	5.00	870	181
7.00-16 C	5.50	778	198
7.00-18 C	5.50	848	198
7.00-20 C	5.50	898	198
7.50-16 C	6.00	806	210
7.50-17 C	6.00	852	210
8.25-16 C	6.50	860	234
8.90-16 C	6.50	885	250
9.00-16 C	6.50	900	252

Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 12

## Commercial vehicle tyres

RADIAL  
 TYRES FOR LIGHT COMMERCIAL VEHICLES MOUNTED ON 5° TAPERED RIMS  
 Rim diameter 12" — 15"  
 (DROP-CENTRE)

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
'Super balloon' series			
5.60 R 12 C	4.00	570	150
6.40 R 13 C	5.00	648	172
6.70 R 13 C	5.00	660	180
6.70 R 14 C	5.00	688	180
6.70 R 15 C	5.00	712	180
7.00 R 15 C	5.50	744	195
'Low section' series			
6.50 R 14 C	5.00	640	170
7.00 R 14 C	5.00	650	180
7.50 R 14 C	5.50	686	195

TYRES FOR LIGHT COMMERCIAL VEHICLES  
 MOUNTED ON 15° TAPERED RIMS  
 (DROP-CENTRE)

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
7 R 17.5 C	5.25	752	185
8 R 17.5 C	6.00	784	208

*Tolerances:* see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 13

## Commercial vehicle tyres

DIAGONAL  
TYRES FOR LIGHT COMMERCIAL VEHICLES  
MOUNTED ON 5° TAPERED RIMS  
(DROP CENTRE)  
Rim diameter 12" — 15"

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
'Super balloon' series			
5.20-12 C	3.50	560	136
5.60-12 C	4.00	572	148
5.60-13 C	4.00	598	148
5.90-13 C	4.50	616	158
5.90-14 C	4.50	642	158
5.90-15 C	4.50	668	158
6.40-13 C	5.00	640	172
6.40-14 C	5.00	666	172
6.40-15 C	5.00	692	172
6.40-16 C	4.50	748	172
6.70-13 C	5.00	662	180
6.70-14 C	5.00	688	180
6.70-15 C	5.00	714	180
'Low section' series			
5.50-12 C	4.00	552	142
6.00-12 C	4.50	574	158
6.00-14 C	4.50	626	158
6.50-14 C	5.00	650	172
6.50-15 C	5.00	676	172
7.00-14 C	5.00	668	182
7.50-14 C	5.50	692	192
'Balloon' series			
7.00-15 C	5.50	752	198
7.50-15 C	6.00	780	210
'Millimetric' series			
125-12 C	3.50	514	127
165-15 C	4.50	652	167
185-14 C	5.50	654	188
195-14 C	5.50	670	198
245-16 C	7.00	798	248
17-15 C or	5.00	678	178
17-380 C	5.00	678	178
17-400 C	19 × 400 mm	702	186
19-400 C	19 × 400 mm	736	200
21-400 C	19 × 400 mm	772	216

Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 14

## Commercial vehicle tyres

## RADIAL

TYRES FOR LIGHT COMMERCIAL  
VEHICLES MOUNTED ON 5° TAPERED RIMS (DROP-CENTRE) RIMS

## 'Millimetric' series

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
125 R 12 C	3.50	510	127
125 R 13 C	3.50	536	127
125 R 14 C	3.00	562	127
125 R 15 C	3.50	588	127
135 R 12 C	4.00	522	137
135 R 13 C	4.00	548	137
135 R 14 C	4.00	574	137
135 R 15 C	4.00	600	137
145 R 10 C	4.00	492	147
145 R 12 C	4.00	542	147
145 R 13 C	4.00	566	147
145 R 14 C	4.00	590	147
145 R 15 C	4.00	616	147
155 R 12 C	4.50	550	157
155 R 13 C	4.50	578	157
155 R 14 C	4.50	604	157
155 R 15 C	4.50	630	157
155 R 16 C	4.50	656	157
165 R 13 C	4.50	596	167
165 R 14 C	4.50	622	167
165 R 15 C	4.50	646	167
165 R 16 C	4.50	672	167
175 R 13 C	5.00	608	178
175 R 14 C	5.00	634	178
175 R 15 C	5.00	660	178
175 R 16 C	5.00	684	178
185 R 13 C	5.50	624	188
185 R 14 C	5.50	650	188
185 R 15 C	5.50	674	188
185 R 16 C	5.50	700	188
195 R 14 C	5.50	666	198
195 R 15 C	5.50	690	198
195 R 16 C	5.50	716	198
205 R 14 C	6.00	686	208
205 R 15 C	6.00	710	208
205 R 16 C	6.00	736	208
215 R 14 C	6.00	700	218
215 R 15 C	6.00	724	218
215 R 16 C	6.00	750	218
225 R 14 C	6.50	714	228
225 R 15 C	6.50	738	228
225 R 16 C	6.50	764	228
235 R 14 C	6.50	728	238
235 R 15 C	6.50	752	238
235 R 16 C	6.50	778	238
17 R 15 C or	5.00	678	178
17 R 380 C	5.00	678	178
17 R 400 C	19 × 400 mm	698	186
19 R 400 C	19 × 400 mm	728	200

Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 15

## Commercial vehicle tyres

## DIAGONAL

WIDE-BASE TYRES FOR MULTIPURPOSE TRUCKS ON HIGHWAY, OFF-THE-ROAD  
AND AGRICULTURAL SERVICES

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
10.5-18 MPT	9	905	270
10.5-20 MPT	9	955	270
12.5-18 MPT	11	990	325
12.5-20 MPT	11	1 040	325
14.5-20 MPT	11	1 095	355
14.5-24 MPT	11	1 195	355
7.50-18 MPT	5.50	885	208

TABLE 16

## RADIAL

WIDE-BASE TYRES FOR MULTIPURPOSE TRUCKS ON HIGHWAY, OFF-THE-ROAD  
AND AGRICULTURAL SERVICES

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
10.5 R 20 MPT	9	955	276
12.5 R 20 MPT	11	1 040	330
14.5 R 20 MPT	11	1 095	362
14.5 R 24 MPT	11	1 195	362

Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 17

## Commercial vehicle tyres

## RADIAL

## 'FREE-ROLLING' TYRES IN HIGHWAY SERVICE

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
5.00 R 8	3.00	467	132
6.00 R 9	4.00	540	160
7.00 R 12	5.00	672	192
7.50 R 15	6.00	772	212
8.25 R 15	6.50	836	234
10.00 R 15	7.50	918	275

TABLE 18

## DIAGONAL

## 'FREE-ROLLING' TYRES IN HIGHWAY SERVICE

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
6.00- 9	4.00	540	160
7.00-12	5.00	672	192
7.00-15	5.00	746	192
7.50-15	6.00	772	212
8.25-15	6.50	836	234
10.00-15	7.50	918	275
200 -15	6.50	730	205

TABLE 19

## DIAGONAL

## '75' SERIES MOUNTED ON 15° TAPERED RIMS

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
7.25/75-16.5 or 7.25-16.5	5.25	695	182
8.00/75-16.5 or 8.00-16.5	6.00	724	203
8.75/75-16.5 or 8.75-16.5	6.75	752	224
9.50/75-16.5 or 9.50-16.5	7.50	781	245

Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 20

## Commercial vehicle tyres

## DIAGONAL

## DIAGONAL AND RADIAL TYRES MOUNTED ON FLAT BASE OR DIVIDED RIMS

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
3.00-4	2.10	255	81
4.00-4	2.50	312	107
4.00-8	2.50	414	107
5.00-8	3.00	467	132
6.50-10	5.00	588	177
7.00-9	5.00	562	174
7.50-10	5.50	645	207
8.25-10	6.50	698	240
10.50-13	6.00	889	275
10.50-16	6.00	965	275
11.00-16	6.00	952	272
14.00-16	10.00	1 139	375
15 x 4.5-2	3.25	385	122
16 x 6-8	4.33	425	152
18 x 7-8 <sup>(1)</sup>	4.33	462	173
21 x 4	2.32	565	113
21 x 8-9	6.00	535	200
23 x 9-10	6.50	595	225
22 x 4.5	3.11	595	132
23 x 5	3.75	635	155
25 x 6	3.75	680	170
27 x 6	4.33	758	188
27 x 10-12	8.00	690	255
28 x 6	3.75	760	170
28 x 9-15	7.00	707	216
(8.15-15)	7.00	707	216
29 x 7	5.00	809	211
29 x 8	6.00	809	243
9.00-15	6.00	840	249
2.50-15	7.50	735	250
3.00-15	8.00	840	300

<sup>(1)</sup> Also marked 18 x 7.

## RADIAL

Tyre size designation	Measuring-rim width (in inches)	Outer diameter (in mm)	Section width (in mm)
6.50 R 10	5.00	588	177
7.00 R 15	5.50	746	197
7.50 R 10	5.50	645	207
15 x 4.5 R 8	3.25	385	122
16 x 6 R 8	4.33	435	152
18 x 7 R 8	4.33	462	173
560 x 165 R 11	5.00	560	175
680 x 180 R 15	5.00	680	189

Tolerances: see sections 6.1.4 and 6.1.5 of Annex II.

TABLE 21

Tyres for trucks, buses, trailers and multipurpose passenger vehicles in normal highway service  
 DIAGONAL AND RADIAL  
 TYRES MOUNTED ON 5° DROP-CENTRE OR SEMI-DROP-CENTRE RIMS

Tyre size designation		Measuring-rim width (in inches)	Section width (in mm) <sup>(1)</sup>	Outer diameter	
Diagonal	Radial			Highway tread (in mm) <sup>(2)</sup>	Mud and snow (in mm) <sup>(2)</sup>
6.00-16 LT	6.00 R 16 LT	4.50	173	732	743
6.50-16 LT	6.50 R 16 LT	4.50	182	755	767
6.70-15 LT	6.70 R 15 LT	5.00	191	722	733
7.00-13 LT	7.00 R 13 LT	5.00	187	647	658
7.00-14 LT	7.00 R 14 LT	5.00	187	670	681
7.00-15 LT	7.00 R 15 LT	5.50	202	752	763
7.00-16 LT	7.00 R 16 LT	5.50	202	778	788
7.10-15 LT	7.10 R 15 LT	5.00	199	738	749
7.50-15 LT	7.50 R 15 LT	6.00	220	782	794
7.50-16 LT	7.50 R 16 LT	6.00	220	808	819
8.25-16 LT	8.25 R 16 LT	6.50	241	859	869
9.00-16 LT	9.00 R 16 LT	6.50	257	890	903
D78-14 LT	DR 78-14 LT	5.00	192	661	672
E78-14 LT	ER 78-14 LT	5.50	199	667	678
C78-15 LT	CR 78-15 LT	5.00	187	672	683
G78-15 LT	GR 78-15 LT	6.00	212	711	722
H78-15 LT	HR 78-15 LT	6.00	222	727	739
L78-15 LT	LR 78-15 LT	6.50	236	749	760
F78-16 LT	FR 78-16 LT	5.50	202	721	732
H78-16 LT	HR 78-16 LT	6.00	222	753	764
L78-16 LT	LR 78-16 LT	6.50	236	775	786

<sup>(1)</sup> Overall tyre widths may exceed the above section widths by 8%.

<sup>(2)</sup> Tolerance + 8% of the difference between the above outer diameter and the nominal rim diameters.



TABLE 22

Tyres for trucks, buses, trailers and multipurpose passenger vehicles in normal highway service

DIAGONAL AND RADIAL  
TYRES MOUNTED ON 15° DROP-CENTRE RIMS

TABLE 22.1

Tyre size designation		Measuring-rim width (inches)	Section width (mm) <sup>(1)</sup>	Outer diameter	
Diagonal	Radial			Highway tread (mm) <sup>(2)</sup>	Mud and snow (mm) <sup>(2)</sup>
7-14.5 LT	—	6.00	185	677	—
8-14.5 LT	—	6.00	203	707	—
9-14.5 LT	—	7.00	241	711	—
7-17.5 LT	7 R 17.5 LT	5.25	189	758	769
8-17.5 LT	8 R 17.5 LT	5.25	199	788	799

<sup>(1)</sup> Overall tyre widths may exceed the above section widths by 8%.<sup>(2)</sup> Tolerance + 8% of the difference between the above outer diameters and the nominal rim diameters.

TABLE 22.2

Tyre size designation		Measuring-rim width (inches)	Section width (mm) <sup>(1)</sup>	Outer diameter	
Diagonal	Radial			Highway tread (mm) <sup>(2)</sup>	Mud and snow (mm) <sup>(2)</sup>
8.00-16.5 LT	8.00 R 16.5 LT	6.00	203	720	730
8.75-16.5 LT	8.75 R 16.5 LT	6.75	222	748	759
9.50-16.5 LT	9.50 R 16.5 LT	6.75	241	776	787
10-16.5 LT	10 R 16.5 LT	8.25	264	762	773
10-17.5 LT	10 R 17.5 LT	8.25	264	787	798
12-16.5 LT	12 R 16.5 LT	9.75	307	818	831
30 × 9.50-16.5 LT	30 × 9.50 R 16.5 LT	7.50	240	750	761
31 × 10.50-16.5 LT	31 × 10.50 R 16.5 LT	8.25	266	775	787
33 × 10.50-16.5 LT	33 × 12.50 R 16.5 LT	9.75	315	826	838
37 × 10.50-16.5 LT	37 × 14.50 R 16.5 LT	11.25	365	928	939

<sup>(1)</sup> Overall tyre widths may exceed the above section widths by 7%.<sup>(2)</sup> Tolerance + 8% of the difference between the above outer diameter and the nominal rim diameters.

TABLE 23

Tyres for trucks, buses, trailers in normal highway service  
DIAGONAL AND RADIAL  
TYRES MOUNTED ON 15° DROP-CENTRE RIMS

Tyre size designation		Measuring-rim width (inches)	Section width (mm) <sup>(1)</sup>	Outer diameter		
Diagonal	Radial			Highway tread (mm) <sup>(2)</sup>	Heavy tread (mm) <sup>(2)</sup>	Mud and snow (mm) <sup>(2)</sup>
Normal-section tyres						
7 -22.5	7 R 22.5	5.25	178	878	—	894
8 -19.5	8 R 19.5	6.00	203	859	—	876
8 -22.5	8 R 22.5	6.00	203	935	—	952
9 -22.5	9 R 22.5	6.75	229	974	982	992
10 -22.5	10 R 22.5	7.50	254	1 019	1 031	1 038
11 -22.5	11 R 22.5	8.25	279	1 054	1 067	1 037
11 -24.5	11 R 24.5	8.25	279	1 104	1 118	1 123
12 -22.5	12 R 22.5	9.00	300	1 085	1 099	1 104
12 -24.5	12 R 24.5	9.00	300	1 135	1 150	1 155
12.5-22.5	12.5 R 22.5	9.00	302	1 085	1 099	1 104
12.5-22.5	12.5 R 24.5	9.00	302	1 135	1 150	1 155
Wide-base tyres						
14 -17.5	14 R 17.5	10.50	349	907	—	921
15 -19.5	15 R 19.5	11.75	389	1 005	—	1 019
15 -22.5	15 R 22.5	11.75	389	1 082	—	1 095
16.5-19.5	16.5 R 19.5	13.00	425	1 052	—	1 068
16.5-22.5	16.5 R 22.5	13.00	425	1 128	—	1 144
18 -19.5	18 R 19.5	14.00	457	1 080	—	1 096
18 -22.5	18 R 22.5	14.00	457	1 158	—	1 172
19.5-19.5	19.5 R 19.5	15.00	495	1 138	—	1 156

<sup>(1)</sup> Overall tyre widths may exceed the above section widths by 6%.

<sup>(2)</sup> Tolerance + 5% of the difference between the above outer diameter and the nominal rim diameters.

TABLE 24

Tyres for trucks, buses, trailers in normal highway service  
DIAGONAL AND RADIAL  
TYRES MOUNTED ON 5° DROP-CENTRE RIMS

Tyre size designation		Measuring-rim width (inches)	Section width (mm) <sup>(1)</sup>	Outer diameter		
Diagonal	Radial			Highway tread (mm) <sup>(2)</sup>	Heavy tread (mm) <sup>(2)</sup>	Mud and snow (mm) <sup>(2)</sup>
—	8R14LT	7.00	216	667	—	—
9-15LT	—	8.00	254	744	755	—
10-15LT	10R15LT	8.00	264	773	783	—
10-16LT	—	8.00	264	798	809	—
11-14LT	—	8.00	279	752	763	—
11-15LT	11R15LT	8.00	279	777	788	—
11-16LT	—	8.00	279	803	813	—
12-15LT	—	10.00	318	823	834	—
—	9R15LT	8.00	254	744	755	752
24 × 7.50-13LT	24 × 7.50R13LT	6.00	191	597	609	604
27 × 8.50-14LT	27 × 8.50-14LT	7.00	218	674	685	680
28 × 8.50-15LT	28 × 8.50-15LT	7.00	218	699	711	705
29 × 9.50-15LT	29 × 9.50-15LT	7.50	240	724	736	731
30 × 9.50-15LT	30 × 9.50-15LT	7.50	240	750	761	756
31 × 10.50-15LT	31 × 10.50-15LT	8.50	268	775	787	781
31 × 11.50-15LT	31 × 11.50-15LT	9.00	290	775	787	781
32 × 11.50-15LT	32 × 11.50-15LT	9.00	290	801	812	807
33 × 12.50-15LT	33 × 12.50-15LT	10.00	318	826	838	832
35 × 12.50-15LT	35 × 12.50-15LT	10.00	318	877	888	883
37 × 12.50-15LT	37 × 12.50-15LT	10.00	318	928	939	934
31 × 13.50-15LT	31 × 13.50-15LT	11.00	345	775	787	781
37 × 14.50-15LT	37 × 14.50-15LT	12.00	372	928	939	934
31 × 15.50-15LT	31 × 15.50-15LT	12.00	390	775	787	781

<sup>(1)</sup> Overall tyre widths may exceed the above section widths by 6%.

<sup>(2)</sup> Tolerance + 6% of the difference between the above outer diameter and the nominal rim diameters.

TABLE 25

Tyres for trucks, buses and trailers in normal highway service

DIAGONAL AND RADIAL  
TYRES MOUNTED ON MULTI-PIECE BYMS

Tyre size designation		Measuring-rim width (inches)	Section width (mm) <sup>(1)</sup>	Outer diameter		
Diagonal	Radial			Highway tread (mm) <sup>(2)</sup>	Heavy tread (mm) <sup>(2)</sup>	Mud and snow (mm) <sup>(2)</sup>
6.50-20	6.50R20	5.00	184	878	—	1 049
7.00-15TR	7.00R15TR	5.50	199	777	—	962
7.00-17	7.00R17	5.50	199	828	—	843
7.00-18	7.00R18	5.50	199	853	—	868
7.00-20	7.00R20	5.50	199	904	—	919
7.50-15TR	7.50R15TR	6.00	215	808	—	825
7.50-17	7.50R17	6.00	215	859	—	876
7.50-18	7.50R18	6.00	215	884	—	981
7.50-20	7.50R20	6.00	215	935	—	952
8.25-15TR	8.25R15TR	6.50	236	847	855	865
8.25-17	8.25R17	6.50	236	898	906	915
8.25-20	8.25R20	6.50	236	974	982	992
9.00-15TR	9.00R15TR	7.00	259	891	904	911
9.00-20	9.00R20	7.00	259	1 019	1 031	1 038
10.00-15TR	10.00R15TR	7.50	278	927	940	946
10.00-20	10.00R20	7.50	278	1 054	1 067	1 073
10.00-22	10.50R22	7.50	278	1 104	1 118	1 123
11.00-15TR	11.00R15TR	8.00	293	958	972	977
11.00-20	11.00R20	8.00	293	1 085	1 099	1 104
11.00-22	11.00R22	8.00	293	1 135	1 150	1 155
11.00-24	11.00R24	8.00	293	1 186	1 201	1 206
11.50-20	11.50R20	8.00	296	1 085	1 099	1 104
11.50-22	11.50R22	8.00	296	1 135	1 150	1 155
12.50-20	12.00R20	8.50	315	1 125	—	1 146
12.50-24	12.00R24	8.50	315	1 226	—	1 247

<sup>(1)</sup> Overall tyre widths may exceed the above section widths by 6%.<sup>(2)</sup> Tolerance + 6% of the difference between the above outer diameter and the nominal rim diameters.

TABLE 26

Tyres for trucks and trailers in highway service at restricted speeds

DIAGONAL AND RADIAL  
TYRES MOUNTED ON MULTI-PIECE RIMS

Tyre size designation		Measuring-rim width (inches)	Section width (mm) <sup>(1)</sup>	Outer diameter	
Diagonal	Radial			Highway tread (mm) <sup>(2)</sup>	Mud and snow (mm) <sup>(2)</sup>
13.00-20	13.00R20	9.00	340	1 177	1 200
14.00-20	14.00R20	10.00	375	1 241	1 266
14.00-24	14.00R24	10.00	375	1 343	1 368

<sup>(1)</sup> Overall tyre widths may exceed the above section widths by 6%.<sup>(2)</sup> Tolerance + 6% of the difference between the above outer diameter and the nominal rim diameters.

TABLE 27

Tyres for mobile homes in highway service

## DIAGONAL

Tyre size designation	Measuring-rim width (inches)	Section width (mm) <sup>(1)</sup>	Outer diameter (mm) <sup>(2)</sup>
Tyres mounted on 15° drop-centre rims			
7-14.5 MH	6.00	185	677
8-14.5 MH	6.00	203	707
9-14.5 MH	7.00	241	711
Tyres mounted on 5° drop-centre and semi-drop-centre rims			
7.00-15 MH	5.50	202	752

<sup>(1)</sup> Overall tyre widths may exceed the above section widths by 8%.<sup>(2)</sup> Tolerance + 8% of the difference between the above outer diameter and the nominal rim diameters.

TABLE 28

## Mining and logging tyres in intermittent highway service

## DIAGONAL

Tyre size designation	Measuring-rim width (inches)	Section width (mm) <sup>(1)</sup>	Outer diameter	
			Traction tread (mm) <sup>(2)</sup>	Extra tread (mm) <sup>(2)</sup>
Tyres mounted on 15° drop-centre rims				
7.00-20 ML	5.50	199	919	—
7.50-20 ML	6.00	215	952	—
8.25-20 ML	6.50	236	992	—
9.00-20 ML	7.00	259	1 038	1 063
10.00-20 ML	7.50	278	1 073	1 099
10.00-22 ML	7.50	278	1 123	1 150
10.00-20 ML	7.50	278	1 174	1 200
11.00-20 ML	8.00	293	1 104	1 131
11.00-22 ML	8.00	293	1 155	1 182
11.00-24 ML	8.00	293	1 206	1 233
12.00-20 ML	8.50	315	1 146	1 173
12.00-24 ML	8.50	315	1 247	1 275
13.00-20 ML	9.00	340	1 200	—
13.00-24 ML	9.00	340	1 302	—
14.00-20 ML	10.00	375	1 266	—
14.00-24 ML	10.00	375	1 368	—
Tyres mounted on full-tapered bead seat rims				
11.00-25 ML	8.50	298	1 206	1 233
12.00-21 ML	8.50	315	1 146	1 175
12.00-25 ML	8.50	315	1 247	1 275
13.00-25 ML	10.00	351	1 302	—
14.00-21 ML	10.00	375	1 266	—
14.00-25 ML	10.00	375	1 368	—
Tyres mounted on 15° drop-centre rims				
9-22.5 ML	6.75	229	992	—
10-22.5 ML	7.50	254	1 038	—
11-22.5 ML	8.25	279	1 073	—
11-24.5 ML	8.25	279	1 123	—
12-22.5 ML	9.00	300	1 104	—
Tyres mounted on 15° drop-centre rims				
14-17.5 ML	10.50	349	921	—
15-19.5 ML	11.75	389	1 019	—
15-22.5 ML	11.75	389	1 095	—
16.5-19.5 ML	13.00	425	1 068	—
16.5-22.5 ML	13.00	425	1 144	—
18-19.5 ML	14.00	457	1 096	—
18-22.5 ML	14.00	457	1 172	—
19.5-19.5 ML	15.00	495	1 156	—
23-23.5 ML	17.00	584	1 320	—

<sup>(1)</sup> Overall tyre widths may exceed the above section widths by 8%.

<sup>(2)</sup> Tolerance + 6% of the difference between the above outer diameter and the nominal rim diameters.

## Appendix 6

## METHOD OF MEASURING TYRE DIMENSIONS

(see Annex II section 6.1.3)

## PART A: PASSENGER CAR TYRES

- 1.1. The tyre is mounted on the measuring rim specified by the manufacturer pursuant to section 6.11 of Annex I, Appendix 1.
- 1.2. The pressure in the tyre is then adjusted as follows:
- 1.2.1. in standard bias — belted tyres to 1,7 bar;
- 1.2.2. in diagonal (bias-ply) tyres to the pressure shown below (bar):

Ply-rating	Speed category		
	L, M, N	P, Q, R, S	T, U, H, V
4	1,7	2,0	—
6	2,1	2,4	2,6
8	2,5	2,8	3,0

- 1.2.3. in standard radial tyres to 1,8 bar,
- 1.2.4. in reinforced tyres to 2,3 bar, and
- 1.2.5. in T-type temporary-use spare tyres: to 4,2 bar.
2. The tyre, mounted on its rim, is conditioned at the ambient room temperature for not less than 24 hours, with the exception referred to in section 6.2.3 of Annex II.
3. The pressure is readjusted to that specified in section 1.2.
4. The overall width is measured by caliper at six equally-spaced points, account being taken of the thickness of the protective ribs or bands. The highest measurement so obtained is taken as the overall width.
5. The outer diameter is determined by measuring the maximum circumference and dividing the figure so obtained by  $\pi$  (3,1416).

## PART B: COMMERCIAL VEHICLE TYRES

1. The tyre is mounted on the measuring rim specified by the manufacturer pursuant to section 6.11 of Appendix 1 to Annex I and is inflated to a pressure specified by the manufacturer pursuant to section 6.12 of Annex I, Appendix 1.
2. The tyre fitted on its rim is conditioned to the ambient temperature of the laboratory for at least 24 hours.
3. The pressure is readjusted to the value specified in section 1.
4. The overall width is measured by caliper at six equally-spaced points, account being taken of the thickness of the protective ribs or bands. The highest measurement so obtained is taken as the overall width.
5. The outer diameter is determined by measuring the maximum circumference and dividing the figure so obtained by  $\pi$  (3,1416).

## Appendix 7

LOAD/SPEED TEST-PROCEDURE <sup>(1)</sup>

(see Annex II, section 6.2)

## PART A: PASSENGER CAR TYRES

## 1. Preparing the tyre

1.1. A new tyre is mounted on the test rim specified by the manufacturer pursuant to section 6.11 of Annex I, Appendix 1.

1.2. It is inflated to the appropriate pressure as given in the table below:

Test pressure (bar)

Speed category	Diagonal (bias-ply) tyres			Radial tyres		Bias-belted tyres
	Ply-rating			Standard	Reinforced	Standard
	4	6	8			
L, M, N	2,3	2,7	3,0	2,4	—	—
P, Q, R, S	2,6	3,0	3,3	2,6	3,0	2,6
T, U, H	2,8	3,2	3,5	2,8	3,2	2,8
V	3,0	3,4	3,7	3,0	—	—

T-type temporary use spare tyres: to 4,2 bars.

1.3. The manufacturer may request, giving reasons, the use of an inflation pressure differing from those under section 1.2. In such a case the tyre is inflated to that pressure (see section 6.14 of Appendix 1 to Annex I).

1.4. The tyre-and-wheel assembly is conditioned at test-room temperature for not less than three hours.

1.5. The tyre pressure is readjusted to that specified in section 1.2 or 1.3.

## 2. Carrying out the test

2.1. The tyre-and-wheel assembly is mounted on a test axle and pressed against the outer face of a smooth wheel 1,70 m  $\pm$  1% or 2 m  $\pm$  1% in diameter.

2.2. Apply to the test axle a load equal to 80% of:

2.2.1. the maximum load rating equated to the load capacity index for tyres with speed symbols L to H inclusive;

2.2.2. the maximum load rating associated with a maximum speed of 240 km/h for tyres with speed symbol 'V' (see section 2.31.2 of Annex II).

2.3. Throughout the test the tyre pressure must not be corrected and the test load must be kept constant.

2.4. During the test the temperature in the test-room must be maintained at between 20 °C and 30 °C or at a higher temperature if the manufacturer agrees.

2.5. The test is carried out without interruption in conformity with the following particulars:

2.5.1. time taken to pass from zero speed to initial test speed: 10 minutes;

<sup>(1)</sup> In the case of passenger car tyres intended for vehicles designed for a maximum speed greater than 240 km/h (Z rated tyres), until uniform test procedures have been agreed the manufacturer of the tyre must satisfy the technical service that his test procedure and results are acceptable.



- 2.5.2. initial test speed: prescribed maximum speed for the type of tyre, less 40 km/h in the case of the smooth wheel having  $1,70 \text{ m} \pm 1\%$  in diameter or less 30 km/h in the case of the smooth wheel having  $2 \text{ m} \pm 1\%$  in diameter;
- 2.5.3. successive speed increments: 10 km/h;
- 2.5.4. duration of test at each speed step except the last: 10 minutes;
- 2.5.5. duration of test at last speed step: 20 minutes;
- 2.5.6. maximum test speed: prescribed maximum speed for the type of tyre, less 10 km/h in the case of the smooth wheel having  $1,7 \text{ m} \pm 1\%$  in diameter or equal to prescribed maximum speed in the case of the smooth wheel having  $2 \text{ m} \pm 1\%$  in diameter.

### 3. Equivalent test methods

If a method other than that described in section 2 is used, its equivalence must be demonstrated.

## PART B: COMMERCIAL VEHICLE TYRES (1)

### 1. Preparing the tyre

- 1.1. Mount a new tyre on the test rim specified by the manufacturer pursuant to section 6.11 of Appendix 1 to Annex I.
- 1.2. Use a new inner tube or combination of inner tube, valve and flap (as required) when testing tyres with inner tubes.
- 1.3. Inflate the tyre to the pressure corresponding to the pressure index specified by the tyre manufacturer, pursuant to section 6.14 of Appendix 1 to Annex I.
- 1.4. Condition the tyre and wheel assembly at test room temperature for not less than three hours.
- 1.5. Readjust the tyre pressure to that specified in section 1.3.

### 2. Test procedure

- 2.1. Mount the tyre and wheel assembly on the test axle and press it against the outer face of a smooth power-driven test drum  $1,70 \text{ m} \pm 1\%$  in diameter having a surface at least as wide as the tyre tread.
- 2.2. Apply to test axle a series of test loads expressed as a percentage of the load indicated in Appendix 2, opposite the load index moulded on the sidewall of the tyre, in accordance with the load/speed test programme shown in the Table below. When the tyre has load capacity indices for both single and twin utilization, the reference load for single utilization is taken as the basis for the test loads.
- 2.3. The tyre pressure must not be corrected throughout the test and the test load must be kept constant throughout each of the three test stages.
- 2.4. During the test the temperature in the test room must be maintained at between  $20\text{ }^{\circ}\text{C}$  and  $30\text{ }^{\circ}\text{C}$  or at a higher temperature if the manufacturer so agrees.
- 2.5. The load/speed test programme must be carried out without interruption.

### 3. Equivalent test methods

If a method other than that described in section 2 is used, its equivalence must be demonstrated.

(1) In the case of commercial vehicle tyres intended for vehicles designed for a maximum speed greater than 150 km/h, until uniform test procedures have been agreed the manufacturer of the tyre must satisfy the technical service that his test procedure and results are acceptable.

## LOAD/SPEED TEST PROGRAMME

Load index	Tyre speed category symbol	Test-drum speed (rev/min) <sup>(1)</sup>		Load placed on the wheel as a percentage of the load corresponding to the load index					
		Radial-ply tyre	Diagonal (bias-ply) tyre	7 h.	16 h.	24 h.			
122 or more	F	100	100	66 %	84 %	101 %			
	G	125	100						
	J	150	125						
	K	175	150						
	L	200	—						
	M	225	—						
121 or less	F	100	100	70 %	88 %	106 %			
	G	125	125						
	J	150	150						
	K	175	175						
	L	200	175				4 h.	6 h.	
							75 %	97 %	
	M	250	200				75 %	97 %	114 %
	N	275	—				75 %	97 %	114 %
	P	300	—				75 %	97 %	114 %

<sup>(1)</sup> 'Special-use' tyres (see section 2.1.3. of Annex II) should be tested at a speed equal to 85% of the test-drum speed prescribed above for equivalent normal tyres.

## Appendix 8

## VARIATION OF LOAD CAPACITY WITH SPEED

## Commercial-vehicle tyres

## RADIAL AND DIAGONAL

(see Annex II, sections 2.30, 2.31 and 6.2.4)

Speed (km/h)	Variation of load capacity (%)									
	All load indices				Load indices <sup>(1)</sup> ≥ 122		Load indices <sup>(1)</sup> ≤ 121			
	Speed category symbol				Speed category symbol		Speed category symbol			
	F	G	J	K	L	M	L	M	N	P <sup>(2)</sup>
0	+150	+150	+150	+150	+150	+150	+110	+110	+110	+110
5	+110	+110	+110	+110	+110	+110	+90	+90	+90	+90
10	+80	+80	+80	+80	+80	+80	+75	+75	+75	+75
15	+65	+65	+65	+65	+65	+65	+60	+60	+60	+60
20	+50	+50	+50	+50	+50	+50	+50	+50	+50	+50
25	+35	+35	+35	+35	+35	+35	+42	+42	+42	+42
30	+25	+25	+25	+25	+25	+25	+35	+35	+35	+35
35	+19	+19	+19	+19	+19	+19	+29	+29	+29	+29
40	+15	+15	+15	+15	+15	+15	+25	+25	+25	+25
45	+13	+13	+13	+13	+13	+13	+22	+22	+22	+22
50	+12	+12	+12	+12	+12	+12	+20	+20	+20	+20
55	+11	+11	+11	+11	+11	+11	+17,5	+17,5	+17,5	+17,5
60	+10	+10	+10	+10	+10	+10	+15,0	+15,0	+15,0	+15,0
65	+7,5	+8,5	+8,5	+8,5	+8,5	+8,5	+13,5	+13,5	+13,5	+13,5
70	+5,0	+7,0	+7,0	+7,0	+7,0	+7,0	+12,5	+12,5	+12,5	+12,5
75	+2,5	+5,5	+5,5	+5,5	+5,5	+5,5	+11,0	+11,0	+11,0	+11,0
80	0	+4,0	+4,0	+4,0	+4,0	+4,0	+10,0	+10,0	+10,0	+10,0
85	-3	+2,0	+3,0	+3,0	+3,0	+3,0	+8,5	+8,5	+8,5	+8,5
90	-6	0	+2,0	+2,0	+2,0	+2,0	+7,5	+7,5	+7,5	+7,5
95	-10	-2,5	+1,0	+1,0	+1,0	+1,0	+6,5	+6,5	+6,5	+6,5
100	-15	-5	0	0	0	0	+5,0	+5,0	+5,0	+5,0
105		-8	-2	0	0	0	+3,75	+3,75	+3,75	+3,75
110		-13	-4	0	0	0	+2,5	+2,5	+2,5	+2,5
115			-7	-3	0	0	+1,25	+1,25	+1,25	+1,25
120			-12	-7	0	0	0	0	0	0
125						0	-2,5	0	0	0
130						0	-5	0	0	0
135							-7,5	-2,5	0	0
140							-10	-5	0	0
145								-7,5	-2,5	0
150								-10	-5	0
155									-7,5	-2,5
160									-10	-5

<sup>(1)</sup> The load capacity indices refer to single operations (see section 2.28.2 of Annex II).<sup>(2)</sup> Load variations are not allowed above 160 km/h. For speed category symbols Q and above, the speed category corresponding to the speed category symbol (see section 2.29.3 of Annex II) specifies the maximum speed permitted for the tyre.

## ANNEX III

## ADMINISTRATIVE PROVISIONS FOR THE TYPE-APPROVAL OF VEHICLES WITH REGARD TO THE FITTING OF THEIR TYRES

## 1. APPLICATION FOR THE EEC TYPE-APPROVAL OF A VEHICLE TYPE

- 1.1. The application for EEC type-approval of a vehicle type with regard to its tyres is submitted by the vehicle manufacturer or by his authorized representative.
- 1.2. It is accompanied, in triplicate, by a description of the vehicle type and of its tyres in terms of their tyre-size designation, speed category and load-capacity index, including any temporary-use spare unit(s), with which it may be fitted as described in the information document in Appendix 1.
- 1.3. A vehicle representative of the vehicle type to be approved must be submitted to the technical service responsible for conducting the approval tests.
- 1.4. The vehicle manufacturer or his representative may apply for the EEC vehicle type-approval to be extended to include tyres of additional tyre-size designations, speed categories or load-capacity indices or additional temporary-use spare unit(s).

## 2. EEC TYPE-APPROVAL OF A VEHICLE

- 2.1. EEC type-approval is granted and an EEC type-approval number issued in respect of any vehicle type submitted in accordance with section 1 which satisfied the requirements of this Directive.
- 2.2. Notice of approval or of extension or of refusal of approval of a vehicle type pursuant to this Directive is communicated to the Member States by means of a form conforming to the model in Appendix 2.
- 2.3. An approval number is assigned to each vehicle type approved. The same Member State must not assign the same number to another vehicle type.

## 3. MODIFICATION OF VEHICLE TYPE

- 3.1. Every modification of a vehicle type must be notified to the approval authority which approved it. That approval authority may then either:
  - 3.1.1. consider that the modifications made are unlikely to have an appreciable adverse effect and that in any case the vehicle still meets the requirements; or
  - 3.1.2. refuse to approve the modification.
- 3.2. Confirmation or refusal of approval, specifying the alterations, is communicated to the other Member States by the procedure specified in sections 2.2.

## 4. CONFORMITY OF PRODUCTION

- 4.1. Every production vehicle to which this Directive applies must be so manufactured that it conforms to all of the relevant requirements of this Directive.
- 4.2. In order to verify that the requirements of section 4.1 are met, suitable controls of the production must be carried out.
- 4.3. The holder of the approval must in particular ensure the existence of procedures for effectively checking on compatibility between the characteristics of the vehicle and the characteristics of the tyres fitted as laid down within the framework of this Directive.
- 4.4. The approval authority which has granted type-approval may at any time verify the conformity control methods applicable to each production unit.
  - 4.4.1. In every inspection, the test books and productions survey records must be presented to the visiting inspector.
- 4.5. The normal frequency of inspections authorized by the approval authority is one per year. In the case where negative results are recorded during one of these visits, the approval authority must ensure that all necessary steps are taken to re-establish the conformity of production as rapidly as possible.

## 5. PRODUCTION DEFINITELY DISCONTINUED

If the holder of an approval completely ceases to manufacture a type of vehicle approved in accordance with this Directive, he must so inform the authority which granted the approval. Upon receiving the relevant communication that authority must inform thereof the other approval authorities by means of a copy of the approval form bearing at the end, in large letters, the signed and dated annotation 'PRODUCTION DISCONTINUED'.

## Appendix 1

**INFORMATION DOCUMENT No . . .**  
**IN ACCORDANCE WITH ANNEX I TO COUNCIL DIRECTIVE 70/156/EEC RELATING TO EEC TYPE-APPROVAL**  
**OF A VEHICLE TYPE WITH REGARD TO THE FITTING OF ITS TYRES**  
**(DIRECTIVE 92/23/EEC)**

The following information, if applicable, must be supplied in triplicate and must include a list of contents. Drawings, if any, must be supplied in appropriate scale and in sufficient detail on size A4 or folded to that size. In the case of microprocessor-controlled functions supply relevant performance-related information.

0. GENERAL
- 0.1. Make (trade name of manufacturer): .....
- 0.2. Type and commercial description(s): .....
- 0.3. Means of identification of type, if marked on the vehicle (b): .....
- 0.3.1. Location of that marking: .....
- 0.4. Category of vehicle (c): .....
- 0.5. Name and address of applicant: .....
- 0.6. Location of statutory plates and inscriptions and methods of affixing: .....
- 0.6.1. On the chassis: .....
- 0.6.2. On the bodywork: .....
- 0.7. Address(es) of assembly plant(s): .....
1. GENERAL CONSTRUCTION CHARACTERISTICS OF THE VEHICLE
- 1.3. Number of axles and wheels: .....
- 1.3.1. Number and position of axles with tyres in dual (twin) formation: .....
- 1.3.2. Number and position of steered axles: .....
- 1.3.3. Powered axles (number, position, interconnection): .....
- 1.4. Maximum design speed (for each variant, if any): .....
2. MASSES AND DIMENSIONS (e) (in kg and mm) (refer to drawing where applicable)
- 2.1. Maximum technically permissible mass for each axle: .....
6. SUSPENSION:
- 6.2. Tyres and wheels normally fitted: .....
- 6.2.1. Attached is a list presented by the vehicle manufacturer of all the relevant variants (if any) of the vehicle type and the corresponding tyres for use on each. The description of the tyres must include the following information:
- the tyre-size designation,
  - the minimum load-capacity index compatible with the maximum axle load (each axle to be stated separately if more than one tyre size designation is fitted to the vehicle),
  - the minimum speed category symbol compatible with the maximum design speed.
- 6.2.4. Tyre pressure(s) as recommended by the vehicle manufacturer (kPa): .....
- 6.2.5. Tyre/wheel combination(s): .....
- 6.2.6. Brief description of temporary-use spare unit(s), if any: .....

Appendix 2

MODEL

[(maximum format: A4 (210 x 297 mm))]

EEC TYPE-APPROVAL CERTIFICATE  
(vehicle)

Stamp of  
Administration

Communication concerning the:

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

of a type of vehicle with regard to Directive 92/23/EEC.

EEC type-approval No: ..... Extension No: .....

SECTION I

0. General

0.1. Make (trade name of manufacturer): .....

0.2. Commercial description(s): .....

0.3. Means of identification of type, if marked on the vehicle (b): .....

0.3.1. Location of that marking: .....

0.4. Category of vehicle (c): .....

0.5. Name and address of applicant: .....

0.6. Location of statutory plates and inscriptions and methods of affixing: .....

0.6.1. On the chassis: .....

0.6.2. On the bodywork: .....

0.7. Address(es) of assembly plant (s): .....

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

Footnotes, see Annex to Directive 70/156/EEC, as last amended by Directive 87/403/EEC.

## SECTION II

1. **Additional information**
- 1.1. Attached is a list presented by the vehicle manufacturer of all the relevant variants (if any) of the vehicle type and the corresponding tyres for use on each. The description of the tyres must include only the following information:
  - the tyre size designation,
  - the minimum speed category symbol compatible with the maximum design speed,
  - the minimum load-capacity index compatible with the maximum axle load (each axle to be stated separately if more than one tyre size designation is fitted to the vehicle).
- 1.2. Brief description of temporary-use spare unit(s), if any: .....
- 1.2.1. Technical service responsible for carrying out the tests: .....
- 1.2.2. Date of test report: .....
- 1.2.3. Number of test report: .....
- 1.2.4. Grounds for extending type-approval (where appropriate): .....
- 1.2.5. Comments (if any): .....
- 1.2.6. Place: .....
- 1.2.7. Date: .....
- 1.2.8. Signature: .....
- 1.2.9. A list of documents making up the type-approval file lodged with the approval authority that has granted type-approval, which may be obtained on request, is attached.

## ANNEX IV

## REQUIREMENTS FOR VEHICLES WITH REGARD TO THE FITTING OF THEIR TYRES

## 1. DEFINITIONS

2. *For the purpose of this Directive:*

2.1. '*approval of a vehicle*' means the approval of a vehicle type with regard to its tyres, including temporary-use spare tyres;

2.2. '*vehicle type*' means a range of vehicles which do not differ significantly, at least as regards each variant of the vehicle type, in such essential aspects as would affect the tyre size designation, the speed category symbol or the load capacity index:

2.3. '*wheel*' means a complete wheel consisting of a rim and a wheel disc;

2.4. '*temporary-use spare wheel*' means a wheel different from one of the normal wheels on the vehicle type;

2.5. '*unit*' means an assembly of a wheel and tyre;

2.6. '*normal unit*' means a unit which is capable of being fitted to the vehicle for normal operation;

2.7. '*spare unit*' means a unit which is intended to be exchanged for a normal unit in case of malfunction of the latter. A '*spare unit*' may be either of the following:

2.7.0. '*normal spare unit*', which is a unit that conforms to the normal unit of the vehicle type;

2.7.1. '*temporary-use spare unit*', which is a unit that differs from the normal units of the vehicle type with regard to their principal characteristics (e.g. their tyre-size designation, functional dimensions, conditions of use or structure). It is intended for temporary use under restricted conditions. Temporary-use spare units may be of the following categories:

2.7.1.1. category 1

a unit consisting of a wheel which conforms to a wheel of a normal unit and a tyre which has principal characteristics (e.g. dimensions, structure) different to the normal tyre;

2.7.1.2. category 2

a unit consisting of a wheel and a tyre both having principal characteristics different to the normal unit and intended to be carried on the vehicle with the tyre inflated to the pressure specified for temporary use;

2.7.1.3. category 3

a unit consisting of a normal wheel and a tyre having principal characteristics different to a normal tyre and intended to be carried on the vehicle with the tyre folded and not inflated;

2.7.1.4. category 4

a unit consisting of a wheel and tyre both having principal characteristics different to a normal unit and intended to be carried on the vehicle with the tyre folded and not inflated;

2.8. '*maximum mass*' means the maximum value stated by the vehicle manufacturer to be technically permissible for the vehicle;

2.9. '*maximum axle load*' means the maximum value stated by the vehicle manufacturer to be technically permissible for the total vertical force between the contact surfaces of the tyres of the axle in question and the ground and resulting from the part of the vehicle mass supported by that axle. The sum of the axle loads may be greater than the value corresponding to the maximum mass of the vehicle;

2.10. '*functional dimensions*' means dimensions derived from the size designation of the wheels and/or tyres (e.g. diameter, width, aspect ratio) and from the mounting of the unit to the vehicle (e.g. wheel offset);

2.11. '*maximum design speed*' means the maximum speed approved for the vehicle type inclusive of the tolerance allowed for the conformity checks of the series production.



### 3. REQUIREMENTS FOR VEHICLES WITH REGARD TO THE FITTING OF THEIR TYRES

#### 3.1. General

3.1.1. Subject to the provisions of section 3.7.4, every tyre fitted to a vehicle, including any spare, must bear the EEC component type-approval mark or the type-approval mark indicating compliance with EEC Regulations Nos 30 or 54 as referred to in the recitals of this Directive.

#### 3.2. Tyre fitment

3.2.1. All of the tyres fitted to a vehicle, excluding any temporary use spare, must have the same structure (see Annex II section 2.3).

3.2.2. All of the tyres fitted to one axle must be of the same type (see Annex II section 2.1).

3.2.3. The space in which the wheel revolves must be such as to allow unrestricted movement when using the maximum permissible size of tyres within the suspension and steering constraints provided by the vehicle manufacturer.

#### 3.3. Load capacity

3.3.1. Subject to the provisions of section 3.7, the maximum load rating (see Annex II section 2.31) of every tyre, including a spare tyre (if provided) with which a vehicle is fitted is:

3.3.1.1. in the case of a vehicle fitted with tyres of the same type in single formation: at least equal to half of the maximum axle load (see section 2.9) for the most heavily loaded axle, as declared by the manufacturer of the vehicle;

3.3.1.2. in the case of a vehicle fitted with tyres of more than one type, in single formation: at least equal to half of the maximum axle load (see section 2.9), as declared by the manufacturer of the vehicle, in respect of the relevant axle;

3.3.1.3. in the case of a vehicle fitted with passenger car tyres in dual (twin) formation: at least equal to 0,27 times the maximum axle load, as declared by the manufacturer of the vehicle, in respect of the relevant axle;

3.3.1.4. in the case of axles fitted with commercial vehicle tyres in dual (twin) formation: at least equal to 0,25 times, with reference to the load capacity index for dual application, the maximum axle load as declared by the manufacturer of the vehicle, in respect of the relevant axle.

#### 3.4. Speed capacity

3.4.1. Every tyre with which a vehicle is normally fitted must have a speed category symbol (see Annex II section 2.29) compatible with the maximum design speed of the vehicle (as declared by the vehicle manufacturer) or the applicable load/speed combination (see Annex II section 2.30).

3.4.2. The above specification does not apply:

3.4.2.1. in the case of temporary use spare units for which section 3.8 applies;

3.4.2.2. in the case of vehicles normally equipped with ordinary tyres and occasionally supplied with snow tyres.

However, in this case the speed category symbol of the snow tyres must correspond to a speed either greater than the maximum design speed of the vehicle (as declared by the vehicle manufacturer) or not less than 160 km/h (or both).

If, nevertheless, the maximum design speed of the vehicles (as declared by the vehicle manufacturer) is greater than the speed corresponding to the speed category symbol of the snow tyres a maximum speed warning label, specifying the maximum speed capability of the snow tyres, must be displayed inside the vehicle in a prominent position readily visible to the driver.

#### 3.5. Spare tyre

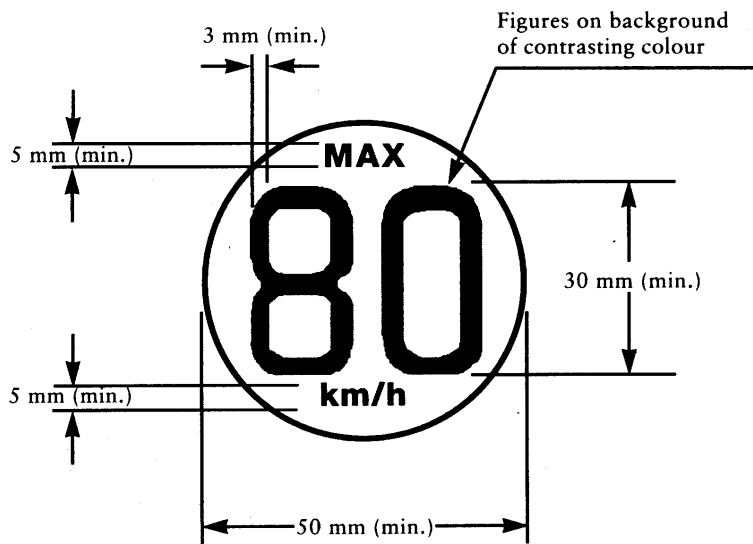
3.5.1. In the case where a vehicle is provided with a spare wheel its tyre must be:

3.5.1.1. the same type as one of the tyres fitted to or approved for the vehicle, or

3.5.1.2. a temporary-use spare tyre of a type suitable for use on the vehicle, in any position. However, no vehicle other than a vehicle of category M<sub>1</sub> may be fitted with a temporary-use spare tyre.

- 3.5.2. Every vehicle provided with a temporary-use spare unit must be provided with supplementary information clearly and permanently displayed on the temporary-use spare unit or on the vehicle near the spare unit or in the driver's handbook. At least the following information must be given:
- 3.5.2.1. an instruction to drive with caution when the temporary-use spare unit is fitted, and to install a normal unit as soon as possible;
  - 3.5.2.2. a statement that operation of the vehicle is not permitted with more than one temporary-use spare unit fitted at the same time;
  - 3.5.2.3. a clear indication of the inflation pressure specified by the vehicle manufacturer for the tyre of the temporary-use spare unit;
  - 3.5.2.4. for vehicles equipped with category 3 or category 4 temporary-use spare units, a description of the procedure for inflating the tyre to the pressure specified for temporary use by means of the device referred to in section 3.6;
- 3.6. **Inflating device of temporary-use spare unit:**
- 3.6.1. if the vehicle is equipped with a category 3 or category 4 temporary-use spare unit, a device must be provided on the vehicle which permits the tyre to be inflated to the pressure specified for temporary use within a maximum of five minutes.
- 3.7. **Special cases**
- 3.7.1. In the case of trailers of categories 01 and 02 with operating speeds restricted to 100 km/h or less fitted with passenger car tyres in single formation, the maximum load rating of every tyre must be at least equal to 0,45 times the maximum mass for the most heavily loaded axle, as declared by the manufacturer of the trailer. For tyres in dual (twin) formation this factor is 0,24.
  - 3.7.2. In the case of some special vehicles fitted with commercial vehicle tyres, the table 'Variation of Load Capacity with Speed' (see section 2.30 and Appendix 8 to Annex II) is not to be applied. In those cases the tyre maximum load ratings to check against the maximum axle loads (see sections 3.3.1.2 and 3.3.1.4 of this Annex) are determined by multiplying the load corresponding to the load capacity index by an appropriate coefficient which is related to the type of vehicle and its use rather than to the maximum design speed of the vehicle. In such cases section 3.4.1 of this Annex does not apply. The appropriate coefficients are as follows:
    - 3.7.2.1. 1,10 in the case of vehicles of category M<sub>3</sub> when the vehicle is carrying standing passengers and the operating speed does not exceed 60 km/h. However, for operational reasons Member States may allow the operating speed to be increased to 80 km/h;
    - 3.7.2.2. 1,15 in the case of such vehicles (M<sub>3</sub>) if they are intended for use only on urban routes with frequent stops;
    - 3.7.2.3. 1,10 in the case of public utility vehicles of category N used at slow speeds over short distances in urban and suburban applications such as road sweepers or refuse collectors.
  - 3.7.3. When a motor vehicle of category M<sub>1</sub> is towing a trailer, the additional load imposed at the trailer coupling device may cause the tyre maximum load ratings to be exceeded, but not by more than 15 %, provided that the operating speed is restricted to 100 km/h or less and the inflation pressure increased by at least 0,2 bar is applied.
  - 3.7.4. In the case of a vehicle which is fitted with tyres which are not passenger car tyres nor commercial vehicle tyres due to special conditions of use (e.g. agricultural tyres, industrial truck tyres, motor cycle tyres) the requirements of Annex II do not apply provided that the approval authority is satisfied that the tyres fitted are suitable for the operating conditions of the vehicle.
- 3.8. **Specifications for temporary-use spare units**
- 3.8.1. Every temporary-use spare tyre must have a speed category at least equal to 120 km/h (speed category symbol L).
  - 3.8.2. When fitted to the vehicle for temporary use the outward facing surface of the wheel must exhibit a distinctive colour or colour pattern which is clearly different from the colour(s) of the normal units. If it is possible to attach a wheel cover to the temporary-use spare unit the distinctive colour or colour pattern must not be obscured by this wheel cover.

- 3.8.3. A maximum speed warning symbol must be permanently displayed on the outer face of the wheel in a prominent position and in accordance with the diagram below:



Scale - full size (1:1)