INTERNATIONAL STANDARD

ISO 18807

First edition
2019-08

Tyres and rims for logging and forestry service

Pneumatiques et jantes pour engins forestiers et de débardage du bois

Reference number
ISO 18807:2019(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 5, *Agricultural tyres and rims*.

This first edition of ISO 18807 cancels and replaces ISO 4251-5:1992, which has been technically revised. It also incorporates the amendment ISO 4251-5:1992/Amd.1:1998. The main changes are:

— information already contained in other International Standards was removed and replaced with normative references to those standards;

— data for tyre sizes with metric designation were added;

— the document was aligned with other standards developed by SC 5 and with existing regulations;

— additional definitions useful for the comprehension of this document were added;

— the pictogram to identify the maximum pressure for tyre bead seating, as specified by UN/ECE Regulation 106, was introduced;

— dimensional data and the list of approved rim contours were revised.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Tyres and rims for logging and forestry service

1 Scope

This document sets out the marking, the tyre size designation, the dimensions, the load ratings and the rim coordination for logging and forestry service tyres in diagonal and radial construction.

Rim dimensions are given in ISO 18804.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4223-1, *Definitions of some terms used in the tyre industry — Part 1: Pneumatic tyres*

ISO 7867-1, *Metric series for agricultural, forestry machines and construction tyres — Part 1: Tyre designation, dimensions and marking, and tyre/rim coordination*

ISO 18804, *Rims for agricultural, forestry and construction machines*

ISO 18805, *Tyre classification — Agricultural, forestry and construction machines*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4223-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
tyre for logging or forestry machines
tyre for use on machines/equipment used in forestry applications, in high torque service (e.g. skidders) or low torque service (e.g. forwarders) and for short transports on roads

3.2
ply rating
PR
term used as an indication of tyre strength and not corresponding to the actual number of plies in the tyre

3.3
high and sustained torque
condition that occurs when high continuous tractive effort is applied to the drawbar or hitch

4 Marking

4.1 General

The marking shall consist of the tyre size designation, the load rating and additional markings.

4.2 Tyre size designation

4.2.1 Conventional code designated diagonal tyres

The designation consists of the nominal tyre width code, the construction code (-) and the nominal rim diameter code.

EXAMPLE 1 23.1 - 26

For low section height tyres, the letter L is added after the nominal tyre width code.

EXAMPLE 2 30.5L - 32

If a specific rim contour is required for a given tyre, it shall be added as a prefix to the size marking.

The marking of the suffix LS, as described in ISO 18805, placed after the nominal rim diameter code is optional but can be required by regional regulations.

4.2.2 3-part code designated diagonal tyres

The designation consists of the nominal overall diameter code, the symbol “x”, the nominal tyre width code, the construction code (-) and the nominal rim diameter code.

If a specific rim contour is required for a given tyre, it shall be added as a prefix to the size marking.

These sizes may have an optional suffix “NHS” after the size designation.

EXAMPLES

66x43.00-26 NHS

DH73x44.00-32

4.2.3 Metric designated tyres

The designation consists of the nominal section width, the nominal aspect ratio, the construction code (- for diagonal, R for radial), the nominal rim diameter code and the suffix LS.

EXAMPLES

710/55 – 34 LS for diagonal tyres

600/55 R 26.5 LS for radial tyres

4.3 Load rating

4.3.1 Conventional and 3-part code designated diagonal sizes

The load rating marking shall consist in the marking of the ply rating (PR).

EXAMPLES

30.5L – 32 14PR

66x43.00-26 NHS 14 PR

Regional regulations can require that the service description (load index and speed symbol) be added.

4.3.2 Metric sizes

The load rating marking shall consist of the service description (load index and speed symbol).

EXAMPLE

710/55 – 34 LS 161 A8

4.4 Additional markings

4.4.1 Tubeless tyres shall be marked with the word "TUBELESS".

4.4.2 The classification codes applying to forestry and logging tyres may additionally be used and shall be in accordance with ISO 18805, but they are not part of the size designation of the tyre.

4.4.3 In the case of a preferred direction of rotation of the tyre, an arrow shall be used to indicate that direction.

4.4.4 Maximum pressure for tyre bead seating shall marked with the following inscription: "XXX kPa MAX" or “XXX bar MAX” inside the pictogram (Figure 1) indicating the maximum inflation pressure that shall not be exceeded for bead seating during tyre mounting. The value of the tyre bead seating pressure is determined by the tyre manufacturer.

The marking of the pictogram on the tyre sidewall is optional but can be required for conformity to some regional regulations.

An example of the pictogram to be marked on both sidewalls of the tyre is given in Figure 1.

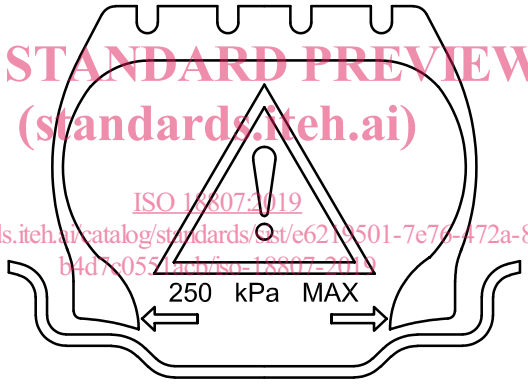

Figure 1 — Pictogram of maximum inflation pressure for bead seating

5 Tyre dimensions

5.1 General

Size designation, measuring rim width code, measurements (section width and overall diameter) for design new tyre and tyre in service are given in Annex A.

5.2 Design new tyre dimensions

5.2.1 General

Design new tyre dimensions quoted in the tables are used for tyre design purposes only.

5.2.2 Section width

The design section width (S) shown in Annex A refers to the corresponding “Measurement rim width code”.

5.2.3 Overall diameter

The overall diameter, D_O, in the tables refers to tyres with LS-2 (or HF-2) tread depth.

Tyres with deep or extra deep tread pattern and corresponding increased overall diameter may be used.

In case of new metric sizes, dimensional data and the range of permitted rims shall be in accordance with ISO 7867-1.

5.3 Tyre dimensions in service

In-service dimensions are the maximum dimensions for grown tyres in service for use by machine manufacturers designing for tyre clearances.

The overall diameter, $D_{O,\,max}$, in Annex A refers to tyres with LS-2 (or HF-2) tread types.

Tyres with deep or extra deep tread pattern and corresponding increased overall diameter may be used.

When the tyre is mounted on an alternative rim, the design section width and the maximum overall width in service change as follows:

$$W_A = W + 10\,(R_A - R_M)$$

where

W_A is the design new tyre section width (or the maximum overall tyre width in service) on the alternative rim;

W is the design new tyre section width S (or the maximum overall tyre width in service W_{max}) on the measurement rim width code as shown in Annex A;

R_A is the rim width code of the alternative rim;

R_M is the measurement rim width code as shown in Annex A.

6 Tyre load capacities

6.1 General

The basic tyre loads given in Annex B are maximum values and are valid for the inflation pressures indicated.

For high torque service (e.g. “skidder service”), the maximum load on the tyre shall include the total vehicle mass with accessories plus load increases due to log winching or grappling loads and mass transfer that is imposed on an individual tyre due to total radial forces during operation.

For low torque service other than skidder service, the maximum load on the tyre shall include the total vehicle mass with accessories plus mass transfer that is imposed on an individual tyre due to total radial forces during operation.

When used as duals, the basic tyre load shall be reduced. Multiply the basic tyre loads by 0,88.

6.2 Conventional code designated diagonal tyres

6.2.1 General

Basic tyre loads given in Table B.1 refer to a maximum speed of 30 km/h.

6.2.2 Transport service and low torque operations

For transport service and operations which do not require sustained high torque, the loads at various speeds given in Table B.2 apply with no change in inflation pressure.

6.2.3 Skidder service: operations including high and sustained torque

Basic tyre loads referring to a speed of 10 km/h given in Table B.3 apply. The loads at various speeds given in Table B.2 do not apply.

6.2.4 Load and carry

For load and carry type of logging operations such as loaders equipped with log forks and feller bunchers, with maximum speed of 10 km/h, tyre load limits shown in Table B.1 may be increased to 150 % with 35 kPa increase in inflation pressure. Maximum length of carry is 150 m.

6.3 3-part code designated diagonal tyres

The basic tyre loads given in Table B.4 refer to a maximum speed of 50 km/h.

For transport service and operations which do not require sustained high torque, the loads at various speeds given in Table B.5 apply with no increase in inflation pressure.

6.4 Metric designated tyres

6.4.1 General

The basic tyre loads for road transport and forestry applications are given in Table B.6 for diagonal tyres and Table B.7 for radial tyres.

The reference speed for the basic tyre load is 40 km/h (speed symbol A8).

6.4.2 Transport service and low torque operations

For transport service and operations which do not require sustained high torque, the loads at various speeds given in Table B.8 apply with no change in inflation pressure.

6.4.3 Skidder service

For forestry service with high and sustained torque, e.g. skidder applications and load and carry type of logging operations such as loaders equipped with log forks and feller-bunchers, loads given in Tables B.6 and B.7 apply up to a maximum speed of 10 km/h with an increase in pressure of 35 kPa and a maximum length of carry within 150 m.

The loads at various speeds given in Table B.8 do not apply.

7 Rim coordination

The approved rim contours are given in Annex C.

Dimensional details of the rim contours shall be as specified in ISO 18804.

Consult rim and wheel manufacturer for confirmation of the capacity of the rim/wheel for the intended service.

8 Tubes

Whenever an inner tube is required, it shall be identified by the same designation as the size of the tyre or tyres in which it is to be mounted.

9 Tyre parameters for vehicle speed reference

The speed radius index (SRI) is a parameter used exclusively for the calculation of forward ground speed during homologation procedures (see ISO 3965 and on ISO 11795 for further information).

Values are given in Annex D.

Annex A
(informative)

Size designation, measuring rim width code, measurements (section width and overall diameter) for design new tyre and tyre in service

Table A.1 — Conventional code designated tyres — Diagonal

Dimensions in millimetres

Tyre size designation	Measurement rim width code	Design new tyre		In service	
		Section width	Overall diameter[a]	Maximum overall width	Maximum overall diameter[a]
		S	D_o	W_{max}	$D_{o,max}$
Normal section height tyres					
16.9-30	15.00	429	1 511	464	1 555
18.4-26	16.00	467	1 476	505	1 525
18.4-30	16.00	467	1 577	505	1 626
18.4-34	16.00	467	1 679	505	1 728
23.1-26	20.00	587	1 632	634	1 691
24.5-32	21.00	622	1 831	672	1 892
Low section height tyres					
28L-26	25.00	714	1 644	771	1 703
30.5L-32	27.00	775	1 847	837	1 909
DH35.5L-32	31.00	902	2 011	974	2 083

[a] Figures are based on tyres with LS-2 tread depth. Tyres with deep or extra deep tread (LS-3 tread pattern) and corresponding increased overall diameter may be used.

Table A.2 — 3-part size designated diagonal tyres

Dimensions in millimetres

Tyre size designation	Measurement rim width code	Design new tyre		In service	
		Section width	Overall diameter[a]	Maximum overall width	Maximum overall diameter[a]
		S	D_o	W_{max}	$D_{o,max}$
54x37.00-25NHS	32.00	940	1 397	1 034	1 473
66x43.00-25NHS	36.00	1 054	1 702	1 160	1 808
66x43.00-26NHS	36.00	1 054	1 702	1 160	1 806
67x34.00-25NHS	30.00	864	1 727	950	1 836
67x34.00-26NHS	30.00	864	1 727	950	1 834
68x50.00-32NHS	44.00	1 270	1 753	1 397	1 847
DH73x44.00-32	36.00	1 118	1 880	1 229	1 986
DH73x50.00-32	44.00	1 270	1 880	1 397	1 986

[a] Figures are based on tyres with HF-2 tread depth. Tyres with deep or extra deep (HF-3 or HF-4 tread pattern) tread and corresponding increased overall diameter may be used.