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Agricultural tyres for lawn and garden tractors — 3-part code designated tyres

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 5383 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 5, *Agricultural tyres and rims*.

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Agricultural tyres for lawn and garden tractors — 3-part code designated tyres

1 Scope

A paragraph.

This document establishes the designation, the dimensions, the approved rim contours and the load ratings for 3-part code designated tyres in diagonal or radial construction for lawn, garden tractors and agricultural machines, with a nominal rim diameter code 18 and below.

2 Normative references

The following referenced documents are indispensable for the application 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 18804, *Rims for agricultural, forestry and construction machines*

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

ISO 29802, *All-terrain (AT) tyres and rims — Symbol marked pneumatic tyres on 5 degree tapered rims — Designation, dimension, marking and load ratings*

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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:

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

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

3.1

drive wheel tyre

tyre designed primarily for the equipment of driven axles

3.1.1

high and sustained torque

condition that occurs when high continuous tractive effort is applied to the drawbar or hitch

3.1.2

low torque

condition that occurs when the primary torque involved is only that applied to propel the vehicle

3.2

free rolling tyre

tyre designed for the equipment of non-driven (trailed) axles

3.3

mixed applications tyre

tyre designed to be fitted to either driven and non-driven (trailed) axles

3.4 tractor tyre

tyre primarily designed to be fitted to driven axles of agricultural tractors that are destined to high and sustained torque applications

Note 1 to entry: Note to entry: The tyre tread pattern consists of lugs (cleats) for optimum field traction

3.5 implement tyre

tyre primarily designed for agricultural machines (i.e. interchangeable towed equipment, agricultural trailers, motor cultivators or lawn and garden tractors)

3.6 Ply Rating (PR)

indication of tyre strength and does not correspond to the actual number of plies in the tyre

3.7 NHS (Not for Highway Service)

tyre primarily designed for use outside of public roads, but suitable for temporary/incidental use on public roads

4 Marking

The marking consists of the tyre size designation, the load rating, and any additional information. See 4.1 to 4.4. for details.

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4.1 Tyre size designation

The marking for the identification of tyres consists of the nominal overall diameter code, the symbol “X”, the nominal section width code, the construction code and the nominal rim diameter code.

Nominal overall diameter code	Nominal section width code	Tyre construction code	Nominal rim diameter code
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Example 23 x 10.00 - 10

4.1.1 Nominal Overall Diameter Code

The nominal overall diameter shall be indicated by means of a code with steps of 1 unit starting from 10.

4.1.2 Nominal Section Width Code

The nominal section width shall be indicated by means of a code with steps of 0,50 unit starting from 4.00.

4.1.3 Tyre construction code

The tyre construction code shall be as follows:

“-” (a dash) or “D” for diagonal ply construction

R for radial ply construction

4.1.4 Nominal rim diameter code

The nominal rim diameter code shall be as specified in Table A.3 of ISO 4223-1 and in ISO 18804.

4.1.5 Other markings

For conformity to some regional regulations, in case of tyres classified in the category of use “implement” the inscription “IMPLEMENT” or the suffix “IMP” shall be marked on the tyre sidewall.

NOTE “implement” tyres may also be fitted to the drive wheels of agricultural tractors with low torque applications.

4.2 Load rating

The marking of load rating, except for radial tyres for which it is optional, comprises the ply rating (**PR**).

EXAMPLE

16x6.50-8 4PR

16x6.50-8 IMP 4PR

4.3 Service description

The marking of the service description consist of a load index and a speed symbol. If not required by regional regulations it is an optional marking.

4.3.1 Load index

The load index is a numerical code associated with the maximum load a tyre can carry at the speed indicated by its speed symbol under service conditions specified by the tyre manufacturer.

The correlation between load indices and tyre load carrying capacities shall be as given in Table A.1 of ISO 4223-1.

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4.3.2 Speed symbol

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The speed category symbol is a symbol indicating the speed at which the tyre can carry the load corresponding to its load index under service conditions specified by the tyre manufacturer.

The following speed symbols apply.

Speed symbol	Speed
	km/h
A4	20
A6	30
A8	40
B	50

4.3.3 Type of service

When, as required by regional regulations in case of tyres classified in the category of use “implement”, the basic tyre load is referred to the type of service (Free rolling tyre or Drive wheel tyre) they were designed for, the relevant service description shall be supplemented by the following symbol.



for Drive wheel tyre EXAMPLE **16x6.50R8 4PR 64A6**



for Free rolling tyre EXAMPLE **16x6.50R8 4PR 64A6**



In case of tyres designed for “Mixed applications” (i.e. both drive wheels and free rolling wheels) both markings apply.

4.4 Additional information

4.4.1 General

4.4.1.1 Tubeless tyres shall be marked with the word “TUBELESS”.

4.4.1.2 The classification code marking G-1 or G-2 or HF-1 or HF-2, as described in ISO 18805, may additionally be marked, but it is not part of the size designation of the tyre.

4.4.1.3 The inscription “NHS” may also be marked after the nominal rim diameter code of the tyre.

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

4.4.2 Maximum pressure for tyre bead seating

The inscription “XXX kPa MAX” or “XXX bar MAX” inside the pictogram (see example in [Figure 1](#)) indicates 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 may be required for conformity to some regional regulations.

Example of the pictogram to be marked on both sidewalls of the tyre is in [Figure 1](#).

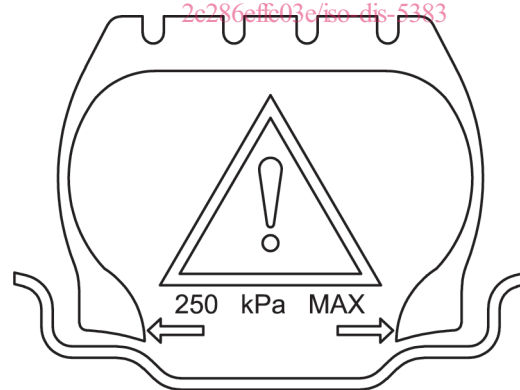


Figure 1 — Pictogram for the maximum bead seating inflation pressure

5 Tyre dimensions

5.1 Design new tyre dimensions

Design new tyre dimensions are used for tyre design purposes only.

5.1.1 Design rim width

The design rim width code is equal to the nominal section width code multiplied by the factor 0.8 and rounded to the nearest 0.5 step.

NOTE Rim codes 3.25 and 5.375 are also permitted.

5.1.2 Design new tyre section width (S)

The design new tyre section width (S), on the design rim width code corresponds to the nominal section width code multiplied by 25.4 and rounded to the nearest mm.

5.1.3 Design new tyre overall diameter (Do)

The design new tyre overall diameter (Do) corresponds to the nominal overall diameter code multiplied by 25.4 and rounded to the nearest mm. Dimensions are referred to tyres with traction tread.

5.1.4 Design section height

The Design section height is half the difference between the "Overall diameter" and the "Rim diameter"

$$H = (D_o - D_r) / 2$$

where

H is the design new tyre section height (in mm)

D_o is the design new tyre overall diameter

D_r is the nominal rim diameter of the tyre expressed in mm (see Table A.3 of ISO 4223-1)

5.2 Maximum overall tyre dimensions in service

Maximum overall dimensions in service are for use by vehicle manufacturers in designing for tyre clearances. Calculated values are to be rounded to the nearest integer.

5.2.1 Maximum overall width in service, W_{\max}

The maximum overall width in service, W_{\max} , is equal to the product of the design tyre section width, S, and the appropriate coefficient, a rounded to the nearest mm

$$W_{\max} = S \times a$$

where

S is the design new tyre section width on the design rim (in mm)

a = 1,05 for radial tyres

1,08 for diagonal tyres

It includes protective ribs, lettering, embellishments, manufacturing tolerances and growth due to service.

5.2.2 Maximum overall diameter in service, $D_{O, \max}$

The maximum overall diameter in service, $D_{O, \max}$, is equal to the nominal rim diameter, D_r , expressed in mm, plus twice the product of the design tyre section height, H , and the appropriate coefficient, b and rounded to the nearest mm.

$$D_{O, \max} = D_r + 2 \times H \times b$$

where

H is the design new tyre section height

D_r is the nominal rim diameter expressed in mm (see ISO 4223-1 Annex A Table A.3)

$b =$ 1.12 for tyres with Nominal rim Diameter code 14 and below

1.10 for tyres with Nominal rim Diameter code 15 and above

It includes manufacturing tolerances and growth due to service.

5.3 Minimum new tyre overall diameter

Minimum new tyre overall diameter, $D_{O, \min}$, shall be calculated on the basis of a tolerance of -4% on design section height and rounded to the nearest mm.

$$D_{O, \min} = D_r + 2 H \times c$$

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where:

H is the design new tyre section height

D_r is the nominal rim diameter expressed in mm (see Table A.3 of ISO 4223-1)

$c =$ 0,96

6 Tyre dimensional data

Dimensional data for some selected tyre size designations shall be as given in [Annex A](#).

NOTE Some tyre sizes conforming to previous local standardisations may not follow exactly the specifications given in above [Clauses 4](#) and [5](#).

7 Method of measurement of tyre dimensions

Before being measured, the tyre shall be mounted on one approved rim, inflated with air or nitrogen to the recommended pressure, and allowed to stand for a minimum of 24 h at normal room temperature, after which the inflation pressure shall be readjusted to the original value.

In case the tyre is mounted on a rim whose width code differs from the design rim width code, the actual tyre section widths (in mm) shall be modified as follows:

$$WA = W + 10 (RA - RM)$$

where

- WA is the design new tyre section width (or the maximum overall tyre width in service) on the alternative/approved rim;
- W is the design new tyre section width S (or the maximum overall tyre width in service W_{\max}) on the design rim width code as shown in [Annex A](#);
- RA is the rim width code of the alternative/approved rim;
- RM is the design rim width code as shown in [Annex A](#).

8 Tyre and rim coordination

8.1 Approved rim width codes

The range of approved rim codes is given by

$$\text{Rim width code} = R \times S_N$$

where

S_N is the nominal section width code

$R =$ 0,75 for the minimum rim width code
0,85 for the maximum rim width code

The values (min. and maximum) shall be rounded to the appropriate nearest standardized rim width code published in ISO 18804 or ISO 29802 Clause 11 and Table 11.

8.2 Approved rim contours

Approved rim contours for a selected range of existing tyres shall be as given in [Annex B](#).

9 Tyre parameters for vehicle speed reference

Speed radius index (SRI) is a parameter to be used exclusively for the calculation of the vehicle characteristics during type approval procedures.

Values for a selected range of existing tyres are given in [Annex D](#).

10 Tyre load ratings

10.1 Basic tyre load

Basic tyre load (BTL) is the tyre load-carrying capacity indicated by the tyre's load index at the reference speed indicated by the tyre's speed symbol in the principal service description.

When used as duals, tyre loads shall be reduced to 88 % of the basic tyre load.

Basic tyre loads and reference inflation pressures of some existing tyre sizes shall be as given in [Annex C](#).

10.1.1 Load and inflation pressure relationship

Basic tyre loads, as given in the [Tables C.1](#) and [C.2](#), are maximum values and are valid for the type of service, the reference speed and the inflation pressures indicated there.