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

*Pneumatiques et jantes tout terrains — Pneumatiques marqués
par un symbole pour jantes à 5° — Désignation, côtes, marquage et
capacités de charge*

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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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, SC 10, *Cycle, moped, motorcycle tyres and rims*.

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This second edition cancels and replaces the first edition (ISO 29802:2009), which has been technically revised.

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

1 Scope

This document specifies the designations, dimensions, markings and load ratings of pneumatic tyres primarily intended for all-terrain vehicles (ATV). It also specifies the designation, marking and contours of rims.

The tyres meet the following parameters:

- a) speeds not exceeding 130 km/h (Speed Symbol M);
- b) fitted to (AT) 5° tapered drop centre rims;
- c) nominal rim diameter codes of 7 to 14 inclusive.

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 3877-1, *Tyres, valves and tubes — List of equivalent terms — Part 1: Tyres*
<https://standards.iteh.ai/catalog/standards/sist/35060e47-1c08-41ec-a424-4066-749516711-20802-2017>

ISO 4223-1:2002, *Definitions of some terms used in the tyre industry — Part 1: Pneumatic tyres*

ISO 80000-1, *Quantities and units — Part 1: General*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4223-1 and ISO 3877-1 and the following apply.

For the purposes of this document, the following terms and definitions 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 <http://www.iso.org/obp>

3.1

NHS

NOT FOR HIGHWAY SERVICE

marking that identifies tyres for off-road applications

Note 1 to entry: The following terms may be used: “NOT FOR HIGHWAY SERVICE” or “NHS” or “NOT FOR HIGHWAY USE”.

4 Tyre size designations

4.1 Dimensional and constructional characteristics

4.1.1 General

The characteristics shall be indicated as follows:

Prefix	Nominal overall diameter code	x	Nominal section width code	Tyre construction code	Nominal rim diameter code
EXAMPLE: AT	23	x	10	R	10

NOTE Tyre construction code: "R" = Radial, "-" = Diagonal.

4.1.2 Prefix

AT (all-terrain) identifies tyres and rims designated for service on all-terrain vehicles (ATV).

4.1.3 Nominal overall diameter code

The code shall be as given in [Table 1](#).

Table 1 — (Nominal overall diameter code)

Nominal overall diameter code	Design tyre overall diameter, D_0 mm
16	406
17	432
18	457
19	483
20	508
21	533
22	559
23	584
24	610
25	635
26	660
27	686
28	711
29	737
30	762

4.1.4 Nominal section width code

The code shall be as given in [Table 2](#).

Table 2 — Nominal section width code

Nominal section width code	Nominal section width, S_n mm
6	152
7	178
8	203
9	229
10	254
11	279
12	305
13	330

4.1.5 Tyre construction code

The tyre construction code shall be as follows:

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

4.1.6 Nominal rim diameter code

The code shall be as given in [Table 3](#).

Table 3 — Nominal rim diameter code

Nominal rim diameter code	Nominal rim diameter, D_r mm
7	178
8	203
9	229
10	254
11	279
12	305
13	330
14	356

4.2 Service condition**4.2.1 General**

4.2.1.1 The tyre shall be marked with a symbol (see [4.2.2](#)) and a service description.

4.2.1.2 Tyres restricted to off-road service also be marked with one of the following inscriptions: “NOT FOR HIGHWAY SERVICE” or “NHS” or “NOT FOR HIGHWAY USE”.

4.2.2 Symbol of reference inflation pressure

Symbols shall be used to identify the reference inflation pressure given in [Table 4](#).

Table 4 — Reference inflation pressures

Symbol	Inflation pressure kPa
☆	25
☆☆	35
☆☆☆	45

4.2.3 Service description

4.2.3.1 General

The service description shall be indicated as follows:

Load index Speed symbol (example 35 F)

4.2.3.2 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 description specified by the tyre manufacturer.

The correlation between load indices and tyre load carrying capacities shall be as given in ISO 4223-1:2002, Annex A.

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4.2.3.3 Speed symbol

The speed symbol shall be as given in [Table 5](#). The speed symbol or speed category indicates the reference speed defined as the speed at which the tyre can carry the load corresponding to its load index under the specified service description.

Table 5 — Correlation between speed symbol and speed category

Speed symbol	Speed category km/h
Fa	80 ^a
^a The reference speed for tyre load identification of all-terrain tyres shall be 80 km/h, i.e. speed symbol F.	

4.3 Other service characteristics

4.3.1 The word “TUBELESS” shall be used to characterize tyres that can be used without a tube.

4.3.2 Specific indications, if required, may be added to show, for example, the preferred direction of rotation, indicated by an arrow.

5 Marking

The marking shall consist of:

- a) the designation of the dimensional and constructional characteristics;

- b) service description;
- c) other service characteristics.

The location of the marking of the service description (load index and speed symbol) and the symbol identifying the reference inflation pressure shall be distinct but in the vicinity of the marking of the dimensional and constructional characteristics.

No location is specified for the markings related to other service characteristics (see 4.3).

EXAMPLE AT 20 x 10 R 9 ☆☆ 34 F

The characteristics of a tyre with the above markings are as follows:

- AT: tyre designated for service intended for service on all-terrain vehicles (ATV);
- 20: nominal overall diameter code;
- 10: nominal section width code;
- R: radial ply construction;
- 9: nominal rim diameter code;
- ☆☆ : symbol to identify a reference inflation pressure of 35 kPa;
- 34: load index (LI) corresponding to a tyre load capacity of 118 kg;
- F: speed symbol corresponding to a speed category of 80 km/h;

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6 Tyre dimensions

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6.1 General

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The formula-derived values for design tyre dimensions shall be rounded to the nearest millimetre according to ISO 80000-1.

6.2 Calculation of design tyre dimensions

6.2.1 Theoretical rim width, R_{th}

The theoretical rim width, R_{th} , is equal to the product of the nominal section width, S_n , (see Table 2) and the rim/section ratio, K_1 , where the value of K_1 is 0,8 rounded to the nearest standardized rim width code.

$$R_{th} = K_1 \times S_n \quad (1)$$

6.2.2 Measuring rim width, R_m

Measuring rim width, R_m , enables one to select the nearest standardized rim width code from R_{th} (see Table 9).

6.2.3 Design tyre section width, S

The design tyre section width, S , is given in Table 9.

$$S = S_n + 0,4 \times (R_m - R_{th}) \quad (2)$$

For the values of S_n to be used see Table 2.