

International Standard



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Bicycle tyres and rims — Part 1 : Tyre designations and dimensions

Pneumatiques et jantes pour cycles — Partie 1 : Désignation et dimensions des pneumatiques

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 5775/1 was developed by Technical Committee ISO/TC 31, *Tyres, rims and valves*.

The first edition (ISO 5775/1-1978) had been approved by the member bodies of the following countries :

Australia	India	South Africa, Rep. of
Austria	Israel	Spain
Belgium	Italy	Sweden
Brazil	Japan	Switzerland
Canada	Korea, Rep. of	Thailand
Chile	Mexico	Turkey
Czechoslovakia	Netherlands	United Kingdom
France	Poland	USA
Germany, F.R.	Romania	USSR

No member body expressed disapproval of the document.

This second edition, which supersedes ISO 5775/1-1978, incorporates draft Amendment 1, which was circulated to the member bodies in July 1979 and which has been approved by the member bodies of the following countries :

Australia	Israel	Romania
Austria	Italy	South Africa, Rep. of
Belgium	Japan	Spain
China	Korea, Rep. of	Sweden
Czechoslovakia	Mexico	Thailand
France	Netherlands	United Kingdom
Germany, F.R.	Poland	USA

No member body expressed disapproval of the document.

Bicycle tyres and rims —

Part 1 : Tyre designations and dimensions

1 Scope

This International Standard, consisting of three parts, specifies the main requirements for bicycle tyres and rims, as follows :

Part 1 : Tyre designations and dimensions :

Section one : Tyres mounted on straight side rims.
Section two : Tyres mounted on hooked bead rims.

Part 2 : Load ratings.¹⁾

Partie 3 : Rims (profile and dimensions)¹⁾ :

Section one : Straight side rims.
Section two : Hook bead rims.
Section three : Methods for checking rim dimensions.

2 Field of application

This International Standard applies to pneumatic tyres for bicycles mounted on straight side rims and to pneumatic tyres for bicycles mounted on hooked bead rims.

Tubular sew-up tyres and non-pneumatic tyres will be the subjects of separate International Standards.

3 Reference

ISO 4223, *Definitions of some terms used in the tyre industry.*

1) In preparation.

Section one : Tyres mounted on straight side rims

4 Definitions

For definitions of terms relating to tyres, see ISO 4223.

5 Tyre designation

The tyre designation shall be shown on the sidewall of the tyre and shall include the following markings :

5.1 Tyre size designation

The characteristics shall be indicated as follows :

Nominal section width	Tyre construction code	Nominal rim diameter
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5.1.1 Nominal section width

The nominal section width shall be expressed in millimetres.

5.1.2 Tyre construction code

The tyre construction code shall be "—".

NOTE — Other codes will be established for new concepts of tyres.

5.1.3 Nominal rim diameter

The nominal rim diameter shall be expressed in millimetres.

5.2 Old marking

To help customers in those countries where other systems of marking were used, the old marking or markings can be added in parentheses "(...)" before or after the tyre size designation.

It is suggested that characters smaller than those used for the designation specified in 5.1 be adopted. See table 2 for correspondence between "tyre size designation" and "old markings". Sizes not included in table 2 shall bear "tyre size designation" only.

5.3 Preferred direction of rotation

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

5.4 Example

A tyre having nominal section width 32 and nominal rim diameter 597 will be marked :

32—597

6 Tyre dimensions

6.1 Calculation of "design new tyre" dimensions

6.1.1 Theoretical rim width (R_{Th})

The theoretical rim width equals the product of the nominal section width (S_N) by the rim/section ratio (K_1) :

$$R_{Th} = K_1 S_N$$

NOTE — For tyres with $S_N = 30$ or lower, $K_1 = 0,65$. For tyres with S_N larger than 30, $K_1 = 0,55$.

6.1.2 Measuring rim width (R_M)

The measuring rim width is the width of the existing rim nearest to the theoretical rim width (R_{Th}). See part 3 for rim width (R_M) of existing rims.

6.1.3 Design new tyre section width (S)

The design new tyre section width is the nominal section width (S_N) transferred from the theoretical rim (R_{Th}) to the measuring rim (R_M) :

$$S = S_N + K_2 (R_M - R_{Th})$$

rounded to whole numbers.

NOTE — For tyres of existing concepts, $K_2 = 0,4$.

6.1.4 Design new tyre section height (H)

The design new tyre section height equals the nominal section width (S_N).

6.1.5 Design new tyre overall diameter (D_o)

The design new tyre overall diameter is the sum of the nominal rim diameter (D_r) plus twice the design new tyre section height (H) :

$$D_o = D_r + 2 H$$

See table 1 in part 3 for the existing values of D_r .

6.2 Calculation of maximum tyre dimensions in service (for use by vehicle manufacturers in designing for tyre clearances)

6.2.1 Maximum overall width in service (W_{max})

The maximum overall width in service equals the design new tyre section width (S) plus 3 mm.

$$W_{max} = S + 3 \text{ mm}$$

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

6.2.2 Maximum overall diameter in service ($D_{o \max}$)

The maximum overall diameter in service equals the nominal rim diameter (D_r) plus twice the design new tyre section height (H) plus 6 mm :

$$D_{o \max} = D_r + 2 H + 6 \text{ mm}$$

It includes manufacturing tolerances and growth due to service.

6.3 Values

Table 1 shows the dimensions for measuring rim width, design section width and design section height according to 6.1 for nominal section widths to be retained.

7 Method of measurement of tyre dimensions

Before measuring, tyres shall be mounted on the measuring rim, inflated to the recommended inflation 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.

Table 1 – Tyres mounted on straight side rims – New tyre dimensions

Values in millimetres

Nominal section width S_N	Measuring rim width ¹⁾ R_M	New tyre	
		Design section width S	Design section height H
25	18	25	25
28	18	28	28
32	18	32	32
37	20	37	37
40	22	40	40
44	24	44	44
47	27	47	47
50	27	50	50
54	30,5	54	54
57	30,5	57	57
62	34 (30,5)	62 (61)	62

1) For dimensions of measuring rims and permitted rims, see part 3.

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Table 2 — Tyres mounted on straight side rims —
Correspondence between "tyre size designation" and "old markings"

Tyre size designation	Old markings	
28-622	$28 \times 1 \frac{5}{8} \times 1 \frac{1}{8}$	700 x 28 C
	$28 \times \frac{5}{8} \times 1 \frac{1}{4} \times 1 \frac{1}{8}$	700 C Carrera
28-630	$27 \times 1 \frac{1}{4}$	fifty
28-635		700 B
28-642	$28 \times 1 \frac{3}{8} \times 1 \frac{1}{8}$	700 x 28 A
32-239	$12 \times 1 \frac{3}{8} \times 1 \frac{1}{4}$	300 x 32
32-248	$12 \times 1 \frac{1}{4}$	300 x 32 A
32-288	$14 \times 1 \frac{3}{8} \times 1 \frac{1}{4}$	350 x 32
32-298	$14 \times 1 \frac{1}{4}$	350 x 32 A
32-340	$16 \times 1 \frac{3}{8} \times 1 \frac{1}{8}$	400 A
		400 x 32
32-349	$16 \times 1 \frac{1}{4}$ NL	400 x 32 A
32-357	$17 \times 1 \frac{1}{4}$	
32-369	$16 \times 1 \frac{1}{4}$	
32-390	$18 \times 1 \frac{3}{8} \times 1 \frac{1}{4}$	450 A
		450 x 32
32-400	$18 \times 1 \frac{1}{4}$	450 x 32 A
32-438		500 x 32 ANL
32-440	$20 \times 1 \frac{3}{8} \times 1 \frac{1}{4}$	500 A
		500 x 32
32-451	$20 \times 1 \frac{1}{4}$	500 x 32 A
32-489		550 x 32 ANL
32-490	$22 \times 1 \frac{3}{8} \times 1 \frac{1}{4}$	550 A
		550 x 32
32-501	$22 \times 1 \frac{1}{4}$	550 x 32 A
32-508	$22 \times 1 \frac{1}{4} \times 1$	
32-540	$24 \times 1 \frac{3}{8} \times 1 \frac{1}{4}$	
32-541	$24 \times 1 \frac{3}{8} \times 1 \frac{1}{4}$ NL	600 A
		600 x 32 A
32-547	$24 \times 1 \frac{1}{4}$	
32-590	$26 \times 1 \frac{3}{8} \times 1 \frac{1}{4}$	650 x 32 A
32-597	$26 \times 1 \frac{1}{4}$	

Tyre size designation	Old markings	
32-622	$28 \times 1 \frac{5}{8} \times 1 \frac{1}{4}$	700 x 32 C
	$28 \times 1 \frac{1}{4} \times 1 \frac{3}{4}$	700 C Course
32-630	$27 \times 1 \frac{1}{4}$	
32-635	$28 \times 1 \frac{1}{2} \times 1 \frac{1}{8}$	700 x 28 B
		700 B Course
37-288		350 A Comfort
		350 A $\frac{1}{2}$ Balloon
37-298	$14 \times 1 \frac{3}{8}$	
37-337	$16 \times 1 \frac{3}{8}$ ANL	
37-340		400 A Comfort
	$16 \times 1 \frac{3}{8}$ NL	400 A $\frac{1}{2}$ Balloon
		400 x 42 A
		400 x 35 A
37-349	$16 \times 1 \frac{3}{8}$	
37-387	$18 \times 1 \frac{3}{8}$ NL	
37-390		450 A Comfort
		450 A $\frac{1}{2}$ Balloon
37-400	$18 \times 1 \frac{3}{8}$	
37-438	$20 \times 1 \frac{3}{8}$ NL	
37-440		500 A Comfort
		500 A $\frac{1}{2}$ Balloon
37-451	$20 \times 1 \frac{3}{8}$	
37-489	$22 \times 1 \frac{3}{8}$ NL	
37-490		550 A Comfort
		550 A $\frac{1}{2}$ Balloon
37-498	$22 \times 1 \frac{3}{8} \times 1 \frac{1}{4}$ NL	
37-501	$22 \times 1 \frac{3}{8}$	
37-540	$24 \times 1 \frac{3}{8}$	
37-541		600 A Comfort
		600 A $\frac{1}{2}$ Balloon
		600 x 35 A
37-584	$26 \times 1 \frac{1}{2} \times 1 \frac{3}{8}$	
	$26 \times 1 \frac{3}{8} \times 1 \frac{1}{2}$	

Table 2 — Tyres mounted on straight side rims —
Correspondence between "tyre size designation" and "old markings" (continued)

Tyre size designation	Old markings
37-590	26 × 1 $\frac{3}{8}$ 650 A 650 × 35 A
37-622	28 × 1 $\frac{5}{8}$ × 1 $\frac{3}{8}$ 700 × 35 C 28 × 1 $\frac{3}{8}$ × 1 $\frac{5}{8}$
37-642	18 × 1 $\frac{3}{8}$ 700 × 35 A
40-279	14 × 1 $\frac{1}{2}$ 350 × 38 B
40-288	14 × 1 $\frac{1}{2}$ NL 350 × 38
40-330	16 × 1 $\frac{1}{2}$ 400 × 38 B
40-432	20 × 1 $\frac{1}{2}$
40-440	20 × 1 $\frac{1}{2}$ NL 500 × 38
40-534	24 × 1 $\frac{1}{2}$
40-540	24 × 1 $\frac{3}{8}$ × 1 $\frac{1}{2}$ 24 × 1 $\frac{1}{2}$ × 1 $\frac{3}{8}$
40-571	26 × 1 $\frac{1}{2}$ C.S. 26 × 1 $\frac{5}{8}$ × 1 $\frac{1}{2}$ NL
40-584	26 × 1 $\frac{1}{2}$ 650 × 35 B 650 × 38 B
40-590	26 × 1 $\frac{3}{8}$ × 1 $\frac{1}{2}$ NL
40-622	28 × 1 $\frac{5}{8}$ × 1 $\frac{1}{2}$ NL 700 × 38 C
40-635	28 × 1 $\frac{1}{2}$ × 1 $\frac{3}{8}$ 700 B Standard 700 × 35 B 700 × 38 B
44-194	10 × 1 $\frac{5}{8}$
44-288	14 × 1 $\frac{3}{8}$ × 1 $\frac{5}{8}$ 350 A 350 × 42 A
44-340	16 × 1 $\frac{5}{8}$
44-428	20 × 1 $\frac{5}{8}$ × 1 $\frac{1}{2}$
44-484	22 × 1 $\frac{5}{8}$ × 1 $\frac{1}{2}$
44-531	24 × 1 $\frac{5}{8}$ × 1 $\frac{1}{2}$
44-584	26 × 1 $\frac{1}{2}$ × 1 $\frac{5}{8}$ 650 B Semi-Comf. 26 × 1 $\frac{5}{8}$ × 1 $\frac{1}{2}$ 650 B $\frac{1}{2}$ Balloon 26 × 1 $\frac{3}{4}$ × 1 $\frac{1}{2}$ 650 × 42 B
44-622	28 × 1 $\frac{5}{8}$ 700 × 42 C
47-203	12 $\frac{1}{2}$ × 1.75 × 2 $\frac{1}{4}$
47-222	17 × 1 $\frac{3}{4}$
47-305	16 × 1.75 × 2
47-317	16 × 1 $\frac{3}{4}$
47-355	18 × 1.75 × 2
47-406	20 × 1.75 × 2 20 × 1.75
47-419	20 × 1 $\frac{3}{4}$
47-501 T	24 × 1 $\frac{3}{4}$ R 600 × 45 C
47-507	24 × 1.75 × 2 24 × 1.75
47-520	24 × 1 $\frac{3}{4}$
47-559	26 × 1.75 × 2 26 × 1.75
47-571	28 × 1 $\frac{3}{4}$ 650 × 46 C 26 × 1 $\frac{5}{8}$ 650 C S.C.
47-584	26 × 1.75 × 1 $\frac{1}{2}$ 650 × 45 B 26 × 1 $\frac{1}{2}$ × 1 $\frac{3}{4}$
47-622	28 × 1 $\frac{3}{4}$ 700 × 45 C 28 × 1.75 28 × 1 $\frac{5}{8}$ × 1 $\frac{3}{4}$
54-298	14 × 2 × 1 $\frac{3}{4}$
54-305	16 × 2
54-400	20 × 2 × 1 $\frac{3}{4}$ 28 × 2 F 4 J
54-406	20 × 2.00
54-428	20 × 2

Table 2 — Tyres mounted on straight side rims —
Correspondence between "tyre size designation" and "old markings" (concluded)

Tyre size designation	Old markings
54-559	26 × 2.00
54-571	26 × 1 $\frac{3}{4}$ × 2
	26 × 2 × 1 $\frac{3}{4}$ 650 × 50 C
	26 × 2
54-584	26 × 2 × 2 $\frac{1}{2}$
	26 × 1 $\frac{1}{2}$ × 2
54-609	28 × 2
57-239	300 × 55 A

Tyre size designation	Old markings
57-251 T	315 × 55
57-390	450 × 55 A
57-406	20 × 2.125
	20 × 2.125 × 2
62-203	12 $\frac{1}{2}$ × 2 $\frac{1}{4}$ 320 × 57
62-305	16 × 2.125
67-203	13 × 2 $\frac{1}{2}$ 330 × 65
67-381	20 × 2 $\frac{1}{2}$

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Section two : Tyres mounted on hooked bead rims

8 Definitions

For definitions of terms relating to tyres, see ISO 4223.

9 Tyre designation

The tyre designation shall be shown on the sidewall of the tyre and shall include the following marking :

9.1 Tyre size designation

The characteristics shall be indicated as follows :

Overall diameter code	"X"	Nominal section code
-----------------------	-----	----------------------

9.1.1 Overall diameter code

The overall diameter code shall be in whole even numbers.

9.1.2 Symbol "X"

The symbol "X" shall be included between the code corresponding to the overall diameter and the code corresponding to the nominal section.

9.1.3 Nominal section code

The nominal section code shall be expressed in hundredths or thousandths, ending in 5 (for example 1.375).

9.2 Preferred direction of rotation

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

9.3 Example

A tyre having overall diameter code 20 and nominal section code 1.375 will be marked :

20 × 1.375

10 Tyre dimensions

10.1 Design new tyre dimensions

10.1.1 Measuring rim width and design dimensions

Table 3 gives the measuring rim width (R_M), the design new tyre section width (S) and the design new tyre section height (H) for a given nominal section code.

Table 3 - Tyres mounted on hooked bead rims — Measuring rim width and design dimensions

Values in millimetres

Nominal section code	Measuring rim width ¹⁾ R_M	Design new tyre	
		Section width S	Section height ²⁾ H
1.25	19,8	32	28
1.375	19,8	35	31
1.75	24,6	44	39
2.125	27,0	54	48

1) To be revised.

2) The design section height equals 0,88 X design section width rounded to whole numbers.

10.1.2 Design new tyre overall diameter (D_o)

The design new tyre overall diameter equals the sum of the nominal outer rim diameter (ODR) plus twice the design section height (H) :

$$D_o = ODR + 2 H$$

See part 3, table 1, for existing values of ODR .

10.2 Calculation of maximum tyre dimensions in service (for use by vehicle manufacturers in designing for tyre clearances)

10.2.1 Maximum overall width in service (W_{max})

The maximum overall width in service equals the design new tyre section width (S) plus 3 mm :

$$W_{max} = S + 3 \text{ mm}$$

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

10.2.2 Maximum overall diameter in service ($D_{o,max}$)

The maximum overall diameter in service equals the nominal outer rim diameter (ODR) plus twice the design new tyre section height (H) plus 6 mm :

$$D_{o,max} = ODR + 2 H + 6 \text{ mm}$$

It includes manufacturing tolerances and growth due to service.