INTERNATIONAL STANDARD

ISO 5775-1

Fifth edition
1997-12-01

Bicycle tyres and rims —

Part 1:
Tyre designations and dimensions

Pneumatiques et jantes pour cycles —

Partie 1: Désignation et cotes des pneumatiques

Reference number
ISO 5775-1:1997(E)

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.

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.

International Standard ISO 5775-1 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves,* Subcommittee SC 10, *Cycle, moped, motorcycle tyres and rims.*

This fifth edition cancels and replaces the fourth edition (ISO 5775-1:1994), of which it constitutes a technical revision.

ISO 5775 consists of the following parts, under the general title *Bicycle tyres and rims*:

Part 1: Tyre designations and dimensions

Part 2: Rims

Annex A of this part of ISO 5775 is for information only.

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet central@iso.ch
X.400 c=ch; a=400net; p=iso; o=isocs; s=central

Printed in Switzerland

Bicycle tyres and rims —

Part 1:
Tyre designations and dimensions

1 Scope

This part of ISO 5775 specifies the designations and dimensions for pneumatic bicycle tyres:

— "wired edge" tyres mounted on straight side or crotchet type rims, and

— "beaded edge" tyres mounted on hooked bead rims.

Tubular sew-up tyres and non-pneumatic tyres are not covered by this part of ISO 5775.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 5775. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5775 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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

ISO 5775-2:1996, *Bicycle tyres and rims — Part 2: Rims.*

3 Definitions

For the purposes of this part of ISO 5775, the definitions given in ISO 4223-1 apply.

1) To be published. (Revision of ISO 4223-1:1989)

4 "Wired edge" tyres mounted on straight side or crotchet type rims

NOTE — For tyres that can be mounted on both straight side and hooked bead rims, see 5.4.

4.1 Tyre designation

The tyre designation for straight side and crotchet type rims shall be shown on the sidewall of the tyre and shall include the marking given in 4.1.1 to 4.1.4.

4.1.1 Tyre size designation

The characteristics shall be indicated as follows:

Nominal section width	Tyre construction code	Nominal rim diameter

4.1.1.1 Nominal section width

The nominal section width of the tyre shall be expressed in millimetres.

4.1.1.2 Tyre construction code

The tyre construction code shall be a separated dash.

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

4.1.1.3 Nominal rim diameter

The nominal rim diameter shall be expressed in millimetres.

4.1.2 Old marking

To help customers in those countries where other systems of marking were used, the old marking(s) may 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 4.1.1 be adopted. See annex A for correspondence between "tyre size designation" and "old markings". Sizes not included in annex A shall bear the tyre size designation only.

4.1.3 Other service characteristics

4.1.3.1 In the case of tubeless tyres, the marking "TUBELESS" shall be shown on the tyre.

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

4.1.3.3 Specific indications, if required, may be added to indicate

a) the recommended or the maximum inflation pressure, in kilopascals;

b) other characteristics.

4.1.4 Example

A tyre having nominal section width 32 mm, nominal rim diameter 597 mm and recommended inflation pressure of 400 kPa shall be marked as follows:

32 - 597 inflate to 400 kPa

4.2 Tyre dimensions

See figure 1 for tread and tyre dimensions.

4.2.1 Calculation of "design tyre" dimensions

4.2.1.1 Theoretical rim width, R_{th}

The theoretical rim width, R_{th}, is equal to 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 $S_N \leqslant 30$, $K_1 = 0{,}65$. For tyres with $S_N > 30$, $K_1 = 0{,}55$.

4.2.1.2 Measuring rim width, R_m

The measuring rim width, R_m, is the width of the existing rim nearest to the theoretical rim width, R_{th}. See ISO 5775-2 for existing rim widths.

4.2.1.3 Design tyre section width, S

The design tyre section width, S, is the nominal section width, S_N, transferred from the theoretical rim width, R_{th}, to the measuring rim width, R_m:

$$S = S_N + K_2 (R_m - R_{th})$$

rounded to the nearest whole number.

NOTE — For tyres existing concepts, $K_2 = 0{,}4$

4.2.1.4 Design tyre section height, H

The design tyre section, H, is equal:

— to the nominal section width, S_N, when $S_N \geqslant 28$ mm;

— to the nominal section width, S_N, plus 2,5 mm when $S_N < 28$ mm.

4.2.1.5 Design tyre overall diameter, D_o

The design tyre overall diameter, D_o, is the sum of the nominal rim diameter, D_r, plus twice the design tyre section height, H:

$$D_o = D_r + 2H$$

Existing values of the nominal rim diameter, D_r, are given in ISO 5775-2.

4.2.2 Calculation of maximum tyre dimensions in service

The calculation is for use by vehicle manufacturers in designing for tyre clearance.

4.2.2.1 Maximum overall width in service, W_{max}

The maximum overall width in service, W_{max}, is equal to the design tyre section width, S, plus a value, as shown in table 1.

Table 1 — Maximum overall width in service

Dimensions in millimetres

Tyre type (see 4.3)	Nominal section width S_N	Maximum overall width in service W_{max}
A	$\leqslant 25$	$S + 1$
	$25 < S_N \leqslant 35$	$S + 2$
	> 35	$S + 3$
D	all S_N	$S + 8$

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

4.2.2.2 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, plus twice the design tyre section height, H, plus a value as follows:

$D_{o,max} = D_r + 2H + 6$ mm for type A tyres;

$D_{o,max} = D_r + 2H + 10$ mm for type D tyres.

This includes manufacturing tolerances and growth due to service.

4.2.2.3 Minimum overall width, S_{min}

The minimum overall width, S_{min}, is equal to the design tyre section width, S, plus a value, as shown in table 2.

Table 2 — Minimum overall width

Dimensions in millimetres

Nominal section width S_N	Minimum overall width S_{min}
$\leqslant 28$	$S - 2$
> 28	$S - 3$

4.2.3 Values

Table 3 shows the dimensions for measuring rim width, design section width and design section height according to 4.2.1 for nominal section widths to be used.

Table 3 — "Wired edge" tyres mounted on straight side rims — Design tyre dimensions

Dimensions in millimetres

Nominal section width S_N	Measuring rim width [1] R_m	Design tyre	
		Section width S	Section height H
16	13C	16	18,5
18	13C	18	20,5
20	13C	20	22,5
23	15C	23	25,5
25	15C	25	27,5
28	18	28	28
32	18	32	32
35	20	35	35
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

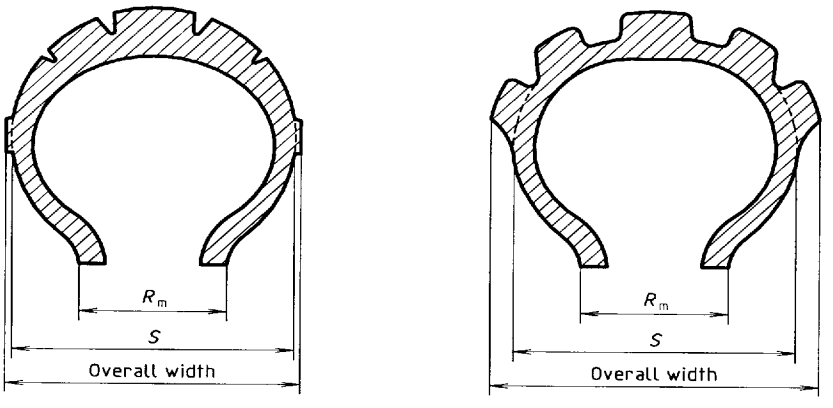
1) For dimensions of measuring rims, see ISO 5775-2.

4.3 Tread configurations

Figure 1 shows two principal tread configurations which apply to bicycle tyres.

Tread type A corresponds to highway service tyres.

Tread type D corresponds to tyres for on-and-off road service tyres (e.g. mountain bikes).



Type A Type D

Figure 1 — Tread configurations

4.4 Tyre dimension measurement method

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.

4.5 Recommended rim contours

The recommended straight side and crotchet type rim contours correlated to nominal tyre section widths, S_N, are presented in table 4.

When inflation pressures over 500 kPa are used, appropriate rim tapes shall be fitted.

When mounting the tyre on a permitted rim, the section width of the tyre varies by 0,4 times the difference between the recommended and permitted rim widths.

NOTES

1 For tyres for foldable bicycles, consult the tyre manufacturer for the types of rims permitted.

2 Rim dimensions and bead seat characteristics are given in ISO 5775-2.

4.6 Minimum inflation pressure

The deflection of the tyre in use shall not exceed 30 % of the tyre section height. The tyre inflation pressure shall not be less than:

— 300 kPa for narrow tyres (i.e. with nominal section width 25 and below);

— 200 kPa for other sizes in normal highway service;

— 150 kPa for off-the-road service.

Table 4 — "Wired edge" tyres mounted on straight side and crotchet type rims — Recommended rims

Dimensions in millimetres

Nominal section width S_N	Recommended rims[1)]	
	Straight side rims	Crotchet type rims
16	—	13C
18	—	13C
20	—	13C
23	16	13C; 15C
25	16; 18	13C; 15C; 17C
28	16; 18; 20	15C; 17C; 19C
32	16; 18; 20	15C; 17C; 19C
35	18; 20; 22	17C; 19C; 21C
37	18; 20; 22	17C; 19C; 21C
40	20; 22; 24	19C; 21C; 23C
44	20; 22; 24; 27	19C; 21C; 23C; 25C
47	20; 22; 24; 27	19C; 21C; 23C; 25C
50	22; 24; 27; 30.5	21C; 23C; 25C
54	27; 30.5	25C
57		25C
62		—

1) Crotchet type rims shall be used when tyre inflation pressures over 500 kPa are recommended.

5 "Beaded edge" tyres mounted on hooked bead rims

5.1 Tyre designation

The tyre designation for hooked bead rims shall be shown on the sidewall of the tyre and shall include the marking given in 5.1.1 to 5.1.3.

5.1.1 Tyre size designation

The characteristics shall be indicated as follows:

Overall diameter code	x	Nominal section width code

5.1.1.1 Overall diameter code

The overall diameter code shall be in whole even numbers.

5.1.1.2 Symbol "×"

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

5.1.1.3 Nominal section width code

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

5.1.2 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.

5.1.3 Example

A tyre having overall diameter code 20 and nominal section width code 1.375 shall be marked as follows:

20 x 1.375

5.2 Tyre dimensions

See figure 1 for tread and tyre dimensions.

5.2.1 "Design tyre" dimensions

5.2.1.1 Measuring rim width, R_m, and design dimensions

Table 5 gives the measuring rim width, R_m, the design tyre section width, S, and the design tyre section height, H, for a given nominal section width code.

Table 5 — "Beaded edge" tyres mounted on hooked bead rims — Measuring rim width and design dimensions

Dimensions in millimetres

Nominal section width code	Measuring rim width R_m	Design tyre	
		Section width S	Section height[1] H
1.25	20	32	28
1.375	19,8	35	31
1.75	25	44	39
2.125	27	54	48

1) The design section height is equal to 0,88 × design section width rounded to whole numbers.

5.2.1.2 Design tyre overall diameter, D_o

The design tyre overall diameter, D_o, is equal to the sum of the nominal outside rim diameter, D_2, plus twice the design section height, H:

$$D_o = D_2 + 2H$$

See ISO 5775-2 for existing values of nominal outside rim diameter.

5.2.2 Calculation of maximum tyre dimensions in service

This calculation is for use by vehicle manufacturers in designing for tyre clearance.

5.2.2.1 Maximum overall width in service, W_{max}

The maximum overall width service, W_{max}, is equal to the design tyre section width, S, plus 3 mm:

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

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

5.2.2.2 Maximum overall diameter in service, $D_{o,max}$

The maximum overall diameter in service, $D_{o,max}$, is equal to the nominal outside rim diameter, D_2, plus twice the design tyre section height, H, plus 6 mm:

$$D_{o,max} = D_2 + 2H + 6 \text{ mm}$$

This includes manufacturing tolerances and growth due to service.

5.2.3 Determination of nominal overall diameter code

The nominal overall diameter code expresses the value of the design tyre overall diameter, D_o, as is 5.2.1.2, multiplied by 0,04 and rounded to the nearest even number. (For example, if D_o = 450, nominal overall diameter code = 18.)

5.2.4 Values

Table 6 shows the dimensions for measuring rim width, measuring rim overall diameter, design section width, design overall diameter, maximum overall width in service and maximum overall diameter in service according to 5.2.1 and 5.2.2 for sizes of interest.

Table 6 — "Beaded edge" tyres mounted on hooked bead rims — Measuring rim, design tyre and in-service dimensions

Dimensions in millimetres

Tyre size designation	Measuring rim		Design tyre		In-service	
	Width	Overall diameter	Section width	Overall diameter	Maximum overall width	Maximum overall diameter
20 × 1.25	20	458,8	32	515	35	521
24 × 1.25		560,4		616		622
26 × 1.25		611,2		666		673
20 × 1.375	20	458,8	35	521	38	527
24 × 1.375		560,4		622		628
26 × 1.375		611,2		673		679
16 × 1. 75	25	320,7	44	399	47	405
18 × 1. 75		371,5		449		455
20 × 1. 75		422,3		500		506
22 × 1. 75		473,1		551		557
24 × 1. 75		523,9		602		608
26 × 1. 75		574,7		653		659
16 × 2.125	27	320,7	54	417	57	423
20 × 2.125		422,3		518		524
24 × 2.125		523,9		620		626
26 × 2.125		574,7		671		677

5.3 Tyre dimension measurement method

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.

5.4 Tyres than can be mounted on both hooked bead and straight side rims

5.4.1 Tyre designation

Tyres of special construction can be designed in such a way as to permit their mounting both on hooked bead and straight side rims of similar diameters. In this case, the tyre shall be marked with the tyre designations of both categories, the designations being separated by a solidus; for example:

20 x 1.75/47 - 406

5.4.2 Maximum tyre dimensions in service

The maximum tyre dimensions in service of the tyre shall conform to those of each tyre designation when fitted on the proper rim.

Annex A
(informative)

Old marking

Table A.1 — Tyres mounted on straight side rims — Correspondence between "tyre size designation" and "old markings"

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

Tyre size designation	Old marking	
32 — 597	26 × 1 1/4	
32 — 622	28 × 1 5/8 × 1 1/4 28 × 1 1/4 × 1 3/4	700 × 32 C 700 × C Course
32 — 630	27 × 1 1/4	
32 — 635	28 × 1 1/2 × 1 1/8	700 × 28 B 700 B Course
37 — 288		350 A Comfort 350 A 1/2 Balloon
37 — 298	14 × 1 3/8	
37 — 337	16 × 1 3/8 ANL	
37 — 340	16 × 1 3/8 NL	400 A Comfort 400 A 1/2 Balloon 400 × 42 A 400 × 35 A
37 — 349	16 × 1 3/8 NL	
37 — 387	18 × 1 3/8	
37 — 390		450 A Comfort 450 A 1/2 Balloon
37 — 400	18 × 1 3/8	
37 — 438	20 × 1 3/8 NL	
37 — 440		500 A Comfort 500 A 1/2 Balloon
37 — 451	20 × 1 3/8	
37 — 489	22 × 1 3/8 NL	
37 — 490		550 A Comfort 550 A 1/2 Balloon
37 — 498	22 × 1 3/8 × 1 1/4 NL	
37 — 501	22 ×1 3/8	
37 — 540	24 × 1 3/8	
37 — 541		600 A Comfort 600 A 1/2 Balloon 600 × 35 A
37 — 565	25 × 1 3/8	
37 — 584	26 × 1 1/2 × 1 3/8 26 × 1 3/8 × 1 1/2	

Tyre size designation	Old marking	
37 — 590	26 × 1 3/8	650 A 650 × 35 A
37 — 622	28 × 1 5/8 × 1 3/8 28 × 1 3/8 1 5/8	700 × 35 C
37 — 642	28 × 1 3/8	700 × 35 A
40 — 279	14 × 1 1/2	350 × 38 B
40 — 288	14 × 1 1/2 NL	350 × 38
40 — 330	16 × 1 1/2	400 × 38 B
40 — 432	20 × 1 1/2	
40 — 440	20 × 1 1/2 NL	500 × 38
40 — 534	24 × 1 1/2	
40 — 540	24 × 1 3/8 × 1 1/2 24 × 1 1/2 × 1 3/8	
40 — 571	26 × 1 1/2 C.S. 26 × 1 5/8 × 1 1/2 NL	
40 — 584	26 × 1 1/2	650 × 35 B 650 × 38 B
40 — 590	26 × 1 3/8 × 1 1/2 NL	
40 — 622	28 × 1 5/8 × 1 1/2 NL	700 × 38 C
40 — 635	28 × 1 1/2 × 1 3/8× 28 × 1 1/2	700 B Standard 700 × 35 B 700 × 38 B
44 — 194	10 × 1 5/8	
44 — 288	14 × 1 3/8 × 1 5/8	350 A 350 × 42 A
44 — 340	16 × 1 5/8	
44 — 428	20 1 5/8 × 1 1/2	
44 — 484	22 × 1 5/8 × 1 1/2	
44 — 531	24 × 1 5/8 × 1 1/2	
44 — 584	26 × 1 1/2 × 1 5/8 26 × 1 5/8 × 1 1/2 26 × 1 3/4 × 1 1/2	650 B Semi-comfort 650 B 1/2 Balloon 650 × 42 B
44 — 622	28 × 1 5/8	700 × 42 C
44 — 635	28 × 1 5/8 × 1 1/2 28 × 1 1/2 × 1 5/8	
47 — 203	12 1/2 × 1.75 × 2 1/4	
47 — 222	11 × 1 3/4	
47 — 305	16 × 1.75 × 2	
47 — 317	16 × 1 3/4	
47 — 355	18 × 1.75 × 2	
47 — 406	20 × 1.75 × 2 20 × 1.75	

Tyre size designation	Old marking	
47 — 419	20 × 1 3/4	
47 — 501 T	24 × 1 3/4 R	600 × 45 C
47 — 507	24 × 1.75 × 2 24 × 1.75	
47 — 520	24 × 1 3/4	
47 — 559	26 × 1.75 × 2 26 × 1.75	
47 — 571	26 × 1 3/4 26 × 1 5/8	650 × 45 C 650 C S.C.
45 — 584	26 × 1.75 × 1 1/2 26 × 1 1/2 × 1 3/4	650 × 45 B
47 — 622	28 × 1 3/4 28 × 1.75 28 × 1 5/8 1 3/4	700 × 45 C
54 — 298	14 × 2 × 1 3/4	
54 — 305	16 × 2	
54 — 400	20 × 2 × 1 3/4 20 × 2 F 4 J	
54 — 406	20 × 2.00	
54 — 428	20 × 2	
54 — 559	26 × 2.00	
54 — 571	26 × 1 3/4 × 2 26 × 2 × 1 3/4 26 × 2	650 × 50 C
54 — 584	26 × 2 × 2 1/2 26 × 1 1/2 × 2	
54 — 609	28 × 2	
57 — 239		300 × 55 A
57 — 251 T		315 × 55
57 — 305	16 × 2.125 16 × 2.125 × 2	
57 — 390		450 × 55 A
57 — 406	20 × 2.125 20 × 2.125 × 2	
57 — 507	24 × 2.125 24 × 2.125 × 2	
57 — 559	26 × 2.125 26 × 2.125 × 2	
62 — 203	12 1/2 × 2 1/4	320 × 57
62 — 305	16 × 2.125	
67 — 203	13 × 2 1/2	330 × 65
67 — 381	20 × 2 1/2	

ICS 83.160.10

Descriptors: road vehicles, bicycles, tyres, pneumatic tyres, dimensions, designation.

Price based on 11 pages