INTERNATIONAL STANDARD

ISO 4209-2

Fourth edition
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Truck and bus tyres and rims (metric series) —

Part 2: **Rims**

Pneumatiques et jantes (séries millimétriques) pour camions et autobus —

Partie 2: Jantes

Reference number
ISO 4209-2:2012(E)

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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.

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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.

ISO 4209-2 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 4, *Truck and bus tyres and rims*.

This fourth edition cancels and replaces the third edition (ISO 4209-2:2001), which has been technically revised.

ISO 4209 consists of the following parts, under the general title *Truck and bus tyres and rims (metric series)*:

— *Part 1: Tyres*

— *Part 2: Rims*

Truck and bus tyres and rims (metric series) —

Part 2: Rims

1 Scope

This part of ISO 4209 specifies the designations, contours and dimensions of drop-centre (one-piece) rims for use on trucks and buses.

The rim dimensions are those rim contour dimensions necessary for mounting and fitment of the tyre to the rim.

Tyre designations, dimensions and load ratings are given in ISO 4209-1.

2 Normative references

The following referenced documents are indispensable for the application of the document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3911, *Wheels and rims for pneumatic tyres — Vocabulary, designation and marking*

ISO 4000-2, *Passenger car tyres and rims — Part 2: Rims*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3911 apply.

4 Designation and marking

The rim shall be designated by its nominal rim diameter code and nominal rim width code (e.g. 17.5 × 5.25), and rim flange when specified (for example: 16 × 6 K).

5 5° tapered (drop-centre) rims

5.1 Rim flange

Recommended rim flange contours for K rims are given in Table 1.

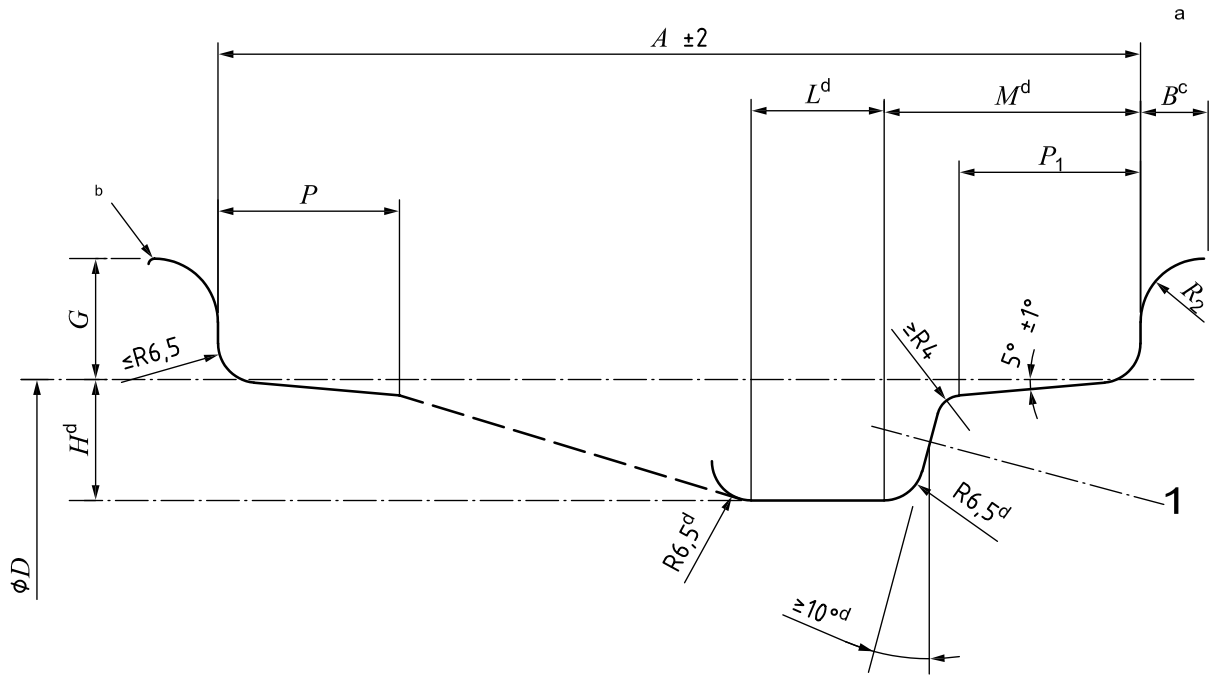
Refer to ISO 4000-2 for B and J contour rims.

5.2 Rim contours

The dimensions and tolerances of the rims shall be as given in Figure 1 and Tables 1 and 2.

Optional bead seat contours and their dimensions are given in Figure 2 and Table 3.

Dimensions in millimetres



Key

1 valve hole (see 5.4)

NOTE For use with tubeless tyres, humps are necessary on the vehicle outboard side and preferred on the vehicle inboard side.

a Tyre-mounting side.

b Break corner equivalent to 0,5 minimum R.

c Flange width includes edge radius. The portion of a flange beyond the minimum width shall not be higher than the highest point of the flange.

d These dimensions comprise the minimum well envelope for tyre-mounting purposes, except for localized areas at the weld or the valve hole.

Figure 1 — Contour of 5° tapered (drop-centre) rims

Table 1 — Dimensions of 5° (drop-centre) rim contours

Dimensions in millimetres

Nominal rim diameter code	Nominal rim width code and flange type[b]	B min.	G ±1,0	P min.	P_1 min.	H [a] gauge	L gauge	M max.	R_2 min.
16	6 K and wider	11,5	20	19,5	19,5	20	22	47	10,5

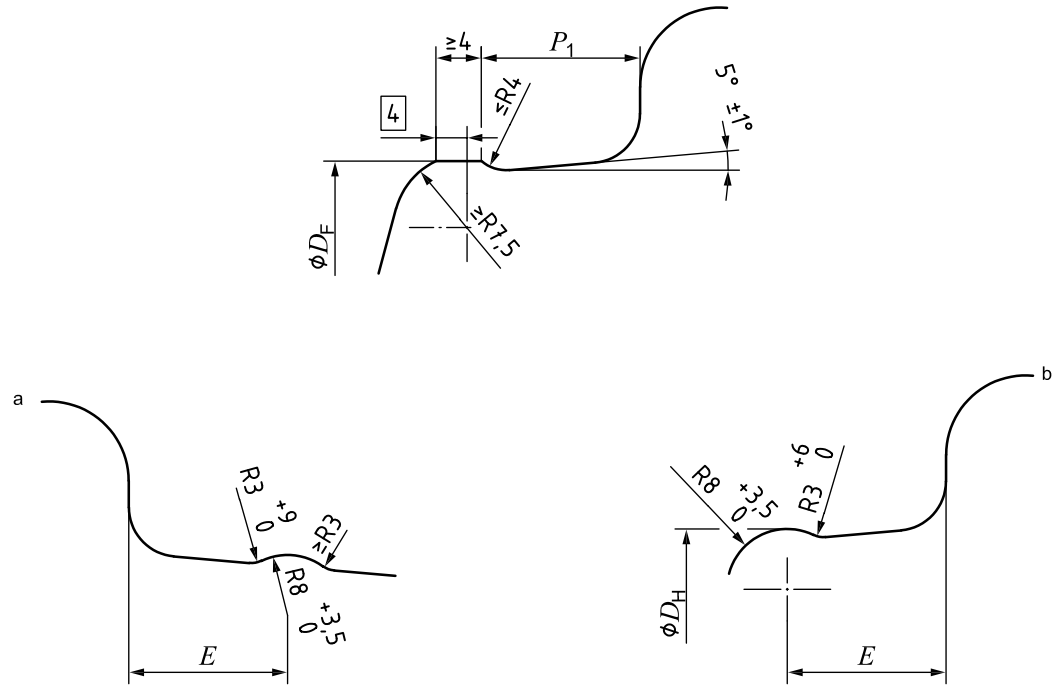
a Minimum dimensions for the well depth, H, and the well angle are required for tyre-mounting. Larger values may be required to ensure sufficient space for tubeless tyre valve seating.

b Dimension A = nominal rim width code × 25,4 (rounded to 0,5 mm) (increments of code = 0,5).

Table 2 — Nominal rim width code

Nominal rim width code		*A* mm
6.00	6	152,5
6.50	6 1/2	165
7.00	7	178
7.50	7 1/2	190,5
8.00	8	203
8.50	8 1/2	216
9.00	9	228,5
9.50	9 1/2	241,5
10.00	10	254
10.50	10 1/2	266,5
11.00	11	279,5
12.00	12	305
13.00	13	330
14.00	14	355,5
15.00	15	381

Dimensions in millimetres



a Non-mounting side.

b Tyre-mounting side.

Figure 2 — Optional bead seat contours

Table 3 — E dimension for round humps

Nominal rim width code and flange type	E mm
6 K and wider	$21^{+2,0}_{0}$
For E, $19{,}5^{+2,0}_{0}$ is also permitted.	

5.3 Rim diameter and hump circumference

The specified rim diameter, D, for the appropriate nominal rim diameter code and the hump circumferences are given in Table 4.

Table 4 — Specified rim diameter and hump circumference of 5° tapered (drop-centre) rims

Dimensions in millimetres

Nominal rim diameter code	Specified rim diameter[a] $D \pm 0{,}4$	Hump circumference	
		Flat hump $\varnothing D_{F\,-3,5}^{\;0}$	Round hump[b] $\varnothing D_{H\,-3,0}^{\;0}$
16	405,6	1 274,2	1 276,4

[a] The tolerance for the specified rim diameter is for tyre design purposes only. The rim measurement is by a circumference-measuring tape related to a mandrel.

[b] For round humps on the vehicle inboard side only, a tolerance of $^{0}_{-5,0}$ is also permitted.

5.4 Valve holes

5.4.1 Valve hole edges on the tyre side of rim shall be rounded or chamfered.

5.4.2 Valve hole edges on the weather (external) side of the rim shall be free from any burrs that could damage the valve.

5.4.3 To provide for adequate sealing, an unbroken, smooth inside surface having at least 0,75 mm or 25 % of rim thickness, whichever is greater, shall be maintained.

5.4.4 Suitable valves shall be used. Valve hole details for snap-in valves shall be as shown in Figures 3 and 4.

NOTE Holes for other valves are under consideration for a future revision of this part of ISO 4209.

Dimensions in millimetres

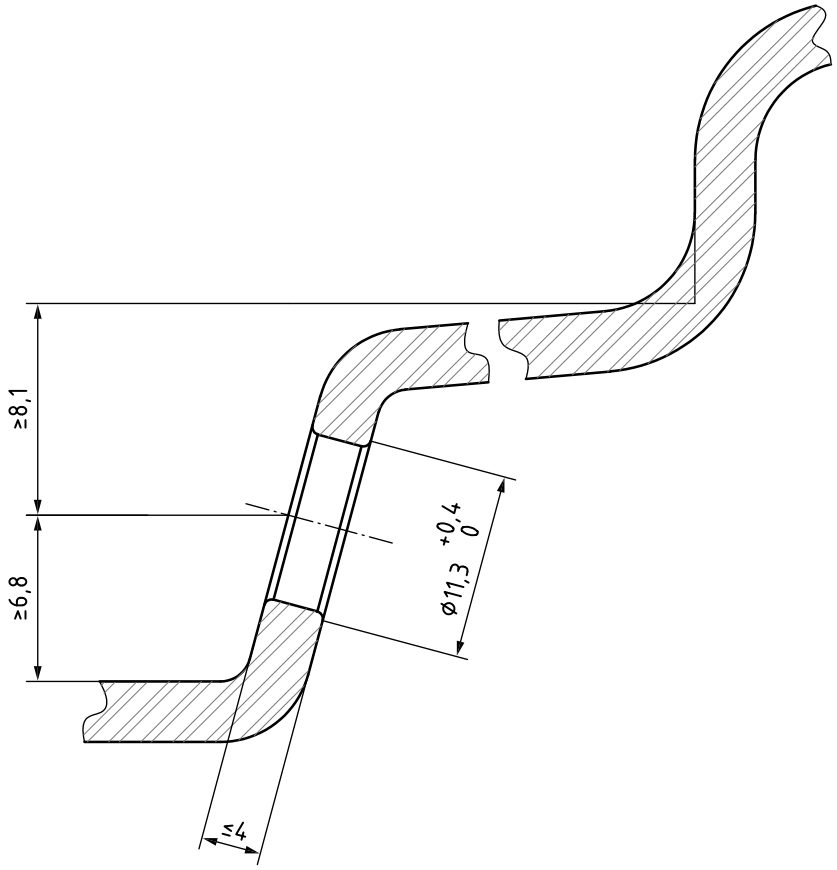
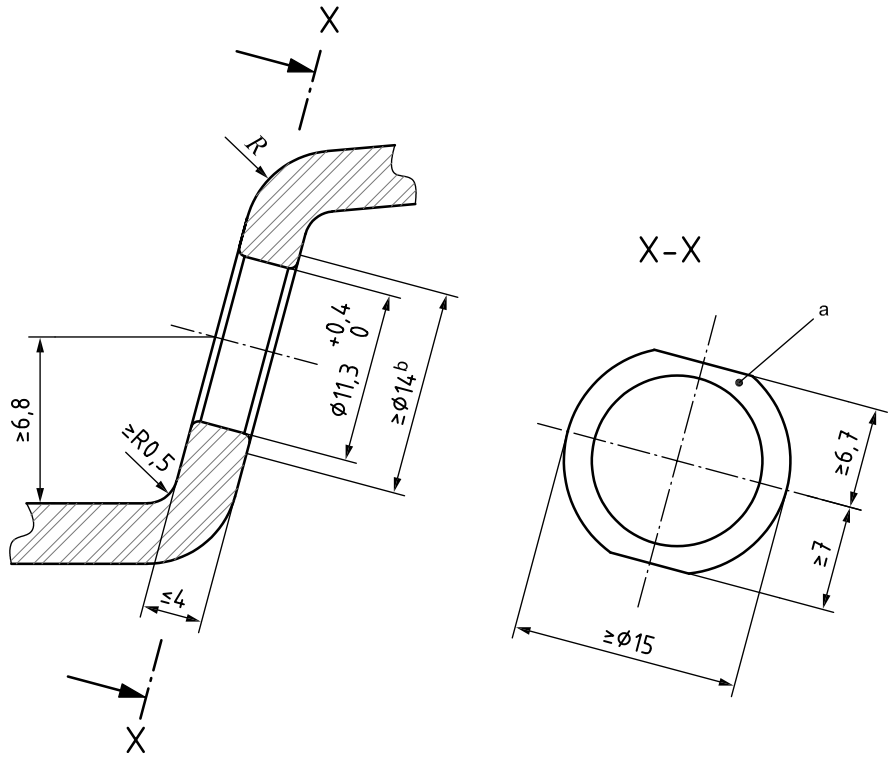


Figure 3 — Valve hole dimensions

Dimensions in millimetres



a Flat surface with no radial striations.

b Flat surface for clamp-in valves.

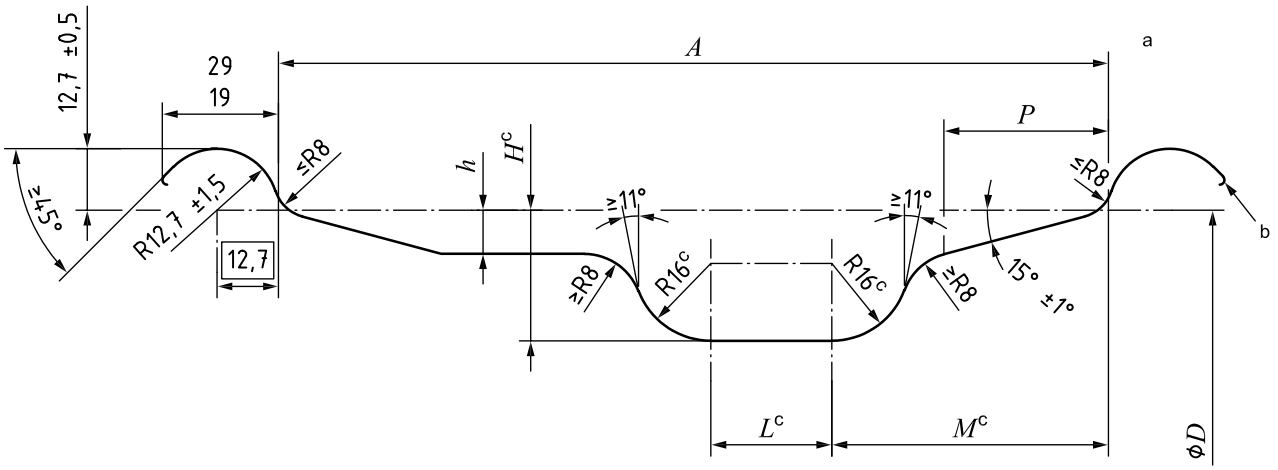
Figure 4 — Optional flat surface around valve hole

6 15° tapered (drop-centre) rims

6.1 Rim contours

The dimensions and tolerances of rims shall be as given in Figure 5 and Tables 5 and 6.

Dimensions in millimetres



a Tyre-mounting side.

b Break corner equivalent to 0,5 mm minimum radius.

c These dimensions comprise the minimum well envelope for tyre-mounting purposes.

Figure 5 — Dimensions of 15° tapered (drop-centre) rim contours

Table 5 — Dimensions of 15°tapered (drop-centre) rim contours for nominal rim width codes ≤ 9.75

Dimensions in millimetres

Rim size designation	*A* ±3,5	*H*[a] min.	*h* min.	*L*[a] min.	*M*[a] max.	*P* min.
17.5 × 5.25	133,5	24	7	4	55	25
19.5 × 5.25		27			56	
22.5 × 5.25		30		8	57	
17.5 × 6.00	152,5	24	8,5	11	60	
17.5 × 6.00 HC		30			63	30
19.5 × 6.00		27			62	30[b]
19.5 × 6.00 RW		24	9	19	56	25
22.5 × 6.00		30	8.5	11	63	30
17.5 × 6.75	171,5	24	9		62[c]	25
17.5 × 6.75 HC		30		14	70	32
19.5 × 6.75		27			64	30[b]
19.5 × 6.75 RW		24		19	56	25
22.5 × 6.75		30		14	66[c]	32
17.5 × 7.50	190,5	24	9.5		65[c]	25
17.5 × 7.50 HC		30	10	21	74	34
19.5 × 7.50		27	9.5		67	30
19.5 × 7.50 RW		25			58	
22.5 × 7.50		30	10		68[c]	34
24.5 × 7.50					70[c]	
17.5 × 8.25	209,5	24	9,5	14	55[c]	26
17.5 × 8.25 HC		30	10	28	74	36
19.5 × 8.25		27	9.5		67	30
19.5 × 8.25 RW		25		21	58	
22.5 × 8.25		30	10	28	70[c]	36
24.5 × 8.25					72[c]	
19.5 × 9.00	228,5		9,5		68	30
22.5 × 9.00			10		70[c]	36
24.5 × 9.00					72[c]	
22.5 × 9.75	247,5				70[c]	

[a] These dimensions comprise the minimum well envelope for tyre-mounting purposes.

[b] For light truck application (load index ≤ 121 in single mounting), 25 mm may be used. These rims shall be appropriately identified.

[c] Larger dimensions may be used subject to confirmation by tyre-mounting trials.

Table 6 — Dimensions of 15° tapered (drop-centre) rim contours for nominal rim width codes ≥ 10.50

Dimensions in millimetres

Rim size designation	A ±5,0	H[a] min.	h min.	L[a] min.	M[a] max.	P
17.5 × 10.50	266,5	24	9,5	14	55	26
19.5 × 10.50		30	10	30	68[b]	34
22.5 × 10.50					70[b]	
19.5 × 11.75	298,5				68[b]	
22.5 × 11.75					70[b]	
19.5 × 12.25	311				68[b]	
22.5 × 12.25					70[b]	
19.5 × 13.00	330				68[b]	
22.5 × 13.00					70[b]	
19.5 × 14.00	355,5				68[b]	
22.5 × 14.00					70[b]	
19.5 × 15.00	381		11		68[b]	
22.5 × 15.00					70[b]	
20.5 × 16.00	406,5				70[b]	
22.5 × 16.00					70[b]	
20.5 × 18.00	457				70[b]	
22.5 × 18.00					70[b]	

[a] These dimensions comprise the minimum well envelope for tyre-mounting purposes.

[b] Larger dimensions may be used subject to confirmation by tyre-mounting trials.

6.2 Rim diameters

The nominal rim diameter codes and the specified rim diameters for 15° tapered (drop-centre) rim contours are given in Table 7.

Table 7 — Nominal rim diameter code and specified rim diameter

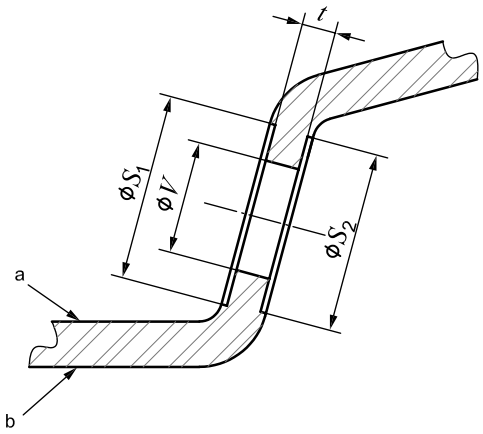
Nominal rim diameter code	Specified rim diameter[a] $\varnothing D$ mm ±0,4
17.5	444,5
19.5	495,3
20.5	520,7
22.5	571,5
24.5	622,3

[a] Tolerance is for tyre design purposes only. Rim measurement is by circumference-measuring tape related to a mandrel.

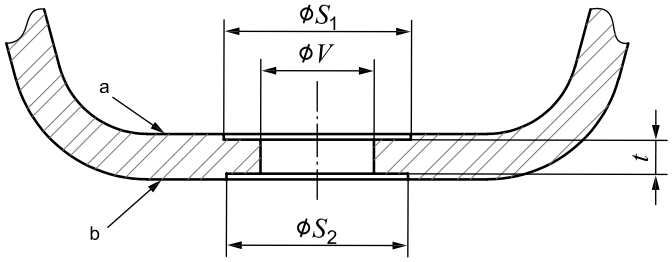
6.3 Valve holes

6.3.1 General

The dimensions, locations and tolerances of rim holes are given in Figure 6 and Table 8.



a) Side of well



b) Bottom of well

a Tyre side.

b External side.

Figure 6 — Dimensions of valve holes for 15° tapered rims

Table 8 — Dimensions of valve holes for 15° tapered rims

Dimensions in millimetres

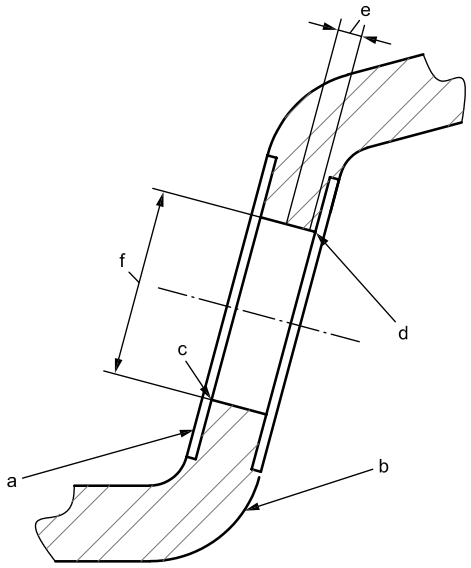
Hole diameter min./ max. V	Location	Circular flat diameter min. Tyre side S_1	Circular flat diameter min. External side S_2	Rim thickness at circular flat min./max. t
9.7/10.0	Side of well	18	16	5,5/6,0
		16,5	12,5	3/6
	Bottom of well	18	16	5,5/5,6
15.7/16.1	Side of well	19,3	19,3	4,8/8
	Bottom of well	19,3	19,3	4,8/8
		27	27	3,5/6
Consult the valve manufacturer on valves for 9.7/10.0 hole with thickness, t, above 6 mm and for 15.7/16.1 hole with t above 8 mm. Circular flats S_1 and S_2 are to be parallel within 0,2 mm.				

6.3.2 Characteristics of valve holes

6.3.2.1 The edges of the holes on the tyre side of the rim shall be rounded or chamfered.

6.3.2.2 The edges of the holes on the external side of the rim shall be free from any burrs that could damage the valve.

6.3.2.3 To provide for adequate sealing for tubeless tyre rim valves, an unbroken, smooth inside surface of holes having at least 25 % of rim thickness shall be maintained. See Figure 7.



a Tyre side.
b External side.
c See 6.3.2.1.
d See 6.3.2.2.
e See 6.3.2.3.
f See 6.3.2.4.

Figure 7 — Valve holes

6.3.2.4 Holes shall be round within established diameter limits measured in any direction for applications above 300 kPa.

6.3.2.5 A concentric circular flat is mandatory to provide a flat surface for valves to seat properly in applications above 300 kPa.

6.3.2.6 For clamp-in type valves, the angle of circular flat is to be such as to position the valve to make the tip end accessible for inflating and checking inflation pressure in dual assemblies with current servicing equipment in the field.

Bibliography

[1] ISO 4209-1, *Truck and bus tyres and rims (metric series) — Part 1: Tyres*

ICS 43.040.50

Price based on 11 pages