



BSI Standards Publication

Passenger car tyres and rims

Part 2: Rims

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Passenger car tyres and rims —

Part 2:
Rims

*Pneumatiques et jantes pour voitures particulières —
Partie 2: Jantes*



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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).

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The committee responsible for this document is ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 3, *Passenger car tyres and rims*.

This sixth edition cancels and replaces the fifth edition (ISO 4000-2:2013), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the article of valve hole for snap-in valve and clamp-in valve has been divided;
- the tolerance of circumference for round hump has been corrected.

A list of all parts in the ISO 4000 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Passenger car tyres and rims —

Part 2: Rims

1 Scope

This document specifies the designation, contour and dimensions of 5° tapered (drop-centre) rims primarily intended for passenger cars.

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

ISO 9413, *Tyre valves — Dimensions and designation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3911 and ISO 9413 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Designation and marking

The rim shall be designated by its nominal rim-diameter code, nominal rim-width code and rim flange type (e.g. 15 × 6 J or 13 × 5.50 B) defined by ISO 3911.

5 5° tapered (drop-centre) rims

5.1 Rim flanges

Recommended rim flange contours are given in [Table 1](#) for the nominal rim diameter codes.

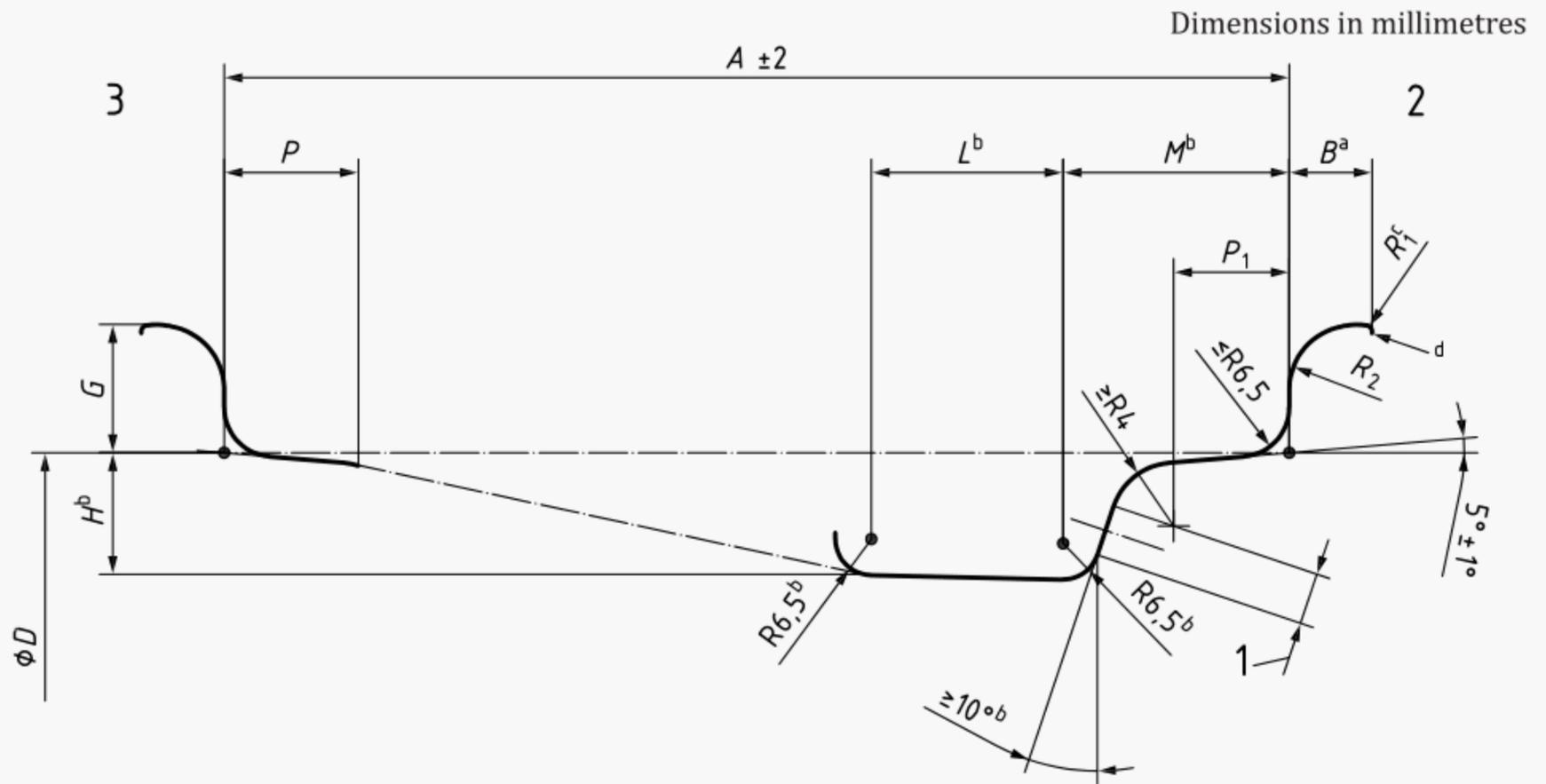
Table 1 — Recommended rim flanges

Nominal rim-diameter code	Rim flange
10	B
12	
13	
14	J
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
28	
30	

5.2 Rim contours

Dimensions and tolerances of the rims shall be as given in [Figure 1](#) and [Table 2](#). Optional hump contours and their dimensions are given in [Figure 2](#) and [Table 3](#).

The rim contour shall be rotational symmetric except for the valve hole area.



Key

- | | | | |
|----------|--|-----------------------|---------------------------------------|
| 1 | valve hole (see Clause 6) | <i>H</i> | well depth |
| 2 | tyre mounting side | <i>L</i> | well width |
| 3 | tyre non-mounting side | <i>M</i> | well position |
| <i>A</i> | specified rim width | <i>P</i> | bead seat width |
| <i>B</i> | flange width | <i>P</i> ₁ | bead seat width on tyre mounting side |
| <i>D</i> | specified rim diameter | <i>R</i> ₁ | flange compound radius |
| <i>G</i> | flange height | <i>R</i> ₂ | flange radius |
- a 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. Flange dimensions apply to both sides of the rim contour.
- b These dimensions comprise the minimum well envelope for tyre mounting purposes at *M* max. or less, except for localized areas at the weld or valve hole.
- c Depending on the actual values for flange curl and flange width, but max. equal to *R*₂.
- d Break corner equivalent to $\geq R0,5$.

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

Optional groove in rim flange for wheel weight retention is permissible.

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

Table 2 — Dimensions of 5° tapered (drop-centre) rims

Dimensions in millimetres

Diameter code	Rim width code and flange type ^c	<i>B</i> min.	<i>G</i> ±1,0	<i>P</i> min.	<i>P</i> ₁ min.	<i>H</i> ^a gauge	<i>L</i> gauge	<i>M</i> max.	<i>R</i> ₂ min.
10 12 13	3.00 B	10,0	14,5	13,0	15,0	15,0	16,0	28,0	7,5
	3.50 B	10,0	14,5	15,0	17,0	15,0	19,0	34,0	7,5
	4.00 B	10,0	14,5	15,0	17,0	15,0	19,0	45,0	7,5
	4.50 B and wider	10,0	14,5	19,5	19,5	15,0	22,0	45,0	7,5
14 through 21	3J	11,0	17,5	13,0	13,0	17,3 ^b	16,0	28,0	9,5
	3 1/2 J	11,0	17,5	15,0	17,0	17,3 ^b	19,0	34,0	9,5
	4J	11,0	17,5	15,0	17,0	17,3 ^b	19,0	45,0	9,5
	4 1/2 J and wider	11,0	17,5	19,5	19,5	17,3 ^b	22,0	45,0	9,5
22 and greater	4 1/2 J and wider	11,0	17,5	19,5	19,5	22,0 ^d	22,0	45,0	9,5

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

^b For J-type rims, a deviation to *H* gauge of 17 mm is permitted with a corresponding *M* max. of 43 mm.

^c $A = W \times 25,4$

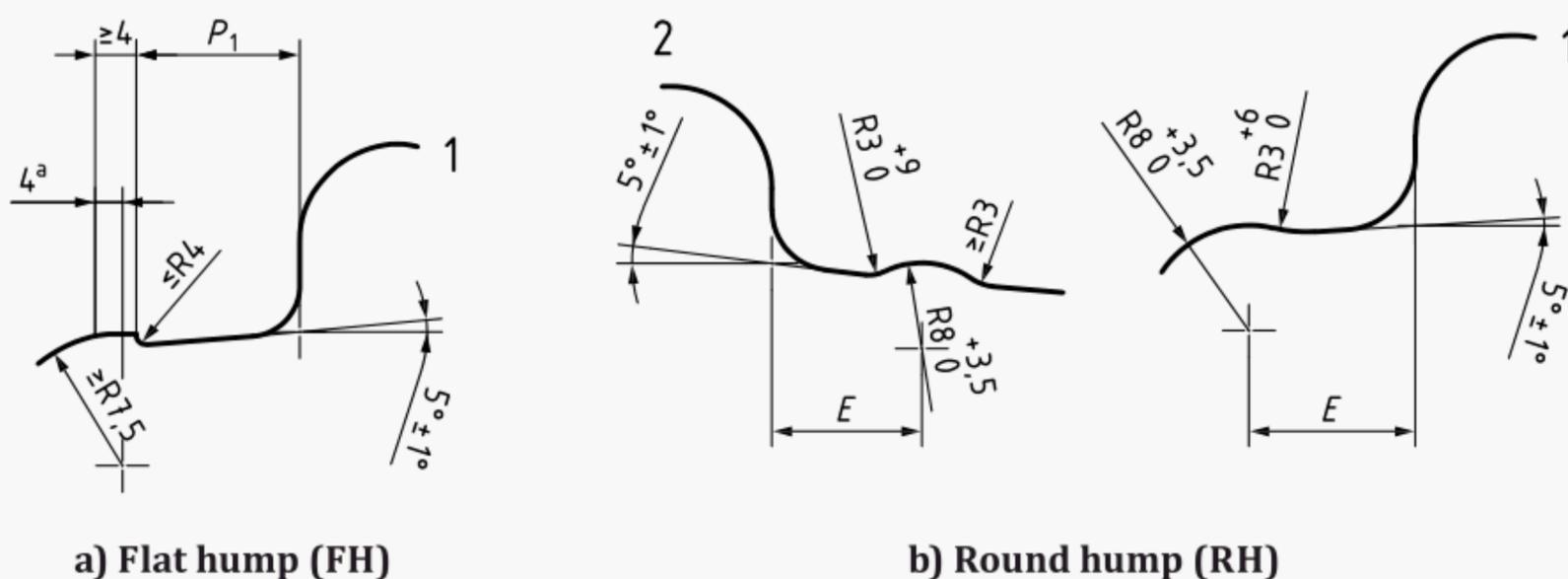
where

A is the specified rim width (rounded to the nearest 0,5 mm; increments of code = 0.5);

W is the rim width code.

^d Some existing designs may follow minimum value of 17,3 mm well depth.

Dimensions in millimetres



Key

1 tyre mounting side

2 tyre non-mounting side

^a 4 ref: the recommended value 4 mm which does not have to be used due to various constraints with a certain rim.

Figure 2 — Optional hump contours

Table 3 — E dimension for round humps

Dimensions in millimetres

Rim width code and flange type	E
3.00 B and 3 J	13 min.
3.50 B, 3 1/2 J, 4.00 B, 4 J	16 min.
4.50 B, 4 1/2 J and wider	21,0 ^{+2,0} ₀ ^a

^a 19,5^{+2,0}₀ mm permitted for rim widths 4.50 B (4 1/2 J) to 7.00 B (7 J).
NOTE See [Figure 2](#).

5.3 Rim diameter and hump circumference

The specified rim diameter, *D*, for nominal rim-diameter codes and hump circumferences is 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 <i>D</i> ± 0,4 ^a	Circumference	
		Flat hump $\begin{smallmatrix} 0 \\ -3,5 \end{smallmatrix}$	Round hump $\begin{smallmatrix} 0 \\ -3,0 \end{smallmatrix}$ ^b
10	253,2	795,4	797,6
12	304,0	955,0	957,6
13	329,4	1 034,8	1 037,0
14	354,8	1 114,6	1 116,8
15	380,2	1 194,4	1 196,6
16	405,6	1 274,2	1 276,4
17	436,6	1 371,6	1 373,8
18	462,0	1 451,4	1 453,6
19	487,4	1 531,2	1 533,4
20	512,8	1 611,0	1 613,2
21	538,2	1 690,8	1 693,0
22	563,6	1 770,6	1 772,8
23	589,0	1 850,4	1 852,6
24	614,4	1 930,2	1 932,4
25	639,8	2 010,0	2 012,2
26	665,2	2 089,8	2 092,0
28	716,0	2 249,4	2 251,6
30	766,8	2 409,0	2 411,2

^a Tolerance is for tyre design purpose only. The rim measurement is by a circumference-measuring tape related to a mandrel.
^b A tolerance of $\begin{smallmatrix} 0 \\ -5,0 \end{smallmatrix}$ mm is permitted on the vehicle inboard side only.

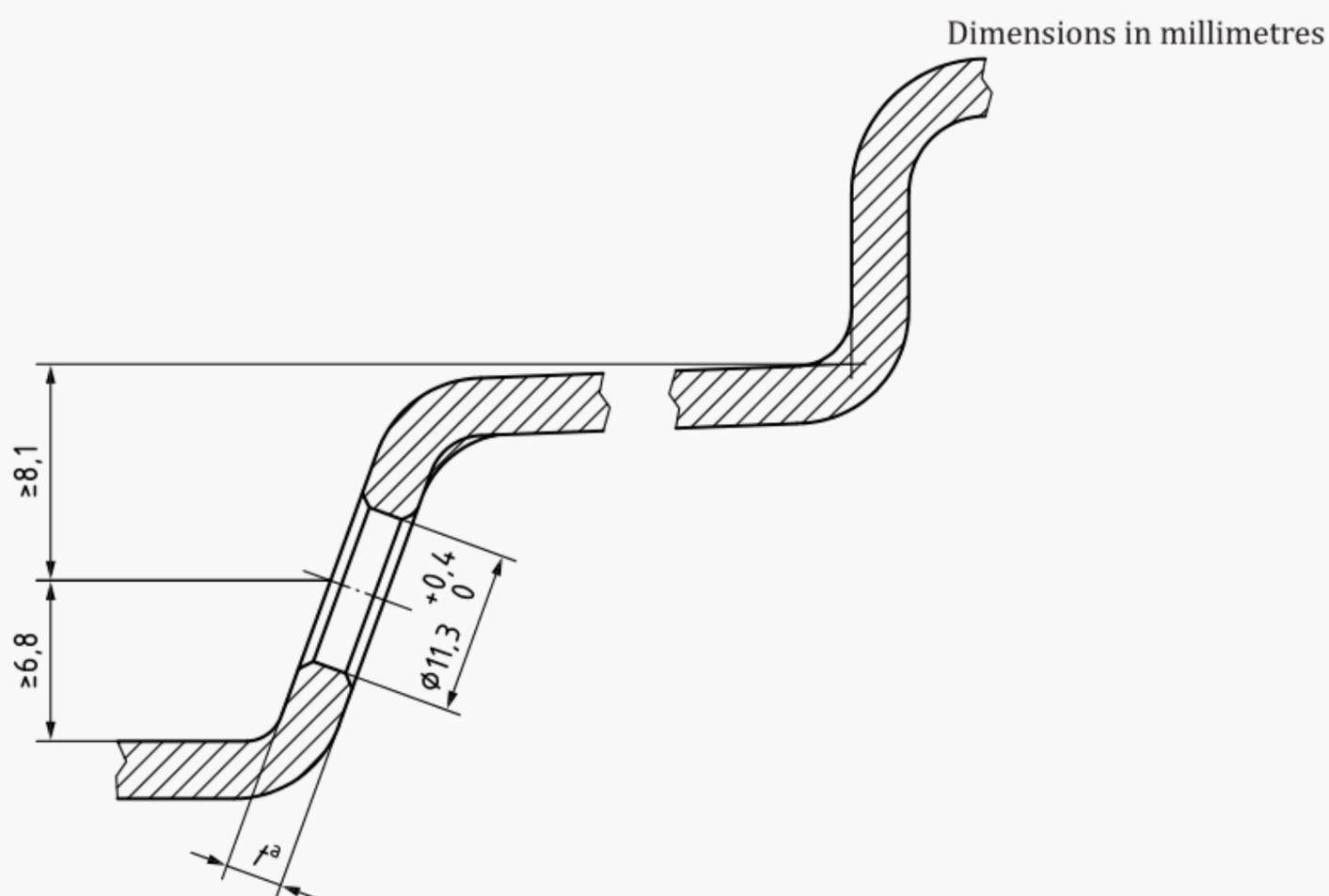
6 Valve holes 11,3

6.1 General

Valve hole edges on the tyre side of rims shall be rounded or chamfered; valve hole edges on the weather side of rims shall be free from burrs that could damage the valve.

6.2 Valve hole 11,3 for snap-in valves

To provide for adequate sealing, an unbroken smooth inside surface having at least 0,75 mm or 25 % of rim thickness shall be maintained. Suitable valves shall be used. Valve hole details shall be as shown in [Figures 3](#) and [4](#) for rims with 17,3 mm minimum well depth.



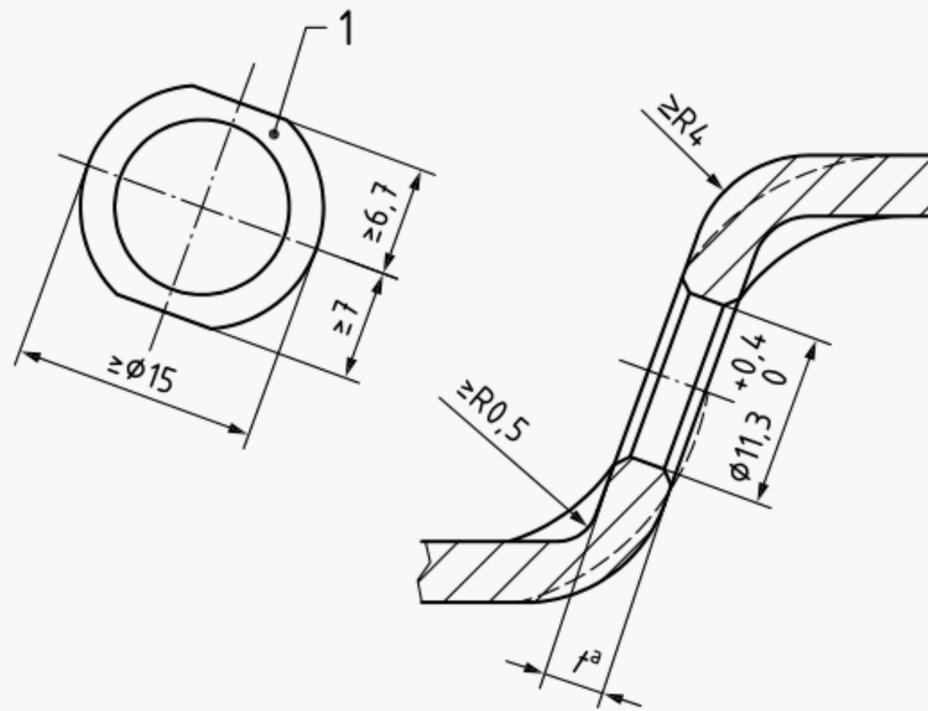
a Rim thickness t is 1,5 mm minimum and 4,0 mm maximum.

For snap-in tyre pressure monitoring system (TPMS) valves 1,8 mm minimum and 4,0 mm maximum are recommended.

NOTE Due to the manufacturing technology difference between machining and punching, common specification is shown on this figure.

Figure 3 — Valve hole dimensions for snap-in valves

Dimensions in millimetres



Key

- 1 flat surface with no radial striations for snap-in valve (tyre side)
- ^a Rim thickness t is 1,5 mm minimum and 4,0 mm maximum.
For snap-in TPMS valves 1,8 mm minimum and 4,0 mm maximum are recommended.

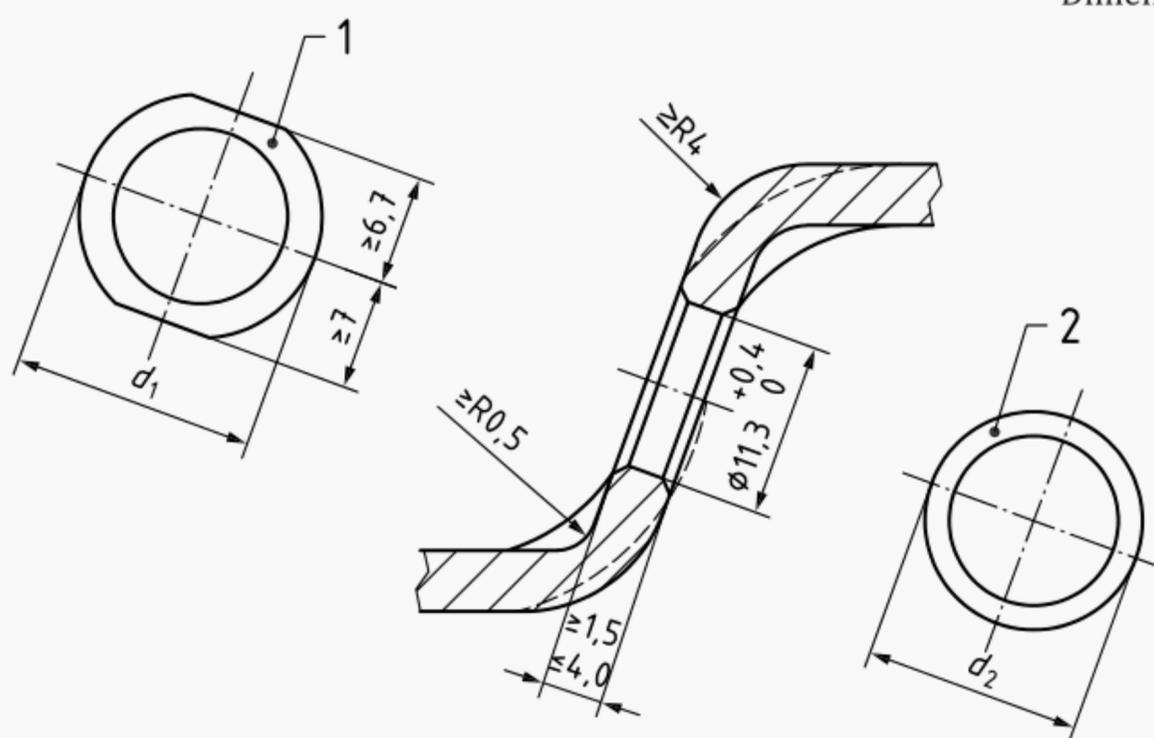
NOTE Due to the manufacturing technology difference between machining and punching, common specification is shown on this figure.

Figure 4 — Valve hole dimensions around valve hole for snap-in valve

6.3 Valve hole 11,3 for clamp-in valves

Suitable valves shall be used. Valve hole details shall be as shown in [Figure 5](#) and [Table 5](#) for rims with 17,3 mm minimum well depth.

Dimensions in millimetres



Key

- 1 flat surface with no radial striations for clamp-in valves (tyre side)
- 2 flat surface with no radial striations for clamp-in valves (external side)

NOTE Due to the manufacturing technology difference between machining and punching, only common specification is shown on this figure.

Figure 5 — Valve hole dimensions around valve hole for clamp-in valve

Table 5 — *d* dimension

Dimensions in millimetres

Valve	d_1	d_2
All valves except for CQ07 ^a and CQ08 ^a	15 min.	14 min.
CQ07 ^a	18 min.	16 min.
CQ08 ^a	19,5 min.	16 min.

Key

d_1 : valve hole flat diameter (tyre side)

d_2 : valve hole flat diameter (external side)

^a The valve code names are specified in ISO 9413.

NOTE See [Figure 5](#).

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