
**Tyres (ply rating marked series) and rims
for agricultural tractors and machines —**

**Part 3:
Rims**

*Pneumatiques (série à marquage «équivalent nappes») et jantes pour
tracteurs et machines agricoles —*

Partie 3: 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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 4251-3 was prepared by Technical Committee ISO/TC 31, *Tyre, rims and valves*, Subcommittee SC 5, *Agricultural tyres and rims*.

This fourth edition cancels and replaces the third edition (ISO 4251-3:1994), which has been technically revised.

ISO 4251 consists of the following parts, under the general title *Tyres (ply rating marked series) and rims for agricultural tractors and machines*:

- *Part 1: Tyre designation and dimensions, and approved rim contours*
- *Part 2: Tyre load ratings*
- *Part 3: Rims*
- *Part 4: Tyre classification and nomenclature*
- *Part 5: Logging and forestry service tyres*

Tyres (ply rating marked series) and rims for agricultural tractors and machines —

Part 3: Rims

1 Scope

This part of ISO 4251 specifies rim dimensions for the ply rating marked series of tyres for agricultural tractors and machines.

NOTE Tyre designation and dimensions, load ratings and tyre classification and nomenclature are given in ISO 4251-1, ISO 4251-2, ISO 7867-2, ISO 4251-4, ISO 7867-1 and ISO 8664.

All dimensions in this part of ISO 4251 are given in millimetres and are applicable to the side of the rim which is in contact with the tyre.

NOTE Terms used are in accordance with ISO 3911:2004.

2 Normative references

The following referenced documents are indispensable for the application 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 4000-2:2001, *Passenger car tyres and rims — Part 2: Rims*

ISO 4209-2:2001, *Truck and bus tyres and rims (metric series) — Part 2: Rims*

3 Rim diameters and circumferences

Nominal rim diameter codes D_R are shown in Table 1 related to the specified rim diameter given in Figure 1.

For rim diameter measurements, see Annex A.

A tolerance of $\pm 1,2$ mm on the rim circumference is permitted.

Table 1 — Rim diameters

Dimensions in millimetres

Nominal rim diameter code D_R	Specified rim diameter ^a D
4	100,8
6	151,6
8	202,4
9 ^b	227,8
10	253,2
12	304,0
13 ^b	329,4
14	354,8
15 ^b	380,2
16	405,6
17 ^b	436,6
18	462,0
19 ^b	487,4
20	512,8
24	614,4
26	665,2
28	716,0
30	766,8
32	817,6
34	868,4
36	919,2
38	970,0
40	1 020,8
42	1 071,6
44	1 122,4
46	1 173,2
48	1 224,0
50	1 274,8
52	1 325,6
54	1 376,4

^a The specified rim diameters, D , in millimetres, are derived from the nominal rim diameter codes, D_R , as follows:
 — $D_R > 16$, $D = 25,4 (D_R + 0,187 5)$;
 — $D_R \leq 16$, $D = 25,4 (D_R - 0,031 25)$.
 The values are rounded to 0,1 mm.

^b Values not recommended.

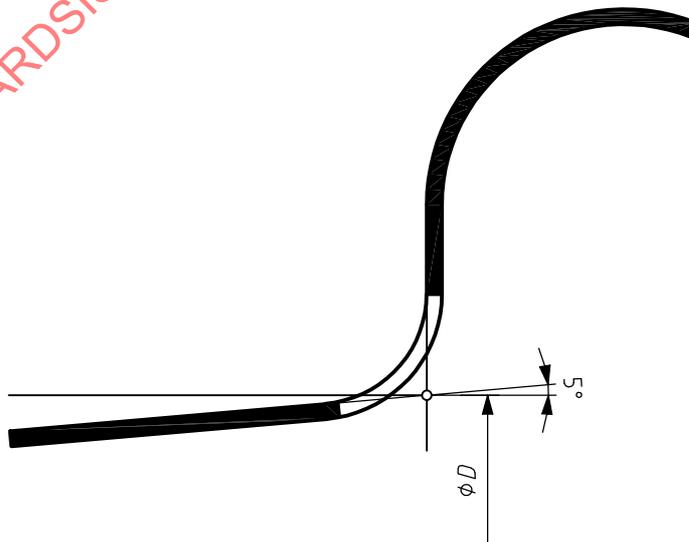


Figure 1 — Specified rim diameter

4 Rim contours and valve holes

4.1 Drop-centre W and DW rims

Dimensions and tolerances of drop-centre W and DW rims (includes all suffixes, for example DW-A, for W-C refer to Annex A) shall be as given in Table 2 and shown in Figure 2.

The valve hole shall have a diameter of $15,7 \text{ mm} + {}^0,4_0$ mm and may be on either side of the rim.

The nominal valve seat angle is $30^\circ \pm 5^\circ$. To provide for valve-to-vehicle clearance, optional valve seat angles of 45° maximum are permissible. For any angle selected for a given rim, tolerance is $\pm 5^\circ$.

Table 2 — Dimensions of drop-centre W and DW rims

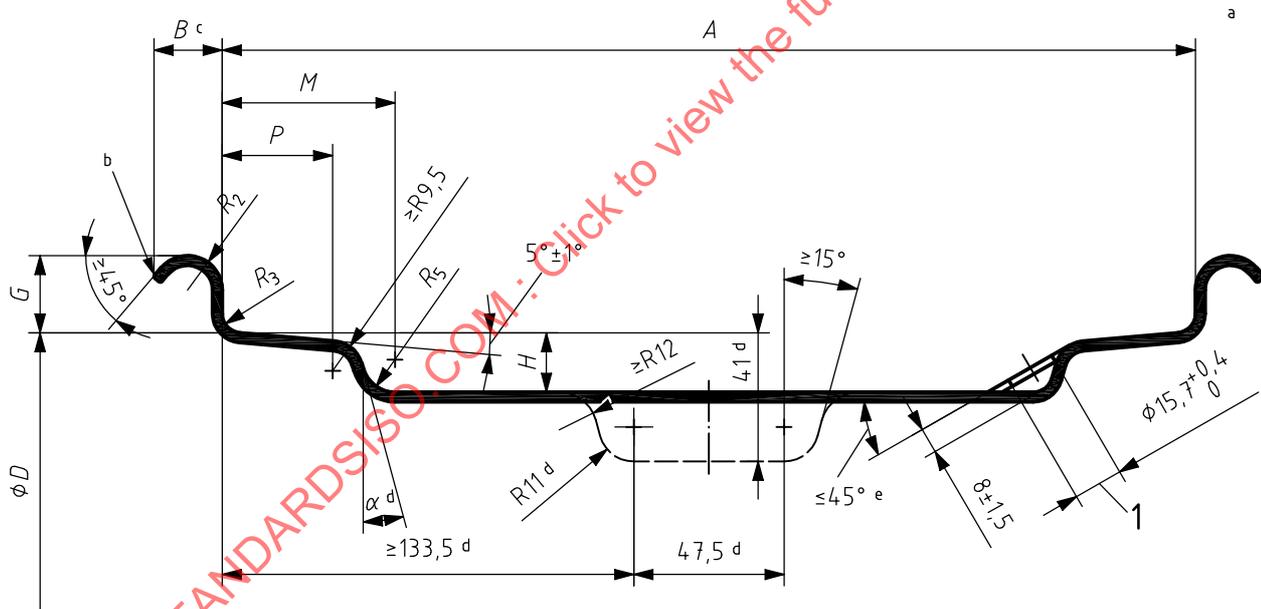
Dimensions in millimetres

Rim size	A	tol.	B	G	H	M	P	R ₂	R ₃	R ₅	α				
			min.	± 1,0	min.	max.	min.		max.	max.	min.				
W 6	152,5	± 2,5	10,0	22,5	20,5	44,5	23,5	9,5	6,5	11,0	6°				
W 7	178,0			19,3		60,5									
W 7 L				22,5		44,5									
W 8	203,0		11,5	25,5		57,5	33,0	11,0	6,5						
W 8 H						22,0	51,0					27,0			
W 8 L						57,5	27,0	11,0	6,5			6°			
W 9	228,5		25,5	66,0		41,0					15,0	8,0			
W 10	254,0		16,0	11,5		22,0	57,5	27,0	11,0		6,5	15°			
W 10 A							66,0	41,0	15,0		8,0				
W 10 H							33,0	27,0	11,0		6,5				
W 10 L						22,0	57,5	27,0	11,0		6,5				
W 11	279,5		11,5	11,5		25,5	66,0	41,0	11,0		6,5				
W 11 H								57,5					27,0	11,0	6,5
W 12	305,0		16,0	11,5		25,5	66,0	41,0	15,0		8,0				
W 12 A								57,5	27,0		11,0		6,5		
W 13	330,0		16,0	11,5		25,5	66,0	41,0	15,0		8,0				
W 13 A								57,5	27,0		11,0		6,5		
W 14 L	355,5		± 5,0	16,0		25,5	29,0	27,0	63,5		36,5		11,0	8,0	14,5
W 15 A	381,0	11,5			57,5					33,0					
W 15 L	406,5	11,5	16,0	25,5	29,0	27,0	63,5	36,5	11,0	8,0	14,5				
W 16 A														11,5	57,5
W 16 L	432,0	16,0	11,5	25,5	29,0	27,0	63,5	36,5	11,0	8,0	14,5				
W 17 L														16,0	57,5
W 18 A	457,0	± 2,5	11,5	29,0	27,0	63,5	36,5	11,0	8,0	14,5	15°				
W 18 L														16,0	57,5
DW 10	254,0	± 2,5	11,5	29,0	27,0	63,5	36,5	11,0	8,0	14,5	15°				
DW 11	279,5											54,0	27,0	6,5	
DW 12	305,0											54,0	27,0	6,5	
DW 13	330,0	± 5,0	11,5	25,5	20,0	95,5	50,5	11,0	8,0	14,5	15°				
DW 18	457,0											29,0	27,0	63,5	36,5
DW 14 L	355,5											29,0	27,0	63,5	36,5
DW 15 L	381,0											25,5	20,0	95,5	50,5
DW 16 L	406,5											25,5	20,0	95,5	50,5
DW 17 L	432,0											25,5	20,0	95,5	50,5
DW 18 L	457,0	25,5	20,0	95,5	50,5										

Table 2 (continued)

Dimensions in millimetres

Rim size	A tol.	B min.	G ± 1,0	H min.	M max.	P min.	R ₂	R ₃ max.	R ₅ max.	α min.
DW 10 A	254,0	± 2,5	16,0	20,5	66,0	41,0	15,0	8,0	14,5	15°
DW 11 A	279,5				57,0					
DW 12 A	305,0				66,0					
DW 13 A	330,0	± 5,0		29,0	63,5	36,5				
DW 14 A	355,5				66,0					
DW 15 A	381,0				63,5					
DW 16 A	406,5	± 6,5	27,0	66,0	50,5					
DW 18 A	457,0			41,0						
DW 20 A	508,0			± 6,5		29,0	27,0	95,5	50,5	
DW 21 A	533,5									
DW 23 A	584,0									
DW 25 A	635,0									
DW 27 A	686,0									
DW 28 A	711,0									
DW 30 A	762,0									
DW 36 A	914,5									
DW 44 A	1117,5									



Key

1 valve hole

a The tyre-mounting side is that side of the rim for which the dimension *M* is shown.

b Break corner equivalent to R 0,5 min.

c Flange width includes edge radius. The portion of flange beyond the minimum width shall be lower than the highest point of the flange.

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

e For any angle selected for a given rim, the tolerance is ± 5°.

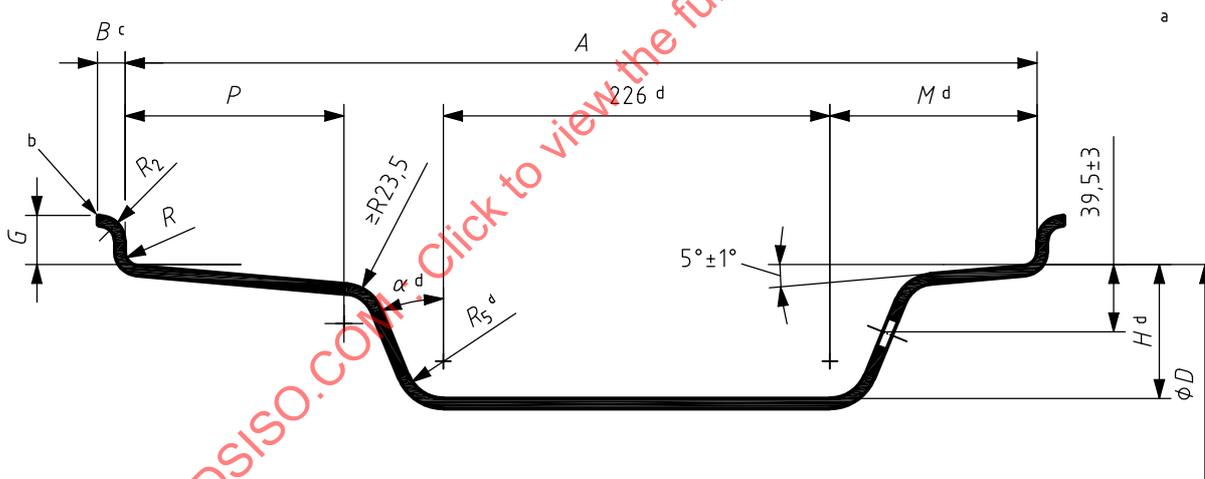
Figure 2 — Contour of drop-centre W and DW rims

4.2 Drop-centre DH rims

Dimensions and tolerances of drop-centre DH rims (including all suffixes, for example DH-H) shall be as given in Table 3 and shown in Figure 3.

Table 3 — Dimensions of drop-centre DH rims

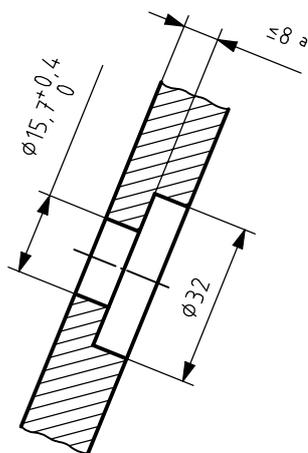
Rim size	Dimensions in millimetres										
	A	tol.	B min.	G ± 1	H min.	M max.	P min.	R ₂	R ₃ max.	R ₅ max.	α min.
DH 21	533,5	± 6,5	16	29	69	121	54	15	8	22	22°
DH 21 H							60				
DH 27	686,0						54				
DH 27 H							60				
DH 31	787,5						54				
DH 31 H							60				
DH 36	914,5						54				
DH 36 H							60				
DH 44	1 117,5						54				
DH 44 H							60				



- a The tyre-mounting side is that side of the rim for which the dimension *M* is shown.
- b Break corner equivalent to *R* 0,5 min.
- c Flange width includes edge radius. The portion of flange beyond the minimum width shall be lower than the highest point of the flange.
- d These dimensions comprise the minimum well envelope for tyre-mounting purposes.

Figure 3 — Contour of drop-centre DH rims

The location of valve holes in drop-centre DH rims is shown in Figure 4.



^a Maintain 8 max. dimension by counterboring on the weather side of the rim only.

Figure 4 — Location of the valve holes in drop-centre DH rims

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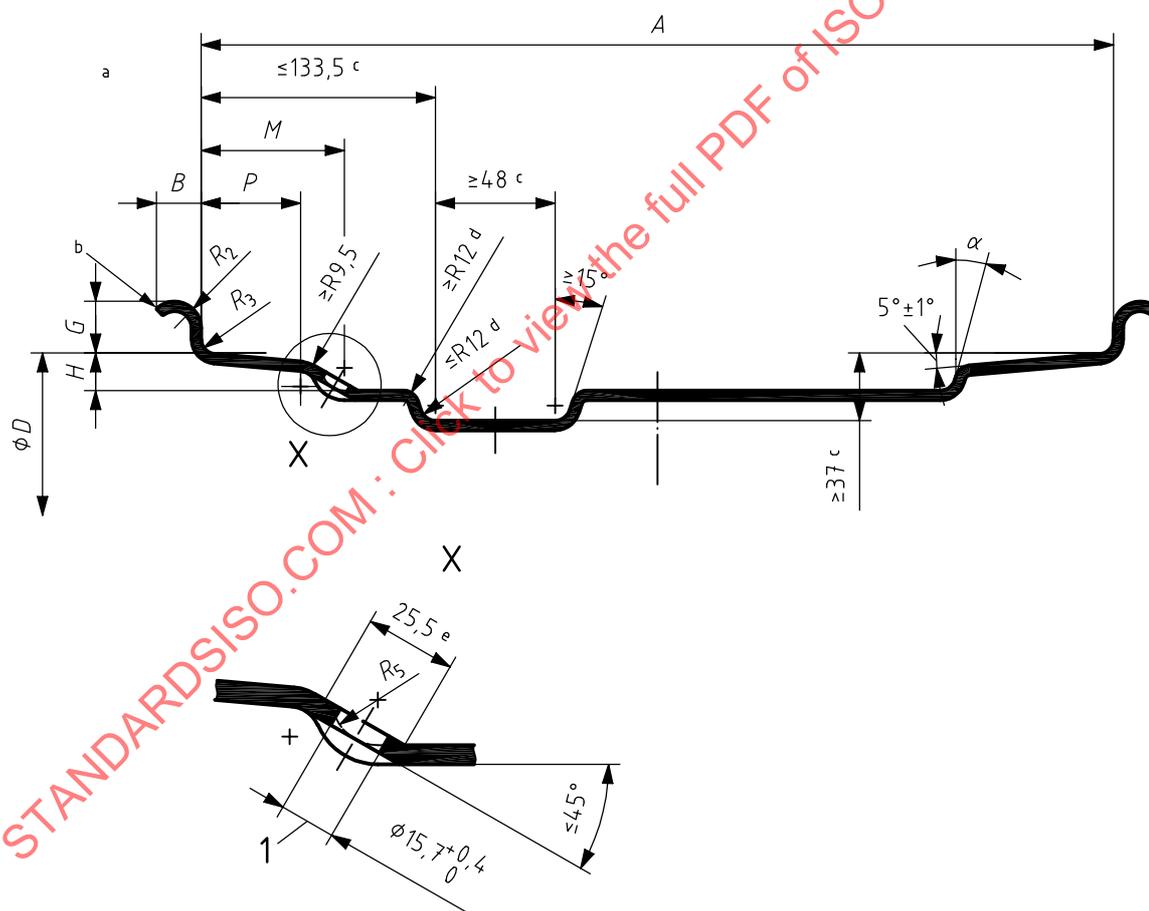
4.3 Drop-centre MW-A rims

Dimensions and tolerances of drop-centre MW-A rims shall be as given in Table 4 and shown in Figure 5.

The valve hole shall have a diameter of $15,7 \text{ mm} +^{0,4}_0 \text{ mm}$ and may be on either side of the rim.

Table 4 — Dimensions of drop-centre MW-A rims

Rim size	Dimensions in millimetres										
	<i>A</i>	tol.	<i>B</i> min.	<i>G</i> ± 1	<i>H</i> min.	<i>M</i> max.	<i>P</i> min.	<i>R</i> ₂	<i>R</i> ₃ max.	<i>R</i> ₅ max.	<i>α</i> min.
MW 20 A	508,0	± 6,5	16	29	19	95,5	50,5	15	8	14,5	15°
MW 23 A	584,0										
MW 25 A	635,0										
MW 28 A	711,0										



Key

1 valve hole

- a The tyre-mounting side is that side of the rim for which the dimension *M* is shown.
- b Flange width includes edge radius. The portion of flange beyond the minimum width shall be lower than the highest point of the flange.
- c These dimensions comprise the minimum well envelope for tyre-mounting purposes.
- d For any angle selected for a given rim, the tolerance is $\pm 5^\circ$.
- e Flat.

Figure 5 — Contour of drop-centre MW-A rims

4.4 Drop-centre DD rims

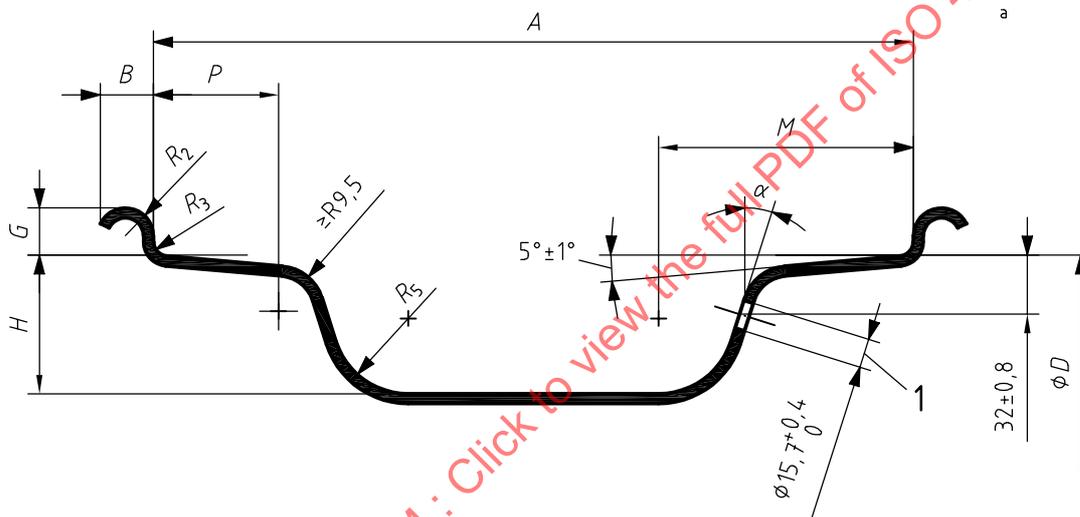
Dimensions and tolerances of drop-centre DD rims shall be as given in Table 5 and shown in Figure 6.

The valve hole shall have a diameter of 15,7 mm $^{+0,4}_0$ mm and may be on either side of the rim.

Table 5 — Dimensions of drop-centre DD rims

Dimensions in millimetres

Rim size	A		B	G	H	M	P	R ₂	R ₃	R ₅	α
		tol.	min.	± 1,0	min.	max.	min.		max.	max.	min.
DD 16	406,5	± 5,0	16	25,5	71	152,5	41	15	8	57	15°
DD 18	457,0										



Key

1 valve hole

a The tyre-mounting side is that side of the rim for which the dimension M is shown.

Figure 6 — Contour of drop-centre DD rims

4.5 Other drop-centre rims

Dimensions and tolerances of other drop-centre rims shall be as given in Table 6 and shown in Figure 7.

The normal location of valve holes in these rims is shown in Figure 7. The valve hole may be on either side of the rim well.

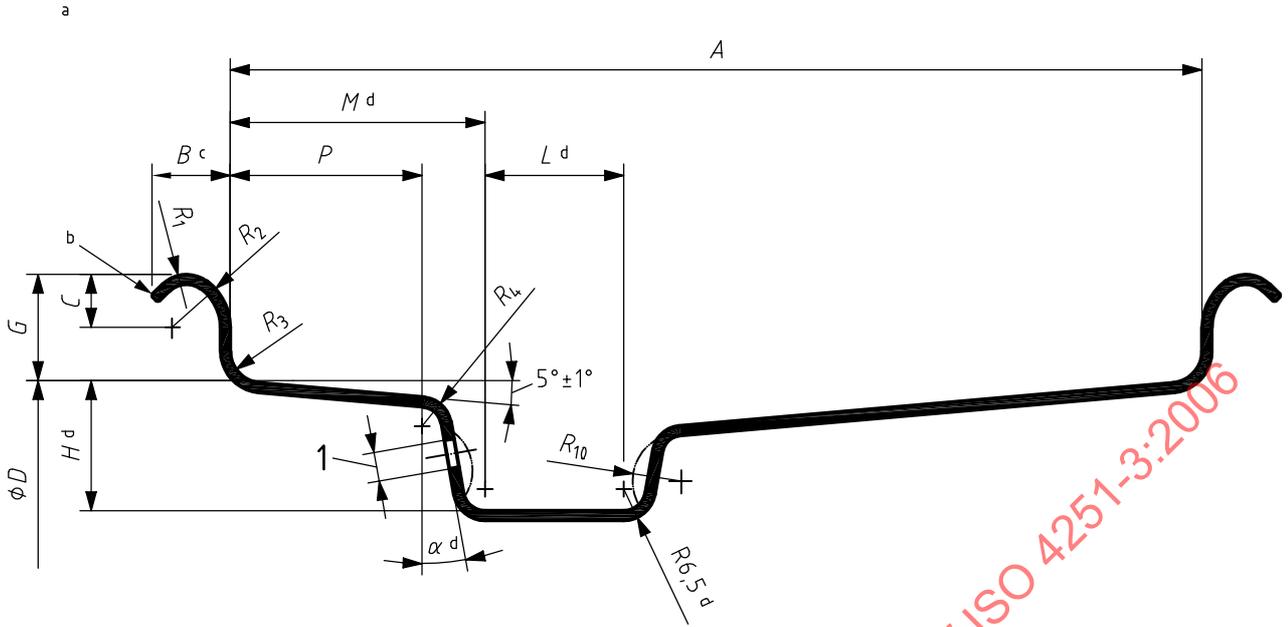
Table 6 — Dimensions of other drop-centre rims

Dimensions in millimetres

Rim size	A	B	G	H ^a	C	L	M	P	R ₁	R ₂	R ₃	R ₄	R ₁₀	α ^a	Valve hole: see Figure ...
	tol.	min.	± 1,0				max.	min.			max.	min.		min.	
2.50 A	63,5	9,5	11,5	12	6,5	12,5	25,5	11,5	—	6,5	4	4	—	10°	7 or 8
2.50 C		11	16,5	13,5	11,5			12	7,5	12	3,5		28,5	13°	
3.00 D ^b	76,0	11,5	18,0	18	12,5	17,5	29	14	8	13	6,5		32	13°	
3.50 D	89,0					19	34	15,5					35		
3.75 I	95,5	10	16	22	9	25	35	14	—	9	4,5		—	10°	
4.00 E		12,5	20	19	13,5	19		18	8,5	14	6,5		38		
4 JA	101,5	8,5	16		8	23	38,5	17,5		8	5,5			15°	
4.25 KA	108,0	9,5		26	10,5		42	20,5		10,5					
4.50 E		12,5		23	13,5	22	40	18	8,5	14				10°	
4 1/2 K	114,5	± 2,0	20		20	10,5	21	47	19,5	—	10,5	6,5	4	15°	
4 1/2 KB							22	45							
5.00 F			13	22,5	26	14,5	25	54	23,5	9,5	15,5		6		
5 JA	127,0		8,5	16	19	8	48	38,5	17,5		8	5,5			
5 K			12	20	20	10,5	21	47	19,5	—	10,5		4		
5 KB			10				25	45				6,5			
5.50 F			13	22,5	26	14,5	54	23,5	9,5	15,5			6		
5 1/2 K	139,5		12	20	20	10,5	21	47	19,5	—	10,5		4		
5 1/2 KB			10	19,5			45		6,5		7				
6.00 F		± 2,5	13	22,5	26	14,5	25	54	23,5	9,5	15,5	6,5	6		
6 KB	152,5	± 2	10	19,5	20			45	19,5	6,5	10,5	7		10°	
6 L			12,5	22	26	11	22		23,5	9,5			4	15°	
6 LB		± 2,5	10	22	27		28,5	48,5	25	7	12	6,5		10°	
7.00			12	20,5	31		30	60	19,5	—	11		—	15°	
7 JA	178,0	± 2	8,5	16	19	8	99	38,5	17,5		8	5,5		7 or 8	
7 KB			19,5	20	11	25	45	19,5	6,5	10,5	7				
7 LB		± 2,5	10	22	27		28,5	54	25	7	12	6,5		10°	
8 KB	203,0	± 2		19,5	20	11	25	45	19,5	6,5	10,5	7			
8 LB		± 2,5		22	27		28,5	54	25	7	12	6,5			
8 1/2 JA	216,0	± 2	8,5	16	19	8	138	38,5	17,5		8	5,5			
9	228,5	± 2,5	10	25,5	31	11	50	60	27	—	11	6,5		15°	
9 1/2 JA	241,0	± 2	8,5	16	19	8	163	38,5	17,5		8	5,5		7 or 9	
10 LB	254,0	± 2,5	10	22	27	11	28,5	54	25	7	12	6,5			
10 1/2 JA	267,0	± 2	8,5	16	19	8	99	38,5	17,5		8	5,5			
11	279,5	± 2,5	10	25,5	31	11	60	65	31,5	—	11	6,5			
12 LB	305,0	± 2		22	27	12	28,5	54	25	7	12	7			
13.00				19	31	11	61	65	30	—	11	6,5			
13	330,0	± 2,5	12	25,5			90		31,5						
13 LB		± 2	10	22	27	12	28,5	54	25	7	12	7			
14	355,5	± 2,5	12	25,5	31		90	65	31,5	—		6,5		15°	

^a Larger values may be required to ensure sufficient space for tubeless tyre valve seating.

^b For rim sizes 3.00 B, 4 J, 4 1/2 J and 5 1/2 J, see ISO 4000-2 and/or ISO 4209-2.



Key

- 1 valve hole
- a The tyre-mounting side is that side of the rim for which the dimension *M* is shown.
- b Break corner equivalent to R 0,5 min.
- c Flange width includes edge radius. The portion of flange beyond the minimum width shall be lower than the highest point of the flange.
- d These dimensions comprise the minimum well envelope for tyre-mounting purposes.

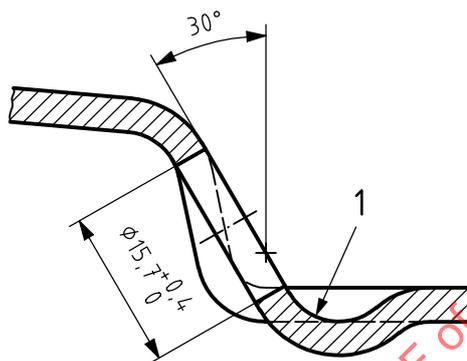
Figure 7 — Contour of other drop-centre rims

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The valve hole diameter shall be

- a) 15,7 mm $^{+0,4}_0$ mm for rims of nominal rim diameter code 15 and above;
- b) 11,3 mm $^{+0,4}_0$ mm for rims of nominal rim diameter code 14 and below.

An optional location of valve holes in rims of diameter code 15 and above (valve hole diameter 15,7 mm $^{+0,4}_0$ mm) is shown in Figure 8.

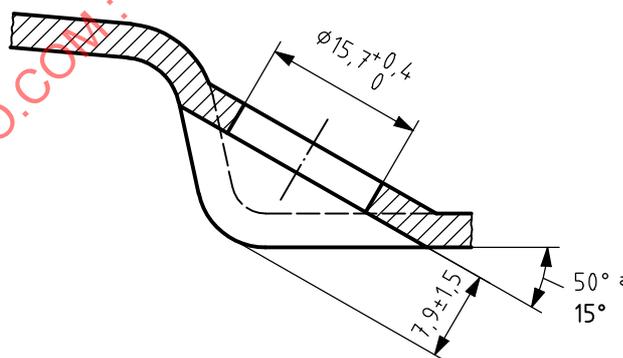


Key

- 1 local depression to clear valve head

Figure 8 — Optional location of 15,7 mm valve hole

A valve hole in the corner of the well as shown in Figure 9 is an optional location and provides valve-to-vehicle clearance. Valve seat angles of 15° to 50° are permissible. For any angle selected for a given rim, the tolerance is $\pm 5^\circ$.



- a For any angle selected for a given rim, the tolerance is $\pm 5^\circ$.

Figure 9 — Location of 15,7 mm valve hole in corner of well

4.6 Semi-drop-centre rims

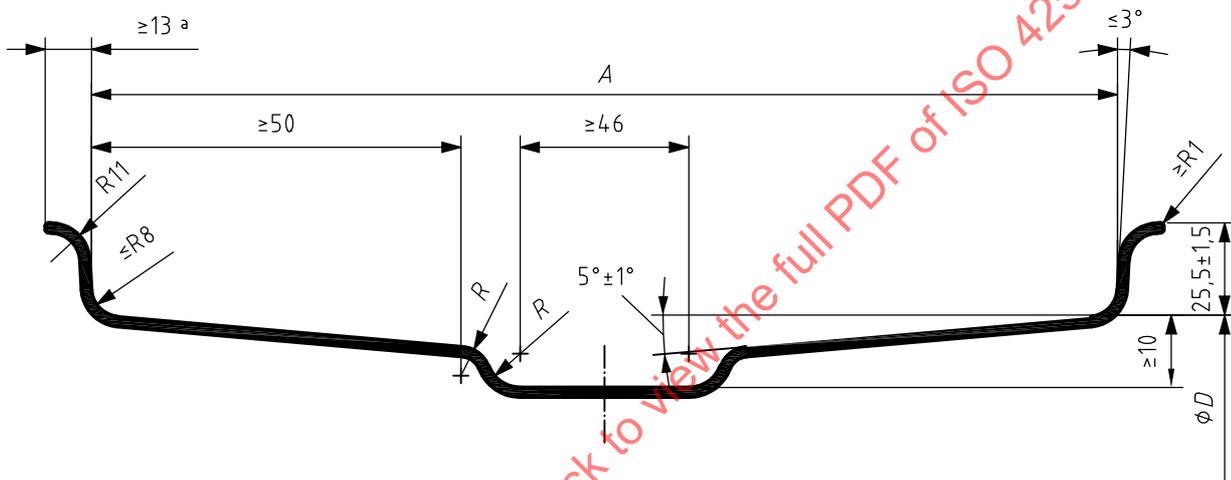
Dimensions and tolerances of semi-drop-centre rims shall be as given in Table 7 and shown in Figure 10.

The location of valve holes is shown in Figure 11.

Table 7 — Dimensions of semi-drop-centre rims

Dimensions in millimetres

Rim size	A	tol.
11	279,5	± 5,0
12	305,0	± 6,5
13	330,0	



NOTE Flange and bead seat are removable on one side of rim.

^a Flange width includes edge radius. The portion of flange beyond the minimum width shall be lower than the highest point of the flange.

Figure 10 — Contour of semi-drop-centre rims

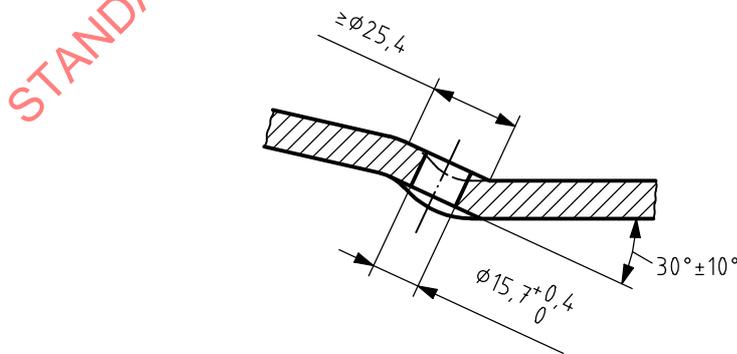


Figure 11 — Location of valve holes in semi-drop-centre rims

4.7 Divided rims

Dimensions and tolerances of divided rims shall be as given in Table 8 and shown in Figure 12.

The location of valve holes is shown in Figure 12.

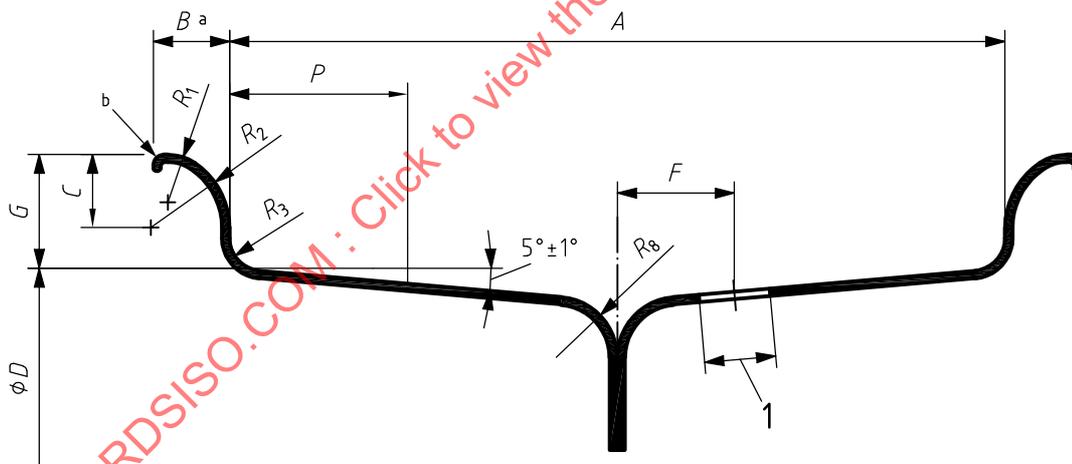
The valve hole diameter shall be

- a) 11,3 mm $+0,4$ ₀ mm for rims of nominal rim diameter code 14 and below;
- b) 15,7 mm $+0,4$ ₀ mm for rims of nominal rim diameter code 15 and above.

Table 8 — Dimensions of divided rims

Dimensions in millimetres

Rim size	A	B	G	C	P	R ₁	R ₂	R ₃	R ₈	F	
	± 2,0	min.	± 1,0		min.			max.	max.	min.	max.
2.50 C	63,5	11	16,5	11,5	12	7,5	12	3,5	5	9	14
3.00 D	76,0	11,5	18,0	12,5	14	8	13	6,5	10	11	16
4.00 E	101,5	12,5	20,0	13,5	25	8,5	14			12	
5.00 F	127,0	13	22,5	14,5	23,5	9,5	15,5		12	20	26
5.50 F	139,5									11	17,5
5 1/2 K		12	20,0	10,5	19,5	—	10,5		9,5	13	17,5
6.00 F	152,5	13	22,5	14,5	23,5	9,5	15,5		12	20	26



Key

1 valve hole

^a Flange width includes edge radius. The portion of flange beyond the minimum width shall be lower than the highest point of the flange.

^b Break corner equivalent to R 0,5 min.

Figure 12 — Contour of divided rims

5 Rim knurling

Transverse knurling on bead seats as shown in Figure 13 is mandatory on W, DW, DH, MW-A, and DD rims of rim width codes 14 or wider with nominal diameter codes 24 or larger. The following specifications apply.

Rim width	Rim diameter	
	Code smaller than 24	Code 24 or greater
Width code 13 or smaller	Optional	Optional
Width code 14 or greater	Optional	Mandatory

Pitch of knurling shall be 1,6 to 3,2.

Dimensions in millimetres

P_{min}	Knurl width, K
< 33	10,2
≥ 33	20,6 to 25,4

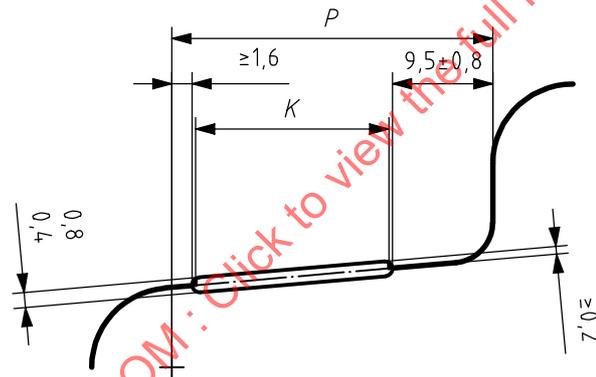


Figure 13 — Rim knurling

Annex A (normative)

Rim diameter measurements

Rim diameter measurements (see Clause 3) shall be performed using a ball tape checked on a mandrel (see Figure A.1). The ball diameter should be 16 mm.

It will be left to the discretion of the individual national standards organization whether the mandrel shall have nominal circumference or maximum circumference.

Ball sizes other than 16 mm may be used if a suitable alteration to the mandrel diameter and circumference dimensions is made (see Table A.1).

Tableau A.1 — Mandrel dimensions

Dimensions in millimetres

Nominal rim diameter code	Nominal mandrel diameter	Nominal mandrel circumference ^a	Maximum mandrel diameter	Maximum mandrel circumference ^b
D_R	D_M	U_M	$D_{M, \max}$	$U_{M, \max}$
4 ^c	100,40	314,2	100,52	315,8
6 ^c	150,94	474,2	151,32	475,4
8	201,07	631,7	201,45	632,9
9	226,47	711,5	226,85	712,7
10	251,87	791,3	252,25	792,5
12	302,67	950,9	303,05	952,1
13	328,07	1 030,7	328,45	1 031,9
14	353,47	1 110,5	353,85	1 111,7
15	378,87	1 190,2	379,25	1 191,4
16	404,27	1 270,1	404,65	1 271,2
17	435,22	1 367,3	435,60	1 368,5
18	460,62	1 447,1	461,00	1 448,3
19	486,02	1 526,9	486,40	1 528,1
20	511,42	1 606,7	511,80	1 607,9
24	613,02	1 925,9	613,40	1 927,1
26	663,82	2 085,5	664,20	2 086,7
28	714,62	2 245,1	715,00	2 246,3
30	765,42	2 404,6	765,80	2 405,8
32	816,22	2 564,2	816,60	2 565,4
34	867,02	2 723,8	867,40	2 725,0
36	917,82	2 883,4	918,20	2 884,6
38	968,62	3 043,0	969,00	3 044,2
40	1 019,42	3 202,6	1 019,80	3 203,8
42	1 070,22	3 362,2	1 070,60	3 363,4
44	1 121,02	3 521,8	1 121,40	3 523,0
46	1 171,82	3 681,4	1 172,20	3 682,6
48	1 222,62	3 841,0	1 223,00	3 842,2
50	1 273,42	4 000,6	1 273,80	4 001,8
52	1 324,22	4 160,2	1 324,60	4 161,4
54	1 375,02	4 319,7	1 375,40	4 320,9

^a $U_M = D_M \times 3,141\ 59$

^b $U_{M, \max} = U_M + 1,2$

^c Ball of 8 mm diameter.