INTERNATIONAL STANDARD

ISO
4250-3

Earth-mover tyres and rims —

Part 3:
Rims

Pneumatiques et jantes pour engins de terrassement —

Partie 3: Jantes

Contents

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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 4250-3 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 6, *Off-the-road tyres and rims*.

This fourth edition cancels and replaces the third edition (ISO 4250-3:2006), which has been technically revised.

ISO 4250 consists of the following parts, under the general title *Earth-mover tyres and rims*:

— *Part 1: Tyre designation and dimensions*

— *Part 2: Loads and inflation pressures*

— *Part 3: Rims*

Introduction

ISO 4250 consists of three parts (ISO 4250-1, ISO 4250-2 and this part of ISO 4250) that lay down the technical elements relating to designation and dimensions of tyres and rims for earth-moving machinery. It also provides load tables for these tyres.

Earth-mover tyres and rims —

Part 3:
Rims

1   Scope

This part of ISO 4250 sets out the designation, contours and dimensions for rims for narrow- and wide-base off-road tyres primarily intended for earth-moving machinery.

All dimensions in this part of ISO 4250 are given in millimetres and are applicable to the side of the rim which is in contact with the tyre.

Tyre designations and dimensions, tyre classifications and nomenclature are given in ISO 4250-1, ISO 10571 and ISO 13442.

Annex A gives details on sealing ring grooves and O-rings for earth-mover rims.

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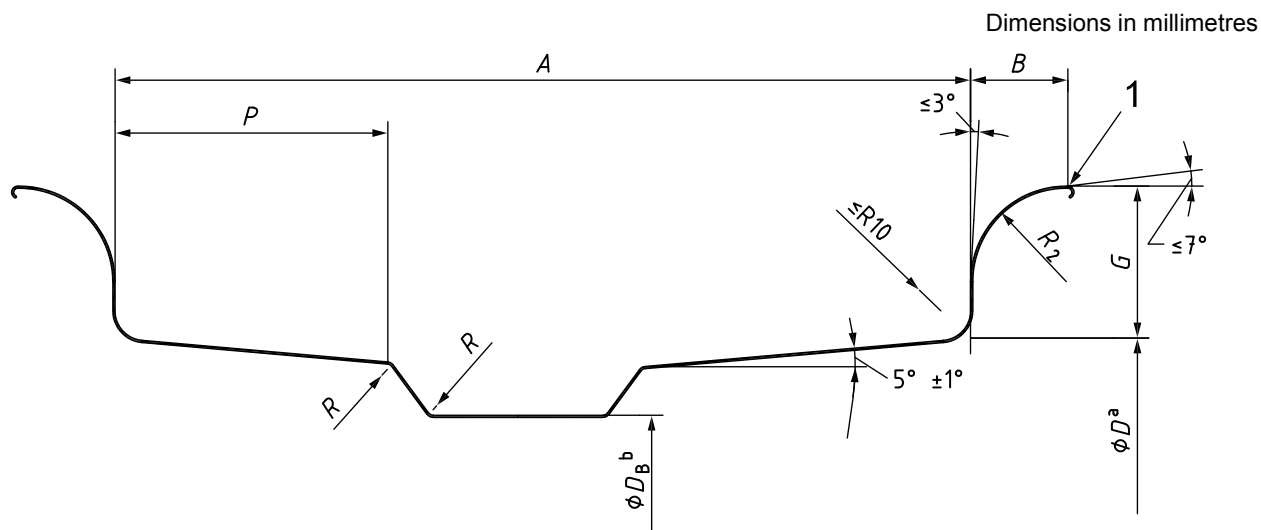
3   Terms and definitions

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

4   Rim identification

4.1   Codes shall be used to identify:

a)   specified rim diameter, D (see Table 7);

b)   nominal width between flanges;

c)   nominal flange height or rim profile designations.

4.2   The rim marking shall consist of codes for:

a)   specified rim diameter, D;

b)   nominal width between flanges.

The markings shall be on the weather side of the rim and visible when the tyre is mounted on the rim.

Where a disk is fitted by the rim/wheel manufacturer, the marking shall appear on either the disc or the rim base.

Loose flanges shall be marked on an externally visible surface. The marking shall indicate nominal height and nominal diameter.

5   Rim contours

Rim contours are given in Figures 1 to 5 and Tables 1 to 5.

6   Rim knurling

If rim knurling is required, details can be found in Figure 6 and Table 6.

7   Rim loads and inflation pressures

The load and inflation pressure imposed on the rim and wheel shall not exceed the rim and wheel manufacturer's recommendations, even though the tyre may be approved for a higher load or inflation pressure. Consult the rim and wheel manufacturer to determine if rim and wheel capacities are adequate for the intended service.

8   Rim dimensions

Rim dimensions are standardized for size and contour, and for particular tyre and rim combinations designed to ensure proper mounting and fit of the tyre to the rim.

Where rim dimensions are not available, consult the rim, wheel or tyre manufacturer.

Dimensions in millimetres

Key

1   break corner equivalent to R1 min.

Flange and bead seat shall be removable on one side.

All flange and bead seat dimensions apply to both sides of the rim contour.

NOTE   This figure applies to rim diameter codes 24, 25, 29, 33, 35, 39, 45, 49, 51, 57 and 63. (See Table 7 for specific rim diameters.)

a   For rim diameter codes < 49, D tolerance: $^{+0,4}_{-0,8}$.

For rim diameter codes ≥ 49, D tolerance: ±0,8.

The tolerance given for the specified rim diameter, D, is for tyre design purposes only. The actual rim measurement by circumference is established by using a mandrel and a tape.

b   For rim diameter codes ≤ 49, $D_B = (D - 25,5)\,^{+\,0,5}_{-13,0}$.

For rim diameter codes 51 and 57, $D_B = (D - 51,0)\,^{+\,0,5}_{-13,0}$.

For rim diameter code 63, $D_B = (D - 63,5) \pm 13,0$.

**Figure 1 — Contours of 5° full tapered bead seat rims**

Table 1 — Contours of 5° full tapered bead seat rims

Dimensions in millimetres

Rim width code/ flange height code[a]	A ±13,0	G ±2,0	B min.	P min.	R_2	tol.
11.25/2.0	286,0	51,0	32,5	101,0	32,0	±1,5
13.00/2.5	330,0	63,5	45,5	101,0	38,0	±1,5
13.00/2.75	330,0	70,0	48,5	101,0	47,5	±1,5
14.00/1.5	355,5	38,1	24,5	51,0	25,0	±1,5
15.00/3.0	381,0	76,0	55,0	117,5	44,5	±1,5
15.00/3.0[b]	381,0	76,0	55,0	117,5	51,0	±2,0
17.00/2.0	432,0	51,0	32,5	101,0	32,0	±1,5
17.00/3.5	432,0	89,0	58,0	139,0	51,0	±2,0
19.50/2.0	495,5	51,0	32,5	101,0	32,0	±1,5
19.50/2.5	495,5	63,5	45,5	101,0	38,0	±1,5
19.50/4.0	495,5	101,5	66,0	139,0	57,0	±2,0
20.00/2.0	508,0	51,0	32,5	101,0	32,0	±1,5
22.00/3.0	559,0	76,0	55,0	139,0	44,5	±1,5
22.00/3.5	559,0	89,0	76,0	139,0	51,0	±2,0
22.00/4.0	559,0	101,5	66,0	139,0	57,0	±2,0
22.00/4.5	559,0	114,5	74,0	190,5	63,5	±2,0
24.00/3.0	609,5	76,0	55,0	139,0	44,5	±1,5
24.00/3.5	609,5	89,0	58,0	139,0	51,0	±2,0
24.00/5.0	609,5	127,0	86,5	190,5	70,0	±2,0
25.00/3.5	635,0	89,0	58,0	139,0	51,0	±2,0
26.00/3.5	660,5	89,0	58,0	139,0	51,0	±2,0
26.00/5.0	660,5	127,0	86,5	190,5	70,0	±2,0
27.00/3.5	686,0	89,0	58,0	139,0	51,0	±2,0
27.00/6.0	686,0	152,5	122,0	190,5	84,0	±2,5
28.00/3.5	711,0	89,0	58,0	139,0	51,0	±2,0
28.00/4.0	711,0	101,5	66,0	139,0	57,0	±2,0
29.00/3.5	736,5	89,0	58,0	139,0	51,0	±2,0
29.00/6.0	736,5	152,5	122,0	190,5	84,0	±2,5
31.00/4.0	787,5	101,5	66,0	139,0	57,0	±2,0
32.00/4.0	813,0	101,5	66,0	139,0	57,0	±2,0
32.00/4.5	813,0	114,5	74,0	139,0	63,5	±2,0
32.00/6.0	813,0	152,5	122,0	139,0	84,0	±2,5
32.00/6.5	813,0	165,0	122.0	190,5	70,0	±2,0
34.00/5.0	863,5	127,0	86,5	190,5	70,0	±2,0
36.00/4.5	914,5	114,5	74,0	139,0	63,5	±2,0
36.00/5.0	914,5	127,0	86,5	190,5	70,0	±2,0
36.00/6.0	914,5	152,5	122,0	190,5	84,0	±2,5
38.00/5.0	965,0	127,0	139,5	190,5	70,0	±2,0
40.00/4.5	1 016,0	114,5	74,0	190,5	63,5	±2,0
44.00/5.0	1 117,5	127,0	139,5	190,5	70,0	±2,5
44.00/6.0	1 117,5	152,5	122,0	190,5	84,0	±2,5
41.00/5.0	1 041,5	127,0	127,0	190,5	70,0	±2,0
52.00/6.0	1 321,0	152,5	127,0	254,0	84,0	±2,5

[a] The rim width code and flange height code are applicable to specific tyre sizes. See ISO 4250-1 for approved rim/tyre combinations.

[b] For rim diameter code 49.
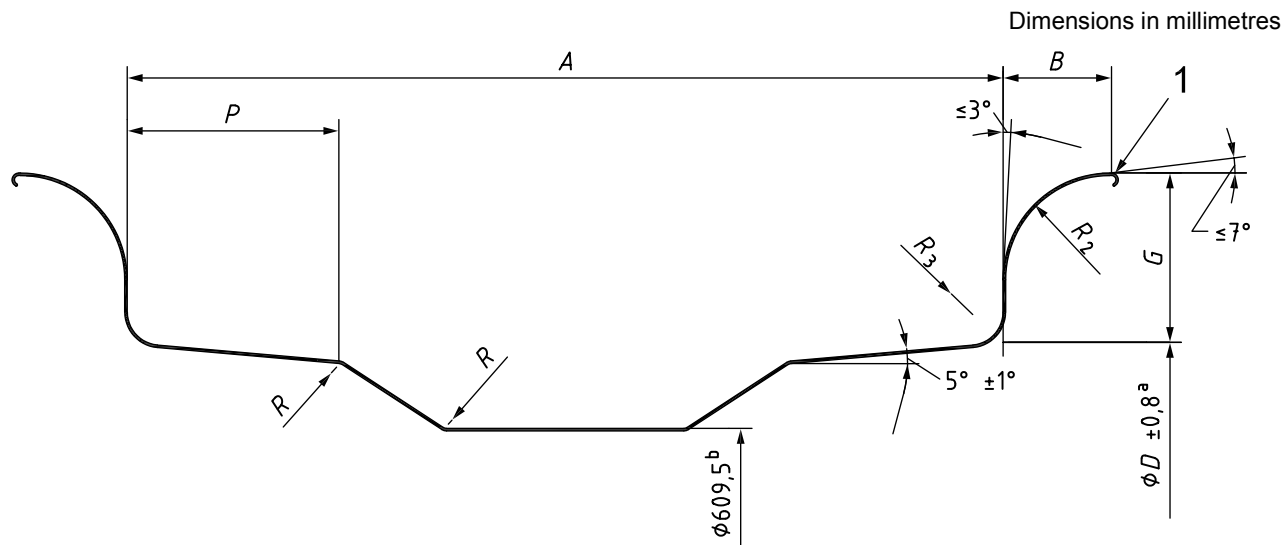
Dimensions in millimetres

Key

1   break corner equivalent to R1 min.

Flange and bead seat shall be removable on one side.

All flange and bead seat dimensions apply to both sides of the rim contour.

NOTE   This figure applies to rim diameter code 25. (See Table 7 for specified rim diameters.)

^a   The tolerance given for the specified rim diameter, D, is for tyre design purposes only. The actual measurement by circumference is established by using a mandrel and a tape.

^b   For rims 8.50/1.3 and 10.00/1.5, D tolerance: $^{+\,0,5}_{-\,6,5}$.

For larger rims, D tolerance: $^{+\,0,5}_{-13,0}$.

Figure 2 — Contours of 5° full tapered bead seat rims

Table 2 — Contours of 5° full tapered bead seat rims

Dimensions in millimetres

Rim width code/ flange height code	A		G		B	P	R_2	R_3
		tol.		tol.	min.	min.	±1,5	max.
8.50/1.3	216,0	±5,0	33,0	±1,5	25,5	50,0	23,0	8,0
10.00/1.5	254,0	±5,0	38,0	±1,5	28,0	59,0	25,5	8,0
12.00/1.3	305,0	±6,5	33,0	±1,5	25,5	47,0	23,0	10,0
14.00/1.5	355,5	±6,5	38,0	±1,5	28,0	59,0	25,5	10,0
17.00/1.7	432,0	±13,0	43,0	±2,0	25,5	60,0	23,0	8,0
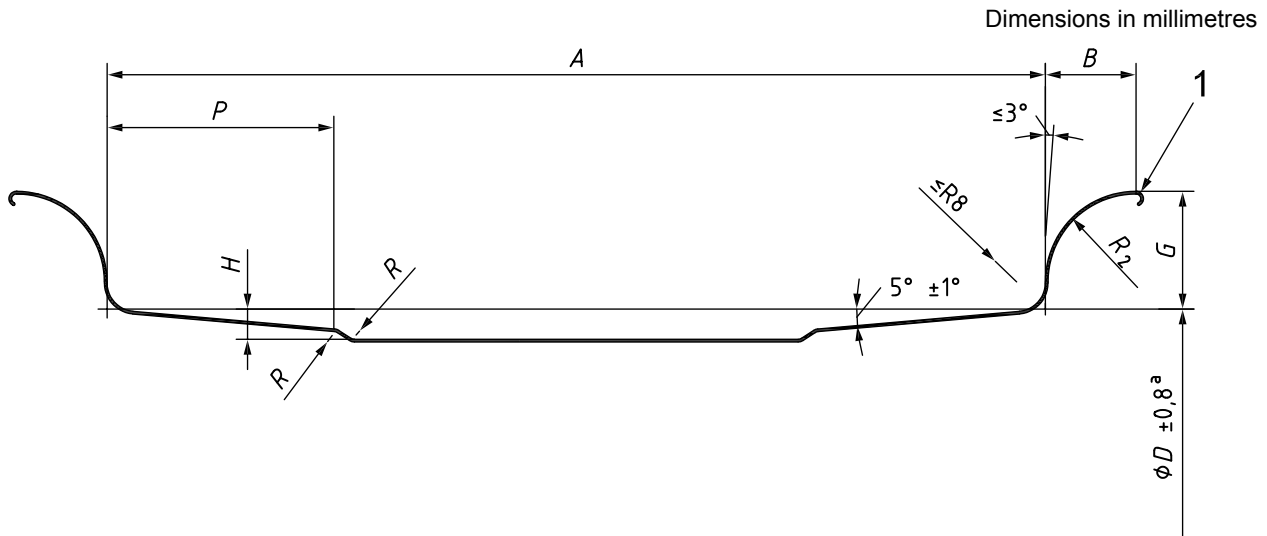
Dimensions in millimetres

Key

1   break corner equivalent to R1 min.

Flange and bead seat shall be removable on one side.

All flange and bead seat dimensions apply to both sides of the rim contour.

NOTE   This figure applies to rim diameter codes 24 and 25. (See Table 7 for specified rim diameters.)
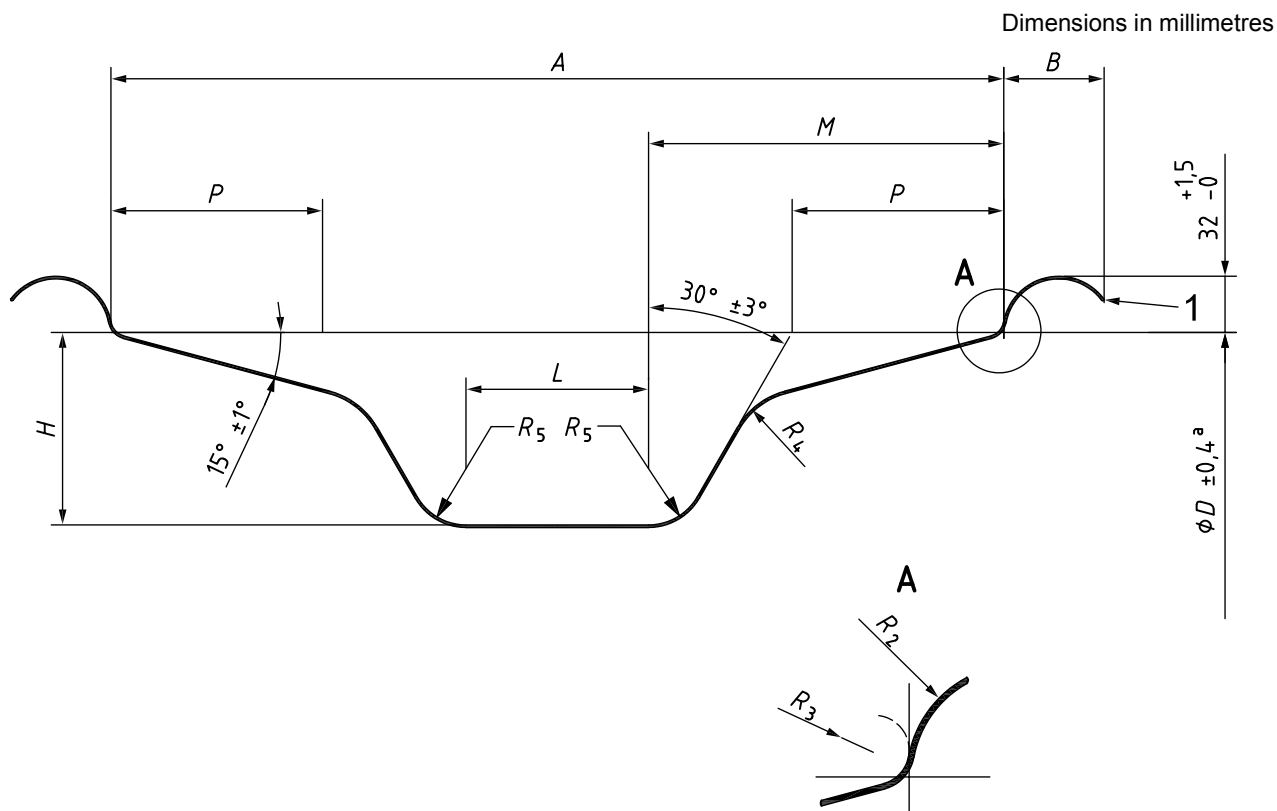
[a]   The tolerance given for the specified rim diameter, D, is for tyre design purposes only. The actual rim measurement by circumference is established using a mandrel and a tape.

Figure 3 — Contours of semi-drop-centre rims

Table 3 — Contours of semi-drop-centre rims

Dimensions in millimetres

Rim width code/ flange height code	A		G	B	P	H	R_2	Rim diameter code
		tol.	±1,5	min.	min.	min.	±1,5	
8.00 TG	203,0	±3,5	35,5	17,5	47,0	6,5	16,5	24
10.00 VA	254,0	±5,0	43,0	25,5	59,0	11,0	23,0	24
12.00/1.3	305,0	±6,5	33,0	25,5	47,0	7,0	23,0	25
14.00/1.3	355,5	±6,5	33,0	25,5	47,0	7,0	23,0	25

Dimensions in millimetres

Key

1   break corner equivalent to R1 min.

NOTE   This figure applies to rim diameter codes 56.5 and 59.5. (See Table 7 for specified rim diameters.)

[a]   The tolerance given for the specified rim diameter, D, is for tyre design purposes only. The actual rim measurement by circumference is established using a mandrel and a tape.

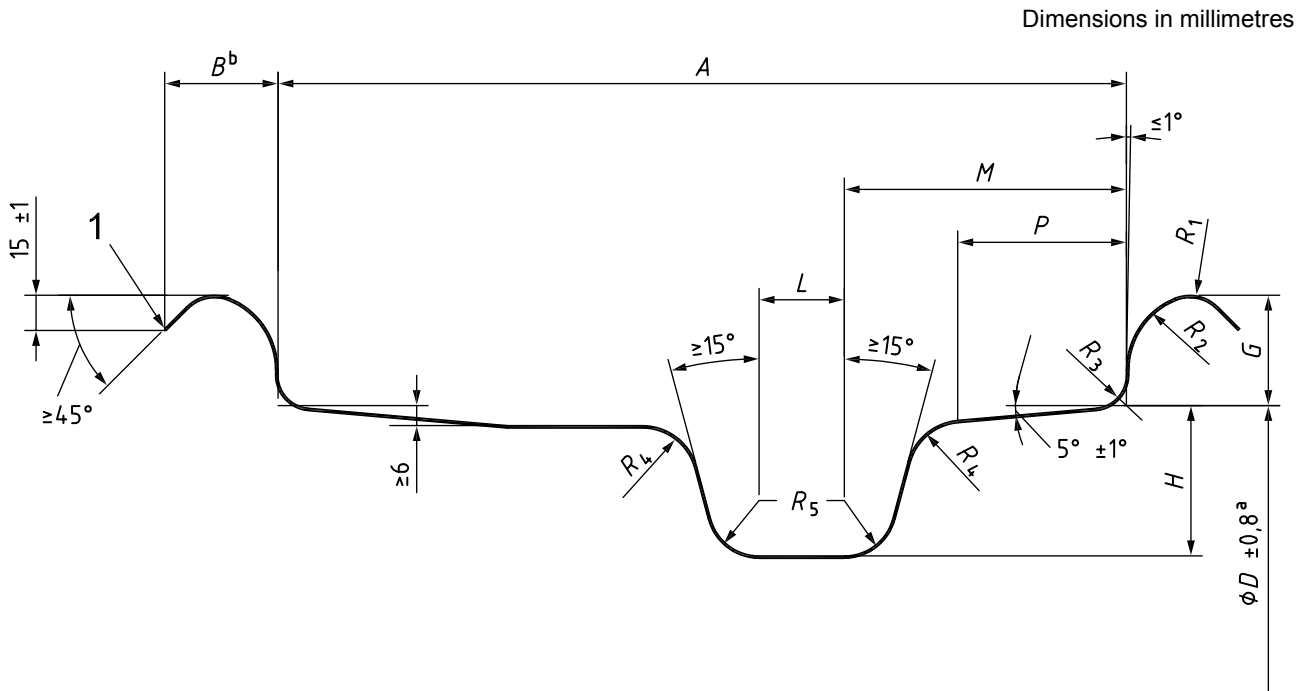[b]   The tyre-mounting side is that side of the rim to which dimension M applies.

Figure 4 — Contours of 15° drop-centre rims

Table 4 — Contours of 15° drop-centre rims

Dimensions in millimetres

Rim width code	A ±10,0	B min.	H[a]	L[a]	M[a] max.	P min.	R_2	R_3 max.	R_4 max.	R_5[a]
20.0	508,0	57,0	109,5	106,0	201,5	120,5	32,0	19,5	44,5	32,0
21.0	533,0	57,0	109,5	106,0	201,5	120,5	32,0	19,5	44,5	32,0
22.0	559,0	57,0	109,5	157,0	201,5	120,5	32,0	19,5	44,5	32,0
23.5	597,0	66,5	131,5	111,0	248,0	152,0	41,0	25,5	48,0	38,5
27.0	686,0	66,5	131,5	200,0	248,0	152,0	41,0	25,5	48,0	38,5

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

Dimensions in millimetres

Key

1   break corner equivalent to R1 min.

NOTE   This figure applies to rim diameter codes 24 and 25. (See Table 7 for specified rim diameters.)

a   The tolerance given for the specified rim diameter, D, is for tyre design purposes only. The actual rim measurement by circumference is established by using a mandrel and a tape.

b   Flange width B includes an edge radius.

c   The tyre-mounting side is that side of the rim to which dimension M applies.

Figure 5 — Contours of 5° drop-centre rims

Table 5 — Contours of 5° drop-centre rims

Dimensions in millimetres

Rim width code/ flange height code	A		G	B		P	H^a	L^a	M^a	R_1	R_2	R_3	R_4	$R_5{}^a$	Rim diameter code
		tol.	±1,5	min.	max.	min.	min.	min.	max.	+ 3,0 0		max.	min.		
9.00/1.5	228,5	±5,0	38,0	25,0	36,0	49,0	48,0	25,5	102,0	14,0	19,0	8,0	22,0	≤24,0	24
10.00/1.3	254,0	±6,0	33,0	25,0	40,0	49,0	45,0	25,5	102,0	12,0	23,0	10,0	17,0	≥15,0	24
12.00/1.3	305,0	±6,5	33,0	25,0	40,0	40,0	45,0	30,0	90,0	12,0	23,0	10,0	17,0	≥15,0	25
13.00/1.4	330,0	±6,5	36,0	25,0	40,0	40,0	48,0	30,0	102,0	12,0	23,0	10,0	17,0	≥15,0	25
14.00/1.3	355,5	±6,5	33,0	25,0	40,0	40,0	45,0	30,0	90,0	12,0	23,0	10,0	17,0	≥15,0	25
14.00/1.5	355,5	±6,5	38,0	27,0	43,0	40,0	52,0	30,0	90,0	12,0	25,5	10,0	17,0	≥15,0	25
a These dimensions comprise the minimum well envelope for tyre-mounting purposes.															

Dimensions in millimetres
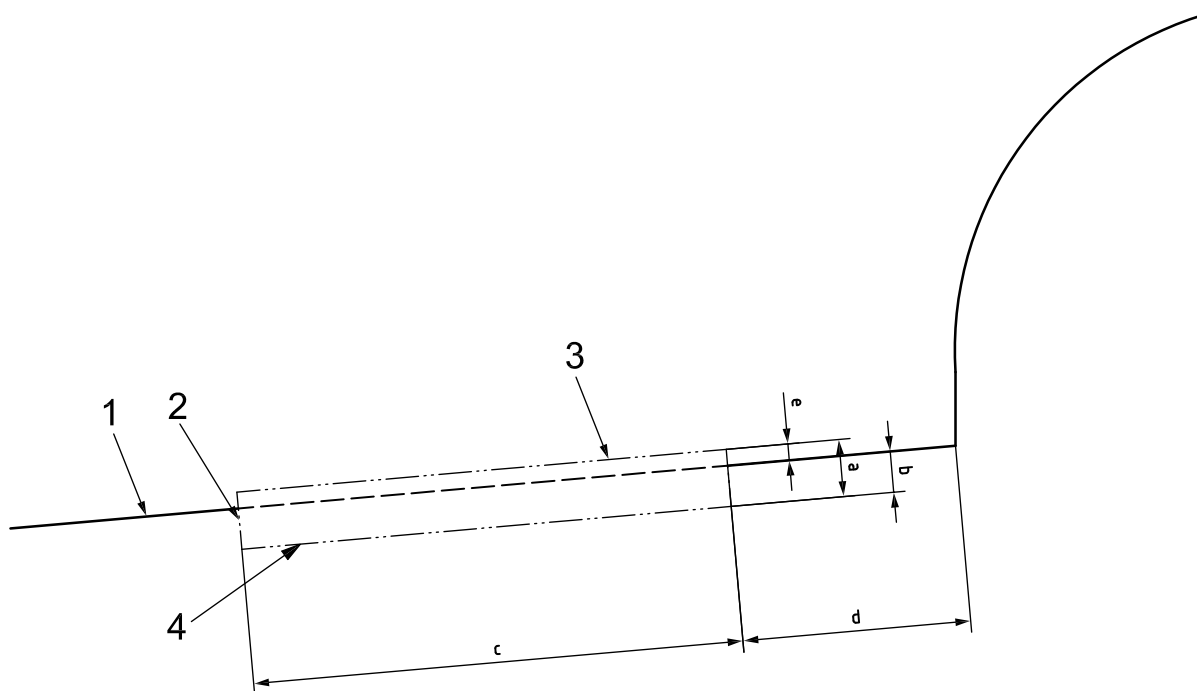
Key

1   base line

2   knurl envelope

3   crest

4   root

Pitch: ≥1,5 to ≤5,0

[a]   Height from crest to root: ≥0,5 to ≤1,0.

[b]   Depth.

[c]   Width.

[d]   Offset: ≥9,5 to ≤16,0.

[e]   Height from crest to base line: ≥0,2.

Figure 6 — Knurling detail

Table 6 — Knurling widths

Dimensions in millimetres

Rim width codes		Fixed flange side	Removable flange side
a) Rim diameter codes 25 to 49			
	11.25 to 15.00	≥25,0	≤51,0 ≥38,0
	17.00 and above	≤67,0 ≥38,0	≤67,0 ≥38,0
b) Rim diameter codes 51 and larger			
	22.00 and above	≤67,0 ≥53,5	≤67,0 ≥53,5

Table 7 — Earth-mover specified rim diameters

Rim diameter codes	Specified diameter D mm
24 TG	614,4
24 VA	614,4
25	635,0
29	736,6
33	838,2
35	889,0
39	990,6
45	1 143,0
49	1 244,6
51	1 295,4
56.5	1 435,1
57	1 447,8
59.5	1 511,3
63	1 600,2

Annex A
(informative)

Sealing ring grooves and O-rings for earth-mover rims
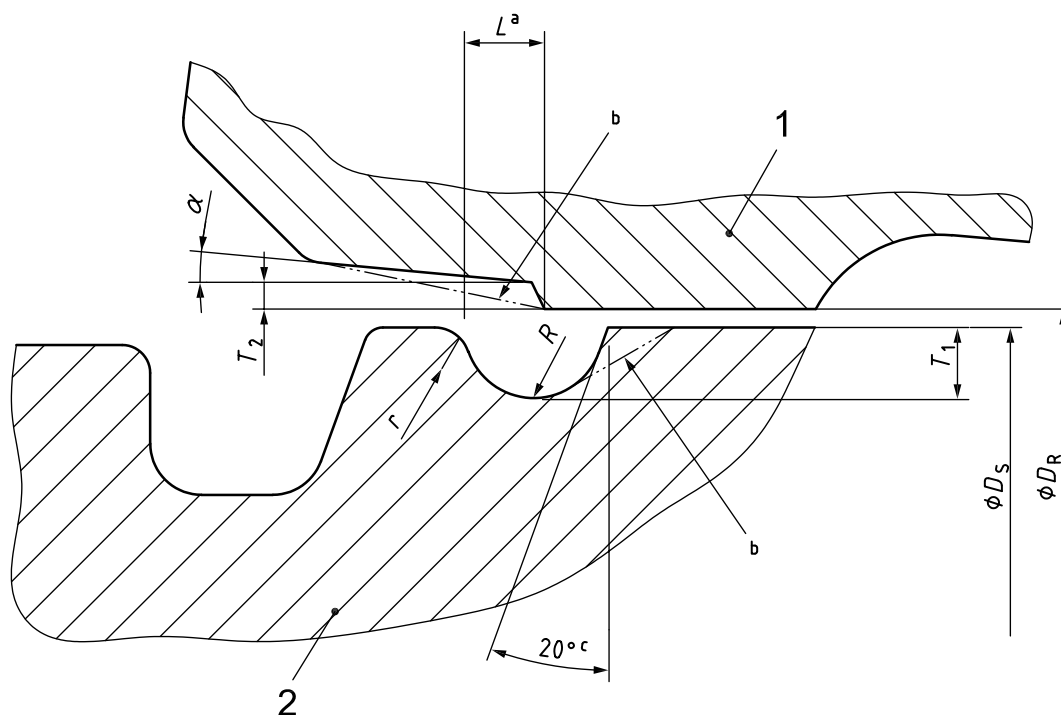
Key

1   bead seat ring

2   rim base

a   This dimension cannot be measured in practice; it is shown for reference purposes only to provide guidance for the rim and O-ring manufacturers.

b   Optional contour.

c   May be greater for rim diameter codes 25 and larger.

Figure A.1 — Sealing ring grooves and O-rings for earth-mover rims

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Table A.1 — Sealing ring grooves and O-rings for earth-mover rims

Dimensions in millimetres

Rim size	Rim base [a]						Bead seat ring [a]						Proposed O-ring designation
	D_S	πD_S	tol.	R	r	T_1 ±0,3	D_R	πD_R	tol.	T_2	α (+2°/0°)	L	
11-20 SDC													
12-20 SDC	487,4	1 531,2					488,6	1 535,0					OR 220
13-20 SDC			±1,2						±1,2				
10.00VA-24 SDC	589,0	1 850,4					590,2	1 854,2					OR 224
16.00T-24 SDC													
8.00TG-24 SDC	600,0	1 885,0					601,2	1 888,8					
8.50-25/1.3				3,2		3,2				1,2	5°	5,0	
10.00-25/1.5													
11.25-25/1.3	609,6	1 915,1	±2,4				610,8	1 918,9	±2,4				
12.00-25/1.3													OR 225
14.00-25/1.5													
17.00-25/1.7													
12.00-25/1.3 SDC	620,6	1 949,7	±1,2				621,8	1 953,4	±1,2				
14.00-25/1.3 SDC													
11.25-25													
13.00-25													
15.00-25													
16.00-25													
17.00-25					≤1,6								OR 325
19.50-25	600,0	1 885,0					602,0	1 891,2					
20.00-25			+1,2 −2,4						+1,2 −2,4				
22.00-25													
24.00-25				4,8		5,6				1,6	2°	7,0	
25.00-25													
−29	701,6	2 204,1					703,6	2 210,4					OR 329
−33	803,2	2 523,3					805,2	2 529,6					OR 333
−35	854,1	2 683,2					856,1	2 689,5					OR 335
−39	955,7	3 002,4					957,7	3 008,7					OR 339
−43	1 057,3	3 321,6					1 059,3	3 327,9					OR 343
−45	1 108,1	3 481,2					1 110,1	3 487,5					OR 345
−49	1 209,7	3 800,4					1 211,7	3 806,7					OR 349
−51	1 244,6	3 910,0	±2,4				1 246,6	3 916,3	±2,4				OR 451
−57A	1 390,7	4 369,0		6,4		7,2	1 392,7	4 375,3		—	15°	9,5	OR 457
−57B	1 397,0	4 388,8					1 399,0	4 395,1					OR 457
−63A	1 536,2	4 826,1					1 538,2	4 832,4					OR 463
−63B	1 549,4	4 867,6					1 551,0	4 872,6					OR 463

[a] O-ring size, shape and properties should provide a lasting seal.

Bibliography

[1]   ISO 4250-1, *Earth-mover tyres and rims — Part 1: Tyre designation and dimensions*

[2]   ISO 10571, *Tyres for mobile cranes and similar specialized machines*

[3]   ISO 13442, *Tyres and rims for construction machines*

ICS 53.100

Price based on 13 pages