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

Part 1:

Tyre designation and dimensions

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*Pneumatiques (série à marquage “ply rating”) et jantes pour tracteurs
et machines agricoles —*

Partie 1: Désignation et cotes des pneumatiques
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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.

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 4251-1 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Sub-Committee SC 5, *Agricultural tyres and rims*.

This fourth edition cancels and replaces the third edition (ISO 4251-1:1988), of which it constitutes a minor revision. Existing series is now called "ply rating marked series" and rim codes 15.3 and 16.1 have been moved to a new, informative, annex.

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
- Part 2: Tyre load ratings
- Part 3: Rims
- Part 4: Tyre classification and nomenclature
- Part 5: Log skidder tyres

Annex A of this part of ISO 4251 is for information only.

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

Part 1:

Tyre designation and dimensions

1 Scope

This part of ISO 4251 establishes the designation in use and the dimensions of the ply rating marked series of tyres for agricultural tractors and machines.

Tyre load ratings, rim dimensions, and tyre classification and nomenclature are given in ISO 4251-2, ISO 4251-3 and ISO 4251-4 respectively.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 4251. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 4251 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 4223-1:1989, *Definitions of some terms used in the tyre industry — Part 1: Pneumatic tyres.*

3 Definitions

For the purposes of this part of ISO 4251, the definitions given in ISO 4223-1 apply.

4 Marking

The marking of the ply rating marked series of tyres consists of designations of the tyre size and load

rating, and any additional information. See 4.1 to 4.3.

4.1 Tyre size

The present size markings for the identification of tyres consist of the nominal tyre width code and the nominal rim diameter code.

EXAMPLES

Tyre 13.6 — 28

Tyre 6.50 — 16

For tyres of radial construction, the letter "R" replaces the dash.

EXAMPLE

Tyre 13.6 R 28

For low section height tyres, the letter "L" is added to the nominal tyre width code.

EXAMPLE

Tyre 9.5 L — 15

For low section height tractor steering wheel tyres of diagonal construction, an optional marking may be used in the following manner:

nominal tyre width code/nominal aspect ratio...
nominal rim diameter.

EXAMPLE

Tyre 9.5/85 — 15

4.2 Load rating

The present marking of load rating comprises the ply rating.

EXAMPLE

Tyre 13.6 — 28 8 PR

4.3 Additional information

Tubeless tyres may be marked with the word "TUBELESS".

Additionally, classification code markings indicating tyre classifications may be used as described in ISO 4251-4, but they are not part of the size marking of the tyre.

5 Dimensions and tolerances

5.1 Agricultural drive wheels — Tractor tyres

Standard sizes, measurement rims, design dimensions of new tyres, and maximum tyre dimensions in service are given in

- a) table 1 for tyres of diagonal construction with normal section height;
- b) table 2 for tyres of radial construction with normal section height;
- c) table 3 for tyres of diagonal construction with low section height;
- d) table 4 for tyres of radial construction with low section height;
- e) table 5 for tyres of diagonal construction for special cultivation work;
- f) table 6 for tyres of radial construction for special cultivation work.

5.2 Agricultural steering wheels — Tractor tyres

Standard sizes, measurement rims, design dimensions of new tyres, and maximum tyre dimensions in service are given in

- a) table 7 for tyres of diagonal construction with normal section height;
- b) table 8 for tyres of diagonal construction with low section height.

5.3 Agricultural implement tyres

Standard sizes, measurement rims, design dimensions of new tyres, and maximum tyre dimensions in service are given in

- a) table 10 for tyres of diagonal construction with normal section height;
- b) table 11 for tyres of diagonal construction with low section height.

6 Dynamic radius indices

Dynamic radius indices are parameters used exclusively for the calculation of forward ground speed during homologation procedures (see ISO 3965:1990, *Agricultural wheeled tractors — Maximum speeds — Method of determination*).

Values are given in table 9 for agricultural drive wheel tractor tyres of diagonal and radial construction with normal section height and of diagonal construction with low section height.

They apply to tyres inflated to the inflation pressures given in ISO 4251-2 and having tyre loads corresponding to 50 % of the maximum values at 30 km/h.

7 Tubes

Whenever a tube is required it should be identified by the same designation as the tyre size in which it is to be mounted.

Table 1 — Agricultural drive wheels — Tractor tyres (diagonal construction — normal section height) — Standard sizes, measurement rims, and dimensions

Dimensions in millimetres

Tyre size designation	Measurement rim width code	Design new tyre		In service	
		Section width	Overall diameter ¹⁾	Maximum overall width	Maximum overall diameter ²⁾
8.3 — 24	7	211	995	228	1 019
9.5 — 24 9.5 — 32 9.5 — 36	8	241	1 050 1 250 1 355	260	1 076 1 276 1 381
11.2 — 24 11.2 — 28	10	284	1 105 1 205	307	1 135 1 235
12.4 — 24 12.4 — 28 12.4 — 32 12.4 — 36 12.4 — 38	11	315	1 160 1 260 1 360 1 465 1 515	340	1 192 1 292 1 392 1 497 1 547
13.6 — 24 13.6 — 28 13.6 — 36 13.6 — 38	12	345	1 210 1 310 1 515 1 565	373	1 246 1 346 1 551 1 601
14.9 — 24 14.9 — 26 14.9 — 28 14.9 — 30 14.9 — 38	13	378	1 265 1 315 1 365 1 415 1 615	408	1 305 1 355 1 405 1 455 1 655
15.5 — 38	14	394	1 570	426	1 606
16.9 — 24 16.9 — 26 16.9 — 28 16.9 — 30 16.9 — 34 16.9 — 38	15	429	1 335 1 385 1 435 1 485 1 585 1 690	463	1 379 1 429 1 479 1 529 1 629 1 734
18.4 — 26 18.4 — 30 18.4 — 34 18.4 — 38	16	467	1 450 1 550 1 650 1 750	504	1 498 1 598 1 698 1 798
20.8 — 34 20.8 — 38	18	528	1 735 1 835	570	1 787 1 887
23.1 — 26 23.1 — 30 23.1 — 34	20	587	1 605 1 705 1 805	634	1 661 1 761 1 861
24.5 — 32	21	622	1 805	672	1 865

1) Minimum new tyre overall diameter shall be calculated on the basis of a tolerance of — 3 % on design section height.

2) Figures are based on tyres with classification code R—1. The tractor manufacturer must recognize that tyres with deep tread and related increased overall diameter may be used.

Table 2 — Agricultural drive wheels — Tractor tyres (radial construction — normal section height) — Standard sizes, measurement rims, and dimensions

Dimensions in millimetres

Tyre size designation	Measurement rim width code	Design new tyre		In service	
		Section width	Overall diameter ¹⁾	Maximum overall width	Maximum overall diameter
8.3 R 24	7	211	985	228	1 001
9.5 R 24 9.5 R 32 9.5 R 36	8	241	1 040 1 245 1 345	260	1 058 1 263 1 363
11.2 R 24 11.2 R 28	10	284	1 095 1 200	307	1 115 1 220
12.4 R 24 12.4 R 28 12.4 R 32 12.4 R 36 12.4 R 38	11	315	1 145 1 250 1 350 1 450 1 500	340	1 167 1 272 1 372 1 472 1 522
13.6 R 24 13.6 R 28 13.6 R 36 13.6 R 38	12	345	1 190 1 295 1 500 1 550	373	1 214 1 319 1 524 1 574
14.9 R 24 14.9 R 26 14.9 R 28 14.9 R 30	13	378	1 245 1 295 1 350 1 400	408	1 271 1 321 1 376 1 426
15.5 R 38	14	394	1 565	426	1 589
16.9 R 24 16.9 R 26 16.9 R 28 16.9 R 30 16.9 R 34 16.9 R 38	15	429	1 320 1 370 1 420 1 475 1 575 1 675	463	1 349 1 399 1 449 1 504 1 604 1 704
18.4 R 26 18.4 R 30 18.4 R 34 18.4 R 38	16	467	1 440 1 545 1 645 1 750	504	1 482 1 582 1 682 1 782
20.8 R 34 20.8 R 38	18	528	1 735 1 835	570	1 770 1 870

1) Minimum new tyre overall diameter shall be calculated on the basis of a tolerance of — 4 % on design section height.

Table 3 — Agricultural drive wheels — Tractor tyres (diagonal construction — low section height) — Standard sizes, measurement rims, and dimensions

Dimensions in millimetres

Tyre size designation	Measurement rim width code	Design new tyre		In service	
		Section width	Overall diameter ¹⁾	Maximum overall width	Maximum overall diameter ²⁾
28 L — 26 ³⁾	25	714	1 615	771	1 673
30.5 L — 32	27	775	1 820	837	1 881

1) Minimum new tyre overall diameter shall be calculated on the basis of a tolerance of — 3 % on design section height.

2) Figures are based on tyres with classification code R-1. The tractor manufacturer must recognize that tyres with deep tread and related increased overall diameter may be used.

3) Optional size designation 28.1 — 26.

Table 4 — Agricultural drive wheels — Tractor tyres (radial construction — low section height) — Standard sizes, measurement rims, and dimensions

Dimensions in millimetres

Tyre size designation	Measurement rim width code	Design new tyre		In service	
		Section width	Overall diameter ¹⁾	Maximum overall width	Maximum overall diameter
30.5 L R 32	27	775	1 820	837	1 860

1) Minimum new tyre overall diameter shall be calculated on the basis of a tolerance of — 4 % on design section height.

Table 5 — Agricultural drive wheels — Tractor tyres for special cultivation work (diagonal construction) — Standard sizes, measurement rims, and dimensions

Dimensions in millimetres

Tyre size designation	Measurement rim width code	Design new tyre		In service	
		Section width	Overall diameter	Maximum overall width	Maximum overall diameter
7.2 — 36	6.0	183	1 250	198	1 270
7.2 — 40			1 350		1 370
8.3 — 36	7.0	211	1 300	228	1 320
8.3 — 42			1 450		1 475
8.3 — 44			1 500		1 525
9.5 — 36	8.0	241	1 355	260	1 380
9.5 — 44			1 555		1 580
9.5 — 48			1 655		1 680

Table 6 — Agricultural drive wheels — Tractor tyres for special cultivation work (radial construction) — Standard sizes, measurement rims, and dimensions

Dimensions in millimetres

Tyre size designation	Measurement rim width code	Design new tyre		In service	
		Section width	Overall diameter	Maximum overall width	Maximum overall diameter
8.3 R 36 8.3 R 42 8.3 R 44	7.0	211	1 290 1 440 1 495	228	1 315 1 465 1 520
9.5 R 36 9.5 R 44 9.5 R 48	8.0	241	1 345 1 550 1 650	260	1 365 1 575 1 675

Table 7 — Agricultural steering wheels — Tractor tyres (diagonal construction — normal section height) — Standard sizes, measurement rims, and dimensions

Dimensions in millimetres

Tyre size designation	Measurement rim width code	Design new tyre		In service	
		Section width	Overall diameter ¹⁾	Maximum overall width	Maximum overall diameter ²⁾
4.00 — 12 4.00 — 15	3	112	535 610	122	553 628
5.00 — 15	4	140	655	153	677
5.50 — 16	4	150	710	164	734
6.00 — 16	4.5	165	735	180	761
6.50 — 16 6.50 — 20	4.5	175	760 865	191	788 894
7.50 — 16 7.50 — 18 7.50 — 20	5.5	205	805 860 915	223	837 892 948
9.00 — 16	6	234	855	255	891
10.00 — 16	8	274	895	299	934
11.00 — 16	10	315	965	343	1 010

1) Minimum new tyre overall diameter shall be calculated on the basis of a tolerance of — 3 % on design section height.

2) Figures are based on tyres with classification code F—2.

Table 8 — Agricultural steering wheels — Tractor tyres (diagonal construction — low section height) — Standard sizes, measurement rims, and dimensions

Dimensions in millimetres

Tyre size designation	Optional size marking	Measurement rim width code	Design new tyre		In service	
			Section width	Overall diameter ¹⁾	Maximum overall width	Maximum overall diameter ²⁾
7.5 L — 15	8.25/85 — 15	6	210	745	229	774
9.5 L — 15	9.5/85 — 15	8	240	785	262	817
11 L — 15	11.5/75 — 15	8	280	815	305	850

1) Minimum new tyre overall diameter shall be calculated on the basis of a tolerance of — 3 % on design section height.

2) Figures are based on tyres with classification code F—2.

Table 9 — Dynamic radius indices for calculation of the forward ground speed (tyres of diagonal and radial construction)

Tyre size designation		Dynamic radius indices ¹⁾ mm	Tyre size designation		Dynamic radius indices ¹⁾ mm
Diagonal	Radial		Diagonal	Radial	
8.3 — 24	8.3 R 24	470	15.5 — 38	15.5 R 38	745
9.5 — 24	9.5 R 24	495	16.9 — 24	16.9 R 24	620
9.5 — 32	9.5 R 32	595	16.9 — 26	16.9 R 26	645
9.5 — 36	9.5 R 36	645	16.9 — 28	16.9 R 28	670
11.2 — 24	11.2 R 24	515	16.9 — 30	16.9 R 30	695
11.2 — 28	11.2 R 28	565	16.9 — 34	16.9 R 34	745
			16.9 — 38	16.9 R 38	795
12.4 — 24	12.4 R 24	540	18.4 — 26	18.4 R 26	670
12.4 — 28	12.4 R 28	590	18.4 — 30	18.4 R 30	720
12.4 — 32	12.4 R 32	640	18.4 — 34	18.4 R 34	770
12.4 — 36	12.4 R 36	690	18.4 — 38	18.4 R 38	820
12.4 — 38	12.4 R 38	720			
13.6 — 24	13.6 R 24	560	20.8 — 34	20.8 R 34	810
13.6 — 28	13.6 R 28	610	20.8 — 38	20.8 R 38	855
13.6 — 36	13.6 R 36	715			
13.6 — 38	13.6 R 38	740	23.1 — 26		730
			23.1 — 30		790
			23.1 — 34		840
14.9 — 24	14.9 R 24	590			
14.9 — 26	14.9 R 26	615	24.5 — 32		835
14.9 — 28	14.9 R 28	640			
14.9 — 30	14.9 R 30	665	28 L — 26		730
14.9 — 38		765			
			30.5 L — 32		845

NOTE — Designers are reminded that practical speed limits may be imposed by appropriate legislative bodies.

1) The values listed do not include the manufacturing tolerances of the tyres.