International Standard 4251/1

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Tyres and rims (existing series) for agricultural tractors and machines — Part 1 : Tyre designation and dimensions

Pneus et jantes (Séries existantes) pour tracteurs et machines agricoles — Partie 1 : Désignation et dimensions des pneumatiques

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Descriptors : agricultural machinery, tractors, tyres, pneumatic tyres, rims, designations, dimensions, dimensional tolerances, marking.

Foreword

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International Standard ISO 4251/1 was developed by Technical Committee ISO/TC 31, *Tyres, rims and valves*, and was circulated to the member bodies in January 1979.

It has been approved by the member bodies of the following countries :

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Canada	Japan	Spain
Chile	Korea, Rep. of	Sweden
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Denmark	Poland	USSR

The member bodies of the following countries expressed disapproval of the document on technical grounds :

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This International Standard incorporates draft Addendum 1, which was circulated to the member bodies in August 1979, and which has been approved by the member bodies of the following countries :

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Tyres and rims (existing series) for agricultural tractors and machines —
Part 1 : Tyre designation and dimensions
ADDENDUM 1

Addendum 1 to International Standard ISO 4251/1-1980 was developed by Technical Committee ISO/TC 31, *Tyres, rims and valves*, and was circulated to the member bodies in January 1981.

It has been approved by the member bodies of the following countries :

Austria	Israel	Romania
Belgium	Italy	South Africa, Rep. of
Brazil	Japan	Sweden
Canada	Korea, Dem.P.Rep. of	United Kingdom
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France	Netherlands	USSR
Germany, F.R.	Poland	

No member body expressed disapproval of the document.

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Replace clause 5.3 by the following :

"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 9 for tyres of diagonal construction with normal section;

b) table 10 for tyres of diagonal construction with low section."

Add the following clause after clause 6 :

"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."

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Table 3

Insert footnote cross-reference 3) after 28L — 26 in first column.

Add the following footnote beneath the table :

"3) Optional size designation 28.1 — 26."

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Add the following table :

Table 10 — Agricultural implement tyres (Diagonal construction — low section) — Standard sizes, measurement rims and dimensions

Dimensions in millimetres

Tyre size designation	Measurement rim width Code	Design new tyre			In service		
		Section width	Overal diameter[1]		Maximum overall width	Maximum overall diameter	
			Non-traction pattern	Traction pattern		Non-traction pattern	Traction pattern
10.0/75 — 15	9	264	760	780	277	779	800
10.0/80 — 12	9	264	710	730	277	730	751
10.5/80 — 18	9	274	885	907	288	906	930
11.5/80 — 15	9	290	845	867	305	868	891
12.0/75 — 18	9	299	915	937	314	938	961
12.5/80 — 18	9	308	965	987	323	990	1 014
13.0/65 — 18	11	336	890	912	353	912	935
9.5 L — 15	7	241	767	782	263	786	802
11 L — 15	8	279	777	796	305	797	816
11 L — 16	8	279	803	821	305	822	842
14 L — 16.1	11	356	940	—	388	966	—

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

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Tyres and rims (existing series) for agricultural tractors and machines — Part 1 : Tyre designation and dimensions

1 Scope and field of application

This International Standard sets out the designation in use and the dimensions of existing series of tyres for agricultural tractors and machines.

Load ratings, rim dimensions, and tyre classification and nomenclature are given in ISO 4251/2, ISO 4251/3, and ISO 4251/4 respectively.

2 References

ISO 3965, *Agricultural wheeled tractors — Determination of maximum travel speed.*

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

3 Definitions

For definitions of terms relating to tyres, see ISO 4223.

4 Marking

The marking of existing series of tyres consists of designations of the tyre size and load rating, and additional information.

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, or tyre 6.50 — 16.

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

Example : Tyre 13.6 R 28.

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

Example : Tyre 9.5 L — 15.

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

section width/nominal aspect ratio . . . 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;

b) table 2 for tyres of radial construction with normal section;

c) table 3 for tyres of diagonal construction with low section;

d) table 4 for tyres of diagonal construction for special cultivation work;

e) table 5 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

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a) table 6 for tyres of diagonal construction with normal section;

b) table 7 for tyres of diagonal construction with low section.

5.3 Agricultural implement tyres

Standard sizes, measurement rims, design dimensions of new tyres, and maximum tyre dimensions in service are given in table 9 for tyres of diagonal construction with normal section.*

5.4 Garden tractor tyres

Under study.

6 Dynamic radius indices

Dynamic radius indices are parameters used exclusively for the calculation of forward speed during homologation procedures at speeds between 10 and 30 km/h (see ISO 3965).

Values are given in table 8 for agricultural drive wheel tractor tyres of diagonal and radial construction with normal section and of diagonal construction with low section.

They are applicable 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.

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* Tyres of diagonal construction with low section are under study.

Table 1 — Agricultural drive wheels — Tractor tyres (diagonal construction — normal section) — 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 increased overall diameter may be used.

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Table 2 — Agricultural drive wheels — Tractor tyres (radial construction — normal section) — 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.

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Table 3 — Agricultural drive wheels — Tractor tyres (diagonal construction — low section) — 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	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 increased overall diameter may be used.

Table 4 — 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 7.2 – 40	6.0	183	1 250 1 350	198	1 270 1 370
8.3 – 36 8.3 – 42 8.3 – 44	7.0	211	1 300 1 450 1 500	228	1 320 1 475 1 525
9.5 – 36 9.5 – 44 9.5 – 48	8.0	241	1 355 1 555 1 655	260	1 380 1 580 1 680

Table 5 — 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

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Table 6 — Agricultural steering wheels — Tractor tyres (diagonal construction — normal section) — 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.

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Table 7 — Agricultural steering wheels — Tractor tyres (diagonal construction — low section) — 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
14 L – 16.1	14.0 /80 – 16.1	11	360	985	392	1 031

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 — Dynamic radius indices for calculation of the forward speed[1] (tyres of diagonal and radial construction)

Tyre size designation		Dynamic radius indices[2]
Diagonal	Radial	mm
8.3 – 24	8.3 R 24	470
9.5 – 24	9.5 R 24	495
9.5 – 32	9.5 R 32	595
9.5 – 36	9.5 R 36	645
11.2 – 24	11.2 R 24	515
11.2 – 28	11.2 R 28	565
12.4 – 24	12.4 R 24	540
12.4 – 28	12.4 R 28	590
12.4 – 32	12.4 R 32	640
12.4 – 36	12.4 R 36	690
12.4 – 38	12.4 R 38	720
13.6 – 24	13.6 R 24	560
13.6 – 28	13.6 R 28	610
13.6 – 36	13.6 R 36	715
13.6 – 38	13.6 R 38	740
14.9 – 24	14.9 R 24	590
14.9 – 26	14.9 R 26	615
14.9 – 28	14.9 R 28	640
14.9 – 30	14.9 R 30	665
14.9 – 38		765
15.5 – 38	15.5 R 38	745
16.9 – 24	16.9 R 24	620
16.9 – 26	16.9 R 26	645
16.9 – 28	16.9 R 28	670
16.9 – 30	16.9 R 30	695
16.9 – 34	16.9 R 34	745
16.9 – 38	16.9 R 38	795
18.4 – 26	18.4 R 26	670
18.4 – 30	18.4 R 30	720
18.4 – 34	18.4 R 34	770
18.4 – 38	18.4 R 38	820
20.8 – 34	20.8 R 34	810
20.8 – 38	20.8 R 38	855
23.1 – 26		760
23.1 – 30		790
23.1 – 34		840
24.5 – 32		835
28 L – 26		760
30.5 L – 32		845

1) Designers are reminded that practical speed limits may be imposed by appropriate legislative bodies.

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

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