International Standard ISO 4251/2

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Tyres and rims (existing series) for agricultural tractors and machines — Part 2 : Tyre load ratings

Pneus et jantes (séries existantes) pour tracteurs et machines agricoles — Partie 2 : Capacités de charge 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4251/2 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves.*

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Tyres and rims (existing series) for agricultural tractors and machines — Part 2 : Tyre load ratings

1 Scope and field of application

This part of ISO 4251 sets out load ratings for existing series of tyres for agricultural tractors and machines.

Tyre designation and dimensions, rim dimensions, and tyre classification and nomenclature are given in ISO 4251/1, ISO 4251/3 and ISO 4251/4 respectively.

2 Load — Inflation pressure relationship

The loads given in the tables of this part of ISO 4251 are maximum values and are valid for the inflation pressures indicated.

3 Tyre loads

3.1 Agricultural drive wheels — Tractor tyres

Basic tyre loads for a maximum speed of 30 km/h, and corresponding inflation pressures are given in :

a) table 1 for tyres of diagonal and radial construction with normal section height;

b) table 2 for tyres of diagonal construction with low section height.

Tyre loads at different speeds (load-speed relationship) are given in table 3 for tyres of diagonal and radial construction with normal section height and tyres of diagonal construction with low section height.

Loads for tyres in dual applications for a maximum speed of 30 km/h, and corresponding inflation pressures are given in :

a) table 4 for tyres of diagonal and radial construction with normal section height;

b) table 5 for tyres of diagonal construction with low section height.

Loads for tyres of diagonal and radial construction for special cultivation work and corresponding inflation pressures are given in :

a) table 6 for a maximum speed of 30 km/h;

b) table 7 for cultivation work at a maximum speed of 8 km/h.

3.2 Agricultural steering wheels — Tractor tyres

Basic tyre loads for a maximum speed of 30 km/h, and corresponding inflation pressures are given in :

a) table 8 for tyres of diagonal construction with normal section height;

b) table 9 for tyres of diagonal construction with low section height.

Tyre loads at different speeds (load-speed relationship) are given in table 10 for tyres of diagonal construction with normal and low section.

3.3 Agricultural implement tyres

Basic tyre loads for a maximum speed of 30 km/h, tyre loads for other speeds and special applications and corresponding inflation pressures are specified in

a) table 11 for tyres of diagonal construction with normal section height;

b) table 12 for tyres of diagonal construction with low section height.

Table 1 — Agricultural drive wheels — Tractor tyres (diagonal and radial construction — normal section height) — Basic tyre loads (BTL) for a maximum speed of 30 km/h and inflation pressures (IP)

Tyre size		4 PR		6 PR		8 PR		10 PR		12 PR	
Diagonal	Radial	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa
8.3 — 24	8.3 R 24	625	160	810	240						
9.5 — 24	9.5 R 24	740		940		1 110					
9.5 — 32	9.5 R 32	840	140	1 065	210	1 260	280				
9.5 — 36	9.5 R 36	890		1 130		1 335					
11.2 — 24	11.2 R 24	845	130	1 045	180	1 225	240				
11.2 — 28	11.2 R 28	900		1 115		1 305					
12.4 — 24	12.4 R 24	945		1 200		1 415					
12.4 — 28	12.4 R 28	1 005		1 275		1 510					
12.4 — 32	12.4 R 32	1 070	110	1 355	170	1 605	230				
12.4 — 36	12.4 R 36	1 135		1 440		1 700					
12.4 — 38	12.4 R 38	1 165		1 480		1 750					
13.6 — 24	13.6 R 24	1 030		1 340		1 545		1 790			
13.6 — 28	13.6 R 28	1 100	100	1 430	160	1 645	200	1 910	250		
13.6 — 36	13.6 R 36	1 240		1 615		1 855		2 150			
13.6 — 38	13.6 R 38	1 275		1 660		1 910		2 215			
14.9 — 24	14.9 R 24			1 510		1 760		1 990			
14.9 — 26	14.9 R 26			1 560		1 820		2 055			
14.9 — 28	14.9 R 28			1 610	140	1 880	180	2 120	230		
14.9 — 30	14.9 R 30			1 665		1 940		2 190			
14.9 — 38				1 870		2 180		2 460			
15.5 — 38	15.5 R 38			1 765	140	2 060	180	2 320	230		
16.9 — 24	16.9 R 24			1 725		2 040		2 230			
16.9 — 26	16.9 R 26			1 780		2 105		2 305			
16.9 — 28	16.9 R 28			1 840	130	2 175	170	2 380	200		
16.9 — 30	16.9 R 30			1 900		2 245		2 455			
16.9 — 34	16.9 R 34			2 015		2 380		2 605			
16.9 — 38	16,9 R 38			2 130		2 520		2 760			
18.4 — 26	18.4 R 26			1 990		2 265		2 645		2 985	
18.4 — 30	18.4 R 30			2 120	110	2 415	140	2 815	180	3 180	230
18.4 — 34	18.4 R 34			2 250		2 565		2 990		3 375	
18.4 — 38	18.4 R 38			2 380		2 715		3 165		3 575	
20.8 — 34	20.8 R 34					2 920	130	3 285	160	3 785	200
20.8 — 38	20.8 R 38					3 090		3 475		4 000	
23.1 — 26						2 850		3 245		3 610	
23.1 — 30						3 035	110	3 460	140	3 850	170
23.1 — 34						3 225		3 675		4 090	
24.5 — 32								3 950	140	4 390	170

Table 2 — Agricultural drive wheels — Tractor tyres (diagonal construction — low section height) — Basic tyre loads (BTL) for a maximum speed of 30 km/h and inflation pressures (IP)

Tyre size	10 PR		12 PR		14 PR	
	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa
28 L — 26	3 460	120	3 785	140	4 245	170
30.5 L — 32			4 745	140		

Table 3 — Agricultural drive wheels — Tractor tyres — Tyre loads at different speeds (load — speed relationship)

Maximum speed[1] km/h	Maximum tyre load[2]
8[3] [4]	140
20	120
25	107
30	100

1) The values given for the maximum tyre loads also apply when drive wheel tractor tyres are fitted on the front axles (steering wheels).

2) Expressed as a percentage of the basic tyre loads given in tables 1 and 2. If national legislation permits speeds in excess of 30 km/h, for example up to 40 km/h, a tyre load of 90 % of the basic tyre load shall be permitted at a speed of 35 km/h, and a tyre load of 80 % of the basic tyre load shall be permitted at a speed of 40 km/h. Tyres intended for higher speeds, for example multipurpose applications (MPT), will form the subject of a future International Standard.

3) This applies to drive wheel tractor tyres fitted on front axles of front-end loaders used in intermittent service. Tyre inflation pressures have to be increased by 30 kPa for operating at these overloads.

4) On combine harvesters in cyclic loading service, except hillside combines, a load of up to 150 % of the basic tyre loads given in tables 1 and 2 is permitted for speeds up to 8 km/h with an inflation pressure increase of approximately 25 % (consult the tyre manufacturers).

The wheel and rim manufacturers should be consulted concerning the strength of the wheels.

Table 4 — Agricultural drive wheels — Tractor tyres used as duals (diagonal and radial construction — normal section height) — Load per tyre (L) for a maximum speed of 30 km/h and inflation pressures (IP)

Tyre size		4 PR		6 PR		8 PR		10 PR		12 PR	
Diagonal	Radial	L kg	IP kPa	L kg	IP kPa	L kg	IP kPa	L kg	IP kPa	L kg	IP kPa
8.3 — 24	8.3 R 24	550	160	715	240						
9.5 — 24	9.5 R 24	650		825		975					
9.5 — 32	9.5 R 32	740	140	935	210	1 110	280				
9.5 — 36	9.5 R 36	785		995		1 175					
11.2 — 24	11.2 R 24	745	130	920	180	1 080	240				
11.2 — 28	11.2 R 28	790		980		1 150					
12.4 — 24	12.4 R 24	830		1 055		1 245					
12.4 — 28	12.4 R 28	885		1 120		1 330					
12.4 — 32	12.4 R 32	940	110	1 190	170	1 410	230				
12.4 — 36	12.4 R 36	1 000		1 265		1 495					
12.4 — 38	12.4 R 38	1 025		1 300		1 540					
13.6 — 24	13.6 R 24	905		1 180		1 360		1 575			
13.6 — 28	13.6 R 28	970	100	1 260	160	1 450	200	1 680	250		
13.6 — 36	13.6 R 36	1 090		1 420		1 630		1 890			
13.6 — 38	13.6 R 38	1 120		1 460		1 680		1 950			
14.9 — 24	14.9 R 24			1 330		1 550		1 750			
14.9 — 26	14.9 R 26			1 375		1 600		1 810			
14.9 — 28	14.9 R 28			1 415	140	1 650	180	1 865	230		
14.9 — 30	14.9 R 30			1 465		1 705		1 925			
14.9 — 38				1 645		1 920		2 165			
15.5 — 38	15.5 R 38			1 555	140	1 815	180	2 040	230		
16.9 — 24	16.9 R 24			1 520		1 795		1 960			
16.9 — 26	16.9 R 26			1 565		1 850		2 030			
16.9 — 28	16.9 R 28			1 620	130	1 915	170	2 095	200		
16.9 — 30	16.9 R 30			1 670		1 975		2 160			
16.9 — 34	16.9 R 34			1 775		2 095		2 290			
16.9 — 38	16,9 R 38			1 875		2 220		2 430			
18.4 — 26	18.4 R 26			1 750		1 995		2 330		2 625	
18.4 — 30	18.4 R 30			1 865	110	2 125	140	2 475	180	2 800	230
18.4 — 34	18.4 R 34			1 980		2 255		2 630		2 970	
18.4 — 38	18.4 R 38			2 095		2 390		2 785		3 145	
20.8 — 34	20.8 R 34					2 570	130	2 890	160	3 330	200
20.8 — 38	20.8 R 38					2 720		3 060		3 520	
23.1 — 26						2 510		2 855		3 175	
23.1 — 30						2 670	110	3 045	140	3 390	170
23.1 — 34						2 840		3 235		3 600	
24.5 — 32								3 475	140	3 865	170

Table 5 — Agricultural drive wheels — Tractor tyres used as duals (diagonal construction — low section height) — Load per tyre (L) for a maximum speed of 30 km/h and inflation pressures (IP)

Tyre size	10 PR		12 PR		14 PR	
	L kg	IP kPa	L kg	IP kPa	L kg	IP kPa
28 L — 26	3 045	120	3 330	140	3 735	170
30.5 L — 32			4 000	130		

Table 6 — Agricultural drive wheels — Tractor tyres for special cultivation work (diagonal and radial construction) — Basic tyre loads (BTL) for a maximum speed of 30 km/h and inflation pressures (IP)

Tyre size		6 PR		8 PR	
Diagonal	Radial	BTL kg	IP kPa	BTL kg	IP kPa
7.2 — 36 7.2 — 40		865 935	280	1 005 1 090	370
8.3 — 36 8.3 — 42 8.3 — 44	8.3 R 36 8.3 R 42 8.3 R 44	970 1 055 1 080	240	1 160 1 255 1 290	320
9.5 — 36 9.5 — 44 9.5 — 48	9.5 R 36 9.5 R 44 9.5 R 48	1 130 1 255 1 320	210	1 335 1 485 1 560	280

Table 7 — Agricultural drive wheels — Tractor tyres for special cultivation work (diagonal and radial construction) — Tyre loads (L) for special cultivation work[1] at a maximum speed of 8 km/h and inflation pressures (IP)

Tyre size		6 PR		8 PR	
Diagonal	Radial	L kg	IP kPa	L kg	IP kPa
7.2 — 36 7.2 — 40		1 115 1 180	290	1 325 1 400	390
8.3 — 36 8.3 — 42 8.3 — 44	8.3 R 36 8.3 R 42 8.3 R 44	1 290 1 400 1 440	260	1 535 1 665 1 710	350
9.5 — 36 9.5 — 44 9.5 — 48	9.5 R 36 9.5 R 44 9.5 R 48	1 495 1 665 1 750	230	1 750 1 945 2 045	300

1) No road application except field to farm transit at speeds not exceeding 25 km/h.

Table 8 — Agricultural steering wheels — Tractor tyres (diagonal construction — normal section height) — Basic tyre loads (BTL) for a maximum speed of 30 km/h and inflation pressures (IP)

Tyre size	4 PR		6 PR		8 PR		10 PR	
	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa
4.00 — 12 4.00 — 15	250 300	340						
5.00 — 15	365	280	465	420				
5.50 — 16	425	250	525	370				
6.00 — 16	450	230	560	340	675	450		
6.50 — 16 6.50 — 20	510 600	230	615 725	310	735 865	420		
7.50 — 16 7.50 — 18 7.50 — 20	605 655 710	200	745 810 875	280	870 945 1 020	370		
9.00 — 16			900	230	1 080	310	1 245	390
10.00 — 16			965	200	1 190	280	1 325	340
11.00 — 16			1 140	200	1 320	250	1 485	310

Table 9 — Agricultural steering wheels — Tractor tyres (diagonal construction — low section height) — Basic type loads (BTL) for a maximum speed of 30 km/h and inflation pressures (IP)

Tyre size	Optional size marking	4 PR		6 PR		8 PR		10 PR		12 PR	
		BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa
7.5 L — 15	8.25/85 — 15	585	200	720	280	840	370				
9.5 L — 15	9.5 /85 — 15			770	230	930	310				
11 L — 15	11.5 /75 — 15			865	200	1 070	280	1 190	340	1 355	420
14 L — 16.1	14.0 /80 — 16.1			1 295	170	1 530	230	1 745	280	1 940	340

Table 10 — Agricultural steering wheels — Tractor tyres — Tyre loads at different speeds (load — speed relationship)

Maximum speed km/h	Maximum tyre load[1)]
Front-end loaders 8[2)]	200
8	150
20	135
25	115
30	100

1) *Expressed as a percentage of the basic tyre loads given in tables 8* and 9. If national legislation permits speeds in excess of 30 km/h, for example up to 40 km/h, a tyre load of 90 % of the basic tyre load shall be permitted at a speed of 35 km/h, and a tyre load of 80 % of the basic tyre load shall be permitted at a speed of 40 km/h. Tyres intended for higher speeds, for example multipurpose applications (MPT), will form the subject of a future International Standard.

2) This applies to steering wheel tractor tyres of 6 PR and more fitted on front axles of front-end loaders used in agricultural intermittent service for short distances (100 m maximum). Tyre inflation pressures have to be increased by 30 kPa for operating at these overloads.

Table 11 — Agricultural implement tyres (diagonal construction — normal section height) — Basic tyre loads (BTL) for a maximum speed of 30 km/h and inflation pressures (IP)[1) 2)]

Tyre size	2 PR		4 PR		6 PR		8 PR		10 PR	
	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa
4.00-8	155	150	225	275						
4.00-12	210	150	300	275						
4.00-15			355	275						
5.00-15			430	225						
5.50-16			500	200						
5.90-15			480	200						
6.00-16			570	200	685	275				
6.40-15			555	200	670	275				
6.50-16			640	200	775	275				
7.00-12			555	175	680	250				
7.50-16			700	150	890	225	1 100	325	1 240	400
7.50-18			720	150	950	225				
7.50-20			775	150	980	225				
7.50-24			830	160			1 270	325		
9.00-16							1 315	275	1 445	325
10.00-15							1 425	240		
11.25-24							1 860	200		
11.25-28							1 925	200	2 245	260
13.50-16.1					1 600	140	1 855	180	2 195	240

1) For speeds up to a maximum of 8 km/h, loads may be increased by 20 % with an inflation pressure increase of up to 30 % (consult tyre and rim manufacturers).

2) On agricultural trailers operated on improved surfaces at speeds up to a maximum of 30 km/h, loads may be increased by 20 % with a 30 % increase in inflation pressure where national standardization does not impose restrictions (consult tyre and rim manufacturers).

Table 12 — Agricultural implement tyres (diagonal construction — low section height) — Basic tyre loads (BTL) for a maximum speed of 30 km/h and inflation pressures (IP)[1) 2)]

Tyre size designation	4 PR		6 PR		8 PR		10 PR		12 PR		14 PR		16 PR	
	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa	BTL kg	IP kPa
10.0/75-15.3	880	150	1 120	230	1 330	310	1 525	390						
10.0/80-12	815	150	1 040	230	1 240	310								
10.5/80-18			1 430	220	1 710	300	1 935	370						
11.5/80-15.3			1 410	200	1 675	270	1 930	340	2 145	410				
12.0/75-18			1 555	190	1 880	260	2 160	330						
12.5/80-18			1 790	190	2 090	250	2 375	310	2 625	370				
13.0/65-18			1 530	180	1 810	240	2 070	300	2 310	360	2 555	430	2 750	490
9.5 L-15			895	190	1 100	280								
11 L-15			950	170	1 130	220	1 285	280						
11 L-16			995	170	1 175	220	1 340	280						
14 L-16.1							1 835	220	2 090	280				

1) For speeds up to a maximum of 8 km/h, loads may be increased by 20 % with an inflation pressure increase of up to 30 % (consult tyre and rim manufacturers).

2) On agricultural trailers operated on improved surfaces at speeds up to a maximum of 30 km/h, loads may be increased by 20 % with a 30 % increase in inflation pressure where national standardization does not impose restrictions (consult tyre and rim manufacturers).