INTERNATIONAL STANDARD

ISO 7867-2

Second edition
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Tyres and rims (metric series) for agricultural tractors and machines —

Part 2: Service description and load ratings

Pneumatiques et jantes (série millimétrique) pour tracteurs et machines agricoles —

Partie 2: Description d'utilisation et capacités de charge

Reference number
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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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 7867-2 was prepared by Technical Committee ISO/TC 31, *Tyres, rims and valves*, Subcommittee SC 5, *Agricultural tyres and rims*.

This second edition cancels and replaces the first edition (ISO 7867-2:1996), which has been technically revised. It also incorporates the Technical Corrigendum ISO 7867-2:1996/Cor.1:1996.

ISO 7867 consists of the following parts, under the general title *Tyres and rims (metric series) for agricultural tractors and machines*:

— *Part 1: Tyre designation, dimensions and marking, and tyre/rim coordination*

— *Part 2: Service description and load ratings*

Tyres and rims (metric series) for agricultural tractors and machines —

Part 2:
Service description and load ratings

1 Scope

This part of ISO 7867 establishes the service description, the tyre load ratings in basic and special applications, and reference inflation pressure increments for the metric series of tyres primarily intended for agricultural tractors and machines.

It applies to bias-belted, diagonal and radial tyres mounted on 5° tapered rims, as specified in ISO 4251-3. It also applies to different concepts and types of tyres and rims; in these cases, however, appropriate load/speed curves and reference inflation pressure increments will be established and added.

Basic tyre load-carrying capacities for ranges of existing tyres are given in Annex A.

NOTE Designation and marking of the metric series are defined in ISO 7867-1. Tyres (ply rating marked series) and rims for agricultural tractors and machines are specified in ISO 4251-1 to ISO 4251-5. Service description (load index and speed symbol) marking of existing series of agricultural tractor-drive-wheel tyres is given in ISO 8664.

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

ISO 4251-3, *Tyres (ply rating marked series) and rims for agricultural tractors and machines— Part 3: Rims*

ISO 7867-1, *Tyres and rims (metric series) for agricultural tractors and machines — Part 1: Tyre designation, dimensions and marking, and tyre/rim coordination*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4223-1 and ISO 7867-1 apply.

4 Service description

4.1 General

The service description shall be indicated as follows:

load index speed symbol

4.2 Load index

The load index is a numerical code related to the maximum load a tyre can carry at the speed indicated by its speed symbol under service conditions specified by the tyre manufacturer.

The correlation between load indices and tyre load-carrying capacities shall be as given in Table 1.

Table 1 — Load indices (LI) and load-carrying capacities (TLCC)

LI	TLCC kg	LI	TLCC kg	LI	TLCC kg	LI	TLCC kg	LI	TLCC kg
0	45	40	140	80	450	120	1 400	160	4 500
1	46,2	41	145	81	462	121	1 450	161	4 625
2	47,5	42	150	82	475	122	1 500	162	4750
3	48,7	43	155	83	487	123	1 550	163	4875
4	50	44	160	84	500	124	1 600	164	5 000
5	51,5	45	165	85	515	125	1 650	165	5150
6	53	46	170	86	530	126	1 700	166	5 300
7	54,5	47	175	87	545	127	1 750	167	5 450
8	56	48	180	88	560	128	1 800	168	5600
9	58	49	185	89	580	129	1 850	169	5 800
10	60	50	190	90	600	130	1 900	170	6 000
11	61,5	51	195	91	615	131	1 950	171	6 150
12	63	52	200	92	630	132	2 000	172	6 300
13	65	53	206	93	650	133	2 060	173	6 500
14	67	54	212	94	670	134	2 120	174	6 700
15	69	55	218	95	690	135	2 180	175	6 900
16	71	56	224	96	710	136	2 240	176	7 100
17	73	57	230	97	730	137	2 300	177	7 300
18	75	58	236	98	750	138	2 360	178	7 500
19	77,5	59	243	99	775	139	2 430	179	7 750
20	80	60	250	100	800	140	2 500	180	8 000
21	82,5	61	257	101	825	141	2 575	181	8 250
22	85	62	265	102	850	142	2 650	182	8 500
23	87,5	63	272	103	875	143	2 725	183	8 750
24	90	64	280	104	900	144	2 800	184	9 000
25	92,5	65	290	105	925	145	2 900	185	9 250
26	95	66	300	106	950	146	3 000	186	9 500
27	97,5	67	307	107	975	147	3 075	187	9 750
28	100	68	315	108	1 000	148	3 150	188	10 000
29	103	69	325	109	1 030	149	3 250	189	10 300
30	106	70	335	110	1 060	150	3 350	190	10 600
31	109	71	345	111	1 090	151	3 450	191	10 900
32	112	72	355	112	1120	152	3 550	192	11 200
33	115	73	365	113	1 150	153	3 650	193	11 500
34	118	74	375	114	1 180	154	3 750	194	11 800
35	121	75	387	115	1 215	155	3 875	195	12 150
36	125	76	400	116	1 250	156	4 000	196	12 500
37	128	77	412	117	1 285	157	4 125	197	12 850
38	132	78	425	118	1 320	158	4 250	198	13 200
39	136	79	437	119	1 360	159	4 375	199	13 600

4.3 Speed symbol

The speed symbol is a symbol indicating the speed at which the tyre can carry a load corresponding to its index under service conditions specified by the tyre manufacturer.

The correlation between speed symbols and reference speeds shall be as given in Table 2.

5 Tyre load ratings

5.1 Basic tyre load

Basic tyre load is the tyre load-carrying capacity indicated by the tyre's load index at the reference speed indicated by the tyre's speed symbol.

When used as dual tyres, the load per tyre shall be reduced to 88 % of the single tyre load.

For basic tyre loads for ranges of existing tyres, see Annex A.

5.2 Tyre applications other than at reference speed

For applications without high and sustained torques, including road transport, the load/speed relationship is given in Table 2.

The tyre manufacturer concerned shall be consulted for the actual pressure to be used when applying the load/speed relationship given in Table 2.

The rim/wheel manufacturer shall be consulted for confirmation of the strength of the rim/wheel for the intended service.

Table 2 — Load/speed relationship

Speed symbol	Service speed [a]	Maximum tyre load (%) at service speed Speed symbol				
	km/h	A2	A6	A8	B	D
A2	**10**	**100**	140	150	150	150
	15	94	130	134	134	134
	20	89	120	123	123	123
	25	84	107	111	111	118,5
A6	**30**	80	**100** [b]	107 [b]	107 [b]	115 [b]
	35	76	90	103	103	112
A8	**40**	73	80	**100**	100	109,5
	45			96	100	107
B	**50**			91	**100**	105
	55					103
	60					101,5
D	**65**					**100**
	70					91

[a] Reference speed is given in bold characters.

[b] This applies for all field applications with high and sustained torque.

5.3 Tyre application on combine harvesters (A8 tyres only)

On combine harvesters in cyclic loading application, except hillside combines, a load of up to 170 % of the basic tyre loads is permitted for speeds up to 10 km/h with an inflation pressure increase of approximately 30 % (consult the tyre manufacturer). This load increase shall include all possible field and user modifications that increase the vehicle mass and shall apply only to load increases which occur during the harvesting process.

For hillside operations over 11° (22 %) slope, only the basic tyre loads are permitted.

The rim and wheel manufacturer shall be consulted concerning the strength of the wheels.

6 Reference inflation pressures

The following reference inflation pressures are recommended for basic tyre loads of different ranges of tyres (metric series) for agricultural tractors and machines.

100 kPa
120 kPa
140 kPa
160 kPa
200 kPa
240 kPa
280 kPA
320 kPa
360 kPa
400 kPa
440 kPa

NOTE These reference inflation pressures are for basic tyre loads of different ranges of metric agricultural tyres. Operating pressures can be different.

Annex A
(informative)

Basic tyre loads

A.1 This annex gives information additional to 5.1.

A.2 Load indices and basic tyre loads for ranges of existing tyres are given in Tables A.1 to A.10.

Table A.1 — Load per tyre at reference speed A2 and inflation pressure: "95" series tractor tyres for special cultivation work

Tyre size designation		Load index	Basic tyre load	Reference inflation pressure [a]
		LI	kg	kPa
180/95	R 40	121	1 450	320
210/95	R 32	124	1 600	
	R 36	126	1 700	
	R 44	130	1 900	
230/95	R 32	128	1 800	
		139	2 430	440
	R 36	131	1 950	320
		141	2 575	440
	R 40	133	2 060	320
	R 44	135	2 180	
		145	2 900	440
	R 48	136	2 240	320
		147	3 075	440
270/95	R 32	137	2 300	320
		146	3 000	440
	R 36	139	2 430	320
		149	3 250	440
	R 38	140	2 500	320
		150	3 350	440
	R 42	142	2 650	320
		151	3 450	440
	R 44	143	2 725	320
		152	3 550	440
	R 46	153	3 650	
	R 48	145	2 900	320
		154	3 750	440
	R 54	157	4 125	
300/95	R 42	157	4 125	
	R 46	149	3 250	320
		158	4 250	440
	R 52	161	4 625	

[a] The inflation pressure is a minimum reference value for loads given in the table. The tyre manufacturer concerned shall be consulted about the actual pressure to be used in practice.

Table A.2 — Load per tyre at reference speed and inflation pressure: “95” series tractor tyres

Tyre size designation		Load index LI	Basic tyre load kg	Reference inflation pressure [a] kPa
230/95	R 48	114	1 180	120
		121	1 450	160
		123	1 550	200
		126	1 700	240
		129	1 850	280
		132	2 000	320
		134	2 120	360
250/95	R 34	119	1 360	160
	R 50	137	2 300	320
290/95	R 34	131	1 950	240

[a] The inflation pressure is a minimum reference value for the loads given in the table. The tyre manufacturer concerned shall be consulted about the actual pressures to be used in practice. For reference speeds see Table 2.

Table A.3 — Load per tyre at reference speed and inflation pressure: “90” series tractor tyres

Tyre size designation		Load index LI	Basic tyre load kg	Reference inflation pressure [a] kPa
290/90	R 38	138	2 360	320
	R 42	128	1 800	160
		133	2 060	240
320/90	R 42	139	2 430	
	R 46	148	3 150	360
	R 50	148	3 150	320
	R 52	148	3 150	
	R 54	143	2 725	240
		149	3 250	320
380/90	R 46	147	3 075	200
		149	3 250	240
	R 50	151	3 450	
	R 54	140	2 500	120
		146	3 000	160
		150	3 350	200
		152	3 550	240
420/90	R 30	142	2 650	160
		147	3 075	240

[a] The inflation pressure is a minimum reference value for the loads given in the table. The tyre manufacturer concerned shall be consulted about the actual pressures to be used in practice. For reference speeds see Table 2.

Table A.4 — Load per tyre at reference speed and inflation pressure: "85" series tractor tyres

Tyre size designation		Load index	Basic tyre load	Reference inflation pressure [a]
		LI	kg	kPa
240/85	R 24	107	975	160
	R 28	109	1 030	
250/85	R 24	109	1 030	
	R 28	112	1 120	
280/85	R 24	115	1 215	
	R 28	118	1 320	
320/85	R 20	119	1 360	
	R 24	122	1 500	
	R 28	124	1 600	
	R 32	126	1 700	
	R 34	133	2 060	240
	R 36	128	1 800	160
	R 38	138	2 360	280
		143	2 725	360
340/85	R 24	125	1 650	160
	R 28	127	1 750	
	R 36	132	2 000	
	R 38	133	2 060	
	R 46	142	2 650	240
380/85	R 24	131	1 950	160
	R 28	133	2 060	
	R 30	135	2 180	
	R 34	137	2 300	
		142	2 650	240
420/85	R 24	137	2 300	160
	R 28	139	2 430	
	R 30	140	2 500	
	R 34	142	2 650	
	R 38	144	2 800	
460/85	R 30	145	2 900	
	R 34	147	3 075	
	R 38	149	3 250	
	R 42	150	3 350	
480/85	R 34	149	3 250	
520/85	R 38	155	3 875	
	R 42	157	4 125	
		162	5 150	240
	R 46	158	4 250	160
650/85	R 38	173	6 500	240
680/85	R 32	173	6 500	

a The inflation pressure is a minimum reference value for the loads given in the table. The tyre manufacturer concerned shall be consulted about the actual pressures to be used in practice. For reference speeds see Table 2.

Table A.5 — Load per tyre at reference speed and inflation pressure: “80” series tractor tyres

Tyre size designation		Load index	Basic tyre load	Reference inflation pressure [a]
		LI	kg	kPa
210/80	R 16	94	670	160
250/80	R 16	100	800	
	R 18	102	850	
260/80	R 20	106	950	
340/80	R 20	121	1 450	
380/80	R 38	142	2 650	240
420/80	R 46	145	2 900	160
		151	3 450	240
440/80	R 28	140	2 500	160
480/80	R 38	149	3 250	
	R 42	151	3 450	
	R 46	158	4 250	240
	R 50	159	4 375	

[a] The inflation pressure is a minimum reference value for the loads given in the table. The tyre manufacturer concerned shall be consulted about the actual pressures to be used in practice. For reference speeds see Table 2.

Table A.6 — Load per tyre at reference speed and inflation pressure: “75” series tractor tyres

Tyre size designation		Load index	Basic tyre load	Reference inflation pressure [a]
		LI	kg	kPa
320/75	R 24	118	1 320	160
340/75	R 20	117	1 285	
380/75	R 20	121	1 450	
400/75	R 38	138	2 360	
620/75	R 26	153	3 650	
		166	5 300	320
	R 30	155	3 875	160
		163	4 875	240
		168	5 600	320
	R 34	157	4 125	160
		170	6 000	320
650/75	R 32	160	4 500	160
		167	5 450	240
		172	6 300	320
	R 34	162	4 750	160
	R 38	169	5 800	
680/75	R 32	164	5 000	
710/75	R 34	168	5 600	

[a] The inflation pressure is a minimum reference value for the loads given in the table. The tyre manufacturer concerned shall be consulted about the actual pressures to be used in practice. For reference speeds see Table 2.

Table A.7 — Load per tyre at reference speed and inflation pressure: "70" series tractor tyres

Tyre size designation		Load index	Basic tyre load	Reference inflation pressure [a]
		LI	kg	kPa
200/70	R 16	94	670	
240/70	R 16	104	900	
	R 16	109	1 030	240
260/70	R 18	111	1 090	
	R 20	113	1 150	
280/70	R 16	102	850	160
		112	1 120	240
	R 18	104	900	160
		114	1 180	240
	R 20	116	1 250	
	R 16	106	950	
300/70	R 18	108	1 000	160
	R 20	110	1 060	
		120	1 400	240
	R 24	113	1 150	160
320/70	R 20	113	1 150	
		123	1 550	240
	R 24	116	1 250	160
	R 28	119	1 360	
360/70	R 20	120	1 400	
		129	1 850	240
	R 24	122	1 500	160
		127	1 750	240
	R 28	125	1 650	160
		130	1 900	240
380/70	R 20	122	1 500	160
	R 24	125	1 650	
		130	1 900	240
	R 28	127	1 750	160
		133	2 060	240
420/70	R 24	130	1 900	160
		136	2 240	240
	R 28	133	2 060	160
		139	2 430	240
	R 30	134	2 120	160
460/70	R 24	135	2 180	
480/70	R 24	138	2 360	
		143	2 725	240
	R 26	139	2 430	160
	R 28	140	2 500	
		145	2 900	240
		151	3 450	320
	R 30	141	2 575	160
		147	3 075	240
		152	3 550	320
	R 34	143	2 725	160
		146	3 000	200
		152	3 550	280
	R 38	145	2 900	160

Table A.7 (*continued*)

Tyre size designation		Load index	Basic tyre load	Reference inflation pressure [a]
		LI	kg	kPa
500/70	R 34	145	2 900	
	R 26	143	2 725	160
	R 30	145	2 900	
520/70		151	3 450	240
	R 34	148	3 150	160
	R 38	150	3 350	
540/70	R 34	150	3 350	
580/70	R 26	145	2 900	
	R 38	155	3 875	
	R 42	158	4 250	
600/70	R 28	157	4 125	240
	R 30	152	3 550	160
	R 26	148	3 150	
	R 38	170	6 000	320
620/70	R 42	160	4 500	160
		166	5 300	240
		172	6 300	320
	R 46	162	4 750	160
650/70	R 26	156	4 000	
		157	4 125	
680/70	R 32	161	4 625	
	R 34	162	4 750	
710/70	R 38	166	5 300	
		171	6 150	240
	R 42	168	5 600	160
		173	6 500	240
800/70	R 38	166	5 300	120
		173	6 500	160

[a] The inflation pressure is a minimum reference value for the loads given in the table. The tyre manufacturer concerned shall be consulted about the actual pressures to be used in practice. For reference speeds see Table 2.