INTERNATIONAL STANDARD

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

Part 2:
Service description and load ratings

Pneumatiques et jantes (séries millimétriques) pour tracteurs et machines agricoles —

Partie 2: «Description d'utilisation» et capacités de charge

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

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, marking and tyre/rim coordination*

— *Part 2: Service description and load ratings*

Annexes A and B of this part of ISO 7867 are for information only.

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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 1 Designation and marking of the metric series is defined in ISO 7867-1. Code (ply rating) marked series of tyres and rims for agricultural tractors and machines are specified in ISO 4251-1, ISO 4251-2 and ISO 4251-5. Service description (load index — speed symbol) marking of existing series of agricultural tractor-drive-wheel tyres is given in ISO 8664.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7867. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7867 are encouraged to investigate the possibility of applying the most recent editions of the standards 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.*

ISO 4251-3:1994, *Tyres (ply rating marked series) and rims for agricultural tractors and machines — Part 3: Rims.*

ISO 7867-1:1996, *Tyres and rims (metric series) for agricultural tractors and machines — Part 1: Tyre designation, dimensions, marking and tyre/rim coordination.*

3 Definitions

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

4 Service description

The service description shall be indicated as follows:

Load index Speed symbol

4.1 Load index

The load index is a numerical code associated with a 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 tyre 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	4 750
3	48,7	43	155	83	487	123	1 550	163	4 875
4	50	44	160	84	500	124	1 600	164	5 000
5	51,5	45	165	85	515	125	1 650	165	5 150
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	5 600
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	1 120	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

4.2 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 loads

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.

Load for dual tyres equals 1,76 times the load for a single tyre.

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 3.

The tyre manufacturer concerned shall be consulted for the actual pressure to be used when applying the load/speed relationship given in table 3.

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

Table 2 — Speed symbol and reference speed

Speed symbol	Reference speed km/h
A1	5
A2	10
A3	15
A4	20
A5	25
A6	30
A7	35
A8 [1]	40
B	50

NOTE — This list of speed symbols is not restrictive; other categories may be determined later.

1) Recommended speed symbol for tyres for agricultural tractors and machines.

Table 3 — Load/speed relationship

Speed km/h	Maximum tyre load [1]	
	Tyres with speed symbol A2 (10 km/h reference speed)	Tyres with speed symbol A8 (40 km/h reference speed)
10	100	150
15	94	134
20	89	123
25	84	111
30	80	107 [2]
35	76	103
40	73	100
45	—	96
50	—	91

1) Expressed as a percentage of the basic tyre loads.

2) This also applies for all field applications with high and sustained torques.

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 %, in consultation with 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. When not in cyclic application (as for instance when grain tanks are empty during transport) the loads in table 3 apply.

For hill-side 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 2 These reference inflation pressures are for basic tyre loads of different ranges of metric agricultural tyres. Operating pressures may 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.5.

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 LI	Basic tyre load kg	Reference inflation pressure[1] kPa
180/95	R 40	120	1 400	320
210/95	R 44	124	1 600	
230/95	R 40	130	1 900	
	R 44	132	2 000	
	R 48	134	2 120	
270/95	R 48	140	2 500	
230/95	R 32	139	2 430	440
	R 36	141	2 575	
	R 44	145	2 900	
	R 48	147	3 075	
270/95	R 48	153	3 650	
	R 54	157	4 125	

1) 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.

Table A.2 — Load per tyre at reference speed A8 and inflation pressure — "80" series tyres

Tyre size designation	Load index LI	Basic tyre load kg	Reference inflation pressure[1] kPa
420/80 R 46	145	2 900	160

1) 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.

Table A.3 — Load per tyre at reference speed A8 and inflation pressure — "75" series tyres

Tyre size designation		Load index LI	Basic tyre load kg	Reference inflation pressure[1] kPa
340/75	R 20	117	1 285	160
380/75	R 20	121	1 450	
620/75	R 26	153	3 650	
	R 30	155	3 875	
	R 34	157	4 125	
650/75	R 34	162	4 750	
680/75	R 32	164	5 000	
710/75	R 34	168	5 600	
620/75	R 26	166	5 300	320
	R 30	168	5 600	
	R 34	170	6 000	

1) 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.

Table A.4 — Load per tyre at reference speed A8 and inflation pressure — "70" series tyres

Tyre size designation		Load index LI	Basic tyre load kg	Reference inflation pressure[1] kPa
300/70	R 20	110	1 060	120
320/70	R 20	113	1 150	
	R 24	116	1 250	
	R 28	119	1 360	
360/70	R 20	120	1 400	
	R 24	122	1 500	
	R 28	125	1 650	
380/70	R 20	122	1 500	
	R 24	125	1 650	
	R 28	127	1 750	
420/70	R 24	130	1 900	
	R 28	133	2 060	
	R 30	134	2 120	
480/70	R 24	138	2 360	
	R 26	139	2 430	
	R 28	140	2 500	
	R 30	141	2 575	
	R 34	143	2 725	
	R 38	145	2 900	
520/70	R 26	143	2 725	
	R 30	145	2 900	
	R 34	148	3 150	
	R 38	150	3 350	
580/70	R 26	145	2 900	
	R 38	155	3 875	
	R 42	158	4 250	
620/70	R 26	148	3 150	
710/70	R 38	166	5 300	
480/70	R 28	151	3 500	320

1) 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.

Table A.5 — Load per tyre at reference speed A8 and inflation pressure — "65" series tyres

Tyre size designation		Load index LI	Basic tyre load kg	Reference inflation pressure[1] kPa
440/65	R 24	122	1 500	120
	R 28	124	1 600	
480/65	R 24	127	1 750	
	R 28	129	1 850	
540/65	R 24	135	2 180	
	R 26	136	2 240	
	R 28	137	2 300	
	R 30	138	2 360	
	R 34	140	2 500	
	R 38	142	2 650	
600/65	R 28	147	3 075	160
	R 34	145	2 900	
	R 38	147	3 075	
650/65	R 38	154	3 750	
	R 42	156	4 000	

1) 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.