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**ECONOMIC COMMISSION FOR EUROPE**

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Working Party on Brakes and Running Gear

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Item 8(c) of the provisional agenda

**TYRES**

Regulation No. 106 (Pneumatic tyres for agricultural vehicles)

Proposal for draft amendments to Regulation No. 106

Submitted by the expert from the European Tyre and Rim Technical Organisation <sup>\*/</sup>

The text reproduced below was prepared by the expert from the European Tyre and Rim Technical Organization (ETRTO), to amend Regulation No. 106 with regard to tyre size designations as well as additional tyre sizes, and to cover tyre versions and types, existing on the market, that were omitted when compiling tables in Annex 5. It is based on ECE/TRANS/WP.29/GRRF/2007/21 and Corr.1, taking into account some comments received. The modifications to the existing text of the Regulation are marked in **bold** characters.

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<sup>\*/</sup> In accordance with the programme of work of the Inland Transport Committee for 2006-2010 (ECE/TRANS/166/Add.1, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance performance of vehicles. The present document is submitted in conformity with that mandate.

A. PROPOSAL

Insert a new paragraph 3.1.8.2., to read:

**"3.1.8.2. The inscription 'I-3' for implement tyres with traction tread as identified in Annex 5, tables 5 and 6."**

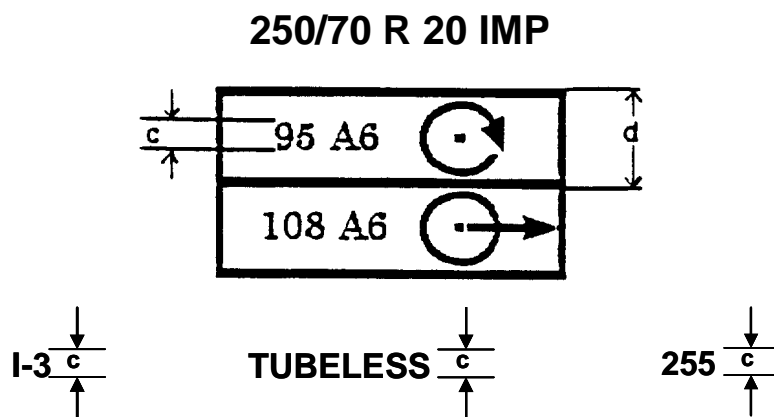
Insert a new paragraph 6.4.3., to read:

**"6.4.3. However, for the types of tyre for which the size designation is given in the first column of the tables in Annex 5, the allowed percentages are those given in the relevant tables, if any."**

Annex 3, part C, amend to read:

**"PART C: IMPLEMENT TYRES**

Example of the markings to be borne by types of tyres  
complying with this Regulation



MINIMUM HEIGHTS OF MARKINGS (mm)

.....

- (c) the symbol "TUBELESS", **I-3 if any**, the optional word "RADIAL", the optional word "IMPLEMENT" and the date of manufacture may be at a distance from the size designation."

Annex 5

Table 5, the title, amend to read:

**"Table 5 (~~1 of 2~~) Agricultural Implement Tyres – Normal section Sizes"**

Table 5, insert the following new tyre size designations:

"

Tyre size designation	Theoretical rim width code (A1)	Nominal section width (S1)	Overall diameter (D)	Nominal rim diameter (d)
		(mm)	(mm)	(mm)
<b>4.10/3.50-4 IMP</b>	<b>2.10</b>	<b>89</b>	<b>272</b>	<b>101</b>
<b>190-8 IMP</b>	<b>5.50</b>	<b>182</b>	<b>430</b>	<b>203</b>

"

Table 5, insert a new column for "Overall diameter (D)" identified by (\*), and add in the new column the relevant values for the following tyre size designations:

"Table 5 Agricultural Implement Tyres – Normal section Sizes

Tyre size designation	Theoretical rim width code (A1)	Nominal section width (S1)	Overall diameter (D)		Nominal rim diameter (d)
				(*)	
		(mm)	(mm)		(mm)
4.00 – 8 IMP	3	112	418	<b>425</b>	203
4.00 – 9 IMP	3	112	443	<b>460</b>	229
<b>4.0 – 10 IMP</b>	<b>3</b>	<b>114</b>	<b>455</b>	<b>465</b>	<b>254</b>
<b>4.00 – 10 IMP</b>	<b>3</b>	<b>114</b>	<b>465</b>	<b>475</b>	<b>254</b>
4.00 – 12 IMP	3	112	519	<b>536</b>	305
4.00 – 15 IMP	3	112	595	<b>612</b>	381
4.00 – 18 IMP	3	112	672	<b>688</b>	457
4.50 – 19 IMP	3	124	720	<b>733</b>	483
4.80 – 8 IMP	3,75	121	423	<b>449</b>	203
5.0 – 10 IMP	4	145	505	<b>517</b>	254
<b>5.00 – 12 IMP</b>	<b>4</b>	<b>145</b>	<b>567</b>	<b>580</b>	<b>305</b>
<b>5.00 – 14 IMP</b>	<b>4</b>	<b>145</b>	<b>618</b>	<b>631</b>	<b>356</b>
5.00 – 15 IMP	3	130	639	<b>655</b>	381
5.50 – 16 IMP	4	150	685	<b>703</b>	406
5.90 – 15 IMP	4	150	665	<b>681</b>	381
6.00 - 9 IMP	4,5	169	543	<b>556</b>	229
6.00 – 16 IMP	4	158	712	<b>729</b>	406
6.50 – 16 IMP	4,5	173	735	<b>754</b>	406
6.70 – 15 IMP	4,5	182	<b>704</b>	<b>720</b>	381
7.00- 12 IMP	5	187	667	<b>685</b>	305
7.50 – 10 IMP	6	214	634	<b>649</b>	254
7.50 – 16 IMP	5,5	202	785	<b>801</b>	406
7.50 – 18 IMP	5,5	202	836	<b>852</b>	457
7.50 – 20 IMP	5,5	202	887	<b>903</b>	508
7.50 – 24 IMP	5,5	202	989	<b>1013</b>	610
7.60 – 15 IMP	5,5	193	734	<b>751</b>	381
13.50 – 16.1 IMP	11	353	1021	<b>1043</b>	409

"

After table 5 (1 of 2), add the following notes to read:

- "Notes:**
- 1. The suffix "IMP" may be replaced by the wording "IMPLEMENT" on the tyre sidewall.**
  - 2. Tyres of radial structure are identified by means of the letter "R" in place of "-" (e.g. 7.5 L R 15).**
  - 3. Overall diameters (D) in column (\*) apply to tyres marked with classification code 'I-3' – see paragraph 3.1.8.2."**

Table 6 (1 of 2), insert a new column for "Overall diameter (D)" identified by (\*), and add in the new column the relevant values for the following tyre size designations:

"Table 6 (1 of 2) Agricultural Implement Tyres – Low Section Sizes

Tyre size designation	Theoretical rim width code (A1)	Nominal section width (S1)	Overall diameter (D)		Nominal rim diameter (d)
				(*)	
		(mm)	(mm)		(mm)
8.5L – 14 IMP	6	216	721	<b>735</b>	356
9.5L – 14 IMP	7	241	741	<b>757</b>	356
9.5L – 15 IMP	7	241	767	<b>782</b>	381
11L – 14 IMP	8	279	752	<b>770</b>	356
11L – 15 IMP	8	279	777	<b>796</b>	381
11L – 16 IMP	8	279	803	<b>821</b>	406
12.5L – 15 IMP	10	318	823	<b>845</b>	381
12.5L – 16 IMP	10	318	848	<b>870</b>	406
16.5L – 16.1 IMP	14	419	1024	<b>1046</b>	409

After table 6 (1 of 2), add the following note 3 to read:

- "3. Overall diameters (D) in column (\*) apply to tyres marked with classification code 'I-3' – see paragraph 3.1.8.2."**

Table 6 (2 of 2), insert a new column for "Overall diameter (D)" identified by (\*), and add in the new column the relevant values for the following tyre size designations:

"Table 6 (2 of 2) Agricultural Implement Tyres – Low Section Sizes

Tyre size designation	Theoretical rim width code (A1)	Nominal section width (S1)	Overall diameter (D)		Nominal rim diameter (d)
				(*)	
		(mm)	(mm)		(mm)
6.5/80 – 12 IMP	5	163	569	<b>588</b>	305
6.5/80 – 15 IMP	5	163	645	<b>663</b>	381
9.0/75 – 16 IMP	7	226	749	<b>770</b>	406
10.0/80 – 12 IMP	9	264	710	<b>730</b>	305
11.0/65 - 12 IMP	9	281	670	<b>692</b>	305
10.0/75 - 15.3 IMP	9	264	760	<b>780</b>	389
11.5/80 – 15.3	9	290	845	<b>867</b>	389
10.5/80 – 18 IMP	9	274	885	<b>907</b>	457
12.0/75 - 18 IMP	9	299	915	<b>937</b>	457
12.5/80 - 18 IMP	9	308	965	<b>987</b>	457
14.5/80 - 18 IMP	12	372	1060	<b>1082</b>	457
15.0/55 - 17 IMP	13	391	850	<b>872</b>	432
15.5/80 - 24 IMP	13	394	1240	<b>1262</b>	610
16.0/70 - 20 IMP	14	418	1075	<b>1097</b>	508
16.5/85 - 24 IMP	13	417	1322	<b>1344</b>	610
16.5/85 - 28 IMP	13	417	1423	<b>1445</b>	711

After table 6 (2 of 2), add the following note 3. to read:

**"3. Overall diameters (D) in column (\*) apply to tyres marked with classification code 'I-3' – see paragraph 3.1.8.2."**

Table 7 (1 of 2), insert the following new tyre size designations:

Tyre size designation	Theoretical rim width code (A1)	Nominal section width (S1)	Overall diameter (D)	Nominal rim diameter (d)
		(mm)	(mm)	(mm)
<b>13x6.00-6</b>	<b>5</b>	<b>154</b>	<b>330</b>	<b>152</b>
<b>14x4.50-6</b>	<b>3,5</b>	<b>113</b>	<b>356</b>	<b>152</b>
<b>18x7.50-8</b>	<b>6</b>	<b>191</b>	<b>457</b>	<b>203</b>
<b>19x9.50-8</b>	<b>7,5</b>	<b>240</b>	<b>483</b>	<b>203</b>
<b>20x8.00-8</b>	<b>6,5</b>	<b>204</b>	<b>508</b>	<b>203</b>
<b>20x9.00-8</b>	<b>7</b>	<b>227</b>	<b>508</b>	<b>203</b>

<b>21x7.00-10</b>	<b>5,5</b>	<b>177</b>	<b>533</b>	<b>254</b>
<b>23x9.50-12</b>	<b>7</b>	<b>235</b>	<b>577</b>	<b>305</b>
<b>24x12.00-12</b>	<b>9,5</b>	<b>304</b>	<b>610</b>	<b>305</b>
<b>25x8.00-12</b>	<b>6,5</b>	<b>203</b>	<b>635</b>	<b>305</b>
<b>25x10.00-12</b>	<b>8</b>	<b>254</b>	<b>635</b>	<b>305</b>
<b>25x11.00-12</b>	<b>9</b>	<b>279</b>	<b>635</b>	<b>305</b>

"

Table 7 (1 of 2), for the tyre size designation AT21x7-10, AT22x9-8, AT23x7-10, AT23x8-11, AT24x8-11, AT24x9-11, AT24x10-11, AT25x8-12, AT25x11-9 and AT25x11-10, the whole row should be deleted.

Table 7 (2 of 2), add the following new tyre size designations:

"

Tyre size designation	Theoretical rim width code (A1)	Nominal section width (S1)	Overall diameter (D)	Nominal rim diameter (d)
		(mm)	(mm)	(mm)
<b>DH73x50.00-32</b>	<b>44</b>	<b>1270</b>	<b>1880</b>	<b>813</b>

"

After table 7 (2 of 2), add the following note 4. to read:

**"4. Coefficient "b" for the calculation of the Overall diameter Dmax:**

- (a) **1.12 for tyres with Nominal rim Diameter (d) less than 380 mm;**
- (b) **1.10 for tyres with Nominal rim Diameter (d) 381 mm and above."**

## B. JUSTIFICATION

This document consolidates previous documents ECE/TRANS/WP.29/GRRF/2007/21 and ECE/TRANS/WP.29/GRRF/2007/21/Corr.1, and takes into account the verbal comments expressed by experts at the last meeting in February 2008 and the written comments sent by the expert from the United Kingdom.

Additional paragraphs 3.1.8.2. (note that a request for new paragraph 3.1.8.1. was already added through ECE/TRANS/WP.29/GRRF/2007/20) and 6.4.3. are based on comments by the expert from the United Kingdom.

Annex 5 of Regulation No. 106 lists theoretical rim, outer diameter and nominal section width of tyres of certain size designations for which calculations of dimensions as per paragraphs 6.1.1. and 6.2.1. are not applicable. In fact, sizes listed in Annex 5 are subject to the specific requirements of paragraphs 6.1.2., 6.2.2., 6.3.1., 6.3.3., 6.4.1.1. and now 6.4.3.

Additional overall diameters for selected sizes requested for addition in tables 5 and 6 reflect existing standards for implement tyres having 'traction tread' (classification code I-3 as per

Annex 10) and mainly conform to data published for many years in the Tire and Rim Association Inc. (T&RA) - Year Book and in the European Tyre and Rim Technical Organisation (ETRTO) Standards Manual, but which were inadvertently omitted when the tables were first approved. Consequently, it is proposed to specify the additional marking 'I-3' as per the new note 3 to identify those sizes characterized by a larger overall diameter. And additionally that marking is made compulsory by the new paragraph 3.1.8.1.

Ad hoc coefficients 'b' for the calculation of max overall diameter for sizes listed in table 7 (as proposed by additional note 4) reflect standard data for "agricultural high flotation tyres", having a nominal rim diameter (d) 381 mm (rim code 15) and above, and for "utility vehicle and lawn and garden tractor tyres", having a nominal rim diameter (d) lower than 380 mm (rim code 14 and below), published since many years in the Tire and Rim Association Inc. (T&RA) - Year Book, but which were inadvertently omitted when the tables were first approved.

Addition of ad hoc coefficients follows the same approach already adopted by Regulation No. 106 in Annex 5, table 2, note 3 and in paragraph 6.3.3. Moreover the same procedure is widely used in Regulation No. 54 (see Annex 5 part II) and Regulation No. 75 (see Annex 5, tables 2, 3 and 4).

Additional tyre size designations in table 5 reflect data published in the Scandinavian Tire and Rim Organisation (STRO) Data Book and additional tyre size designations in table 7 reflect data published in the Tire and Rim Association Inc. (T&RA) - Year Book

The tyre size designations to be deleted from table 7 in actual facts cannot be classified as tyres for agricultural machinery as they are generally known as tyres for "All Terrain Vehicles" (hence the prefix AT in the tyre size designation) and allowed for speeds in excess of 80 km/h.

AT tyres have never been regulated by Regulation No. 106 or type approved to Regulation No. 106 as the speed symbol "F" of those tyres, available in the world market, is outside of the scope of Regulation No. 106, that is restricted to tyres designed for agricultural and forestry machines and classified with a speed category symbol not exceeding "D" (65 km/h).

The best place to consider AT sizes, depending on the type of vehicles they are generally fitted on (e.g. L<sub>6</sub> and L<sub>7</sub> vehicles), would be the Regulation No. 75. However, at present some type approval authorities have already type approved some of those tyres, double marked with a metric designation, following the prescriptions of either Regulation No. 30 or Regulation No. 54.

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