

**Economic and Social Council**Distr.: General  
16 July 2018

Original: English

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**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations****Working Party on Automated/Autonomous and Connected Vehicles\*****First session**

Geneva, 25-28 September 2018

Item 14 (a) of the provisional agenda

**Remaining activities from the former Working Party  
on Brake and Running Gear (handover period):****Tyres****Proposal for a Supplement to UN Regulation No. 30  
(Pneumatic tyres for passenger vehicles and their trailers)****Submitted by the experts from the European Tyre and Rim Technical  
Organisation\*\***

The text reproduced below was prepared by the experts from the European Tyre and Rim Technical Organisation (ETRTO) amending UN Regulation No. 30 and already considering its Supplement 20 adopted in March 2018 but not yet in force. The modifications to the existing text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

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\* Formerly: **Working Party on Brakes and Running Gear (GRRF)**.

\*\* In accordance with ECE/TRANS/274, para 52, with ECE/TRANS/WP.29/1139, para. 33 and with the programme of work of the Inland Transport Committee for 2014–2018 (ECE/TRANS/240, para. 105 and ECE/TRANS/2014/26, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.



## I. Proposal

*Paragraph 2.1.*, amend to read:

"2.1. "Type of tyre" means tyres which do not differ in such essential characteristics as:

...

(d) Structure (diagonal (bias-ply), bias-belted, **radial** (radial-ply), run flat tyre);"

*Paragraph 2.8.3.*, amend to read:

"2.8.3. "Radial" or "**radial-ply**" describes tyre structure in which the ply cords extend to the beads and are laid substantially at 90° to the centre line of the tread, the carcass being stabilized by an essentially inextensible circumferential belt;"

*Paragraph 2.8.7.*, amend to read:

"2.8.7 "Run flat tyre" or "Self supporting tyre" describes a tyre structure provided with any technical solutions (for example, reinforced sidewalls, etc.) allowing the tyre, mounted on the appropriate wheel and in the absence of any supplementary component, to supply the vehicle with the basic tyre functions, at least, at a speed of 80km/h (~~50 mph~~) and a distance of 80 km when operating in flat tyre running mode."

*Insert new paragraph 2.9.*, to read:

"**2.9. "Extended Mobility Tyre (EMT)" describes a tyre with a radial structure allowing the tyre, mounted on the appropriate wheel and in the absence of any supplementary component, to provide the vehicle with the basic tyre functions at a speed of 80 km/h and a distance of 80 km when operating in flat tyre running mode.**"

*Former paragraphs from 2.9. to 2.39.*, shall be renumbered as paragraphs 2.10. to 2.40..

*Paragraph 2.16.1. (former 2.15.1.)*, amend to read:

"2.16.1. However, in case of tyres identified by the "tyre to rim fitment configuration" (see para. ~~3.1.10~~ **2.25.1.**) symbol "A" or "U", it means the area of the tyre which is seating on the rim."

*Former paragraph 2.40.*, to be deleted.

*Paragraph 3.1.9.*, amend to read (paragraph number to be corrected):

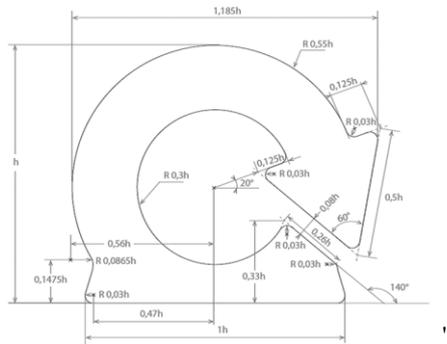
"~~3.1.98.~~ The word "TUBELESS" if the tyre is designed for use without an inner tube;"

*Paragraph 3.1.12.*, amend to read:

"3.1.12. In the case of tyres first approved after the entry into force of Supplement 13 to the 02 series of amendments to UN Regulation No. 30, the identification referred to in paragraph 2.~~423~~**1.5.** shall be placed immediately after the rim diameter marking referred to in paragraph 2.~~423~~**1.3.**"

*Insert new paragraph 3.1.15.*, to read:

"**3.1.15. The symbol below if the tyre is an EMT, where "h" is at least 12 mm.**



Paragraph 3.4.1., amend to read:

"3.4.1. However, for tyres identified by the "tyre to rim fitment configuration" (see para. ~~3.4.10~~ **2.25.1.**), symbol "A" or "U", the markings may be placed anywhere on the outside sidewall of the tyre."

Insert new paragraph 4.1.9., to read:

**"4.1.9. Whether the tyre is an EMT;"**

Former paragraphs 4.1.9. to 4.1.16., shall be renumbered as paragraphs 4.1.10. to 4.1.17.

Paragraph 4.1.15. (former 4.1.14.), amend to read:

"4.1.15. The factor x referred to in paragraph ~~2.22~~**26.** above."

Paragraph 6.1.1.3., amend to read:

"6.1.1.3. However, for tyres identified by the "tyre to rim fitment configuration" (see para. ~~3.1.10~~**2.25.1.**) symbol "A" or "U", K shall be taken equal to 0.6."

Paragraph 6.1.2.1., amend to read:

"6.1.2.1. The outer diameter of a tyre shall be obtained by means of the following formula:

...

D is the nominal rim diameter defined in paragraph ~~2.23~~**24.** above, expressed in millimetres;

..."

Paragraph 6.1.2.3., amend to read:

"6.1.2.3. However, for tyres identified by the "tyre to rim fitment configuration" (see para. ~~3.1.10~~**2.25.1.**) symbol "A" or "U", the outer diameter shall be that specified in the tyre size designation as shown on the sidewall of the tyre."

Paragraph 6.1.4.2.4., amend to read:

"6.1.4.2.4. However, for tyres identified by the "tyre to rim fitment configuration" (see para. ~~3.1.10~~**2.25.1.**) symbol "A" or "U", the overall width of the tyre, in the lower area of the tyre, equals the nominal width of the rim on which the tyre is mounted, as shown by the manufacturer in the descriptive note, increased by 20 mm."

*Paragraph 6.1.5.1., amend to read:*

"6.1.5.1. For sizes listed in Annex 5, and for tyres identified by the "tyre to rim fitment configuration" (see para. ~~3.1.10.2.5.1.~~) symbol "A" or "U", the nominal section height H is equal to:

H = 0.5 (D-d), rounded to the nearest mm – for references see paragraph 6.1.2.1."

*Paragraph 6.2.1.1., amend to read:*

"6.2.1.1. Where application is made for tyres identified by means of letter code "ZR" within the size designation and suitable for speeds over 300 km/h (see paragraph 4.1.~~4.5.16.~~), the above load/speed test is carried out on one tyre at conditions appropriate for the load index marked on the tyre and the speed symbol Y. Another load/speed test must be carried out on a second sample of the same tyre type according to paragraph 2.6. of Annex 7 corresponding to the load and speed conditions specified as maximum by the tyre manufacturer (see paragraph 4.1.~~4.5.16.~~ of this Regulation)."

*Paragraph 6.2.1.2., amend to read:*

"6.2.1.2. Where application is made for the type approval of a "run flat ~~system-tyre~~" the above load speed test is carried out on one tyre, inflated as per paragraph 1.2. of Annex 7, at the load and speed conditions marked on the tyre (see paragraph 3.1.~~4.1.5.~~ and 3.1.8.). Another load/speed test must be carried out on a second sample of the same tyre type as specified in paragraph 3. of Annex 7. The second test may be carried out on the same sample if the manufacturer agrees."

*Insert new paragraph 6.2.1.3., to read:*

**"6.2.1.3. Where application is made for the type approval of an EMT the above load speed test is carried out on one tyre, inflated as per paragraph 1.2. of Annex 7, at the load and speed conditions marked on the tyre (see paragraph 3.1.5. and 3.1.8. ). Another load/speed test must be carried out on a second sample of the same tyre type as specified in paragraph 4. of Annex 7. The second test may be carried out on the same sample if the manufacturer agrees."**

*Paragraph 6.2.2.2., amend to read:*

"6.2.2.2. If a "run flat ~~system-tyre~~" tyre which, after undergoing the test as specified in paragraph 3. of Annex 7, does not exhibit a change in the deflected section height, compared to the deflected section height at the start of the test, higher than 20 per cent and retains the tread connected to the two sidewalls, it is deemed to have passed the test."

*Insert new paragraph 6.2.2.3., to read:*

**"6.2.2.3 If an EMT which, after undergoing the test as specified in paragraph 4. of Annex 7, does not exhibit a change in the deflected section height, compared to the deflected section height at the start of the test, higher than 20 per cent and retains the tread connected to the two sidewalls, it is deemed to have passed the test."**

*Annex 1, insert new item 4.6., to read:*

**"4.6. Extended Mobility Tyre: (Yes / No) 2/....."**

*Annex 3, Paragraph 3., amend to read:*

- "3. The positioning and order of the markings constituting the tyre designation shall be the following:
- (a) the size designation as defined in paragraph 2.4723. of this Regulation shall be grouped as shown in the above examples: 185/70 R 14 and 185-560 R 400A or 185-560 R 400U;
  - (b) the service description comprising the load index and the speed symbol shall be placed immediately after the tyre size designation as defined in paragraph 2.4723. of this Regulation;
  - (c) The symbols "TUBELESS", "REINFORCED", "M + S" and "ET" and "POR" may be at a distance from the size-designation."

*Annex 6, Paragraph 1.1.*, amend to read:

- "1.1. Mount the tyre on the measuring rim specified by the manufacturer pursuant to paragraph 4.1.4213. of this Regulation and inflate it to a pressure of 3 to 3.5 bar."

*Annex 6, Paragraph 1.2.3.*, amend to read:

- "1.2.3. in standard radial tyres **and in standard Run Flat tyres:** to 1.8 bar;"

*Annex 6, Paragraph 1.2.4.*, amend to read:

- "1.2.4. in reinforced radial tyres **and in reinforced Run Flat tyres:** to 2.2 bar;"

*Annex 7, Paragraph 1.1.*, amend to read:

- "1.1. Mount a new tyre on the test rim specified by the manufacturer pursuant to paragraph 4.1.4213. of this Regulation.

*Annex 7, Paragraph 1.2.*, amend to read:

Speed category	Diagonal (bias-ply) tyres			Radial/ <b>and Run flat tyres system</b>		Bias-belted tyres
	Ply rating			Standard	Reinforced	Standard
	4	6	8			
L, M, N	2.3	2.7	3.0	2.4	2.8	-
P, Q, R, S	2.6	3.0	3.3	2.6	3.0	2.6
T, U, H	2.8	3.2	3.5	2.8	3.2	2.8
V	3.0	3.4	3.7	3.0	3.4	-
W	-	-	-	3.2	3.6	-
Y	-	-	-	3.2 <u>1/</u>	3.6	-

*Annex 7, Paragraph 2.2.2.*, amend to read:

- "2.2.2. the maximum load rating associated with a maximum speed of 240 km/h for tyres Speed Symbol "V" (see para. 2.3738.2. of this Regulation)."

*Annex 7, Paragraph 2.2.3.*, amend to read:

- "2.2.3. the maximum load rating associated with a maximum speed of 270 km/h for tyres with speed symbol "W" (see paragraph 2.3738.3. of this Regulation)."

*Annex 7, Paragraph 2.2.3.*, amend to read:

"2.2.4. the maximum load rating associated with a maximum speed of 300 km/h for tyres with speed symbol "Y" (see paragraph 2.3738.4. of this Regulation)."

*Annex 7, Paragraph 2.5.2.*, amend to read:

"2.5.2. initial test speed: prescribed maximum speed for the type of tyre (see para. 2.3435.1. of this Regulation), less 40 km/h in the case of the smooth wheel having 1.70 m + 1 per cent in diameter or less 30 km/h in the case of the smooth wheel having 2 m + 1 per cent in diameter;"

*Annex 7, Paragraph 2.6.1.*, amend to read:

"2.6.1. Apply to the test axle a load equal to 80 per cent of the maximum load rating associated with the maximum speed specified by the tyre manufacturer (see paragraph 4.1.4516. of this Regulation)."

*Annex 7, Paragraph 3.*, amend to read:

"3. Procedure to assess the "flat tyre running mode" of "run flat system tyre"

*Annex 7, Paragraph 3.1.*, amend to read:

"3.1. Mount a new tyre on ~~the~~ a test rim **corresponding to the following specifications:**

(a) **Measuring rim width, according to ISO 4000-1**

(b) **Contour with hump (round or flat) on both rim sides, according to ISO 4000-2.**

~~specified by the manufacturer pursuant to paragraphs 4.1.12. and 4.1.15. of this Regulation."~~

*Annex 7, Paragraph 3.2.*, amend to read:

"3.2. Carry out the procedure as detailed in paragraphs 1.2. to 1.5. above with a test room temperature at 38 °C + 3 °C in relation to conditioning the tyre-and-wheel assembly as detailed in paragraph 1.4. **The temperature sensor shall be at a distance not less than 0.15 m and not more than 1.00 m from the tyre sidewall.**"

*Annex 7, Paragraph 3.8.2.*, amend to read:

"3.8.2. Test speed: 80 km/h **in case of 2.0 m ± 1 per cent drum diameter, or 75 km/h in case of 1.7 m ± 1 per cent drum diameter"**

*Annex 7, insert new paragraphs from 4. to 4.9.1.*, to read:

"4. **Procedure to assess the "flat tyre running mode" of "extended mobility tyres"**

4.1. **Mount a new tyre on a test rim corresponding to the following specifications:**

(a) **Measuring rim width, according to ISO 4000-1**

(b) **Contour with hump (round or flat) on both rim sides, according to ISO 4000-2.**

4.2. **Carry out the procedure as detailed in paragraphs 1.2. to 1.5. above with a test room temperature at 25 °C ± 3 °C in relation to conditioning the tyre-and-wheel assembly as detailed in paragraph 1.4. The temperature**

sensor shall be at a distance not less than 0.15 m and not more than 1.00 m from the tyre sidewall.

- 4.3. Remove the valve insert and wait until the tyre deflates completely.
- 4.4. Mount the tyre-and-wheel assembly to a test axle and press it against the outer surface of a smooth wheel  $1.70\text{ m} \pm 1\text{ per cent}$  or  $2.0\text{ m} \pm 1\text{ per cent}$  in diameter.
- 4.5. Apply to the test axle a load equal to 60 per cent of the maximum load rating corresponding to the load capacity index of the tyre.
- 4.6. At the start of the test, measure the deflected section height (Z1).
- 4.7. During the test the temperature of the test room must be maintained at  $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ .
- 4.8. Carry the test through, without interruption in conformity with the following particulars:
  - 4.8.1. Time taken to pass from zero speed to constant test speed: 5 minutes
  - 4.8.2. Test speed: 80 km/h in case of  $2.0\text{ m} \pm 1\text{ per cent}$  drum diameter, or 75 km/h in case of  $1.7\text{ m} \pm 1\text{ per cent}$  drum diameter
  - 4.8.3. Duration of test at the test speed: 60 minutes
- 4.9. At the end of the test, measure the deflected section height (Z2).
- 4.9.1. Calculate the change in per cent of the deflected section height compared to the deflected section height at the start of the test as  $((Z1 - Z2) / Z1) \times 100$ ."

*Annex 7, Paragraph 4. (former)*, renumber as paragraph 5 and amend to read:

- "45. Equivalent test methods
- If a method other than that described in paragraphs 2. and/or 3, **and/or** 4. above is used, its equivalence must be demonstrated."

## II. Justification

1. This document presents amendments corresponding to the introduction of "Extended Mobility Tyre" as a new definition in UN Regulation No. 30, based on a new "minimum requirement" performance test procedure, along with the relevant pictogram to be used to properly distinguish such tyres.

2. This proposal follows what has already been presented to Working Party on Brakes and Running Gear through informal documents GRRF-86-04 and GRRF-86-05.