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Item 5.3. of the provisional agenda

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 64
(Temporary use spare wheels/tyres)

Submitted by the experts from the European Tyre and Rim Technical Organisation (ETRTO)

Note: The text reproduced below has been prepared by the experts from ETRTO in order to further amend the existing requirements to cover vehicles fitted with run-flat tyres. It is based on ECE/TRANS/WP.29/GRRF/2006/2002/17/Rev.5 and aims at clarifying the provisions for run-flat warning systems (RFWS). The modifications to the latter document are marked in **bold** characters.

Note: This document is distributed to the Experts on Brakes and Running Gear only.

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A. PROPOSAL

Paragraphs 5.1.6. to 5.1.6.3., amend to read:

- "5.1.6. In the case of vehicles equipped with run-flat/self supporting tyres or run-flat/extended mobility system the vehicle shall also be fitted with a run-flat **warning** system (defined in paragraph 2.14.) that warns the driver that an individual tyre, which is in contact with the road, **is going to operate or is operating** in flat tyre running mode;
- 5.1.6.1. The failure indication shall be by means of an optical warning signal in accordance with UNECE Regulation No. 121.
- 5.1.6.2. **The warning signal shall be activated when the ignition (start) switch is in the "on" (run) position (bulb check).** ~~Any electrical failure or sensor anomaly that affects the pressure monitoring system, including failure of the electrical source, supply or transmission of the output signal, shall be indicated to the driver by operation of the warning signal referred to in paragraph 5.1.6.1.~~
- 5.1.6.3. **When any tyre is in the flat tyre running mode, it shall be indicated to the driver by operation of the warning signal referred to in paragraph 5.1.6.1.** ~~The warning signal shall be activated when the ignition circuit of the vehicle is energized (bulb check). The warning signal shall also be activated if any tyre is in the run-flat condition or the condition referred to in paragraph 5.1.6.2. is present. These conditions shall be detected within 10 minutes after the vehicle has been driven continuously at a speed greater than 40 km/h. The warning signal shall continue to be activated as long as any of these conditions exist and whenever the ignition is in the "On" ("Run") position."~~

Insert new paragraphs 5.1.6.4. to 5.1.6.6., to read:

- "**5.1.6.4. Electrical failure or sensor anomaly that affects the Run-Flat Warning System, including failure of the electrical source, supply or transmission of the output signal, shall be indicated to the driver by operation of the warning signal referred to in paragraph 5.1.6.1.**
- 5.1.6.5. The operation of the warning signal specified in paragraphs 5.1.6.2. to 5.1.6.4. shall meet either one of the following requirements:**
- 5.1.6.5.1. Using a vehicle the tyres of which are correctly inflated at the recommended cold inflation pressure, produce on one tyre a gradual pressure loss between 10 kPa/min and 20 kPa/min and check while driving at any speed above 25 km/h that the system delivers an alert at the latest for a pressure drop of 100 kPa.**
- 5.1.6.5.2. Using a vehicle the tyres of which are correctly inflated at the recommended cold inflation pressure, and while the vehicle is stationary, adjust one tyre at a**

pressure 100 kPa below the recommended cold inflation pressure. The system shall deliver an alert within 5 min while driving at any speed above 25 km/h.

5.1.6.5.3. The test shall be performed at two different speed levels at least. One shall be 130 km/h or higher. Another shall be within the range 25 to 70 km/h.

5.1.6.6. The self-diagnostic function of the system shall be able to deliver information within 5 minutes in driving conditions exceeding 25 km/h in case of malfunction."

B. JUSTIFICATION

ETRTO wishes to put forward proposals for amendments to Regulation No. 64 to clarify the existing requirements concerning run-flat tyres and extended mobility systems.

Such tyres and systems are designed to operate in the flat tyre running mode, with inflation pressures lower than 70 kPa, and achieve in that mode specified performances in terms of maximum allowable speed and distance (or time). For instance, UNECE Regulation No. 30 Supplement 14 states: 80 km (or 1 hour) at 80 km/h, at 0 kPa pressure. However, it must be borne in mind that if the vehicle speed exceeds the specified maximum speed (80 km/h) in the flat tyre running mode, the distance (or time) that the user can drive in run-flat mode decreases very rapidly with increasing vehicle speed. It should be contemplated that driving in flat-tyre mode at speeds exceeding 80 km/h may lead to tyre failure in shorter times¹.

Therefore, the performance of the TPMS or RFWS (sensitivity to pressure and reactivity) and the test conditions of RFWS must be consistent with the safety needs of users in actual driving conditions. When one of the tyres is losing pressure, the user must be alerted as soon as the tyre actually enters² the flat tyre running mode so that he can decrease his vehicle speed to the level corresponding to this mode (80km/h).

The amendment proposed by ETRTO, where paragraphs 5.1.6.5.1. and 2. are adapted from ISO 21750/2006 on "Road vehicles – Safety enhancement in conjunction with the tyre inflation pressure monitoring", is consistent with the actual safety needs of users, because:

1. two tests of RFWS are specified in order to reasonably cover the expected allowable speed range of vehicles over the Contracting Parties to 1958 Agreement,
2. pressure-loss detection time is sufficiently short to let the system alert the driver before the run-flat capacity of the tyre is significantly affected, and
3. malfunction detection time is also limited, since it can add to the detection delay.

¹ Complaints recently filed to United States of America DOT/NHTSA's Office of Defects Investigations tend to show that users faced near critical situations while driving at speeds higher than 100 km/h when their TPMS did not detect in time that their run-flat tyres were flat.

² This is consistent with standard ISO/16992:2006, para. 6.2-Requirements: "Extended Mobility Systems shall activate automatically and include a run-flat warning system that warns the driver:
- that the "Flat Tyre Running Mode" is reached;
- of any failure of the run-flat warning system."