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**ECONOMIC COMMISSION FOR EUROPE**

**INLAND TRANSPORT COMMITTEE**

**World Forum for Harmonization of Vehicle Regulations**

One-hundred-and-forty-ninth session  
Geneva, 10-13 November 2009  
Item 4.2.38 of the provisional agenda

**1958 AGREEMENT**

Consideration of draft amendments to existing Regulations

Proposal for the 02 series of amendments to Regulation No. 64  
(Temporary-use spare wheels/tyres)

Submitted by the Working Party on Brakes and Running Gear \*/

The text reproduced below was agreed by the Working Party on Brakes and Running Gear (GRRF) at its sixty-fifth session except unresolved issues shown in square brackets.. It is based on ECE/TRANS/WP.29/GRRF/2009/10 and its Corrigendum 1 as reproduced in informal document No. GRRF-65-40. The latter was redrafted by the expert from the European Commission, following the decision of GRRF to adopt it as an amendment to Regulation No. 64, instead as of a new Regulation. The proposal is now submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee (AC.1) for consideration (ECE/TRANS/WP.29/GRRF/65, paras. 44-48), subject to final review by GRRF at its September 2009 session.

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\*/ 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.

The title, (in both instances where the title is used), amend to read:

"UNIFORM PROVISIONS CONCERNING THE APPROVAL OF VEHICLES WITH REGARD TO EQUIPMENT WHICH MAY INCLUDE A TEMPORARY USE SPARE WHEEL AND TYRE UNIT, A RUN-FLAT TYRE SYSTEM AND/OR A TYRE PRESSURE MONITORING SYSTEM"

The table of contents, amend to read (inserting Annex 5):

"Annex 5 -Test requirements for Tyre Pressure Monitoring Systems."

Text of Regulation

Paragraph 1. (including the addition of a new footnote 2/), amend to read:

"1 This Regulation applies.....with regard to equipment which may include tyre pressure monitoring systems 2/, run flat tyre systems ..... paragraph 2.10. of the Regulation.

Contracting Parties shall issue or accept approvals to this Regulation with respect to the equipment of vehicles with temporary-use spare tyres and with tyre pressure monitoring systems unless they notify to the Secretary-General of the United Nations their option to issue or accept approvals with respect to either the equipment of vehicles with temporary-use spare tyres only or the equipment of vehicles with tyre pressure monitoring systems only, in accordance with paragraph 3.1.

Such notification shall have effect in accordance with the time scales laid down in Article 1, paragraphs 6. and 7. of the 1958 Agreement (E/ECE/TRANS/505/Rev.2)

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2/ In the case of vehicles up to 3,500 kg with single tyres"

Insert new paragraphs 2.2.8. and 2.2.9., to read:

"2.2.8. the type and design of any tyre pressure monitoring system fitted to the vehicle,

2.2.9. vehicle features which significantly influence the performances of the tyre pressure monitoring system (if fitted)."

Insert new paragraphs 2.14. to 2.19., to read:

"2.14. "Tyre Pressure Monitoring System (TPMS)" means a system fitted on a vehicle, able to perform a function to evaluate the inflation pressure of the tyres or the variation of this inflation pressure over time and to transmit corresponding information to the user while the vehicle is running.

2.15. "Cold tyre inflation pressure" means the tyre pressure at ambient temperature, in the absence of any pressure build-up due to tyre usage.

- 2.16. "Recommended cold inflation pressure ( $P_{rec}$ )" means the pressure recommended for each tyre position by the vehicle manufacturer, for the intended service conditions (e.g. speed and load) of the given vehicle, as defined on the vehicle placard and/or the vehicle owner's manual.
- 2.17. "In service operating pressure ( $P_{warm}$ )" means the inflation pressure for each tyre position elevated from the cold pressure ( $P_{rec}$ ) by temperature effects during vehicle usage.
- 2.18. "Test Pressure ( $P_{test}$ )" means the actual pressure of the tyre(s) selected for each tyre position after deflation during the test procedure.
- 2.19. "Type of Tyre Pressure Monitoring System" means systems which do not differ significantly in such essential aspects as:
- (a) the principle of operation,
  - (b) any components which are likely to have a significant influence on the performance of the system as specified under paragraph 5.3 to this Regulation."

Paragraph 3.1., amend to read:

- "3.1. The application for approval of a vehicle type with regard to its equipment with:
- (a) a temporary use spare unit (including, where applicable, a run-flat warning system) and/or
  - (b) a tyre pressure monitoring system
- shall be submitted by the vehicle manufacturer or by his duly accredited representative;"

Paragraph 4.1., amend to read:

- "4.1. If the vehicle submitted for approval pursuant to this Regulation meets all the requirements of paragraph 5 below, approval of that vehicle type shall be granted."

Insert new paragraphs 4.1.1. and 4.1.2., to read:

- "4.1.1. A vehicle approval with respect to the provisions relating to temporary use spare tyres only shall be granted if the vehicle meets the requirements of paragraphs 5.1. and 5.2.
- 4.1.2. A vehicle approval with respect solely to the provisions relating to tyre pressure monitoring systems only shall be granted if the vehicle meets the requirements of paragraph 5.3."

Paragraph 4.2., amend to read:

"4.2. An approval number shall be assigned to each type approval. Its first two digits (at present 02 corresponding to the 02 series of amendments) shall indicate the series.....provided that the results of the tests described in paragraph 5.2. and 5.3. do not show major differences."

Paragraph 4.4.1., the reference to footnote 2/ and footnote 2/ renumber as 3/.

Paragraph 4.4.2., amend to read:

"4.4.2. the number of this Regulation, followed by:"

Insert new paragraphs 4.4.2.1. to 4.4.3., to read:

"4.4.2.1. the letter "R" in the case of vehicles approved in accordance with paragraph 4.1.1. only.

4.4.2.2. the letter "P" in the case of vehicles approved in accordance with paragraph 4.1.2. only.

4.4.2.3. the letters "RP" in the case of vehicles approved in accordance with both paragraphs 4.1.1. and 4.1.2.

4.4.3. a dash and the approval number to the right of the markings prescribed in paragraphs 4.4.1. and 4.4.2."

Paragraph 5.1.6., 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 2.13.) capable of operating within a speed range from 40 km/h to the maximum design speed of the vehicle and meeting the requirements of paragraphs 5.1.6.1. to 5.1.6.6. However, if the vehicle is fitted with a tyre pressure monitoring system meeting the requirements of paragraph 5.3, the additional fitment of a run-flat warning system is not required."

[Insert a new paragraph 5.1.7., to read:

"5.1.7 If the vehicle is equipped with a temporary-use spare unit stored in a deflated condition, a device must be provided on the vehicle which permits the tyre to be inflated to the pressure specified for temporary use within a maximum of 10 minutes."]

Insert new paragraphs 5.3. to 5.3.5.5., to read:

"5.3 Tyre Pressure Monitoring Systems (TPMS)

5.3.1. General Requirements

5.3.1.1. Subject to the requirements of paragraph 12., any vehicle of categories M<sub>1</sub> (up to 3,500 kg) and N<sub>1</sub> with single tyres and fitted with a tyre pressure monitoring system complying with the definition of paragraph 2.14. shall meet the performance requirements contained in paragraphs 5.3.1.2. to 5.3.5.5. below and shall be tested in accordance with Annex 5.

5.3.1.2. Any tyre pressure monitoring system fitted on a vehicle shall comply with the requirements of Regulation No. 10.

5.3.1.3. The system shall operate from a speed of 40 km/h or below, up to the vehicle's maximum design speed.

5.3.2. Tyre pressure detection for incident-related pressure loss (puncture test).

5.3.2.1. The TPMS shall be tested according to the test procedure set out in paragraph 2.6.1. of Annex 5. When tested to this procedure, the TPMS shall illuminate the warning signal described in paragraph 5.3.5 not more than 10 minutes after the in service operating pressure in one of the vehicle's tyres has been reduced by 20 per cent or it is at a minimum pressure of 150 kPa, whatever is higher.

5.3.3. Detection for a tyre pressure level significantly below the recommended pressure for optimum performance including fuel consumption and safety (diffusion test).

5.3.3.1. The TPMS shall be tested according to the test procedure set out in paragraph 2.6.2. of Annex 5. When tested to this procedure, the TPMS shall illuminate the warning signal described in paragraph 5.3.5. within not more than [30][60] minutes of cumulative driving time after the in-service operating pressure in any of the vehicle's tyres, up to a total of four tyres, has been reduced by 20 per cent.

5.3.4. Malfunction detection test.

5.3.4.1. The TPMS shall be tested according to the test procedure set out in paragraph 3. of Annex 5. When tested to this procedure, the TPMS shall illuminate the warning signal described in paragraph 5.3.5. not more than 10 minutes after the occurrence of a malfunction that affects the generation or transmission of control or response signals in the vehicle's tyre pressure monitoring system. If the system is blocked by external influence (e.g. radio-frequency noise), the malfunction detection time may be extended.

5.3.5. Warning indication.

- 5.3.5.1. The warning indication shall be by means of an optical warning signal conforming to Regulation No. 121.
- 5.3.5.2. The warning signal shall be activated when the ignition (start) switch is in the "on" (run) position (bulb check). [This requirement does not apply to tell-tales shown in a common space].
- 5.3.5.3. The warning signal must be visible even by daylight; the satisfactory condition of the signal must be easily verifiable by the driver from the driver's seat.
- 5.3.5.4. The malfunction indication may be the same warning signal as the one used to indicate under-inflation. If the warning signal described in paragraph 5.3.5.1. is used to indicate both under-inflation and a malfunction of the TPMS, the following shall apply: with the ignition (start) switch in the "on" (run) position the warning signal shall flash to indicate a malfunction. After a short period of time the warning signal shall remain continuously illuminated as long as the malfunction exists and the ignition (start) switch is in the "on" (run) position. The flashing and illumination sequence shall be repeated each time the ignition (start) switch is in the "on" (run) position until the malfunction has been corrected.
- 5.3.5.5. The tell-tale of the warning described in paragraph 5.3.5.1. may be used in a flashing mode in order to provide information about the reset status of the tyre pressure monitoring system in accordance with the vehicle manufacturer's instructions."

[Paragraph 6.1., amend to read:

- "6.1. If the vehicle is equipped with a temporary use spare unit, the owner's manual of the vehicle shall contain at least the following information:"

Paragraph 6.1.5., amend to read:

".....the device referred to in paragraph 5.1.7. above."

Paragraph 6.2., amend to read:

- "6.2. If the vehicle is fitted with a Tyre Pressure Monitoring System or a Run Flat Warning System, the owner's manual of the vehicle shall contain at least the following information:"

Insert new paragraphs 6.2.1. to 6.2.3., to read:

- "6.2.1. A statement that the vehicle is equipped with such a system (and information how to reset the system, if the actual system includes such a feature).
- 6.2.2. An image of the tell-tale symbol described in paragraph 5.1.6.1. or 5.3.5.1. as appropriate (and an image of the malfunction tell-tale symbol, if a dedicated tell-tale is used for this function).

- 6.2.3. Additional information about the significance of the low tyre pressure warning tell-tale illuminating and a description of the corrective action to be undertaken if this happens."

Paragraph 6.3., amend to read:

"6.3. If no owner's manual is supplied with the vehicle, the information required in paragraph 6.1 and/or 6.2 above shall be displayed in a prominent place on the vehicle."]

Insert new paragraphs 12.5. to 12.8., to read:

- "12.5. As from the official date of entry into force of the 02 series of amendments to this Regulation, no Contracting Party applying this Regulation shall refuse to grant approval under this Regulation as amended by the 02 series of amendments.
- 12.6. As from the official date of entry into force of the 02 series of amendments to this Regulation, no Contracting Party applying this Regulation shall prohibit the sale or entry into service of any vehicle in categories M<sub>1</sub> (up to 3,500 kg) and N<sub>1</sub> with single tyres, with regard to the specification for tyre pressure monitoring systems, if the vehicle type complies with the requirements of this Regulation.
- 12.7. Until [1 November 2012] , no Contracting Party applying this Regulation shall refuse to grant national or regional type approval of a vehicle type in categories M<sub>1</sub> up to 3,500 kg and to N<sub>1</sub> with single tyres, if the vehicle does not comply with the requirements on tyre pressure monitoring systems set out in this Regulation.
- 12.8. From [1 November 2014] Contracting Parties applying this Regulation may refuse first national or regional registration (first entry into service) of a vehicle in categories M<sub>1</sub> (up to 3,500 kg) and N<sub>1</sub> with single tyres, if the vehicle does not comply with the requirements on tyre pressure monitoring systems set out in this Regulation.

Paragraph 12.5., renumber as paragraph 12.9.

#### Annex 1

The title, amend to read (including reference to existing footnote 2/):

"Communication concerning .....of a vehicle type with regard to its equipment with temporary-use spare unit/tyre pressure monitoring system 2/, pursuant to Regulation No. 64."

Item 9.1., first line, amend to read:

"9.1 Mass of the vehicle when tested:"

Insert new items 9.4. to 10., to read:

"9.4. The vehicle is fitted with a run flat warning system meeting the requirements of paragraph 5.1.6.....yes/no2/

The vehicle is fitted with a tyre pressure monitoring system meeting the requirements of paragraphs 5.3 - 5.5.....yes/no2/

9.5. Brief description of run flat warning system /tyre pressure monitoring system where applicable:.....

10. Result of the tests:

	Measured Time to warning (mm:ss)
"Puncture test"	
"Diffusion test"	
"Malfunction test"	

"

Items 10.(former) to 16., renumber as items 11. to 17.



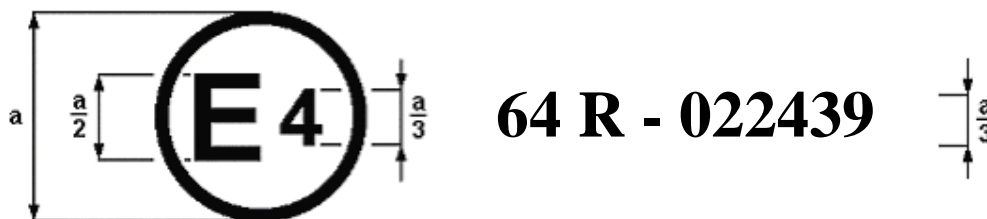
Annex 2, amend to read:

Annex 2

ARRANGEMENTS OF APPROVAL MARKS

Model A

(See paragraph 4.4. of this Regulation)

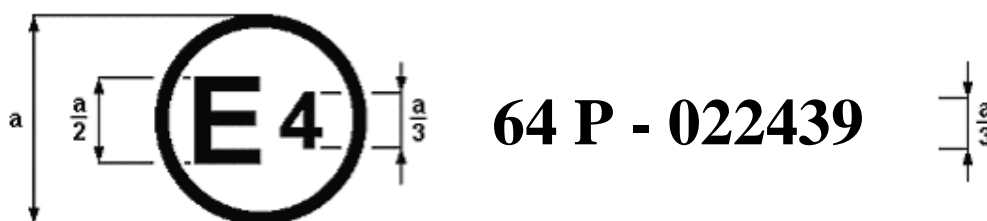


a = 8 mm min.

The above approval mark affixed to a vehicle shows that the vehicle type concerned has, with regard to the equipment of temporary-use spare unit(s), been approved in the Netherlands (E 4), pursuant to Regulation No. 64 under approval number 022439. The approval number indicates that the approval was granted in accordance with the requirements of Regulation No. 64, incorporating the 02 series of amendments.

Model B

(See paragraph 4.4. of this Regulation)

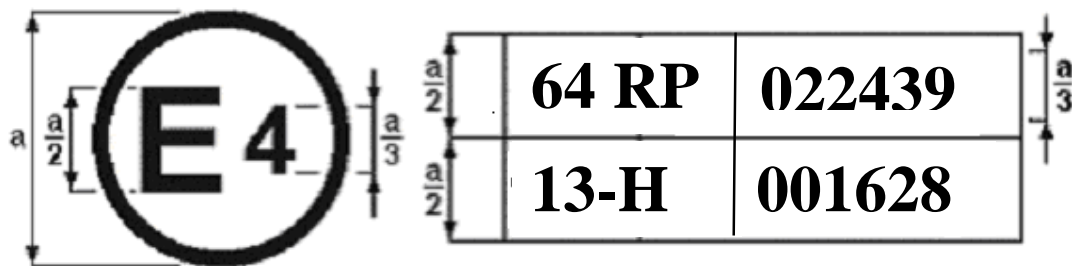


a = 8 mm min.

The above approval mark affixed to a vehicle shows that the vehicle type concerned has, with regard to the equipment of a tyre pressure monitoring system, been approved in the Netherlands (E 4), pursuant to Regulation No. 64 under approval number 022439. The approval number indicates that the approval was granted in accordance with the requirements of Regulation No. 64, incorporating the 02 series of amendments.

Model C

(See paragraph 4.5. of this Regulation)



a = 8 mm min.

The above approval mark affixed to a vehicle shows that the vehicle type concerned has been approved in the Netherlands (E 4) pursuant to Regulation Nos. 64 (with respect to the equipment of temporary-use spare unit(s) and equipment with a tyre pressure monitoring system) and 13-H. <sup>1/</sup> The approval numbers indicate that, at the dates when the respective approvals were given, Regulation No. 64 included the 02 series of amendments and Regulation No. 13-H was in its original form.

<sup>1/</sup> The latter number is given as an example only."

Insert a new Annex 5, to read:

"Annex 5

## TESTS FOR TYRE PRESSURE MONITORING SYSTEMS

1. Test conditions.

1.1. Ambient temperature.

The ambient temperature shall be between 0° C and 40° C.

1.2. Road test surface.

The road shall have a surface affording good adhesion. The road surface shall be dry during testing.

1.3. The tests shall be conducted in an environment free of interferences from radio wave.

1.4. Vehicle conditions.

1.4.1. Test weight.

The vehicle may be tested at any condition of load, the distribution of the mass among the axles being that stated by the vehicle manufacturer without exceeding any of the maximum permissible mass for each axle.

However, in the case where there is no possibility to set or reset the system, the vehicle shall be unladen. There may be, in addition to the driver, a second person on the front seat who is responsible for noting the results of the tests. The load condition shall not be modified during the test.

1.4.2. Vehicle speed.

The TPMS shall be calibrated and tested:

- (a) in a speed range from 40 km/h to 120 km/h or the vehicle's maximum design speed if it is less than 120 km/h for the puncture test to verify the requirements of paragraph 5.3.2. to this Regulation and
- (b) in a speed range from [40] km/h and 100 km for the diffusion test to verify the requirements of paragraph 5.3.3 to this Regulation and for the malfunction test to verify the requirements of paragraph 5.3.4. to this Regulation.

The whole speed range shall be covered during the test.

For vehicles equipped with cruise control, the cruise control shall not be engaged during testing.

1.4.3. Rim position.

The vehicle rims may be positioned at any wheel position, consistent with any related instructions or limitations from the vehicle's manufacturer.

1.4.4. Stationary location.

When the vehicle is parked, the vehicle's tyres shall be shaded from direct sun. The location shall be shielded from any wind that may affect the results.

1.4.5. Brake pedal application.

Driving time shall not accumulate during service brake application while the vehicle is moving.

1.4.6. Tyres.

The vehicle shall be tested with the tyres installed on the vehicle according to the vehicle manufacturer's recommendation. However, the spare tyre may be utilised for testing TPMS malfunction.

1.5. Accuracy of measurement equipment.

The accuracy of measurement equipment shall be taken into account during the test in accordance with paragraph 2.5.3 to this annex.

2. Test procedure.

The test shall be performed at a test speed within the range in accordance with paragraph 1.4.2. to this annex, at least once for the test case according to paragraph 2.6.1. to this annex ("puncture test"), and at least once for each test case according to paragraph 2.6.2. to this annex ("diffusion test").

2.1. Before inflating the vehicle's tyres, leave the vehicle stationary outside at ambient temperature with the engine off shaded from direct sunlight and not exposed to wind or other heating or chilling influences for at least one hour. Inflate the vehicle's tyres to the vehicle manufacturer's recommended cold inflation pressure ( $P_{rec}$ ), in accordance with the vehicle manufacturer's recommendation for the speed and load conditions, and tyre positions.

2.2. With the vehicle stationary and the ignition locking system in the "Lock" or "Off" position, activate the ignition locking system to the "On" or "Run" position. The tyre pressure monitoring system shall perform a check of lamp function for the low tyre pressure tell-tale as specified in paragraph 5.3.5.2. of this Regulation. [This last requirement does not apply to tell-tales shown in a common space].

- 2.3. If applicable, set or reset the tyre pressure monitoring system in accordance with the vehicle manufacturer's recommendations.
- 2.4. Learning phase.
  - 2.4.1. Drive the vehicle for a minimum of 20 minutes within the speed range in paragraph 1.4.2. to this Annex, and with an average speed of 80 km/h (+/-10 km/h). It is allowed to be outside the speed range for a maximum cumulative time of 2 minutes during the learning phase.
  - 2.4.2. At the discretion of the technical service, where the driving test is undertaken on a track (circle/oval) with only turns in a single direction, then the driving test in paragraph 2.4.1 above should be equally split (+/-2 minutes) in both directions
  - 2.4.3. Within the 5 minutes of completing the learning phase, measure the warm pressure of the tyre(s) to be deflated. The warm pressure shall be taken as the value  $P_{\text{warm}}$ . This value will be used for subsequent operations.
- 2.5. Deflation phase.
  - 2.5.1. Procedure for the puncture test to verify the requirements of paragraph 5.3.2. to this Regulation  

Deflate one of the vehicle's tyres, until it is at  $P_{\text{warm}} - 20$  per cent, or it is at a minimum pressure of 150 kPa, whichever is higher, namely  $P_{\text{test}}$ .
  - 2.5.2. Procedure for the diffusion test to verify the requirements of paragraph 5.3.3. to this Regulation  

Deflate all four tyres, until the deflated tyres are at  $P_{\text{warm}} - 20$  per cent, namely  $P_{\text{test}}$ .
  - 2.5.3. In both cases above, in order to compensate for inaccuracies of the measuring equipment, the value  $P_{\text{test}}$  shall be reduced by a further [5] kPa.
- 2.6. Low tyre pressure detection phase.
  - 2.6.1. Procedure for the puncture test to verify the requirements of paragraph 5.3.2. to this Regulation
    - 2.6.1.1. Drive the vehicle along any portion of the test course (not necessarily continuously). The sum of the total cumulative drive time shall be the lesser of 10 minutes or the time at which the low tyre pressure tell-tale illuminates.
  - 2.6.2. Procedure for the diffusion test to verify the requirements of paragraph 5.3.3. to this Regulation

Option A

- [2.6.2.1 Drive the vehicle along any portion of the test course (not necessarily continuously). The sum of the total cumulative drive time shall be the lesser of [*value in paragraph 5.3.3.1*] minutes or the time at which the low tyre pressure tell-tale illuminates].

Option B

- [2.6.2.1. Drive the vehicle along any portion of the test course. After not less than 20 minutes and not more than 40 minutes bring the vehicle to a complete standstill with the engine switched off and the ignition key removed for not less than 1 minute or more than 3 minutes. Resume the test. The sum of the total cumulative drive time shall be the lesser of [*value in paragraph 5.3.3.1*] minutes of cumulative driving under the conditions set out in paragraph 1.4.2 above or the time at which the low tyre pressure tell-tale illuminates.]

2.6.3. If the low tyre pressure signal did not illuminate, discontinue the test.

2.7. If the low tyre pressure tell-tale illuminated during the procedure in paragraph 2.6. above, deactivate the ignition locking system to the "Off" or "Lock" position. After a 5 minutes period, reactivate the vehicle's ignition locking system to the "On" ("Run") position. The tell-tale must illuminate and remain illuminated as long as the ignition locking system is in the "On" ("Run") position.

2.8. Inflate all of the vehicle's tyres to the vehicle manufacturer's recommended cold inflation pressure. Reset the system in accordance with the instructions of the vehicle manufacturer. Determine whether the tell-tale has extinguished. If necessary, drive the vehicle until the tell-tale has been extinguished. If the tell-tale does not extinguish, discontinue the test.

2.9. Repetition of the deflation phase.

The test may be repeated, at the same or different loads, using the relevant test procedures in paragraphs 2.1. to 2.8. above, with the relevant tyre(s) on the vehicle under-inflated, in accordance with the provisions of paragraph 5.3.2. or 5.3.3. to this Regulation, whichever is relevant.

3. TPMS malfunction detection.

3.1. Simulate a TPMS malfunction, for example, by disconnecting the power source to any TPMS component, disconnecting any electrical connection between TPMS components, or installing a tyre or wheel on the vehicle that is incompatible with the TPMS. When simulating a TPMS malfunction, the electrical connections for the tell-tale lamps shall not be disconnected.

3.2. Drive the vehicle for up to 10 minutes of cumulative time (not necessarily continuously) along any portion of the test course.

- 3.3. The sum of the total cumulative drive time under paragraph 3.2. shall be the lesser of 10 minutes or the time at which the TPMS malfunction tell-tale illuminates.
- 3.4. If the TPMS malfunction indicator did not illuminate in accordance with paragraph 5.3.4 to this Regulation, as required, discontinue the test.
- 3.5. If the TPMS malfunction indicator is illuminated or illuminates during the procedure in paragraphs 3.1 to 3.3 above, deactivate the ignition locking system to the "Off" or "Lock" position. After 5 minutes, reactivate the vehicle's ignition locking system to the "On" ("Run") position. The TPMS malfunction indicator shall again signal a malfunction and remain illuminated as long as the ignition locking system is in the "On" ("Run") position.
- 3.6. Restore the TPMS to normal operation. If necessary, drive the vehicle until the warning signal has extinguished. If the warning lamp has not extinguished, discontinue the test.
- 3.7. The test may be repeated using the test procedures in paragraphs 3.1. to 3.6. above, with each such test limited to simulation of a single malfunction."

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