

Proposal for amendments to the 01 series of amendments to UN Regulation No. 141 (Tyre pressure monitoring system)

The changes compared to document ECE/TRANS/WP.29/2021/10 are marked in **bold** for added text and strike through for deleted text, all in red font.

I. Proposal:

Paragraph 5.1.2., amend to read:

“5.1.2. The effectiveness of the tyre pressure monitoring system, **the tyre pressure refill system or the central tyre inflation system** fitted on a vehicle

Paragraph 5.2.3., amend to read:

“5.2.3. For vehicles of category M₂, M₃, N₂, **and N₃, ~~O₃ and O₄~~**, fitted with tyres of the tyre class C2 or C3, the TPMS shall illuminate the warning signal described in paragraph 5.5. within not more than ten minutes of cumulative driving time after the in service operating pressure in one of the vehicle's **rolling** tyres **in contact with the ground** has been reduced by 20 per cent.”

Insert a new paragraph 5.2.4., to read:

“**5.2.4. For vehicles of category O₃ and O₄ , fitted with tyres of the tyre class C2 or C3, the TPMS shall illuminate the warning signal described in paragraph 5.5. within not more than ten minutes of cumulative driving time after the in service operating pressure in one of the vehicle's rolling tyres in contact with the ground has been reduced by 20 per cent.**”

Renumber the former paragraph 5.2.4., amend to read:

“**5.2.4.5.** The low tyre pressure warning signal described in paragraph 5.5. shall be illuminated whenever the towed vehicle TPMS provides low tyre pressure warning information via the communication interface described in paragraph 5.6.”

Paragraph 5.3.2., amend to read:

“5.3.2. For vehicles **category** of category M₁ up to a maximum mass of 3,500kg and N₁, fitted with tyres of the tyre class C2, the TPMS shall illuminate the warning signal described in 5.5. within not more than 60 minutes of cumulative driving time after the in service operating pressure in any of the vehicle's tyres has been reduced by 20 per cent or it is at a minimum pressure of 220 kPa, whichever is higher.”

Paragraph 5.3.3., amend to read:

“5.3.3. For vehicles of **category categories** M₂, M₃, N₂ and N₃, fitted with tyres of the tyre class C2 or C3, the TPMS shall illuminate the warning signal within not more than 60 minutes of cumulative driving time after the in-service operating pressure in any of the vehicle's rolling tyres in contact with the ground has been reduced by 20 per cent.”

Paragraph 5.3.4., amend to read:

“5.3.4. For vehicles of **category categories** O₃ and O₄, fitted with tyres of the tyre class C2 or C3, the TPMS shall transmit an appropriate warning signal described in 5.5 within not more than 60 minutes of cumulative driving time after the in-service operating pressure in any of the vehicle's rolling tyres in contact with the ground has been reduced by 20 per cent.”

Annex 3 paragraph 2.4.1., amend to read:

“2.4.1.
For vehicles of category M₂, M₃, N₂, N₃, O₃ and O₄, drive the vehicle for a minimum of 120 minutes within the speed range in paragraph 1.5.2. to this **annex Annex**, and with an average speed of ~~57~~ **60** km/h (±10 km/h). It is allowed to be outside the speed range for a maximum cumulative time of two minutes during this phase.”

Annex 3 paragraph 2.6.2.1., amend to read:

“2.6.2.1. Drive the vehicle along any portion of the test course. After not less than twenty (20) minutes and not more than forty (40) minutes bring the vehicle to a complete standstill with the engine switched off and the ignition key removed for not less than one (1) minute or more than three (3) minutes. Resume the test. The sum of the total cumulative drive time shall be the lesser of sixty (60) minutes of cumulative driving under the conditions set out in paragraph ~~1.4.2~~ **1.5.2.** above or the time at which the low tyre pressure tell-tale illuminates.”

Proposal for amendments to ECE/TRANS/WP.29/GRBP/2021/6

The changes compared to document ECE/TRANS/WP.29/GRBP/2021/06 are marked in **bold** for added text and strike through for deleted text, all in red font.

II. Proposal

Annex 5 Part A Paragraph 2.1.2., amend to read:

“2.1.2. Mandatory messages transmitted from the towed vehicle to the towing vehicle:

<i>Function / Parameter</i>	<i>ISO 11992-2:2014 reference</i>	<i>Reference to paragraphs in this UN Regulation</i>
Tyre Pressure Status	EBS23 Byte 1 Bit 1-2	Paragraph 5.2.4. Paragraph 5.3.5 Paragraph 5.4.3.
Tyre/wheel identification (pressure)	EBS23 Byte 2	Paragraph 5.2.4. Paragraph 5.3.5 Paragraph 5.4.3.

“

Annex 5 Part A Paragraph 2.2., amend to read:

“2.2. When the towed vehicle transmits the following messages, the towing vehicle shall provide a low tyre pressure warning to the driver:

<i>Function / Parameter</i>	<i>ISO 11992-2:2014 reference</i>	<i>Driver warning required</i>
Tyre Pressure Status <i>(For Low Tyre Pressure Warning Indication)</i>	EBS23 Byte 1 Bit 1-2 (002 002 — tyre pressure insufficient)	References to paragraph 5.2.3., 5.2.4., 5.3.3. 5.3.4. , 5.3.5. and 5.5.2. in this UN Regulation
Tyre/wheel identification <i>(corresponding to Tyre Pressure Status)</i>	EBS23 Byte 2 (XXXXXXXXX₂ XXXXXXXXX₂ — actual Tyre/Wheel ID) OR (0000000₂ 0000000₂ — Tyre/Wheel ID not defined or wheel not defined and axle > 15₁₀ OR (1111111₂ 1111111₂ — Tyre/Wheel ID not available or wheel = 15₁₀ and axle = 15₁₀	References to paragraph 5.2.3., 5.2.4., 5.3.3. 5.3.4. , 5.3.5. and 5.5.2. in this UN Regulation

“

Annex 5 Part A Paragraph 2.3., amend to read:

“2.3. When the towed vehicle transmits the following messages, the towing vehicle shall provide a TPMS malfunction indication to the driver:

<i>Function / Parameter</i>	<i>ISO 11992-2:2014 reference</i>	<i>Driver warning required</i>
Tyre Pressure Status <i>(For TPMS Malfunction Indication)</i>	EBS23 Byte 1 Bit 1-2 (00₂ 10₂ — error indicator)	Reference to paragraph 5.4.1., 5.4.2. and 5.5.2. in this UN Regulation
Tyre/wheel identification <i>(corresponding to Tyre Pressure Status)</i>	EBS23 Byte 2 XXXXXXXX₈ XXXXXXXX₂ — actual Tyre/Wheel ID) OR (0000000 ₈ 0000000 ₂ — Tyre/Wheel ID not defined or wheel not defined and axle > 15₁₀) OR (1111111 ₈ 1111111 ₂ — Tyre/Wheel ID not available or wheel = 15₁₀ and axle = 15₁₀)	Reference to paragraph 5.4.1., 5.4.2. and 5.5.2. in this UN Regulation

“

Annex 5 Part A Paragraph 25., amend to read:

“2.5. When a valid Tyre Pressure Status is temporarily not available (i.e. unavailable for less than 10 minutes of cumulative drive time), the towed vehicle shall transmit the following messages:

<i>Function / Parameter</i>	<i>ISO 11992-2:2014 reference</i>	<i>Driver warning required</i>
Tyre Pressure Status <i>(TPMS data temporarily unavailable)</i>	EBS23 Byte 1 Bit 1-2 (11₂ 11₂ — not available)	Not applicable
Tyre/wheel identification <i>(corresponding to Tyre Pressure Status)</i>	EBS23 Byte 2 XXXXXXXX₈ XXXXXXXX₂ — actual Tyre/Wheel ID) OR (0000000 ₈ 0000000 ₂ — Tyre/Wheel ID not defined or wheel not defined and axle > 15₁₀) OR (1111111 ₈ 1111111 ₂ — Tyre/Wheel ID not available or wheel = 15₁₀ and axle = 15₁₀)	Not applicable

“

Annex 5 Part B Paragraph 2., amend to read:

“2. The towed vehicle gateway ECU that is part of the point-to-point link shall provide an interface with the ECU providing TPMS functionality complying with data link layer and physical layer in accordance with ISO ~~11898:2015~~ **11898-1:2015 and ISO 11898-2:2016.**”

Annex 5 Part B Paragraph 2.1, amend to read:

“2.1. The CAN bit-rate for the ISO ~~11898:2015~~ **11898-1:2015** interface shall be 250 kbit/s.”

Annex 5 Part B Paragraph 2.2, amend to read:

“2.2. The ISO ~~11898:2015~~ **11898-2:2016** bus termination shall be configured on the vehicle in accordance with the guidelines of the vehicle manufacturer for the given installation.”

Annex 5 Part B Paragraph 3., amend to read:

“3. The parameters that are transmitted by the ISO ~~11898:2015~~ **11898-1:2015** communication interface shall be as defined within ISO 11992-2:2014 and shall be supported as follows:”

Annex 6 Paragraph 2.2.1.1.1., amend to read:

“2.2.1.1.1. Simulate a towed vehicle low tyre pressure warning and check that the low tyre pressure warning signal specified in paragraph 5.5 of this regulation is displayed.

The parameters defined in EBS 23 bytes 1 and 2 of ISO 11992-2:2014 shall be transmitted as follows:

<i>Control line signalling</i>	<i>EBS 23 Byte 1 Bits 1 - 2</i>	<i>EBS 23 Byte 2</i>
Low Tyre Pressure Warning for tyre/wheel identification number 1,7 (Axle 1, left inner)	00_b 00₂ (tyre pressure insufficient)	0001011_b 0001011₂ (Tyre/Wheel “1,7”)

“

Annex 6 Paragraph 2.2.1.1.2., amend to read:

“2.2.1.1.2. Simulate a towed vehicle low tyre pressure warning (without known tyre/wheel ID) and check that the low tyre pressure warning signal specified in paragraphs 5.5 of this Regulation is displayed.

The parameters defined in EBS 23 bytes 1 and 2 of ISO 11992-2:2014 shall be transmitted as follows:

<i>Control line signalling</i>	<i>EBS 23 Byte 1 Bits 1 - 2</i>	<i>EBS 23 Byte 2</i>
Low Tyre Pressure Warning (without known tyre/wheel ID)	00_b 00₂ (tyre pressure insufficient)	0000000_b 0000000₂ (Tyre/Wheel ID not defined or wheel not defined and axle > 15 ₁₀) OR 1111111_b

<i>Control line signalling</i>	<i>EBS 23 Byte 1 Bits 1 - 2</i>	<i>EBS 23 Byte 2</i>
		1111111₂ (Tyre/Wheel ID not available or wheel = 15₁₀ and axle = 15₁₀)

“

Annex 6 Paragraph 2.2.1.2.1., amend to read:

“2.2.1.2.1. Simulate a towed vehicle TPMS malfunction, signalled by the towed vehicle TPMS, and check that the towed vehicle TPMS malfunction indication warning signal specified in paragraph 5.5.6. of this Regulation is displayed.

The parameters defined in EBS 23 bytes 1 and 2 of ISO 11992-2:2014 shall be transmitted as follows:

<i>Control line signalling</i>	<i>EBS 23 Byte 1 Bits 1 - 2</i>	<i>EBS 23 Byte 2</i>
TPMS Malfunction for tyre/wheel identification number 1,7 (Axle 1, left inner)	10_b 10₂ (Error indicator)	0001011_b 0001011₂ (Tyre/Wheel “1,7”)

“

Annex 6 Paragraph 2.2.1.2.2., amend to read:

“2.2.1.2.2. Simulate a towed vehicle TPMS malfunction (without known tyre/wheel ID) and check that the towed vehicle TPMS malfunction indication warning signal specified in paragraph 5.5.6. of this Regulation is displayed.

The parameters defined in EBS 23 bytes 1 and 2 of ISO 11992-2:2014 shall be transmitted as follows:

<i>Control line signalling</i>	<i>EBS 23 Byte 1 Bits 1 - 2</i>	<i>EBS 23 Byte 2</i>
TPMS Malfunction (without known tyre/wheel ID)	10_b 10₂ (Error indicator)	0000000_b 0000000₂ (Tyre/Wheel ID not defined or wheel not defined and axle > 15₁₀) OR 1111111_b 1111111₂ (Tyre/Wheel ID not available or wheel = 15₁₀ and axle = 15₁₀)

“

Annex 6 Paragraph 3.2.2.2., amend to read:

- “3.2.2.2. Follow the test procedure defined in Annex 3 of this Regulation and check that the TPMS warning and malfunction signals are transmitted as defined in paragraphs 2.2.7 and 2.3. ~~and 2.4.~~ of Part A of Annex 5 **to this Regulation.**”

III. Justification General

The Task Force TPMSTI agreed at its 9th meeting to continue working on the communication interface protocol of TPMS between towing and towed vehicles of categories N₂, N₃ and O₃, O₄, respectively. The suitable communication requirements, already described in Annex 5 on the basis of the ISO bus requirements, are revised in the same manner as described in UN Regulation No 13 and the relevant ISO documents.

In addition, certain other requirements were corrected in order to align them for TPMS, TPRS and CTIS or clarify the drafting.

For section “I. Proposal”

5.1.2: Alignment of requirements for TPMS, TPRS and CTIS.

5.2.3, new 5.2.4: Separate drafting for vehicles of category M₂, M₃, N₂ and N₃ in one paragraph and O₃ and O₄ in another paragraph for clearer drafting and for amending readily in the future, if necessary.

New 5.2.5, 5.3.2, 5.3.3, 5.3.4: drafting corrections for correct paragraph numbering and drafting alignment.

Annex 3:

- paragraph 2.4.1: new average speed, due to new boundary values of vehicle speed of the mentioned vehicle categories in the tests,
- paragraph 2.6.2.1: drafting correction.

For section “II. Proposal”

Annex 5:

- Part A: the messages, warnings or indications in the second column of the tables are corrected in accordance with the ISO 11992-2:2014 drafting. The third column of the tables is corrected, where applicable and necessary, with the full reference to the corresponding paragraphs in the main text of UN Regulation No 141 to the driver’s warnings.
- Part B: the ISO 11898 correct document references are introduced.

Annex 6:

The transmitted parameters in the second and third columns of the mentioned tables are corrected according with the ISO 11992-2:2014 drafting.

The paragraph 3.2.2.2 is amended with the correct reference to Annex 5 paragraphs.