

ETRTO position on Tyre Pressure Monitoring Systems (TPMS)

A. BACKGROUND

At its last session, WP29 was requested to give under agenda item 3.6.1. Guidance on Tyre Pressure Monitoring Systems (TPMS) requested by GRRF . They did not succeed to clarify the remaining open items on thresholds and delay times for warning on diffusion cases. It was decided to forward this clarification to the next GRRF session in September 2009.

In the present document, ETRTO presents and explains its position on the open issues.

Informal document GRRF-65-40 Original text:

"5.3.1. When tested according to paragraph 6.2.6.2., the TPMS shall illuminate the warning signal described in paragraph 5.5. within not more than **30** ~~60~~ minutes of cumulative driving time after the in-service operating pressure in one of the vehicle's tyres, up to a total of four tyres, has been reduced by 20 per cent."

ETRTO is not in agreement with the 30 minutes of driving time as well as the 20 per cent threshold on its own.

Rationale: A response time of 30 minutes already is longer than the average duration of passenger cars trips in Europe and longer durations will exclude a large part of the European driving cases. **ETRTO requests that the response time is less than 20 minutes.**

To accept longer duration response would entail inclusion of specific and complicated in § 5.1 about interruptions, TPMS memory, time integration,

In addition, ETRTO wants to emphasize that for tyre durability reasons, going below the minimum cold inflation pressure of the tyre needed to carry the vehicle load (P_{min}) is not acceptable when applied to a diffusion loss situation. Such a pressure condition may be met over a period of several months, allowing tyres to be operated below P_{min} , which means over deflected, i. e. overstressed. The tyre industry requests that P_{min} being mentioned with the 20% and considered as the lowest threshold. So the paragraph 5.3.1. should read:

5.3.1. When tested according to paragraph 6.2.6.2., the TPMS shall illuminate the warning signal described in paragraph 5.5. within not more than **20** minutes of cumulative driving time after the in-service operating pressure in one of the vehicle's tyres, up to a total of four tyres, has been reduced by 20 per **cent or to the minimum cold inflation pressure, whichever is higher."**

Informal document GRRF-65-40 Original text:

6.2.5.2. Procedure for the diffusion test according to paragraph 5.3.

Deflate all four tyres, until the deflated tyres are at $P_{warm} - 20$ per cent, namely P_{test} .

6.2.5.3. In both cases above, in order to compensate for inaccuracies of the measuring equipment, the value P_{test} shall be reduced by a further [5] kPa.

ETRTO sees paragraph 5.3.1 and 6.2.5.2 as complementary and ETRTO requests to modify as below:

6.2.5.2. Procedure for the diffusion test according to paragraph 5.3.

Deflate all four tyres, until the deflated tyres are at $P_{\text{warm}} - 20$ per cent **or to the minimum cold inflation pressure (P_{min}), whichever is higher**, namely P_{test} .

Informal document GRRF-65-40 Original text:

6.1.5. Accuracy of measurement equipment.

The accuracy of measurement equipment shall be taken into account during the test in accordance with paragraph 6.2.5.4

6.2.5.3. In both cases above, in order to compensate for inaccuracies of the measuring equipment, the value P_{test} shall be reduced by a further [5] kPa.

ETRTO reminds to change the reference in 6.1.5, but more important requests to

- 1. change the inaccuracy level to +- 3kPa and**
- 2. not reduce the value P_{test} by this inaccuracy.**

Rationale:

The rules commonly admitted for the accuracy of gauges and also recommended in ISO 15 037 - 1 are given as: "The tolerance for cold pressure should be set at ± 5 kPa maximum."

NHTSA specifies the use of gauges with an accuracy of ± 2 kPa in "TP138/03" and in ISO 21750, all experts world wide agreed on ± 3 kPa. So we see the latter as obtainable target.

We cannot accept the amendment of Paragraph 6.2.5.3 as given because the expected performance of TPMS cannot be assured. Any inaccuracy of the test equipment should be considered in the test agreement with the type approval authority, but may not be added to the threshold.

Informal document GRRF-65-40 Original text:

6.2.6.2.1. 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 [30][60] minutes or the time at which the low tyre pressure telltale illuminates.

ETRTO is not in agreement with the 30 or 60 minutes of driving time.

Rationale: A response time of 30 minutes already is longer than the average duration of passenger cars trips in Europe and longer durations will exclude a large part of the European driving cases. **ETRTO requests that the response time is less than 20 minutes.**

Finally ETRTO requests to add a note to the regulation stating that:

“Any reliable TPMS does not exonerate the driver from regular pressure checks. In particular, if the inflation pressure at the point of illumination of the telltale is below the pressure required to carry the load of the vehicle according to tyre industry standards, the vehicle manufacturer must advise the customer that he/she still needs to check the tyre pressure regularly.

It must be guaranteed that tyre pressure threshold and warning time are always respected in any tyre condition of use and in all vehicle operating conditions.”

We are aware that it is not easy to create a TPM system with a tight threshold without having nuisance alarms. But we feel that the essence of the regulation is to find a good compromise between CO2 saving and customer satisfaction, without sacrificing the tyre durability.
