Transmitted by the expert from Germany

Informal Document No. **GRRF-63-23**
(63rd GRRF, 4 - 8 February 2008,
agenda item 8(e))

PROPOSAL FOR A NEW DRAFT REGULATION:

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF SYSTEMS FOR TIME BASED TYRE PRESSURE LOSS REMINDER SYSTEMS (TBW) AND TYRE PRESSURE MONITORING SYSTEMS (TPMS) AND TYRE LEAK ALERTING SYSTEMS FOR MOTOR VEHICLES

Transmitted by the Expert from Germany

Note: The text reproduced below was prepared by the expert from Germany in order to update the provisions for Time Based Tyre Pressure Loss Reminder Systems (TBW), Tyre Leak Alerting Systems (TLAS) and Tyre Pressure Monitoring Systems (TPMS) used in motor vehicles and in their trailers. It includes prescriptions for their installation on the vehicles.

Justification

The discussion about global warming and therefore the need to reduce the CO2 emissions identified among others the tyre pressure of vehicle tyres as a complementary measure to reach the required targets.

In this context it seems supportive to create a regulation as soon as possible. To avoid long lasting discussions about the different technical solutions which are more or less cost intensive, the idea is to start with a system that is valuable under all aspects (liability, cost, etc.) and therefore simply agreeable.

The intention is to start with a time based tyre pressure loss reminder called TBW with an immediate effect as regards CO2 emissions. In a second step the Regulation could be amended without time consuming formalism to more sophisticated systems. Going this way, an additional development time for higher level systems would be given to reduce the costs for customers and manufacturers; in other words to have an optimum with regard to the cost benefit balance.

PROPOSAL FOR A NEW DRAFT REGULATION:

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF SYSTEMS FOR TIME BASED TYRE PRESSURE LOSS REMINDER SYSTEMS (TBW) AND TYRE PRESSURE MONITORING SYSTEMS (TPMS) AND TYRE LEAK ALERTING SYSTEMS FOR MOTOR VEHICLES

1. SCOPE

This Regulation covers electronic Time Based Tyre Pressure Loss Reminder Systems TBW, Tyre Leak Alerting Systems TLAS and Tyre Pressure Monitoring Systems TPMS for tubeless tyres with a reference pressure lower or equal to 375 kPa fitted in single formation on vehicles of categories M1 and N1. 1/

This regulation establishes overall performance guidelines for the system and their components, independently of the physical principles and technological solution which have been selected to monitor the tyre pressure.

This regulation covers also the requirements for compatibility of system components.

2. DEFINITIONS
For the purpose of this Regulation:

2.1. Time Based Tyre Pressure Loss Reminder Systems TBW are any systems fitted on a vehicle, able to give a reminder message to the driver to check and re-adjust the tyre pressure.

2.2. Tyre Leak Alerting System TLAS is a system that monitors the pressure differences between the tyres in use, or parameters that adequately correlates, and delivers an alert if a significant pressure difference appears. The goal of the alert is to inform the driver to take proper corrective actions as soon as possible.

2.3. Tyre Pressure Monitoring Systems TPMS are any systems fitted on a vehicle, able to detect when a tyre is running with too low tyre pressure and/or too high tyre deflection and to give a warning to the driver.
A TPMS can be realised by combination of a TBW and a TLAS.

1/ Categories M;N,O and L as defined in annex 7 to the Consolidated Resolution on the Construction of Vehicles (R.E.3) (document TRANS/WP.29/78/Rev.1/Amend.2).

3. APPLICATION FOR APPROVAL

3.1. The application for approval of a TBW or TLAS or TPMS type shall be submitted by the vehicle manufacturer or manufacturer of the TBW or TLAS or TPMS, or by his duly accredited representative, and shall be accompanied by:

3.1.1. Drawings, in triplicate, sufficiently detailed to permit identification of the type. They shall also show the position intended for the approval mark and for the TBW or TLAS or TPMS markings;

3.1.2. Technical description for the respective type of system

4. APPROVAL

4.1. If the TBW or TLAS or TPMS submitted for approval in accordance with paragraph 3. above meets the requirements, then approval for this type of TBW or TLAS or TPMS shall be granted.

4.2. An approval number shall be assigned to each type approved. The first two digits (at present 00 for the regulation in its original form) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party may not assign the same number to another type of TBW or TLAS or TPMS.

4.3. Notice of approval or refusal or extension of approval of a type of TBW or TLAS or TPMS under this regulation shall be communicated to the parties to the 1958 Agreement which apply this regulation by means of a communication form conforming to the model in annex 1 to this Regulation.

4.4. Every TBW or TLAS or TPMS conforming to a type approved under this regulation shall bear, in addition to the markings prescribed in paragraph 5., a clearly legible and indelible international approval mark consisting of:

4.4.1. A circle surrounding the letter E followed by the distinguishing number of the country which has granted approval (see annex 2). 9/

4.4.2. The number of this Regulation, followed by the letter R, a dash and the approval number according to paragraph 4.2.

4.5. The approval mark shall be permanent, visible and clearly legible, when the tyre is fitted on the TBW or TLAS or TPMS.

4.6. Annex 2 to this regulation gives an example of the arrangement of the approval mark.

4.7. The TBW or TLAS or TPMS manufacturer's facilities may be used for test purposes provided that the Type Approval Authority or a designated representative witnesses the tests.

9/ 1 for Germany, 2 for France, 3 for Italy, 4 for Netherlands, 5 for Sweden, 6 for Belgium, 7 for Hungary, 8 for the Czech Republic, 9 for Spain, 10 for Yugoslavia, 11 for the United Kingdom, 12 Austria, 13 for Luxembourg, 14 for Switzerland, 15 (vacant), 16 for Norway, 17 for Finland, 18 for Denmark, 19 for Romania, 20 for Poland, 21 for Portugal, 22 for the Russian Federation, 23 for Greece, 24 for Ireland, 25 for Croatia, 26 for Slovenia, 27 for Slovakia, 28 for Belarus, 29 for Estonia, 30 (vacant), 31 for Bosnia and Herzegovina, 32 for Latvia, 33 (vacant), 34 for Bulgaria, 35-36 (vacant), 37 for Turkey, 38-39 (vacant), 40 for The former Yugoslav Republic of Macedonia, 41 (vacant), 42 for the European Community (Approvals are granted by its member States using their respective ECE symbol), 43 for Japan, 44 (vacant), 45 for Australia, and 46 for Ukraine. Subsequent numbers shall be assigned to other countries in the chronological order in which they ratify or accede to the Agreement Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approval Granted on the Basis of these Prescriptions, and the numbers thus assigned shall be communicated by the Secretary-General of the United Nations to the Contracting Parties to the Agreement.

5. TBW or TLAS or TPMS MARKINGS

5.1. The TBW or TLAS or TPMS shall be permanently and legibly marked as follows, in a position chosen by the manufacturer.

5.1.1. manufacturer name or trade mark;

5.1.2. date of manufacture(at least the month and year);

5.1.3. the part number;

5.2. Annex 3 to this regulation gives an example of the arrangement of the TBW or TLAS or TPMS markings.

6. GENERAL REQUIREMENTS

6.1. TBW

6.1.1 TBW is based on the fact that passenger car tires lose air by natural leakage of approx. 30 kPa within 10 weeks.

6.1.2 TBW gives at a date 2, which is 70 days after a date 1 an optical signal to the driver to check and readjust the tyre pressure.

If the date 2 occurs during driving, the signal can be suppressed until the next drive.

6.1.3 Signals to the driver

The optical signal is the symbol 42a according ISO 2575:2004 in yellow or amber. It shall be located in the driver´s direct field of vision and not be hidden by the steering wheel or any other part of the dashboard or controls.

The following alternative solutions are also possible:

- Adding of some text or vocal message(s), sound(s), other tell-tale(s) to the above configuration

- Replacement of the proposed minimum configuration by other, clearer, symbols, under the car manufacturers responsibility, if the manufacturer is able to prove that these symbols are in direct relationship with the TBW and well understood. The colours shall be kept for optical indicators. In case of a written message, the colour is not relevant.

All signals resp. messages according 6.1.3 shall durate until the driver has confirmed by restarting the TBW that the tyre pressure has been checked and readjusted.

6.1.4. Owners manual information (deleted)

6.1.5 Start function
TBW shall have a internal car control (press-button or soft button) by which it can be started at terminal status R and higher.

6.1.6. In case of a press-button the button has to be pressed for approx. 3 seconds until the TBW accepts the start. Acceptance of start shall be shown by illuminating the optical TBW-signal. In case of a soft button an acknowledgment inquiry has to be confirmed until the TBW accepts the start.

A start during driving with speeds higher than 5 km/h shall not be possible.

6.1.7 Diagnostic

A TBW shall include a self-diagnostic function delivering information to the user when the system is out of function. The system shall be able to deliver an information within 10 minutes in driving conditions exceeding 25 km/h in case of malfunction.

6.1.8 Function Test

For function test it has to be possible to simulate a date 2 plus 1 day with the internal car control (press-button or soft button) to simulate a status according 6.1.2.
At this status the function 6.1.3 has to be fulfilled.

6.2. TLAS

6.2.1. A TLAS does not need to measure directly the pressure of each tyre. The information about tyre pressure may be estimated by comparing all tyres in use. The system shall give an alert if at least one of the tyres (in service) is under-inflated related to the other ones. It may also give an alert if two or more tyres are underinflated.

6.2.2. A TLAS may use a reset program to tune the system. After all tyres in use have been inflated, the reset button shall be pressed. After a learning phase, the system will be able to detect when the pressure drop of at least one tyre is higher than of the others. The system is not able to detect that a wrong inflation pressure has been set.

6.2.3. Reset function

The reset function shall be started with the identical elements, in the identical way and with the identical responses described in 6.1.5 and 6.1.6

6.2.4. Signals to the driver

The optical signal is the symbol 42a according ISO 2575:2004 in red. It shall be located in the driver´s direct field of vision and not be hidden by the steering wheel or any other part of the dashboard or controls.

The following alternative solutions are also possible:

- Adding of some text or vocal message(s), sound(s), other tell-tale(s) to the above configuration

- Replacement of the proposed minimum configuration by other, clearer, symbols, under the car manufacturers responsibility, if the manufacturer is able to prove that these symbols are in direct relationship with the TBW resp. TLAS and well understood. The colours shall be kept for optical indicators. In case of a written message, the colour is not relevant.

All signals resp. messages according 6.2.4 shall durate until the driver has checked and readjusted the tyre pressure and restarted the TBW resp. TLAS.

6.2.5 Owners manual information (deleted)

6.2.6 Environmental system performance

No function required on offroad surfaces and under slippery, snowy and icy conditions

6.2.7 Monitoring strategy

After completion of the learning phase a TLAS shall provide an alert within 10 Minutes at a speed exceeding 25 km/h if corrective actions are needed. In case of conjunction of a TLAS malfunction and a puncture, the user may not be informed in time.

6.2.8. Diagnostic

The functioning of Diagnostic shall be the same as TBW (see 6.1.7)

6.2.9. Outdoor test procedures

Outdoor test shall be performed after the learning phase.

Detection test 1:

Use 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 a speed exceeding 25 km/h that the system delivers an alert at the latest for a pressure drop of 100 kPa.

Detection test 2:

While the vehicle is stationary, adjust one tyre at a pressure xy kPa below the recommended cold inflation pressure within a tolerance of 10 kPa. The system shall deliver an alert within 10 minutes while driving at a speed exceeding 25 km/h.

7. MODIFICATIONS AND EXTENSION OF APPROVAL FOR TBW OR TLAS or TPMS

7.1. Every modification of the TBW or TLAS or TPMS type shall be notified to the approval authority which granted the type approval. The approval authority may then:

7.1.1. either consider that the modifications made are unlikely to have appreciable adverse effects and that in any case the type of TBW or TLAS or TPMS still complies with the requirements;

7.1.2. or require a further test.

7.2. Confirmation or refusal of approval, specifying the alterations, shall be notified by the procedure specified in paragraph 4.3. above to the parties to the agreement applying this regulation.

7.3. The competent authority issuing the extension of approval shall assign a series number to each communication form drawn up for such an extension.

8. CONFORMITY OF PRODUCTION

8.1. The conformity of production procedures shall comply with those set out in the agreement - E/ECE/324-E/ECE/TRANS/505/Rev.2 appendix 2.

8.2. The authority which has granted type approval may at any time verify the conformity control methods applied in each production facility. The normal frequency of these verifications shall be once every two years.

9. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

9.1. The approval granted in respect of a type of TBW or TLAS or TPMS pursuant to this regulation may be withdrawn if the requirements set forth above are not met or if a TBW or TLAS or TPMS bearing the approval mark does not conform to the type approved.

9.2. If a Contracting Party to the Agreement applying this regulation withdraws an approval it has previously granted, it shall forthwith so notify the other Contracting Parties applying this regulation, by means of a communication form conforming to the model in annex 1 to this Regulation.

10. PRODUCTION DEFINITELY DISCONTINUED

If the holder of an approval completely ceases to manufacture a TBW or TLAS or TPMS approved in accordance with this regulation, he shall so inform the authority which granted the approval. Upon receiving the relevant communication, that authority shall inform the other parties applying this regulation by means of a communication form conforming to the model in annex 1 to this Regulation.

11. NAMES AND ADDRESSES OF TECHNICAL SERVICES RESPONSIBLE FOR CONDUCTING APPROVAL TESTS AND OF ADMINISTRATIVE DEPARTMENTS

The Contracting Parties to the Agreement applying the regulation shall communicate to the United Nations secretariat the names and addresses of the Technical Services responsible for conducting approval tests and of the administrative departments which grant approval and to which forms certifying approval or extension or refusal or withdrawal of approval, or production definitely discontinued issued in other countries, are to be sent.

Annex 1

COMMUNICATION

(Maximum format: A4(210 x 297 mm))

issued by: Name of administration:
.....
.....
.....

concerning: 2/ APPROVAL GRANTED
APPROVAL EXTENDED
APPROVAL REFUSED
APPROVAL WITHDRAWN
PRODUCTION DEFINITELY DISCONTINUED

Extension No. .....

1. TBW or TPMS or TLAS manufacturer:
2. TBW or TPMS or TLAS type designation:
3. Address of the manufacturer:
4. If applicable, name and address of manufacturers representative.
5. Date on which the TBW or TPMS or TLAS was submitted for approval tests:
6. Technical Service responsible for carrying out the approval test:
7. Date of test report issued by the Technical Service:
8. Number of test report issued by the Technical Service:
9. Remarks:
10. Approval granted/refused/extended/withdrawn 2/:
11. Reason(s) for the extension (if applicable):
12. Place:
13. Date:
14. Signature:
Name:
15. Annexed is a list of documents making up the approval file, deposited with the competent authority which granted approval, a copy can be obtained on request.

_____

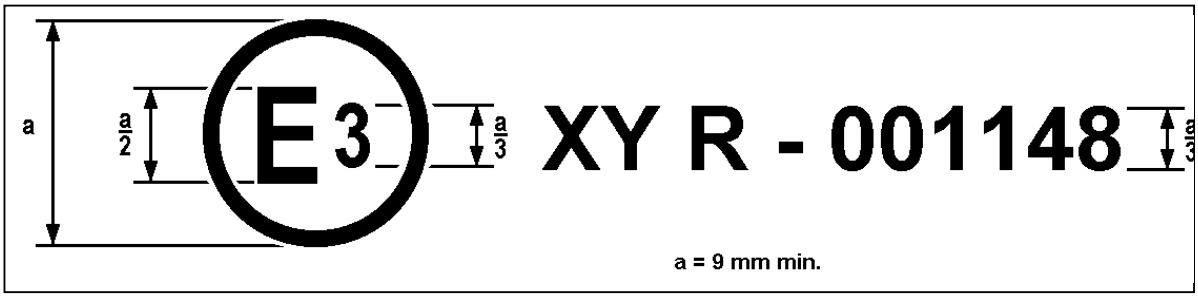
1/ Name of the administration.
2/ Strike out what does not apply.

_____

Annex 2

ARRANGEMENT OF THE APPROVAL MARK

.



.

The TBW or TLAS or TPMS bearing the above approval mark is a TBW or TLAS or TPMS that has been approved in Italy (E3) under approval number 001148.

The first two digits of the approval number indicate that the approval was granted in accordance with the requirements of Regulation No. XY in its original form.

The marking of approval mark, the Regulation number and approval number may be at a distance from each other respecting the sequence.

_____

Annex 3

ARRANGEMENT OF THE TBW OR TLAS or TPMS MARKINGS

Example of markings which shall be applied to a TBW or TLAS or TPMS conforming to this Regulation:

This example of marking defines a TBW or TLAS or TPMS:

manufactured in January 200x (xxxx)
the manufacturer’s part number (ab123)

- - - - - -