Proposal to replace the Working Document GRBP/2025/20 (Proposal for a new Supplement to the 03 series of amendments of UN Regulation No. 51)

The changes introduced to GRBP/2025/20 by the present Informal Document are marked in **blue** (bold and strikethrough).

I. Proposal

Add new paragraphs 11.17. and 11.18., to read:

"11.17. **Supplement 10 does not apply to existing type approvals and their extensions, granted prior to the date of entry into force of Supplement 10.**

11.18. **Supplement [11] does not apply to existing type approvals and their extensions, granted prior to the date of entry into force of Supplement [11]."**

Annex 3, paragraph 1.2., amend to read:

"1.2. ~~Calibration~~ **Verification and Adjustment** of the ~~e~~**E**ntire Acoustic Measurement System for ~~a~~ **Every** Measurement Session

The Technical Service shall determine the duration of a measurement session, which shall be no more than one day.

At the beginning ~~and at the end~~ of every measurement session the entire acoustic measurement system shall be checked by means of a sound calibrator of at least precision Class 1 according to IEC 60942:2003**, and – if the equipment allows it – adjusted to the reference values given by the calibrator**.

At the end of every measurement session, the entire acoustic measurement system shall be re-checked by means of the same sound calibrator which was used for the check at the beginning. Without any further adjustment the difference between the readings ~~of two consecutive checks~~ **at the beginning and at the end** shall be less than or equal to 0.5 dB~~(A)~~.

If ~~this value~~ **the difference** is ~~exceeded~~ **greater than 0.5 dB**, the results of the ~~measurements obtained after the previous satisfactory check~~ **whole measurement session** shall be discarded.

For indoor testing, the entire measurement system shall be checked at the beginning and at the end of a series of sessions.

Section 6 of ISO 362-3:2022 describes a ~~A~~ qualified calibration method (i.e. electrical calibration)**. Such a method** is recommended to be provided by the hardware supplier and, in that case, shall be implemented in the measurement software used. Simulation algorithms using sound source localization detection should deactivate that feature for these tests."

Annex 3, paragraph 2.2.2.3.4., amend to read:

"2.2.2.3.4. Calculation of the test mass of a virtual vehicle with two axles:

When a vehicle family is not represented by a two-axle vehicle because it is physically not available, the vehicle family can be represented by a vehicle with

more than two axles (vrf). In that case the test mass of a virtual two-axle vehicle ($m_{t\ (2\ axles\ virtual)}$) can be calculated in the following way:

For the calculation of the unladen vehicle mass of the virtual two-axle vehicle ($m_{unladen\ (2\ axles\ virtual)}$), take from the vehicle with more than two axles (vrf) the measured unladen front axle load ($m_{fa\ (vrf)\ load\ unladen}$) and the measured unladen rear axle load of that driven rear axle ($m_{ra\ (vrf)\ load\ unladen}$) which has the highest unladen load.

If the vehicle (vrf) has more than one front axle, take the one with the highest unladen front axle load.

~~→ $m_{unladen\ (2\ axles\ virtual)} = m_{fa\ (vrf)\ load\ unladen} + m_{ra\ (vrf)\ load\ unladen}$~~

~~→ $m_{xload\ (2\ axles\ virtual)} = m_{target} - (m_d + m_{unladen\ (2\ axles\ virtual)})$~~

$m_{unladen\ (2\ axles\ virtual)} = m_{fa\ (vrf)\ load\ unladen} + m_{ra\ (vrf)\ load\ unladen}$

$m_{xload\ (2\ axles\ virtual)} = m_{target} - (m_d + m_{unladen\ (2\ axles\ virtual)})$

Due to the requirement that the sum of the extra loading ($m_{xload\ (2\ axles\ virtual)}$) and the unladen rear axle load, $m_{ra\ (vrf)\ load\ unladen}$, is limited to 75 per cent of the technically permissible maximum laden mass allowed for the rear axle, $m_{ac\ ra\ max\ (2\ axles\ virtual)}$, this value, $m_{ac\ ra\ max\ (2\ axles\ virtual)}$, has to be chosen in such a way that it represents the rear axle of the forecasted highest production-volume in the manufacturer's variation with a technically permissible maximum laden mass allowed for the rear axle ($m_{ac\ ra\ max\ (chosen)}$) for the vehicle family as declared by the manufacturer.

~~→ $m_{ac\ ra\ max\ (4x2\ virtual)} = m_{ac\ ra\ max\ (chosen)}$~~

$m_{ac\ ra\ max\ (4x2\ virtual)} = m_{ac\ ra\ max\ (chosen)}$

If $m_{xload\ (2\ axles\ virtual)} \leq 0.75\ m_{ac\ ra\ max\ (chosen)} - m_{ra\ (vrf)\ load\ unladen}$

then

$m_{t\ (2\ axles\ virtual)} = m_{xload\ (2\ axles\ virtual)} + m_d + m_{fa\ (vrf)\ load\ unladen} + m_{ra\ (vrf)\ load\ unladen}$

and

$m_{t\ (2\ axles\ virtual)} = m_{target}$

If $m_{xload\ (2\ axles\ virtual)} > 0.75\ m_{ac\ ra\ max\ (chosen)} - m_{ra\ (vrf)\ load\ unladen}$

then

$m_{t\ (2\ axles\ virtual)} = 0.75\ m_{ac\ ra\ max\ (chosen)} + m_d + m_{fa\ (vrf)\ load\ unladen}$

and

$m_{t\ (2\ axles\ virtual)} < m_{target}$

The test mass of the vehicle with more than two axles representing the vehicle family is defined as followed:

$m_{t\ (vrf)} = m_{t\ (2\ axles\ virtual)}$

and the extra loading is calculated as

$m_{xload\ (vrf)} = m_{t\ (2\ axles\ virtual)} - m_d - m_{unladen\ (vrf)}$"

Annex 3, Appendix 2, paragraph 3.3.4., amend to read:

"3.3.4. For each gear, run**,** and vehicle side**,** extract the power train component $L_{PT,wot,j}$ from the reported acceleration test $L_{wot,j}$, by calculation.

$$L_{PT,wot,j} = 10 \times \lg\left(10^{0.1 \times L_{wot,j}} - 10^{0.1 \times L_{TR,wot,j,\vartheta_{wot}}}\right)$$

In case that

$$10^{0.1 \times L_{TR,wot,j,\vartheta_{wot}}} \geq 0.99 \times 10^{0.1 \times Lwot,j}$$

the power train component $L_{PT,wot,j}$ is determined by

$$L_{PT,wot,j} = 10 \times \lg\left(0.01 \times 10^{0.1 \times L_{wot,j}}\right)$$

with $L_{TR,wot,j,\vartheta wot}$ redefined as

$$L_{TR,wot,j,\vartheta wot} = 10 \times \lg(0.99 \times 10^{0.1 \times L_{wot,j}})$$

The redefined $L_{TR,wot,j,\vartheta wot}$ shall then be subjected to temperature correction in ~~3.2.3.~~ **paragraph 3.3.3.** to obtain the corresponding $L_{TR,wot,j,\vartheta ref.}$.

Calculate per gear the acceleration test result $L_{wot,j,\vartheta_{ref}}$

$$L_{wot,j,\vartheta_{ref}} = 10 \times \lg\left(10^{0.1 \times L_{PT,wot,j}} + 10^{0.1 \times L_{TR,wot,j,\vartheta_{ref}}}\right)"$$

Annex 7, paragraph 5.2., amend to read:

"5.2. The determination of gear α is as follows:

For vehicles tested in locked condition

- α = 3 for manual transmission and for automatic transmission ~~tested in locked position~~ with up to 5 gears;
- α = 4 for manual transmission and for automatic transmission ~~tested in locked position~~ with 6 or more gears. If the acceleration calculated from AA to BB + vehicle length in gear 4 exceeds 1.9 m/s², the first higher gear α > 4 with an acceleration lower than or equal to 1.9 m/s² shall be chosen. If there is no gear with an acceleration less than or equal to 1.9 m/s² available, the highest available gear shall be chosen.

~~For vehicles tested under locked condition, the gear ratio for further calculation shall be determined from the acceleration test result in Annex 3.~~

For vehicles tested under non-locked condition, the gear ratio for further calculation shall be determined from the acceleration test result in Annex 3 using the reported engine speed and vehicle speed at line BB'."

II. Justification

Paragraphs 2.8. to 2.8.3.

1. The definition related to power, with the change from GTR No.21 to UN Regulation No. 177 is removed. We found out some other issues with those paragraphs and prefer to postpone our amendment proposal on definition for February 2026.

Paragraph 11.17. and 11.18., transitional provisions for Supplements 10 and [11]

2. Supplement 10 introduced changes in the calculation of temperature and track corrections introduced in Supplement 7. Therefore, transitional provisions are needed, to avoid unnecessary measurements for type approval extensions.

3. Supplement [11] itself mainly adds the editorial amendments, however, because it is considered to include the content of previous Supplements up to Supplement 10 as well, transitional provisions are needed.

Annex 3, paragraph 1.2., calibration

4. It appeared necessary to define the extent of a measurement session. It is commonly agreed as good practice that when a measurement session must be suspended at the end of the day, a new check of the calibration is necessary before the microphones and the measuring equipment are uninstalled for the night. The sentence added at the beginning of this paragraph defines the maximum extend of a measurement session to one day.

5. Ambiguity did raise on the way of calibration, as the calibration is specified as a check of the system. It is proposed to describe the check procedure the way it is written in ISO 362-1.

6. Before a measurement session, a validation of the measuring system is always necessary, including an adjustment to the reference values given by the calibrator, when the system allows it. After a measurement session, a potential drift of the microphone calibration is re-checked. Here, without any further adjustment the system shall be within the 0,5 dB range, to validate the measurements which have been performed.

7. The procedure can be compared to the necessary tare function for scales, e.g. in supermarkets. Before the weight of goods is determined, customers expect that the scale is balanced to zero.

8. When testing indoor, the equipment is made of arrays of around 40 microphones, that do not need to be uninstalled overnight and are not submitted to change in weather conditions. Therefore, the painful calibration check of each microphone can be spaced over several measurement sessions. The reference to Section 6 of ISO 362-3:2022 is added, for reference to its simplified "electrical calibration" method. This method uses internal signals to the microphones from the data acquisition equipment and/or the sensors to calibrate all indoor microphones at once, giving a reliable indication of the stability of the calibration, thus allowing to space the individual calibration of each microphone.

Annex 3, paragraph 2.2.2.3.4., editorial correction

9. It is proposed to remove the arrows "➔" and replace them by an indent. There is no change in the formulas.

Annex 3, Appendix 2, paragraph 3.3.4., editorial correction

10. The referenced paragraph is wrongly referring to formulas regarding constant speed tests (crs). The correct number is referring to the formulas regarding accelerated tests (WOT). It is obviously an editorial error, since section 3.3. is only dealing with accelerated tests.

Annex 7, paragraph 5.2., gear ratios for $ASEP_{Lref}$

11. A title line is added, to separate the situations of locked and unlocked gear ratios in a clearer way.

12. The deleted sentence has been wrongly introduced in the text of Supplement 10 (GRBP-79-33-Rev.1). It was not the object of the amendment to this paragraph. The previous amendment to this paragraph was in Supplement 5 (E/ECE/324/Rev.1/Add.50/Rev.3/Amend.5), where this sentence was not present.

13. It is obviously an editorial error, as this sentence does not make sense, since the choice of gear ratio for the measurement or calculation of L_{ref} in the case of locked gear ratios is already clearly addressed in the same paragraph. It is then proposed to remove this sentence.