

Proposal for amendments to Regulation No.51.03

I. Proposal

Paragraph 2.24., amend to read:

"2.24 Table of symbols

<i>Symbol</i>	<i>Unit</i>	<i>Annex</i>	<i>Paragraph</i>	<i>Explanation</i>
.....
$v_{BB'}$	km/h	Annex 3	3.1.2.1.2. 3.1.2.2.	vehicle velocity when reference point or rear of vehicle passes line BB' (see 5.1. for definition of reference point); value to be reported and used for calculations to the first decimal place
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"

Annex 1 – Appendix 2

Paragraph 5., amend to read:

"5. ~~Suspension~~ **Running system**"

Annex 3

Paragraph 3.1.2.1.4.1., amend to read:

"3.1.2.1.4.1. Vehicles with manual transmission, automatic transmissions, adaptive transmissions or CVTs tested with locked gear ratios

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- (d) If the vehicle has a transmission in which there is only one selection for the gear ratio the acceleration test is carried out in this vehicle gear selection. The achieved acceleration is then used for the calculation of the part power factor k_p instead of $a_{wot\ ref}$.
- (e) If rated engine speed is exceeded in a gear ratio before the vehicle passes BB' the next higher gear shall be used. **In this condition, if the vehicle has only one selection for the gear ratio, the vehicle test speed, v_{test} , shall be reduced by 2.5 km/h until the rated engine speed is not exceeded.** ~~If the next higher gear results in an acceleration below a_{urban} , the vehicle test speed, v_{test} , shall be reduced by 2.5 km/h until the rated engine speed is not exceeded. and the gear ratio selection shall proceed as specified by the options given in this paragraph. In no case shall the vehicle test speed be reduced below 40 km/h. In this case, a gear ratio is allowed even if $a_{wot\ test}$ does not exceed a_{urban} .~~ "

Paragraph 3.1.2.1.6., amend to read:

"3.1.2.1.6. Constant speed test

The constant speed test shall be carried out with the same gear(s) **and a constant speed of the same vehicle test speed v_{pp}** specified for the acceleration test ~~and a constant speed of 50 km/h~~ with a tolerance of ± 1 km/h between AA' and BB'. During the constant speed test the acceleration control shall be positioned to maintain a constant speed between AA' and BB' as specified. If the gear is locked for the acceleration test, the same gear shall be locked for the constant speed test.

Paragraph 3.1.2.2.1.1., amend to read:

"3.1.2.2.1.1. Manual transmission, automatic transmissions, adaptive transmissions or transmissions with continuously variable gear ratios (CVTs) tested with locked gear ratios

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(d) ~~If one gear choice fulfils~~ **two gear choices fulfil** the target condition for the rotational engine speed $n_{\text{target BB'}}$ but not the target condition for the vehicle speed $v_{\text{target BB'}}$, use two gears, gear_x and gear_y. The target conditions for the vehicle speed for these two gears are as follows:

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(g) If the vehicle has a transmission in which there is only one selection for the gear ratio and can not fulfill the rotational engine speed $n_{\text{target BB'}}$ and target condition for the vehicle speed $v_{\text{target BB'}}$ at the same time, the rotational engine speed $n_{\text{target BB'}}$ should be fulfilled first and with $v_{\text{BB'}}$ not higher than 45km/h. And if the $n_{\text{target BB'}}$ can not get, the vehicle shall be tested using only the target vehicle speed $v_{\text{target BB'}}$.

A stable acceleration condition shall be insured. If a stable acceleration cannot be insured in a gear, this gear shall be disregarded. In all conditions, the rated engine speed shall not be exceeded while the reference point of the vehicle is in the measurement zone. If the rated engine speed is exceeded within the measurement zone, this gear shall be disregarded, **and if the vehicle has only one selection for the gear ratio, $n_{\text{target BB'}}$, shall be reduced by 5% of S until the rated engine speed is not exceeded."**

Paragraph 3.1.2.2.1.2., amend to read:

"3.1.2.2.1.2. Automatic transmission, adaptive transmissions, and transmissions with variable gear ratio tested with non-locked gear ratios

The gear selector position for full automatic operation shall be used.

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~~(f) If the vehicle includes a transmission design that provides only a single gear selection (D) that limits engine speed during the test, the vehicle shall be tested using only the target vehicle speed $v_{\text{target BB'}}$.~~

Terms need to clarify

1. Scope
The specifications in this Regulation are intended to reproduce the sound levels which are generated by vehicles during **normal driving in urban traffic**.

2.2.4. If the vehicle is fitted with more than two-wheel drive, it shall be tested in the drive which is intended for **normal road use**.

3.1.2.1.
.....

The path of the centreline of the vehicle shall follow line CC' as closely as possible throughout the entire test, from the approach to line AA' until the rear of the vehicle passes line BB'. If the vehicle is fitted with more than two-wheel drive, test it in the drive selection which is intended for **normal road use**.

If the vehicle is fitted with an auxiliary manual transmission or a multi-gear axle, the position used for **normal urban driving shall be used**. In all cases, the gear ratios for slow movements, parking or braking shall be excluded.

3.1.2.2.2. Acceleration test

When the reference point of the vehicle reaches the line AA' the accelerator control shall be fully depressed (without operating the automatic downshift to a lower range than **normally used in urban driving**) and held fully engaged until the reference point reaches BB' + 5 m. The acceleration control unit can then be released on request of the manufacturer.

II. Justification

1. Paragraph 2.24. The definition of $v_{BB'}$ is different for 3.1.2.1.2. and 3.1.2.2.
2. Annex 1 - Appendix 2 Paragraph 5 The description is all about axles, wheels and tyres, which are all not part of suspension but running system.
3. Annex 3 Paragraph 3.1.2.1.4.1. There are some problems for the flowchat of item (e), if the following conditions happen, how to carry out the tests?
 - a) If gear i exceed the rated engine speed, then gear $i+1$ should be used. But gear $i+1$ has acceleration lower than a_{urban} , so we come back to gear i and lower the test speed which is higher than 40km/h at least. Finally the rated engine speed is not exceeded in gear i , but we find the acceleration of gear i is higher than $2m/s^2$. We choose gear i or gear $i+1$ or gear i and $i+1$ both?
 - b) If the vehicle has only one selection for the gear ratio, there is not a next higher gear to choose. What we should do then?
4. Annex 3 Paragraph 3.1.2.1.6. If the acceleration test is carried out at the speed 40, 42.5, 45 or 47.5km/h, what the speed for constant tests?
5. Annex 3 Paragraph 3.1.2.2.1.1. The condition of vehicles with only one selection for the gear ratio has been considered for $M_1, N_1, M_2(\leq 3500kg)$, it should also be considered for $M_2(> 3500kg), M_3, N_2, N_3$ categories even it will nearly not happen.
6. Annex 3 Paragraph 3.1.2.2.1.2. For vehicles with D position only, the test method has said clearly that we use full automatic operation, and the condition of item (f) has been included in the items from (a) to (e).