

**Economic and Social Council**Distr.: General  
26 October 2016

Original: English

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**Economic Commission for Europe****Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on Pollution and Energy****Seventy-fourth session**

Geneva, 10-13 January 2017

Item 3(a) of the provisional agenda

**Light vehicles – Regulations Nos. 68 (Measurement of the maximum speed, including electric vehicles), 83 (Emissions of M<sub>1</sub> and N<sub>1</sub> vehicles), 101 (CO<sub>2</sub> emissions/fuel consumption) and 103 (Replacement pollution control devices)****Proposal for a new Supplement to the 06 and 07 series of amendments to Regulation No. 83 (Emissions of M<sub>1</sub> and N<sub>1</sub> vehicles)****Submitted by the expert from the International Organization of Motor Vehicle Manufacturers\***

The text reproduced below was prepared by the expert from the International Organization of Motor Vehicle Manufacturers (OICA) to adapt the provisions of the 06 and 07 series of amendments to Regulation No. 83 on Selective Catalytic Reduction (SCR) warning and inducement systems to current vehicles, emissions requirements and reagent infrastructure. The modifications to the current text of the Regulation are marked in bold for new or strikethrough for deleted characters.

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\* In accordance with the programme of work of the Inland Transport Committee for 2014–2018 (ECE/TRANS/240, para. 105 and ECE/TRANS/2014/26, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

## I. Proposal

*Appendix 6,*

*Paragraph 3.5.,* amend to read:

"3.5. The warning system shall activate at **the latest one of the following distances at the choice of the manufacturer:**

- (a) A distance equivalent to a driving range of at least 2,400 km in advance of the reagent tank becoming empty; **or**
- (b) **A distance equivalent to a driving range of at least 10 per cent of the capacity of the reagent tank."**

*Paragraph 8.2.,* amend to read:

"8.2. The inducement system shall activate at the latest **one of the following levels at the choice of the manufacturer:**

- (a) When the level of reagent in the tank reaches a level equivalent to the average driving range of the vehicle with a complete tank of fuel; **or**
- (b) **When the level of reagent in the tank equals at least 2.5 per cent of the capacity of the reagent tank.**

The system shall also activate when the failures in paragraphs 4., 5., or 6. above have occurred, depending on the NO<sub>x</sub> monitoring approach. The detection of an empty reagent tank and the failures mentioned in paragraphs 4., 5., or 6. above shall result in the failure information storage requirements of paragraph 7. above coming into effect."

*Paragraph 8.3.1.,* amend to read:

"8.3.1. A "no engine restart after countdown" approach allows a countdown of restarts or distance remaining once the inducement system activates. Engine starts initiated by the vehicle control system, such as start-stop systems, are not included in this countdown. Engine restarts shall be prevented ~~immediately after the reagent tank becomes empty or a distance equivalent to a complete tank of fuel has been exceeded since the activation of the inducement system, whichever occurs earlier.~~ **after the applicable one of the following distances has been exceeded since the activation of the inducement system:**

- (a) **In the case that the option described in 8.2.1.(a) is used, a distance equivalent to a complete tank of fuel; or**
- (b) **In the case that the option described in 8.2.1.(b) is used, a distance equivalent to at least 2.5 per cent of the capacity of the reagent tank;**

**or immediately after the reagent tank becomes empty, whichever occurs earlier."**

Paragraph 8.3.4., amend to read:

"8.3.4. A "performance restriction" approach restricts the speed of the vehicle after the inducement system activates. The level of speed limitation shall be noticeable to the driver and significantly reduce the maximum speed of the vehicle. Such limitation shall enter into operation gradually or after an engine start. Shortly before engine restarts are prevented, the speed of the vehicle shall not exceed 50 km/h. Engine restarts shall be prevented ~~immediately after the reagent tank becomes empty or a distance equivalent to a complete tank of fuel has been exceeded since the activation of inducement system, whichever occurs earlier.~~ **after the one of the applicable following distances has been exceeded since the activation of the inducement system:**

- (a) **In the case that the option described in 8.2.1.(a) is used, a distance equivalent to a complete tank of fuel; or**
- (b) **In the case that the option described in 8.2.1.(b) is used, a distance equivalent to at least 2.5 per cent of the capacity of the reagent tank;**

**or immediately after the reagent tank becomes empty, whichever occurs earlier."**

Paragraph 8.4., amend to read:

"8.4. Once the inducement system has fully activated and disabled the vehicle, the inducement system shall only be deactivated if the quantity of reagent added to the vehicle is equivalent to **one of the following distances at the choice of the manufacturer:**

- (a) 2,400 km average driving range; **or**
- (b) **A distance equivalent to a driving range of at least 10 per cent of the capacity of the reagent tank;**

or the failures specified in paragraphs 4., 5., or 6. of this appendix have been rectified. After a repair has been carried out to correct a fault where the OBD system has been triggered under paragraph 7.2. above, the inducement system may be reinitialised via the OBD serial port (e.g. by a generic scan tool) to enable the vehicle to be restarted for self-diagnosis purposes. The vehicle shall operate for a maximum of 50 km to enable the success of the repair to be validated. The inducement system shall be fully reactivated if the fault persists after this validation."

## II. Justification

1. The first introduction of reagent-based NO<sub>x</sub>-aftertreatment required the acceptance of the customer for an additional consumable operating fluid. For this reason, the reagent tank size was designed to require reagent refuelling only at regular service intervals. Therefore, a long-range driver warning to refill AdBlue® was needed to cater for normal servicing intervals, arrange AdBlue®/workshop availability and to plan accordingly. This need is reflected by the current legal requirements which can be summarized as follows.

2. For passenger cars the warning indicator to refill AdBlue® has to be activated at 2,400 km of remaining reagent range. The inducement system, which encourages the

customer to refill the reagent tank, has to be activated at least at a fuel-range of one tank. This is equivalent to approximately 800 km.

3. The need for further vehicle weight reduction for CO<sub>2</sub> optimisation and vehicle packaging problems will imply smaller AdBlue® tanks. The European Union-wide roll-out of easy AdBlue® refilling (with needed political support to ongoing industry activities) must start happening. Customers are generally familiar with AdBlue® (but increased communications will be needed as SCR is widely applied) and refilling will be eased by the roll-out of AdBlue® pump nozzles next to diesel pumps – therefore the need for more frequent AdBlue® refilling by the customer can be addressed. Collaboration is needed.

4. Service stations where AdBlue® can be purchased can be found online, for example [www.findadblue.com](http://www.findadblue.com) and industry is working on several pilot projects at filling stations for car AdBlue® refilling.

5. With the necessary focus on smaller AdBlue® tanks, the current warning scenario distance of 2,400 km would equal a high percentage of the total reagent tank volume across the diesel car fleet and would result in customers needing to refill the AdBlue® tank at nearly every other refuelling stop.

6. In the United States of America, where larger distances are driven on average compared to Europe, 1,000 miles was fixed by the Environmental Protection Agency (EPA) as the warning scenario limit for AdBlue® in 2007, even without the security of a more widespread AdBlue® refilling infrastructure at that time.

7. For heavy-duty vehicles, the warning has to be activated at least at a reagent level of 10 per cent of total reagent tank volume. The inducement system has to be activated at least at 2.5 per cent of reagent level.

8. Considering the improved AdBlue® refilling infrastructure leading to easier refilling of AdBlue® by customers, increased customer knowledge and acceptance of AdBlue®, the activation of the warning/inducement should be adopted according to these values.

9. The provisions should permit the manufacturer in agreement with the Type Approval Authority to determine the starting point for warning and inducement system activation within reasonable limits for the vehicle type to avoid unsatisfied customers facing frequent and untimely warning messages. The warning and inducement requirements for heavy-duty vehicles provides a reasonable starting point, which should be taken over into the Euro 6 legislation as an option for the manufacturer.

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