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**Economic Commission for Europe****Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on General Safety Provisions****111th session**

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Item 9 of the provisional agenda

**Regulation No. 110 (CNG and LNG vehicles)****Proposal for amendments to Regulation No. 110  
(CNG and LNG vehicles)****Submitted by the expert from France\***

The text reproduced below was prepared by the expert from France. It is proposed to amend Regulation No. 110 by incorporating provisions concerning refrigeration systems for cooling the cargo compartment which are connected to the compressed natural gas (CNG) and/or liquefied natural gas (LNG) system. The modifications to the current text of the Regulation are marked in bold for new or strikethrough for deleted characters. This document is based on document ECE/TRANS/WP.29/GRSG/2015/36 and informal document GRSG-110-23, which was submitted to the Working Party at its 110th session (see the report of the session, contained in document ECE/TRANS/WP.29/GRSG/89, paras. 31, 32 and 39).

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\* In accordance with the programme of work of the Inland Transport Committee for 2016-2017 (ECE/TRANS/254, para. 159, and ECE/TRANS/2016/28/Add.1, cluster 3.1), 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

### Part II

Approval of vehicles with regard to the installation of specific components of an approved type for the use of compressed natural gas (CNG) and/or liquefied natural gas (LNG) in their propulsion system

*Paragraphs 18.1.7.1 and 18.1.7.2, amend to read:*

“18.1.7.1 Notwithstanding the provisions of paragraph 18.1.7, vehicles may be fitted with a heating system to heat the passenger compartment and/or the load area **or a refrigeration system to cool the cargo compartment** which is connected to the CNG and/or LNG system.

18.1.7.2 The heating **or refrigeration** system referred to in paragraph 18.1.7.1 shall be permitted if, in the view of the Technical Services responsible for conducting type approval, the heating **or refrigeration** system is adequately protected and the required operation of the normal CNG and/or LNG system is not affected.”

*Paragraph 18.5.1.3, amend to read:*

“18.5.1.3 Notwithstanding the provisions of paragraph 18.5.1.2,

(a) the automatic cylinder valve may stay in an open position during commanded stop phases, and

(b) in the case where a fire alarm system is installed in the autonomous CNG **and/or LNG** heater compartment, the automatic valve(s) may be opened by an electronic control unit **to permit the warming of the engine. Any defect or failure of the system shall cause the automatic valve of the cylinder supplying the heating system to close, and**

(c) **in the case where a fire alarm system is installed in the refrigeration system compartment of the cargo compartment, the automatic valve(s) may be opened by an electronic control unit to permit the cooling of the cargo compartment. Any defect or failure of the system shall cause the automatic valve of the cylinder supplying the refrigeration system to close.**”

### *Annex 1A*

*Items 1.2.4.5.15 to 1.2.4.5.15.3, amend to read (footnote <sup>1</sup> remains unchanged):*

“1.2.4.5.15 Connection to CNG/LNG system for heating system: yes/no<sup>1</sup>

**or connection to CNG/LNG system for refrigeration system: yes/no<sup>1</sup>**

1.2.4.5.15.1 **Make(s) of the heating system:**

1.2.4.5.15.2 **Type(s) of the heating system:**

1.2.4.5.15.3 **Description and drawings of installation of the heating system:”**

*Insert new items 1.2.4.5.15.4 to 1.2.4.5.15.6, to read:*

**“1.2.4.5.15.4 Make(s) of the refrigeration system:**

**1.2.4.5.15.5 Type(s) of the refrigeration system:**

**1.2.4.5.15.6 Description and drawings of installation of the refrigeration system:”**

### *Annex 1B*

*Items 1.2.4.5.15 to 1.2.4.5.15.3, amend to read (footnote <sup>2</sup> remains unchanged):*

“1.2.4.5.15 Connection to CNG/LNG system for heating system: yes/no<sup>2</sup>  
**or connection to CNG/LNG system for refrigeration system: yes/no<sup>2</sup>**

1.2.4.5.15.1 **Make(s) of the heating system:**

1.2.4.5.15.2 **Type(s) of the heating system:**

1.2.4.5.15.3 **Description and drawings of installation of the heating system:”**

*Insert new items 1.2.4.5.15.4 to 1.2.4.5.15.6, to read:*

**“1.2.4.5.15.4 Make(s) of the refrigeration system:**

**1.2.4.5.15.5 Type(s) of the refrigeration system:**

**1.2.4.5.15.6 Description and drawings of installation of the refrigeration system:”**

## II. Justification

1. Amendment to paragraph 18.1.7.1: Currently, paragraph 18.1.7.1 allows heating systems to be fitted on vehicles to heat the passenger compartment and/or the cargo compartment of a vehicle. The addition of “refrigeration systems” in this paragraph expands the potential applications of natural gas vehicles and allows manufacturers of refrigeration systems to use the gas contained in the fuel tanks to supply the refrigeration unit. New markets would be opened up for these manufacturers. The use of natural gas would considerably reduce low particle emissions and noise from the refrigeration unit. This concerns vehicles transporting and delivering perishable products in urban areas.

2. Amendment to paragraph 18.1.7.2: The requirements applicable to the heating system have been extended to the refrigeration system.

3. Amendment to paragraph 18.1.5.3: This paragraph has been amended to take account of these developments. It provides that the automatic cylinder valve may remain open in order to supply the heating or refrigeration system. Several cylinders may remain open if the period during which the heating or refrigeration system is in operation so requires. As soon as a defect or failure is detected, as a security measure the automatic valve of each cylinder supplying the system must close. The fire alarm system ensures that all serious risks are detected and addressed.

4. Amendments to annexes 1A and 1B: In annex 1A (Essential characteristics of the CNG/LNG components) and annex 1B (Essential characteristics of the vehicle, engine and CNG/LNG-related system), items 1.2.4.5.15, 1.2.4.5.15.1, 1.2.4.5.15.2 and 1.2.4.5.15.3 have been amended and items 1.2.4.5.15.4, 1.2.4.5.15.5 and 1.2.4.5.15.6 have been inserted to ensure that the presence of the refrigeration system is indicated, along with its make and type.