

**Economic and Social Council**Distr.: General  
19 July 2012

Original: English

---

**Economic Commission for Europe**

Inland Transport Committee

**World Forum for Harmonization of Vehicle Regulations****Working Party on General Safety Provisions****103<sup>rd</sup> session**

Geneva, 2–5 October 2012

Item 7 of the provisional agenda

**Regulation No. 110 (Specific equipment for CNG)****Proposal for amendments to Regulation No. 110  
(Specific equipment for CNG)****Submitted by the expert from the European Association of Automotive  
Suppliers\***

The text reproduced below was produced by the expert from European Association of Automotive Suppliers (CLEPA) to introduce type approval provisions for compressed natural gas (CNG) control functionality included in the engine control unit, and, for control functionality which is used in vehicles with start-stop system. The purpose of this document is similar to that specified in ECE/TRANS/WP.29/GRSG/2012/24 for the insertion into UN Regulation No. 67 of new provisions on Liquefied Petroleum Gas (LPG) fuel selection systems. The modification to the current text of Regulation No. 110 is marked in bold or new or strikethrough or deleted characters.

---

\* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106 and ECE/TRANS/2010/8, 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

*Part II, paragraph 17.1.2., insert new paragraph 17.1.2.1., to read:*

"17.1.2. All components of the system shall be type approved as individual parts pursuant to Part I of this Regulation.

**17.1.2.1. Notwithstanding the provisions of paragraph 17.1.2., if the CNG demand control is integrated in the engine electronic control unit and is type approved in a vehicle installation during vehicle type approval according to Regulation No. 110 part II and Regulation No. 10, a separate type approval of the ECU is not necessary. The vehicle type approval shall be pursuant to the applicable provisions laid down in Annex 4H."**

*Part II, paragraph 17.5.1., insert new paragraph 17.5.1.3., to read:*

**"17.5.1.3. The automatic cylinder valve shall stay in an open position during the commanded stop phase of an automatic stop-start system for a maximum time of 100 seconds."**

*Part II, paragraph 17.10.2., amend to read:*

"17.10.2. Vehicles with more than one fuel system shall have a fuel selection system ~~to ensure that no more than one fuel at the same time is supplied to the engine for more than 5 seconds which prevents both a flow of gaseous fuel into the petrol tank and a flow of petrol into the gaseous fuel tank also in case of a single fault. The measure shall be demonstrated during the type approval. "Dual fuel" vehicles, using diesel as the primary fuel for igniting the air/gas mixture, are allowed in cases where these engines and vehicles meet mandatory emission standards.~~

*Annex 4H, insert new paragraph 2.1.1., to read:*

**"2.1.1. The automatic cylinder valve shall stay in an open position during the commanded stop phase of an automatic stop-start system for a maximum time of 100 seconds."**

## II. Justification

1. Reference paragraph 17.1.2.1.

Engine control units (ECU) can only be operated normally in the specific vehicle environment for which they are designed and calibrated. Therefore, ECUs for gasoline and diesel vehicles are only type approved in a vehicle installation during vehicle type approval. There is no separate ECU type approval, as is currently required for CNG (or Liquefied Petroleum Gas (LPG)) ECUs. Engine control units which contain CNG functionality (for mono- or bivalent gas vehicles) should be type approved like ECUs for gasoline and diesel vehicles. The proposed amendment introduces the type approval of an electronic control unit which contains CNG functionality during the vehicle type approval.

The type approval according to UN Regulation No. 10 is mandatory for the ECU. According to paragraph 4.1.1.1. of this Regulation, type approval in a vehicle installation can be chosen.

2. Reference paragraph 17.5.1.3. and Annex 4H

The start-stop functionality of the engine will be used in CNG vehicle systems to reduce CO<sub>2</sub> emissions. Thereby, the number of opening/closing cycles of the CNG tank valves will be increased by a factor of ten. It is proposed to let the tank valves stay open in a commanded start-stop phase as it is the case for the idling phase of vehicles without start-stop system. Thereby, the same durability requirement as regards opening/closing cycles of the valves as for non-start-stop systems is preserved. The automatic cylinder valve shall stay in an open position to assure a correct and save operation of the valve over the life of the vehicle. Thereby, different durability requirements as regards opening/closing cycles for the type approval can be avoided.

3. Reference paragraph 17.10.2.

Mixed fuel operation can provide advantages for biofuel vehicles. There is no safety risk in running in a mixed fuel operation mode. However, for safety issues it shall be ensured that there is no flow of fuel into the other fuel tank. Therefore, this proposal replaces the restriction for mixed fuel operation by a prohibition of a flow of gaseous fuel into the petrol or diesel tank and a prohibition of a flow of petrol or diesel into the gaseous fuel tank. This shall be avoided under all temperature and pressure conditions and also in case of a single fault. UN Regulation No. 110 regulates only safety issues. The mandatory requirements for emissions are part of UN Regulation No. 83.

---