

22 February 2017

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## Agreement

### **Concerning the Adoption of Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of these Prescriptions\***

(Revision 2, including the amendments which entered into force on 16 October 1995)

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#### **Addendum 48 – Regulation No. 49**

#### **Revision 6 - Amendment 4**

Supplement 4 to the 06 series of amendments – Date of entry into force: 9 February 2017

#### **Uniform provisions concerning the measures to be taken against the emission of gaseous and particulate pollutants from compression-ignition engines and positive ignition engines for use in vehicles**

This document is meant purely as documentation tool. The authentic and legal binding text is: ECE/TRANS/WP.29/2016/41.



**UNITED NATIONS**

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\* Former title of the Agreement: Agreement Concerning the Adoption of Uniform Conditions of Approval and Reciprocal Recognition of Approval for Motor Vehicle Equipment and Parts, done at Geneva on 20 March 1958.

GE.17-01812(E)



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Annex 4,

Paragraphs 9.2.1. and 9.2.1.1., amend to read:

"9.2.1. Linearity verification

9.2.1.1. Introduction

A linearity verification shall be performed for each measurement system listed in Table 7. At least 10 reference values, or as specified otherwise, shall be introduced to the measurement system. For stand-alone pressure and temperature linearity verifications, at least three reference values shall be selected. The measured values shall be compared to the reference values by using a least squares linear regression in accordance with equation 11 in paragraph 7.8.7. The maximum limits in Table 7 refer to the maximum values expected during testing."

Annex 9A,

Paragraph 2.3.1., amend to read:

"2.3.1. Malfunctioning injectors

As an alternative to the monitor specified in line (d) of the table in item 7 of Appendix 3 to Annex 9B to this Regulation, the manufacturer may opt for compliance with the provisions specified in paragraphs 2.3.1.1. to 2.3.1.2.1. of this annex."

Annex 9B,

Appendix 3, Item 7, amend to read:

"Fuel System monitoring

The OBD system shall monitor the following elements of the fuel system on engines so-equipped for proper operation:

	<i>Diesel</i>	<i>Gas</i>
(a) Fuel system pressure control: fuel system ability to achieve the commanded fuel pressure in closed loop control - performance monitoring.	X	
(b) Fuel system pressure control: fuel system ability to achieve the commanded fuel pressure in closed loop control in the case where the system is so constructed that the pressure can be controlled independently of other parameters - performance monitoring.	X	
(c) Fuel injection timing: fuel system ability to achieve the commanded fuel timing for at least one of the injection events when the engine is equipped with the appropriate sensors - performance monitoring.	X	
(d) Fuel injection quantity: fuel system ability to achieve the commanded fuel quantity by detecting errors from desired fuel quantity in at least one of the injection events when the engine is equipped with the appropriate sensors (e.g. in pre- main- or post-injection) – emission threshold monitoring.	X	

	<i>Diesel</i>	<i>Gas</i>
(e) Fuel injection system: ability to maintain the desired air-fuel ratio (incl. but not limited to self-adaptation features) – performance monitoring.		X

"

*Annex 10,*

*Paragraph 11.,* amend to read:

"11. Documentation

The Type Approval Authority shall require that the manufacturer provides a documentation package. This should describe any element of design and emission control strategy of the engine system and the means by which it controls its output variables, whether that control is direct or indirect.

The information shall include a full description of the emission control strategy. In addition, this shall include information on the operation of all AES and BES, including a description of the parameters that are modified by any AES and the boundary conditions under which the AES operate, and indication of which AES and BES are likely to be active under the conditions of the test procedures in this annex.

This information shall be made available in the "extended documentation package" according to the documentation requirements specified in paragraph 5.1.4."

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