

Proposal for amendments to the Original series of amendments to UN Regulation No. 154

This document aims to clarify OBD monitoring requirements for combustion-ignition engines with regard to Level 1A and Level 1B. The modifications to the current text of the Regulation are marked in bold for new or strikethrough for deleted characters.

I. Proposal

Annex C5, paragraph 3.3.4., amend to read:

"3.3.4. Monitoring requirements for vehicles equipped with compression-ignition engines
In satisfying the requirements of paragraph 3.3.2. of this annex the OBD system shall monitor:

~~For Level 1A:~~

3.3.4.1. This paragraph is only applicable for Level 1A

~~3.3.4.1.~~ **3.3.4.1.1.** Where fitted, reduction in the efficiency of the catalytic converter.

~~3.3.4.2.~~ **3.3.4.1.2.** Where fitted, the functionality and integrity of the particulate trap.

~~3.3.4.3.~~ **3.3.4.1.3.** The fuel-injection system electronic fuel quantity and timing actuator(s) is/are monitored for circuit continuity and total functional failure.

~~3.3.4.4.~~ **3.3.4.1.4.** Other emission control system components or systems, or emission-related power-train components or systems, which are connected to a computer, the failure of which may result in exhaust emissions exceeding any of the OBD thresholds set out in paragraph 6.8.2. of this Regulation. Examples of such systems or components are those for monitoring and control of air mass-flow, air volumetric flow (and temperature), boost pressure and inlet manifold pressure (and relevant sensors to enable these functions to be carried out).

~~3.3.4.5.~~ **3.3.4.1.5.** Unless otherwise monitored, any other emission-related power-train component connected to a computer shall be monitored for circuit continuity.

~~3.3.4.6.~~ **3.3.4.1.6.** Malfunctions and the reduction in efficiency of the EGR system shall be monitored.

~~3.3.4.7.~~ **3.3.4.1.7.** Malfunctions and the reduction in efficiency of a NO_x after-treatment system using a reagent and the reagent dosing sub-system shall be monitored.

~~3.3.4.8.~~ **3.3.4.1.8.** Malfunctions and the reduction in efficiency of NO_x after-treatment not using a reagent shall be monitored.

~~For Level 1B:~~

3.3.4.2. This paragraph is only applicable for Level 1B

3.3.4.2.1. Any emission-related power-train component connected to a computer shall be monitored for circuit continuity.

3.3.4.2.2. Circuit monitor list
(a) Atmosphere pressure sensor
[...]"

Annex C5, paragraph 4.3.; amend to read:

"4.3. In determining the identified order of deficiencies, deficiencies relating to paragraphs 3.3.3.1., 3.3.3.2. and 3.3.3.3. of this annex for positive ignition engines and paragraphs ~~3.3.4.1.~~ **3.3.4.1.1.**, ~~3.3.4.2.~~ **3.3.4.1.2.** and ~~3.3.4.3.~~ **3.3.4.1.3.** of this annex for compression-ignition engines shall be identified first."

Annex C5, paragraph 3.6.1.; amend to read:

"3.6.1. The OBD system shall record pending and confirmed fault code(s) indicating the status of the emission control system. Separate status codes (readiness codes) shall be used to identify correctly functioning emission control systems and those emission control systems which need further vehicle operation to be fully evaluated. If the MI is activated due to deterioration or malfunction or permanent emission default modes of operation, a fault code shall be stored ECE/TRANS/WP.29/2020/77 573 that identifies the type of malfunction. A fault code shall also be stored in the cases referred to in paragraphs 3.3.3.5. and ~~3.3.4.5.~~ **3.3.4.1.5.** of this annex."

Annex C5 - Appendix 1, paragraph 6.4.2.1.; amend to read:

"6.4.2.1. After vehicle preconditioning according to paragraph 6.2. of this appendix, the test vehicle is driven over a Type 1 test. The MI shall be activated at the latest before the end of this test under any of the conditions given in paragraphs 6.4.2.2. to 6.4.2.5 of this appendix. The MI may also be activated during preconditioning. The technical service may substitute those failure modes by others in accordance with paragraph ~~3.3.4.4.~~ **3.3.4.1.4.** of this annex. However, the total number of failures simulated shall not exceed four (4) for the purposes of type approval."

II. Justification

1. Contrary to the annotation in the rest of the document under Chapter 3.3.4 a reference to Level 1A can be found which has no related requirement.
 2. Under 3.3.4.8 there is a monitoring requirement for NOx after-treatment as well as a completely unrelated requirement for Level 1B circuit continuity monitoring.
 3. The requirement for Level 1B under 3.3.4.8 is somewhat redundant to the requirement given under 3.3.4.5.
 4. Given the fact that there are no OBD-thresholds specified for Level 1B certification of compression ignition engines. The requirements under 3.3.4.1 to 3.3.4.8 are not rationally applicable for Level 1B certification.
 5. Conclusion: The requirements given under 3.3.4.1 to 3.3.4.8 are related solely to Level 1A certification, and only the requirements under 3.3.4.8 referring to Level 1B have to be fulfilled for Level 1B certification.
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