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World Forum for Harmonization of Vehicle Regulations

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Item 4.10.1 of the provisional agenda
1958 Agreement – Consideration of draft amendments to existing Regulations submitted by GRPE

Proposal for Supplement 1 to the 06 series of amendments to Regulation No. 49 (emissions of C.I. and P.I. (NG and LPG))

Submitted by the Working Party on Pollution and Energy*

Corrigendum

1. Page 24, paragraph 6.1 and the following Table 1

For

6.1. Dual-fuel engines shall be subject to the laboratory tests specified in table 1

* 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.

Table 1
Laboratory tests to be performed by a HDDF engine

	Type 1A	*Type 1B*	*Type 2A*
WHTC	NMHC; CH_4; CO; NO_x; PM; PN;NH_3	Dual-fuel mode:	THC; NMHC; CH_4
		NMHC; CH_4	CO; NO_x; PM; PN; NH_3
		CO; NO_x;	
		PM; PN; NH_3	
		Diesel mode:	
		THC	
		CO; NO_x	
		PM; PN; NH_3	
WHSC	no test	Dual-fuel mode:	NMHC;
		no test	CO; NO_x
			PM; PN; NH_3
		Diesel mode:	
		THC	
		CO; NO_x	
		PM; PN; NH_3	
WNTE laboratory test	no test	Dual-fuel mode:	[HC]
		no test	CO; NO_x
			PM
		Diesel mode:	
		THC	
		CO; NO_x	
		PM	

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6.1. Dual-fuel engines shall be subject to the laboratory tests specified in Table 1.

Table 1
Laboratory tests to be performed by a dual-fuel engine

	Type 1A	*Type 1B*	*Type 2A*	*Type 2B*	*Type 3B*
WHTC	NMHC; CH_4; CO; NO_x; PM; PN; NH_3	Dual-fuel mode: NMHC; CH_4; CO; NO_x; PM; PN; NH_3 Diesel mode: THC; CO; NO_x; PM; PN; NH_3	THC; NMHC; CH_4; CO; NO_x; PM; PN; NH_3	Dual-fuel mode: THC; NMHC; CH_4; CO; NO_x; PM; PN; NH_3 Diesel mode: THC; CO; NO_x; PM; PN; NH_3	THC; CO; NO_x; PM; PN; NH_3
WHSC	no test	Dual-fuel mode: no test Diesel mode: THC; CO; NO_x; PM; PN; NH_3	NMHC; CO; NO_x; PM; PN; NH_3	Dual-fuel mode: NMHC; CO; NO_x; PM; PN; NH_3 Diesel mode: THC; CO; NO_x; PM; PN; NH_3	THC; CO; NO_x; PM; PN; NH_3
WNTE laboratory test	no test	Dual-fuel mode: no test Diesel mode: THC; CO; NO_x; PM	[HC]; CO; NO_x; PM	Dual-fuel mode: [HC]; CO; NO_x; PM Diesel mode: THC; CO; NO_x; PM	THC; CO; NO_x; PM

2. Page 30, paragraph 12

For

Appendix 2 Activation and deactivation mechanisms of the counter(s), warning system, operability restriction, service mode in case of HDDF engines and vehicles- Description and illustrations

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Appendix 2 Activation and deactivation mechanisms of the counter(s), warning system, operability restriction, service mode in case of dual fuel engines and vehicles- Description and illustrations

3. Page 32, the title of Annex 15 - Appendix 2

For

Activation and deactivation mechanisms of the counter(s), warning system, operability restriction, service mode in case of HDDF engines and vehicles -

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Activation and deactivation mechanisms of the counter(s), warning system, operability restriction, service mode in case of dual-fuel engines and vehicles - Description and illustrations

4. Page 39, paragraph A.3.1.3

For

A.3.1.3. Service mode indicator

In the case where a dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the service mode indicator when operating in service mode shall be demonstrated at type-approval.

In the case where a dual-fuel engine is type approved with regard to its emissions, the activation of the service mode indicator when operating in service mode shall be demonstrated at type-approval.

Note: Installation requirements related to the service mode indicator of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

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A.3.1.3. Service mode indicator

In the case where a dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the service mode indicator when operating in service mode shall be demonstrated at type-approval.

In the case where a dual-fuel vehicle is type approved with regard to its emissions, the activation of the service mode indicator when operating in service mode shall be demonstrated at type-approval.

Note: Installation requirements related to the service mode indicator of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

5. Page 40, paragraphs A.3.3 and A.3.3.1 (appearing twice in the text)

For

A.3.3. Operability restriction

In the case where a Type 1A or Type 2A dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel shall be demonstrated at type-approval.

In the case where a Type 1A or Type 2A dual-fuel vehicle is type approved as regards to its emissions, the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel mode shall be demonstrated at type-approval.

Note: Installation requirements related to the operability restriction of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

A.3.3.1. The malfunctioning of the gas supply and the abnormality of gas consumption may be simulated at the request of the manufacturer and with the approval of the approval authority.

In the case where a Type 1A or Type 2A dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the operability restriction upon detection of an empty gaseous

fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel shall be demonstrated at type-approval.

In the case where a Type 1A or Type 2A dual-fuel vehicle is type approved as regards to its emissions, the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel mode shall be demonstrated at type-approval.

Note: Installation requirements related to the operability restriction of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

A.3.3.1. The malfunctioning of the gas supply and the abnormality of gas consumption may be simulated at the request of the manufacturer and with the approval of the approval authority.

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A.3.3. Operability restriction

In the case where a Type 1A or Type 2A dual-fuel engine is type approved as a separate technical unit, the ability of the engine system to command the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel mode shall be demonstrated at type-approval.

In the case where a Type 1A or Type 2A dual-fuel vehicle is type approved as regards to its emissions, the activation of the operability restriction upon detection of an empty gaseous fuel tank, of a malfunctioning gas supply system, and of an abnormality of gas consumption in dual-fuel mode shall be demonstrated at type-approval.

Note: Installation requirements related to the operability restriction of an approved dual-fuel engine are specified in paragraph 6.2. of this Annex.

A.3.3.1. The malfunctioning of the gas supply and the abnormality of gas consumption may be simulated at the request of the manufacturer and with the approval of the approval authority.