

COMMISSION IMPLEMENTING REGULATION (EU) 2018/988**of 27 April 2018****amending and correcting Implementing Regulation (EU) 2017/656 laying down the administrative requirements relating to emission limits and type-approval of internal combustion engines for non-road mobile machinery in accordance with Regulation (EU) 2016/1628 of the European Parliament and of the Council****(Text with EEA relevance)**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013 and amending and repealing Directive 97/68/EC ⁽¹⁾, and in particular Articles 18(5), 21(3), 23(5), 24(12) and 32(3) thereof,

Whereas:

- (1) Commission Implementing Regulation (EU) 2017/656 ⁽²⁾ lays down, inter alia, the templates for certain documents to be drawn up in the context of the EU type-approval of internal combustion engines for non-road mobile machinery. Given a number of errors and omissions, those templates should be amended and corrected and made more comprehensive.
- (2) For the purpose of transparency and completeness, the engine manufacturer should include in the information folder a copy of the demonstration reports of specific tests when applying for an EU type-approval.
- (3) In order to harmonise and facilitate the procedures for the calculation of gaseous pollutant emissions for in-service monitoring of non-road mobile engines in accordance with Commission Delegated Regulation (EU) 2017/655 ⁽³⁾, the reference work and the reference CO₂ mass used for that calculation should be stated in the addendum of the template of the EU type-approval certificate and in the single format of the test report.
- (4) For the purpose of harmonising the terminology used in the entire legislative package relating to emission limits and type-approval of internal combustion engines for non-road mobile machinery and clarifying their meaning, the terms 'cylinder displacement' and 'engine displacement' appearing in Implementing Regulation (EU) 2017/656 should be replaced by the terms 'swept volume per cylinder' and 'engine total swept volume'.
- (5) Finally, following the publication of Implementing Regulation (EU) 2017/656, minor errors of different types have been detected and need to be corrected. In particular, certain changes should be made to provisions containing contradictions or redundant information and certain references and numbering should be corrected.
- (6) In particular, points 10 to 11.2 of the template for the single format of the test report should be corrected in order to correctly reflect the terminology used in Regulation (EU) 2016/1628.
- (7) Implementing Regulation (EU) 2017/656 should therefore be amended and corrected accordingly.
- (8) The measures provided for in this Regulation are in accordance with the opinion of the Technical Committee – Motor Vehicles,

⁽¹⁾ OJ L 252, 16.9.2016, p. 53.

⁽²⁾ Commission Implementing Regulation (EU) 2017/656 of 19 December 2016 laying down the administrative requirements relating to emission limits and type-approval of internal combustion engines for non-road mobile machinery in accordance with Regulation (EU) 2016/1628 of the European Parliament and of the Council (OJ L 102, 13.4.2017, p. 364).

⁽³⁾ Commission Delegated Regulation (EU) 2017/655 of 19 December 2016 supplementing Regulation (EU) 2016/1628 of the European Parliament and of the Council with regard to monitoring of gaseous pollutant emissions from in-service internal combustion engines installed in non-road mobile machinery (OJ L 102, 13.4.2017, p. 334).

HAS ADOPTED THIS REGULATION:

Article 1

Amendments to Implementing Regulation (EU) 2017/656

Implementing Regulation (EU) 2017/656 is amended as follows:

- (1) the following Article 12a is inserted:

'Article 12a

Transitional provisions

1. Notwithstanding the application of the provisions of this Regulation, as amended by Commission Implementing Regulation (EU) 2018/988 (*), approval authorities shall, until 31 December 2018, also continue to grant EU type-approvals to engine types or engine families in accordance with this Regulation, in its version applicable on 6 August 2018.

2. Notwithstanding the application of the provisions of this Regulation, as amended by Implementing Regulation (EU) 2018/988, the Member States shall, until 30 June 2019, also permit the placing on the market of engines based on an engine type approved in accordance with this Regulation, in its version applicable on 6 August 2018.

(*) Commission Implementing Regulation (EU) 2018/988 of 27 April 2018 amending and correcting Implementing Regulation (EU) 2017/656 laying down the administrative requirements relating to emission limits and type-approval of internal combustion engines for non-road mobile machinery in accordance with Regulation (EU) 2016/1628 of the European Parliament and of the Council (OJ L 182, 18.7.2018, p. 46).';

- (2) Annex I is amended in accordance with Annex I to this Regulation;
(3) Annex IV is amended in accordance with Annex IV to this Regulation;

Article 2

Corrections to Implementing Regulation (EU) 2017/656

Implementing Regulation (EU) 2017/656 is corrected as follows:

- (1) Annex I is corrected in accordance with Annex II to this Regulation;
(2) in Annex II, Appendix 1 and Appendix 2 are corrected in accordance with Annex III to this Regulation;
(3) in Annex III, Appendix 1, Table 1, the ninth row, in the first column, the words 'Applicable exemption code (EM) or transition code (TM) from column 4 of Table 1 of Appendix 2 to Annex II' are replaced by the words 'Applicable exemption code (EM) or transition code (TR) from column 4 of Table 1 of Appendix 2 to Annex II';
(4) in Annex IV, the Addendum to the EU type-approval certificate is corrected in accordance with Annex V to this Regulation;
(5) Annex V is corrected in accordance with Annex VI to this Regulation;
(6) Annex VI is corrected in accordance with Annex VII to this Regulation;
(7) Annex IX is corrected in accordance with Annex VIII to this Regulation.

Article 3

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 27 April 2018.

For the Commission

The President

Jean-Claude JUNCKER

(ii) the following rows with item numbers 3.10.3 to 3.10.4.1 are inserted:

3.10.3.	Air injection									
3.10.3.1.	Operation principle:			X						
3.10.4.	Other(s)									
3.10.4.1.	Type(s):			X'						

(iii) the following row with item number 3.11.1.3.1 is inserted:

3.11.1.3.1.	Test conditions for measurement:	X	X'							
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(iv) the following rows with item numbers 3.11.7 and 3.11.7.1 are inserted:

3.11.7.	Other device(s) or feature(s)									
3.11.7.1.	Type(s):			X'						

ANNEX III

Annex II to Implementing Regulation (EU) 2017/656 is corrected as follows:

(1) in Appendix 1, in Section 2, point 3 is replaced by the following:

‘3. Exemption Code (EM)/transition code (TR) ⁽⁶⁾:’;

(2) in Appendix 2, Table 1 is corrected as follows:

(i) in the heading of column 4, the words ‘Exemption Code (EM) or transition code (TM) (column 4)’ are replaced by the words ‘Exemption code (EM) or transition code (TR) (column 4)’;

(ii) in the first row, in column 5 (‘Text for supplementary information’), the words ‘ENGINE NOT FOR USE IN EU MACHINERY’ are replaced by the words ‘ENGINE NOT FOR USE IN EU NON-ROAD MOBILE MACHINERY’.

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ANNEX IV

Annex IV to Implementing Regulation (EU) 2017/656 is amended as follows:

(1) in the Addendum to the EU type-approval certificate, the following points 11.3 to 11.3.2 are added:

‘11.3. In service monitoring reference values ⁽⁹⁾

11.3.1. Reference work (kWh):

11.3.2. Reference CO₂ mass (g):’;

(2) in the Explanatory notes to Annex IV, the following explanatory note ⁽⁹⁾ is added:

⁽⁹⁾ Only applicable to engines of sub-categories NRE-v-5 and NRE-v-6 tested on NRTC.’;

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ANNEX V

In Annex IV to Implementing Regulation (EU) 2017/656, the Addendum to the EU type-approval certificate is corrected as follows:

(1) points 2.11.8, 2.11.9 and 2.11.10 are replaced by the following:

‘2.11.8. Other after-treatment devices (specify):

2.11.9. Other devices or features that have a strong influence on emissions (specify):’;

(2) in point 3.6.4 in the second column ‘Item description’, the words ‘Engine Displacement (cm³):’ are replaced by the words ‘Engine total swept volume (cm³):’;

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ANNEX VI

Annex V to Implementing Regulation (EU) 2017/656 is corrected as follows:

(1) in point 3.1, the introductory wording of the first paragraph is replaced by the following:

‘Example of a EU type-approval number of an NRSh-v-1b engine operating on petrol fuel, issued by the Netherlands, which has been extended three times:’;

(2) in point 3.2, the introductory wording of the first paragraph is replaced by the following:

‘Example of a EU type-approval number of a NRE-c-3 type 1A dual fuel engine operating on gaseous fuel of type LN2 (a specific liquefied natural gas/liquefied biomethane composition resulting in a λ -shift factor not differing by more than 3 per cent the λ -shift factor of the G20 gas specified in Annex I to Delegated Regulation (EU) 2017/654 and the ethane content of which does not exceed 1,5 per cent), which has not yet been extended, issued by France:’;

(3) in point 3.3, the introductory wording of the first paragraph is replaced by the following:

‘Example of a EU type-approval number of a RLL-v-1 engine according to the SPE emission limits operating on diesel fuel, issued by Austria, which has been extended 2 times:’.

ANNEX VII

Annex VI to Implementing Regulation (EU) 2017/656 is corrected as follows:

(1) point 2.6 is replaced by the following:

‘2.6. The test report may be delivered on paper or in an electronic format agreed between the manufacturer, technical service and approval authority.’;

(2) Appendix 1 is corrected as follows:

(i) points 10 to 11.2 are replaced by the following:

‘10. **Information concerning the conduct of the transient test (if applicable)**

10.1. Cycle (mark cycle with X) to be stated in Table 8:

Table 8

Transient test cycle

NRTC	
LSI-NRTC	

10.2. Transient test deterioration factors:

10.2.1. Deterioration Factor (DF): calculated/fixed

10.2.2. DF values and the emissions results to be stated in Table 9 or Table 10

10.3. NRTC emission results:

Table 9

DF values and the emissions results for NRTC

DF mult/add	CO	HC	NO _x	HC+NO _x	PM	PN
Emissions	CO (g/kWh)	HC (g/kWh)	NO _x (g/kWh)	HC+NO _x (g/kWh)	PM (g/kWh)	PN (#/kWh)
Cold start						
Hot start test result with/without regeneration						
Weighted test result						
k_{ru}/k_{rd} mult/add						
Weighted test result with IRAFs						
Final test result with DF						

10.3.1. Hot cycle CO₂ (g/kWh):

10.3.2. Cycle average NH₃ (ppm):

10.3.3. Cycle work for hot start test (kWh):

10.3.4. Cycle CO₂ for hot start test (g):

10.4. LSI-NRTC emission results

Table 10

DF values and the emissions results for LSI- NRTC

DF mult/add	CO	HC	NO _x	HC+NO _x	PM	PN
Emissions	CO (g/kWh)	HC (g/kWh)	NO _x (g/kWh)	HC+NO _x (g/kWh)	PM (g/kWh)	PN (#/kWh)
test result with/without regeneration						
k_{ru}/k_{rd} mult/add						
Test result with IRAFs						
Final test result with DF						

10.4.1. Cycle CO₂ (g/kWh):10.4.2. Cycle average NH₃ (ppm):

10.4.3. Cycle work (kWh):

10.4.4. Cycle CO₂ (g):

10.5. Sampling system used for the transient test:

10.5.1. Gaseous emissions:

10.5.2. PM:

10.5.3. Particle number:

11. Final emissions results

11.1. Cycle emissions results to be stated in Table 11.

Table 11

Final emissions results

Emissions	CO (g/kWh)	HC (g/kWh)	NO _x (g/kWh)	HC+NO _x (g/kWh)	PM (g/kWh)	PN (#/kWh)	Test Cycle ⁽¹⁾
NRSC final result with DF ⁽²⁾ .							
Final transient test result with DF ⁽³⁾							

11.2. CO₂ result⁽⁴⁾:11.3. In service monitoring reference values⁽⁵⁾11.3.1. Reference work (kWh)⁽⁶⁾:11.3.2. Reference CO₂ mass (g)⁽⁷⁾:

(ii) the explanatory notes to Appendix 1 are replaced by the following:

'Explanatory notes to Appendix 1:

(Footnote markers, footnotes and explanatory notes not to be stated on the test report)

- (¹) For NRSC indicate the cycle noted in point 9.1 (Table 4); for transient test indicate cycle noted in point 10.1 (Table 8).
 - (²) Copy the "Final test result with DF" results from Table 6.
 - (³) Copy "Final test result with DF" results from Table 9 or 10, as applicable.
 - (⁴) For an engine type or engine family that is tested on both the NRSC and a transient cycle, indicate the hot cycle CO₂ emissions values from the NRTC noted in point 10.3.4 or the CO₂ emissions values from the LSI-NRTC noted in point 10.4.4. For an engine only tested on an NRSC indicate the CO₂ emissions values given in that cycle noted in point 9.3.3.
 - (⁵) Only applicable to engines of sub-categories NRE-v-5 and NRE-v-6 tested on NRTC.
 - (⁶) Indicate the cycle work for hot start test value from the NRTC noted in point 10.3.3.
 - (⁷) Indicate the cycle CO₂ for hot start test value from the NRTC noted in point 10.3.4.
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ANNEX VIII

Points 2.4.4 to 2.4.4.3 of Annex IX to Implementing Regulation (EU) 2017/656 are replaced by the following:

2.4.4. Swept volume per cylinder

2.4.4.1. Engine with a swept volume per cylinder $\geq 750 \text{ cm}^3$

In order for engines with a swept volume per cylinder of $\geq 750 \text{ cm}^3$ to be considered to belong to the same engine family, the spread of their swept volume per cylinder shall not exceed 15 per cent of the largest swept volume per cylinder within the engine family.

2.4.4.2. Engine with a swept volume per cylinder $< 750 \text{ cm}^3$

In order for engines with an individual cylinder swept volume of $< 750 \text{ cm}^3$ to be considered to belong to the same engine family, the spread of their swept volume per cylinder shall not exceed 30 per cent of the largest swept volume per cylinder within the engine family.

2.4.4.3. Engine with greater spread in swept volume per cylinder

Notwithstanding points 2.4.4.1 and 2.4.4.2, engines with a swept volume per cylinder that exceeds the spread defined in paragraphs 2.4.4.1 and 2.4.4.2 may be considered to belong to the same engine family subject to the approval of the approval authority. The approval shall be based on technical elements (calculations, simulations, experimental results etc.) showing that exceeding the spread does not have a significant influence on the exhaust emissions.'
