Commission Delegated Regulation (EU) 2017/654 of 19 December 2016 supplementing Regulation (EU) 2016/1628 of the European Parliament and of the Council with regard to technical and general requirements relating to emission limits and type-approval for internal combustion engines for non-road mobile machinery

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ANNEXES

ANNEX I

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2. Purpose
   - 2.1. The conformity of production arrangements aim to ensure that each...
   - 2.2. Procedures include, inseparably, the assessment of quality management systems, referred...

3. Initial assessment
   - 3.1. Before granting EU type-approval, the approval authority shall verify the...
   - 3.2. Guidelines for quality and/or environmental management systems auditing set out...
   - 3.3. The approval authority shall be satisfied with the initial assessment...
     - 3.3.1. The initial assessment and/or verification of product conformity arrangements shall...
       - 3.3.1.1. When considering the extent of the initial assessment to be...
     - 3.3.2. The initial assessment and verification of product conformity arrangements may...
       - 3.3.2.1. In such a case, the approval authority of the other...
       - 3.3.2.2. On receiving an application for a compliance statement from the...
       - 3.3.2.3. The statement of compliance shall include at least the following:...
     - 3.3.3. The approval authority shall also accept the manufacturer's suitable certification...

4. Product conformity arrangements
   - 4.1. Every engine EU type-approved pursuant to Regulation (EU) 2016/1628, this...
   - 4.2. Before granting a EU type-approval pursuant to Regulation (EU) 2016/1628...
   - 4.3. The holder of the EU type-approval shall:
   - 4.4. If the further audit or check results referred to in...

5. Continued verification arrangements
   - 5.1. The authority which has granted EU type-approval may at any...
     - 5.1.1. The normal approach for such periodic audits shall be to...
       - 5.1.1.1. Surveillance activities carried out by the technical services (qualified or...
       - 5.1.1.2. The minimum frequency of verifications (other than those referred to...
   - 5.2. At every review, the records of tests, checks and production...
   - 5.3. The inspector may select random samples to be tested in...
   - 5.4. Where the level of control appears unsatisfactory, or when it...
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6. Conformity of production test requirements in cases of an unsatisfactory...

6.1. In case of an unsatisfactory level of product conformity control...
6.2. Except otherwise provided in point 6.3, the following procedure shall...
6.2.1. Three engines and, if applicable, three after-treatment systems shall randomly...
6.2.2. After the inspector's selection of the engines, the manufacturer shall...
6.2.3. Engines shall be subjected to emissions testing in accordance with...
6.2.3.1. Notwithstanding point 6.2.3, in the case of engines of category...
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6.2.5. The tests shall be carried out on newly manufactured engines....
6.2.5.1. At the request of the manufacturer, the tests may be...
6.2.6. On the basis of tests of the engine by sampling...
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6.3. By derogation from point 6.2.1, the following procedure shall apply...
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Appendix 1

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3. The following procedure is used for each of the emission...
4. Determine for the sample the test statistic quantifying the cumulative...
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2.2. The service accumulation tests or the emissions tests performed to...
2.3. This Annex also details the emission-related and non-emission-related maintenance that...

3. Engine categories NRE, NRG, IWP, IWA, RLL, RLR, SMB, ATS...
3.1. Selection of engines for establishing emission durability period deterioration factors...
3.1.1. Engines shall be selected from the engine family defined in...
3.1.2. Engines from different engine families may be further combined into...
3.1.3. The test engine shall represent the emission deterioration characteristics of...
3.1.4. If the approval authority decides that the worst case emissions...
3.2. Determination of emission durability period deterioration factors
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3.2.1.1. At the request of the manufacturer, the approval authority may...

3.2.2. Service accumulation schedule

3.2.2.1. In-service and dynamometer service accumulation

3.2.2.1.1. The manufacturer shall determine the form and duration of the...

3.2.2.1.2. The manufacturer shall determine the test points where gaseous and...

3.2.2.1.3. The emission values at the start point and at the...

3.2.2.1.4. For engine categories or sub-categories to which a NRTC applies,...

3.2.2.1.5. In the case of engine categories or sub-categories for which...

3.2.2.1.6. Service accumulation schedules may be different for different engine-after-treatment system...

3.2.2.1.7. Service accumulation schedules may be shorter than the emission durability...

3.2.2.1.8. Accelerated ageing by adjusting the service accumulation schedule on a...

3.2.2.1.9. The manufacturer may use, if agreed by the approval authority,...

3.2.2.1.10. The service accumulation schedule shall be fully described in the...

3.2.2.2. If the approval authority decides that additional measurements need to...

3.2.3. Engine testing

3.2.3.1. Engine stabilisation

3.2.3.1.1. For each engine-after-treatment system family, the manufacturer shall determine the...

3.2.3.1.2. The end of the stabilisation period determined in point 3.2.3.1.1...

3.2.3.2. Service accumulation testing

3.2.3.2.1. After stabilisation, the engine shall be run over the service...

3.2.3.2.2. During the service accumulation schedule, maintenance shall be carried out...

3.2.3.2.3. During the service accumulation schedule, unscheduled maintenance on the engine...

3.2.4. Reporting

3.2.4.1. The results of all emission tests (hot-start NRTC, LSI-NRTC and...

3.2.4.2. The manufacturer shall retain records of all information concerning all...

3.2.5. Determination of deterioration factors

3.2.5.1. When running a service accumulation schedule in accordance with point...

3.2.5.2. The emission values for each pollutant at the start of...

3.2.5.3. The deterioration factor (DF) for each pollutant is defined as...

3.2.6. Assigned deterioration factors

3.2.6.1. As an alternative to using a service accumulation schedule to...

3.2.6.1.1. Notwithstanding point 3.2.6.1, for PN, either an additive DF of...

ANNEX IV

Requirements with regard to emission control strategies, NOx control measures and particulate control measures

Appendix 1

2.1.2. Detailed written information fully describing the functional operation characteristics of...
2.1.3. The manufacturer shall provide the OEM with documents with instructions...
2.2. Operating conditions
2.2.1. Monitoring for reagent level in the storage tank shall be...
2.2.2. Reagent freeze protection shall apply at ambient temperatures at or...
2.2.3. All elements of the NO x control diagnostic system other...
2.3. Reagent freeze protection
2.3.1. It is permitted to use a heated or a non-heated...
2.3.1.1. The use of a non-heated reagent tank and dosing system...
2.3.2. Reagent tank and dosing system
2.3.2.1. If the reagent has frozen, the reagent shall be available...
2.3.2.2. Design criteria for a heated system
2.3.2.2.1 The reagent tank and dosing system shall be soaked at...
2.3.2.2.2 After the soak period set out in point 2.3.2.2.1, the...
2.3.2.2.3 At the conclusion of the test procedure set out in...
2.3.2.2.4 Evaluation of the design criteria may be performed in a...
2.3.2.3. Activation of the operator warning and inducement system for a...
2.3.2.3.1 The operator warning system described in points 4 to 4.9...
2.3.2.3.2 The severe inducement system as referred to in point 5.4...
2.3.3. Activation of the operator warning and inducement system for a...
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2.3.3.2. . . . .
2.4. Diagnostic requirements
2.4.1 The NOx Control Diagnostic system (NCD) shall be able to...
2.4.2 Requirements for recording Diagnostic Trouble Codes (DTCs)
2.4.2.1 The NCD system shall record a DTC for each distinct...
2.4.2.2 The NCD system shall conclude within 60 minutes of engine...
2.4.2.3 In cases where more than 60 minutes running time is...
2.4.3. Requirements for erasing Diagnostic trouble codes (DTCs)
2.4.4. An NCD system shall not be programmed or otherwise designed...
2.4.5. Any reprogrammable computer codes or operating parameters of the NCD...
2.4.6. NCD engine family
2.4.6.1. Parameters defining an NCD engine family
3. Maintenance requirements
3.1. The OEM shall provide to all end-users of new non-road...
4. Operator warning system

7.1.1. The manufacturer shall specify a minimum acceptable reagent concentration CDmin,...
7.1.1.1. The value of CD min specified by the manufacturer shall...
7.1.2. Any reagent concentration lower than CDmin shall be detected and...
7.1.3. A specific counter ('the reagent quality counter') shall be attributed...
7.1.3.1. Optionally, the manufacturer may group the reagent quality failure together...
7.1.4. Details of the reagent quality counter activation and deactivation criteria...
7.2. Activation of the operator warning system
7.3 Activation of the operator inducement system
7.3.1. The low-level inducement system described in point 5.3 shall be...
7.3.2. The severe inducement system described in point 5.4 shall be...
7.3.3. The number of hours prior to activation of the inducement...
8. Reagent dosing activity
8.1 The engine shall include a means of determining interruption of...
8.2. Reagent dosing activity counter
8.2.1. A specific counter shall be attributed to the dosing activity...
8.2.1.1. Optionally, the manufacturer may group the reagent dosing failure together...
8.2.2. Details of the reagent dosing activity counter activation and deactivation...
8.3. Activation of the operator warning system
8.4. Activation of the operator inducement system
8.4.1. The low-level inducement system described in point 5.3 shall be...
8.4.2. The severe inducement system described in point 5.4 shall be...
8.4.3. The number of hours prior to activation of the inducement...
9. Other failures that may be attributed to tampering
9.1. In addition to the level of reagent in the reagent...
9.2. Monitoring requirements and counters
9.2.1. NCD system
9.2.1.1. The NO x Control Diagnostic (NCD) system shall be monitored...
9.2.1.2. A counter shall be attributed to each of the monitoring...
9.2.1.2. ΙThe manufacturer may group the NCD system failure together with...
9.2.1.3. Details of the NCD system counter(s) activation and deactivation criteria...
9.2.2. Impeded EGR valve
9.2.2.1. The exhaust gas recirculation (EGR) system shall be monitored for...
9.2.2.2. A counter shall be attributed to an impeded EGR valve....
9.2.2.2. ΙThe manufacturer may group the impeded EGR valve failure together...
9.2.2.3. Details of the EGR valve counter activation and deactivation criteria...

10.4.3. For the purpose of this demonstration,
10.4.4. The manufacturer shall, in addition, demonstrate the operation of the...
10.4.4.1. These additional demonstrations shall in particular demonstrate to the satisfaction...
10.4.5. Demonstration test of the low-level inducement system
10.4.5.1. This demonstration starts when the warning system or when appropriate...
10.4.5.2. When the system is being checked for its reaction to...
10.4.5.2.1. The manufacturer may, with the agreement of the approval authority,...
10.4.5.3. When the system is checked for its reaction in the...
10.4.5.4. The demonstration of the low level inducement system shall be...
10.4.6. Demonstration test of the severe inducement system
10.4.6.1. This demonstration shall start from a condition where the low-level...
10.4.6.2. When the system is checked for its reaction in the...
10.4.6.2.1. The manufacturer may, with the agreement of the approval authority,...
10.4.6.3. When the system is checked for its reaction in the...
10.4.6.4. The demonstration of the severe inducement system shall be deemed...
10.4.7. Alternatively, if the manufacturer chooses, and subject to the agreement...
10.4.7.1. The non-road mobile machinery shall be operated until the counter...
10.5. Documentation of the demonstration
10.5.1. A demonstration report shall document the demonstration of the NCD...
11. Description of the operator warning and inducement activation and deactivation...
11.1 To complement the requirements specified in this Appendix concerning the...
11.2. Activation and deactivation mechanisms of the warning system
11.2.1. The operator warning system shall be activated when the diagnostic...
11.2.2. The operator warning system shall be deactivated when the diagnosis...
11.2.2.1. Requirements for erasing ‘NOx control information’
11.2.2.1.1. Erasing/resetting ‘NOx control information’ by a scan-tool
11.2.2.1.2. NOx control information shall not be erased by disconnection of...
11.2.2.1.3. The erasing of ‘NOx control information’ shall only be possible...
11.2.2.1.4. When ‘NOx control information’ including DTCs are erased, any counter...
11.3. Activation and deactivation mechanism of the operator inducement system
11.3.1. The operator inducement system shall be activated when the warning...

Appendix 2

Additional technical requirements on NOx control measures for engines of...

Appendix 3

Additional technical requirements on NOx control measures for engines of...

1. Introduction
2. Required information
   - 2.1. The manufacturer shall provide information that fully describes the functional...
   - 2.2. If the emission control system requires a reagent, the characteristics...
3. Reagent availability and operator warning system
4. Reagent quality

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Technical requirements on particulate pollutant control measures, including the method...

1. Introduction
2. General requirements
   - 2.1. Required information
     - 2.1.1. If the emission control system requires a reagent e.g. fuel...
     - 2.1.2. Detailed written information fully describing the functional operation characteristics of...
     - 2.1.3. The manufacturer shall provide installation documents that, when used by...
   - 2.2. Operating conditions
     - 2.2.1. The PCD system shall, at a minimum, be operational at...
   - 2.3. Diagnostic requirements
     - 2.3.1. The PCD system shall be able to identify the particulate...
     - 2.3.2. Requirements for recording Diagnostic Trouble Codes (DTCs)
       - 2.3.2.1. The PCD system shall record a DTC for each distinct...
       - 2.3.2.2. The PCD system shall conclude within the periods of engine...
       - 2.3.2.3. In cases where more than the period of running time...
     - 2.3.3. Requirements for erasing Diagnostic trouble codes (DTCs):
     - 2.3.4. A PCD system shall not be programmed or otherwise designed...
     - 2.3.5. Any reprogrammable computer codes or operating parameters of the PCD...
     - 2.3.6. PCD engine family
       - 2.3.6.1. Parameters defining a PCD engine family
3. Maintenance requirements
   - 3.1. The OEM shall provide to all end-users of new non-road...
4. Operator warning system
   - 4.1. The non-road mobile machinery shall include an operator warning system...
   - 4.2. The operator warning system may consist of one or more...
   - 4.3. At the choice of the manufacturer, the warning system may...
   - 4.4. The operator warning system shall be activated as specified in...
   - 4.5. The operator warning system shall be deactivated when the conditions...
   - 4.6. The warning system may be temporarily interrupted by other warning...

4.7. In the application for EU type-approval under Regulation (EU) 2016/1628,...

5. System to store information on operator warning system activation
   5.1. The PCD system shall include a non-volatile computer memory or...
   5.2. The PCD shall store in the non-volatile memory the total...
   5.3. It shall be possible for national authorities to read these...
   5.4. A description of the connection for, and method to read,...
6. Monitoring for removal of the particulate after-treatment system
   6.1. The PCD system shall detect the complete removal of the...
7. Additional requirements in the case of a particulate after-treatment system...
   7.1. In the case of a confirmed and active DTC for...
   7.2. The warning system shall be activated if the reagent level...
8. Monitoring failures that may be attributed to tampering
   8.1. In addition to monitoring for removal of the particulate after-treatment...
   8.2. Monitoring of loss of the particulate after-treatment system function
   8.3. Monitoring of failures of the PCD system
      8.3.1. The PCD system shall be monitored for electrical failures and...
      8.3.2. Where the failure, removal or deactivation of a single sensor...
9. Demonstration requirements
   9.1. General
   9.2. Engine families and PCD engine families
      9.2.1. In the case where engines of an engine family belong...
   9.3. Demonstration of the warning system activation
      9.3.1. The compliance of the warning system activation shall be demonstrated...
      9.3.2. Selection of the failures to be tested
         9.3.2.1. The manufacturer shall provide the approval authority with a list...
         9.3.2.2. The failure to be considered in the test shall be...
      9.3.3. Demonstration
         9.3.3.1. For the purpose of this demonstration, a separate test shall...
         9.3.3.2. During a test, no failure shall be present other than...
         9.3.3.3. Prior to starting a test, all DTC shall have been...
         9.3.3.4. At the request of the manufacturer, and with the agreement...
         9.3.3.5. Detection of failures
            9.3.3.5.1. The PCD system shall respond to the introduction of a...
         9.3.3.6. PCD test cycle
            9.3.3.6.1. The PCD test cycle considered in this Section 9 for...
            9.3.3.6.2. On request of the manufacturer and with approval of the...
         9.3.3.7 Configuration for demonstration of the warning system activation
            9.3.3.7.1. The demonstration of the warning system activation shall be done...
            9.3.3.7.2. Any components or subsystems not physically mounted on the engine,...

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Particle number emissions measurement equipment

Appendix 2

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Appendix 3

Verification of torque signal broadcast by electronic control unit

Appendix 4

Procedure for the measurement of ammonia

Appendix 5

Description of system responses
1. This appendix describes the times used to express the response...
2. The following times apply, as shown in figure 6-11:
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Method for data evaluation and calculation

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Drift Correction

Appendix 2

Appendix 3

Appendix 4

Appendix 5

Particle number calculation

Appendix 6

ANNEX VIII

Performance requirements and test procedures for dual-fuel engines

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Dual-fuel engine dual-fuel indicator, warning system, operability restriction — Demonstration...

1. Dual-fuel indicators
    - 1.1. Dual-fuel mode indicator
    - 1.2. Liquid-fuel mode indicator
    - 1.3. Service mode indicator
        - 1.3.1. When so-equipped it is sufficient to perform the demonstration related...
2. Warning system
3. Operability restriction
    - 3.1. It is sufficient to perform the demonstration in a typical...

Appendix 2

Emission test procedure requirements for dual-fuel engines

1. General
2. Test conditions
3. Test procedures
4. Measurement procedures
5. Measurement equipment
6. Particle number emissions measurement
7. Emission calculation
    - 7.1. Mass-based emission calculation
        - 7.1.1. Dry/wet correction
            - 7.1.1.1. Raw exhaust gas
            - 7.1.1.2. Diluted exhaust gas
        - 7.1.2. NOx correction for humidity
        - 7.1.3. Partial flow dilution (PFS) and raw gaseous measurement
            - 7.1.3.1. Determination of exhaust gas mass flow
            - 7.1.3.2. Determination of the gaseous components
                - 7.1.3.2.1. Mass per test of a gaseous emission
            - 7.1.3.3. Particulate determination
            - 7.1.3.4. Additional requirements regarding the exhaust gas mass flow meter
        - 7.1.4. Full flow dilution measurement (CVS)
            - 7.1.4.1. Determination of the background corrected concentrations
        - 7.1.5. Determination of molar component ratios
            - 7.1.5.1. General
            - 7.1.5.2. Calculation of the fuel mixture components
            - 7.1.5.3. Calculation of the molar ratios of H, C, S, N...
    - 7.2. Molar-based emission calculation
        - 7.2.1. NOx correction for humidity
        - 7.2.2. Determination of exhaust gas mass flow when not using a...
        - 7.2.3. Molar component ratios for determination of the gaseous components
            - 7.2.3.1. Determination of molar component ratios
    - 7.3. CO2 determination

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Types of dual-fuel engines operated on natural gas/biomethane or LPG...

ANNEX IX

Reference Fuels

1. Technical data on fuels for testing compression-ignition engines
   - 1.1. Type: Diesel (non-road gas-oil)
   - 1.2. Type: Ethanol for dedicated compression ignition engines (ED95) (1)

2. Technical data on fuels for testing spark ignition engines
   - 2.1. Type: Petrol (E10)
   - 2.2. Type: Ethanol (E85)

3. Technical data on gaseous fuels for single-fuel and dual-fuel engines...
   - 3.1. Type: LPG
   - 3.2. Type: Natural Gas/ Biomethane
     - 3.2.1. Specification for reference fuels supplied with fixed properties (e.g. from...
     - 3.2.2. Specification for reference fuel supplied from a pipeline with admixture...
       - 3.2.2.1. The basis of each pipeline reference fuel (GR, G20, …)...
       - 3.2.2.2. The value of Sλ of the resulting blend of pipeline...
       - 3.2.2.3. The engine test report for each test run shall include...
       - 3.2.2.4. The requirements of Appendices 1 and 2 shall be met...
       - 3.2.2.5. In the case that one or more of the gas...

Appendix 1

Supplementary requirements for conducting emission testing using gaseous reference fuels...

1. Method of gas analysis and gas flow measurement
   - 1.1. For the purpose of this Appendix, where required the composition...
   - 1.2. For the purpose of this Appendix, where required the measurement...
2. Analysis and flowrate of incoming utility gas supply
   - 2.1. The composition of the utility gas supply shall be analysed...
   - 2.2. The flowrate of the utility gas entering the admixture blending...
3. Analysis and flowrate of admixture
   - 3.1. When an applicable certificate of analysis is available for an...
   - 3.2. Where an applicable certificate of analysis is not available for...
   - 3.3. The flowrate of each admixture entering the admixture blending system...
4. Analysis of blended gas
   - 4.1. The analysis of the composition of the gas supplied to...

Appendix 2

Calculation of λ-Shift factor (Sλ)
1. Calculation
2. Examples for the calculation of the λ-shift factor Sλ:

Appendix 3

Correction for CO2 in the exhaust gas arising from CO2...
1. Instantaneous mass flow rate of CO2 in the gaseous fuel...
1.1. Gas composition and gas flow shall be determined according to...
1.2 The instantaneous mass flow rate of CO2 in a stream...
1.3. In order to determine the total mass flow rate of...
2. Calculation of specific CO2 emissions for transient (NRTC and LSI-NRTC)...
2.1 The total mass per test of CO2 emission from the...
2.2 The total mass of CO2 emission m CO2 [g/test] used...
3. Calculation of specific CO2 emissions for discrete-mode NRSC
3.1 The mean mass flow of CO2 emission from the CO2...
3.2 The mean mass flow rate of CO2 emission qm CO2...

ANNEX X

Detailed technical specifications and conditions for delivering an engine separately from its exhaust after-treatment system

1. Separate shipment, as set out in Article 34(3) of Regulation...

2. In this case, the manufacturer shall:
2.1. Be considered responsible for the placing on the market of...
2.2. Place all orders for the parts shipped separately before shipping...
2.3. Make available to the OEM the instructions for installation of...
2.4. Keep records of:

2.4.1. keep these records for at least 10 years;
2.4.2. Make the records available to the approval authority, the European...
2.5. Ensure that, in addition to the statutory marking required by...
2.6. Ensure that the parts shipped separately from the engines have...
2.7. Ensure that in the case of a transition engine, the...
2.7.1. The records set out in point 2.4 shall include evidence...

3. The OEM shall:
3.1. Confirm to the manufacturer that the engine has been brought...
3.2. Where an OEM receives a regular supply of engines from...

ANNEX XI

Detailed technical specifications and conditions for the temporary placing on the market for the purposes of field testing

The following conditions shall apply for the temporary placing on...

1. The ownership of the engine shall remain with the manufacturer...

2. Before placing the engine on the market, the manufacturer shall...

3. The engine shall be accompanied by a statement of conformity...

4. The engine shall bear the statutory marking set out in...

5. When the tests have been completed and in any case...

6. Notwithstanding point 5, the manufacturer may apply for an extension...
6.1. The approval authority may authorise the extension, if deemed justified....

ANNEX XII

Detailed technical specifications and conditions for special purpose engines

The following conditions shall apply for placing on the market...

1. Before placing the engine on the market, the manufacturer shall...

2. For the purposes of point 1, a written statement from...

3. The manufacturer shall:

4. The engine shall be accompanied by a statement of conformity...

5. The engine shall bear the statutory marking set out in...

ANNEX XIII

Acceptance of equivalent engine type-approvals

1. For engine families or engines types of category NRE the...

ANNEX XIV

Details of the relevant information and instructions for OEMs

1. As required by Article 43(2) of Regulation (EU) 2016/1628, the...

2. The instructions may be provided on paper or a commonly...

3. Where a number of engines requiring the same instructions are...

4. The information and instructions to the OEM shall include at...

5. As required by Article 43(3) of Regulation (EU) 2016/1628, the...

6. As required by Article 43(4) of Regulation (EU) 2016/1628, the...

ANNEX XV

Details of the relevant information and instructions for end-users

1. The OEM shall provide to the end-users all information and...

2. The instructions to the end-users shall be:
   - 2.1. written in a clear and non-technical manner using the same...
   - 2.2. be provided on paper or, alternatively, a commonly used electronic...
   - 2.3. be part of the instructions to end-users for the non-road...
     - 2.3.1. when delivered separately from the instructions to end-users for the...

3. The information and instructions to the end-users shall include at...

4. As required by Article 43(4) of Regulation (EU) 2016/1628, the...

ANNEX XVI

Performance standards and assessment of technical services

1. General Requirements

2. Standards with which the technical services have to comply
   - 2.1. Technical services of the different categories set out in Article...
   - 2.2. Reference to Article 41 of Directive 2007/46/EC in that Appendix...
   - 2.3. Reference to Annex IV of Directive 2007/46/EC in that Appendix...

3. Procedure for the assessment of the technical services
   - 3.1. The compliance of the Technical services with the requirements of...
   - 3.2. References to Article 42 of Directive 2007/46/EC in Appendix 2...

ANNEX XVII

Characteristics of the steady-state and transient test cycles

1. Tables of test modes and weighting factors for the discrete-mode...

2. Tables of test modes and weighting factors for the RMC...

3. Tables of engine dynamometer schedules for transient (NRTC and LSI-NRTC)...

Appendix 1

Steady-state discrete-mode NRSC
- Test cycles type C
- Test cycles type D
- Test cycles type E
- Test cycle type F
- Test cycle type G
- Test cycle type H

Appendix 2

Steady-state ramped modal cycles (RMC)
- Test cycles type C
- Test cycles type D
- Test cycles type E
- Test cycle type F
- Test cycles type G
- Test cycle type H

Appendix 3

2.4.2.1 Transient (NRTC and LSI-NRTC) test cycles
- NRTC engine dynamometer schedule
- LSI-NRTC engine dynamometer schedule

(**1**) OJ L 252, 16.9.2016, p. 53.

(**2**) Council Decision of 27 November 1997 with a view to accession by the European Community to the Agreement of the United Nations Economic Commission for Europe concerning the adoption of uniform technical prescriptions for wheeled vehicles, equipment and parts which can be fitted to and/or be used on wheeled vehicles and the conditions for reciprocal recognition of approvals granted on the basis of these prescriptions ('Revised 1958 Agreement') (OJ L 346, 17.12.1997, p. 78).

(**3**) http://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29glob_registry.html

(**4**) OJ L 88, 22.3.2014, p. 1.

Changes to legislation:
There are currently no known outstanding effects for the Commission Delegated Regulation (EU) 2017/654.