

To be integrated in RVCR (not yet finalised) para 3.2.1.1.:

### 3.2.1. Temporary disablement of the OBD system

3.2.1.1. A manufacturer may disable the OBD system if its ability to monitor is affected by low fuel levels or below the minimum state of charge of the propulsion or electric system batteries (maximum discharge of capacity). Disablement shall not occur when the fuel tank level is above 20 per cent of the nominal capacity of the fuel tank.

### Relevant draft Regulatory language concerning significant torque reduction

#### Reg 168/2013

#### Art 21(3)

*From the dates set out in point 1.8.2 of Annex IV (2020), vehicle (sub-)categories L3e to L7e shall be equipped with an OBD stage I system which monitors for any electric circuit and electronics failure of the emission control system and which is triggered when the emission thresholds as laid down in Annex VI (B2) are being exceeded. OBD stage I systems for these vehicle (sub-)categories shall also report the triggering of any operating mode which significantly reduces engine torque.*

#### RVCR.

#### Recital 12, last sentence

*... An example of such a case would be the wheel speed sensor circuits in case the vehicle speed would be calculated in the PCU / ECU from the wheel rotation speeds and which would subsequently be used to control the environmental performance of the motorcycle or would be used to trigger a torque limiting default mode.*

#### Art 2 (38)

*'malfunction' means the failure of a component or system that would result in emissions exceeding the OBD thresholds laid down in Section (B) of Annex VI to Regulation (EU) No 168/2013, or the triggering of any operating mode which significantly reduces engine torque, or the OBD system being unable to fulfil the basic monitoring requirements of Annex XII;*

#### Art 2(54)

*'significant reduction of propulsion torque' means a propulsion torque less than or equal to 90 % of torque in normal operation mode;*

#### Annex XII main

#### 3.5. Activation of malfunction indicator (MI)

3.5.1. *The OBD system shall incorporate a malfunction indicator readily perceivable to the vehicle operator. The MI shall not be used for any purposes other than to indicate emergency start-up or limp-home routines to the driver. The MI shall be visible in all reasonable lighting conditions. When activated, it shall display a*

symbol in conformity with ISO 2575:2010, symbol F.01. A vehicle shall not be equipped with more than one general purpose MI for emission-related problems or powertrain faults leading to significantly reduced torque. Separate specific purpose tell tales (e. g. brake system, fasten seat belt, oil pressure, etc.) are permitted. The use of red colour for an MI is prohibited.

3.5.2. For strategies requiring more than two preconditioning cycles for MI activation, the manufacturer shall provide data and/or an engineering evaluation which adequately demonstrate that the monitoring system is equally effective and timely in detecting component deterioration. Strategies requiring on average more than ten driving cycles for MI activation are not accepted. The MI shall also activate whenever the powertrain control enters a permanent default mode of operation leading to a significant torque reduction or if the OBD emission thresholds in Section (B) of Annex VI to Regulation (EU) No 168/2013 are exceeded or if the OBD system is unable to fulfil the basic monitoring requirements laid down in points 3.3.2. or 3.3.3.

...

3.6. The OBD system shall record fault code(s) indicating the status of the emission control system or of the functional safety system leading to an operation mode with significantly reduced torque in comparison to normal operation mode....

Annex XII, appendix 1

3.3. Description of tests [NB independent of propulsion type, e.g. also pure electric and hybrid electric vehicles]:

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3.3.6. Unless otherwise monitored, any other powertrain component connected to a computer relevant for the environmental performance and/or functional safety, triggering any programmed 'limp-home' operating mode which significantly reduces engine torque, e.g. to safeguard powertrain components. Without prejudice to the list Ap2-1 the relevant diagnostic trouble code shall be stored.

3.6.3 The MI may be activated if a default mode is active without significant reduction of propulsion torque.

Annex XII, appendix 2

2. Scope and monitoring requirements

If fitted, the following listed sensors and actuators shall be monitored for electric circuit malfunctions which may cause emissions to exceed the designated OBD emission thresholds laid down to in section B of Annex VI to Regulation (EU) No 168/2013 and/or lead to activation of a default mode that results in a significant reduction of propulsion torque.

Reference text draft R100 below:

<p><b>5.3.1.3</b></p>	<p><b>Indication of reduced power and/or of SOC of REESS</b></p>	<p><b>x.xx.xx Indication of reduced power and/or of SOC of the REESS</b></p>
<p><b>5.3.1.3.1.</b></p>	<p><del>The vehicle shall have a function/device that visually or audibly warns the driver/rider if the power is automatically reduced below a certain level, (e.g. due to activation of the output controller to protect the REESS or the propulsion system) or due to a low state of charge (SOC).</del></p>	<p>The vehicle shall have a function/device that <b>indicates</b> the driver/rider if the power is automatically reduced below a certain level, (e.g. due to activation of the output controller to protect the REESS or the propulsion system) or due to a low state of charge (SOC).</p>
<p><b>5.3.1.3.2.</b></p>	<p><b>The conditions under which these warnings are given shall be determined by the manufacturer. The impact of the power reduction on the safety will be prescribed in [Annex 6.]</b></p>	<p>The conditions under which these <b>indications</b> are given shall be determined by the manufacturer. A brief description of the power reduction and indicating strategy will be prescribed in Annex 6.</p> <p><b>Annex 6 :</b>  <b>8.4 System descriptions for low performance driving mode(s)</b>  <b>8.4.1 Systems' SOC level(s) for which power reduction is activated, descriptions, rationales</b>  <b>8.4.2 Descriptions for systems' reduced power mode(s) and similar mode(s), rationales</b></p>