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**World Forum for Harmonization of Vehicle Regulations****Working Party on General Safety Provisions****109<sup>th</sup> session**

Geneva, 29 September – 2 October 2015

**Report of the Working Party on General Safety Provisions  
on its 109<sup>th</sup> session (29 September – 2 October 2015)****Addendum 1****Contents**

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## Annex II

### **Draft 07 series of amendments to Regulation No. 107 (para. 6) (superseding ECE/TRANS/WP.29/GRSG/2015/32)**

*Insert a new paragraph 2.2.3., to read:*

- "2.2.3. "Fire suppression system type" for the purpose of type approval as a component means **systems which do** not essentially differ in the following aspects:
- (a) fire suppression system manufacturer;
  - (b) extinguishing agent;
  - (c) type of discharge point(s) used (e.g. type of nozzle, extinguishing agent generator or extinguishing agent discharge tube);
  - (d) type of propellant gas, if applicable."

*Paragraph 2.3., amend to read:*

- "2.3. "Approval of a vehicle, a separate technical unit or a component" means the approval of a **type of vehicle, bodywork or component** as defined in paragraph 2.2. with regard to the constructional features specified in this Regulation;"

*Paragraph 4.2., replace figure "06" by "07" (2 times).*

*Paragraph 5.1., amend to read:*

- "5.1. All vehicles shall comply with the provisions set out in Annex 3 to this Regulation. Bodywork approved separately shall comply with Annex 10. The approval of a vehicle incorporating bodywork approved in accordance with Annex 10 shall be completed in accordance with **Annex 3**. Fire suppression systems approved separately shall comply with Annex 13, Part 1. In the case of an approval of a vehicle with a fire suppression system installed in a specific engine compartment, it shall comply with the requirements of Annex 13, Part 2."

*Insert new paragraphs 10.13. to 10.17. (Transitional provisions), to read:*

- "**10.13. As from the official date of entry into force of the 07 series of amendments, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals under this Regulation as amended by the 07 series of amendments.**
- 10.14. As from 1 September 2020, Contracting Parties applying this Regulation shall grant type approvals to vehicle types of Classes I and II, only if the vehicle type to be approved meets the requirements of this Regulation as amended by the 07 series of amendments.**
- 10.15. Contracting Parties applying this Regulation shall not refuse to grant extensions of type approvals for existing types which have been granted according to the 06 series of amendments to this Regulation.**
- 10.16. As from 1 September 2021, Contracting Parties applying this Regulation shall not be obliged to accept, for the purpose of national or regional type approval, a vehicle of Class I or II type approved to the 06 series of amendments to this Regulation.**

**10.17. Notwithstanding paragraphs 10.14. and 10.16., Contracting Parties applying this Regulation shall continue to accept type approvals granted to the 06 series of amendments to vehicles which are not affected by the 07 series of amendments."**

*Annex 2, Model D*, replace figure "06" by "07" (3 times).

*Annex 3*

*Paragraph 7.5.1.5.*, amend to read:

"7.5.1.5. In the case of ... heater is located.

In addition to the alarm system, vehicles of Classes **I, II and III** shall be equipped with a fire suppression system in the engine compartment and each compartment where a combustion heater is located. Vehicles of **Classes A and B**, may be equipped with a fire suppression system in the engine compartment and in each compartment where a combustion heater is located."

*Paragraph 7.5.1.5.4.2.*, amend to read:

"7.5.1.5.4.2. An analysis shall be ... activates. The spray pattern and direction of discharge points, as well as the **discharge** distance, shall be ensured to cover identified fire hazards. The system shall also be ensured to work properly regardless of the vehicle's **attitude**.

**The fire hazard analysis shall, as a minimum, take into account the following components:**

- (a) **those** whose surface may reach temperatures above the auto-ignition temperature for fluids, gases or substances that are present within the compartment,
- (b) electrical components and cables with a current or voltage high enough for an ignition to occur,
- (c) hoses and containers with flammable liquid or gas (in particular if those are pressurized).

The analysis shall be fully documented."

*Paragraph 7.5.1.5.4.3.*, replace "auxiliary heater" by "**combustion** heater" (3 times).

*Annex 13 — Part 1*

*Paragraph 1.1.*, amend to read:

"1.1. Fire suppression systems shall be tested for high-**load** fire, low-**load** fire, high-**load** fire with fan and re-ignition."

*Paragraphs 1.3. and 1.3.1.*, amend to read:

"1.3. High-**load** fire

1.3.1. The test shall be conducted ..."

*Paragraph 1.3.3.*, amend to read:

"1.3.3. The fires shall be fully extinguished, **at the latest** in the minute after activation or **before the extinguishing agent has been fully used, whichever happens first.**"

*Paragraphs 1.4. to 1.6.3.*, amend to read:

"1.4. Low-**load** fire

- 1.4.1. The test shall be conducted ...
- 1.4.2. The fires shall be fully extinguished, **at the latest** in the minute after activation or **before the extinguishing agent has been fully used, whichever happens first.**
- 1.4.3. ...
- 1.5. **High-load** fire with fan
- 1.5.1. The test shall be conducted ...
- ...
- 1.6.1. The test shall be conducted ...
- 1.6.2. **Re-ignition shall not occur within 45 seconds of the fire being fully extinguished.**
- 1.6.3. The test is considered ..."

*Annex 13 — Part 2*

*Paragraphs 1.1. and 1.2., amend to read:*

- "1.1. A specific engine compartment means engine compartments which do not differ in the following essential aspects:
  - (a) **The position of the engine compartment;**
  - (b) Maximum gross volume;
  - (c) General layout of components in the compartment (i.e. position of **the determined** fire hazards).

For compartments where a combustion heater is located items (b) and (c) apply.
- 1.2. The fire suppression systems shall be tested for high-**load** fire, low-**load** fire, high-**load** fire with fan (to be applied if a fan is fitted in the engine compartment and/or combustion heater compartment) and re-ignition."

*Paragraphs 1.4. to 1.7.3., amend to read:*

- "1.4. **High-load** fire
- 1.4.1. The test shall be conducted ...
- ...
- 1.5. **Low-load** fire
- 1.5.1. The test shall be conducted ...
- ...
- 1.6. **High-load** fire with fan (if a fan is fitted in the engine and/or combustion heater compartment)
- 1.6.1. The test shall be conducted ...
- ...
- 1.7.2. **Re-ignition shall not occur within 45 seconds of the fire being fully extinguished.**
- 1.7.3. The test ..."

## Annex 13 — Appendix 1

Paragraphs 1.1. to 3.4.6., amend to read:

"1.1. The test apparatus is ... engine compartment.

Figure 1

**Coordinate system for the positioning of objects in the test apparatus (view from front side)**

...

Table 1

**Test apparatus objects**

<i>Objects</i>	<i>Plate thickness</i>
Fan cylinder	1.5 – 2 mm
Obstructions	1.5 – 2 mm
Exhaust manifold mock-up	8 mm
Engine mock-up	2 – 3 mm
<b>Silencer</b> mock-up	2 – 3 mm
Exhaust pipe	2 – 3 mm
Connection pipe	2 – 3 mm
Walls, ceiling and floor	1.5 – 3 mm

1.2. Object locations

1.2.1. All objects ... corner.

Table 2

**Coordinates of objects**

<i>Objects</i>	<i>Coordinates [x; y; z]</i>
Fan cylinder	[-0.60; 0.40; 0.10]
Obstruction 1	[0.0; 0.26; 0.0]
Obstruction 2	[0.26; 0.05; 0.02]
Exhaust manifold mock-up	[0.76; 0.05; 0.47]
Engine mock-up	[0.87; 0.05; 0.04]
Obstruction 3	[1.44; 0.05; 0.02]
Obstruction 4	[0.82; 1.2; 0.0]
<b>Silencer</b> mock-up	[2.0; 0.28; 0.23]

1.3. Framework

1.3.1. The framework of the test apparatus shall be constructed according to Figure 4. The **dimensions** of the beams are ... the ground.

...

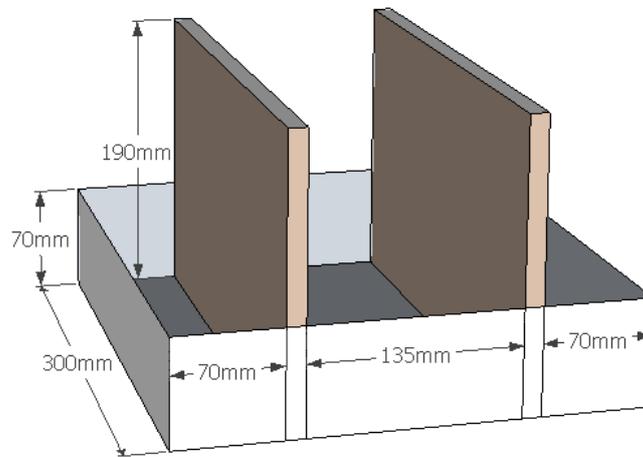
- 1.4. Apertures
  - 1.4.1. In addition to the opening for the fan, the test apparatus includes six apertures. The dimensions and positioning of the apertures are according to the coordinates in Table 3. The positions are **referenced from** two diagonally opposite corners (all apertures are rectangular in shape). The apertures are shown in Figure 4.
  - ...
- 1.6. Mock-up components
  - 1.6.1. The dimensions of the engine mock-up are 1,000 mm × 650 mm × 500 mm. The dimensions of the **silencer** mock-up are diameter 400 mm × 800 mm. The exhaust manifold mock-up shall have the inner dimensions of diameter 80 mm × 900 mm. The mock-up components shall be **hollow**. The exhaust manifold mock-up shall be connected to the **silencer** mock-up through a pipe with a diameter of 76 mm. A pipe from the **silencer** mock-up shall also be used to carry the exhaust gases from the pre-warming system out from the test apparatus.
  - ...
- 1.10. Pool fire trays
  - 1.10.1. **Detailed descriptions of these trays are given in Table 5. Three different types of pool fire trays are applied in Table 6: square, rectangular and circular.**

**Table 5**  
**Specification of pool fire trays**

<i>Dimensions</i>	<i>Rim height</i>	<i>Nominal thickness</i>	<i>Used for test fire</i>
<b>300 mm × 300 mm</b>	<b>70 mm</b>	<b>1.5 mm</b>	<b>#1, #2</b>
<b>200 mm × 300 mm</b>	<b>70 mm</b>	<b>2 mm</b>	<b>#3</b>
<b>Diameter 150 mm</b>	<b>100 mm</b>	<b>1.5 mm</b>	<b>#4</b>

- 1.10.2. The square pool fire trays with fibreboards and the rectangular pool fire trays shall be positioned in its orientation according to the test scenarios in Appendices 2 to 4. Figure 10 shows the dimensions for test fire #2. The test fire shall be positioned perpendicular to the long edge of the test apparatus.

Figure 10  
Distances for test fire #2



## 2. Test fires

- 2.1. The test fires in Table 6 are to be **conducted as** described in Appendices 2 to 5. Diesel oil (commercial fuel oil or light diesel oil), heptane ( $C_7H_{16}$ ) and engine oil 15W-40 with a flash point COC of 230 °C and viscosity at 40 °C of 107 mm<sup>2</sup>/s shall be used as test fuels.

Table 6  
Test fires

<i>Test fire</i>	<i>Description</i>	<i>Fuel</i>	<i>Approximate peak Heat Release Rate 60 sec after ignition</i>
#1	Pool fire 300 mm × 300 mm	Diesel oil and heptane	60 kW
#2	Pool fire 300 mm × 300 mm and 2 fibreboards	Diesel oil and heptane	110 kW
#3	Pool fire 200 mm × 300 mm	Diesel oil and heptane	40 kW
#4	Pool fire diameter 150 mm	Diesel oil and heptane	7 kW
#5	Spray fire (450 kPa, 0.73 kg/min ±10%)	Diesel oil	520 kW
#6	Spray fire (450 kPa, 0.19 kg/min ±10%)	Diesel oil	140 kW
#7	Dripping oil fire (40 droplets/min ±10)	Engine oil	5 kW

- 2.2. The amount of water, diesel and heptane used in the tests shall be in accordance with Table 7.

Table 7  
Amount of fuel used in pool fire trays

<i>Dimensions</i>	<i>Water</i>	<i>Diesel</i>	<i>Heptane</i>	<i>Used for test fire</i>
300 mm × 300 mm	1.0 l	0.5 l	0.2 l	#1, #2,
200 mm × 300 mm	0.5 l	0.5 l	0.2 l	#3
Diameter 150 mm	0.2 l	0.2 l	0.1 l	#4

- 2.3. Test fire #2 consists ... the test.
- 2.4. Test fire #5 and #6 consist ... or an equivalent.
3. Installation of the fire suppression system
- 3.1. To obtain the minimum discharge rate condition, an extinguishing system is to be assembled **to its maximum dimensional capability** with respect to the number of fittings and size and length of pipe, if relevant. The cylinder is to be used ...
- ...
- 3.4. **Test method**
- 3.4.1. The pool fire trays are to be filled with diesel and heptane on a base of water according to Table 7. **Where** fibreboards are **required** to be used as the fire source, **they** shall be soaked in diesel oil, prior to the test, according to instructions in paragraph 2.3. above.
- 3.4.2. A pre-burn time based on the information in Appendices 2 to 5 is required. The pre-burn time is measured from the time the first fire is ignited. All pool fires in the test scenarios shall be ignited within the allowed ignition-time, according to Appendices 2 to 5, using a suitable ignition source. The **low-load fire tests in Table 1 in Appendix 3** may be performed either **individually or concurrently**.
- 3.4.3. A fan is used in some of the test scenarios to obtain a specific air flow rate into the test apparatus. The fan shall be engaged 30 seconds before the suppression system is activated. The fan shall remain active until the test is **determined**.
- 3.4.4. A diesel spray is used in some of the test scenarios. The diesel spray shall be activated 10 seconds prior to activation of the suppression system. The diesel spray shall remain active until the **result of the test is determined**.
- 3.4.5. After the stipulated pre-burn time, the suppression system shall be manually or automatically activated.
- 3.4.6. In the test for re-ignition, the exhaust manifold mock-up tube is pre-heated **with a burner** prior to the test. Pressurized air may be added to the flame for better combustion. ... After 30 seconds the engine oil shall start dripping and the suppression system activated 15 seconds later. The engine oil shall ignite before activation of the suppression system. The oil shall continue to drip on to the tube until **the result of the test is determined**."

Annex 13 — Appendix 2, amend to read:

## "High-load fire

Table 1

### Test fires

<i>Test fire</i> (see Table 6 in Appendix 1)	<i>Description</i>	<i>Coordinates [x; y; z]</i> (see Figure 1 in Appendix 1)
#6	Spray fire (0.45 MPa, 0.19 kg/min)	[1.47; 0.73; 0.46]
#3	Pool fire 200 mm × 300 mm	[0.97; 0.85; 0.70]
#4	Pool fire diameter 150 mm	[0.97; 1.28; 0.00]
#3	Pool fire 200 mm × 300 mm	[1.54; 0.57; 0.36]
#2	Pool fire 300 mm × 300 mm and 2 Fibreboards	[1.54; 0.77; 0.36]
#3	Pool fire 200 mm × 300 mm	[1.54; 0.13; 0.00]

Note: The fan is not used

Table 2

### Test procedure

..."

Annex 13 — Appendix 3, amend to read:

## "Low-load fire

Table 1

### Test fires

<i>Test fire</i> (see Table 6 in Appendix 1)	<i>Description</i>	<i>Coordinates [x; y; z]</i> (see Figure 1 in Appendix 1)
#4	Pool fire diameter 150 mm	[0.02; 0.08; 0.00]
#3	Pool fire 200 mm × 300 mm	[0.37; 0.57; 0.00]
#4	Pool fire diameter 150 mm	[0.45; 1.20; 0.00]
#4	Pool fire diameter 150 mm	[0.97; 1.28; 0.00]
#4	Pool fire diameter 150 mm	[1.54; 0.57; 0.00]

Note: The fan is **required to produce** an air flow of 1.5 m<sup>3</sup>/s.

Table 2

### Test procedure

..."

Annex 13 — Appendix 4, amend to read:

## "High-load fire with fan

Table 1

### Test fires

<i>Test fire</i> (see Table 6 in Appendix 1)	<i>Description</i>	<i>Coordinates [x; y; z]</i> (see Figure 1 in Appendix 1)
#5	Spray fire ( <b>0.45 MPa</b> , 0.73 kg/min)	[0.37; 0.70; 0.46]
#1	Pool fire 300 mm × 300 mm	[0.37; 0.47; 0.36]
#2	Pool fire 300 mm × 300 mm and 2 fibreboards	[0.37; 0.77; 0.36]
#1	Pool fire 300 mm × 300 mm	[0.37; 0.13; 0.00]
#1	Pool fire 300 mm × 300 mm	[1.54; 0.13; 0.00]

Note: The fan is **required to produce** an air flow of 1.5 m<sup>3</sup>/s.

Table 2

### Test procedure

..."

Annex 13 — Appendix 5, amend to read:

## "Re-ignition test

Table 1

### Test fires

<i>Test fire</i> (see Table 6 in Appendix 1)	<i>Description</i>	<i>Coordinates [x; y; z]</i> (see Figure 1 in Appendix 1)
#7	Dripping oil fire ( <b>0.2 MPa</b> , 0.01 kg/min)	[0.82; 0.28; 1.22]

Note: The fan is not used.

Table 2

### Test procedure

<i>Time</i>	<i>Action</i>
Prior to test	Pre-heat tube
00:00	Pre-defined temperatures are reached
00:30	Start oil dripping
00:45	Activate suppression system (the oil shall ignite before <b>activation</b> )

..."

## Annex III

**Draft Supplement 5 to the 06 series of amendments to Regulation No. 107 (paras. 7, 9, 10, 11 and 12) (superseding ECE/TRANS/WP.29/GRSG/2015/18, ECE/TRANS/WP.29/GRSG/2015/20, ECE/TRANS/WP.29/GRSG/2015/31, ECE/TRANS/WP.29/GRSG/2015/33 and ECE/TRANS/WP.29/GRSG/2015/34)**

*Paragraph 2.3.*, amend to read:

"2.3. *"Approval of a vehicle, a separate technical unit or a component"* means the approval of a **type of vehicle, bodywork or component** as defined in paragraph 2.2. with regard to the constructional features specified in this Regulation;"

*Annex 3*

*Paragraph 7.5.1.5.3.*, amend to read:

"7.5.1.5.3. The alarm system and ... is deactivated, wherever applicable. **The alarm system shall remain operational whenever the combustion heater is in operation.**"

*Paragraph 7.5.1.5.4.2.*, *at the end of the first paragraph*, replace "altitude" by "**attitude**".

*Paragraph 7.5.1.5.4.3.*, replace "auxiliary heater" by "**combustion** heater" (3 times).

*Paragraph 7.6.5.1.*, replace "5 km/h" by "**3** km/h".

*Paragraph 7.6.5.1.9.*, amend to read:

"7.6.5.1.9. **In the case of interior controls, shall be deactivated** if the vehicle moves at a speed higher than **3** km/h. **This requirement may be applied to exterior controls.**"

*Paragraph 7.7.1.8.4.*, amend to read:

"7.7.1.8.4. When the seat is in the position of use, and when it is in the folded position, no part of it shall be:

- (a) forward of a vertical plane passing through the centre of the seating surface of the driver's seat in its rearmost **and lowest** position and through the centre of the exterior rear-view mirror mounted on the opposite side of the vehicle or through the centre of any monitor used as device for indirect vision, whatever applicable,

**and**

- (b) **above a horizontal plane which is located 300 mm above the centre of the seating surface of the driver's seat in its rearmost and lowest position.**"

*Paragraph 7.12.1.*, amend to read:

"7.12.1. Where any seated passenger is likely to be thrown forward into a step well, **designated wheelchair space, pram space or open area for standing passengers** as a result of heavy braking, either a guard or, in the case of a

vehicle of Class A or B, a safety-belt shall be fitted. Where fitted, the guard shall have a minimum height from the floor on which the passenger's feet rest of 800 mm and shall extend inwards from the wall of the vehicle at least as far as 100 mm beyond the longitudinal centre line of any seating position where the passenger is at risk or, **in the case of a step well**, to the riser of the innermost step; whichever is the lesser."

*Insert a new paragraph 7.12.2., to read:*

**"7.12.2. Paragraph 7.12.1. shall not apply to any sideways facing seat, a seat which has its centreline within the longitudinal projection of a gangway, a seat in front of which is existing vehicle structure (e.g. fixed table or luggage pen) offering comparable levels of protection as a guard meeting the requirements of paragraph 7.12.1. or transverse facing seats where the maximum distance between the front faces of the seat squabs of facing seats does not exceed 1,800 mm when measured in accordance with paragraph 7.7.8.4.3."**

*Paragraphs 7.12.2. to 7.12.4. (former), renumber as paragraphs 7.12.3. to 7.12.5.*

*Annex 8*

*Paragraph 3.1., amend to read:*

"3.1. Steps  
...  
The height of steps in an access passage at the above-mentioned door(s), and **throughout the entire** gangway, shall be not more ...  
..."

*Paragraph 3.10.1., correct to read:*

"3.10.1. **(Reserved)**"

Annex IV

**Draft Supplement 5 to the 05 series of amendments to  
Regulation No. 107 (paras. 9 and 12)  
(superseding ECE/TRANS/WP.29/GRSG/2015/14 and  
ECE/TRANS/WP.29/GRSG/2015/31)**

*Annex 3, paragraph 7.7.1.8.4., amend to read:*

"7.7.1.8.4. When the seat is in the position of use, and when it is in the folded position, no part of it shall be:

- (a) forward of a vertical plane passing through the centre of the seating surface of the driver's seat in its rearmost **and lowest** position and through the centre of the exterior rear-view mirror mounted on the opposite side of the vehicle or through the centre of any monitor used as device for indirect vision, whatever applicable

**and**

- (b) **above a horizontal plane which is located 300 mm above the centre of the seating surface of the driver's seat in its rearmost and lowest position."**

*Annex 8, paragraph 3.10.1., correct to read:*

"3.10.1. **(Reserved)**"

## Annex V

### **Draft Supplement 5 to Regulation No. 60 (para. 26)**

*Insert new paragraphs 5.3.1.1. and 5.3.1.2., to read:*

**"5.3.1.1. It shall be ensured that no deviations in the shape and orientation of the provided symbols are permitted, notably that any customised appearance of the provided symbols shall be prohibited.**

**5.3.1.2. Small irregularities concerning line thickness, the marking application and other relevant tolerances shall be accepted, as provided in paragraph 4 of ISO 2575:2010/amd1:2011 (design principles)."**

*Paragraph 5.5.4., amend to read:*

**"5.5.4. Each symbol used for the identification of a tell-tale, control or indicator shall stand out** clearly against the background."

## Annex VI

**Draft 02 series of amendments to Regulation No. 110  
(para. 34)  
(superseding ECE/TRANS/WP.29/GRSG/2015/27 and  
ECE/TRANS/WP.29/2015/90)**

*Paragraph 2.*, amend to read (deleting two references):

- "2.           References
- .....
- EN Standards<sup>4</sup>
- N 1251-2 2000       Cryogenic vessels. Vacuum insulated vessels of not  
                  more than 1,000 litres volume
- ....."

*Paragraph 6.3.(d)*, amend to read:

- "6.3.           ...
- (d)    Operating pressure/test pressure/**working pressure** [MPa];
- ..."

*Insert a new paragraph 6.4.*, to read:

- "6.4.           **Every automatic valve and every pressure relief device fitted to the  
                  container shall also bear a marking with the following data clearly  
                  legible and indelible:**
- (a)    **The marking "CNG";**
- (b)    **Working pressure [MPa]."**

*Paragraph 6.4. (former)*, renumber as paragraph 6.5.

*Insert a new paragraph 6.6.*, to read:

- "6.6.           **Every one of the following components shall also bear a clearly legible  
                  and indelible marking of the data listed below (a) and (b): pressure relief  
                  valve (primary); pressure relief valve (secondary); manual fuel shut off  
                  valve; manual vapour shut off valve; LNG check valve; and LNG valves  
                  (manual or automatic) fitted to the tank.**
- (a)    **The marking "LNG";**
- (b)    **Working pressure [MPa]."**

*Paragraph 7.2.*, amend to read:

- "7.2.           An approval number ... Its first two digits (at present 02 corresponding to the  
                  02 series of amendments) shall indicate ... type of component."

*Insert a new paragraph 8.2.2.*, to read:

- "8.2.2.       **CNG-1, CNG-2 and CNG-3 containers of welded construction are not  
                  permitted."**

*Paragraph 18.1.8.4.*, amend to read:

"18.1.8.4. A label shall be placed adjacent to the **CNG and/or LNG** fill receptacle stating the fuelling requirements **with the following data:**

- (a) **The marking "CNG" and/or "LNG";**
- (b) **Working pressure [MPa].**

The fuelling requirements shall be as recommended by the manufacturer."

*Paragraph 18.5.2.1.*, amend to read:

"18.5.2.1. The pressure relief device ... of paragraph 18.5.5. below.

However, in case of vehicles of categories M and N where the container(s) is (are) fitted outside the vehicle and on the roof or top of the bodywork of the vehicle, the pressure relief device (temperature triggered) shall be fitted to the fuel container(s) in such a manner that it can discharge the CNG only in a vertical upward direction."

*Paragraph 18.5.6.2.*, amend to read:

"18.5.6.2. The PRD (pressure triggered) shall ... of paragraph 18.5.5. above.

However, in case of vehicles of category M and N where the container(s) is (are) fitted outside the vehicle and on the roof or on the top of the bodywork of the vehicle, the pressure relief device (pressure triggered) shall be fitted to the fuel container(s) in such a manner that it can discharge the CNG only in a vertical upward direction."

*Paragraph 24.3.*, amend to read:

"24.3. Type approvals of components other than fuel rail, as defined in paragraph 4.72., granted according to the original version of this Regulation or of components granted according to the 01 series of amendments, shall remain valid and shall be accepted for the purpose of their installation on vehicles as long as the requirements for the specific component have not changed by any series of amendments."

*Insert new paragraphs 24.8. to 24.12.*, to read:

"24.8. As from the official date of entry into force of the 02 series of amendments to this Regulation, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approval under this Regulation as amended by the 02 series of amendments.

24.9. As from 1 September 2017 Contracting Parties applying this Regulation shall grant approvals only if the type of components to be approved meets the requirements of Part I of this Regulation as amended by the 02 series of amendments to this Regulation.

24.10. As from 1 September 2018 Contracting Parties applying this Regulation shall grant approvals only if the vehicle type to be approved meets the requirements of Part II of this Regulation as amended by the 02 series of amendments to this Regulation.

24.11. As from 1 September 2019 Contracting Parties applying this Regulation may refuse to recognize approvals of a type of vehicle which have not been granted in accordance with Part II of this Regulation as amended by the 02 series of amendments to this Regulation.

- 24.12. Contracting Parties applying this Regulation shall not refuse to grant extensions of type approvals for existing types of component or vehicle types which have been issued according to this Regulation without taking into account the provisions of the 02 series of amendments to this Regulation.
- 24.13. Notwithstanding paragraphs 24.11. and 24.12., Contracting Parties applying this Regulation shall continue to accept type approvals granted to the preceding series of amendments, which are not affected by the 02 series of amendments.**
- 24.14. Notwithstanding the transitional provisions above, Contracting Parties whose application of this Regulation comes into force after the date of entry into force of the most recent series of amendments are only obliged to accept type approval granted in accordance with the 02 series of amendments."**

*Throughout Annexes 2A and 2C, replace the symbol "01" by "02" (9 times).*

*Annex 3, paragraph 1.1., amend to read:*

- "1.1. Annex 3A sets out minimum requirements for light-weight refillable gas cylinders. The cylinders are intended only for the on-board storage of high pressure compressed natural gas as a fuel for automotive vehicles to which the cylinders are to be fixed. Cylinders may be of any steel, aluminium or non-metallic material, design or method of manufacture suitable for the specified service conditions. This annex also covers stainless steel metal liners of **seamless construction**. "

*Annex 3A*

*Paragraphs 6.3.2.4. and 6.3.2.5., shall be deleted.*

*Paragraph 6.3.2.6. (former), renumber as paragraph 6.3.2.4. and amend to read:*

- "6.3.2.4. Sulphide stress cracking resistance

**The ultimate tensile strength of the steel from a finished cylinder shall not exceed 1,200 MPa.** If the upper limit of the specified tensile strength for the steel exceeds 950 MPa, the steel from a finished cylinder shall be subjected to a sulphide stress cracking resistance test in accordance with Appendix A to this annex, paragraph A.3. and meet the requirements listed therein."

*Paragraph 6.12., replace "Exterior protection may be provided" by "Exterior protection shall be provided".*

Table 6.1, amend to read:

"Table 6.1

Material design qualification test

	<i>Relevant paragraph of this annex</i>				
	<i>Steel</i>	<i>Aluminium</i>	<i>Resins</i>	<i>Fibres</i>	<i>Plastic liners</i>
Tensile properties	6.3.2.2.	6.3.3.4.		6.3.5.	6.3.6.
Impact properties	6.3.2.3.				
Sulphide stress cracking resistance	<b>6.3.2.4.</b>				
Sustained load crack resistance		6.3.3.3.			
Stress corrosion cracking		6.3.3.2.			
Shear strength			6.3.4.2.		
Glass transition temperature			6.3.4.3.		
Softening/Melting temperature					6.3.6.
Fracture mechanics*	6.7.	6.7.			

\* Not required if flawed cylinder test approach in paragraph A.7. of Appendix A to this annex is used."

*Annex 3A - Appendix A*

Paragraphs A.1. and A.2., amend to read:

"A.1. Tensile tests, steel and aluminium

A tensile test shall be carried out on the material taken from the cylindrical part of the finished cylinder using a rectangular test piece shaped in accordance with the method described in ISO 9809 for steel and ISO 7866 for aluminium. The two faces of the test pieces representing the inside and outside surface of the cylinder shall not be machined. The tensile test shall be carried out in accordance with ISO 6892.

*NOTE* - Attention is drawn to the method of measurement of elongation described in ISO 6892, particularly in cases where the tensile test piece is tapered, resulting in a point of fracture away from the middle of the gauge length.

A.2. Impact test, steel cylinders and steel liners

The impact test shall be carried out on the material taken from the cylindrical part of the finished cylinder on three test pieces in accordance with ISO 148. The impact test pieces shall be taken in the direction as required in Table 6.2 of Annex 3A from the wall of the cylinder. The notch shall be perpendicular to the face of the cylinder wall. For longitudinal tests the test piece shall be machined all over (on six faces), if the wall thickness does not permit a final test piece width of 10 mm, the width shall be as near as practicable to the nominal thickness of the cylinder wall. The test pieces taken in transverse direction shall be machined on four faces only, the inner and outer face of the cylinder wall unmachined."

Paragraph A.28., shall be deleted.

## Annex VII

**Draft Supplement 1 to the 01 series of amendments to  
Regulation No. 125 (para. 45)  
(superseding ECE/TRANS/WP.29/GRSG/2015/8)**

*Paragraph 5.1.3.*, amend to read:

"5.1.3. Except as provided in paragraph 5.1.3.3. or 5.1.3.4. below, other than the obstructions created by the A pillars, the fixed or movable vent or side window division bars, outside radio aerials, **devices for indirect vision, covering the mandatory field of indirect vision**, and windscreen wipers, there should be ...  
..."

*Insert new paragraphs 5.1.3.1. and 5.1.3.2.*, to read (including a new footnote \*):

"5.1.3.1. **In case of camera monitor devices, the exemptions of paragraph 5.1.3. apply to cameras including their holders and housings which are mounted to the vehicle exterior. The camera-monitor system replacing a rear-view Class I mirror shall have the same exemption.**

5.1.3.2. **For vehicles, which are equipped as standard with approved rear-view mirrors that are optionally replaced by camera-monitor devices, the exemptions of paragraph 5.1.3. apply also to monitors, provided:**\*

(a) **their obstruction of the direct view does not exceed the level of obstruction of the corresponding exterior rear-view mirror including its housing and holder, and**

(b) **the position of the monitor is as close as practicable to the position of the rear-view mirror it replaces.**

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\* See report ECE/TRANS/WP.29/GRSG/88, paragraph 46 on the period of application of this paragraph."

*Paragraphs 5.1.3.1. to 5.1.3.2.2. (former)*, renumber as paragraphs 5.1.3.3. to 5.1.3.4.2.

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