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Item 6(b) of the provisional agenda

**AMENDMENTS TO UNECE REGULATIONS**

**REGULATION No. 110**

**Proposal for draft amendments to Regulation No. 110**  
(Specific components for CNG)

**Submitted by the expert from Italy**

The text reproduced below was prepared by the expert from Italy to amend the text of the Regulation with regard to provisions concerning the pressure relief device (pressure triggered), the burst disc and some editorial amendments.

The modifications to the current text of the Regulation are marked in **bold** characters.

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Note: This document is distributed to the experts of the Working Party on Pollution and Energy only.

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A. PROPOSAL

Paragraph 2.2., insert new item (v), to read:

- "2.2. ...  
 (u) ventilation hose,  
 (v) **pressure relief device (PRD) (pressure triggered) or burst disc.**"

Paragraph 2.22., amend to read:

- "2.22. **"Pressure relief device (PRD) (temperature triggered)"** means a one time use device triggered by excessive **temperature which** vents gas to protect the cylinder from rupture."

Insert new paragraph 2.27., to read:

- "2.27. **"Pressure relief device (PRD) (pressure triggered) or burst disc"** means a one time use device triggered by excessive pressure which prevents a pre-determined upstream pressure being exceeded."

Paragraphs 6.4. to 6.11., amend the table to read:

"

Paragraph	Component	Annex
6.4.	Automatic valve Check valve or non-return valve Pressure relief valve Pressure relief device ( <b>temperature triggered</b> ) Excess flow valve <b>Pressure relief device (pressure triggered) or burst disc</b>	4A
6.5.	Flexible fuel ...	...
...	...	...

"

Insert a new paragraph 17.3.2.6., to read:

- "17.3.2.6. **PRD (pressure triggered) or burst disc.**"

Insert new paragraphs 17.5.6. to 17.5.6.2., to read:

- "17.5.6. **PRD (pressure triggered) or burst disc**

- 17.5.6.1. **The PRD (pressure triggered) or burst disc shall be activated and shall vent the gas independently from the PRD (temperature triggered).**

**17.5.6.2. The PRD (pressure triggered) or burst disc shall be fitted to the fuel container(s) in such a manner that it can discharge into the gas-tight housing if that gas-tight housing fulfils the requirements of paragraph 17.5.5."**

Annex 1A, insert new items 1.2.4.5.16. to 1.2.4.5.16.6., to read:

"**1.2.4.5.16. PRD (pressure triggered) or burst disc: yes/no 1/**  
**1.2.4.5.16.1. Make(s): .....**  
**1.2.4.5.16.2. Type(s): .....**  
**1.2.4.5.16.3. Description and drawings: .....**  
**1.2.4.5.16.4. Activation pressure: 2/ ..... MPa**  
**1.2.4.5.16.5. Material:.....**  
**1.2.4.5.16.6. Operating temperatures: 2/ ..... °C"**

Annex 1B

Insert new items 1.2.4.5.16. to 1.2.4.5.16.6., to read:

"**1.2.4.5.16. PRD (pressure triggered) or burst disc: yes/no 1/**  
**1.2.4.5.16.1. Make(s): .....**  
**1.2.4.5.16.2. Type(s): .....**  
**1.2.4.5.16.3. Activation pressure: 2/ ..... MPa**  
**1.2.4.5.16.4. Material:.....**  
**1.2.4.5.16.5. Operating temperatures: 2/ ..... °C"**

Items 1.2.4.5.16. to 1.2.4.5.16.5. (former), renumber as items 1.2.4.5.17. to 1.2.4.5.17.5.

Annex 2B, item 1., amend to read:

"1. CNG component considered:  
.....  
Pressure relief device (PRD) (**temperature triggered**) 2/  
.....  
CNG filter(s) 2/  
**PRD (pressure triggered) or burst disc 2/**"

Annex 2B, Addendum

Insert new items 1.19. to 1.19.2., to read:

"**1.19. PRD (pressure triggered) or burst disc**  
**1.19.1. Working pressure(s): 2/ ..... MPa**  
**1.19.2. Material: .....**"

Annex 3, Appendix A

Paragraph A.15.4., amend to read:

"A.15.4. Temperature and pressure measurements

Surface temperatures shall be ..... less than 25 square mm.

**The pressure inside the cylinder shall be measured by a pressure sensor without modify the configuration of the system under test.**

Thermocouple temperatures and ..."

Paragraph A.28., should be deleted.

Annex 4A

The title, amend to read:

**"PROVISIONS REGARDING THE APPROVAL OF THE AUTOMATIC VALVE, NON RETURN VALVE, PRESSURE RELIEF VALVE, PRESSURE RELIEF DEVICE (TEMPERATURE TRIGGERED), EXCESS FLOW VALVE, MANUAL VALVE AND THE PRESSURE RELIEF DEVICE (PRESSURE TRIGGERED) OR BURST DISC"**

Add a new paragraph 6.3., to read: (content of former Annex 3, Appendix A, paragraph A.28.)

**"6.3. Manual valve device requirements**

One specimen shall be submitted to a fatigue test at a pressure cycling rate not to exceed 4 cycles per minute as follows:

(i) held at 20 °C while pressured for 2,000 cycles between 2 MPa and 26 MPa."

Add new paragraphs 7. to 7.4.2.2.2., to read:

**"7. Pressure relief device (pressure triggered) or burst disc**

**7.1. The materials constituting the PRD (pressure triggered) or burst disc which are in contact with the CNG when operating, shall be compatible with the test CNG. In order to verify this compatibility, the procedure described in Annex 5D shall be used.**

**7.2. Operating specifications**

**7.2.1. The PRD (pressure triggered) or burst disc of Class 0, shall be so designed to operate at temperatures as specified in the Annex 5O.**

**7.2.2.** The burst pressure shall be 34 MPa  $\pm$  10 per cent at ambient temperature and at the maximum operating temperature as indicated in Annex 5O.

**7.3.** The device has to comply with the test procedures for the Class components, specified in the scheme in Figure 1-1 of paragraph 2. of this Regulation, except overpressure, internal leakage, external leakage.

**7.4.** PRD (pressure triggered) or burst disc requirements.

**7.4.1.** Continued operation

**7.4.1.1.** Test procedure

Cycle the PRD (pressure triggered) according to Table 3, with water between 10 per cent and 100 per cent of the working pressure, at a maximum cyclic rate of 10 cycles per minute and a temperature of 82 °C  $\pm$  2 °C or 57 °C  $\pm$  2 °C.

Table 3 — Test temperatures and cycles

Temperature [°C]	Cycles
82	2,000
57	18,000

**7.4.1.2.** Requirements

**7.4.1.2.1.** At the completion of the test, the component shall not leak more than 15 cm<sup>3</sup>/hour when submitted to a gas pressure equal to the maximum working pressure at ambient temperature and at the maximum operating temperature as indicated in Annex 5O.

**7.4.1.2.2.** At the completion of the test, the PRD (pressure triggered) burst pressure shall be 34 MPa  $\pm$  10 per cent at ambient temperature and at the maximum operating temperature as indicated in Annex 5O.

**7.4.2.** Corrosion resistance test

**7.4.2.1.** Test procedure

The PRD (pressure triggered) shall be subjected to the test procedure described in Annex 5E, except the leakage test.

**7.4.2.2.** Requirements

**7.4.2.2.1.** At the completion of the test, the component shall not leak more than 15 cm<sup>3</sup>/hour when submitted to a gas pressure equal to the maximum

**working pressure at ambient temperature and at the maximum operating temperature as indicated in Annex 5O.**

**7.4.2.2.2. At the completion of the test, the PRD (pressure triggered) burst pressure shall be 34 MPa  $\pm$  10 per cent at ambient temperature and at the maximum operating temperature as indicated in Annex 5O."**

**B. JUSTIFICATION**

The main reason of this amendment is to clarify the distinction between pressure relief device (temperature triggered) and the pressure relief device (pressure triggered), also called "burst disc". Furthermore, some specific provisions are added for the burst disc.

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