



Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on Passive Safety****Seventy-sixth session**

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Item 2 of the provisional agenda

UN Global Technical Regulation No. 13 (Hydrogen and Fuel Cells Vehicles)**Request for Authorization to Develop an Amendment to
UN Global Technical Regulation No. 13****Submitted by the representative of the Kingdom of the Netherlands***

The text reproduced below was submitted by the representative of the Kingdom of the Netherlands to adapt the UN Global Technical Regulation (UN GTR) No. 13 to the technical progress with the aim to remove inconsistencies between Parts I and II of UN GTR No. 13, Amendment 1. It is based on ECE/TRANS/WP.29/GRSP/2024/28 distributed and endorsed at the seventy-sixth session of the Working Party on Passive Safety (GRSP). It is submitted to WP.29 and to the Executive Committee of the 1998 Agreement (AC.3) for consideration at their March 2025 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2024 as outlined in proposed programme budget for 2024 (A/78/6 (Sect. 20), table 20.5), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

I. Objective

1. The objective of this proposal is to develop, in the framework of the 1998 Agreement, an amendment to UN Global Technical Regulation (GTR) No. 13 (Hydrogen and Fuel Cell Vehicles), with the aim of aligning Parts I and II of Amendment 1 to remove inconsistencies and ambiguities in the rationale or justification (Part I) versus the actual requirements (Part II).

II. Background

2. Requirements for Compressed Hydrogen Storage System (CHSS) and its primary closures are defined in paragraph 5.1. The provision in paragraph 5.1.(b) allows Contracting Parties to require that primary closure devices be mounted directly on the container. If needed, manufacturers may choose to locate additional Thermally activated Pressure Relief Device (TPRDs) in alternative locations on the container. However, any additional TPRDs should be connected directly to the containers by using supply lines that have demonstrated mechanical integrity and durability as part of qualification tests for CHSS, referring to the technical requirements of paragraphs 5.1.1. and 5.1.2.

3. Drop test provisions are defined in paragraph 5.1.2.2. It is explained that the risk is primarily an aftermarket risk during vehicle repair where a new storage system, or an older system removed during vehicle servicing, is dropped from a forklift during handling. The test procedure requires drops from several angles from a maximum utility forklift height. The test is designed to demonstrate that containers have the capability to survive representative pre-installation drop impacts.

4. The expert of the Kingdom of the Netherlands in conjunction with the GRSP Task Force on the implementation of UN GTR No. 13, Phase 2 into UN Regulation No. 134, proposes a new Addendum 2 to UN GTR No. 13, aiming to clarify the drop test conditions in relation to containers equipped with additional TPRDs, and to remove the inconsistencies between Part I (Statement of Technical Rationale and Justification) and Part II (Text of the Regulation).

III. Proposal for Amendments

A. Statement of Technical Rationale and Justification

1. Background

5. The Technical Rationale, item (51) indicates that supply lines shall have demonstrated mechanical integrity and durability as part of qualification tests for CHSS, referring to the technical requirements of paragraphs 5.1.1. and 5.1.2.

6. The technical requirements for the drop test are defined in paragraph 5.1.2.2. referring to the test conditions and procedure in paragraph 6.2.3.2. Assumptions used in developing paragraph 5.1.2. of the test protocol; item (81)(c)(i) indicates on exposure to physical impacts – drop impact, that the risk is primarily an aftermarket risk during vehicle repair where a new storage system, or an older system removed during vehicle service, is dropped from a forklift during handling. The test procedure requires drops from several angles from a maximum utility forklift height. The test is designed to demonstrate that containers have the capability to survive representative pre-installation drop impacts.

2. Concerns

7. Part I, item (51) suggests that supply lines shall demonstrate compliance with paragraph 5.1.2. which includes subparagraph 5.1.2.2.

8. Neither paragraph 5.1.2.2. nor paragraph 6.2.3.2. specifically exempt supply lines from the drop test, although it is generally considered that including them would not be useful and would create a huge unnecessary and costly test burden.

3. Justification of the Proposal

9. The drop test specifically focuses on the container, before assembly.
10. The test procedure clearly indicates that the container, including container attachments (if any), but without internal pressurization or attached valves, is drop tested.
11. In line with the omission of any attached valves for the test, it is generally understood by the experts in the Task Force on the implementation of UN GTR No. 13, Phase 2 into UN Regulation No. 134, that this also applies to the supply lines. Besides, any damage to the valves or supply lines would be visible after a drop impact and, as a consequence, the devices would need to be replaced.

B. Proposed Amendments

12. *Part 1, paragraph 51.*, amend to read:

"51. Requirements for Compressed Hydrogen Storage System (CHSS) and its primary closures are defined in paragraph 5.1. The provision in paragraph 5.1.(b) allows Contracting Parties to require that primary closure devices be mounted directly on the container. If needed, manufacturers can choose to locate additional TPRDs in alternative locations on the container. However, any additional TPRDs should be connected directly to the containers by using supply lines that have demonstrated mechanical integrity and durability as part of qualification tests for CHSS (paragraphs 5.1.1. and 5.1.2.) **(paragraphs 5.1.1. and 5.1.2. excluding the drop test).**"

13. *Part 1, paragraph 81. (c) (i)*, amend to read:

"81. These assumptions include:

(c) Severe usage: exposure to physical impacts

- (i) Drop impact (para. 5.1.2.2.) – the risk is primarily an aftermarket risk during vehicle repair where a new storage system, or an older system removed during vehicle service, is dropped from a fork lift during handling. The test procedure requires drops from several angles from a maximum utility forklift height. The test is designed to demonstrate that containers **(without supply lines and valves)** have the capability to survive representative pre-installation drop impacts.

Note: Damage to supply lines or valves would be visible after a drop impact and, as a consequence, the devices would need to be replaced;"

14. *Part 2, paragraph 3.8.*, amend to read:

"3.8. "Compressed hydrogen storage system (CHSS)" is a system designed to store compressed hydrogen fuel for a hydrogen-fuelled vehicle, composed of a container, container attachments (if any), **supply lines for additional Thermally activated Pressure Relief Devices (TPRDs) (if any)**, and all primary closure devices required to isolate the stored hydrogen from the remainder of the fuel system and the environment."

15. *Part 2, paragraph 6.2.3.2.*, amend to read:

"6.2.3.2. Drop (impact) test (unpressurized)

The container and its container attachments (if any) is drop tested without internal pressurization, ~~or~~ attached valves **or supply lines (if any)**. The surface onto which the test article is dropped shall be a smooth, horizontal concrete pad or other flooring type

with equivalent hardness. No attempt shall be made to prevent the test article from bouncing or falling over during a drop test, but the test article shall be prevented from falling over during the vertical drop test.

... "
