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## Economic Commission for Europe

### Inland Transport Committee

### World Forum for Harmonization of Vehicle Regulations

#### 193rd session

Geneva, 25–28 June 2024

Items 14.3.1. of the provisional agenda

#### 1998 Agreement:

**Proposal for a corrigendum to a UN GTR, if any**

## **Proposal for Corrigendum 1 to UN Global Technical Regulation No. 13 (Hydrogen and Fuel Cell Vehicles)**

### **Submitted by the Working Party on Passive Safety\***

The text reproduced below was adopted by the Working Party on Passive Safety (GRSP) at its seventy-fourth session (ECE/TRANS/WP.29/GRSP/74, paras. 6 and 7). It is based on ECE/TRANS/WP.29/GRSP/2023/26 as amended by annex III to the report. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Executive Committee of the 1998 Agreement (AC.3) for consideration at their June 2024 sessions.

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\* 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.

Section H, paragraph 2 title, amend to read:

"2. National Requirements Complementary to UN GTR Requirements"

Section I, paragraph 190, amend to read:

"190. ... the requirements presented as optional requirements in this document (LHSS Section G of the preamble) could be adopted as requirements with appropriate modifications.  
"

Section O, Table 10, amend to read:

"Table 10  
**Optional Tolerances for Test Parameters**

Paragraph	Test Parameter	Value	Optional Tolerance	Unit
...				
<i>Distance</i>				
6.2.3.2. (a) (i)	Horizontal drop height	1.8 m	±0.02	m
6.2.3.2.(b) (c)	Vertical drop height	calculated drop height	±0.02	m
6.2.3.2. (d)	45° angle centre of gravity height	1.8 m	±0.02	m
...				

Table 1 in paragraph 3.52., amend to read:

" Table 1  
**Compressed Hydrogen Density (g/l)**

Temperature (°C)	Pressure (MPa)												
	1	10	20	30	35	40	50	60	65	70	75	80	87.5
-40	1.0	9.7	18.1	25.4	28.6	31.7	37.2	42.1	44.3	46.1	48.4	50.3	53.0
-30	1.0	9.4	17.5	24.5	27.7	30.6	36.0	40.8	43.0	45.1	47.1	49.0	51.7
-20	1.0	9.0	16.8	23.7	26.8	29.7	35.0	39.7	41.9	43.9	45.9	47.8	50.4
-10	0.9	8.7	16.2	22.9	25.9	28.7	33.9	38.6	40.7	42.8	44.7	46.6	49.2
0	0.9	8.4	15.7	22.2	25.1	27.9	33.0	37.6	39.7	41.7	43.6	45.5	48.1
10	0.9	8.1	15.2	21.5	24.4	27.1	32.1	36.6	38.7	40.7	42.6	44.4	47.0
15	0.8	7.9	14.9	21.2	24.0	26.7	31.7	36.1	38.2	40.2	42.1	43.9	46.5
20	0.8	7.8	14.7	20.8	23.7	26.3	31.2	35.7	37.7	39.7	41.6	43.4	46.0
30	0.8	7.6	14.3	20.3	23.0	25.6	30.4	34.8	36.8	38.8	<b>40.6</b>	42.4	45.0
40	0.8	7.3	13.9	19.7	22.4	24.9	29.7	34.0	36.0	37.9	39.7	41.5	44.0
50	0.7	7.1	13.5	19.2	21.8	24.3	28.9	33.2	35.2	37.1	38.9	40.6	43.1
60	0.7	6.9	13.1	18.7	21.2	23.7	28.3	32.4	34.4	36.3	38.1	39.8	42.3
70	0.7	6.7	12.7	18.2	20.7	23.1	27.6	31.7	33.6	35.5	37.3	39.0	41.4
80	0.7	6.5	12.4	17.7	20.2	22.6	27.0	31.0	32.9	34.7	36.5	38.2	40.6
85	0.7	6.4	12.2	17.5	20.0	22.3	26.7	30.7	32.6	34.4	36.1	37.8	40.2

Paragraph 6.2.3.2., amend to read:

"6.2.3.2. Drop (impact) test (unpressurized)

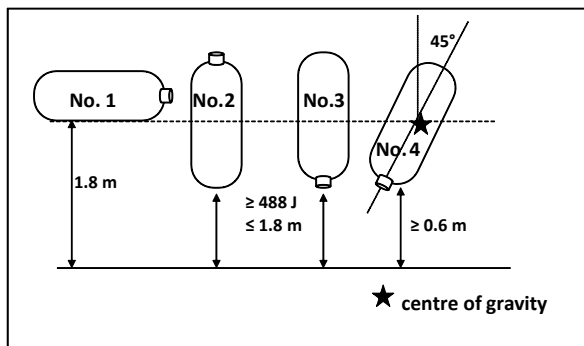
...

- (d) From a 45° angle from the vertical orientation with the shut-off valve interface location downward with its centre of gravity at 1.8 m above the ground. However, if the bottom is closer to the ground than 0.6 m, the drop angle shall be changed to maintain a minimum height of 0.6 m and a centre of gravity at 1.8 m above the ground. In case of non-axisymmetric container, the line passing the shut-off valve interface location end and its centre of gravity shall be 45° angled from vertical orientation and the shut-off valve interface location shall become the lowest.

..."

Figure 3 in paragraph 6.2.3.2., amend to read (correct the place of words in the drawing):

"Figure 3  
Drop Orientations

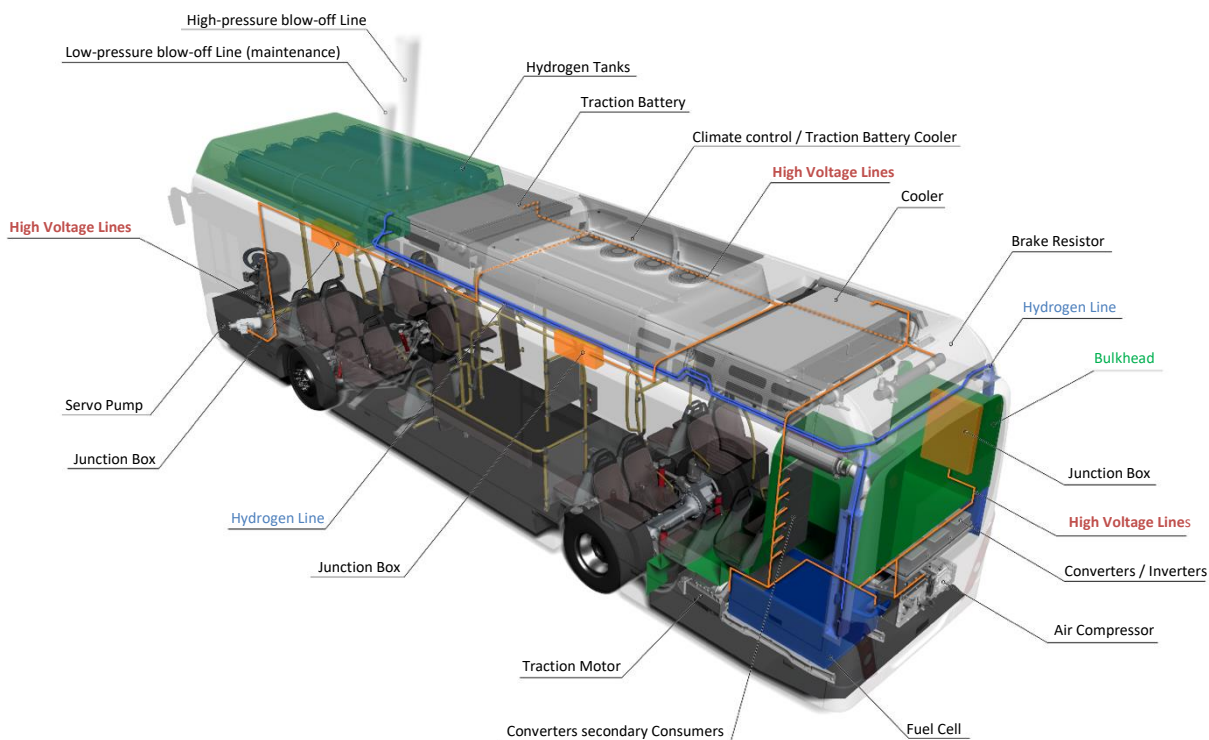


"

Paragraph 6.2.5.4.5.3., amend to read:

"6.2.5.4.5.3. The 60-second rolling averages of individual temperature readings in the localized fire zone (i.e.  $TB_{LOC}$ ,  $TMF_{LOC}$ ,  $TMR_{LOC}$  and  $TU_{LOC}$ ) and the engulfing fire zone (i.e. TBR, TBC, TBL,  $TMRF$ ,  $TMCF$ ,  $TMLF$ ,  $TMRR$ ,  $TMCR$ ,  $TMLR$ ,  $TUR$ ,  $TUC$  and  $TUL$ ) shall be ..."

Figure 3 (Example of a hydrogen fuel cell bus), three labels of "High Voltage Lines", amend to read:



"

Table 1 (Results of Japanese Study), amend to read (such that 5,500 is actually deleted and not just crossed out):

Vehicle Type	Max svc. Life	Max lifetime miles travelled	Lifetime No. of fills	
			("pressure test cycles")	Ref: UN GTR13 Phase 2 Proposal
HD	15 yrs	--	--	11,000
Commercial	20 yrs	3,500,000 km	8,450	11,000
	25 yrs	4,000,000 km	9,750	11,000
LD	15 yrs	--	--	7,500 or 11,000
Commercial	20 yrs	2,100,000 km	6,560	11,000
	25 yrs	2,400,000 km	7,440	11,000

"

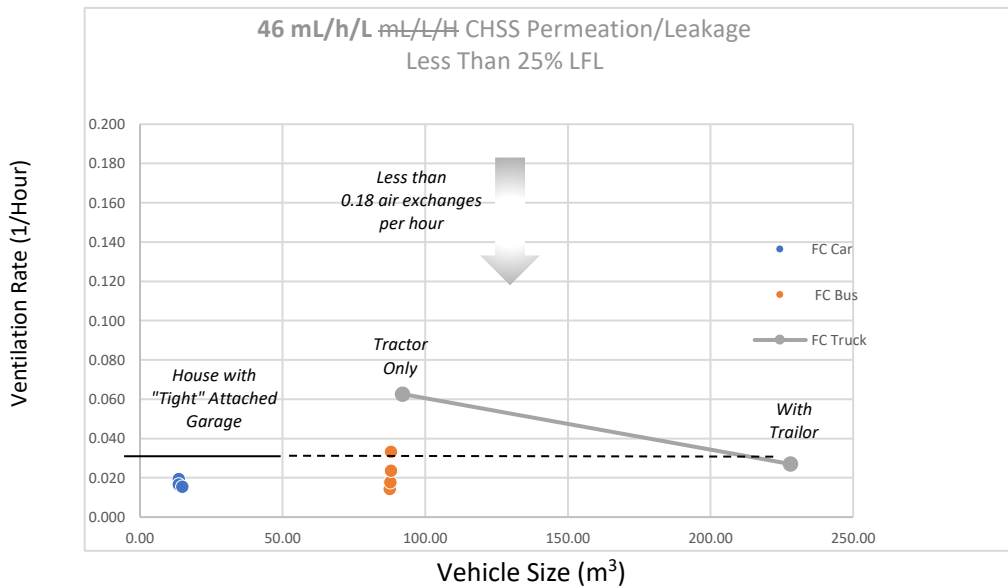
Paragraph 78.(a)(iv), amend to read:

"78. ...

(a) ...

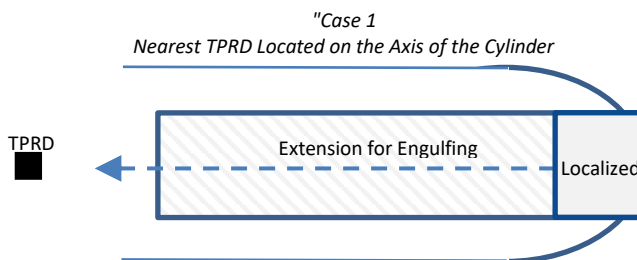
(iv) ... While it is difficult to get a single data-based fuelling interval value for hydrogen fuelled HDVs, an assumption of 400 km (250 mi.) can be a sufficiently conservative values; "

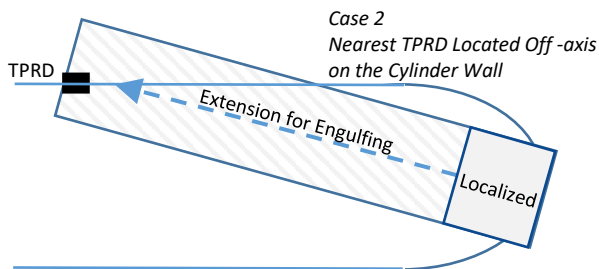
Figure 10, amend to read (such that x-axis label is consistent with the paragraph above it):



"

Figure 29 (Top View Showing Extension of the Engulfing Fire Zone Toward the Nearest TPRD on a Cylinder), amend to read:





"

Paragraph 3.28., amend to read:

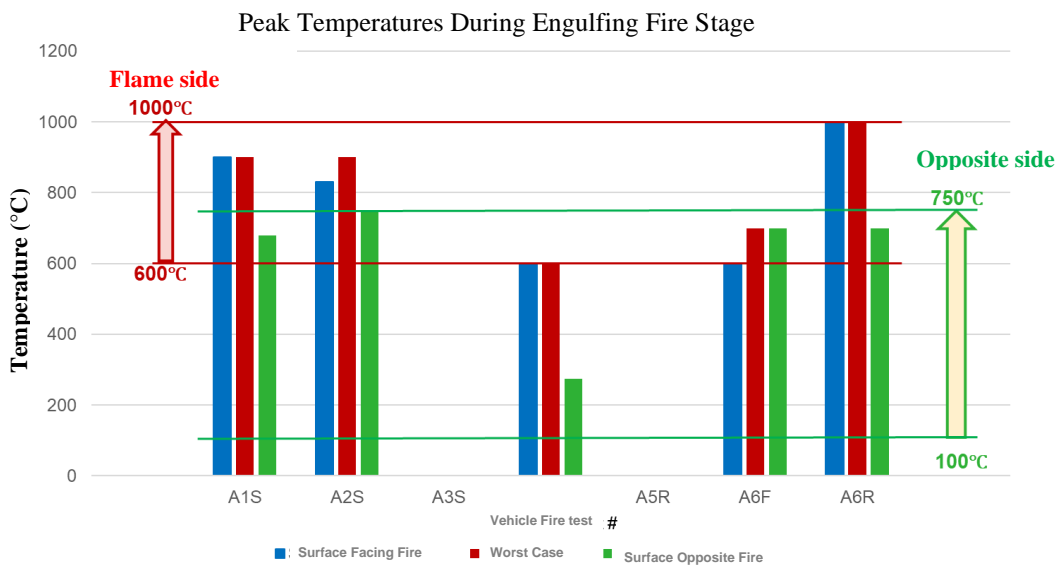
"3.28. "Hydrogen-fuelled vehicle" indicates any motor vehicle that uses compressed gaseous or liquefied hydrogen... Hydrogen fuel for the vehicles is specified in ISO 14687:2019 and SAE J2719\_202003."

Figure 2 (Verification Test for Expected On-Road Performance (Pneumatic/Hydraulic)), amend to read:

"Figure 2  
**Verification Test for Expected On-Road Performance (Pneumatic)**"

Figure 12 in paragraph 88, amend to read (corrected labels, no changes to values):

"



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