

Draft Proposal for Amendment to Regulation No. 13

Requirements for Road Train Combinations

Changes to the current text of the regulation are indicated in bold and strikethrough characters

A. PROPOSAL

Add new paragraphs 2.42 and 2.42.1.to read:

**2.42 “A towing trailer” is a trailer which is equipped to tow another trailer.**

**2.42.1 “Dolly” means a towing trailer designed for the sole purpose to tow a semi-trailer.**

Paragraph 5.1.3. amend to read:

5.1.3. Connections, for compressed-air braking systems, between ~~power-driven vehicles and trailers~~ **vehicles within a combination.**

Paragraph 5.1.3.1. amend to read:

5.1.3.1. The connections of the compressed-air braking systems between ~~power-driven vehicles and trailers~~ shall be provided according to paragraphs 5.1.3.1.1., 5.1.3.1.2. or 5.1.3.1.3.:

Paragraph 5.1.3.2. amend to read:

5.1.3.2. The electric control line of the power-driven vehicle **or towing trailer** shall provide information as to whether the requirements of paragraph 5.2.1.18.2. can be satisfied by the electric control line, without assistance from the pneumatic control line. It shall also provide information as to whether it is equipped according to paragraph 5.1.3.1.2. with two control lines or according to paragraph 5.1.3.1.3. with only an electric control line.

Paragraph 5.1.3.4. amend to read:

5.1.3.4. In the case of a power-driven vehicle **or towing trailer** equipped with two control lines as defined in Paragraph 5.1.3.1.2., when electrically connected to a trailer which is also equipped with two control lines, the following provisions shall be fulfilled:

Paragraph 5.1.3.4.1. amend to read:

5.1.3.4.1. both signals shall be present at the coupling head and the **succeeding** trailer shall use the electric control signal unless this signal is deemed to have failed. In this case the trailer shall automatically switch to the pneumatic control line;

Paragraph 5.1.3.5 amend to read:

5.1.3.5. A trailer may be equipped as defined in paragraph 5.1.3.1.3., provided that it can only be operated in conjunction with a power-driven vehicle with an electric control line which satisfies the requirements of paragraph 5.2.1.18.2.

**Whether these requirements can be satisfied by the electric control line of the towing trailer, without assistance from the pneumatic control line, shall be verified by the evaluation of message EBS12, Byte 3.** In any other case, the trailer, when electrically

connected, shall automatically apply the brakes or remain braked. The driver shall be warned by the separate yellow warning signal specified in paragraph 5.2.1.29.2.

Paragraph 5.1.3.6.3. amend to read:

5.1.3.6.3. When a power-driven vehicle is equipped with an electric control line and electrically connected to a trailer equipped with an electric control line, a continuous failure (> 40 ms) within the electric control line shall be detected in the power-driven vehicle and shall be signalled to the driver by the yellow warning signal specified in paragraph 5.2.1.29.1.2. ~~when such vehicles are connected via the electric control line.~~

**When a towing trailer equipped with an electric control line and electrically connected to a trailer equipped with an electric control line, a continuous failure (> 40 ms) within the electric control line at the rear of the towing trailer shall be detected in the towing trailer and shall be signalled to the driver by the yellow warning signal specified in paragraph 5.2.1.29.2.**

Add a new paragraph 5.1.3.6.4. to read:

**5.1.3.6.4. A trailer shall utilise the control line signalling defined in paragraphs 5.1.3.2. above and 4.3.2.1. or 4.3.2.2. of Annex 17 below that is generated from the vehicle (power driven vehicle or towing trailer) that first generates the signal. In the case of the signal being generated from a towing trailer this would be recognised as having the highest source address.?? Alt. "signal should have the highest priority"**

Paragraph 5.1.3.8. amend to read:

~~5.1.3.8. Shut-off devices which are not automatically actuated shall not be permitted. In the case of articulated **semi-trailer** vehicle combinations, the flexible hoses and cables shall be a part of the power-driven vehicle or **rear of the towing semi-trailer**. In all other cases, the flexible hoses and cables shall be a part of the trailer, **with respect to towing trailers other than towing semi-trailers this only applies to the front coupling head. In the case of a dolly flexible hoses shall be provided at both front and rear coupling heads.**~~

Paragraph 5.1.3.9. amend to read:

~~5.1.3.9. In the case of tractor **towing vehicles for semitrailer** and semi-trailer combinations, the flexible hoses and cables shall be a part of the **towing vehicle** power-driven vehicle or **rear of the towing semi-trailer**. In all other cases, the flexible hoses and cables shall be a part of the **towed** trailer, with respect to towing trailers other than towing semi-trailers this only applies to the front coupling head. In the case of a dolly flexible hoses shall be provided at both front and rear coupling heads.~~

~~In the case of an automated connector, this requirement regarding the allocation of flexible hoses and cables is not applicable.~~

**5.1.3.9. The flexible hoses and cables used for the connection between a towing vehicle for semi-trailer (*i.e. a tractor, a link-trailer, a dolly...*) and its following semi-trailer shall be part of the towing vehicle.**

**The flexible hoses and cables used for the connection between a towing vehicle for trailer other than a semi-trailer (*i.e. a rigid truck, an A-semi, a centre-axle trailer...*) and its following trailer (*i.e. a dolly, a centre-axle trailer...*) shall be part of the following trailer."**

In the case of an automated connector, this requirement regarding the allocation of flexible hoses and cables is not applicable.

### Explanation (for justification or annex)

#### Vehicle combination 1

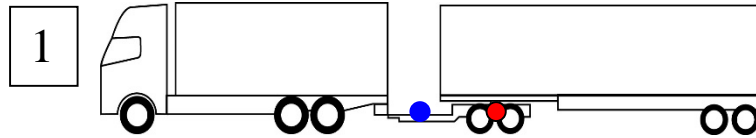


Figure 2 — truck + dolly + A-semi

#### Vehicle combination 2

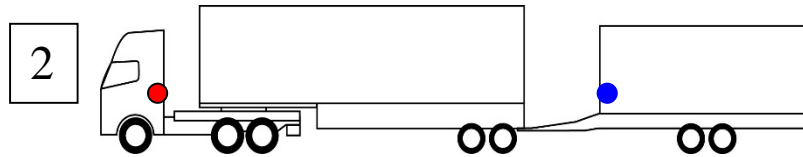


Figure 3 — tractor + A-semi + centre axle trailer

#### Vehicle combination 3

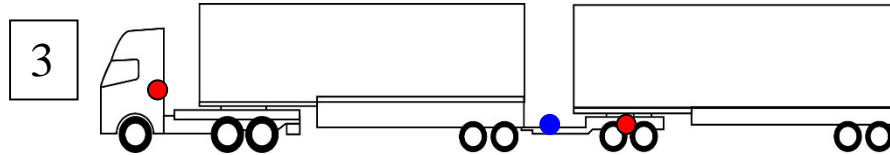


Figure 4 — tractor + A-semi + dolly + A-semi

#### Vehicle combination 4

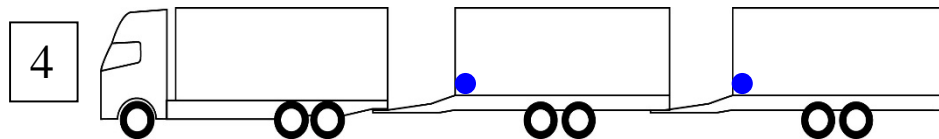


Figure 5 — truck + centre axle trailer + centre axle trailer

#### Vehicle combination 5

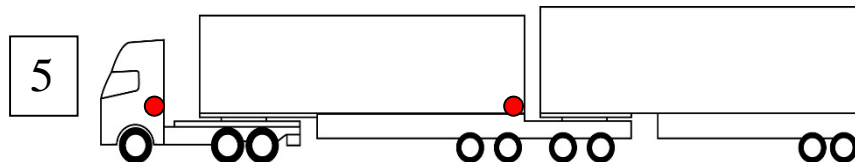


Figure 6 — tractor + link-trailer + A-semi (B-train)

Paragraph 5.2.1.18 amend to read:

5.2.1.18. In the case of a **power driven** vehicle authorized to tow a trailer of category O<sub>3</sub> or O<sub>4</sub>, its braking systems shall satisfy the following conditions:

5.2.1.18.1 when the **power driven** vehicle's secondary braking system comes into action, there shall also be a graduated braking action in the trailer;

5.2.1.18.2 in the event of failure of the **power driven** vehicle's service braking system, where that system consists of at least two independent parts, the part or parts not affected by the failure shall be capable of partially or fully actuating the brakes of the trailer. It shall be possible to graduate this braking action. If this operation is achieved by a valve which is normally at rest, then such a valve may only be incorporated if its correct functioning can easily be

checked by the driver, either from within the cab or from outside the vehicle, without the use of tools;

Paragraph 5.2.1.28.1 amend to read:

5.2.1.28.1. Coupling force control shall only be permitted on the ~~towing~~ power driven vehicle

XX

Paragraph 5.2.1.29.2. amend to read:

5.2.1.29.2. ~~With the exception of vehicles of category N<sub>1</sub>,~~ Power-driven vehicles equipped with an electric control line and/or authorized to tow a trailer equipped with an electric control transmission ~~and/or anti-lock braking system~~, shall be capable of providing a separate yellow warning signal to indicate a defect within the ~~anti-lock braking system and/or~~ electric control transmission of the braking equipment of the trailer. The signal shall be activated from the trailer **as follows:**

a) **via pin 5 of the electric connector conforming to ISO 7638:2003<sup>9/</sup>**

**and**

b) **by the amber warning signal request whenever the trailer provides corresponding failure information via the data communications part of the electric control line**

In all cases the signal transmitted by the trailer shall be displayed without significant delay or modification by the towing vehicle. This warning signal shall not light up when coupled to a trailer without an electric control line and/or electric control transmission ~~and/or anti-lock braking system~~ or when no trailer is coupled. This function shall be automatic.

**The amber warning request referred to above may only be used to transmit equivalent information as defined for pin 5 of the ISO 7638 connector.**

Paragraph 5.2.1.29.2.1 amend to read:

5.2.1.29.2.1. In the case of a power-driven vehicle equipped with an electric control line, when electrically connected to a trailer with an electric control line, the red warning signal specified in paragraph 5.2.1.29.1.1. above shall also be used to indicate certain specified failures within the braking equipment of the trailer, whenever the trailer provides corresponding failure information via the data communication part of the electric control line. **The above requirement shall also apply when a towing trailer connected to the power driven vehicle transmits the red warning signal request from any succeeding towed trailer as defined within part 2 of ISO 11992.** This indication shall be - - -

Add a new paragraph 5.2.1.34 to read:

**5.2.1.34.** Special requirements for power driven vehicles authorised to tow more than one trailer:

**5.2.1.34.1.** Application of the parking braking system on the power driven vehicle shall automatically apply the brakes of the trailer via the pneumatic control line. In addition the requirements of paragraph 5.1.3.7. shall be fulfilled.

Paragraph 5.2.2.12.1 amend to read:

5.2.2.12.1 - - - - specified in paragraph 3.3 of Annex 4 to this Regulation.  
**This function shall be inhibited when a trailer is operated within a multi trailer combination.**

Paragraph 5.2.2.15.2.1. amend to read:

5.2.2.15.2.1. A failure within the electric control transmission of the trailer that affects the function and performance of systems addressed by this Regulation and failures of energy supply available from the ISO 7638:1997 <sup>15/</sup> connector shall be indicated to the driver by the separate warning signal specified in paragraph 5.2.1.29.2. via pin 5 of the electrical connector conforming to ISO 7638:2003 <sup>15/</sup>. In addition, trailers equipped with an electric control line, when electrically connected to a ~~towing vehicle~~ **power driven vehicle or towing trailer** with an electric control line, shall provide the failure information for activation of the red warning signal specified in paragraph 5.2.1.29.2.1. **and the yellow warning signal specified in paragraph 5.2.1.29.2.** via the data communication part of the electric control line, when the prescribed service braking performance of the trailer can no longer be ensured.

Paragraph 5.2.2.17 amend to read:

5.2.2.17. Trailers equipped with an electric control line and O<sub>3</sub> and O<sub>4</sub> category trailers equipped with an anti-lock system, shall be fitted with either one or both of the following for the electric control transmission:

(a) a special electrical connector for the braking system and/or anti-lock system, conforming to ISO 7638:2003 <sup>15/ 16/</sup>,

(b) an automated connector meeting the requirements specified in Annex 22

Failure warning signals required from the trailer by this Regulation shall be activated via the above connector. The requirement to be applied to trailers with respect to the transmission of failure warning signals shall be those, as appropriate, which are prescribed for power driven vehicles in paragraphs 5.2.1.29.4., 5.2.1.29.5. and 5.2.1.29.6.

**In the case of towing trailers to minimise voltage drop and ensure adequate current carrying capacity the minimum cross section of the conductors attached to pins 1 and 4 of the ISO 7638 connector shall be 4mm<sup>2</sup>. The derogation permitted in footnote 16 shall not apply.**

Trailers equipped with an ISO 7638:2003 connector as defined above shall be marked in indelible form to indicate the functionality of the braking system when the ISO 7638:2003 connector is connected and disconnected.

The marking is to be positioned so that it is visible when connecting the pneumatic and electrical interface connections.

Add a new paragraph 5.2.2.17.3 to read:

**5.2.2.17.3. Towing trailers shall be equipped with special electrical connectors conforming to ISO 7638:2003 at the front and rear interfaces. Failure warning signals as specified in 5.2.2.17. shall be transmitted from the rear electrical connector to the front electrical connector without modification.**

Add a new paragraph 5.2.2.24 to read:

**5.2.2.24. Additional special requirements applicable to towing trailers**

**5.2.2.24.1. To ensure compatibility a towing trailer shall be equipped with pneumatic and electric control lines as specified in paragraph 5.1.3.1.2 of this Regulation at both the front and rear coupling heads.**

**5.2.2.24.2 The service braking system of the towing trailer shall be equipped with a device so designed that in the event of failure of the towed trailer's braking system, or in the event of an interruption in the air supply pipe (or of such other type of connection as may be adopted) between the towing and towed trailer, it shall still be possible to brake the towing trailer with a performance of at least 50% of the prescribed performance for the relevant trailer. This device shall be situated on the towing trailer.**

**5.2.2.24.3 In the case of a towing trailer authorized to tow a trailer of category O<sub>3</sub> or O<sub>4</sub>, its braking systems shall satisfy the following conditions:**

**5.2.2.24.3.1. In the event of a failure (e.g. breakage or leak) in one of the pneumatic connecting lines, interruption or defect in the electric control line between the towing trailer and its trailer it shall nevertheless be possible to fully actuate the brakes of the towed trailer by means of the service braking system of the towing trailer, unless the failure automatically causes the towed trailer to be braked with the performance prescribed in paragraph 3.3. of Annex 4 to this Regulation.**

**5.2.2.24.3.2. the automatic braking in paragraph 5.2.2.24.3.1. above shall be considered to be met when the following conditions are fulfilled:**

**5.2.2.24.3.2.1. when the service braking system of the towing trailer is fully actuated the pressure in the supply line at the rear coupling head shall fall to 150 kPa within the following two seconds; in addition, when the service braking system is released, the supply line shall be re-pressurized.**

**5.2.2.24.3.2.2. when the supply line between the towing trailer and towed trailer is evacuated at the rate of at least 100 kPa per second the automatic braking of the towed trailer shall start to operate before the pressure in the supply line falls to 200 kPa.**

**5.2.2.24.3.2.3. A towing trailer may only be operated in conjunction with a power driven vehicle which is equipped with at least a pneumatic control line. In the event of such a trailer being connected to a power driven vehicle equipped with only an electric control line according to paragraph 5.1.3.1.3. it is considered that this combination is not compatible. In this case the towing trailer, when electrically connected to the power driven vehicle, shall automatically apply the brakes of the trailer or remain braked. The driver shall be warned by the separate yellow warning signal in paragraph 5.2.1.29.2.**

**5.2.2.24.3.3.** When a towing trailer is automatically braked by evacuation of the supply line to the preceding vehicle the succeeding trailer shall also be braked by providing a control signal of at least 650kPa at the rear pneumatic coupling head.

**5.2.2.24.4.** The braking system of the towed trailer may only be operated in conjunction with the service, parking braking system or automatic braking system of the towing trailer. However, automatic application of the towed trailer brakes alone is permitted where the operation of the towed trailer brakes is initiated automatically by the towing trailer for the sole purpose of vehicle stabilization.

**5.2.2.24.5.** For the purpose of carrying out plausibility checks between the pneumatic and electric control line signals when towing trailers and trailers are used in combination the following shall apply:

When the electric control signal has exceeded the equivalent of 100 kPa the towed trailer shall verify that a pneumatic signal is present. Depending on the position of the trailer within the vehicle combination the time delay between the electric and pneumatic control line signals defined in the table below shall apply; should no pneumatic signal be present, the driver shall be warned from the trailer by the separate yellow warning signal specified in paragraph 5.2.1.29.2. above:

<b>Trailer number 2:</b>	<b>2seconds</b>
<b>Trailer number 3:</b>	<b>3seconds</b>
<b>Trailer number 4:</b>	<b>4seconds</b>
<b>Trailer number 5:</b>	<b>5seconds</b>

**5.2.2.24.6** The brake demand at the rear control line compared to the front control line under static conditions may not deviate by the following:

**Pneumatic control lines:** 0 to +20kPa at front coupling head demand of 100kPa and 0 to +50kPa at 650kPa.

**Electric control lines:** no deviation permitted

**5.2.2.24.6.1** The above requirements shall be fulfilled even when no electrical power supply to the trailer is available.

**5.2.2.24.7** Parking Braking System

**5.2.2.24.7.1** The parking brake performance of a towing trailer shall be fulfilled by the application of spring brakes fulfilling the relevant requirements of Annex 4 and Annex 8.

**5.2.2.24.7.2** Application of the parking braking system of the towing trailer shall result in the towed trailer being braked.

**5.2.2.24.8.** For the purpose of checking the response time of the braking system of the towing trailer as defined in paragraph 3.5.2 of Annex 6 the towing trailer may be temporarily configured as a non towing trailer.

**5.2.2.24.9.** Transmission of “VDC Active” message within ISO 11992:

Currently ISO 11992 does not ensure the “VDC active” message from a towed trailer within a multi trailer combination is transmitted to the power driven vehicle via the towing trailer. Therefore to ensure this information is available to the driver the “VDC active” information transmitted by the towed trailer shall be combined with the “VDC

active” message generated by the towing trailer and forwarded to the preceding vehicle.

**5.2.2.24.10. Support of “Relative Brake Demand” in ISO 11992:**

Relative brake demand as defined within byte 7 & 8 of EBS 11 shall not be supported by towing trailers. This status shall be indicated to the power driven vehicle by transmitting “support of the axle wise or side wise brake force distribution” message (see byte 2, bit 3 & 4 of EBS21) with a value of 00<sub>b</sub> (disabled) or 11<sub>b</sub> (not supported).

**5.2.2.25.11. A dolly as defined in paragraph 2.43 of this Regulation shall be considered to be a centre axle trailer with respect to the requirements of paragraph 3 of Annex 4 and paragraph 5 of Annex 10. In addition it shall also fulfil the requirements of a towing trailer.**

Annex 2

Add a new paragraph 9.4.6. to read:

**9.4.6. The power driven vehicle is / is not <sup>2/</sup> authorised to tow more than one trailer.**

Paragraph 14.7.3.amend to read:

**14.7.3. Flexible pipes of tractors / towing trailers <sup>2/</sup> for semi-trailers:**  
**Length (m): .....**  
**internal diameter (mm): .....**

Add a new paragraph 14.16 to read:

**14.16 The trailer is / is not <sup>2/</sup> authorised to tow a trailer of category O<sub>3</sub> or O<sub>4</sub>**

Annex 4

Paragraph 2.3.2 amend to read:

**2.3.2. On vehicles to which the coupling of a trailer is authorized, the parking braking system of the towing vehicle must be capable of holding the laden combination of vehicles stationary on a 12 per cent up or down-gradient. This requirement shall only apply when one trailer is coupled.**

Add a new paragraph 2.3.2.1. to read:

**2.3.2.1. In the case of power driven vehicles authorised to tow more than one trailer the requirements of paragraph 5.2.1.33.1 shall apply to ensure that all trailers are braked when the parking brake of the power driven vehicle is applied.**

Annex 6

Add a new section 4 to read:

**4 Towing trailers**

**4.1 In addition to the requirements defined in paragraph 3 above towing trailers shall also fulfil the following requirements:**

**4.1.1. The towing trailers control line response time shall be measured without the power driven vehicle. To replace the power driven vehicle it is necessary to provide a**



simulator to which the forward coupling heads of the supply line, the pneumatic control line and electric control line are connected. For the purposes of the test the simulator defined in paragraphs 3.3 and 3.4 above shall be used.

- 4.1.2. Requirements for Towing trailers; in addition to the requirements of paragraph 1.1. of this annex, the response time shall be measured at the extremity of a pipe 2.5 m long with an internal diameter of 13 mm which shall be joined to the rearmost coupling head of the control line of the service braking system. During this test, a volume of  $385 \pm 5 \text{ cm}^3$  (which is deemed to be equivalent to the volume of a pipe 2.5 m long with an internal diameter of 13 mm and under a pressure of 650 kPa) shall be connected to the coupling head of the supply line. Towing trailers for semi-trailers shall be equipped with flexible pipes for making the connection to semi-trailers. The coupling heads will, therefore, be at the extremity of those flexible pipes. The length and internal diameter of the pipes shall be entered at item 14.7.3. of the form conforming to the model in Annex 2 to this Regulation.
- 4.1.3. The pressure in the supply line at the front of the towed trailer shall be 650 kPa.
- 4.1.4. Performance requirements
- 4.1.4.1. The time elapsing between the moment when the pressure produced in the front control line by the simulator reaches 65 kPa and the moment when the pressure at the rear coupling head of the towing trailer reaches 75 per cent of its asymptotic value shall not exceed 0.4 seconds.
- 4.1.4.2. Towing trailers shall be checked with the electrical power supplied to the trailer via the ISO 7638:2003 connector (7 pin).
- 4.1.4.3. It is not necessary to check the reaction time difference of the electric control line between the front and rear coupling heads of the towing trailer as this is defined within part 2 of ISO 11992-2003 **including its Amd. 1:2007** and is therefore part of the Annex 17 assessment.
- 4.1.4.4.. Towing trailers equipped with a pneumatic and an electric control line, the response time measurement for each control line shall be determined independently according to the relevant procedure defined above.

## Annex 7

### **A. Compressed air braking systems**

Add a new paragraph 1.3.3. to read:

- 1.3.3. In the case of towing trailers the test defined in paragraph 1.3.2. above shall be carried out with rear supply line stopped and a compressed air reservoir of 0.5 litre capacity shall be connected directly to the rear coupling head of the pneumatic control line. Before each braking operation, the pressure in this compressed-air reservoir shall be completely eliminated. After the test referred to in paragraph 1.3.1. above, the energy level supplied to the rear pneumatic control line shall not fall below a level equivalent to one-half the figure obtained at the first brake application.

## Annex 17:

Add a new paragraph 4.3 to read:

### 4.3 Additional Requirements for Towing Trailers

4.3.1. Simulators as defined in paragraph 4.1 above shall be used to connect to both the front and rear ISO 7638 interfaces. Alternatively a single simulator may be used provided it is capable of the combined functionality of generating and receiving ISO 11992 messages at both front and rear ISO 7638 connections.

#### 4.3.2 Control line signalling:

4.3.2.1. The parameters defined in EBS 12 byte 3 of ISO 11992-2:2003 shall be checked at the rear ISO 7638 connector of the towing trailer against the specification of the power driven vehicle as follows:

Control Line Signalling	EBS 12 Byte 3	
	Bits 1 - 2	Bits 5 - 6
Service braking demand generated from one electrical circuit	00 <sub>b</sub>	
Service braking demand generated from two electrical circuits	01 <sub>b</sub>	
Vehicle is not equipped with a pneumatic control line <sup>1/</sup>		00 <sub>b</sub>
Vehicle is equipped with a pneumatic control line		01 <sub>b</sub>

4.3.2.2. The parameters defined in EBS 12 byte 3 of ISO 11992-2:2003 shall be checked at the rear ISO 7638 connector of the towing trailer against the specification of the towing trailer as follows:

Control Line Signalling	EBS 12 Byte 3	
	Bits 1 - 2	Bits 5 - 6
Service braking demand generated from one electrical circuit	00 <sub>b</sub>	
Service braking demand generated from two electrical circuits	01 <sub>b</sub>	
Vehicle is not equipped with a pneumatic control line <sup>1/</sup>		00 <sub>b</sub>
Vehicle is equipped with a pneumatic control line		01 <sub>b</sub>

#### 4.3.2 Service braking system function:

4.3.2.1 The trailer response at the rear coupling head to the parameters defined in EBS 11 of ISO 11992-2:2003 and its Amd 1:2007 shall be checked as follows:

The pressure in the supply line at the start of each test shall be  $\geq 700$  kPa and the vehicle shall be laden (the loading condition may be simulated for the purpose of this check).

For trailers equipped with pneumatic and electric control lines:

---

<sup>1/</sup> This specification of vehicle is prohibited by footnote 4/ to paragraph 5.1.3.1.3. and paragraph 5.2.2.24.1 of this Regulation.

both control lines shall be connected;  
 both control lines shall be signalled simultaneously;  
 the simulator shall transmit message byte 3, bits 5 – 6 of EBS 12 set to 01<sub>b</sub> to indicate to the trailer that a pneumatic control line should be connected.

Parameters to be checked:

Message transmitted by the simulator		Signal at rear ISO 7638 electric control line
Byte reference	Digital demand value	Digital demand value
3 - 4	0	0
3 - 4	33280 <sub>d</sub> (650 kPa)	33280 <sub>d</sub> (650 kPa)

**4.3.2.2. Trailers equipped with pneumatic and electric control lines:**

Only the electric control line shall be connected  
 The simulator shall transmit the following messages:  
 Byte 3, bits 5 - 6 of EBS 12 set to 00<sub>b</sub> to indicate to the trailer that a pneumatic control line is not available, and byte 3, bits 1 - 2 of EBS 12 set to 01<sub>b</sub> to indicate to the trailer that the electric control line signal is generated from two electric circuits.

Parameters to be checked:

Message transmitted by the simulator		Pressure at the brake chambers
Byte reference	Digital demand value	
3 - 4	0	At least that defined in the vehicle manufacturer's brake calculation for a demand of 33280 <sub>d</sub> (650 kPa)

### **4.2.2.3. Information signals**

**4.2.2.3.1. Check that the appropriate warning message or signal is transmitted from the rear electric control line connection to the front electric control line connection under the following conditions:**

**4.2.2.3.1.1. Red warning signal request:**

**Simulate byte 2, bits 3 - 4 of EBS 22 is set to 01<sub>b</sub> (red warning signal request) and 00<sub>b</sub> (no red warning signal request) at the rear electric control line connection.**

**4.2.2.3.1.2. Yellow (Amber) warning signal request:**

**Simulate byte 2, bits 5 - 6 of EBS 22 is set to 01<sub>b</sub> (yellow warning signal request) and 00<sub>b</sub> (no yellow warning signal request) at the rear electric control line connection.**

**4.2.2.3.1.3. Vehicle electrical supply sufficient / insufficient**

**Simulate byte 2, bits 1 - 2 of EBS 22 is set to 01<sub>b</sub> (supply sufficient) and 00<sub>b</sub> (supply insufficient) at the rear electric control line connection.**

**4.2.2.3.1.4. Vehicle pneumatic supply sufficient / insufficient:**

**Simulate byte 1, bits 7 - 8 of EBS 23 is set to 01<sub>b</sub> (supply sufficient) and 00<sub>b</sub> (supply insufficient) at the rear electric control line connection.**

**4.2.2.3.1.5. Illumination of stop lamps**

**Simulate message EBS 22 byte 4 bits 5 to 6 set to 00 (stop lamps are not illuminated) and 01 (stop lamps illuminated) at the rear electric control line connection.**

**4.2.2.3.1.6. Intervention of Trailer Stability Function**

**Simulate message EBS 21 byte 2 bits 1 to 2 set to 00 (VDC not active) and 01 (VDC active) at the rear electric control line connection – see also paragraph 5.2.2.24.9 of the Regulation**

**4.2.2.4. Additional Checks**

**Additional checks may be made to ensure messages defined within Annex 16 are transmitted from the rear electric control line connection to the front electric control line connection.**

B. JUSTIFICATION:

Regulation No. 13 only defines requirements for vehicle combinations which include a single trailer. However, in many countries, vehicle combinations, which include more than one trailer or a combination of a dolly and semi-trailer, are used and no uniform provisions with respect to braking are applied. The above proposal is a draft which would amend Regulation No. 13 to specify uniform requirements for towing trailers and motor vehicles which may tow more than one trailer.

The content of this document is based on Informal Document GRRF 66-08 and amended to take into consideration subsequent amendments to UN Regulation 13 up to and including the Supplement 11 to the 11 Series of Amendments.

- - - - -