

Proposal for amendments to Regulation No. 13 (Heavy vehicle braking)

The text reproduced below was prepared by the experts from Sweden to be inserted into Regulation No. 13. This is to produce a robust text structure with respect to Brake Electric/Electronic Interface to ensure that the evolving new technology may be handled safely and without risk for misunderstanding. The modifications to the existing text of the Regulation are marked in **bold** characters. As the proposal for text revision under section "I" is fairly extensive it is recommended to start reading section "II. Justification" starting on page 6.

I. Proposal

Main text

Insert new paragraph 2.34., to read:

"2. DEFINITIONS"

2.34. "Brake electric/electronic interface"

Means: A dedicated and unique bundle for all braking system related electric signals within the electric connection between towing and towed vehicle. (refer to paragraph 5.1.3.6.1 for requirement.)

Amend paragraph 5.1.3.6., to read:

"5. SPECIFICATIONS"

5.1.3.6.1 Brake electric/electronic interface

5.1.3.6.2 **This bundle as defined in paragraph 2.34 shall include the following signals:**

- 1. Plus electrovalve (Braking)**
- 2. Plus electronics (Braking)**
- 3. Minus electronics (Braking)**
- 4. Minus electrovalve (Braking)**
- 5. Warning device (Braking; open connection on the towing vehicle during normal operation)**
- 6. CAN_H (Braking; to conform to ISO11992-1 and ISO11992-2)**
- 7. CAN_L (Braking; to conform to ISO11992-1 and ISO11992-2)**

5.1.3.6.2 The electric control line of the **Brake electric/electronic interface** shall conform to ISO 11992-1 and 11992-2:2003 and be a point-to-point type using the seven pin connector according to ISO 7638-1 or 7638-2:1997 x/. **I.e. the signals of the Brake electric/electronic interface shall be allocated in conformance with ISO 7638.** The data ~~contacts~~ **signals of the Brake electric/electronic interface** ~~of the ISO 7638 connector~~ shall be used to transfer information exclusively for braking (including ABS) and running gear (steering, tyres and suspension) functions as specified in ISO 11992-2:2003. The braking functions have priority and shall be maintained in the normal and failed modes. The transmission of running gear information shall not delay braking functions. The power supply, provided ~~by the ISO 7638 connector~~ **through the Brake electric/electronic interface**, shall be used exclusively for braking and running gear functions and that required for the transfer of trailer related information not transmitted via the electric control line. However, in all cases the provisions of paragraph 5.2.2.18. of this

Regulation shall apply. The power supply for all other functions shall use other measures.

The ISO 7638 connector may be used for 5 pin or 7 pin applications, as appropriate.

Insert footnote x, to read: (relocation of deleted footnote 16 page 47)

x/ **The wiring specifications of ISO 7638:1997 for the trailer not equipped with an electric control transmission may be reduced if the trailer is installed with its own independent fuse. The rating of the fuse shall be such that the current rating of the conductors is not exceeded.**

Renumber paragraph 5.1.3.6.1 to 5.1.3.6.2.1

Renumber paragraph 5.1.3.6.2 to 5.1.3.6.2.2

Amend paragraph 5.2.1.23., to read:

5.2.1.23. "... an anti-lock system shall ~~also be equipped with a special electrical connector, conforming to ISO 7638:1997 7/~~ **have an electric connection realizing the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)**, for the ... "

Delete foot note 7/ on page 31.

~~7/ The ISO 7638:1997 connector may be used for 5 pin or 7 pin applications, as appropriate.~~

Amend paragraph 5.2.1.29.2., to read:

5.2.1.29.2. "... The signal shall be activated from the ~~trailer via pin 5 of the electric connector conforming to ISO 7638:1997 9/~~ **towed vehicle via the signal 5 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)** and in all cases ... "

Delete foot note 9/ on page 39.

~~9/ The ISO 7638:1997 connector may be used for 5 pin or 7 pin applications, as appropriate.~~

Amend paragraph 5.2.2.15.2.1., to read:

5.2.2.15.2.1. "... addressed by this Regulation and failures of energy supply available ~~from the ISO 7638:1997 15/ connector~~ **through the Brake electric/electronic interface** shall be indicated to the driver by the separate warning signal specified in § 5.2.1.29.2.1 ~~via pin 5 of the electrical connector conforming to ISO 7638:1997 15/~~ **signal 5 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)**. In addition ... "

Amend paragraph 5.2.2.16., to read:

5.2.2.16. "...The separate yellow warning signal specified in paragraph 5.2.1.29.2. shall also be activated via ~~pin 5 of the electrical connector conforming to ISO 7638:1997 15/~~ **the signal 5 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)**, to indicate to the driver ... "

Amend paragraph 5.2.2.17., to read:

5.2.2.17. "... anti-lock system, shall be ~~fitted with a special electrical connector for the braking system and/or anti-lock system, conforming to ISO 7638:1997 15/~~ **have an electric connection realizing the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)** 16/. Failure warning signals required from the trailer by this Regulation shall be activated via the ~~above connector~~ **Brake electric/electronic interface**. 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 motor vehicles in paragraphs 5.2.1.29.4., 5.2.1.29.5. and 5.2.1.29.6.

Trailers equipped with an ISO 7638:1997 connector as defined above **having an electric connection as defined above realizing the Brake electric/electronic interface as defined in this regulation** shall be marked in indelible form to indicate the functionality of the braking system when the **Brake electric/electronic interface** is connected and disconnected. The marking is to be positioned so that it is visible when connecting the pneumatic and electrical interface connections. "

Delete foot note 15/ on page 47.

~~15/ The ISO 7638:1997 connector may be used for 5 pin or 7 pin applications, as appropriate.~~

Amend foot note 16/ on page 47.

"The wiring specifications of ISO 7638:1997 **realizing the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)** for the trailer not equipped with an electric control transmission may be reduced if the trailer is installed ... "

Amend paragraph 5.2.2.17.1., to read:

5.2.2.17.1. "...stability system indicate the failure by the separate yellow warning signal specified in paragraph 5.2.1.29.2. above via ~~pin 5 of the ISO 7638:1997 connector~~ **the signal 5 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34).** "

5.2.2.17.2. "It is permitted to connect the braking system to a power supply in addition to that available from the ~~ISO 7638:1997 connector~~ **Brake electric/electronic interface**. However, when an additional power supply is available the following provisions will apply:

(a) In all cases the ~~ISO 7638:1997~~ **Brake electric/electronic interface** power supply is the primary power source for the braking system, irrespective of any additional power supply that is connected. The additional supply is intended to provide a backup should a failure of the ~~ISO 7638:1997~~ **Brake electric/electronic interface** power supply occur.

...

(c) In the event of a failure of the ~~ISO 7638:1997~~ **Brake electric/electronic interface** power supply the energy consumed by the braking system shall not result in the maximum available power from the additional supply being exceeded.

...

(g) Should a failure exist within the electrical supply of energy from the ~~ISO 7638:1997~~ **Brake electric/electronic interface** the requirements of paragraphs 5.2.2.15.2.1. and 4.1. of Annex 13 with respect to failure warning shall apply irrespective of the operation of the braking system from the additional power supply. "

Amend paragraph 5.2.2.18., to read:

5.2.2.18. "...power supplied by the ~~ISO 7638:1997 connector~~ **Brake electric/electronic interface** is used for the functions defined in paragraph 5.1.3.6.2 above, ... "

Amend paragraph 5.2.2.20., to read:

5.2.2.20. "...specified in paragraph 5.2.1.29.2. shall be activated via ~~pin 5 of the ISO 7638:1997 17/ connector~~ **signal 5 of the Brake electric/electronic interface as defined in this regulation.** In addition, trailers ... "

Delete foot note 17/ on page 49.

~~17/ The ISO 7638:1997 connector may be used for a 5 pin or 7 pin applications, as~~

appropriate.

Annex 6

Amend paragraph 3.4.1., to read:

- 3.4.1 "... shall provide the appropriate information to the trailer via ~~pins 6 and 7 of the ISO 7638:1997 connector~~ **signals 6 and 7 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)**. For the ... "

Amend paragraph 3.5.1.1., to read:

- 3.5.1.1. "...be checked with the electrical power supplied to the trailer via the ~~ISO 7638:1997 connector (5 or 7 pin)~~ **Brake electric/electronic interface (signal 5 or 7)** "

Annex 6.. Appendix, amend the text of Example 3 page 91, to read:

" ... ECL = electric control line corresponding to ISO 7638 **or the Brake electric/electronic interface ...**"

Annex 10, amend the foot note 1/ on page 106, to read:

"... shall only apply when the trailer is electrically connected to the towing vehicle by ~~the ISO 7638:1997 connector~~ **an electric connection realizing the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)**. "

Annex 13

Amend paragraph 4.2., to read:

- 4.2. "...used for this purpose, activated via ~~pin 5 of the electrical connector conforming to ISO 7638:1997 4/~~ **signal 5 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)**. "

Delete the foot note 4/ on page 185:

~~4/ The ISO 7638:1997 connector may be used for 5 pin or 7 pin applications, as appropriate.~~

Annex 17

Amend paragraph 1.1., to read:

- 1.1 "... Performance requirements referred to in paragraph ~~5.1.3.6.1~~ **5.1.3.6.2.1** of this ... "

Amend paragraph 1.2., to read:

- 1.2. "The references to ~~ISO 7638~~ **Brake electric/electronic interface** within this annex apply to ~~ISO 7638 1:1997 for 24V applications and ISO 7638 2:1997 for 12V applications~~ **to an electric connection realizing the Brake electric/electronic interface as defined in this regulation (paragraph 2.34) whether it concerns 12V or 24V installations**".

Amend paragraph 3.1.1., to read:

- 3.1.1. "...have a ~~connector meeting ISO 7638:1997 (7 pin)~~ **a 7 pin electric connection realizing the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)** to connect to the vehicle under test. ~~Pins 6 and 7 of the connector~~ **Signal 6 and 7 of the Brake electric/electronic interface** shall be used to transmit and receive messages complying with ISO 11992:2003 "

Amend paragraph 3.2.2., to read:

- 3.2.2. "...the simulator connected to the motor vehicle via the ~~ISO 7638 interface~~ **Brake electric/electronic interface** and whilst all ... "

Amend paragraph 3.2.2.3.1., to read:

3.2.2.3.1. "Simulate a permanent failure in the communication line to ~~pin 6 of the ISO 7638 connector~~ **for signal 6 of the Brake electric/electronic interface as defined in this regulation** and check that the ... "

Amend paragraph 3.2.2.3.2., to read:

3.2.2.3.2. "Simulate a permanent failure in the communication line to ~~pin 7 of the ISO 7638 connector~~ **for signal 7 of the Brake electric/electronic interface as defined in this regulation** and check that the ... "

Amend paragraph 4.1.1., to read:

4.1.1. "...have a ~~connector meeting ISO 7638:1997 (7 pin)~~ **a 7 pin electric connection realizing the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)** to connect to the vehicle under test. ~~Pins 6 and 7~~ **Signal 6 and 7 of the connector Brake electric/electronic interface** shall be used to transmit and receive messages complying with ISO 11992:2003 "

Amend paragraph 4.2.2., to read:

4.2.2. "...the simulator connected to the motor vehicle via the ~~ISO 7638 interface~~ **Brake electric/electronic interface** and whilst all ... "

Amend paragraph 4.2.2.1.2., to read:

4.2.2.1.2. " ...

EBS 12, Byte 3, Bit 1-2	Pressure in the brake chambers or reaction of the trailer
01b	0 kPa (service brake released)
00b	The trailer is automatically braked to demonstrate that the combination is not compatible. A signal should also be transmitted via Pin 5 of the ISO 7638:1997 connector signal 5 of the Brake electric/electronic interface as defined in this regulation (yellow warning).

Amend paragraph 4.2.2.2.1.1., to read:

4.2.2.2.1.1. "...A signal should also be transmitted via ~~pin 5 of the ISO 7638 connector~~ **signal 5 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)** (yellow warning). "

Amend paragraph 4.2.2.2.1.2., to read:

4.2.2.2.1.2. "Reduce the voltage on ~~pins 1 and 2 of the ISO 7638 connector~~ **of signal 1 and 2 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)** to below a value A signal should also be transmitted via ~~pin 5 of the ISO 7638 connector~~ **signal 5 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)** (yellow warning). "

Amend paragraph 4.2.2.2.1.3., to read:

4.2.2.2.1.3. "...A signal should also be transmitted via ~~pin 5 of the ISO 7638 connector~~ **signal 5 of the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)** (yellow warning). "

Annex 19, Appendix 6, amend paragraph 2.3., to read:

2.3. "Methods of powering: ~~ISO 7638~~ **the Brake electric/electronic interface as defined in this regulation (paragraph 2.34)**, ISO 1185 etc. "

II. Justification

Summary of the proposal

- 1) Introduce an explicit definition of the “Brake electric/electronic interface”. This definition includes the signals currently managed through the ISO7638 connector.
- 2) Introduce requirements on the content of the signal bundle equivalent to ISO7638 signals into a new paragraph 5.1.3.6.1
- 2) Merge the definition of the Brake electric/electronic interface with the requirement to use the ISO7638 connector in paragraph 5.1.3.6.2. This is done through a restructuring of paragraph 5.1.3.6 from the current regulation.
- 3) Exchange in the main text all references to the ISO7638 with “Brake electric/electronic interface”.
- 4) Delete all footnotes commenting the difference between 5-pin and 7-pin ISO7638 connectors. This is a matter to be handled once in the requirement of when the ISO7638 connector shall be used.

Detailed justification of the proposal

New technologies like Fully Automated Coupling Systems, FACS are introduced into the market. These technologies address Safety, Efficiency, Environment and Work related illness. FACS and other applications will in the future create situations where the ISO7638 connector can not be used. Other solutions will evolve. Those solutions will safely handle the signals handled through the ISO7638 connector. However in those cases references to ISO7638 for a definition of the signals is inappropriate and prone to misunderstanding. Hence an explicit definition of the Brake electric/electronic interface is introduced.

Regulation No. 13 is requiring the use of ISO7638 hence the definition of the “Brake electric/electronic interface” giving the nomenclature has to be merged with this requirement in paragraph 5.1.3.6.

Footnote 16 on page 47 concerning reduced wiring has been deleted and relocated in connection with paragraph 5.1.3.6.

Except for the explicit requirement in paragraph 5.1.3.6 to use the ISO7638 connector all references in the bulk text of ECE R13 is exchanged for references to relevant parts of the definition of the “Brake electric/electronic interface”.

The deletion of all the footnotes concerning 5 pin and 7 pin applications is justified through the fact that in this proposal the details of the physical realization is the subject of a separate paragraph, e.g. 5.1.3.6.2.
