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REGULATIONS Nos. 13 and 13-H (Braking)

Electric control transmission

Proposal for draft amendments to Regulation No. 13

Submitted by the experts from the European Association of Automotive Suppliers (CLEPA)
and the International Organization of Motor Vehicle Manufacturers (OICA) *

The text reproduced below was prepared by the experts from CLEPA and OICA to ensure in
Regulation No. 13 the compatibility between towing vehicles and trailers with regard to the
electric control transmission. It is mainly based on a document without a symbol (informal
document No. GRRF-62-09 and Add.1), distributed during the sixty-second session of the
Working Party on Brakes and Running Gear (GRRF) (see report ECE/TRANS/WP.29/GRRF/62,
para. 19).

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A.   PROPOSAL

Throughout the text of Regulation No. 13, replace the reference to "ISO11992:2003" by "ISO11992:2003 including ISO11992-2:2003 and its Amd.1:2007".

Insert a new paragraph 5.1.3.6.1., to read:

"5.1.3.6.1. The support of messages defined within ISO11992-2:2003 including Amd.1:2007 is specified within Annex 16 to this Regulation for the towing vehicle and trailer as appropriate."

Paragraphs 5.1.3.6.1. and 5.1.3.6.2. (former), renumber as paragraphs 5.1.3.6.2. and 5.1.3.6.3. respectively.

Paragraph 5.2.1.30.5., delete the reference to footnote 12/ and the footnote 12/

Paragraph 5.2.2.22.1., delete the reference to footnote 19/ and the footnote 19/

Paragraph 5.2.2.22.2., delete the reference to footnote 21/ and the footnote 21/

Add a new Annex 16, to read:

"Annex 16

COMPATIBILITY BETWEEN TOWING VEHICLES AND TRAILERS
WITH RESPECT TO ISO11992 DATA COMMUNICATIONS

1.   General

1.1.   The requirements of this Annex shall only apply to towing vehicles and trailers equipped with an electric control line as defined in paragraph 2.24. of the Regulation.

1.2   The ISO7638 connector provides a power supply for the braking system or anti-lock braking system of the trailer. In the case of vehicles equipped with an electric control line as defined in paragraph 2.24. of the Regulation this connector also provides a data communication interface via Pins 6 and 7 – see paragraph 5.1.3.6. of the Regulation.

1.3.   This Annex defines requirements applicable to the towing vehicle and trailer with respect to the support of messages defined within ISO11992-2:2003 including Amd.1:2007.

2.   The parameters defined within ISO11992-2:2003 including Amd.1:2007 that are transmitted by the electric control line shall be supported as follows:

2.1   The following functions and associated messages are those specified within this Regulation that shall be supported by the towing vehicle or trailer as appropriate:

2.1.1. Messages transmitted from the towing vehicle to the trailer:

Function / Parameter	ISO11992-2:2003 Reference	Regulation No. 13 Reference
Service/secondary brake demand value	EBS11 Byte 3-4	Annex 10 Paragraph 3.1.3.2.
Two electrical circuits brake demand value	EBS12 Byte 3 Bit 1-2	Regulation 13 Paragraph 5.1.3.2
Pneumatic control line	EBS12 Byte 3 Bit 5-6	Regulation 13 Paragraph 5.1.3.2

2.1.2. Messages transmitted from the trailer to the towing vehicle:

Function / Parameter	ISO11992-2:2003 Reference	Regulation No. 13 Reference
VDC Active / passive	EBS21 Byte 2 Bit 1-2	Annex 21 Paragraph 2.1.6
Vehicle electrical supply sufficient / insufficient	EBS22 Byte 2 Bit 1-2	Regulation 13 Paragraph 5.2.2.20.
Red warning signal request	EBS22 Byte 2 Bit 3-4	Regulation 13 Paragraphs 5.2.2.15.2.1., 5.2.2.16. and 5.2.2.20.
Supply line braking request	EBS22 Byte 4 Bit 3-4	Regulation 13 Para. 5.2.2.15.2.
Stop lamps request	EBS22 Byte 4 Bit 5-6	Regulation 13 Para. 5.2.2.22.1.
Vehicle pneumatic supply sufficient / insufficient	EBS23 Byte 1 Bit 7-8	Regulation 13 Para. 5.2.2.16.

2.2 When the trailer transmits the following messages, the towing vehicle shall provide a warning to the driver:

Function / Parameter	ISO11992-2:2003 Reference	Driver Warning Required
VDC Active / Passive 1/	EBS21 Byte 2 Bit 1-2	Annex 21, Para. 2.1.6.
Red warning signal request	EBS22 Byte 2 Bit 3-4	Regulation 13, Para. 5.2.1.29.2.1.

2.3. The following messages defined in ISO11992-2:2003 including Amd.1:2007 shall be supported by the towing vehicle or trailer:

2.3.1. Messages transmitted from the towing vehicle to the trailer:

1/ VDC (Vehicle Dynamic Control) as defined within ISO11992-2:2003 including Amd.1:2007 is defined within this Regulation as Vehicle Stability Function – see paragraph 2.32. of the Regulation.

No messages currently defined.

2.3.2. Messages transmitted from the trailer to the towing vehicle:

Function / Parameter	ISO11992-2:2003 Reference
Vehicle service brake active / passive	EBS22 Byte 1, Bit 5-6
Braking via electric control line supported	EBS22 Byte 4, Bit 7-8
Geometric data index	EBS24 Byte 1
Geometric data index content	EBS24 Byte 2

2.4   The following messages shall be supported by the towing vehicle or trailer as appropriate when the vehicle is installed with a function associated with that parameter:

2.4.1. Messages transmitted from the towing vehicle to the trailer:

Function / Parameter	ISO11992-2:2003 Reference
Vehicle type	EBS11 Byte 2, Bit 3-4
VDC (Vehicle Dynamic Control) Active / passive 2/	EBS11 Byte 2, Bit 5-6
Brake demand value for front or left side of vehicle	EBS11 Byte 7
Brake demand value for rear or right side of vehicle	EBS11 Byte 8
ROP (Roll Over Protection) system enabled/disabled 3	EBS12 Byte 1, Bit 3-4
YC (Yaw Control) system enabled/disabled 4/	EBS12 Byte 1, Bit 5-6
Enable/disable trailer ROP (Roll Over Protection) system 3/	EBS12 Byte 2, Bit 1-2
Enable/disable trailer YC (Yaw Control) system 4/	EBS12 Byte 2, Bit 3-4
Traction help request	RGE11 Byte 1, Bit 7-8
Lift axle 1 - position request	RGE11 Byte 2, Bit 1-2
Lift axle 2 - position request	RGE11 Byte 2, Bit 3-4
Steering axle locking request	RGE11 Byte 2, Bit 5-6
Seconds	TD11 Byte 1
Minutes	TD11 Byte 2
Hours	TD11 Byte 3
Months	TD11 Byte 4
Day	TD11 Byte 5
Year	TD11 Byte 6
Local minute offset	TD11 Byte 7
Local hour offset	TD11 Byte 8

2/   VDC (Vehicle Dynamic Control) as defined within ISO11992-2:2003 including Amd.1:2007 is defined within this Regulation as Vehicle Stability Function – see paragraph 2.32. of the Regulation.

3 /   ROP (Roll Over Protection) as defined within ISO11992-2:2003 including Amd.1:2007 is defined within this Regulation as Roll-Over Control – see paragraph 2.32.2.2 of the Regulation.

4 /   YC (Yaw Control) as defined within ISO11992-2:2003 including Amd.1:2007 is defined within this Regulation as Directional Control – see paragraph 2.32.2.1. of the Regulation.

2.4.2.   Messages transmitted from the trailer to the towing vehicle:

Function / Parameter	ISO11992-2:2003 Reference
Support of side or axle wise brake force distribution	EBS21 Byte 2, Bit 3-4
Wheel based vehicle speed	EBS21 Byte 3-4
Lateral acceleration	EBS21 Byte 8
Vehicle ABS active / passive	EBS22 Byte 1, Bit 1-2
Amber warning signal request	EBS22 Byte 2, Bit 5-6
Vehicle type	EBS22 Byte 3, Bit 5-6
Loading ramp approach assistance	EBS22 Byte 4, Bit 1-2
Axle load sum	EBS22 Byte 5-6
Tyre pressure sufficient / insufficient	EBS23 Byte 1, Bit 1-2
Brake lining sufficient / insufficient	EBS23 Byte 1, Bit 3-4
Brake temperature status	EBS23 Byte 1, Bit 5-6
Tyre / wheel identification (pressure)	EBS23 Byte 2
Tyre / wheel identification (lining)	EBS23 Byte 3
Tyre / wheel identification (temperature)	EBS23 Byte 4
Tyre pressure (actual tyre pressure)	EBS23 Byte 5
Brake lining	EBS23 Byte 6
Brake temperature	EBS23 Byte 7
Brake cylinder pressure first axle left wheel	EBS25 Byte 1
Brake cylinder pressure first axle right wheel	EBS25 Byte 2
Brake cylinder pressure second axle left wheel	EBS25 Byte 3
Brake cylinder pressure second axle right wheel	EBS25 Byte 4
Brake cylinder pressure third axle left wheel	EBS25 Byte 5
Brake cylinder pressure third axle right wheel	EBS25 Byte 6
ROP (Roll Over Protection) system enabled/disabled 5/	EBS25 Byte 7, Bit 1-2
YC (Yaw Control) system enabled/disabled 6/	EBS25 Byte 7, Bit 3-4
Traction help	RGE21 Byte 1, Bit 5-6
Lift axle 1 position	RGE21 Byte 2, Bit 1-2
Lift axle 2 position	RGE21 Byte 2, Bit 3-4
Steering axle locking	RGE21 Byte 2, Bit 5-6
Tyre wheel identification	RGE23 Byte 1
Tyre temperature	RGE23 Byte 2-3
Air leakage detection (Tyre)	RGE23 Byte 4-5
Tyre pressure threshold detection	RGE23 Byte 6, Bit 1-3

5/   ROP (Roll Over Protection) as defined within ISO11992-2:2003 including Amd.1:2007 is defined within this Regulation as Roll-Over Control – see paragraph 2.32.2.2 of the Regulation.

6/   YC (Yaw Control) as defined within ISO11992-2:2003 including Amd.1:2007 is defined within this Regulation as Directional Control – see paragraph 2.32.2.1. of the Regulation.

2.5   The support of all other messages defined within ISO11992-2:2003 including Amd.1:2007 is optional for the towing vehicle and trailer."

Annex 17

Add new paragraphs 3.2.2.6. and 3.2.2.7., to read:

"3.2.2.6. Illumination of stop lamps

Simulate message EBS 22 byte 4 bits 5 to 6 set to 00 and check that the stop lamps are not illuminated.

Simulate message EBS 22 byte 4 bits 5 to 6 set to 01 and check that the stop lamps are illuminated.

3.2.2.7. Intervention of Trailer Stability Function

Simulate message EBS 21 byte 2 bits 1 to 2 set to 00 and check that the driver warning defined in paragraph 2.1.6. of Annex 21 is not illuminated.

Simulate message EBS 21 byte 2 bits 1 to 2 set to 01 and check that the driver warning defined in paragraph 2.1.6. of Annex 21 is illuminated."

Add a new paragraph 3.2.3.2., to read:

"3.2.3.2. Paragraph 2.4.1. of Annex 16 defines additional messages that shall under specific circumstances be supported by the towing vehicle. Additional checks may be carried out to verify the status of supported messages to ensure the requirements of paragraph 5.1.3.6.2. of the Regulation are fulfilled."

Add new paragraphs 4.2.2.4. to 4.2.2.6., to read:

"4.2.2.4. Automatically commanded braking

In the case the trailer includes a function where its operation results in an automatically commanded braking intervention, the following shall be checked:

If no automatically commanded braking intervention is generated, check that message EBS 22 byte 4 bits 5 to 6 are set to 00.

Simulate an automatically commanded braking intervention, when the resulting deceleration is $\geq 0.7 \text{m/sec}^2$, check that message EBS 22 byte 4 bits 5 to 6 are set to 01.

4.2.2.5. Vehicle stability function

In the case of a trailer equipped with a vehicle stability function, the following checks shall be carried out:

When the vehicle stability function is inactive, check that message EBS 21 byte 2 bits 1 to 2 are set to 00.

Simulate an intervention of the vehicle stability control function as specified in paragraph 2.2.4. of Annex 21 and check that message EBS 21 byte 2 bits 1 to 2 are set to 01."

4.2.2.6. Support of the electric control line

Where the trailer braking system does not support braking via the electric control line check that message EBS 22 byte 4 bits 7 to 8 are set to 00.

Where the trailer braking system supports the electric control line, check that message EBS 22 byte 4 bits 7 to 8 are set to 01."

Add a new paragraph 4.2.3.2., to read:

"4.2.3.2. Paragraph 2.4.2. of Annex 16 defines additional messages that shall under specific circumstances be supported by the trailer. Additional checks may be carried out to verify the status of supported messages to ensure the requirements of paragraph 5.1.3.6.2. of the Regulation are fulfilled."

B.   JUSTIFICATION

Within Part 2 of ISO11992:2003, there is a total of 85 messages among which 28 are transmitted by the towing vehicle and 57 by the trailer and among which only 3 are mandated for towing vehicle and 4 for the trailer. This means that should the towing vehicle or trailer support a function for which a message is defined, there is no requirement for the recipient of the message to action of respond. It was considered by industry that this was an anomaly that needed to be addressed by defining which messages the respective vehicle should support. An informal industry group was convened with the objective of defining requirements for supported messages and re-instating Annex 16 within Regulation No. 13 to determine specific requirements associated with the defined messages. However, this work was completed in 2004 by the EVSC expert group and ISO which proceeded to amend the standard to include new messages mainly related to vehicle specification and functionality associated with stability control. Therefore, it was decided to postpone making any proposal to GRRF until the EVSC group and ISO had concluded their work.

In parallel to the work of the EVSC expert group, the informal industry group continued to meet and liaised with ISO to advise of decisions made by the EVSC Group which should be reflected in the standard.

The informal industry group defined categories for respective ISO11992 messages as follows:
1. Mandatory towing vehicle or trailer messages defined elsewhere within the Regulation;
2. Mandatory messages which also require driver warning;
3. Messages defined within Annex 16 that are mandatory for either the towing vehicle or trailer;
4. Messages that must be supported whenever the associated function is supported by the vehicle;
5. Optional.

Based on the above categorised list the requirements associated with each category have been included in a re-instated Annex 16 along with additions to Annex 17 to verify the conformity with ISO11992 Standard.

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