

ISO 11992 Messages and Signalling

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

Throughout Regulation No. 13, the current reference to "ISO11992:2003" shall be replaced with "ISO11992:2003 including Amendment 1".

Add a new paragraph 5.1.3.6.1., to read:

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

Renumber existing paragraphs 5.1.3.6.1. and 5.1.3.6.2. to 5.1.3.6.2. and 5.1.3.6.3. respectively.

Paragraph 5.2.1.30.5., amend to read:

Delete footnote ***/

Paragraph 5.2.2.22.1., amend to read:

Delete footnote ****/

Paragraph 5.2.2.22.2., amend to read:

Delete footnote ****/

Add a new Annex 16, to read:

Annex 16

Compatibility Between Towing Vehicles and Trailers With Respect to ISO11992 Data Communications

- 1.0 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 Part 2 of ISO11992:2003 including amendment 1.
2. The parameters defined within Part 2 of ISO11992:2003 including amendment 1 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 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 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 * | 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. |

* VDC (Vehicle Dynamic Control) as defined within ISO11992:2003 including amendment 1 is defined within this Regulation as Vehicle Stability Function – see paragraph 2.32. of the Regulation

2.3. The following messages defined in Part 2 of ISO11992:2003 including amendment 1 shall be supported by the towing vehicle or trailer:

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

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 * | 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 ** | EBS12 Byte 1, Bit 3-4 |
| YC (Yaw Control) system enabled/disabled *** | EBS12 Byte 1, Bit 5-6 |
| Enable/disable trailer ROP (Roll Over Protection) system ** | EBS12 Byte 2, Bit 1-2 |
| Enable/disable trailer YC (Yaw Control) system *** | 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 |

* VDC (Vehicle Dynamic Control) as defined within ISO11992:2003 including amendment 1 is defined within this Regulation as Vehicle Stability Function – see paragraph 2.32. of the Regulation

** ROP (Roll Over Protection) as defined within ISO11992:2003 including amendment 1 is defined within this Regulation as Roll-Over Control – see paragraph 2.32.2.2 of the Regulation

*** YC (Yaw Control) as defined within ISO11992:2003 including amendment 1 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 * | EBS25 Byte 7, Bit 1-2 |
| YC (Yaw Control) system enabled/disabled ** | 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 |

* ROP (Roll Over Protection) as defined within ISO11992:2003 including amendment 1 is defined within this Regulation as Roll-Over Control – see paragraph 2.32.2.2 of the Regulation

** YC (Yaw Control) as defined within ISO11992:2003 including amendment 1 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 Part 2 of ISO11992:2003 including amendment 1 is optional for the towing vehicle and trailer.

Annex 17:

Add a new paragraph 3.2.2.6 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.”

Add a new paragraph 3.2.2.7. to read:

“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 a new paragraph 4.2.2.4. to read:

“4.2.2.4. Automatically Commanded Braking
In the case where the trailer includes a function where its operation results in an automatically commanded braking intervention the following shall be checked:
With 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 commended braking intervention where 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.”

Add a new paragraph 4.2.2.5 to read:

“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 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.”

Add a new paragraph 4.2.2.6. to read:

“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.

Justification:

Within Part 2 of ISO11992:2003 there are a total of 85 messages which is split between 28 transmitted by the towing vehicle and 57 by the trailer of 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 or 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-instate Annex 16 within Regulation No. 13 to define specific requirements associated with the defined messages. This work was completed in 2004 however at that time the Ad-Hoc EVSC Group had been convened and ISO were in the process of amending the standard to include new messages which were 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 Ad-Hoc Group the informal industry group continued to meet and liaised with ISO to advise of decision made with 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 check conformity to the ISO11992 Standard.
