
Typ / Type : EB+ 4.0
Hersteller / Manufacturer : Haldex Brake Products Ltd., Lindley Warwickshire CV13 6DE

Prüfbericht / Test Report

Hinsichtlich der

**Gateway Funktion für Reifendrucküberwachungssysteme
für einen Bezugsanhänger
(Anhang 7 - Anlage 4)**

Concerning the

**Gateway function for Tyre Pressure Monitoring Systems
of a reference trailer
(Annex 7 - Appendix 4)**

Gemäß UN Regelung Nr.

141

einschließlich

**Änderungsserie 01,
Ergänzung 2**

According UN Regulation No.

141

including

**Series of amendments 01,
Supplement 2**

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0. Allgemeine Angaben
General

- 0.1. Fabrikmarke : Haldex Brake Products Ltd.
(Firmenname des Herstellers)
Make (trade name of manufacturer)
- 0.2. Typ : EB+ 4.0
Type
- 0.3. Fahrzeugklasse : O₃, O₄
Category of vehicle
- 0.4. Name und Anschrift des : Haldex Brake Products Ltd.
Herstellers MIRA Technology Park
Manufacturer's name and address Lindley Warwickshire CV13 6DE
- 0.4.1. Name und Anschrift des : Entfällt
Bevollmächtigten des Herstellers
Name and address of the *Not applicable*
manufacturer's representative
- 0.5. Beschreibungsbogen
Information document
- Name : GS 0651 (issue 3)
Name
- Ausgabedatum : 20-01-23
Date of issue
- Letztes Änderungsdatum : --
Date of last change
- 0.6. Anbringungsort des : Entfällt
Genehmigungszeichens
Location of the Approval Mark *Not applicable*

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1. **Prüffahrzeug(e)/-objekt(e)** : Siehe Messblatt (Anlage 2.)
Test vehicle(s)/-object(s) *See test sheet (Enclosure 2.)*
2. **Prüfprotokoll**
Test record
- 2.1. Ort der Prüfung : Siehe Messblatt (Anlage 2.)
Place of testing *See test sheet (Enclosure 2.)*
- 2.2. Datum der Prüfung : Siehe Messblatt (Anlage 2.)
Date of testing *See test sheet (Enclosure 2.)*
- 2.3. Mess- und Prüfeinrichtungen : Die Prüfungen wurden auf Anlagen durchgeführt,
Equipment for measuring and testing die den Anforderungen der o.g. Verordnung
entsprechen.
The equipment, on which the tests were carried out, fulfilled the requirements of the above mentioned regulation.
- Liste der Prüfmittel : Siehe Messblatt (Anlage 2.)
List of testing equipment *See test sheet (Enclosure 2.)*
- Messunsicherheit : Siehe Verfahrensanweisung:
Uncertainty of measurement *See procedural instruction:*
- VA 25 – Ermittlung der Messunsicherheit (Rev. 00, Stand 03/2020)
VA 25 - Determination of measurement uncertainty (Rev. 00, Status 03/2020)
- Entscheidungsregel : Siehe Verfahrensanweisung:
Decision rule *See procedural instruction:*
- VA 30 Anwendung der Entscheidungsregel (Rev. 02, Stand 05/2020)
VA 30 Application of the decision rule (Rev. 02, as of 05/2020)

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- 2.4. Prüfergebnisse : Nachfolgende Punkte die sich auf ein Fahrzeug
Test results beziehen wurden als „not applicable“ bewertet, da
sich die durchgeführten Prüfungen auf das System
beschränken.
*The following points relating to a vehicle have been
marked as "not applicable", as the tests carried out to the
system.*

Hinweis: Nachfolgende Nummerierung entspricht UN-R 141
Please note: The following numbering system complies with UN-R 141

5. Specifications and tests
- 5.6. Communications interface between towing and towed vehicles
- 5.6.1. Vehicles of category N₂ or N₃ towing at least one : fulfilled
vehicle of category O₃ or O₄ and vehicles of : not applicable
category O₃ and O₄ shall be equipped with a
communication interface to exchange
TPMS/TPRS/CTIS data information between
towing and towed vehicles. This may be achieved
as a wired or a wireless interface, provided that the
TPMS/TPRS/CTIS equipment in the towing vehicle
and in the towed vehicle(s) are compatible.
- 5.6.1.1. The data communication with wired equipment : fulfilled
shall be based on the braking electric control line : not applicable
conforming to ISO 11992-1:2019 and
ISO 11992-2:2014 and be a point-to-point type
using the seven pin connector according to
ISO 7638-1:2018 or ISO 7638-2:2018 or an
appropriate automated connector.
- Other wired specifications may be used, provided : fulfilled
that the TPMS/TPRS/CTIS equipment in the : not applicable
towing vehicle and in the towed vehicle(s) are
compatible and fulfil the same functional
requirements.
- 5.6.1.1.1. The support of messages is specified within Part A
of Annex 5 to this Regulation for the towing vehicle
and the towed vehicle(s).
- 5.6.1.1.2. The functional compatibility of towing and towed : fulfilled
vehicles equipped with data communication lines : not applicable
as described in paragraph 5.6.1.1. above shall be
assessed at the time of type approval by checking
that the relevant provisions as specified in Part A
of Annex 5 are fulfilled.
- Annex 6 to this Regulation provides a procedure
for tests that may be used to perform this
assessment.

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- 5.6.1.2. In the case of a point-to-point link between a towing vehicle ECU and a towed vehicle ECU, the towed vehicle ECU, which constitutes part of the point-to-point link, shall provide an interface according to an open standard specification to allow the ECU(s) providing TPMS/TPRS/CTIS functionality, which does (do) not constitute part of the point-to-point link, to connect, communicate and operate via the towed vehicle ECU which constitutes part of the point-to-point link with ECU of the towing vehicle, i.e. standardised gatewaying. This data communication interface is specified in Part B of Annex 5. : fulfilled
: not applicable
- 5.6.1.3. In the case of data communication with wireless equipment, the communication link shall be an open standard specification. Provision shall be made to ensure that the wireless link is set up between the physically connected vehicles (as opposed to other vehicles in the vicinity), and that information shared over this link is secure against outside interference. The same functional requirements as required in paragraph 5.6.1.1. shall be fulfilled. : fulfilled
: not applicable

Hinweis: Nachfolgende Nummerierung entspricht UN-R141, Anhang 7

Please note: The following numbering system complies with UN-R141, Annex 7

4. Test schedule for reference trailer

- 4.1.1. In case of TPMS: Puncture Test: Conduct a test according to Annex 3 to this Regulation : fulfilled
: not applicable
- 4.1.2. In case of TPMS: Diffusion Test: Conduct a test according to Annex 3 to this Regulation : fulfilled
: not applicable
- 4.1.3. In case of TPRS / CTIS: Refill Test: Conduct a test according to Annex 4 to this Regulation : fulfilled
: not applicable
- 4.1.4. In case of TPMS: Malfunction Test: Conduct a test according to Annex 3 to this Regulation : fulfilled
: not applicable
- 4.1.5. In case of TPRS / CTIS: Malfunction Test: Conduct a test according to Annex 4 to this Regulation : fulfilled
: not applicable
- 4.1.6. Data communication: In case of usage of ISO11992 Gateway: Communication Test: Conduct a test according to Annex 6 to this Regulation : fulfilled
: See test sheet (Encl. 2.)
: not applicable

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2.5. Bemerkungen : Die durchgeführten Prüfungen wurden auf
Remarks Grundlage des Anhang 7 der UN-R 141 am
„Reference Trailer“ durchgeführt und
dient als Prüfgrundlage eines „Subject Trailer“
gem. Anhang 8 der UN-R 141.
*The conducted tests were carried out on "Reference
Trailer" on the basis of Annex 7 of UN-R 141 and serves
as the basis for testing a "Subject Trailer" in accordance
with Annex 8 of in accordance with Annex 8 of UN-R 141.*

3. Anlagen *Enclosures*

1 : Liste der Änderungen
List of modifications

2 : Messblätter
Test sheets

Gültige Messblätter : Test sheet 1
Valid test sheets

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4. **Schlussbescheinigung** **Statement of conformity**

Der / Die unter Nr. 0.5. genannte Beschreibungsbogen / Beschreibungsmappe und der darin beschriebene Typ - **entsprechen** - der oben angegebenen Prüfpezifikation.
*The information document / folder mentioned under No. 0.5. and the type described therein are - **in compliance** - with the Test Specification mentioned above.*

Die verwendeten Fahrzeuge/Objekte waren im Hinblick auf das erforderliche Leistungsniveau für den zu genehmigenden Typ repräsentativ (siehe Nr. 1.).
With the required level of performance to be achieved, the tested vehicles/objects were representative for the type to be approved (see no 1.)

Die Prüfungen wurden entsprechend der relevanten Anforderungen der EN ISO/IEC 17025:2018 durchgeführt.
The tests were carried out in accordance with the relevant requirements of EN ISO/IEC 17025:2018.

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Dieser Prüfbericht umfasst die Seiten 1 bis 7.
The Test Report comprises pages 1 to 7.

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DIN EN ISO/IEC 17025, 17020
Benannt als Technischer Dienst / Designated as Technical service
vom Kraftfahrt Bundesamt / by *Kraftfahrt-Bundesamt*: KBA – P 00004-96

Geschäftsstelle Hannover, 13.11.2023



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Liste der Änderungen
List of modifications

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Entfällt
Not applicable

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Messblatt / Test sheet

Test sheet 1

Gateway Funktion für Reifendrucküberwachungssysteme für einen Bezugsanhänger

Gateway function for Tyre Pressure Monitoring Systems of a reference trailer

Gemäß UN Regelung Nr.

141

einschließlich

**Änderungsserie 01,
Ergänzung 2**

According UN Regulation No.

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including

**Series of amendments 01,
Supplement 2**

1. Prüffahrzeug(e)/-objekt(e)
Test vehicle(s)/-object(s)

1.1. Beschreibung
Description

1.1.1. Fahrzeugtyp : 1: Montracon Curtain Sider, Tri-axle semi-trailer
Vehicle Type : 2: Krone Flat Bed, Tri-Axle semi-trailer
3: Test bench

1.1.2. Variante / Version : Entfällt
Variant / Version : Not applicable

1.1.3. Kennzeichnung (FIN) : 1: SMRC3AXXXKN126689
Identification (VIN) : 2: WKESDP27051237884
3: --

1.1.4. Typ (System) : EB+ 4.0
Type (system)

1.1.5. Software-Stand : A803
Software version

1.2. Repräsentative(s) : Das geprüfte Fahrzeug/Prüfobjekt wurde nach den
Prüffahrzeug(e)/-objekt(e) ungünstigsten Kriterien hinsichtlich der
Representative test vehicle(s)/- Variante/Version und der Ausrüstung ausgewählt.
object(s) *The tested vehicle/object was selected by the worst
criteria regarding the variant/version and the equipment.*

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1.3. Bemerkungen : Keine
Remarks None

1.4. Zusätzliche Angaben : Keine
Additional information None

2. Prüfprotokoll
Test record

2.1. Ort der Prüfung : MIRA Technology Park
*Place of testing Lindley
Warwickshire
CV13 6DE*

2.2. Mess- und Prüfeinrichtungen : Die Prüfungen wurden auf Anlagen durchgeführt, die
*Equipment for measuring and testing den Anforderungen der o.g. Regelung entsprechen.
The equipment, on which the tests were carried out,
fulfilled the requirements of the above mentioned
regulation.*

Liste der Prüfmittel
List of testing equipment

Beschreibung <i>Description</i>	Serien-/QS-Nummer <i>Serial/QS number</i>
Reifenfülldruckmesser <i>Tyre inflation pressure gauge</i>	QS 120-002-318
Stopuhr <i>Stopwatch</i>	QS 120-000-989

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2.3. Prüfergebnisse :
 Test results

Hinweis: Nachfolgende Nummerierung entspricht UN-R 141, Anlage 7, Anhang 4
 Please note: The following numbering system complies with UN-R 141, Annex 7, Appendix 4

1. Identification
 - 1.1. Manufacturer of the ISO11992-2 Gateway ECU : See 0.1.
 - 1.2. System name/model : EB+ 4.0
2. System(s) and installations approved
 - 2.1. Range of application : Semi trailers,
Centre-axle trailers and
Full trailers
 - 2.2. System identification of TEBS system
to provide ISO11992 Gateway function : Part number:
842 xxx xxx
3. Test results
 - 3.1. Brief description of ISO11992-2 Gateway ECU :
 Extract from the information document, appendix 24b:
 "The ECU gathers tyre information from EBS23 and RGE23 messages
 broadcast on H-CAN or T-CAN buses, as long as they have the TPMS source
 address acc. to UN-R141, Annex 6 B, para. 4.
 This information is merged according to the ISO 11992:2014 standard into
 outgoing EBS23 and RGE23 messages to the predecessor vehicle."
 - 3.2. Result of the tests :
 - 3.3. According to Annex 6 (Gateway Function)
to this Regulation : The Low Tyre Pressure
Test and the Malfunction
Test(s) are performed on
the test vehicles.

Test	Measured Time to warning (mm:ss)
Low Tyre Pressure Test	
• Puncture Test	00:37
• Diffusion Test	00:08
Malfunction Test(s)	
• Replacing a tyre without a sensor	09:44
• Disconnect the power supply of the second RCU	09:30

Note: During the test, the gateway didn't show any significant delay.

Vehicle VIN transmission by the gateway acc. to : If the VIN will be trans-
 3.2.2.1. of Annex 6 mitted, if it has been
entered by the vehicle
manufacturer.

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4. Limits of installation : TPMS/TPRS/CTIS shall be connected to H-CAN or T-CAN
- 4.1. Other recommendations/limitations (Output of messages and signals required by TPMS so that the vehicle shall meet the performance requirements contained in paragraphs 5.1.2. to 5.6. of this Regulation and fulfil the tests (puncture, diffusion and malfunction) as specified in Annex 3 to this Regulation e.g. vehicle-speed) : none
- 4.2. Other recommendations/limitations (Output of messages and signals required by TPRS / CTIS so that the vehicle shall meet the performance requirements contained in paragraphs 5.1.2. to 5.6. of this Regulation and fulfil the tests (puncture, diffusion and malfunction) as specified in Annex 4 to this Regulation e.g. vehicle-speed) : none
5. Date of test : 11-14.10.2022
6. This test(s) was carried out and the results reported in accordance with Annex 6 of the UN Regulation and the series of amendments and supplement referred to page 1.
7. Technical Service conducting the test : See statement of conformity
- 2.4. Bemerkungen : Keine
Remarks : None