

Heavy Vehicle Specialist Certificate

Must be presented to a CoF (Heavy) Inspecting Organisation
Heavy Vehicle Specialist Inspector and Inspecting Organisation

| | |
|---|------------------|
| Heavy Vehicle Specialist Inspector's or Manufacturing Inspecting Organisation's Name (PRINT IN CAPS) Jaco de Kock | ID JDK |
|---|------------------|

| | |
|-----------------------|--|
| Vehicle Registration* | VIN/Chassis Number 7 A 9 E 2 5 0 1 9 E 1 0 2 3 3 1 7 |
|-----------------------|--|

Component being certified:

| | | |
|---|--|---------------------------------------|
| <input type="checkbox"/> Chassis Modification | <input type="checkbox"/> Load Anchorage | <input type="checkbox"/> Log Bolsters |
| <input type="checkbox"/> Towing Connection | <input checked="" type="checkbox"/> Brakes | <input type="checkbox"/> SRT |
| <input type="checkbox"/> PSV Stability | <input type="checkbox"/> PSV Rollover | <input type="checkbox"/> Swept Path |
| <input type="checkbox"/> PBS | | |

Certification Category
HVEK

Description of Work
SET UP EBS SYSTEM TO COMPLY TO NEW ZEALAND HEAVY VEHICLE BRAKE RULE 32015 SCHEDULE 5

| | |
|--|--------------------------|
| Code/Standard/Rule Certified to NZHVBR32015 Schedule 5 | Component Load Rating(s) |
| General Drawing Number(s) N/A | |

Supporting Documents
BRAKE PERFORMANE CALCILATION
END OF LINE REPORT

Special Conditions*
WARNING LAMP MUST ILLUMINATE WHEN IGNITION IS SWITCHED ON THEN EXTINGGUISH WITHIN 2 SECONDS OR WHEN VEHICLE EXCEEDS 7KPH

| | | |
|---|----|---|
| Certification Expiry Date (if applicable) | or | Hubodometer Reading (whichever comes first) |
| | | |

Declaration

I the undersigned, declare that I am the Heavy Vehicle Specialist Inspector identified and I hold a current valid appointment. I certify that the above mentioned vehicle component's design, manufacture and installation, and this certification complies in all respects with the Land Transport Rule: Vehicle Standards Compliance 2002 and my Appointment. To the best of my knowledge the information contained in the Certificate is true and correct.

Designer's ID (if different from inspector below)

Inspector's Signature

Inspector's Name (PRINT IN CAPS) **JACO** ID Number **JDK**

Date **17/03/2015** Number **500601**

| | | |
|--------------------------|---------------------------------|------|
| CoF Vehicle Inspector ID | CoF Vehicle Inspector Signature | Date |
| | | |

All fields excluding those marked with * must be completed before this certificate can be accepted.

**KNORR-BREMSE**ECUtalk® - TEBS G2 / G2.x
(v.3.2.19.0)

EOL Report

| | | | | | | | | | | | | |
|--------------------------------|---------------------------|-----------|----------------------------|----------------|--------------------------|-----|------------------------|------------|----------|----------------|----|---|
| TEBS G2 ES2060 | ES2060 | | | K019302V05N00 | | | E48 | 13R- | | | | |
| SW Version | TBSG.700.141.001.008 | | | KB Help Centre | | | + 49 (0) 180 566 77 05 | | | | | |
| Type | Full-trailer | | | Manufacturer | | | Domett Trailers | | | | | |
| Brake calculation no. | 7A9E25019E1023317 | | | VIN | | | 7A9E25019E1023317 | | | | | |
| Serial number | 20143270118 | | | PIN | | | 00 00 00 9D | | | | | |
| | Front pressure parameters | | | | Rear pressure parameters | | | | Axle | Max. load [kg] | | |
| Demand | Pneumatic (CAN) [bar] | | | | Pneumatic (CAN) [bar] | | | | 1 | 8000 | 20 | 0 |
| Control pressure [bar] | 0.70 | 1.6 | 4.5 | 6.5 | 0.70 | 1.6 | 4.5 | 6.5 | 2 | 8000 | 20 | 0 |
| Brake press. unladen [bar] | 0.41 | 0.7 | 2.1 (1.9) | 3.0 (2.7) | 0.49 | 0.8 | 1.7 (1.5) | 2.4 (2.1) | 3 | 6333 | 16 | 0 |
| Brake press. laden [bar] | | 1.1 (1.0) | 4.2 (3.9) | 6.2 (5.8) | | 1.2 | 3.2 (3.1) | 4.6 (4.5) | 4 | 6333 | 16 | 0 |
| | | | Ext.brake demand | | None | | AUXIO1 | | Disabled | | | |
| Bogie load unladen [kg] | 4060 | 5301 | Differential slip [%] | | - | | AUXIO2 | | Disabled | | | |
| Bogie load laden [kg] | 16000 | 19000 | Max slip demand [bar] | | - | | AUXIO3 | | Supply | | | |
| Tyre diameter [mm] | 842 | 842 | Pressure limit (CAN) [bar] | | - | | SENS_IN1 | | Disabled | | | |
| Sensing ring teeth | 80 | 80 | ABS Configuration | | 4S/3M | | SENS_SUP | | Disabled | | | |
| Module turned | No | | 3rd modulator | | TEPM Premium | | INPUT_E | | Disabled | | | |
| TBM LS Type | TBM-Internal | | TEPM LS Type | | TEPM-Internal | | INPUT_F | | Disabled | | | |
| LS1 U_unladen [V] | - | | LS-TEPM U_unladen [V] | | - | | P28 | | LAC1 | | | |
| LS1 U_laden [V] | - | | LS-TEPM U_laden [V] | | - | | TEPM-AUXIO1 | | Disabled | | | |
| Spring deflection TBM | - | | Spring deflection TEPM-P | | - | | TEPM-AUXIO2 | | Disabled | | | |
| Lever length TBM | - | | Lever length TEPM | | - | | TEPM-SENS_IN1 | | Disabled | | | |
| | Unladen | | Laden | | Kilometre counter [km] | | | 0 | | | | |
| Airspring pressure TBM [bar] | 0.8 | | 3.9 | | Next service [km] | | | 9999999 | | | | |
| Airspring pressure TEPM [bar] | 0.8 | | 5 | | Next service [date] | | | 31/12/2254 | | | | |
| Suspension pressure TBM [bar] | - | | - | | | | | | | | | |
| Suspension pressure TEPM [bar] | - | | - | | | | | | | | | |



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KNORR-BREMSE

ECUtalk® - TEBS G2 / G2.x
(v.3.2.19.0)

EOL Report

| | | | | |
|-----------------------|----------------------|----------------|------------------------|------|
| TEBS G2 ES2060 | ES2060 | K019302V05N00 | E48 | 13R- |
| SW Version | TBSG.700.141.001.008 | KB Help Centre | + 49 (0) 180 566 77 05 | |
| Type | Full-trailer | Manufacturer | Domett Trailers | |
| Brake calculation no. | 7A9E25019E1023317 | VIN | 7A9E25019E1023317 | |
| Serial number | 20143270118 | PIN | 00 00 00 9D | |

EOL Test Result: OK

EOL Test Step Results

| | | | |
|------------------------------|--------|--|--|
| Initial "Fault" status (0.0) | OK (1) | | |
| Installation check (1) | OK (1) | | |
| System pressure test (2) | OK (1) | | |
| Warning lamp test (3) | OK (1) | | |
| LAC1 test on P28 (7.1.0) | OK (1) | | |
| S-A sensor test (11.1) | OK (1) | | |
| Air gap speed at SA [km/h] | 2.03 | | |
| S-C sensor test (11.3) | OK (1) | | |
| Air gap speed at SC [km/h] | 1.93 | | |
| S-D sensor test (11.4) | OK (1) | | |
| Air gap speed at SD [km/h] | 1.88 | | |
| S-B sensor test (11.2) | OK (1) | | |
| Air gap speed at SB [km/h] | 1.93 | | |
| RSP installation test (13) | OK (1) | | |
| Final "Fault" status (0.1) | OK (1) | | |
| | | | |
| | | | |
| | | | |

| | | |
|------------------------|---|-----------|
| Tester's name | Jaco de Kock | Signature |
| Location | Tauranga | |
| Date | Tuesday, 17 March 2015 | |
| Additional information | 5 Axle Pull Trailer Northern Southland Transport | |



D184FF2F596E0061



Running Well for You

| | | | | | | | | |
|------------------------------|---------------------------|-------------------|---------------------------|----------|--------------------------|------|----------|----------|
| TEBS G2 | KO 19312 | Manufacturer | Domett Trailers | | | | | |
| Job Number | JDK 193 | Trailer Type | 5 Axle Full Trailer | | | | | |
| Phone | 0800 427 956 | VIN Number | 7A9E25019E1023317 | | | | | |
| | | ABS Configuration | 4S3M | Axle | Max Load Kg. | | | |
| Bogie Load unladen Kg | 4060 | 5300 | Ext. Brake Demand | - | 1 | 8000 | 20 0 | |
| Bogie Load laden Kg | 16000 | 19000 | Pressure limit (bar) | | 2 | 8000 | 20 0 | |
| Tyre Diameter (mm) | 842 | 842 | 3 rd Modulator | TEPM | 3 | 6333 | 16 0 | |
| Sensing Ring teeth | 80 | 80 | Differential Slip | - | 4 | 6333 | 16 0 | |
| Module Turned | No | Tyre Size | 265/70 R19.5 | | 5 | 6333 | 16 0 | |
| TBM load sensing type | TBM Internal | | TEPM load sensing type | None | | | | |
| Air Spring Pr. Laden | 3.9 | | Air Spring Pr. Laden | 5 | | | | |
| Air Spring Pr. Unladen | 0.8 | | Air Spring Pr. Unladen | 0.8 | | | | |
| | Front Pressure Parameters | | | | Rear Pressure Parameters | | | |
| Demand | Pneumatic (CAN) bar | | | | Pneumatic (CAN) bar | | | |
| Control Pressure (bar) | 0.70 | 1.6 | 4.5 | 6.5 | 0.70 | 1.6 | 4.5 | 6.5 |
| Brake Pressure Unladen (bar) | 0.41 | 0.7 | 2.1(1.9) | 3.0(2.7) | 0.49 | 0.8 | 1.7(1.5) | 2.4(2.1) |
| Brake Pressure Laden (bar) | | 1.1(1.0) | 4.2(3.9) | 6.2(5.8) | | 1.2 | 3.2(3.1) | 4.6(4.5) |

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Exemption: HMRE15/049

EXEMPTION FROM SPECIFIED REQUIREMENTS OF LAND TRANSPORT RULE: Heavy Vehicles 2004 and Vehicle Dimensions and Mass 2002

Pursuant to Section 166(1) of the Land Transport Act 1998, and pursuant to the powers delegated to me, Jackie Hartley, Administrator (Assessments), hereby exempt the motor vehicle specified in Schedule 1 hereto from the section of Land Transport Rule: Heavy Vehicles 2004 and Vehicle Dimensions and Mass 2002 listed in Schedule 2, subject to the conditions specified in Schedule 3.

SCHEDULE 1:

Make/Model: Domett Trailers, 5 Axle Pull Trailer
VIN/CHASSIS: 7A9E25019E1023317

SCHEDULE 2: - Exempted Requirement

- Heavy Vehicles 2004
 - Clause 3.5(2)
- Vehicle Dimensions and Mass 2002
 - Clause 4.2(7)

SCHEDULE 3: - Conditions of this exemption:

- The Knorr-Bremse I-Corner function of the TEBS-C2 system is to be activated.
- The vehicle must not be modified in any way while operating under this exemption.
- This original exemption must be kept by BTP/Transport Efficiency.
- A copy of this exemption including the I-Corner function (printed on a silver Knorr-Bremse Sticker) must be affixed to the exempted vehicle.
- The sticker in 4) must be legible and include all printed areas of this original exemption letter.
- This exemption can be revoked at any time in writing by the NZ Transport Agency.

Signed at Wellington this 16th day of March 2014.

Jackie Hartley
Administrator (Assessments)



Company: BPW Transport Efficiency
Author: Jaco de Kock

Created: 16/03/2015
Modified: 16/03/2015

Document: 7A9E25019E1023317
Page: 1 / 7

Calculation in accordance with ECE Regulation 13 (11 Series) and EEC Directive 71/320 EEC (2002/78/EC) using Knorr-Bremse Braking System Designer software (version 13.0).
 Results based on vehicle data and components as defined by the Braking System Designer program user.
 No liability assumed by Knorr-Bremse regarding the use of non-Knorr-Bremse product data.

Customer: Domett Trailers

Vehicle: 7A9E25019E1023317

Project: Northern Southland Transport
 5 Axle Pull Trailers

Vehicle

| | |
|---|---------------------|
| Type | 2x3 Drawbar trailer |
| Calculated effective wheelbase [m] | 6.71 |
| Laden (max.) mass [kg] | 35000.00 |
| Laden (max.) front axle group load [kg] | 16000.00 |
| Laden vertical position of CoG [m] | 1.80 |
| Unladen (min.) mass [kg] | 9361.00 |
| Unladen (min.) front axle group load [kg] | 4060.00 |
| Unladen vertical position of CoG [m] | 1.09 |
| Laden/unladen front air spring press. [bar] | 5.00/0.80 |
| Laden/unladen rear air spring press. [bar] | 3.90/0.80 |

| | Axle 1 | Axle 2 | Axle 3 | Axle 4 | Axle 5 |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|
| Axle distances [m] | <----- 1.31 -----> | <----- 4.85 -----> | <----- 1.21 -----> | <----- 1.21 -----> | <----- 1.21 -----> |
| Axle loads [kg] | 8000 | 8000 | 6333 | 6333 | 6334 |
| Laden | 8000 | 8000 | 6333 | 6333 | 6334 |
| Unladen | 2030 | 2030 | 1767 | 1767 | 1767 |
| Axle type | BPW | BPW | BPW | BPW | BPW |
| 361-041-08 | 361-041-08 | 361-041-08 | 361-041-08 | 361-041-08 | 361-041-08 |
| Tyre size | 265/70 R 19.5 | 265/70 R 19.5 | 265/70 R 19.5 | 265/70 R 19.5 | 265/70 R 19.5 |
| Dyn. tyre radius [mm] | 421 | 421 | 421 | 421 | 421 |
| Stat. tyre radius [mm] | 401 | 401 | 401 | 401 | 401 |
| Brake size or radius [mm] | Disc | Disc | Disc | Disc | Disc |
| and Brake type | TSB 3709 | TSB 3709 | TSB 3709 | TSB 3709 | TSB 3709 |
| Actuator numb./axle & size | 2 x 20 | 2 x 20 | 2 x 16/24 | 2 x 16/24 | 2 x 16/24 |
| Actuator force at 6.5 bar [N] | 7554 | 7554 | 6583 | 6583 | 6583 |
| Slack adjuster length [mm] | - | - | - | - | - |
| Thresh.mom.[Nm] or force[N] | 150.00 | 150.00 | 150.00 | 150.00 | 150.00 |
| Brake Factor by Annex 19 | 20.5 | 20.5 | 20.5 | 20.5 | 20.5 |
| Discbrake lever length [mm] | 80 | 80 | 80 | 80 | 80 |
| Int.br.factor (C*) & Mech. eff.(Eta) | - | - | - | - | - |
| Int.br.factor x Mech. eff.(C* x Eta) | - | - | - | - | - |
| S-Cam radius [mm] or mech.ratio or wedge angle[-] | - | - | - | - | - |
| Friction material | BPW 8200 | BPW 8200 | BPW 8200 | BPW 8200 | BPW 8200 |

Warning! This brake calculation has been produced using information from a source not controlled by Knorr-Bremse. The results produced by this calculation are therefore dependent upon the accuracy of this information and Knorr-Bremse does not take responsibility for any resulting errors.

Calculation pressure [bar]: 6.5
Database version: 13.0.32



Company: BPW Transport Efficiency
 Author: Jaco de Kock

Created: 16/03/2015
 Modified: 16/03/2015
 Document: 7A9E25019E1023317
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System components

| No. | Name | Type | Characteristics |
|-----|--|--------|----------------------------------|
| 1 | Coupling head | KU1... | |
| 2 | Brake Chamber 20" stroke: 65 | BPW | BC 0055.2 26/11/2008 |
| 3 | Brake Chamber 20" stroke: 65 | BPW | BC 0055.2 26/11/2008 |
| 4 | Trailer EBS G2 | ES206. | Sensors on axle 3 |
| 5 | Brake Chamber 20" stroke: 65 | BPW | BC 0055.2 26/11/2008 |
| 6 | Brake Chamber 20" stroke: 65 | BPW | BC 0055.2 26/11/2008 |
| 7 | Electronic Module Premium | ES2071 | |
| 8 | Spring Brake Actuator 16/24" stroke: 56/56 | BPW | BC 0056.2 / BC 0056.2 27/11/2008 |
| 9 | Spring Brake Actuator 16/24" stroke: 56/56 | BPW | BC 0056.2 / BC 0056.2 27/11/2008 |
| 10 | Spring Brake Actuator 16/24" stroke: 56/56 | BPW | BC 0056.2 / BC 0056.2 27/11/2008 |
| 11 | Spring Brake Actuator 16/24" stroke: 56/56 | BPW | BC 0056.2 / BC 0056.2 27/11/2008 |
| 12 | Spring Brake Actuator 16/24" stroke: 56/56 | BPW | BC 0056.2 / BC 0056.2 27/11/2008 |
| 13 | Spring Brake Actuator 16/24" stroke: 56/56 | BPW | BC 0056.2 / BC 0056.2 27/11/2008 |

Axle identifiers

| Axle | Axle identifier | Brake identifier | Axle load identifier | Test report identifier |
|--------|-----------------|------------------|----------------------|------------------------|
| Axle 1 | | | | ID4-361-041-08 |
| Axle 2 | | | | ID4-361-041-08 |
| Axle 3 | | | | ID4-361-041-08 |
| Axle 4 | | | | ID4-361-041-08 |
| Axle 5 | | | | ID4-361-041-08 |

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Calculation pressure [bar]: 6.5

Database version: 13.0.32



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Document: 7A9E25019E1023317
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| Service | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 6.5 | 7 | 7.5 |
|----------------------------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Laden vehicle | | | | | | | | | | | | | | | |
| brake | | | | | | | | | | | | | | | |
| Coupling head pres. [bar] | 0.00 | 0.34 | 0.87 | 1.39 | 1.91 | 2.44 | 2.96 | 3.49 | 4.01 | 4.53 | 5.05 | 5.57 | 6.08 | 6.60 | 7.12 |
| Deceleration [m/s ²] | 0.00 | 3.46 | 8.83 | 14.12 | 19.48 | 24.84 | 30.20 | 35.56 | 40.92 | 46.19 | 51.47 | 56.75 | 62.03 | 67.30 | 72.58 |
| Braking rate [%] | 0.2 | 0.64 | 1.01 | 1.52 | 2.06 | 2.59 | 3.13 | 3.67 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 6.7 | 7.2 |
| Axle 1 actuator pres. [bar] | 0.00 | 1.07 | 2.71 | 4.69 | 6.81 | 8.92 | 11.03 | 13.14 | 15.26 | 17.22 | 19.18 | 21.14 | 23.11 | 25.07 | 27.03 |
| Axle 1 braking torque [kNm] | 0.00 | 2.53 | 6.44 | 11.15 | 16.17 | 21.18 | 26.20 | 31.22 | 36.24 | 40.89 | 45.56 | 50.22 | 54.89 | 59.55 | 64.21 |
| Axle 1 braking force [kN] | 0.00 | 0.03 | 0.08 | 0.13 | 0.18 | 0.24 | 0.28 | 0.33 | 0.37 | 0.41 | 0.45 | 0.48 | 0.51 | 0.54 | 0.57 |
| Axle 1 adhesion utilised | 0.2 | 0.64 | 1.01 | 1.52 | 2.06 | 2.59 | 3.13 | 3.67 | 4.2 | 4.7 | 5.2 | 5.7 | 6.2 | 6.7 | 7.2 |
| Axle 2 actuator pres. [bar] | 0.00 | 1.07 | 2.71 | 4.69 | 6.81 | 8.92 | 11.03 | 13.14 | 15.26 | 17.22 | 19.18 | 21.14 | 23.11 | 25.07 | 27.03 |
| Axle 2 braking torque [kNm] | 0.00 | 2.53 | 6.44 | 11.15 | 16.17 | 21.18 | 26.20 | 31.22 | 36.24 | 40.89 | 45.56 | 50.22 | 54.89 | 59.55 | 64.21 |
| Axle 2 braking force [kN] | 0.00 | 0.03 | 0.08 | 0.13 | 0.18 | 0.24 | 0.28 | 0.33 | 0.37 | 0.41 | 0.45 | 0.48 | 0.51 | 0.54 | 0.57 |
| Axle 2 adhesion utilised | 0.2 | 0.74 | 1.15 | 1.5 | 1.83 | 2.17 | 2.51 | 2.85 | 3.18 | 3.54 | 3.89 | 4.25 | 4.6 | 4.95 | 5.31 |
| Axle 3 actuator pres. [bar] | 0.00 | 0.95 | 2.45 | 3.67 | 4.85 | 6.02 | 7.20 | 8.37 | 9.54 | 10.78 | 12.01 | 13.25 | 14.48 | 15.71 | 16.95 |
| Axle 3 braking torque [kNm] | 0.00 | 2.27 | 5.82 | 8.73 | 11.52 | 14.30 | 17.09 | 19.88 | 22.67 | 25.60 | 28.54 | 31.47 | 34.40 | 37.33 | 40.26 |
| Axle 3 braking force [kN] | 0.00 | 0.04 | 0.10 | 0.15 | 0.21 | 0.26 | 0.32 | 0.39 | 0.46 | 0.53 | 0.62 | 0.70 | 0.80 | 0.90 | 1.01 |
| Axle 3 adhesion utilised | 0.2 | 0.74 | 1.15 | 1.5 | 1.83 | 2.17 | 2.51 | 2.85 | 3.18 | 3.54 | 3.89 | 4.25 | 4.6 | 4.95 | 5.31 |
| Axle 4 actuator pres. [bar] | 0.00 | 0.95 | 2.45 | 3.67 | 4.85 | 6.02 | 7.20 | 8.37 | 9.54 | 10.78 | 12.01 | 13.25 | 14.48 | 15.71 | 16.95 |
| Axle 4 braking torque [kNm] | 0.00 | 2.27 | 5.82 | 8.73 | 11.52 | 14.30 | 17.09 | 19.88 | 22.67 | 25.60 | 28.54 | 31.47 | 34.40 | 37.33 | 40.26 |
| Axle 4 braking force [kN] | 0.00 | 0.04 | 0.10 | 0.15 | 0.21 | 0.26 | 0.32 | 0.39 | 0.46 | 0.53 | 0.62 | 0.70 | 0.80 | 0.90 | 1.01 |
| Axle 4 adhesion utilised | 0.2 | 0.74 | 1.15 | 1.5 | 1.83 | 2.17 | 2.51 | 2.85 | 3.18 | 3.54 | 3.89 | 4.25 | 4.6 | 4.95 | 5.31 |
| Axle 5 actuator pres. [bar] | 0.00 | 0.95 | 2.45 | 3.67 | 4.85 | 6.02 | 7.20 | 8.37 | 9.54 | 10.78 | 12.01 | 13.25 | 14.48 | 15.71 | 16.95 |
| Axle 5 braking torque [kNm] | 0.00 | 2.27 | 5.82 | 8.73 | 11.52 | 14.30 | 17.09 | 19.88 | 22.67 | 25.60 | 28.54 | 31.47 | 34.40 | 37.33 | 40.26 |
| Axle 5 braking force [kN] | 0.00 | 0.04 | 0.10 | 0.15 | 0.21 | 0.26 | 0.32 | 0.39 | 0.46 | 0.53 | 0.62 | 0.70 | 0.80 | 0.90 | 1.01 |
| Axle 5 adhesion utilised | 0.00 | 0.04 | 0.10 | 0.15 | 0.21 | 0.26 | 0.32 | 0.39 | 0.46 | 0.53 | 0.62 | 0.70 | 0.80 | 0.90 | 1.01 |

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Calculation pressure [bar]: 6.5
Database version: 13.0.32



Company: BPW Transport Efficiency
 Author: Jaco de Kock

Created: 16/03/2015
 Modified: 16/03/2015

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Service Unladen vehicle

| | 0.5 | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 6.5 | 7 | 7.5 |
|----------------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Coupling head pres. [bar] | 0.00 | 0.61 | 1.53 | 2.50 | 3.42 | 4.32 | 5.21 | 6.11 | 7.00 | 7.88 | 8.77 | 9.65 | 10.53 | 11.41 | 12.30 |
| Deceleration [m/s ²] | 0.00 | 6.24 | 15.57 | 25.45 | 34.87 | 43.99 | 53.14 | 62.24 | 71.36 | 80.36 | 89.36 | 98.35 | 107.35 | 116.35 | 125.33 |
| Braking rate [%] | 0.2 | 0.51 | 0.67 | 0.9 | 1.14 | 1.38 | 1.62 | 1.87 | 2.11 | 2.33 | 2.55 | 2.78 | 3 | 3.22 | 3.45 |
| Axle 1 actuator pres. [bar] | 0.00 | 0.51 | 1.22 | 2.21 | 3.21 | 4.16 | 5.11 | 6.06 | 7.01 | 7.89 | 8.77 | 9.64 | 10.52 | 11.40 | 12.28 |
| Axle 1 braking torque [kNm] | 0.00 | 0.00 | 1.21 | 2.91 | 5.26 | 7.62 | 9.88 | 12.14 | 14.39 | 16.65 | 18.74 | 20.83 | 22.91 | 24.99 | 27.08 |
| Axle 1 braking force [kN] | 0.00 | 0.06 | 0.14 | 0.24 | 0.34 | 0.43 | 0.51 | 0.59 | 0.66 | 0.72 | 0.78 | 0.84 | 0.90 | 0.95 | 1.00 |
| Axle 1 adhesion utilised | 0.2 | 0.51 | 0.67 | 0.9 | 1.14 | 1.38 | 1.62 | 1.87 | 2.11 | 2.33 | 2.55 | 2.78 | 3 | 3.22 | 3.45 |
| Axle 2 actuator pres. [bar] | 0.00 | 0.51 | 1.22 | 2.21 | 3.21 | 4.16 | 5.11 | 6.06 | 7.01 | 7.89 | 8.77 | 9.64 | 10.52 | 11.40 | 12.28 |
| Axle 2 braking torque [kNm] | 0.00 | 0.00 | 1.21 | 2.91 | 5.26 | 7.62 | 9.88 | 12.14 | 14.39 | 16.65 | 18.74 | 20.83 | 22.91 | 24.99 | 27.08 |
| Axle 2 braking force [kN] | 0.00 | 0.06 | 0.14 | 0.24 | 0.34 | 0.43 | 0.51 | 0.59 | 0.66 | 0.72 | 0.78 | 0.84 | 0.90 | 0.95 | 1.00 |
| Axle 2 adhesion utilised | 0.2 | 0.61 | 0.8 | 0.96 | 1.12 | 1.27 | 1.43 | 1.59 | 1.74 | 1.91 | 2.07 | 2.24 | 2.4 | 2.56 | 2.73 |
| Axle 3 actuator pres. [bar] | 0.00 | 0.47 | 1.19 | 1.80 | 2.36 | 2.90 | 3.44 | 3.98 | 4.52 | 5.10 | 5.67 | 6.25 | 6.82 | 7.39 | 7.97 |
| Axle 3 braking torque [kNm] | 0.00 | 0.00 | 1.11 | 2.83 | 4.29 | 5.59 | 6.88 | 8.17 | 9.46 | 10.74 | 12.11 | 13.47 | 14.83 | 16.20 | 17.56 |
| Axle 3 braking force [kN] | 0.00 | 0.06 | 0.17 | 0.27 | 0.36 | 0.45 | 0.56 | 0.66 | 0.78 | 0.91 | 1.04 | 1.19 | 1.35 | 1.52 | 1.70 |
| Axle 3 adhesion utilised | 0.2 | 0.61 | 0.8 | 0.96 | 1.12 | 1.27 | 1.43 | 1.59 | 1.74 | 1.91 | 2.07 | 2.24 | 2.4 | 2.56 | 2.73 |
| Axle 4 actuator pres. [bar] | 0.00 | 0.47 | 1.19 | 1.80 | 2.36 | 2.90 | 3.44 | 3.98 | 4.52 | 5.10 | 5.67 | 6.25 | 6.82 | 7.39 | 7.97 |
| Axle 4 braking torque [kNm] | 0.00 | 0.00 | 1.11 | 2.83 | 4.29 | 5.59 | 6.88 | 8.17 | 9.46 | 10.74 | 12.11 | 13.47 | 14.83 | 16.20 | 17.56 |
| Axle 4 braking force [kN] | 0.00 | 0.06 | 0.17 | 0.27 | 0.36 | 0.45 | 0.56 | 0.66 | 0.78 | 0.91 | 1.04 | 1.19 | 1.35 | 1.52 | 1.70 |
| Axle 4 adhesion utilised | 0.2 | 0.61 | 0.8 | 0.96 | 1.12 | 1.27 | 1.43 | 1.59 | 1.74 | 1.91 | 2.07 | 2.24 | 2.4 | 2.56 | 2.73 |
| Axle 5 actuator pres. [bar] | 0.00 | 0.47 | 1.19 | 1.80 | 2.36 | 2.90 | 3.44 | 3.98 | 4.52 | 5.10 | 5.67 | 6.25 | 6.82 | 7.39 | 7.97 |
| Axle 5 braking torque [kNm] | 0.00 | 0.00 | 1.11 | 2.83 | 4.29 | 5.59 | 6.88 | 8.17 | 9.46 | 10.74 | 12.11 | 13.47 | 14.83 | 16.20 | 17.56 |
| Axle 5 braking force [kN] | 0.00 | 0.06 | 0.17 | 0.27 | 0.36 | 0.45 | 0.56 | 0.66 | 0.78 | 0.91 | 1.04 | 1.19 | 1.35 | 1.52 | 1.70 |
| Axle 5 adhesion utilised | 0.00 | 0.06 | 0.17 | 0.27 | 0.36 | 0.45 | 0.56 | 0.66 | 0.78 | 0.91 | 1.04 | 1.19 | 1.35 | 1.52 | 1.70 |

Warning! This brake calculation has been produced using information from a source not controlled by Knorr-Bremse. The results produced by this calculation are therefore dependent upon the accuracy of this information and Knorr-Bremse does not take responsibility for any resulting errors.

Calculation pressure [bar]: 6.5

Database version: 13.0.32



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 Author: Jaco de Kock

Miscellaneous

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Coupling head pressure where $z = 22.5\%$ (laden case)

Pressure[bar] 2.77

Brake chamber pressure where $z = 22.5\%$ (laden case)

Pressure[bar] Axle1 : 2.38 Axle2 : 2.38 Axle3 : 2.04 Axle4 : .

Automatic braking performance (laden case) at 6.0 bar

Deceleration [m/s²] : 3.78

Braking rate [%] 38.5

Vehicle performance in case of a load sensing device control failure (laden case) at 6.5 bar

Front axle group

Deceleration [m/s²] : 6.08

Braking rate [%] 62.0

Rear axle group

Deceleration [m/s²] : 6.08

Braking rate [%] 62.0

Parking brake Laden vehicle

| | Up | Down |
|---|--------|-------|
| Max.slope [%] (must be > 18%) | -45.42 | 36.58 |
| (max.spring force = 5809 N at 30 mm strok | | |
| Required spring force at 18% slope | | |
| Axle 1 [N] | - | - |
| Axle 2 [N] | - | - |
| Axle 3 [N] | 2492 | 2492 |
| Axle 4 [N] | 2492 | 2492 |
| Axle 5 [N] | 2492 | 2492 |

Calculation pressure [bar]: 6.5

Database version: 13.0.32

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Trailer EBS parameters

| Coupling head pressure [bar] | Brake chamber pressure [bar] | |
|------------------------------|------------------------------|-------------------|
| | Unladen Pneu. / CAN | Laden Pneu. / CAN |
| Pneu:0.7 CAN:0.7 | 0.49 | |
| 1.6 | 0.84 / 0.79 | 1.23 / 1.21 |
| 6.5 | 2.4 / 2.1 | 4.6 / 4.5 |
| Low-range comp. at 1.6 bar | 0.05 / 0.05 | 0.1 / 0.1 |
| High-range comp. at 4.5 bar | 0 / 0 | 0 / 0 |

| Air suspension Axle boogie load [kg] | Laden | |
|--------------------------------------|---------|-------|
| | Unladen | Laden |
| 5301 | 5301 | 19000 |
| voltages [V] | - | - |
| pressures [bar] | 0.8 | 3.9 |

Pressure limitation [bar] -

3rd modulator logic is LS characteristic

Slip differential [%] - from - [bar]

EMP parameters:

Axle and Tyre information

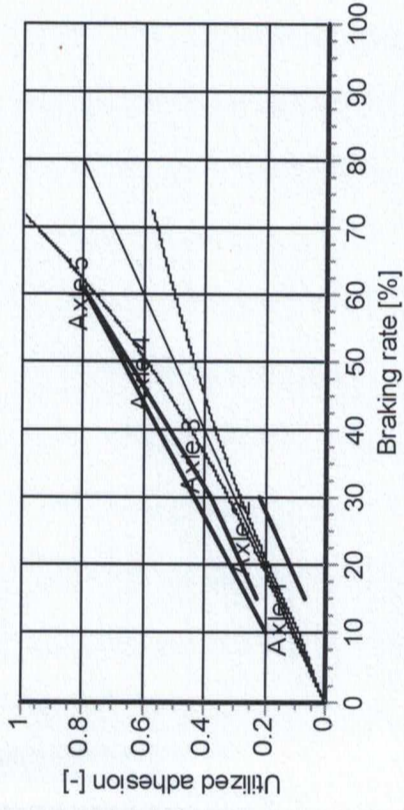
Number of axles: 5
 Dynamic tyre radius [cm]: 42.1

| Coupling head pressure [bar] | Brake chamber pressure [bar] | |
|------------------------------|------------------------------|-------------------|
| | Unladen Pneu. / CAN | Laden Pneu. / CAN |
| Pneu:0.7 CAN:0.7 | 0.41 | |
| 1.6 | 0.71 / 0.66 | 1.09 / 1.03 |
| 6.5 | 3 / 2.7 | 6.2 / 5.8 |
| Low-range comp. at 1.6 bar | -0.11 / -0.1 | -0.22 / -0.22 |
| High-range comp. at 4.5 bar | 0 / 0 | 0 / 0 |

| Air suspension Axle boogie load [kg] | Laden | |
|--------------------------------------|---------|-------|
| | Unladen | Laden |
| 4060 | 4060 | 16000 |
| voltages [V] | - | - |
| pressures [bar] | 0.8 | 5 |

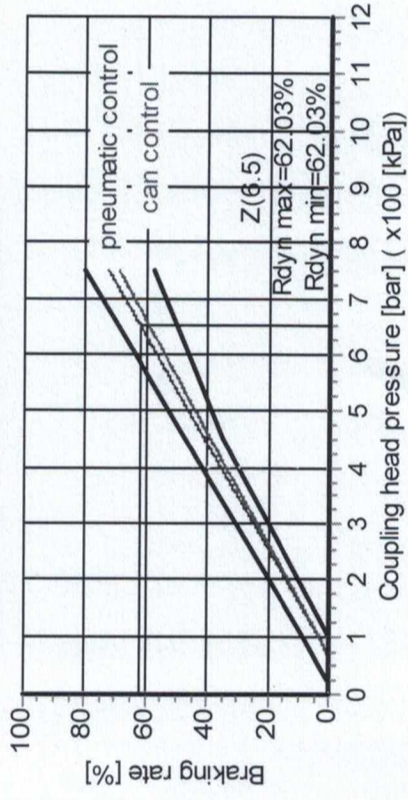
Warning! This brake calculation has been produced using information from a source not controlled by Knorr-Bremse. The results produced by this calculation are therefore dependent upon the accuracy of this information and Knorr-Bremse does not take responsibility for any resulting errors.

Laden vehicle - adhesion utilisation



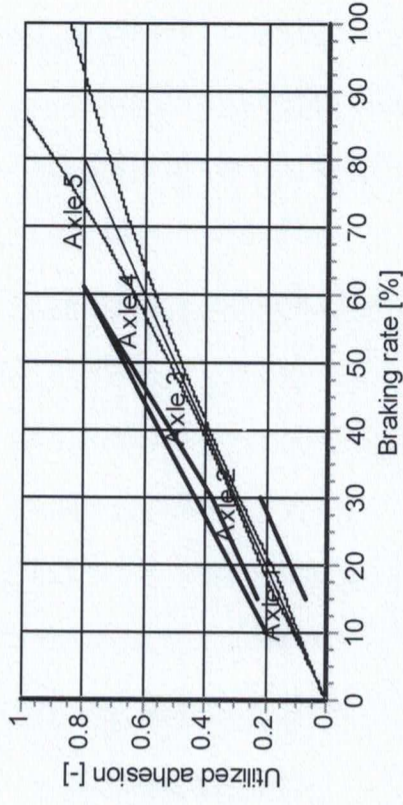
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Laden vehicle - compatibility
 with Pneumatic and CAN control



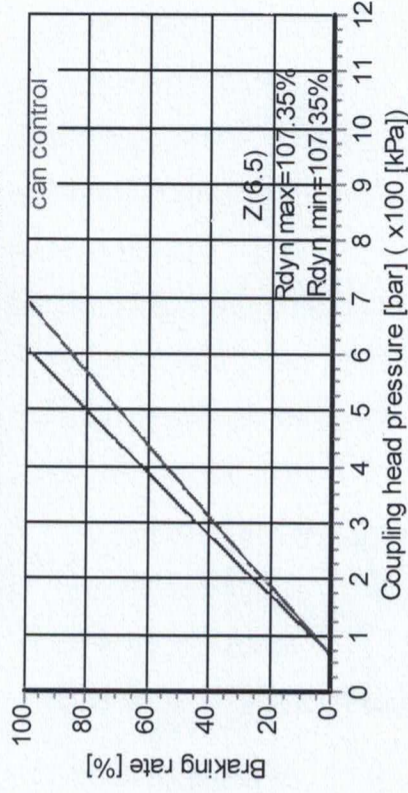
pressure [bar]: 6.5
 version: 13.0.32

Unladen vehicle - adhesion utilisation



(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - compatibility
 with Pneumatic and CAN control



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 and Knorr-Bremse does not take responsibility for any resulting errors.