



# Heavy Vehicle Specialist Certificate

Heavy Vehicle Specialist Inspector and Inspecting Organisation

Heavy Vehicle Specialist Inspector's Name *(PRINT IN CAPS)*

ID

CHRIS CLARKE

COC

Vehicle Registration\*

VIN / Chassis Number

7A9 D2001XB10230L4

Component being certified:

Chassis Modification

Load Anchorage

Log Bolsters

Certification Category

Towing Connection

✓ Brakes

SRT

HUEK

Description of Work

CARRY OUT SET UP OF TRAILER EBS SYSTEM IN COMPLIANCE WITH THE NZ HEAVY VEHICLE BRAKE RULE.

Code/Standard Certified to

Component Load Rating(s)

HUBNZ 32015/2 SCHED 5.

General Drawing Number(s)

N/A.

N/A.

Supporting Documents

KNORR-BREMSE BSD PERFORMANCE CALCULATION.

\*Special Conditions

N/A.

Certification Expiry Date *(if applicable)*

or Hubodometer Reading (whichever comes first)

N/A.

### Declaration

I the undersigned, declare that I am the Heavy Vehicle Specialist Inspector identified above 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 Deed of Appointment. To the best of my knowledge the information contained in this Certificate is true and correct.

Designer's ID *(if certified by a manufacturer)*

Inspector's / Delegate's Signature

\*Delegate's Name *(PRINT IN CAPS)*

Date

Number

30.11.2011

391865

COF Vehicle Inspector ID:

COF Vehicle Inspector Signature:

Date

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



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 (level 11.0).  
 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 Ltd  
 Vehicle: 7AD2001XB1023014  
 Project: 4 axle full trailer

**Vehicle**

Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	6.94
Laden (max.) mass [kg]	30000.00
Laden (max.) front axle group load [kg]	15000.00
Laden vertical position of CoG [m]	2.01
Unladen (min.) mass [kg]	6520.00
Unladen (min.) front axle group load [kg]	3420.00
Unladen vertical position of CoG [m]	1.20
Laden/unladen front air spring press. [bar]	4.80/0.70
Laden/unladen rear air spring press. [bar]	4.80/0.60

**Axles**

Type	Axle 1	Axle 2	Axle 3	Axle 4
Tyre size	361-0071-04-FBKV 265/70 R 19.5	361-0071-04-FBKV 265/70 R 19.5	361-0071-04-FBKV 265/70 R 19.5	361-0071-04-FBKV 265/70 R 19.5
Dyn. tyre radius [mm]	421	421	421	421
Stat. tyre radius [mm]	401	401	401	401
Brake type	Disc	Disc	Disc	Disc
Brake size [mm] or drum/disc radius [mm]	Elsa195 LE	Elsa195 LE	Elsa195 LE	Elsa195 LE
Actuator size	16	16	16/24	16/24
Actuator force at 6.5 bar [N]	6146	6146	6145	6145
Slack adjuster length [mm]	-	-	-	-
Thresh.mom.[Nm] or force[N]	81.00	81.00	81.00	81.00
Brake Factor by Annex 19	20.3	20.3	20.3	20.3
Discbrake lever length [mm]	74	74	74	74
Internal brake factor (C*)	-	-	-	-
Mechanical efficiency (Eta)	-	-	-	-
Internal brake factor x	-	-	-	-
Mech. efficiency (C* x Eta)	-	-	-	-
S-Cam radius [mm] or mech.ratio or wedge angle{}	-	-	-	-
Friction material	ROR 8616 AF	ROR 8616 AF	ROR 8616 AF	ROR 8616 AF

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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.



### Part list

No.	Name	Type	Characteristics	Qty.
1	Coupling head	KU1...	-	1
2	Brake Chamber	MASTER	-	4
3	Trailer EBS G2	ES206.	-	1
4	Electronic Module Premii	User data	-	1
5	Spring Brake Actuator	MASTER	-	4

Calculation pressure [bar]: 6.5

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Database version: 11.0.2



### System components

No.	Name	Type	Characteristics
1	Coupling head	KU1...	-
2	Brake Chamber 16" stroke: 67	MASTER	BZ 163.1 20/10/2003
3	Brake Chamber 16" stroke: 67	MASTER	BZ 163.1 20/10/2003
4	Trailer EBS G2	ES206.	Sensors on axle 4
5	Brake Chamber 16" stroke: 67	MASTER	BZ 163.1 20/10/2003
6	Brake Chamber 16" stroke: 67	MASTER	BZ 163.1 20/10/2003
7	Electronic Module Premium	ES2071	-
8	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005
9	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005
10	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005
11	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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Laden vehicle

Service	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
<b>brake</b>															
Coupling head pres. [bar]	0.00	0.28	0.75	1.23	1.71	2.18	2.66	3.14	3.61	4.09	4.57	5.04	5.47	5.72	5.97
Deceleration [m/s <sup>2</sup> ]	0.00	2.82	7.68	12.54	17.39	22.25	27.11	31.97	36.83	41.69	46.54	51.41	55.78	58.31	60.85
Braking rate [%]	0.20	0.79	1.31	1.83	2.35	2.87	3.39	3.91	4.42	4.94	5.46	5.98	6.50	7.02	7.54
Axle 1 actuator pres. [bar]	0.00	0.91	2.48	4.05	5.62	7.19	8.76	10.33	11.90	13.48	15.04	16.61	18.19	19.75	21.33
Axle 1 braking torque [kNm]	0.00	2.17	5.90	9.63	13.35	17.09	20.82	24.54	28.28	32.01	35.73	39.46	43.20	46.92	50.65
Axle 1 adhesion utilised	0.00	0.03	0.08	0.12	0.16	0.21	0.24	0.28	0.32	0.35	0.38	0.41	0.44	0.48	0.51
Axle 2 actuator pres. [bar]	0.20	0.79	1.31	1.83	2.35	2.87	3.39	3.91	4.42	4.94	5.46	5.98	6.50	7.02	7.54
Axle 2 braking torque [kNm]	0.00	0.91	2.48	4.05	5.62	7.19	8.76	10.33	11.90	13.48	15.04	16.61	18.19	19.75	21.33
Axle 2 adhesion utilised	0.00	0.03	0.08	0.12	0.16	0.21	0.24	0.28	0.32	0.35	0.38	0.41	0.44	0.48	0.51
Axle 3 actuator pres. [bar]	0.20	0.77	1.24	1.72	2.19	2.67	3.14	3.62	4.10	4.57	5.05	5.52	5.99	6.46	6.93
Axle 3 braking torque [kNm]	0.00	0.83	2.27	3.71	5.15	6.59	8.03	9.47	10.91	12.35	13.79	15.23	16.67	18.11	19.55
Axle 3 adhesion utilised	0.00	0.03	0.08	0.13	0.18	0.24	0.31	0.38	0.45	0.53	0.61	0.70	0.78	0.86	0.92
Axle 4 actuator pres. [bar]	0.20	0.77	1.24	1.72	2.19	2.67	3.14	3.62	4.10	4.57	5.05	5.52	5.99	6.46	6.93
Axle 4 braking torque [kNm]	0.00	0.83	2.27	3.71	5.15	6.59	8.03	9.47	10.91	12.35	13.79	15.23	16.67	18.11	19.55
Axle 4 adhesion utilised	0.00	0.03	0.08	0.13	0.18	0.24	0.31	0.38	0.45	0.53	0.61	0.70	0.78	0.86	0.92

Unladen vehicle

Service	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
<b>brake</b>															
Coupling head pres. [bar]	0.00	0.45	1.28	2.10	2.93	3.75	4.57	5.40	6.22	7.05	7.87	8.70	9.52	10.35	11.17
Deceleration [m/s <sup>2</sup> ]	0.00	4.61	13.01	21.42	29.82	38.24	46.63	55.05	63.45	71.87	80.26	88.68	97.08	105.50	113.89
Braking rate [%]	0.20	0.61	0.81	1.02	1.23	1.44	1.65	1.86	2.07	2.27	2.48	2.69	2.90	3.11	3.32
Axle 1 actuator pres. [bar]	0.00	0.35	0.98	1.61	2.24	2.88	3.51	4.14	4.77	5.40	6.03	6.66	7.29	7.92	8.55
Axle 1 braking torque [kNm]	0.00	0.83	2.33	3.83	5.33	6.83	8.33	9.83	11.32	12.83	14.32	15.83	17.32	18.82	20.32
Axle 1 adhesion utilised	0.00	0.05	0.13	0.21	0.29	0.36	0.43	0.50	0.56	0.62	0.68	0.73	0.78	0.83	0.88
Axle 2 actuator pres. [bar]	0.20	0.61	0.81	1.02	1.23	1.44	1.65	1.86	2.07	2.27	2.48	2.69	2.90	3.11	3.32
Axle 2 braking torque [kNm]	0.00	0.35	0.98	1.61	2.24	2.88	3.51	4.14	4.77	5.40	6.03	6.66	7.29	7.92	8.55
Axle 2 adhesion utilised	0.00	0.05	0.13	0.21	0.29	0.35	0.43	0.50	0.56	0.62	0.68	0.73	0.78	0.83	0.88
Axle 3 actuator pres. [bar]	0.20	0.58	0.74	0.91	1.08	1.24	1.41	1.57	1.74	1.90	2.07	2.23	2.40	2.57	2.73
Axle 3 braking torque [kNm]	0.00	0.27	0.77	1.27	1.77	2.27	2.77	3.27	3.78	4.28	4.78	5.28	5.78	6.28	6.78
Axle 3 adhesion utilised	0.00	0.04	0.13	0.22	0.31	0.41	0.52	0.64	0.77	0.90	1.05	1.22	1.40	1.59	1.81
Axle 4 actuator pres. [bar]	0.20	0.58	0.74	0.91	1.08	1.24	1.41	1.57	1.74	1.90	2.07	2.23	2.40	2.57	2.73
Axle 4 braking torque [kNm]	0.00	0.27	0.77	1.27	1.77	2.27	2.77	3.27	3.78	4.28	4.78	5.28	5.78	6.28	6.78
Axle 4 adhesion utilised	0.00	0.04	0.13	0.22	0.31	0.41	0.52	0.64	0.77	0.90	1.05	1.22	1.40	1.59	1.81

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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Miscellaneous

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

Pressure [bar] : 3.00

**Brake chamber pressure [bar] where z = 22.5% ( laden case )**

Axle1 : 2.87 Axle2 : 2.87 Axle3 : 2.67 Axle4 : 2.67

**Automatic braking performance ( at 6.0 [bar], laden case )**

Deceleration [m/s^2] : 3.45

Braking rate [%] 35.2

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

**Front axle group**

Deceleration [m/s^2] : -

Braking rate [%] -

**Rear axle group**

Deceleration [m/s^2] : 5.52

Braking rate [%] 56.3

Parking brake Laden vehicle

Max slope [%]	Up	Down
(must be > 18%)	<b>-40.93</b>	<b>33.29</b>

(max spring force = 7354 N at 30 mm strok

Required spring force at 18% slope

Axle 1 [N] -

Axle 2 [N] -

Axle 3 [N] 3374

Axle 4 [N] 3374

**Calculation pressure [bar]:** 6.5

**Database version:** 11.0.2

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Company: Genese Ltd  
 Author: Chris Clarke

Created: 29/11/2011 Document: 7AD2001XB1023014  
 Modified: 29/11/2011 Page: 6 / 7

Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
Pneu.:0.70, CAN:0.70	0.48	
1.6	0.78	1.34
6.5	2.40	6.00

Axle and Tyre information

Number of axles: 4  
 Dynamic tyre radius [cm]: 42.1

3rd modulator logic is LS characteristic

3rd Modulator parameters:

Low-range comp. at 1.6 bar	0.00	0.00
	0.00	0.00
High-range comp. at 4.5 bar		
Air spring pressure [bar]	Unladen :	Laden :
	0.60	4.80
Axle boogie load [kg]	Unladen	Laden
	3100	15000

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
Pneu.:0.70, CAN:0.70	0.48	
1.6	0.86	1.41
6.5	2.90	6.50
Compen- at 1.6 bar	0.00	0.00
sations : at 4.5 bar	0.00	0.00
Air spring pressure [bar]	Unladen :	Laden :
	0.70	4.80
Axle boogie load [kg]	Unladen	Laden
	3420	15000

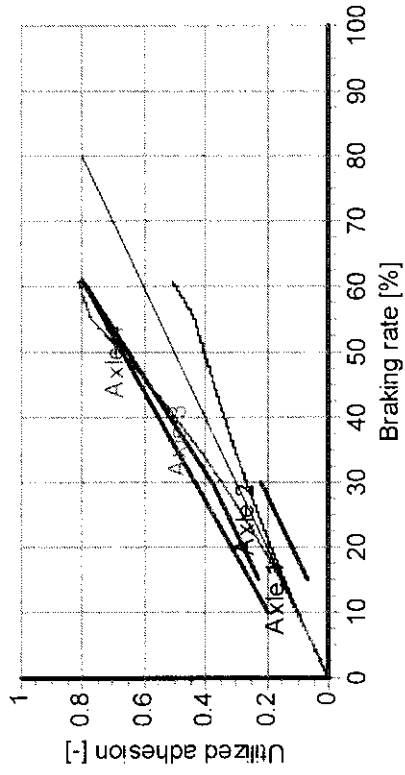
Pressure limitation [bar] 6.50  
 Slip differential [%] 0.00 from 3.00 [bar]

Calculation pressure [bar]: 6.5  
 Database version: 11.0.2

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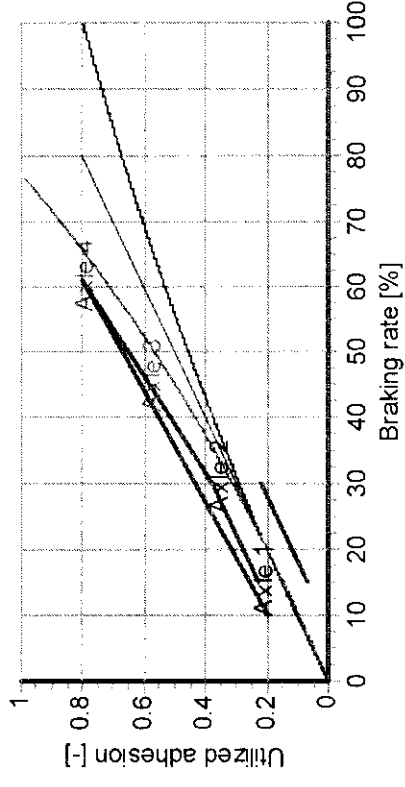


Laden vehicle - adhesion utilisation



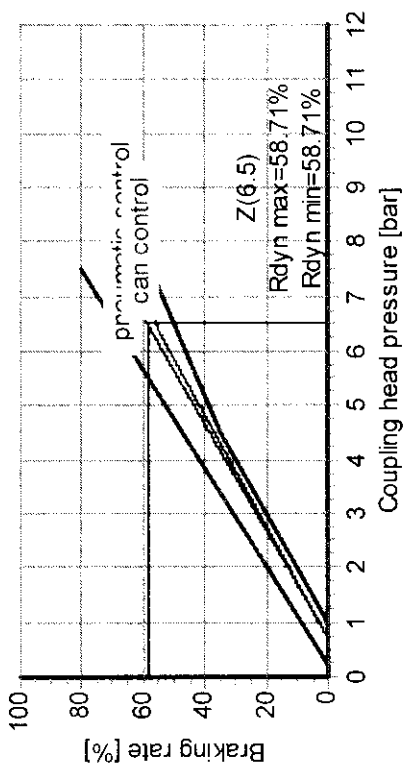
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation



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

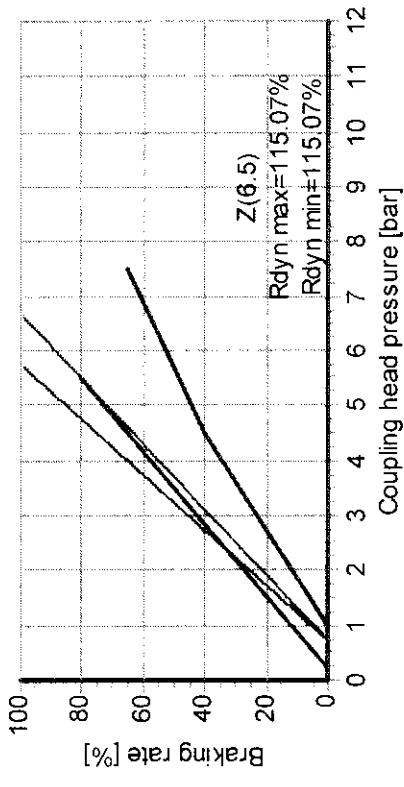
Laden vehicle - compatibility with Pneumatic and CAN control



Calculation pressure [bar]: 6.5

Database version: 11.0.2

Unladen vehicle - compatibility with Pneumatic and CAN control



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**KNORR-BREMSE**ECUtalk® for TEBS G2  
(v.2.3.18.2)

# EOL Report

TEBS G2 ES2060	ES2060	K019300V04N00	E48	13R-
SW Version	TBSG.0000700.0000137	KB Help Centre	+ 49 (0) 180 566 77 05	
Type	Full-trailer	Manufacturer	Domett Trailers	
Brake calculation no.	7AD2001XB1023014	VIN	7AD2001XB1023014	
Serial number	20111530166	PIN	00 00 05 D2	

	Front pressure parameters				Rear pressure parameters				Axle	Max load [kg]		
Demand	Pneumatic (CAN) [bar]				Pneumatic (CAN) [bar]				1	7500	16	0
Control pressure [bar]	0.70	1.6	4.5	6.5	0.70	1.6	4.5	6.5	2	7500	16	0
Brake press. unladen [bar]	0.48	0.9	2.3 (2.1)	3.3 (2.9)		0.8	2.0 (1.7)	2.8 (2.4)	3	7500	16	0
Brake press. laden [bar]		1.4	4.4	6.5		1.4 (1.3)	4.4 (4.1)	6.5 (6.0)	4	7500	16	0
									5	-	-	-

			Ext brake demand	None	AUXIO1	Disabled
Bogie load unladen [kg]	3420	3100	Differential slip [%]	-	AUXIO2	Disabled
Bogie load laden [kg]	15000	15000	Max slip demand [bar]	-	AUXIO3	Supply
Tyre diameter [mm]	842	842	Pressure limit [bar]	6.5	SENS_IN1	Disabled
Sensing ring teeth	90	90	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	Disabled
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
					TEPM-SENS_IN2	Disabled

	Unladen	Laden	Kilometre counter [km]	0
Airspring pressure TBM [bar]	0.6	4.8	Next service [km]	9999999
Airspring pressure TEPM [bar]	0.7	4.8	Next service [date]	31/12/2254
Suspension pressure TBM [bar]	-	-		
Suspension pressure TEPM [bar]	-	-		



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**KNORR-BREMSE**

ECUtalk® for TEBS G2  
(v 2.3.18.2)

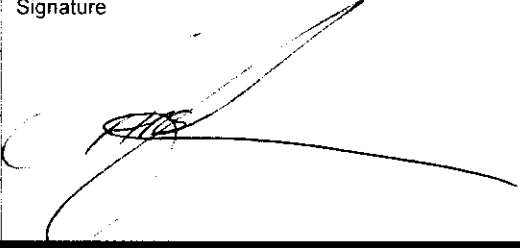
# EOL Report

TEBS G2 ES2060	ES2060	K019300V04N00	<b>E48</b>	13R-
SW Version	TBSG.0000700.0000137	KB Help Centre	+ 49 (0) 180 566 77 05	
Type	Full-trailer	Manufacturer	Domett Trailers	
Brake calculation no.	7AD2001XB1023014	VIN	7AD2001XB1023014	
Serial number	20111530166	PIN	00 00 05 D2	

## 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)	
S-A sensor test (11.1)	OK (1)	
Air gap speed at SA [km/h]	1.94	
S-C sensor test (11.3)	OK (1)	
Air gap speed at SC [km/h]	1.99	
S-D sensor test (11.4)	OK (1)	
Air gap speed at SD [km/h]	1.86	
S-B sensor test (11.2)	OK (1)	
Air gap speed at SB [km/h]	1.97	
RSP installation test (13)	OK (1)	
Final "Fault" status (0.1)	OK (1)	

Tester's name	Chris Clarke	Signature 
Location	Genese Ltd	
Date	Wednesday, 30 November 2011	
Additional information	4 axle full trailer	



9D151364AD1E1E49