NZ TRANSPORT AGENCY
WAKA KOTAHI

Heavy Vehicle Specialist Certificate

Heavy Vehicle Specialist Inspector and Inspecting Organisation

Heavy Vehicle Specialist Inspector's Name *(PRINT IN CAPS)*: JON FORDHAM. ID: HDF

Vehicle Registration*

VIN / Chassis Number: 7A9E331 14C1023042

Component being certified:

X Chassis Modification | X Load Anchorage | X Log Bolsters

X Towing Connection | ✓ Brakes | X SRT

Certification Category: HVEK

Description of Work

To COMPLY BRAKE SYSTEM (DOMETT 5-AXLE FULL)

Code/Standard Certified to: N.Z. HVIS. RULE 32015

Component Load Rating(s): GVM: 35000 Kg.

General Drawing Number(s): N/A

Supporting Documents: COMPLIANCE PAPERS

*Special Conditions: N/A

Certification Expiry Date *(if applicable)*: N/A. or Hubodometer Reading (whichever comes first)

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: 7-10-2012. Number: 418303

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

Vehicle: 5-Axle Full

Project: 7A9E38114C1023042

Vehicle

Type	2x3 Drawbar trailer
Calculated effective wheelbase [m]	7.35
Laden (max.) mass [kg]	35000.00
Laden (max.) front axle group load [kg]	16000.00
Laden vertical position of CoG [m]	1.70
Unladen (min.) mass [kg]	7000.00
Unladen (min.) front axle group load [kg]	3580.00
Unladen vertical position of CoG [m]	0.91
Laden/unladen front air spring press. [bar]	4.00/0.70
Laden/unladen rear air spring press. [bar]	3.80/0.40

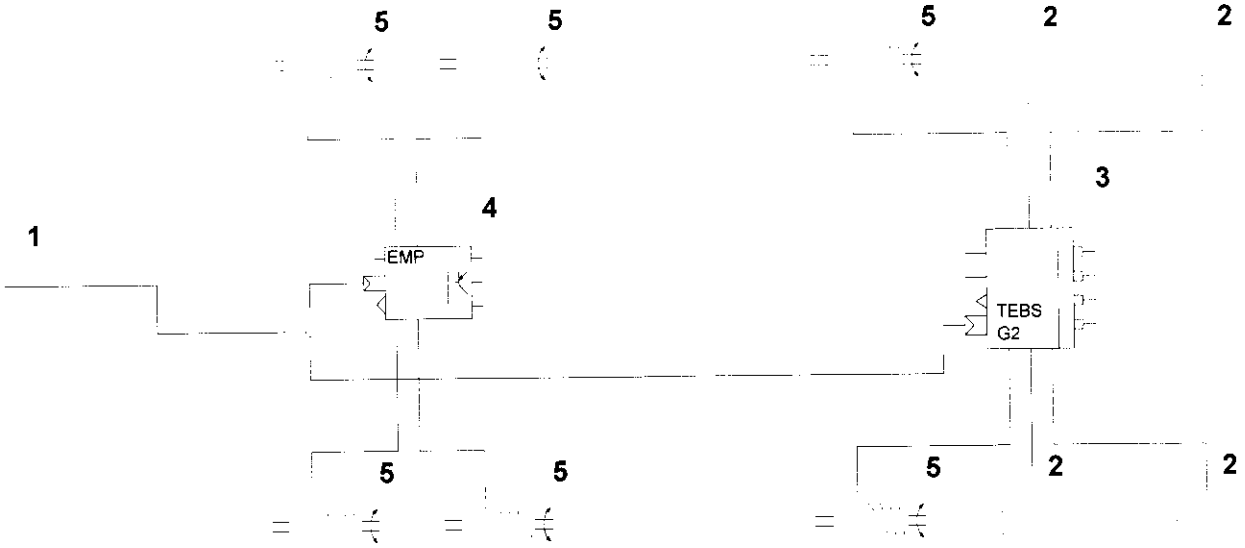
Axles

	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5
Type	MERITOR (ROR) 361-0022-02-FBKV	MERITOR (ROR) 361-0022-02-FBKV	MERITOR (ROR) 361-0022-02-FBKV	MERITOR (ROR) 361-0022-02-FBKV	MERITOR (ROR) 361-0022-02-FBKV
Tyre size	265/70 R 19.5	265/70 R 19.5	355/50 R 22.5	355/50 R 22.5	355/50 R 22.5
Dyn. tyre radius [mm]	421	421	448	448	448
Stat. tyre radius [mm]	401	401	428	428	428
Brake type	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE
Brake size [mm] or drum/disc radius [mm]	-	-	-	-	-
Actuator size	16/24	16/24	16/24	16	16
Actuator force at 6,5 bar [N]	6145	6145	6145	6146	6146
Slack adjuster length [mm]	-	-	-	-	-
Thresh.mom.[Nm] or force[N]	81.00	81.00	81.00	81.00	81.00
Brake Factor by Annex 19	20.3	20.3	20.3	20.3	20.3
Discbrake lever length [mm]	74	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	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 responsiblity 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 Premi	User data	-	1
5	Spring Brake Actuator	MASTER	-	6

Calculation pressure [bar]: 6.5

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 3
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
12	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005
13	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005

Service brake Laden vehicle

Coupling head pres. [bar]	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
Deceleration [m/s^2]	0.00	0.25	0.73	1.21	1.69	2.17	2.66	3.14	3.62	4.10	4.58	5.06	5.54	6.02	6.50
Braking rate [%]	0.00	2.54	7.44	12.35	17.25	22.16	27.07	31.97	36.87	41.78	46.68	51.59	56.49	61.40	66.30
Axle 1 actuator pres. [bar]	0.20	0.76	1.28	1.81	2.33	2.85	3.37	3.89	4.41	4.94	5.46	5.98	6.50	7.02	7.54
Axle 1 braking torque [kNm]	0.00	0.82	2.40	3.98	5.56	7.14	8.72	10.29	11.87	13.45	15.03	16.61	18.18	19.76	21.34
Axle 1 braking force [kN]	0.00	1.96	5.70	9.46	13.20	16.95	20.70	24.45	28.20	31.94	35.70	39.44	43.19	46.94	50.69
Axle 1 adhesion utilised	0.00	0.02	0.07	0.11	0.15	0.19	0.23	0.27	0.30	0.34	0.37	0.40	0.43	0.46	0.48
Axle 2 actuator pres. [bar]	0.20	0.76	1.28	1.81	2.33	2.85	3.37	3.89	4.41	4.94	5.46	5.98	6.50	7.02	7.54
Axle 2 braking torque [kNm]	0.00	0.82	2.40	3.98	5.56	7.14	8.72	10.29	11.87	13.45	15.03	16.61	18.18	19.76	21.34
Axle 2 braking force [kN]	0.00	1.96	5.70	9.46	13.20	16.95	20.70	24.45	28.20	31.94	35.70	39.44	43.19	46.94	50.69
Axle 2 adhesion utilised	0.00	0.02	0.07	0.11	0.15	0.19	0.23	0.27	0.30	0.34	0.37	0.40	0.43	0.46	0.48
Axle 3 actuator pres. [bar]	0.20	0.73	1.19	1.65	2.11	2.57	3.03	3.49	3.96	4.42	4.88	5.34	5.80	6.26	6.72
Axle 3 braking torque [kNm]	0.00	0.72	2.11	3.51	4.90	6.30	7.69	9.09	10.48	11.88	13.27	14.67	16.07	17.46	18.86
Axle 3 braking force [kN]	0.00	1.60	4.71	7.82	10.94	14.06	17.17	20.29	23.40	26.52	29.63	32.75	35.86	38.97	42.09
Axle 3 adhesion utilised	0.00	0.03	0.08	0.13	0.19	0.25	0.31	0.38	0.45	0.52	0.60	0.68	0.76	0.85	0.94
Axle 4 actuator pres. [bar]	0.20	0.73	1.19	1.65	2.11	2.57	3.03	3.49	3.96	4.42	4.88	5.34	5.80	6.26	6.72
Axle 4 braking torque [kNm]	0.00	0.72	2.11	3.51	4.90	6.30	7.69	9.09	10.49	11.88	13.27	14.67	16.07	17.46	18.86
Axle 4 braking force [kN]	0.00	1.60	4.72	7.83	10.94	14.06	17.17	20.29	23.41	26.52	29.63	32.75	35.86	38.98	42.09
Axle 4 adhesion utilised	0.00	0.03	0.08	0.13	0.19	0.25	0.31	0.38	0.45	0.52	0.60	0.68	0.76	0.85	0.94
Axle 5 actuator pres. [bar]	0.20	0.73	1.19	1.65	2.11	2.57	3.03	3.49	3.96	4.42	4.88	5.34	5.80	6.26	6.72
Axle 5 braking torque [kNm]	0.00	0.72	2.11	3.51	4.90	6.30	7.69	9.09	10.49	11.88	13.27	14.67	16.07	17.46	18.86
Axle 5 braking force [kN]	0.00	1.60	4.72	7.83	10.94	14.06	17.17	20.29	23.41	26.52	29.63	32.75	35.86	38.98	42.09
Axle 5 adhesion utilised	0.00	0.03	0.08	0.13	0.19	0.25	0.31	0.38	0.45	0.52	0.60	0.68	0.76	0.85	0.94

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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 : 2.85 Axle2 : 2.85 Axle3 : 2.57 Axle4 : 2.57 Axle5 : 2.57

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

Deceleration [m/s^2] : 4.35

Braking rate [%] 44.4

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

Front axle group	Rear axle group
Deceleration [m/s^2] : -	Deceleration [m/s^2] : 5.54
Braking rate [%] -	Braking rate [%] 56.5

Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar] Unladen	Laden
Pneu.:0.70, CAN:0.70	0.45	
1.6	0.77	1.28
6.5	2.50	5.80

Low-range comp. at 1.6 bar	0.00	0.00
High-range comp. at 4.5 bar	0.00	0.00

Air spring pressure [bar]	**Unladen :**	**Laden :**
	0.40	3.80

Axle boogie load [kg]	**Unladen**	**Laden**
	3420	19000

Pressure limitation [bar] -

Slip differential [%] 0.00 **from** 3.00 **[bar]**

Axle and Tyre information

Number of axles: 5

Dynamic tyre radius [cm]: 42.1

3rd modulator logic is LS characteristic

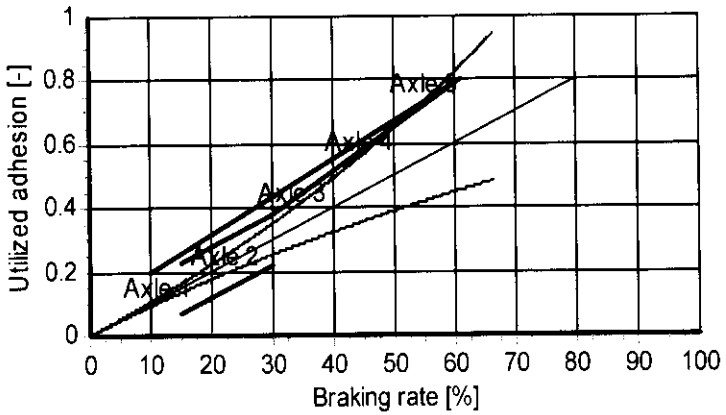
3rd Modulator parameters:

Coupling head pressure [bar]	Brake chamber pressure [bar] Unladen	Laden
Pneu.:0.70, CAN:0.70	0.45	
1.6	0.85	1.39
6.5	3.00	6.50
Compen-sations : at 1.6 bar	0.00	0.00
at 4.5 bar	0.00	0.00

Air spring pressure [bar]	**Unladen :**	**Laden :**
	0.70	4.00

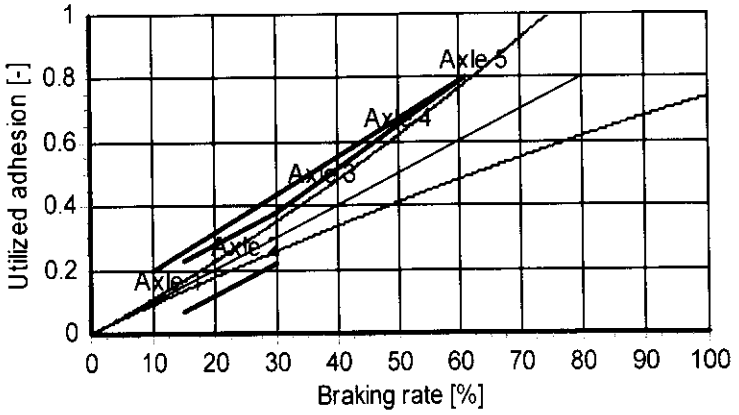
Axle boogie load [kg]	**Unladen**	**Laden**
	3580	16000

Laden vehicle - adhesion utilisation



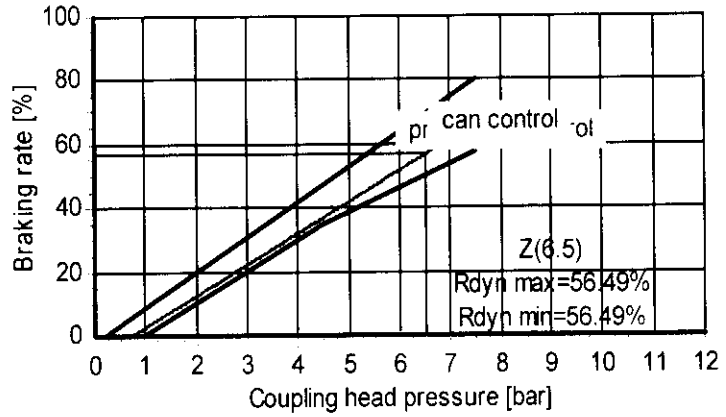
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

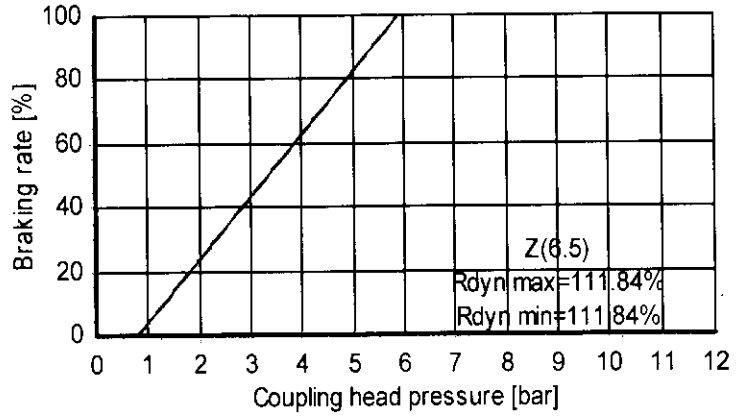


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Laden vehicle - compatibility with Pneumatic and CAN control



Unladen vehicle - compatibility with Pneumatic and CAN control



Calculation pressure [bar]: 6.5

Database version: 11.0.2

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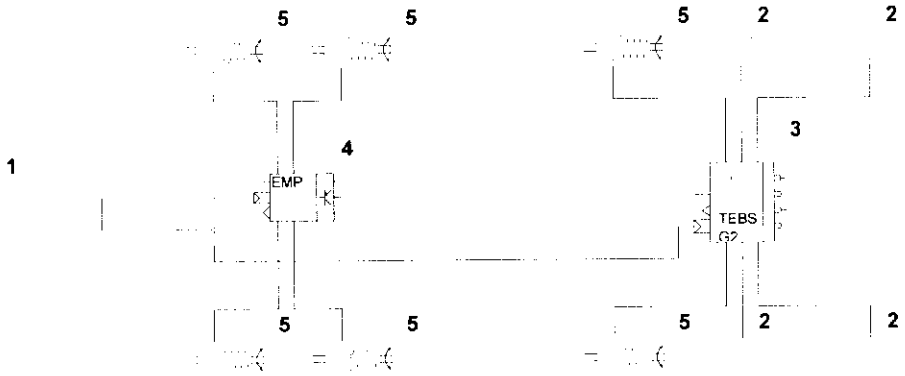
Company:	Brakespec	**Created:**	5/10/2012
Author:	Don Fordham	**Modified:**	5/10/2012
Document:	7A9E38114C1023042	**Page:**	for Workshops

Complet system diagram



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 Premiu	User data	-	1
5	Spring Brake Actuator	MASTER	-	6

Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar] Unladen	Laden
0.70	0.45	
1.6	0.77	1.28
6.5	2.50	5.80
Low-range comp. at 1.6 bar inp. [bar]	0.00	0.00
High-range comp. at 4.5 bar inp. [bar]	0.00	0.00

Air spring pressure [bar]	Unladen	Laden
	0.40	3.80

Axle boogie load [kg]	Unladen	Laden
	3420	19000

Pressure limitation [bar]	-
Slip differential [%]	0.00

Coupling head	-
Brake Chamber 16" stroke: 67	BZ 163.1 20/10/2003
Brake Chamber 16" stroke: 67	BZ 163.1 20/10/2003
Trailer EBS G2	Sensors on axle 3
Brake Chamber 16" stroke: 67	BZ 163.1 20/10/2003
Brake Chamber 16" stroke: 67	BZ 163.1 20/10/2003
Electronic Module Premium	-
Spring Brake Actuator 16/24" st	BZ 161.2 11/01/2005
Spring Brake Actuator 16/24" st	BZ 161.2 11/01/2005
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Spring Brake Actuator 16/24" st	BZ 161.2 11/01/2005
Spring Brake Actuator 16/24" st	BZ 161.2 11/01/2005

Customer: Domett **Project:** 7A9E38114C1023042

Vehicle: 5-Axle Full