NZ TRANSPORT AGENCY
WAKA KOTAHI

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)*: DON FORDHAM.

ID: HDF.

Vehicle Registration*:

VIN/Chassis Number: 7A9E25012F1023399

Component being certified:

- [X] Chassis
- [X] Load Anchorage
- [X] Log Bolsters
- [X] Towing Connection
- [✓] Brakes
- [X] SRT
- [X] PSV Stability
- [X] PSV Rollover
- [X] Swept Path
- [X] PBS

Certification Category: HUEK.

Description of Work: TO COMPLY BRAKE SYSTEM. (DOMETT 5-AXLE FULL)

Code/Standard/Rule Certified to: N.Z.H.V.B. RULE 32015.

Component Load Rating(s): GVM: 32000 kg.

General Drawing Number(s): N/A

Supporting Documents: COMPLIANCE PAPERS

Special Conditions*: ROLL STABILITY (LATERAL ACCELEROMETER) FITTED & ACTIVATED.

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 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)*: DON FORDHAM.

ID Number:

Date: 27-8-2015

Number: 519519

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 (version 14.0).

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: 7A9E25012F1023399

Vehicle

Type		**2x3 Drawbar trailer**
Calculated effective wheelbase [m]		**6.49**
Laden (max.) mass [kg]		**32000.00**
Laden (max.) front axle group load [kg]		**14000.00**
Laden vertical position of CoG [m]		**1.85**
Unladen (min.) mass [kg]		**5980.00**
Unladen (min.) front axle group load [kg]		**2800.00**
Unladen vertical position of CoG [m]		**0.89**
Laden/unladen front air spring press.	**[bar]**	**4.10/0.60**
Laden/unladen rear air spring press.	**[bar]**	**3.80/0.50**

Axles

		Axle 1	Axle 2	Axle 3	Axle 4	Axle 5
Axle distances [m]		-	<----- 1.31 ----->	<----- 4.58 ----->	<----- 1.25 ----->	<----- 1.25 ----->
Axle loads [kg]	**Laden**	7000	7000	6000	6000	6000
	Unladen	1400	1400	1060	1060	1060
Axle type		MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-FBKV
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] and Brake type		- Disc Elsa195 LE	- Disc Elsa195 LE	- Disc Elsa195 LE	- Disc Elsa195 LE	- Disc Elsa195 LE
Actuator numb./axle & size		2 x 16	2 x 16	2 x 16/24	2 x 16/24	2 x 16/24
Actuator force at 6.5 bar [N]		6590	6590	6260	6260	6260
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		22.0	22.0	22.0	22.0	22.0
Discbrake lever length [mm]		74	74	74	74	74
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		ROR 8616 AF	ROR 8616 AF	ROR 8616 AF	ROR 8616 AF	ROR 8616 AF
Cam shaft length [mm]		-	-	-	-	-

Calculation pressure [bar]: 6.5

Database version: 14.0.41

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.

System components

No.	Name	Type	Characteristics
1	Coupling head	KU1...	-
2	Brake Chamber 16" stroke: 64	ROR	BZ 122.1 15/09/2000
3	Brake Chamber 16" stroke: 64	ROR	BZ 122.1 15/09/2000
4	Trailer EBS G2.x	ES206./9.	Sensors on axle 3
5	Brake Chamber 16" stroke: 64	ROR	BZ 122.1 15/09/2000
6	Brake Chamber 16" stroke: 64	ROR	BZ 122.1 15/09/2000
7	Electronic Module Premium	ES2071	-
8	Spring Brake Actuator 16/24" stroke: 76/76	ROR	BZ 141.0 / 08/03/2002
9	Spring Brake Actuator 16/24" stroke: 76/76	ROR	BZ 141.0 / 08/03/2002
10	Spring Brake Actuator 16/24" stroke: 76/76	ROR	BZ 141.0 / 08/03/2002
11	Spring Brake Actuator 16/24" stroke: 76/76	ROR	BZ 141.0 / 08/03/2002
12	Spring Brake Actuator 16/24" stroke: 76/76	ROR	BZ 141.0 / 08/03/2002
13	Spring Brake Actuator 16/24" stroke: 76/76	ROR	BZ 141.0 / 08/03/2002

Axle identifiers

Axle	Axle identifier	Brake identifier	Axle load ident.	Test report identifier	Suffix	Test code
Axle 1				ID4-361-0071-04-FBKV		
Axle 2				ID4-361-0071-04-FBKV		
Axle 3				ID4-361-0071-04-FBKV		
Axle 4				ID4-361-0071-04-FBKV		
Axle 5				ID4-361-0071-04-FBKV		

Calculation pressure [bar]: 6.5
Database version: 14.0.41

Service brake Laden vehicle

Coupling head pres. [bar]	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5
Deceleration [m/s^2]	0.00	0.22	0.74	1.27	1.80	2.32	2.85	3.38	3.90	4.43	4.96	5.48	6.01	6.54	7.06
Braking rate [%]	0.00	2.20	7.56	12.93	18.30	23.67	29.04	34.41	39.78	45.14	50.51	55.88	61.25	66.62	71.99
Axle 1 actuator pres. [bar]	0.2	0.69	1.17	1.66	2.14	2.62	3.1	3.59	4.07	4.55	5.03	5.52	6	6.48	6.97
Axle 1 braking torque [kNm]	0.00	0.93	2.61	4.29	5.97	7.65	9.33	11.01	12.69	14.37	16.05	17.73	19.41	21.09	22.77
Axle 1 braking force [kN]	0.00	2.21	6.20	10.19	14.18	18.17	22.16	26.16	30.15	34.14	38.13	42.12	46.11	50.10	54.09
Axle 1 adhesion utilised	0.00	0.03	0.09	0.14	0.18	0.23	0.27	0.31	0.35	0.38	0.42	0.45	0.48	0.51	0.54
Axle 2 actuator pres. [bar]	0.2	0.69	1.17	1.66	2.14	2.62	3.1	3.59	4.07	4.55	5.03	5.52	6	6.48	6.97
Axle 2 braking torque [kNm]	0.00	0.93	2.61	4.29	5.97	7.65	9.33	11.01	12.69	14.37	16.05	17.73	19.41	21.09	22.77
Axle 2 braking force [kN]	0.00	2.21	6.20	10.19	14.18	18.17	22.16	26.16	30.15	34.14	38.13	42.12	46.11	50.10	54.09
Axle 2 adhesion utilised	0.00	0.03	0.09	0.14	0.18	0.23	0.27	0.31	0.35	0.38	0.42	0.45	0.48	0.51	0.54
Axle 3 actuator pres. [bar]	0.2	0.62	0.99	1.36	1.73	2.11	2.48	2.85	3.22	3.59	3.96	4.33	4.7	5.07	5.44
Axle 3 braking torque [kNm]	0.00	0.35	1.59	2.84	4.08	5.33	6.57	7.82	9.06	10.31	11.55	12.80	14.04	15.29	16.53
Axle 3 braking force [kN]	0.00	0.83	3.78	6.74	9.70	12.65	15.61	18.57	21.52	24.48	27.44	30.39	33.35	36.31	39.26
Axle 3 adhesion utilised	0.00	0.01	0.07	0.12	0.18	0.24	0.31	0.38	0.46	0.54	0.63	0.72	0.82	0.93	1.05
Axle 4 actuator pres. [bar]	0.2	0.62	0.99	1.36	1.73	2.11	2.48	2.85	3.22	3.59	3.96	4.33	4.7	5.07	5.44
Axle 4 braking torque [kNm]	0.00	0.35	1.59	2.84	4.08	5.33	6.57	7.82	9.06	10.31	11.55	12.80	14.04	15.29	16.53
Axle 4 braking force [kN]	0.00	0.83	3.78	6.74	9.70	12.65	15.61	18.57	21.52	24.48	27.44	30.39	33.35	36.31	39.26
Axle 4 adhesion utilised	0.00	0.01	0.07	0.12	0.18	0.24	0.31	0.38	0.46	0.54	0.63	0.72	0.82	0.93	1.05
Axle 5 actuator pres. [bar]	0.2	0.62	0.99	1.36	1.73	2.11	2.48	2.85	3.22	3.59	3.96	4.33	4.7	5.07	5.44
Axle 5 braking torque [kNm]	0.00	0.35	1.59	2.84	4.08	5.33	6.57	7.82	9.06	10.31	11.55	12.80	14.04	15.29	16.53
Axle 5 braking force [kN]	0.00	0.83	3.78	6.74	9.70	12.65	15.61	18.57	21.52	24.48	27.44	30.39	33.35	36.31	39.26
Axle 5 adhesion utilised	0.00	0.01	0.07	0.12	0.18	0.24	0.31	0.38	0.46	0.54	0.63	0.72	0.82	0.93	1.05

Calculation pressure [bar]: 6.5

Database version: 14.0.41

Service brake Unladen vehicle

Coupling head pres. [bar]	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5
Deceleration [m/s^2]	0.00	0.21	1.18	2.25	3.33	4.40	5.47	6.55	7.62	8.70	9.77	10.85	11.92	12.99	14.07
Braking rate [%]	0.00	2.13	12.03	22.95	33.94	44.86	55.81	66.77	77.72	88.64	99.60	110.55	121.48	132.42	143.39
Axle 1 actuator pres. [bar]	0.2	0.5	0.66	0.83	0.99	1.15	1.32	1.48	1.64	1.81	1.97	2.14	2.3	2.46	2.63
Axle 1 braking torque [kNm]	0.00	0.26	0.83	1.40	1.97	2.54	3.11	3.68	4.25	4.82	5.39	5.96	6.53	7.10	7.67
Axle 1 braking force [kN]	0.00	0.63	1.98	3.33	4.69	6.04	7.40	8.75	10.11	11.46	12.81	14.17	15.52	16.88	18.23
Axle 1 adhesion utilised	0.00	0.05	0.14	0.23	0.31	0.39	0.46	0.53	0.60	0.66	0.72	0.78	0.83	0.89	0.93
Axle 2 actuator pres. [bar]	0.2	0.5	0.66	0.83	0.99	1.15	1.32	1.48	1.64	1.81	1.97	2.14	2.3	2.46	2.63
Axle 2 braking torque [kNm]	0.00	0.26	0.83	1.40	1.97	2.54	3.11	3.68	4.25	4.82	5.39	5.96	6.53	7.10	7.67
Axle 2 braking force [kN]	0.00	0.63	1.98	3.33	4.69	6.04	7.40	8.75	10.11	11.46	12.81	14.17	15.52	16.88	18.23
Axle 2 adhesion utilised	0.00	0.05	0.14	0.23	0.31	0.39	0.46	0.53	0.60	0.66	0.72	0.78	0.83	0.89	0.93
Axle 3 actuator pres. [bar]	0.2	0.49	0.65	0.8	0.96	1.11	1.27	1.42	1.58	1.73	1.89	2.04	2.2	2.36	2.51
Axle 3 braking torque [kNm]	0.00	0.00	0.44	0.96	1.48	2.00	2.52	3.04	3.56	4.08	4.61	5.13	5.65	6.17	6.69
Axle 3 braking force [kN]	0.00	0.00	1.03	2.27	3.51	4.75	5.98	7.23	8.46	9.70	10.94	12.17	13.41	14.64	15.89
Axle 3 adhesion utilised	0.00	0.00	0.10	0.23	0.37	0.52	0.67	0.84	1.02	1.21	1.42	1.64	1.88	2.14	2.42
Axle 4 actuator pres. [bar]	0.2	0.49	0.65	0.8	0.96	1.11	1.27	1.42	1.58	1.73	1.89	2.04	2.2	2.36	2.51
Axle 4 braking torque [kNm]	0.00	0.00	0.44	0.96	1.48	2.00	2.52	3.04	3.56	4.08	4.61	5.13	5.65	6.17	6.69
Axle 4 braking force [kN]	0.00	0.00	1.03	2.27	3.51	4.75	5.98	7.23	8.46	9.70	10.94	12.17	13.41	14.64	15.89
Axle 4 adhesion utilised	0.00	0.00	0.10	0.23	0.37	0.52	0.67	0.84	1.02	1.21	1.42	1.64	1.88	2.14	2.42
Axle 5 actuator pres. [bar]	0.2	0.49	0.65	0.8	0.96	1.11	1.27	1.42	1.58	1.73	1.89	2.04	2.2	2.36	2.51
Axle 5 braking torque [kNm]	0.00	0.00	0.44	0.96	1.48	2.00	2.52	3.04	3.56	4.08	4.61	5.13	5.65	6.17	6.69
Axle 5 braking force [kN]	0.00	0.00	1.03	2.27	3.51	4.75	5.98	7.23	8.46	9.70	10.94	12.17	13.41	14.64	15.89
Axle 5 adhesion utilised	0.00	0.00	0.10	0.23	0.37	0.52	0.67	0.84	1.02	1.21	1.42	1.64	1.88	2.14	2.42

Calculation pressure [bar]: 6.5

Database version: 14.0.41

Miscellaneous

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

Pressure[bar] 2.88

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

Pressure[bar] Axle1 : 2.52 Axle2 : 2.52 Axle3 : 2.03 Axle4 : :

Automatic braking performance (laden case) at 6.0 bar

Deceleration [m/s^2] : 5.09

Braking rate [%] 51.9

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

Front axle group		**Rear axle group**	
Deceleration [m/s^2] :	6.01	Deceleration [m/s^2] :	6.01
Braking rate [%]	61.2	Braking rate [%]	61.2

Parking brake

Laden vehicle

	Up	Down
Max.slope [%] (must be > 18%)	**-59.59**	**37.46**

(max.spring force = 7120 N at 30 mm strok
Required spring force at 18% slope

Axle 1 [N]	-
Axle 2 [N]	-
Axle 3 [N]	2242
Axle 4 [N]	2242
Axle 5 [N]	2242

Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar]	
0.7	0.4	
	Unladen	Laden
1.6	0.68	1.07
6.5	2.2	4.7
Low-range comp. at 1.6 bar	0	0
High-range comp. at 4.5 bar	0	0

Air suspension	Unladen	Laden
Axle boogie load [kg]	3180	18000
voltages [V]	-	-
pressures [bar] defined by vehicle manufacturer	0.5	3.8

Pressure limitation [bar] -

3rd modulator logic is LS characteristic

Slip differential [%] - **from** - **[bar]**

Axle and Tyre information

Number of axles: 5

Dynamic tyre radius [cm]: 42.1

EMP parameters:

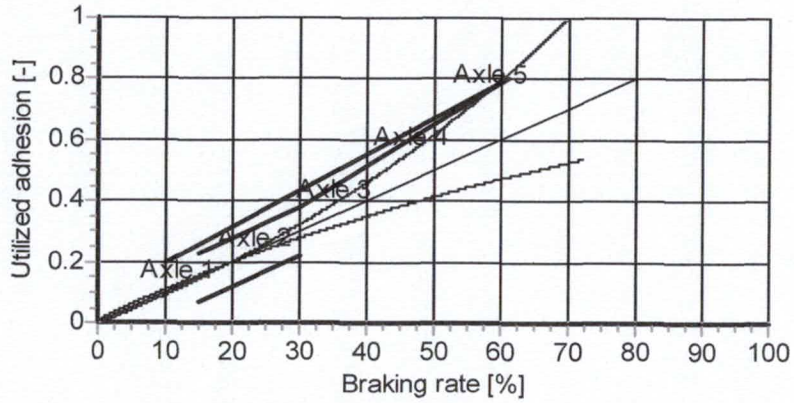
Coupling head pressure [bar]	Brake chamber pressure [bar]	
0.7	0.4	
	Unladen	Laden
1.6	0.69	1.27
6.5	2.3	6
Low-range comp. at 1.6 bar	0	0
High-range comp. at 4.5 bar	0	0

Air suspension	Unladen	Laden
Axle boogie load [kg]	2800	14000
voltages [V]	-	-
pressures [bar]	0.6	4.1

Calculation pressure [bar]: 6.5

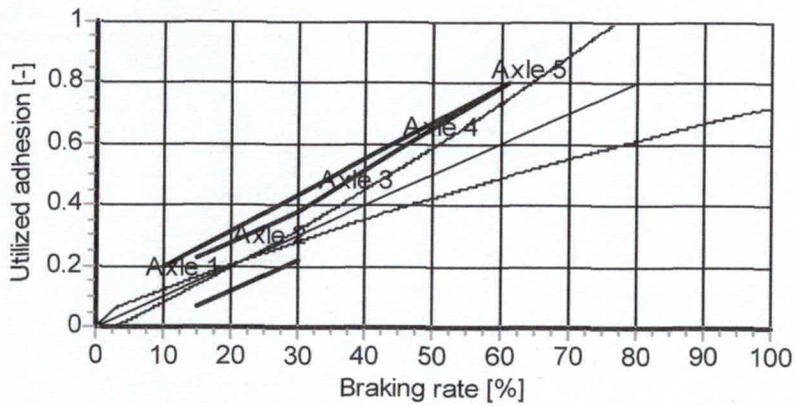
Database version: 14.0.41

Laden vehicle - adhesion utilisation



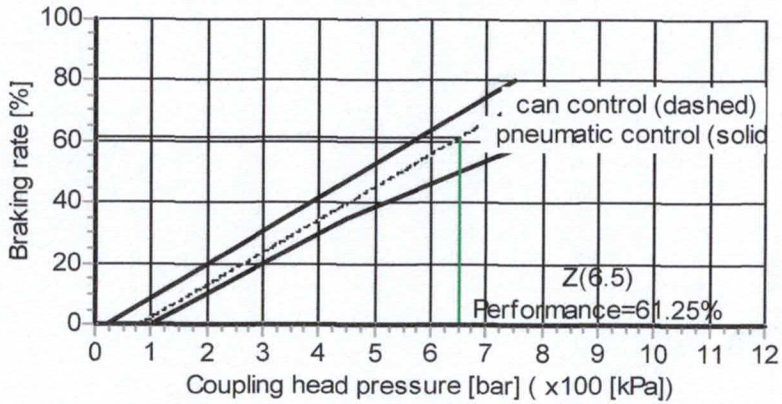
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

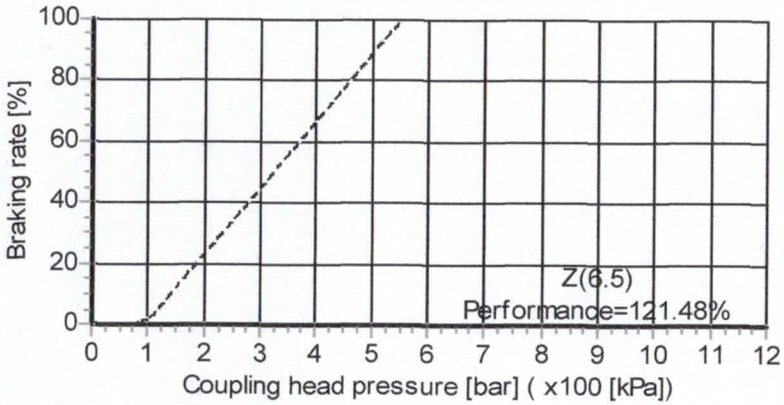


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Laden vehicle - compatibility with Pneumatic and CAN control



Unladen vehicle - compatibility with Pneumatic and CAN control



Calculation pressure [bar]: 6.5
Database version: 14.0.41