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: 7A9E20017F1023336

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: 12-6-2015

Number: 507785

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: 7A9E20017F1023336

Vehicle

Type		**2x3 Drawbar trailer**
Calculated effective wheelbase [m]		**7.35**
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]		**8019.00**
Unladen (min.) front axle group load [kg]		**3660.00**
Unladen vertical position of CoG [m]		**0.98**
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 ----->	<----- 5.44 ----->	<----- 1.25 ----->	<----- 1.25 ----->
Axle loads [kg]	**Laden**	7000	7000	6000	6000	6000
	Unladen	1830	1830	1453	1453	1453
Axle type		MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)
		361-0071-04-FBKV	361-0071-04-FBKV	361-0071-04-FBKV	361-0071-04-FBKV	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]		- Disc	- Disc	- Disc	- Disc	- Disc
and Brake type		Elsa195 LE	Elsa195 LE	Elsa195 LE	Elsa195 LE	Elsa195 LE
Actuator numb./axle & size		2 x 16	2 x 16	2 x 16/24	2 x 16/24	2 x 16
Actuator force at 6.5 bar [N]		6590	6590	6260	6260	6590
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	Brake Chamber 16" stroke: 64	ROR	BZ 122.1 15/09/2000
13	Brake Chamber 16" stroke: 64	ROR	BZ 122.1 15/09/2000

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	0.24	0.77	1.30	1.83	2.36	2.89	3.42	3.95	4.48	5.01	5.54	6.07	6.60	7.13
Braking rate [%]	0.00	2.46	7.86	13.26	18.67	24.07	29.47	34.88	40.28	45.68	51.08	56.49	61.89	67.29	72.70
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	0.19	0.23	0.28	0.32	0.36	0.39	0.43	0.46	0.50	0.53	0.56
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	0.19	0.23	0.28	0.32	0.36	0.39	0.43	0.46	0.50	0.53	0.56
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	0.37	0.45	0.52	0.60	0.69	0.78	0.88	0.99
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	0.37	0.45	0.52	0.60	0.69	0.78	0.88	0.99
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	0.70	1.99	3.28	4.57	5.86	7.15	8.44	9.73	11.02	12.31	13.60	14.89	16.18	17.47
Axle 5 braking force [kN]	0.00	1.65	4.72	7.78	10.85	13.91	16.98	20.04	23.11	26.17	29.24	32.30	35.36	38.43	41.49
Axle 5 adhesion utilised	0.00	0.03	0.08	0.14	0.20	0.26	0.33	0.40	0.48	0.56	0.64	0.73	0.83	0.93	1.04

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	0.34	1.41	2.47	3.54	4.61	5.68	6.75	7.82	8.89	9.96	11.03	12.10	13.17	14.24
Braking rate [%]	0.00	3.42	14.33	25.22	36.10	47.02	57.92	68.81	79.71	90.61	101.52	112.40	123.32	134.22	145.11
Axle 1 actuator pres. [bar]	0.2	0.53	0.74	0.96	1.18	1.39	1.61	1.82	2.04	2.25	2.47	2.68	2.9	3.12	3.33
Axle 1 braking torque [kNm]	0.00	0.37	1.12	1.87	2.62	3.37	4.12	4.87	5.62	6.37	7.12	7.87	8.62	9.37	10.12
Axle 1 braking force [kN]	0.00	0.88	2.66	4.45	6.22	8.01	9.79	11.57	13.36	15.13	16.91	18.70	20.48	22.26	24.05
Axle 1 adhesion utilised	0.00	0.05	0.14	0.23	0.31	0.39	0.47	0.54	0.60	0.67	0.73	0.78	0.84	0.89	0.94
Axle 2 actuator pres. [bar]	0.2	0.53	0.74	0.96	1.18	1.39	1.61	1.82	2.04	2.25	2.47	2.68	2.9	3.12	3.33
Axle 2 braking torque [kNm]	0.00	0.37	1.12	1.87	2.62	3.37	4.12	4.87	5.62	6.37	7.12	7.87	8.62	9.37	10.12
Axle 2 braking force [kN]	0.00	0.88	2.66	4.45	6.22	8.01	9.79	11.57	13.36	15.13	16.91	18.70	20.48	22.26	24.05
Axle 2 adhesion utilised	0.00	0.05	0.14	0.23	0.31	0.39	0.47	0.54	0.60	0.67	0.73	0.78	0.84	0.89	0.94
Axle 3 actuator pres. [bar]	0.2	0.52	0.73	0.94	1.14	1.35	1.56	1.77	1.97	2.18	2.39	2.59	2.8	3.01	3.21
Axle 3 braking torque [kNm]	0.00	0.02	0.72	1.41	2.10	2.80	3.49	4.19	4.88	5.58	6.27	6.96	7.66	8.36	9.05
Axle 3 braking force [kN]	0.00	0.05	1.70	3.34	4.99	6.65	8.30	9.94	11.60	13.25	14.90	16.54	18.20	19.85	21.49
Axle 3 adhesion utilised	0.00	0.00	0.12	0.25	0.38	0.53	0.68	0.84	1.01	1.19	1.39	1.60	1.83	2.08	2.34
Axle 4 actuator pres. [bar]	0.2	0.52	0.73	0.94	1.14	1.35	1.56	1.77	1.97	2.18	2.39	2.59	2.8	3.01	3.21
Axle 4 braking torque [kNm]	0.00	0.02	0.72	1.41	2.10	2.80	3.49	4.19	4.88	5.58	6.27	6.96	7.66	8.36	9.05
Axle 4 braking force [kN]	0.00	0.05	1.70	3.34	4.99	6.65	8.30	9.94	11.60	13.25	14.90	16.54	18.20	19.85	21.49
Axle 4 adhesion utilised	0.00	0.00	0.12	0.25	0.38	0.53	0.68	0.84	1.01	1.19	1.39	1.60	1.83	2.08	2.34
Axle 5 actuator pres. [bar]	0.2	0.52	0.73	0.94	1.14	1.35	1.56	1.77	1.97	2.18	2.39	2.59	2.8	3.01	3.21
Axle 5 braking torque [kNm]	0.00	0.35	1.07	1.79	2.51	3.23	3.95	4.67	5.39	6.11	6.83	7.55	8.27	8.99	9.71
Axle 5 braking force [kN]	0.00	0.83	2.55	4.26	5.97	7.68	9.39	11.10	12.81	14.52	16.23	17.94	19.65	21.36	23.07
Axle 5 adhesion utilised	0.00	0.06	0.19	0.32	0.46	0.61	0.77	0.94	1.12	1.31	1.52	1.74	1.98	2.23	2.51

Calculation pressure [bar]: 6.5

Database version: 14.0.41

Miscellaneous

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

Pressure[bar] 2.85

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] : 3.40

Braking rate [%] 34.6

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] :	6.07	Deceleration [m/s^2] :	6.07
Braking rate [%]	61.9	Braking rate [%]	61.9

Parking brake

Laden vehicle

Max.slope [%] (must be > 18%)	Up	Down
	-35.81	**27.33**

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

Axle 1 [N]	-
Axle 2 [N]	-
Axle 3 [N]	3322
Axle 4 [N]	3322
Axle 5 [N]	-

Calculation pressure [bar]: 6.5

Database version: 14.0.41

Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar]	
0.7	0.4	
	Unladen	Laden
1.6	0.77	1.07
6.5	2.8	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]	4359	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:

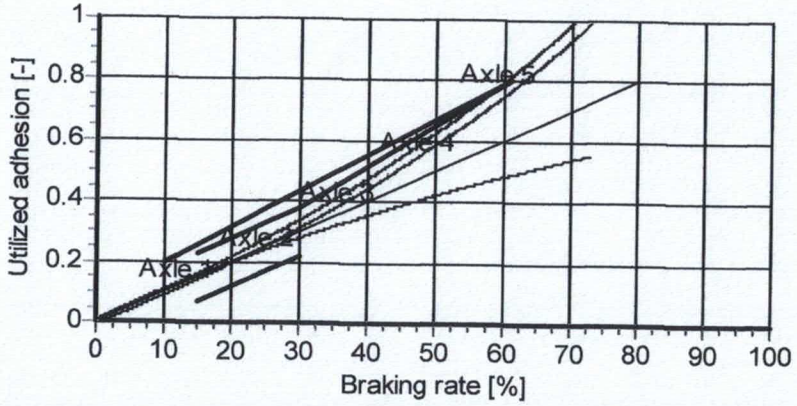
Coupling head pressure [bar]	Brake chamber pressure [bar]	
0.7	0.4	
	Unladen	Laden
1.6	0.79	1.27
6.5	2.9	6
Low-range comp. at 1.6 bar	0	0
High-range comp. at 4.5 bar	0	0

Air suspension	Unladen	Laden
Axle boogie load [kg]	3660	14000
voltages [V]	-	-
pressures [bar]	0.6	4.1

Calculation pressure [bar]: 6.5

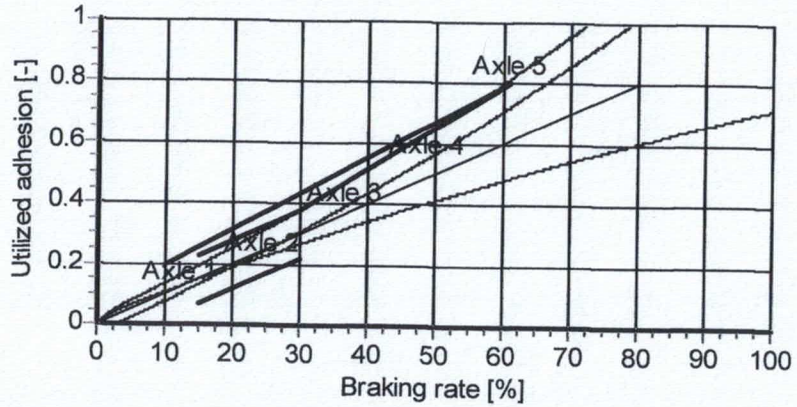
Database version: 14.0.41

Laden vehicle - adhesion utilisation



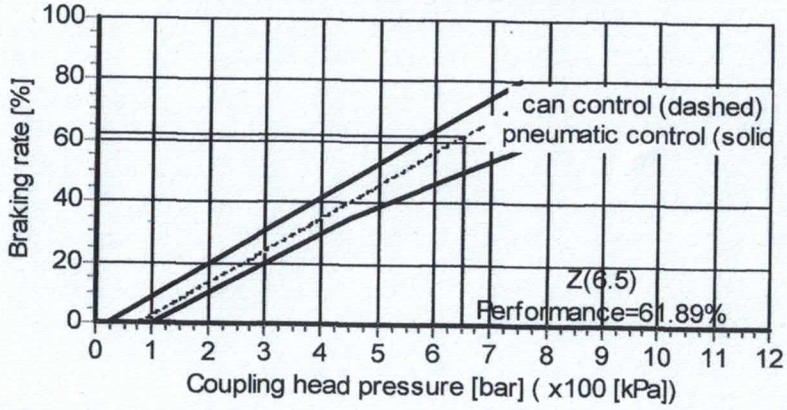
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

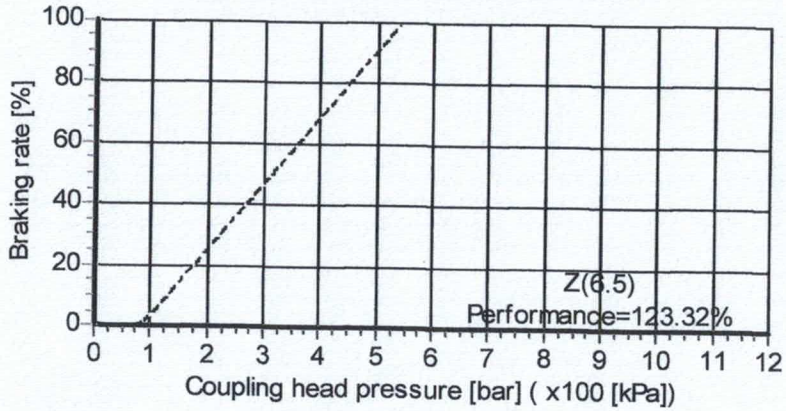


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

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