

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

7A9E20010F1023338

Component being certified:

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

Certification Category

HVEK.

Description of Work

TO COMPLY BRAKE SYSTEM. (DOMEST 5-AXLE FULL)

Code/Standard/Rule Certified to

NZ.H.V.B. RULE 32015.

Component Load Rating(s)

SUM: 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

[Handwritten Signature]

Inspector's Name (PRINT IN CAPS)

DON FORDHAM

ID Number

Date

23-07-2015

Number

519503

CoF Vehicle Inspector ID

CoF Vehicle Inspector Signature

Date

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



Company: Don Fordham
Author:

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.

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Customer: Domett

Vehicle: 5-axle full

Project: 7A9E20010F1023338

Vehicle

Type	2x3 Drawbar trailer
Calculated effective wheelbase [m]	7.32
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]	8020.00
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 distances [m]	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5
Axle loads [kg]	Laden 7000 Unladen 1830	Laden 7000 Unladen 1830	Laden 6000 Unladen 1453	Laden 6000 Unladen 1454	Laden 6000 Unladen 1453
Axle type	MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)
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	361-0071-04-FBKV 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 Eisa195 LE	Disc Eisa195 LE	Disc Eisa195 LE	Disc Eisa195 LE	Disc Eisa195 LE
Actuator numb./axle & size	2 x 16 6590	2 x 16 6590	2 x 16/24 6260	2 x 16/24 6260	2 x 16/24 6260
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 responsibility for any resulting errors.



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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

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Service	Laden vehicle	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5
brake		0.00	0.22	0.76	1.30	1.84	2.38	2.92	3.46	4.00	4.54	5.08	5.62	6.16	6.70	7.25
Coupling head pres. [bar]		0.00	2.28	7.78	13.28	18.77	24.27	29.78	35.28	40.77	46.27	51.77	57.27	62.77	68.31	73.86
Deceleration [m/s ²]		0.00	0.69	1.17	1.66	2.14	2.62	3.1	3.59	4.07	4.55	5.03	5.52	6	6.49	6.98
Braking rate [%]		0.2	0.93	2.61	4.29	5.97	7.65	9.33	11.01	12.69	14.37	16.05	17.73	19.41	21.12	22.83
Axle 1 actuator pres. [bar]		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	50.17	54.23
Axle 1 braking torque [kNm]		0.00	0.03	0.09	0.14	0.19	0.23	0.28	0.32	0.36	0.39	0.43	0.46	0.49	0.52	0.55
Axle 1 adhesion utilised		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	6.49	6.98
Axle 2 actuator pres. [bar]		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	21.12	22.83
Axle 2 braking torque [kNm]		0.00	0.03	0.09	0.14	0.19	0.23	0.28	0.32	0.36	0.39	0.43	0.46	0.49	0.52	0.55
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	0.49	0.52	0.55
Axle 3 actuator pres. [bar]		0.00	0.63	1.89	3.15	4.41	5.67	6.93	8.19	9.45	10.71	11.97	13.23	14.49	15.75	17.01
Axle 3 braking torque [kNm]		0.00	0.38	1.16	1.94	2.72	3.50	4.28	5.06	5.84	6.62	7.40	8.18	8.96	9.74	10.52
Axle 3 adhesion utilised		0.00	0.91	4.01	7.10	10.19	13.29	16.38	19.48	22.57	25.66	28.76	31.85	34.94	38.04	41.13
Axle 4 actuator pres. [bar]		0.00	0.02	0.07	0.13	0.19	0.25	0.32	0.39	0.47	0.55	0.64	0.73	0.83	0.93	1.05
Axle 4 braking torque [kNm]		0.00	0.63	1.02	1.41	1.8	2.18	2.57	2.96	3.35	3.74	4.12	4.51	4.9	5.29	5.68
Axle 4 adhesion utilised		0.00	0.91	4.01	7.10	10.19	13.29	16.38	19.48	22.57	25.66	28.76	31.85	34.94	38.04	41.13
Axle 5 actuator pres. [bar]		0.00	0.02	0.07	0.13	0.19	0.25	0.32	0.39	0.47	0.55	0.64	0.73	0.83	0.93	1.05
Axle 5 braking torque [kNm]		0.00	0.63	1.02	1.41	1.8	2.18	2.57	2.96	3.35	3.74	4.12	4.51	4.9	5.29	5.68
Axle 5 adhesion utilised		0.00	0.91	4.01	7.10	10.19	13.29	16.38	19.48	22.57	25.66	28.76	31.85	34.94	38.04	41.13
Axle 5 adhesion utilised		0.00	0.02	0.07	0.13	0.19	0.25	0.32	0.39	0.47	0.55	0.64	0.73	0.83	0.93	1.05

Calculation pressure [bar]: 6.5
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Service	Unladen vehicle														
brake	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	0.25	1.34	2.43	3.51	4.60	5.69	6.78	7.86	8.95	10.04	11.13	12.21	13.31	14.40
Deceleration [m/s ²]	0.00	2.56	13.66	24.76	35.80	46.90	57.97	69.07	80.17	91.21	102.31	113.41	124.48	135.65	146.83
Braking rate [%]	0.00	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	3.34
Axle 1 actuator pres. [bar]	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	9.39	10.15
Axle 1 braking torque [kNm]	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	22.30	24.11
Axle 1 adhesion utilised	0.00	0.05	0.14	0.23	0.31	0.39	0.47	0.54	0.60	0.66	0.72	0.78	0.84	0.89	0.94
Axle 2 actuator pres. [bar]	0.00	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	3.34
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	9.39	10.15
Axle 2 adhesion utilised	0.00	0.05	0.14	0.23	0.31	0.39	0.47	0.54	0.60	0.66	0.72	0.78	0.84	0.89	0.94
Axle 3 actuator pres. [bar]	0.00	0.05	0.14	0.23	0.31	0.39	0.47	0.54	0.60	0.66	0.72	0.78	0.84	0.89	0.94
Axle 3 braking torque [kNm]	0.00	0.05	0.14	0.23	0.31	0.39	0.47	0.54	0.60	0.66	0.72	0.78	0.84	0.89	0.94
Axle 3 adhesion utilised	0.00	0.05	0.14	0.23	0.31	0.39	0.47	0.54	0.60	0.66	0.72	0.78	0.84	0.89	0.94
Axle 4 actuator pres. [bar]	0.00	0.04	0.13	0.26	0.40	0.55	0.71	0.88	1.06	1.25	1.46	1.68	1.92	2.18	2.47
Axle 4 braking torque [kNm]	0.00	0.08	0.26	0.40	0.55	0.71	0.88	1.06	1.25	1.46	1.68	1.92	2.18	2.47	
Axle 4 adhesion utilised	0.00	0.01	0.13	0.26	0.40	0.55	0.71	0.88	1.06	1.25	1.46	1.68	1.92	2.18	2.47
Axle 5 actuator pres. [bar]	0.00	0.04	0.13	0.26	0.40	0.55	0.71	0.88	1.06	1.25	1.46	1.68	1.92	2.18	2.47
Axle 5 braking torque [kNm]	0.00	0.08	0.26	0.40	0.55	0.71	0.88	1.06	1.25	1.46	1.68	1.92	2.18	2.47	
Axle 5 adhesion utilised	0.00	0.01	0.13	0.26	0.40	0.55	0.71	0.88	1.06	1.25	1.46	1.68	1.92	2.18	2.47

Calculation pressure [bar]: 6.5
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Miscellaneous

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

Pressure[bar] 2.83

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

Pressure[bar] Axle1 : 2.52 Axle2 : 2.52 Axle3 : 2.11 Axle4 :

Automatic braking performance (laden case) at 6.0 bar

Deceleration [m/s²] : 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

Deceleration [m/s²] : 6.16

Braking rate [%] 62.8

Rear axle group

Deceleration [m/s²] : 6.16

Braking rate [%] 62.8

Parking brake Laden vehicle

Max.slope [%]	Up	Down
(must be > 18%)	-57.66	38.26

(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

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Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
0.7	0.4	
1.6	0.79	1.1
6.5	2.9	4.9
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]	4360	18000
voltages [V]	-	-
pressures [bar]	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]	
	Unladen	Laden
0.7	0.4	
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

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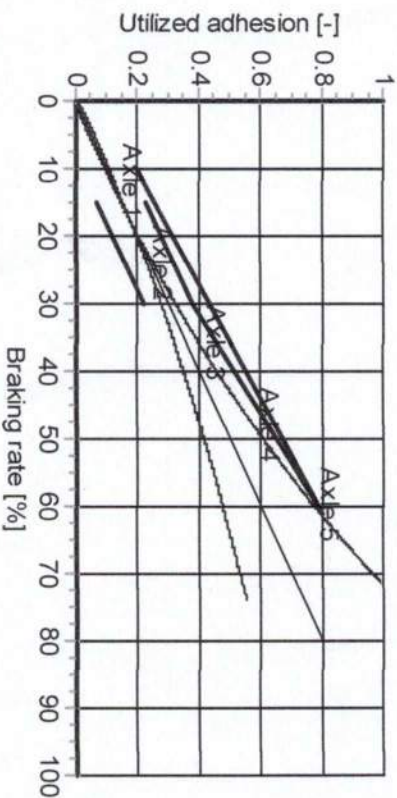


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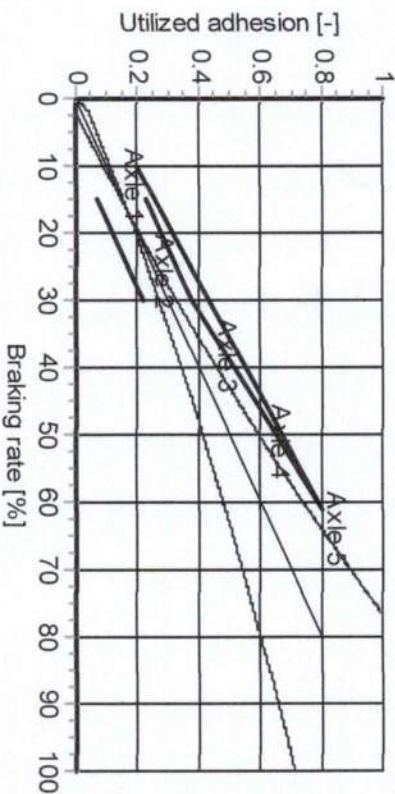
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Laden vehicle - adhesion utilisation



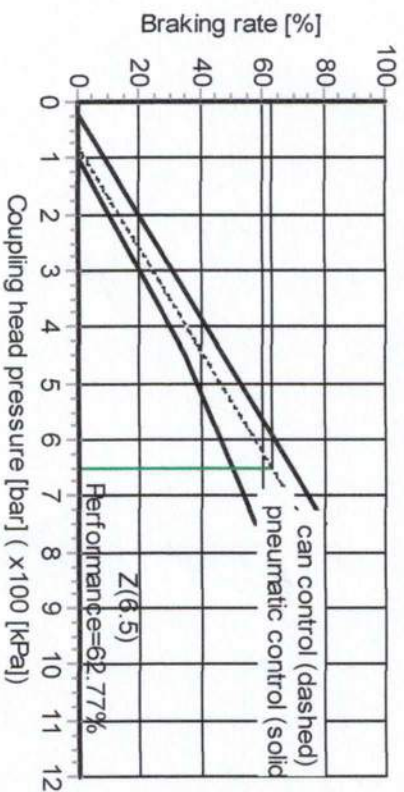
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

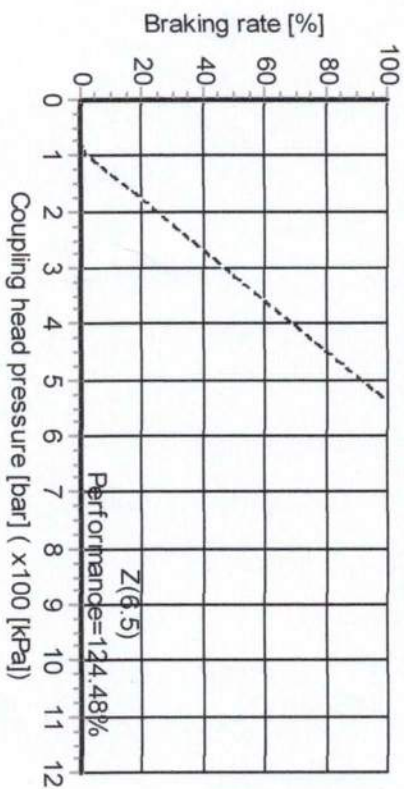


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Laden vehicle - compatibility with Pneumatic and CAN control



Unladen vehicle - compatibility with Pneumatic and CAN control



Calculation pressure [bar]: 6.5

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