

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) ID
DON FORDHAM. HDF.

Vehicle Registration* VIN/Chassis Number
7 A 9 E 2 5 0 1 9 E 1 0 2 3 3 2 0

Component being certified:

<input checked="" type="checkbox"/> Chassis Modification	<input checked="" type="checkbox"/> Load Anchorage	<input checked="" type="checkbox"/> Log Bolsters
<input checked="" type="checkbox"/> Towing Connection	<input checked="" type="checkbox"/> Brakes	<input checked="" type="checkbox"/> SRT
<input checked="" type="checkbox"/> PSV Stability	<input checked="" type="checkbox"/> PSV Rollover	<input checked="" type="checkbox"/> Swept Path
<input checked="" type="checkbox"/> PBS		

Certification Category
HVEK.

Description of Work

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

Code/Standard/Rule Certified to Component Load Rating(s)
N.Z.H.V.B. RULE 32015. GUM: 32000 Kg.

General Drawing Number(s)

N/A

Supporting Documents

COMPLIANCE PAPERS

Special Conditions*

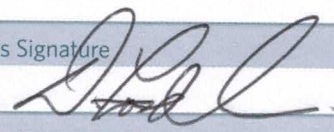
ROLL STABILITY FITTED AND ACTIVATED.

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 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) ID Number

Date Number
15-01-2015 497053

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: Brakespec Ltd
Author: Don Fordham

Created: 15/01/2015
Modified: 15/01/2015
Document: 7A9E25019E1023320
Page: 1 / 7

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 13.0).
 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: Dornett

Vehicle: 5-Axle Full

Project: 7A9E25019E1023320

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]	5978.00
Unladen (min.) front axle group load [kg]	2780.00
Unladen vertical position of CoG [m]	0.90
Laden/unladen front air spring press.	[bar] 4.30/0.60
Laden/unladen rear air spring press.	[bar] 3.70/0.50

Axles

Axle distances [m]	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5
	-	<----- 1.31 ----->	<----- 4.58 ----->	<----- 1.25 ----->	<----- 1.25 ----->
Axle loads [kg]	Laden 7000 Unladen 1390	Laden 7000 Unladen 1390	Laden 6000 Unladen 1066	Laden 6000 Unladen 1066	Laden 6000 Unladen 1066
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 Eisa195 LE	- Disc Eisa195 LE	- Disc Eisa195 LE	- Disc Eisa195 LE	- Disc Eisa195 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

Calculation pressure [bar]: 6.5
Database version: 13.0.32

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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	ES206.	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 identifier	Test report identifier
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
Coupling head pres. [bar]		0.00	0.17	0.70	1.23	1.76	2.29	2.82	3.35	3.88	4.42	4.95	5.48	6.01	6.54	7.07
Deceleration [m/s ²]		0.00	1.69	7.11	12.52	17.94	23.35	28.76	34.18	39.59	45.01	50.42	55.84	61.25	66.66	72.08
Braking rate [%]		0.00	0.59	1.09	1.58	2.07	2.56	3.05	3.54	4.03	4.53	5.02	5.51	6	6.49	6.98
Axle 1 actuator pres. [bar]		0.00	0.60	2.31	4.02	5.73	7.44	9.15	10.86	12.57	14.28	15.99	17.70	19.41	21.12	22.84
Axle 1 braking torque [kNm]		0.00	0.00	5.48	9.55	13.61	17.67	21.73	25.80	29.86	33.92	37.98	42.05	46.11	50.17	54.24
Axle 1 adhesion utilised		0.00	0.02	0.08	0.13	0.18	0.22	0.27	0.31	0.35	0.38	0.42	0.45	0.48	0.51	0.54
Axle 2 actuator pres. [bar]		0.00	0.59	1.09	1.58	2.07	2.56	3.05	3.54	4.03	4.53	5.02	5.51	6	6.49	6.98
Axle 2 braking torque [kNm]		0.00	0.60	2.31	4.02	5.73	7.44	9.15	10.86	12.57	14.28	15.99	17.70	19.41	21.12	22.84
Axle 2 adhesion utilised		0.00	0.02	0.08	0.13	0.18	0.22	0.27	0.31	0.35	0.38	0.42	0.45	0.48	0.51	0.54
Axle 3 actuator pres. [bar]		0.00	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 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]		0.00	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 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]		0.00	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 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: 13.0.32

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Service	Unladen vehicle														
	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	0.00	0.96	2.07	3.19	4.30	5.41	6.52	7.63	8.74	9.85	10.96	12.07	13.19	14.30
Deceleration [m/s ²]	0.00	0.00	9.82	21.13	32.50	43.81	55.12	66.46	77.77	89.12	100.43	111.74	123.08	134.42	145.76
Braking rate [%]	0.00	0.00	0.6	0.79	0.98	1.17	1.36	1.55	1.74	1.93	2.12	2.31	2.5	2.69	2.88
Axle 1 actuator pres. [bar]	0.2	0.41	0.6	0.79	0.98	1.17	1.36	1.55	1.74	1.93	2.12	2.31	2.5	2.69	2.88
Axle 1 braking torque [kNm]	0.00	0.00	0.63	1.29	1.95	2.61	3.27	3.93	4.59	5.25	5.91	6.57	7.23	7.89	8.55
Axle 1 adhesion utilised	0.00	0.00	0.11	0.21	0.31	0.40	0.49	0.57	0.65	0.72	0.79	0.86	0.92	0.98	1.04
Axle 2 actuator pres. [bar]	0.2	0.41	0.6	0.79	0.98	1.17	1.36	1.55	1.74	1.93	2.12	2.31	2.5	2.69	2.88
Axle 2 braking torque [kNm]	0.00	0.00	0.63	1.29	1.95	2.61	3.27	3.93	4.59	5.25	5.91	6.57	7.23	7.89	8.55
Axle 2 adhesion utilised	0.00	0.00	0.11	0.21	0.31	0.40	0.49	0.57	0.65	0.72	0.79	0.86	0.92	0.98	1.04
Axle 3 actuator pres. [bar]	0.00	0.00	0.93	2.09	3.27	4.43	5.60	6.77	7.94	9.11	10.28	11.44	12.61	13.78	14.95
Axle 3 braking torque [kNm]	0.00	0.00	0.93	2.09	3.27	4.43	5.60	6.77	7.94	9.11	10.28	11.44	12.61	13.78	14.95
Axle 3 adhesion utilised	0.00	0.00	0.09	0.21	0.34	0.48	0.62	0.78	0.95	1.13	1.33	1.54	1.77	2.02	2.30
Axle 4 actuator pres. [bar]	0.2	0.49	0.63	0.78	0.93	1.07	1.22	1.37	1.51	1.66	1.81	1.95	2.1	2.25	2.39
Axle 4 braking torque [kNm]	0.00	0.00	0.39	0.88	1.37	1.87	2.36	2.85	3.34	3.84	4.33	4.82	5.31	5.80	6.30
Axle 4 adhesion utilised	0.00	0.00	0.09	0.21	0.34	0.48	0.62	0.78	0.95	1.13	1.33	1.54	1.77	2.02	2.30
Axle 5 actuator pres. [bar]	0.2	0.49	0.63	0.78	0.93	1.07	1.22	1.37	1.51	1.66	1.81	1.95	2.1	2.25	2.39
Axle 5 braking torque [kNm]	0.00	0.00	0.39	0.88	1.37	1.87	2.36	2.85	3.34	3.84	4.33	4.82	5.31	5.80	6.30
Axle 5 adhesion utilised	0.00	0.00	0.09	0.21	0.34	0.48	0.62	0.78	0.95	1.13	1.33	1.54	1.77	2.02	2.30

Calculation pressure [bar]: 6.5

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Miscellaneous

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

Pressure[bar] 2.91

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

Pressure[bar] Axle1 : 2.56 Axle2 : 2.56 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] : 6.01

Braking rate [%] 61.2

Rear axle group

Deceleration [m/s²] : 6.01

Braking rate [%] 61.2

Parking brake

Laden vehicle

Max slope [%]	Up	Down
(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

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Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen Pneu. / CAN	Laden Pneu. / CAN
Pneu:0.7 CAN:0.8	0.4	
1.6	0.66 / 0.64	1.07 / 1
6.5	2.1 / 2.1	4.7 / 4.7
Low-range comp. at 1.6 bar	0 / 0	0 / 0
High-range comp. at 4.5 bar	0 / 0	0 / 0
Air suspension	Unladen	Laden
Axle boogie load [kg]	3198	18000
voltages [V]	-	-
pressures [bar]	0.5	3.7

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 Pneu. / CAN	Laden Pneu. / CAN
Pneu:0.7 CAN:0.8	0.3	
1.6	0.64 / 0.61	1.18 / 1.1
6.5	2.5 / 2.5	6 / 6
Low-range comp. at 1.6 bar	0 / 0	0 / 0
High-range comp. at 4.5 bar	0 / 0	0 / 0
Air suspension	Unladen	Laden
Axle boogie load [kg]	2780	14000
voltages [V]	-	-
pressures [bar]	0.6	4.3

Pressure limitation [bar] -

3rd modulator logic is LS characteristic

Slip differential [%] - from - [bar]

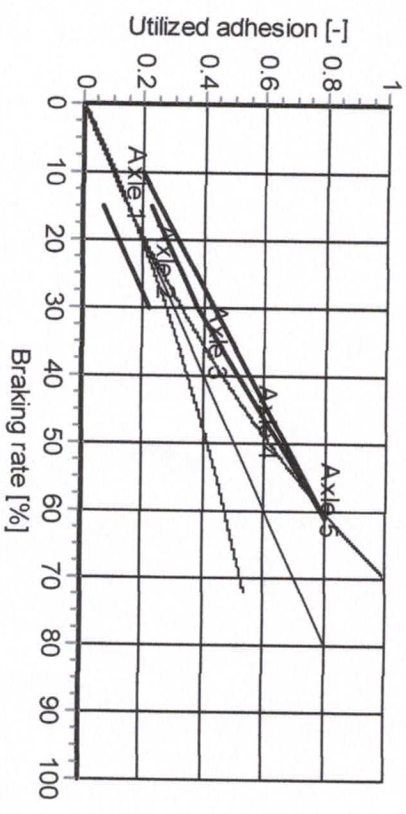
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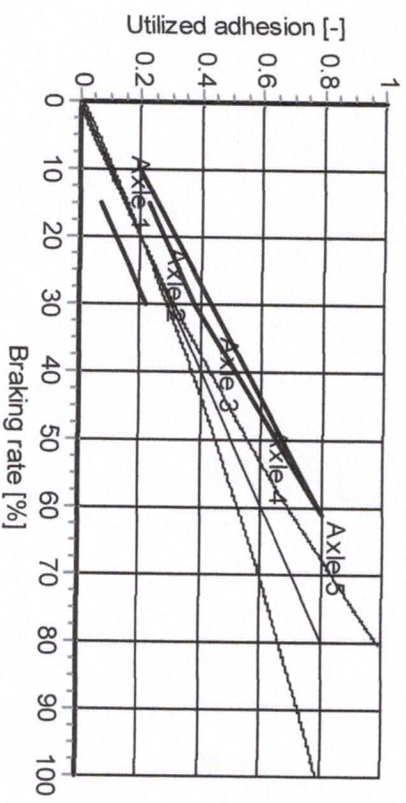
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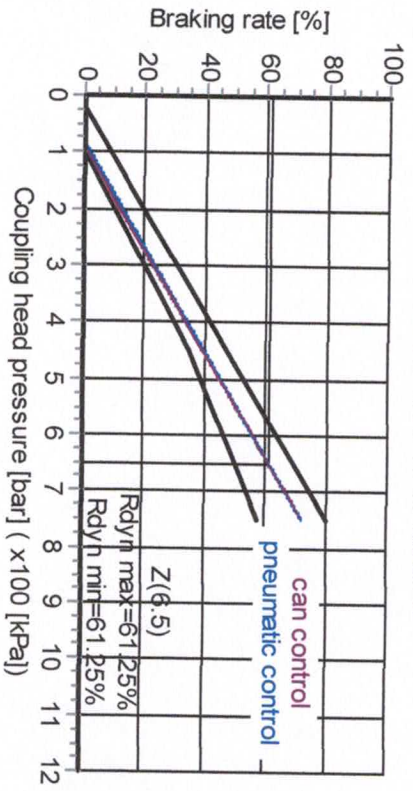
Laden vehicle - adhesion utilisation



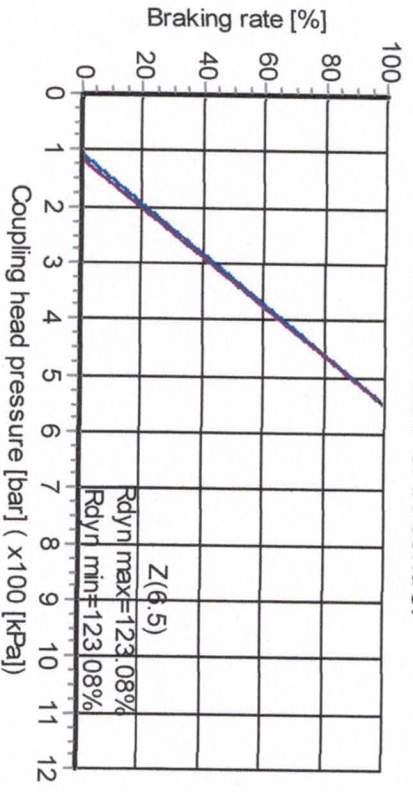
Unladen vehicle - adhesion utilisation



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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