

# 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 (optional) \_\_\_\_\_ VIN/chassis number **7A9E20014J1023755**

Make **DOMETT** Component being certified:  Chassis  Load anchorage

Model (optional) **5-AXLE FULL.**  Log bolsters  Towing connection  Brakes

Certification category **HVEK.**  SRT  PSV stability  PSV rollover

Swept path  PBS

Description of work  
**TO COMPLY BRAKE SYSTEM.**

Code/standard/rule certified to **N.Z.H.V.B. RULE 32015.** Component load rating(s) **SUM: 32000 Kg.**

General drawing number(s) **N/A**

Supporting documents **N/A**


Special conditions (optional) **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 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) **N/A**

Inspector's signature 

Inspector's name (PRINT IN CAPS) **DON FORDHAM.** ID number \_\_\_\_\_

Date **20-08-2014.** Number **639641**

CoF vehicle inspector ID \_\_\_\_\_ CoF vehicle inspector signature \_\_\_\_\_ Date \_\_\_\_\_

All fields are mandatory unless otherwise stated.





**Company:** Brakespec  
**Author:** Don Fordham

**Created:** 19/08/2018  
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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 15.0).  
 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:** 7A9E20014J1023755

**Vehicle**

Type	2x3 Drawbar trailer
Calculated effective wheelbase [m]	7.45
Laden (max.) mass [kg]	32000.00
Laden (max.) front axle group load [kg]	14000.00
Laden vertical position of CoG [m]	1.75
Unladen (min.) mass [kg]	7000.00
Unladen (min.) front axle group load [kg]	3100.00
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 1550	Laden 7000 Unladen 1550	Laden 6000 Unladen 1300	Laden 6000 Unladen 1300	Laden 6000 Unladen 1300
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]	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE
Actuator numb./axle & size	2 x 20	2 x 20	2 x 16/24	2 x 16/24	2 x 16
Actuator force at 6.5 bar [N]	7564	7564	6588	6588	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
Disckbrake 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]	-	-	-	-	-

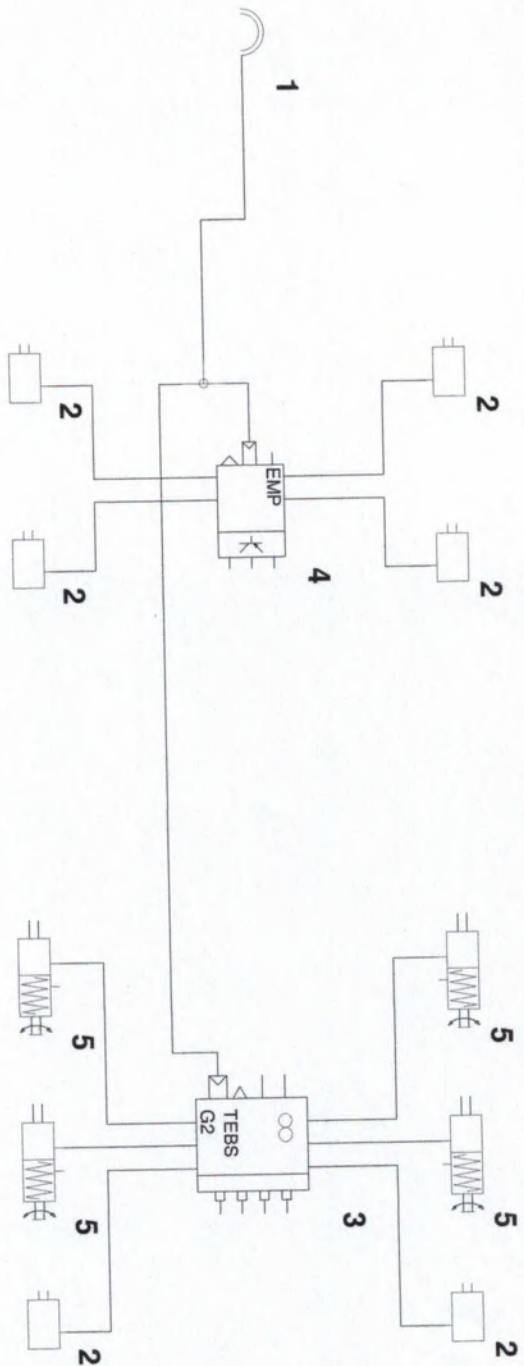
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**Calculation pressure [bar]:** 6.5  
**Database version:** 15.0.47



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### Part list

No.	Name	Type	Characteristics	Qty.
1	Coupling head	KU1...	-	1
2	Brake Chamber	ROR	-	6
3	Trailer EBS G2.x	ES206/9.	-	1
4	Electronic Module Premi	User data	-	1
5	Spring Brake Actuator	ROR	-	4

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**System components**

No.	Name	Type	Characteristics
1	Coupling head	KU1...	
2	Brake Chamber 20" stroke: 65	ROR	BZ 122.1 15/09/2000
3	Brake Chamber 20" stroke: 65	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	Brake Chamber 20" stroke: 65	ROR	BZ 122.1 15/09/2000
8	Brake Chamber 20" stroke: 65	ROR	BZ 122.1 15/09/2000
9	Electronic Module Premium	ES2071	
10	Spring Brake Actuator 16/24" stroke: 64/64	ROR	BZ 119.6 / 01/02/2001
11	Spring Brake Actuator 16/24" stroke: 64/64	ROR	BZ 119.6 / 01/02/2001
12	Spring Brake Actuator 16/24" stroke: 64/64	ROR	BZ 119.6 / 01/02/2001
13	Spring Brake Actuator 16/24" stroke: 64/64	ROR	BZ 119.6 / 01/02/2001

**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		

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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	0.13	0.70	1.26	1.83	2.39	2.96	3.52	4.09	4.65	5.22	5.78	6.35	6.91	7.48
Coupling head pres. [bar]	0.00	1.35	7.10	12.86	18.63	24.39	30.15	35.91	41.67	47.43	53.19	58.96	64.72	70.48	76.24
Deceleration [m/s <sup>2</sup> ]	0.00	0.48	0.93	1.37	1.82	2.27	2.72	3.16	3.61	4.06	4.51	4.95	5.4	5.85	6.29
Braking rate [%]	0.2	0.21	2.00	3.79	5.59	7.38	9.17	10.96	12.75	14.54	16.33	18.13	19.92	21.71	23.50
Axle 1 actuator pres. [bar]	0.00	0.50	4.76	9.01	13.27	17.52	21.78	26.03	30.29	34.54	38.79	43.05	47.31	51.56	55.81
Axle 1 braking torque [kNm]	0.00	0.01	0.07	0.12	0.18	0.23	0.27	0.32	0.36	0.40	0.44	0.48	0.51	0.54	0.58
Axle 1 adhesion utilised	0.2	0.48	0.93	1.37	1.82	2.27	2.72	3.16	3.61	4.06	4.51	4.95	5.4	5.85	6.29
Axle 2 actuator pres. [bar]	0.00	0.21	2.00	3.79	5.59	7.38	9.17	10.96	12.75	14.54	16.33	18.13	19.92	21.71	23.50
Axle 2 braking torque [kNm]	0.00	0.50	4.76	9.01	13.27	17.52	21.78	26.03	30.29	34.54	38.79	43.05	47.31	51.56	55.81
Axle 2 adhesion utilised	0.00	0.01	0.07	0.12	0.18	0.23	0.27	0.32	0.36	0.40	0.44	0.48	0.51	0.54	0.58
Axle 3 actuator pres. [bar]	0.00	0.01	0.07	0.12	0.18	0.23	0.27	0.32	0.36	0.40	0.44	0.48	0.51	0.54	0.58
Axle 3 braking torque [kNm]	0.00	0.05	0.94	1.33	1.71	2.1	2.48	2.87	3.26	3.64	4.03	4.41	4.8	5.19	5.57
Axle 3 adhesion utilised	0.2	0.55	0.94	1.33	1.71	2.1	2.48	2.87	3.26	3.64	4.03	4.41	4.8	5.19	5.57
Axle 4 actuator pres. [bar]	0.00	0.02	0.07	0.13	0.20	0.26	0.33	0.40	0.48	0.56	0.65	0.74	0.84	0.95	1.06
Axle 4 braking torque [kNm]	0.00	0.02	0.07	0.13	0.20	0.26	0.33	0.40	0.48	0.56	0.65	0.74	0.84	0.95	1.06
Axle 4 adhesion utilised	0.00	0.02	0.07	0.13	0.20	0.26	0.33	0.40	0.48	0.56	0.65	0.74	0.84	0.95	1.06
Axle 5 actuator pres. [bar]	0.00	0.02	0.07	0.13	0.20	0.26	0.33	0.40	0.48	0.56	0.65	0.74	0.84	0.95	1.06
Axle 5 braking torque [kNm]	0.00	0.02	0.07	0.13	0.20	0.26	0.33	0.40	0.48	0.56	0.65	0.74	0.84	0.95	1.06
Axle 5 adhesion utilised	0.00	0.02	0.07	0.13	0.20	0.26	0.33	0.40	0.48	0.56	0.65	0.74	0.84	0.95	1.06

**Calculation pressure [bar]:** 6.5

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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
Brake		0.00	0.16	1.07	2.15	3.22	4.30	5.37	6.45	7.52	8.60	9.67	10.75	11.82	12.90	13.97
Coupling head pres. [bar]		0.00	1.65	10.95	21.90	32.87	43.82	54.75	65.72	76.67	87.62	98.59	109.54	120.48	131.45	142.40
Deceleration [m/s <sup>2</sup> ]		0.00	0.37	0.53	0.7	0.87	1.03	1.2	1.37	1.53	1.7	1.87	2.03	2.2	2.37	2.53
Braking rate [%]		0.2	0.00	0.43	1.10	1.76	2.43	3.10	3.77	4.43	5.10	5.77	6.44	7.10	7.77	8.44
Axle 1 actuator pres. [bar]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Axle 1 braking torque [kNm]		0.00	0.00	1.02	2.60	4.19	5.77	7.36	8.95	10.53	12.11	13.70	15.29	16.87	18.46	20.04
Axle 1 adhesion utilised		0.00	0.00	0.06	0.16	0.25	0.34	0.42	0.49	0.56	0.63	0.70	0.76	0.82	0.87	0.93
Axle 2 actuator pres. [bar]		0.2	0.37	0.53	0.7	0.87	1.03	1.2	1.37	1.53	1.7	1.87	2.03	2.2	2.37	2.53
Axle 2 braking torque [kNm]		0.00	0.00	1.02	2.60	4.19	5.77	7.36	8.95	10.53	12.11	13.70	15.29	16.87	18.46	20.04
Axle 2 adhesion utilised		0.00	0.00	0.06	0.16	0.25	0.34	0.42	0.49	0.56	0.63	0.70	0.76	0.82	0.87	0.93
Axle 3 actuator pres. [bar]		0.2	0.47	0.65	0.82	1	1.17	1.35	1.52	1.7	1.87	2.05	2.22	2.4	2.58	2.75
Axle 3 braking torque [kNm]		0.00	0.16	0.77	1.38	1.99	2.60	3.21	3.82	4.43	5.04	5.65	6.26	6.87	7.48	8.10
Axle 3 adhesion utilised		0.00	0.03	0.15	0.27	0.40	0.54	0.69	0.84	1.01	1.18	1.37	1.57	1.79	2.02	2.27
Axle 4 actuator pres. [bar]		0.2	0.47	0.65	0.82	1	1.17	1.35	1.52	1.7	1.87	2.05	2.22	2.4	2.58	2.75
Axle 4 braking torque [kNm]		0.00	0.16	0.77	1.38	1.99	2.60	3.21	3.82	4.43	5.04	5.65	6.26	6.87	7.48	8.10
Axle 4 adhesion utilised		0.00	0.03	0.15	0.27	0.40	0.54	0.69	0.84	1.01	1.18	1.37	1.57	1.79	2.02	2.27
Axle 5 actuator pres. [bar]		0.2	0.47	0.65	0.82	1	1.17	1.35	1.52	1.7	1.87	2.05	2.22	2.4	2.58	2.75
Axle 5 braking torque [kNm]		0.00	0.17	0.77	1.38	2.00	2.61	3.22	3.83	4.44	5.05	5.66	6.27	6.88	7.49	8.10
Axle 5 adhesion utilised		0.00	0.039	1.84	3.29	4.74	6.19	7.64	9.09	10.55	12.00	13.45	14.90	16.34	17.79	19.25

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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 : 2.18 Axle2 : 2.18 Axle3 : 2.02 Axle4 : 2.02 Axle5 : 2.02

Automatic braking performance (laden case ) at 6.5 bar

Deceleration [m/s<sup>2</sup>] : 3.63 Braking rate [%] 37.0

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

**Front axle group**

Deceleration [m/s<sup>2</sup>] : 6.35

Braking rate [%] 64.7

**Rear axle group**

Deceleration [m/s<sup>2</sup>] : 6.35

Braking rate [%] 64.7

**Parking brake** Laden vehicle

	Up	Down
Maximum slope [%]:	-35.4	27.6

Spring force [N] maximum: at 18%:

Axle 1	-	-
Axle 2	-	-
Axle 3	7605	3322
Axle 4	7605	3322
Axle 5	-	-

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Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
0.8	0.4	
1.6	0.68	1.02
6.5	2.4	4.8
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]	3900	18000
voltages [V]	-	-
pressures [bar]	0.5	3.8

Number of axles: 5  
 Dynamic tyre radius [cm]: 42.1

Axle and Tyre Information

EMS/EMP parameters:

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
0.8	0.3	
1.6	0.57	1.02
6.5	2.2	5.4
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]	3100	14000
voltages [V]	-	-
pressures [bar]	0.6	4.1

Pressure limitation [bar] -

3rd modulator logic is LS characteristic

Slip differential [%] - from - [bar]

Calculation pressure [bar]: 6.5

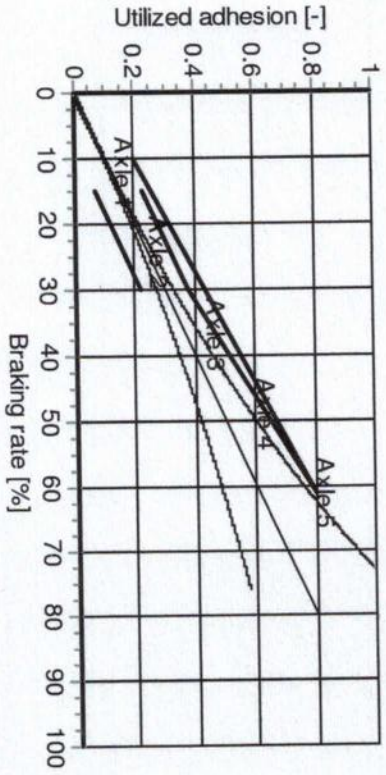
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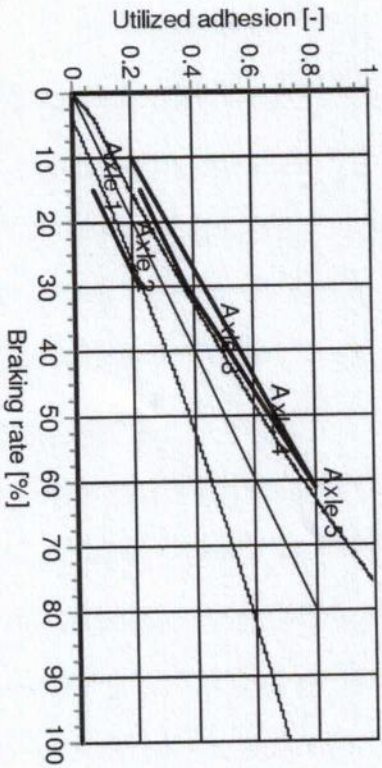


### Laden vehicle - adhesion utilisation



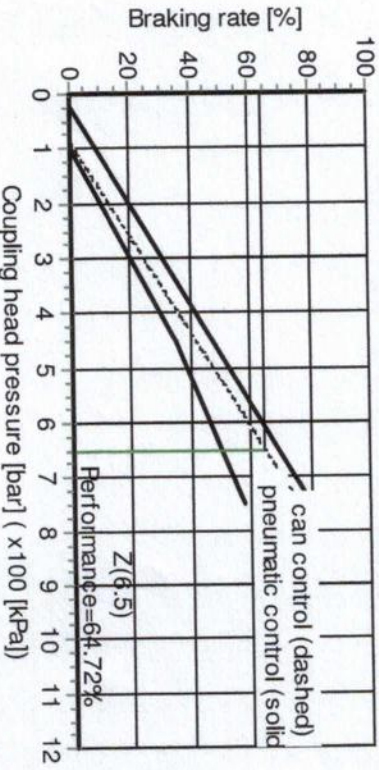
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

### Unladen vehicle - adhesion utilisation

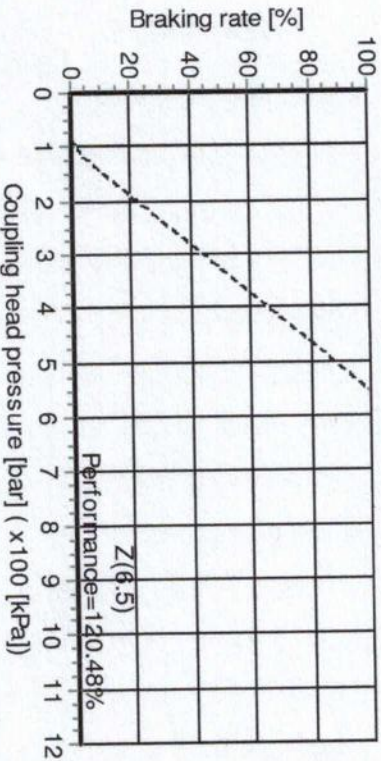


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

### Laden vehicle - compatibility with Pneumatic and CAN control



### Unladen vehicle - compatibility with Pneumatic and CAN control



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