



Heavy Vehicle Specialist Certificate

Heavy Vehicle Specialist Inspector and Inspecting Organisation

Heavy Vehicle Specialist Inspector's Name (PRINT IN CAPS)

CHRIS CLARKE

ID

CJC

Vehicle Registration*

VIN / Chassis Number

7A8JW0T0298031655

Component being certified:

Chassis Modification

Load Anchorage

Log Bolsters

Towing Connection

Brakes

SRT

Certification Category

HUEK

Description of Work

CARRY OUT SET UP OF TRAILER EBS SYSTEM IN COMPLIANCE WITH THE NZ HEAVY VEHICLE BRAKE RULE

Code/Standard Certified to

HUBNZ 32015 SCHED 5.

Component Load Rating(s)

N/A.

General Drawing Number(s)

N/A

Supporting Documents

KNORR-BREMSE BSD PERFORMANCE CALCULATION.

*Special Conditions

N/A

Certification Expiry Date (if applicable)

N/A

OR

Hubodometer Reading (whichever comes first)

Grid for hubodometer reading

Declaration

I the undersigned, declare that I am the Heavy Vehicle Specialist Inspector identified above 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 Deed of Appointment. To the best of my knowledge the information contained in this Certificate is true and correct.

Designer's ID (if certified by a manufacturer)

Blank field for Designer's ID

Inspector's / Delegate's Signature

Handwritten signature of Chris Clarke

*Delegate's Name (PRINT IN CAPS)

Blank field for Delegate's Name

Date

03.05.2010

Number

322519

COF Vehicle Inspector ID:

COF Vehicle Inspector Signature:

Date

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



KNORR-BREMSE
ECUtalk V.3.3.1.10

EOL PROTOCOL REPORT

SYSTEM		Trailer EBS		MATCH CODE		ES 2053						
PRODUCTION DATE		week 10 in 2008		SERIAL NUMBER		126						
PART NUMBER		II 39782		VIN		7A6JW0T0298031655						
MANUFACTURER		Domett Trailers		BRAKE CALCULATION NO.		7A6JW0T0298031655						
TYPE		Full trailer		FORMER PIN ACTUAL PIN		30 32 4D 52 30 32 4D 52						
DIFFERENTIAL SLIP [%] -0.1	AUX1	OFF	IN A	Disabled		SOFTWARE VERSION		521.17	AXLE	BRAKE CHAMBER SIZE	LEVER LENGTH	
	AUX2	OFF	IN B	Disabled		ISS INVERTED		-	1	16	-	
	AUX3	OFF	IN C	Disabled		RSP		St 2	2	16	-	
	AUX4	ON	IN D	-		ABS CONFIGURATION		4S/3M	3	1624	-	
	AUX5	-		POLE WHEEL TEETH SR, SL		90	DYN.TYRE DIAMETER [MM]		840	COMPENSATION AT 1.6 BAR		0.2
REAR AXLE PRESSURE LIMIT [BAR]		5.2		CONTROLL PRESSURE [BAR]		6.5		CONTROLL PRESSURE [BAR]		0.7	1.6	6.5
AXLE	AXLE LOAD UNLADEN [KG]	SUSP.PRESS.UNL. [BAR]	BRAKE PRESS.UNL. [BAR]	AXLE LOAD LADEN [KG]	SUSP.PRESS.LADEN [BAR]	BRAKE PRESS.LADEN [BAR]						
1	1450	0	-	7250	0	-	-	-				
2	1450	0	-	7250	0	-	-	-				
3	1370	0.4	1.6	7250	4.5	0.46	1.4	5.2				
4	1370	0.4	1.6	7250	4.5	0.46	1.4	5.2				
5	-	-	-	-	-	-	-	-				
KILOMETER COUNTER [KM]	0	NEXT SERVICE [KM]	8000000	ECU SUPPLY VOLTAGE [V]	22.7	VALVE SUPPLY VOLTAGE [V]	23.2					
AIR GAP SPEED SL [KM/H]	3.3	AIR GAP SPEED SR [KM/H]	0.6	AIR GAP SPEED SAL [KM/H]	3.1	AIR GAP SPEED SAR [KM/H]	3.0					
EOL TEST RESULTS												
System pressure test		Succeeded		-		-						
Warning lamp test		Succeeded		-		-						
LSF test		Succeeded		-		-						
SL wheel speed sensor test		Succeeded		-		-						
SR wheel speed sensor test		Succeeded		-		-						
Axle modulator test		Succeeded		-		-						
RSP installation test		Succeeded		-		-						
Active faults in the system		No		-		-						
TESTER NAME	Chris Clarke			SIGNATURE 								
LOCATION	Genese Ltd											
DATE	03/05/2010											
ADDITIONAL INFORMATION	Fonterra Refurbish Job # 3377											



Company: Genese LTd
Author: Chris Clarke

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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 (level 11.0).

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: Fonterra Co-operative Dairies Ltd

Vehicle: 7A8JW0T0298031655

Project: 4 axle full milk collection trailer

Vehicle

Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	5.07
Laden (max.) mass [kg]	29000.00
Laden (max.) front axle group load [kg]	14500.00
Laden vertical position of CoG [m]	1.80
Unladen (min.) mass [kg]	5640.00
Unladen (min.) front axle group load [kg]	2900.00
Unladen vertical position of CoG [m]	1.10
Laden/unladen front air spring press. [bar]	-/-
Laden/unladen rear air spring press. [bar]	4.50/0.40

Axles	Axle 1	Axle 2	Axle 3	Axle 4
Type	MERITOR (ROR) 361-0071-04-FBKV 265/70 R 19.5	MERITOR (ROR) 361-0071-04-FBKV 265/70 R 19.5	MERITOR (ROR) 361-0071-04-FBKV 265/70 R 19.5	MERITOR (ROR) 361-0071-04-FBKV 265/70 R 19.5
Dyn. tyre radius [mm]	421	421	421	421
Stat. tyre radius [mm]	401	401	401	401
Brake type	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE
Brake size [mm] or drum/disc radius [mm]	-	-	-	-
Actuator size	16	16	16/24	16/24
Actuator force at 6,5 bar [N]	6590	6590	6260	6260
Slack adjuster length [mm]	-	-	-	-
Thresh.mom. [Nm] or force [N]	81.00	81.00	81.00	81.00
Brake Factor by Annex 19	20.3	20.3	20.3	20.3
Discbrake lever length [mm]	74	74	74	74
Internal brake factor (C*)	-	-	-	-
Mechanical efficiency (Eta)	-	-	-	-
Internal brake factor x Mech. efficiency (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

Calculation pressure [bar]: 6.5

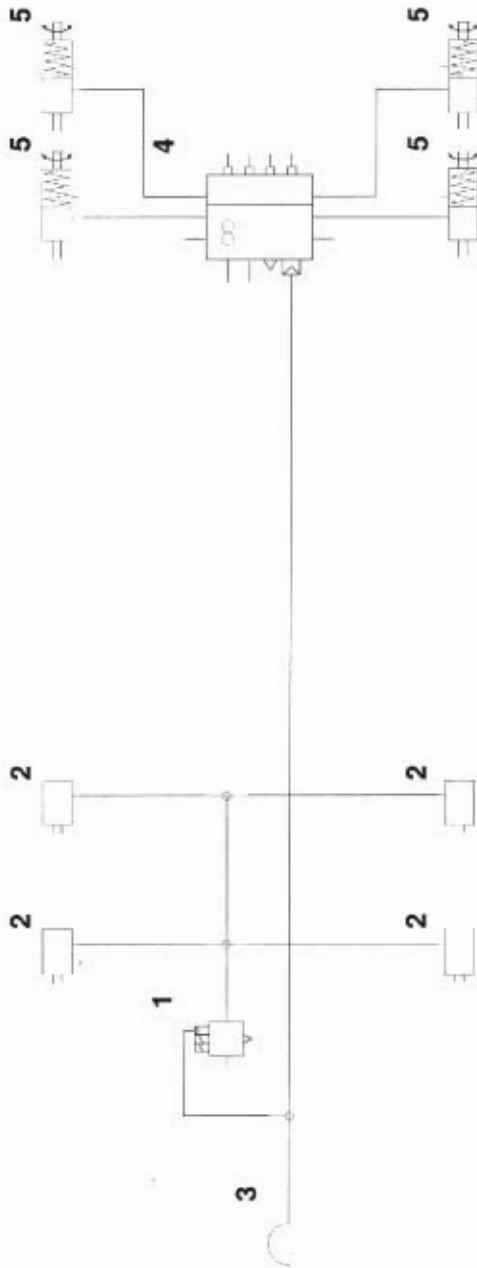
Database version: 11.0.2

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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Part list

No.	Name	Type	Characteristics	Qty.
1	ABS Modulator	BR9234	-	1
2	Brake Chamber	ROR	-	4
3	Coupling head - brake	KU1...	-	1
4	Trailer EBS ECU	ES20..	-	1
5	Spring Brake Actuator	ROR	-	4

Calculation pressure [bar]: 6.5

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System components

No.	Name	Type	Characteristics
1	ABS Modulator	BR9234	Sensors on axle 2
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	Brake Chamber 16" stroke: 64	ROR	BZ 122.1 15/09/2000
5	Brake Chamber 16" stroke: 64	ROR	BZ 122.1 15/09/2000
6	Coupling head - brake	KU1...	.
7	Trailer EBS ECU	ES20..	Sensors on axle 4
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

Calculation pressure [bar]: 6.5

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Laden vehicle

Service brake	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
Coupling head pres. [bar]	0.00	0.23	0.73	1.19	1.64	2.12	2.62	3.14	3.63	4.11	4.58	5.06	5.54	6.00	6.07
Deceleration [m/s^2]	0.00	2.37	7.48	12.09	16.72	21.57	26.72	32.02	37.03	41.88	46.73	51.58	56.43	59.16	61.90
Braking rate [%]	0.00	0.62	1.07	1.54	2.04	2.59	3.19	3.82	4.38	4.90	5.41	5.92	6.43	6.94	7.45
Axle 1 actuator pres. [bar]	0.00	0.63	2.08	3.60	5.21	6.95	8.88	10.90	12.73	14.37	16.01	17.65	19.29	20.93	22.57
Axle 1 braking torque [kNm]	0.00	1.50	4.95	8.54	12.37	16.52	21.09	25.88	30.25	34.14	38.03	41.93	45.82	49.71	53.61
Axle 1 adhesion utilised	0.00	0.02	0.07	0.11	0.16	0.20	0.25	0.30	0.34	0.37	0.40	0.43	0.46	0.49	0.52
Axle 2 actuator pres. [bar]	0.00	0.62	1.07	1.54	2.04	2.59	3.19	3.82	4.38	4.90	5.41	5.92	6.43	6.94	7.45
Axle 2 braking torque [kNm]	0.00	0.63	2.08	3.60	5.21	6.95	8.88	10.90	12.73	14.37	16.01	17.65	19.29	20.93	22.57
Axle 2 adhesion utilised	0.00	1.50	4.95	8.54	12.37	16.52	21.09	25.88	30.25	34.14	38.03	41.93	45.82	49.71	53.61
Axle 3 actuator pres. [bar]	0.20	0.77	1.29	1.89	2.44	2.82	3.19	3.57	3.97	4.38	4.79	5.20	5.20	5.20	5.20
Axle 3 braking torque [kNm]	0.00	0.79	2.40	3.64	4.80	5.96	7.12	8.28	9.44	10.70	11.97	13.24	14.50	14.50	14.50
Axle 3 adhesion utilised	0.00	0.63	0.08	0.13	0.18	0.24	0.29	0.36	0.43	0.51	0.60	0.70	0.81	0.84	0.86
Axle 4 actuator pres. [bar]	0.20	0.77	1.29	1.89	2.44	2.82	3.19	3.57	3.97	4.38	4.79	5.20	5.20	5.20	5.20
Axle 4 braking torque [kNm]	0.00	0.79	2.40	3.64	4.80	5.96	7.12	8.28	9.44	10.70	11.97	13.24	14.50	14.50	14.50
Axle 4 adhesion utilised	0.00	1.87	5.69	8.65	11.41	14.16	16.92	19.65	22.42	25.43	28.43	31.44	34.44	34.44	34.44

Unladen vehicle

Service brake	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
Coupling head pres. [bar]	0.00	0.11	0.85	1.42	1.98	2.56	3.19	3.87	4.61	5.56	6.70	8.29	10.86	20.71	22.07
Deceleration [m/s^2]	0.00	1.16	8.70	14.52	20.16	26.13	32.49	39.42	46.96	56.64	68.28	84.55	110.73	211.09	224.94
Braking rate [%]	0.00	0.44	0.59	0.71	0.83	0.96	1.11	1.27	1.46	1.72	2.05	2.54	3.40	6.94	7.35
Axle 1 actuator pres. [bar]	0.00	0.07	0.54	0.92	1.30	1.72	2.19	2.73	3.34	4.16	5.21	6.80	9.55	20.93	22.24
Axle 1 braking torque [kNm]	0.00	0.16	1.27	2.18	3.09	4.10	5.21	6.48	7.93	9.88	12.38	16.15	22.68	49.71	52.83
Axle 1 adhesion utilised	0.00	0.01	0.09	0.14	0.20	0.26	0.32	0.39	0.47	0.56	0.68	0.84	1.09	1.85	1.91
Axle 2 actuator pres. [bar]	0.00	0.44	0.59	0.71	0.83	0.96	1.11	1.27	1.46	1.72	2.05	2.54	3.40	6.94	7.35
Axle 2 braking torque [kNm]	0.00	0.07	0.54	0.92	1.30	1.72	2.19	2.73	3.34	4.16	5.21	6.80	9.55	20.93	22.24
Axle 2 adhesion utilised	0.00	0.16	1.27	2.18	3.09	4.10	5.21	6.48	7.93	9.88	12.38	16.15	22.68	49.71	52.83
Axle 3 actuator pres. [bar]	0.20	0.54	0.87	1.13	1.42	1.72	2.05	2.44	2.92	3.50	4.27	5.20	6.43	7.96	9.40
Axle 3 braking torque [kNm]	0.00	0.07	0.48	0.77	1.05	1.32	1.59	1.86	2.13	2.44	2.74	3.05	3.35	3.66	3.96
Axle 3 adhesion utilised	0.00	0.16	1.13	1.84	2.49	3.13	3.77	4.42	5.06	5.79	6.51	7.24	7.96	8.68	9.40
Axle 4 actuator pres. [bar]	0.20	0.54	0.87	1.13	1.42	1.72	2.05	2.44	2.92	3.50	4.27	5.20	6.43	7.96	9.40
Axle 4 braking torque [kNm]	0.00	0.07	0.48	0.77	1.05	1.32	1.59	1.86	2.13	2.44	2.74	3.05	3.35	3.66	3.96
Axle 4 adhesion utilised	0.00	0.16	1.13	1.84	2.49	3.13	3.77	4.42	5.06	5.79	6.51	7.24	7.96	8.68	9.40

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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Miscellaneous

Coupling head pressure where z = 22.5% (laden case)
 Pressure [bar] : 3.10

Brake chamber pressure [bar] where z = 22.5% (laden case)
 Axle1 : 2.70 Axle2 : 2.70 Axle3 : 2.52 Axle4 : 2.52

Automatic braking performance (at 6.0 [bar], laden case)
 Deceleration [m/s^2] : 3.46
 Braking rate [%] 35.2

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

Front axle group	Rear axle group
Deceleration [m/s^2] : -	Deceleration [m/s^2] : 5.54
Braking rate [%] -	Braking rate [%] 56.4

Parking brake Laden vehicle

Max.slope [%]	Up	Down
(must be > 18%)	-40.99	31.93
(max.spring force = 7120 N at 30 mm strok		
Required spring force at 18% slope		
Axle 1 [N]	-	-
Axle 2 [N]	-	-
Axle 3 [N]	3264	
Axle 4 [N]	3264	

Calculation pressure [bar]: 6.5

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Trailer EBS parameters

Number of axles: 4
 Number of teeth: 90
 Dynamic tyre radius [cm]: 42.1
 Inshot pressure [bar]: 0.46
 Coupling head pressure [bar]: 0.70
 Pressure compensation (at 1.6 bar) [bar]: 0.20
 Output pressure (at 6.5 bar) [bar]

Laden: 5.20
 Unladen: 1.60

Air spring pressure [bar]

Laden : 4.50
 Unladen : 0.40

Axle boogie load [kg]

Laden: 14500
 Unladen: 2740

Pressure limitation [bar]

5.20
 -0.10

Corresponding sheet on the PC Diagnostic tool (ECU Talk)

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
0.70	0.46	
1.6	0.70	1.40
6.5	1.60	5.20

Brake pressure compensation at 1.6 bar coupling head pressure [bar]
0.20

Air spring pressure [bar]	Unladen :	Laden :
	0.40	4.50

Axle boogie load [kg]	Unladen	Laden
	2740	14500

#22

Calculation pressure [bar]: 6.5

Database version: 1.1.0.2

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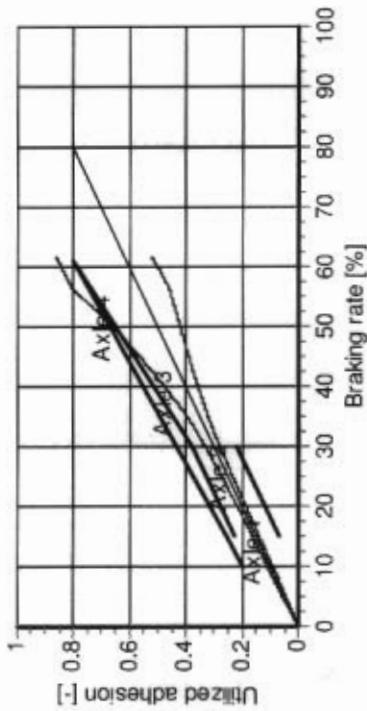


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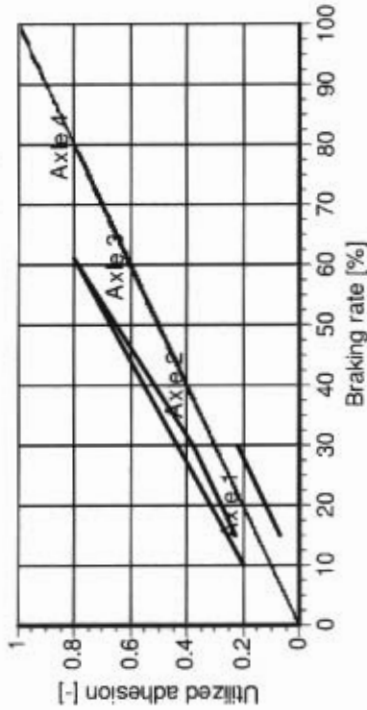
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Laden vehicle - adhesion utilisation



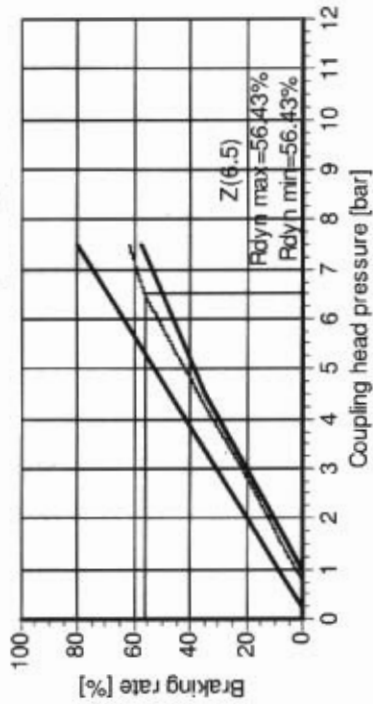
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation



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

Laden vehicle - compatibility



Calculation pressure [bar]: 6.5

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Database version: 11.0.2

Unladen vehicle - compatibility

