



Heavy Vehicle Specialist Certificate

Heavy Vehicle Specialist Inspector and Inspecting Organisation

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

CHRIS CLARKE

ID

CCTC

Vehicle Registration*

VIN / Chassis Number

7A8H9000297746365

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 AND COMPLIANCE TO THE NZ HEAVY VEHICLE BRAKE RULE 2005 SCHEDULE 5

Code/Standard Certified to

NZHSR 3205 SCHED 5

Component Load Rating(s)

N/A

General Drawing Number(s)

N/A

Supporting Documents

BRAKE 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)

Inspector's / Delegate's Signature

*Delegate's Name (PRINT IN CAPS)

Date

19 10 2008

Number

309215

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: Genese Ltd
Author: Chris Clarke

Created: 19/10/2008 Document: 7A8H9000297746365
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Database version: 9.0.13

Calculation in accordance with ECE Regulation 13 (10 Series) and EEC Directive 71/320 EEC (2002/78/EC) using Knorr-Bremse Braking System Designer software (level 9.0).
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-op Ltd
Vehicle: 7A8H9000297746365
Project: 4 axle milk collection full trailer

Vehicle

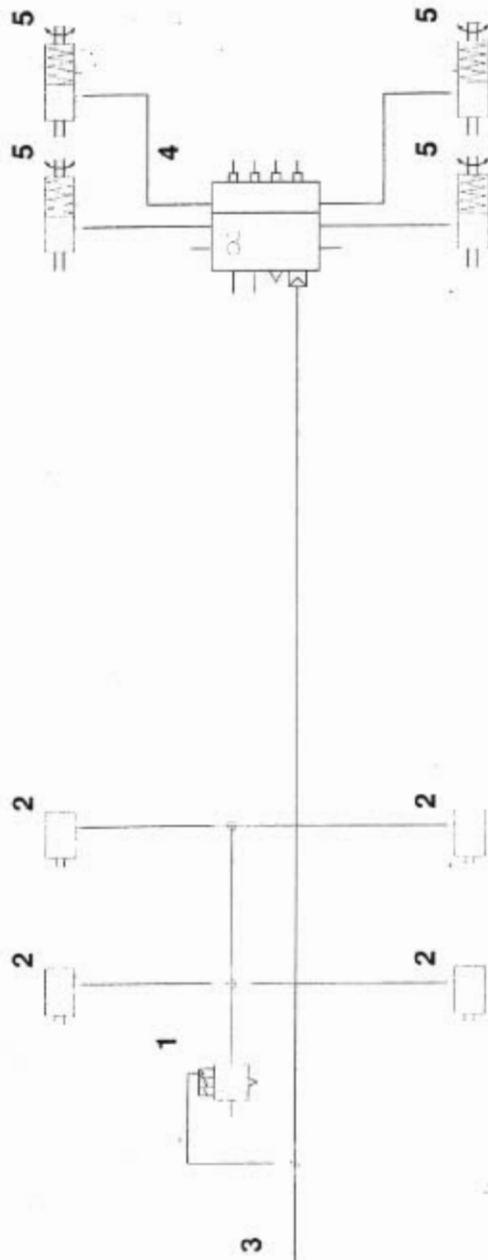
Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	4.90
Laden (max.) mass [kg]	29000.00
Laden (max.) front axle group load [kg]	14500.00
Laden vertical position of CoG [m]	1.96
Unladen (min.) mass [kg]	6718.00
Unladen (min.) front axle group load [kg]	4048.00
Unladen vertical position of CoG [m]	1.27
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)	MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)
	361-0022-02-FBKV	361-0022-02-FBKV	361-0022-02-FBKV	361-0022-02-FBKV
Tyre size	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
Stat. tyre radius [mm]	401	401	401	401
Brake type	Disc	Disc	Disc	Disc
	Elsa195 LE	Elsa195 LE	Elsa195 LE	Elsa195 LE
Brake size [mm] or drum/disc radius [mm]	340x200	340x200	340x200	340x200
Actuator size	16	16	16/24	16/24
Actuator force at 6.5 bar [N]	6590	6590	6280	6280
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

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.



Part list

No.	Name	Type	Characteristics	Qty.
1	ABS Modulator	BR9234	-	1
2	Brake Chamber	ROR	-	4
3	Coupling head - brake	KU1400	-	1
4	Trailer EBS ECU	ES20..	-	1
5	Spring Brake Actuator	ROR	-	4

Calculation pressure [bar]: 6.5

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Laden vehicle

	Intact system	Front circuit only	Rear circuit only	Calculation press.
Deceleration [m/s ²]	8.08	-	*	5.55
Pressure [bar]	8.50	-	*	6.50

Calculation pressure [bar]: 6.5

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Miscellaneous

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

Pressure [bar] : 2.90

Brake chamber pressure [bar] where z = 22.5% (laden case)

Axle1 : 2.76 Axle2 : 2.76 Axle3 : 2.58 Axle4 : 2.58

Automatic braking performance (at 6.0 [bar], laden case)

Deceleration [m/s²] : 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

Deceleration [m/s²] :-

Braking rate [%] -

Rear axle group

Deceleration [m/s²] : 5.70

Braking rate [%] 58.1

Parking brake Laden vehicle

Max.slope [%]	Up	Down
(must be > 18%)	-40.99	31.05

(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]: 0.56
 Coupling head pressure [bar]: 0.70
 Pressure compensation (at 1.6 bar) [bar]: 0.20
 Output pressure (at 6.5 bar) [bar]

Laden: 5.60
 Unladen: 1.40

Air spring pressure [bar]

Laden : 4.50
 Unladen : 0.40

Axle boogie load [kg]

Laden: 14500
 Unladen: 2670

Pressure limitation [bar]

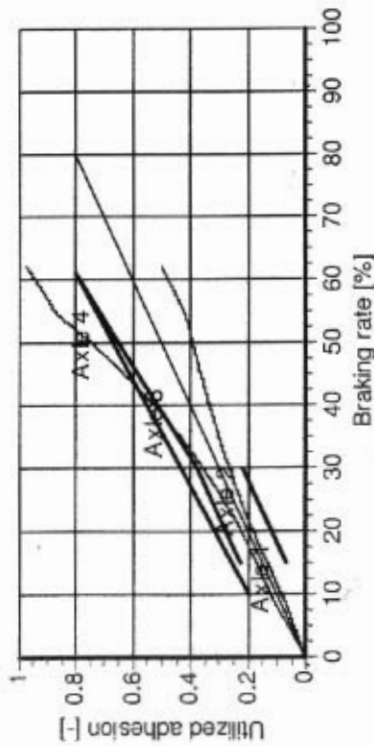
5.30
 -0.20

Corresponding sheet on the PC Diagnostic tool (ECU Talk)

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
0.70	0.56	
1.6	0.74	1.54
6.5	1.40	5.60
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
2670		14500

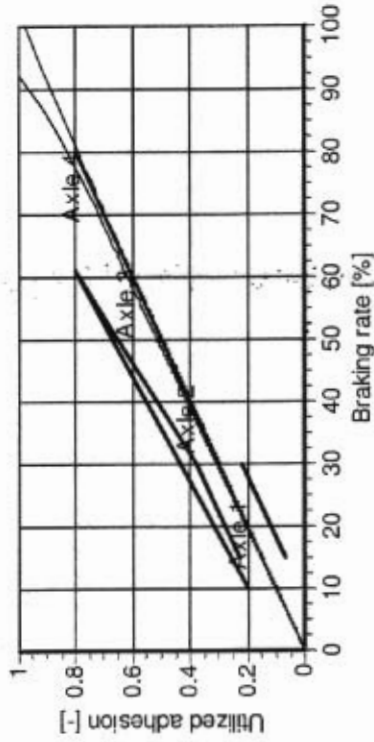


Laden vehicle - adhesion utilisation



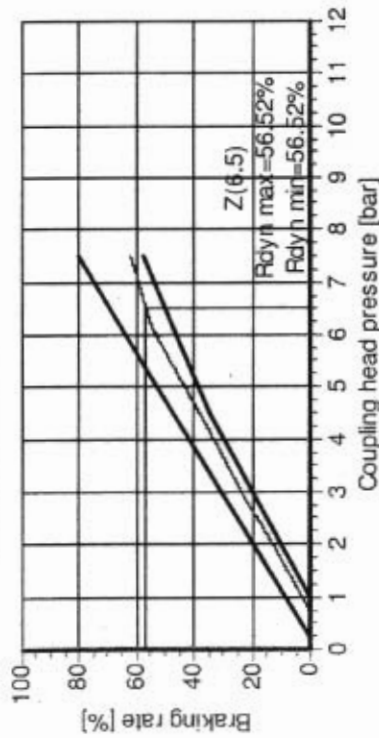
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

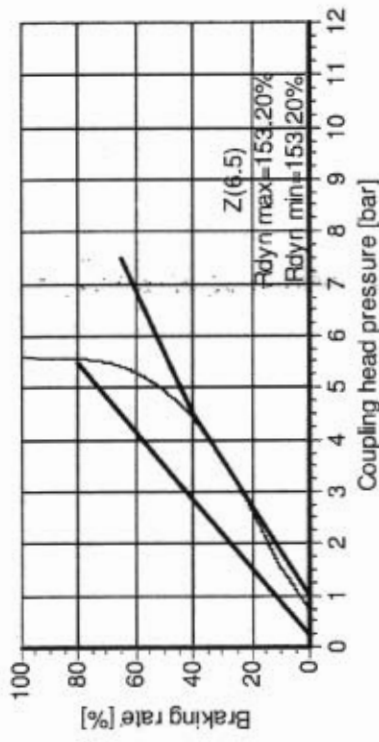


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Laden vehicle - compatibility



Unladen vehicle - compatibility



Calculation pressure [bar]: 6.5

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KNORR-BREMSE
ECUtalk V.3.3.1.10

EOL PROTOCOL REPORT

SYSTEM		Trailer EBS		MATCH CODE		ES 2053						
PRODUCTION DATE		week 51 in 2007		SERIAL NUMBER		105						
PART NUMBER		II 39782		VIN		7ABH9000297746365						
MANUFACTURER		Domett Trailers		BRAKE CALCULATION NO.		7ABH9000297746365						
TYPE		Full trailer		FORMER PIN ACTUAL PIN		30 32 4D 52 30 32 4D 52						
DIFFERENTIAL SLIP [%] -0.2	AUX1	OFF	IN A	Disabled		SOFTWARE VERSION		521.17	AXLE	BRAKE CHAMBER SIZE	LEVER LENGTH	
	AUX2	OFF	IN B	Disabled		ISS INVERTED		-	1	1E	-	
	AUX3	OFF	IN C	Disabled		RSP		S1 2	2	1E	-	
	AUX4	ON	POLE WHEEL TEETH SR, SL		90	ABS CONFIGURATION		4S/3M	3	100A	-	
	AUX5	-	POLE WHEEL TEETH SAR, SAL		90	DYN.TYRE DIAMETER [MM]		840	COMPENSATION AT 1.5 BAR			0.2
	REAR AXLE PRESSURE LIMIT [BAR]		5.3	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	2024	0	-		7250	0		-	-	-		
2	2024	0	-		7250	0		-	-	-		
3	1335	0.5	1.4		7250	4.5		0.56	1.5	5.6		
4	1335	0.5	1.4		7250	4.5		0.56	1.5	5.6		
5	-	-	-		-	-		-	-	-		
KILOMETER COUNTER [KM]		0	NEXT SERVICE [KM]		8000000	ECU SUPPLY VOLTAGE [V]		23.6	VALVE SUPPLY VOLTAGE [V]		23.9	
AIR GAP SPEED SL [KM/H]		3.4	AIR GAP SPEED SR [KM/H]		4.0	AIR GAP SPEED SAL [KM/H]		3.7	AIR GAP SPEED SAR [KM/H]		1.3	
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		19/10/2008										
ADDITIONAL INFORMATION		Fonterra Refurb No 2978										