



Heavy Vehicle Specialist Certificate

Heavy Vehicle Specialist Inspector and Inspecting Organisation

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

ID

CHRIS CLARKE

030

Vehicle Registration*

VIN / Chassis Number

TASAH9000296399017

Component being certified:

Chassis Modification

Load Anchorage

Log Bolsters

Certification Category

Towing Connection

Brakes

SRT

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

Component Load Rating(s)

HUBINT 32015 X HD05

General Drawing Number(s)

N/A

N/A

Supporting Documents

KNOR-BREMSE BTD PERFORMANCE CALCULATION

*Special Conditions

N/A

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 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

Number

10.09.2009

322434

COF Vehicle Inspector ID:

COF Vehicle Inspector Signature:

Date:

A101

10.09.09

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



Calculation in accordance with ECE Regulation 13 (110 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-operative Dairies Ltd

Vehicle: 7A8H9000296399013

Project: 4 axle full trailer

Vehicle

Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	4.85
Laden (max.) mass [kg]	26000.00
Laden (max.) front axle group load [kg]	13000.00
Laden vertical position of CoG [m]	1.80
Unladen (min.) mass [kg]	5820.00
Unladen (min.) front axle group load [kg]	2960.00
Unladen vertical position of CoG [m]	1.20
Laden/unladen front air spring press. [bar]	-/-
Laden/unladen rear air spring press. [bar]	4.03/0.54

Axles

Type	Meritor (ROR)	Axle 1	Axle 2	Axle 3	Axle 4
Type	MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)	MERITOR (ROR)
Tyre size	361-0071-04-FBKV 305/70 R 22.5	361-0071-04-FBKV 305/70 R 22.5	361-0071-04-FBKV 305/70 R 22.5	361-0071-04-FBKV 305/70 R 22.5	361-0071-04-FBKV 305/70 R 22.5
Dyn. tyre radius [mm]	485	485	485	485	485
Stat. tyre radius [mm]	462	462	462	462	462
Brake type	Disc	Disc	Disc	Disc	Disc
Brake size [mm] or drum/disc radius [mm]	Elsa195 LE 340x200	Elsa195 LE 340x200	Elsa195 LE 340x200	Elsa195 LE 340x200	Elsa195 LE 340x200
Actuator size	16	16	16	16	16
Actuator force at 6.5 bar [N]	6590	6590	6590	6590	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	20.3	20.3	20.3	20.3	20.3
Discbrake lever length [mm]	74	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	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.



Company: Genese Ltd
Author: Chris Clarke

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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	KU1400	-	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	KU1400	-
7	Trailer EBS ECU	ES20..	Sensors on axle 4
8	Spring Brake Actuator 16/24" stroke: 64/64	ROR	BZ 119.6 01/02/2001
9	Spring Brake Actuator 16/24" stroke: 64/64	ROR	BZ 119.6 01/02/2001
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

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]	6.57	-	-	5.53
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 : 2.46 Axle4 : 2.46

Automatic braking performance (at 6.0 [bar], laden case)
Deceleration [m/s²] : 3.58
Braking rate [%] 36.5

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] : 5.53
Braking rate [%] -	Braking rate [%] 56.4

Calculation pressure [bar]: 6.5

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Trailer EBS parameters

Number of axles: 4
 Number of teeth: 90
 Dynamic tyre radius [cm]: 48.5
 Inshot pressure [bar]: 0.48
 Coupling head pressure [bar]: 0.70
 Pressure compensation (at 1.6 bar) [bar]: 0.20
 Output pressure (at 6.5 bar) [bar]

Laden: 5.40
 Unladen: 1.60

Air spring pressure [bar]

Laden : 4.03
 Unladen : 0.54

Axle boogie load [kg]

Laden: 13000
 Unladen: 2860

Pressure limitation [bar]

5.40

Slip differential [%]

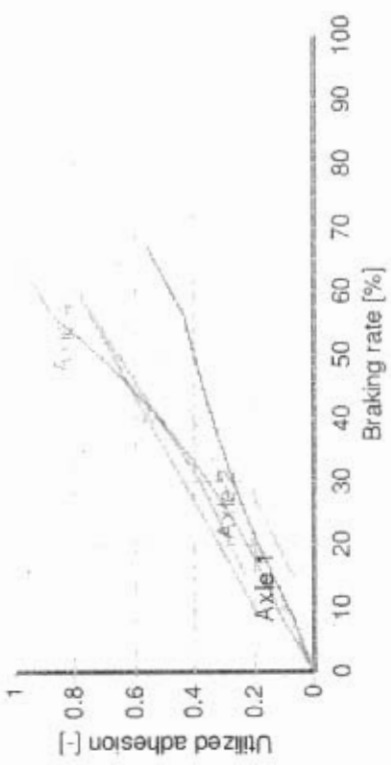
-0.20

Corresponding sheet on the PC Diagnostic tool (ECU Talk)

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
0.70	0.48	
1.6	0.71	1.44
6.5	1.60	5.40
Brake pressure compensation at 1.6 bar coupling head pressure [bar]		
		0.20
Air spring pressure [bar]	Laden :	
	Unladen :	Laden :
	0.54	4.03
Axle boogie load [kg]	Laden	
	Unladen	Laden
	2860	13000

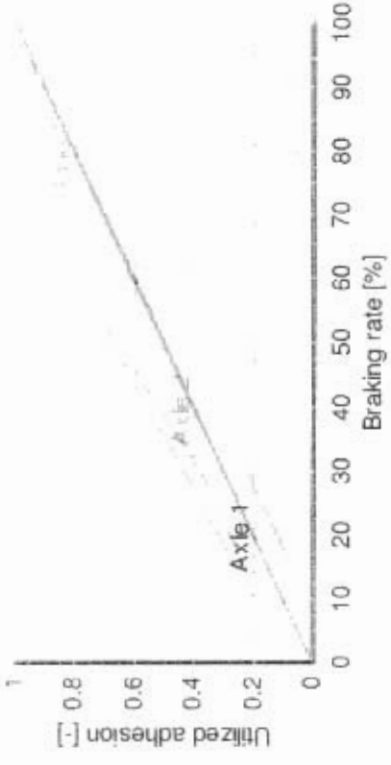


Laden vehicle - adhesion utilisation



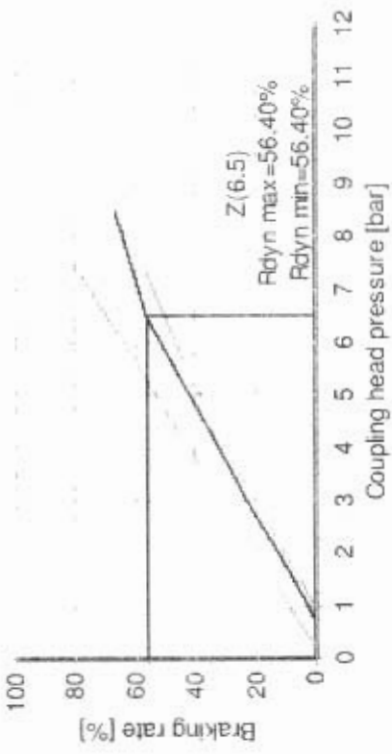
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

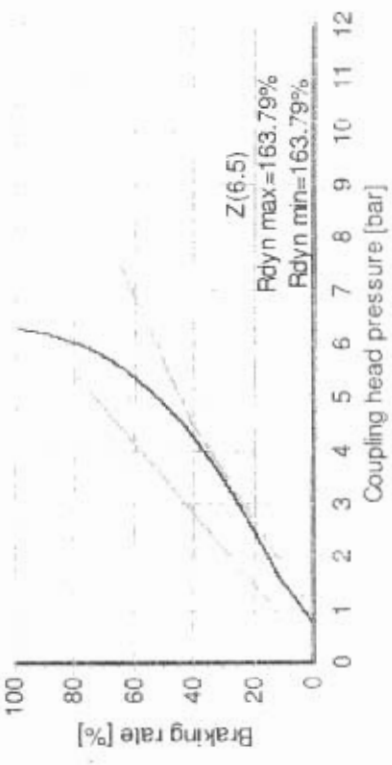


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Laden vehicle - compatibility



Unladen vehicle - compatibility



Calculation pressure [bar]: 6.5

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NZTA CoF B Brake Performance Test

RBT No : 008096

Site Name : _____

Operator : _____

Registration No. : _____

	Max BF daN	BF for Imbalance daN		Imbalance % Max	Weight Static kg			Dynamic % Efficiency
	Total	Left	Right		Left	Right	Total	
Axle <i>G</i> Service	L 2864	498	548	9	1960	2600	4560	70
Axle <i>G</i> Parking	L 2948				1900	2580	4480	69

TOTAL

Service :

Brake force : 2864 daN
 Dynamic weight : 4180 kg
 Efficiency : 70 %

Parking :

Brake force : 2948 daN
 Dynamic weight : 4180 kg
 Efficiency : 72 %

TESTERS COMMENTS: