



# Heavy Vehicle Specialist Certificate

Heavy Vehicle Specialist Inspector and Inspecting Organisation

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

ID  
**CC**

Vehicle Registration\*

VIN / Chassis Number  
**7A8H9000296901513**

Component being certified:  
 Chassis Modification     Load Anchorage     Log Bolsters  
 Towing Connection     Brakes     SRT

Certification Category  
**HUEK**

Description of Work  
**CARRY OUT SET UP OF TRAILOR EBS SYSTEM IN COMPLIANCE WITH THE NZ HEAVY VEHICLE BRAKE RULE 32015 SCHEDULE 5.**

Code/Standard Certified to  
**HUBNZ 32015 SCHED 5.**

Component Load Rating(s)  
**NA.**

General Drawing Number(s)  
**NA**

Supporting Documents  
**KNORR-BREMSE BSD PERFORMANCE CALCULATION**

\*Special Conditions  
**NA**

Certification Expiry Date (if applicable)  
**NA**

OR Hubodometer Reading (whichever comes first)

### 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  
**02.09.2009**

Number  
**322422**

COF Vehicle Inspector ID:  
**AK1**

COF Vehicle Inspector Signature:

Date  
**04.09.09**

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





Company: Genese Ltd  
Author: Chris Clarke

Created: 1/09/2009 Document: 7A8H9000296901513  
Modified: 1/09/2009 Page: 1 / 7

Database version: 9.0.13

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: 7A8H9000296901513

Project: 4 axle full trailer

### Vehicle

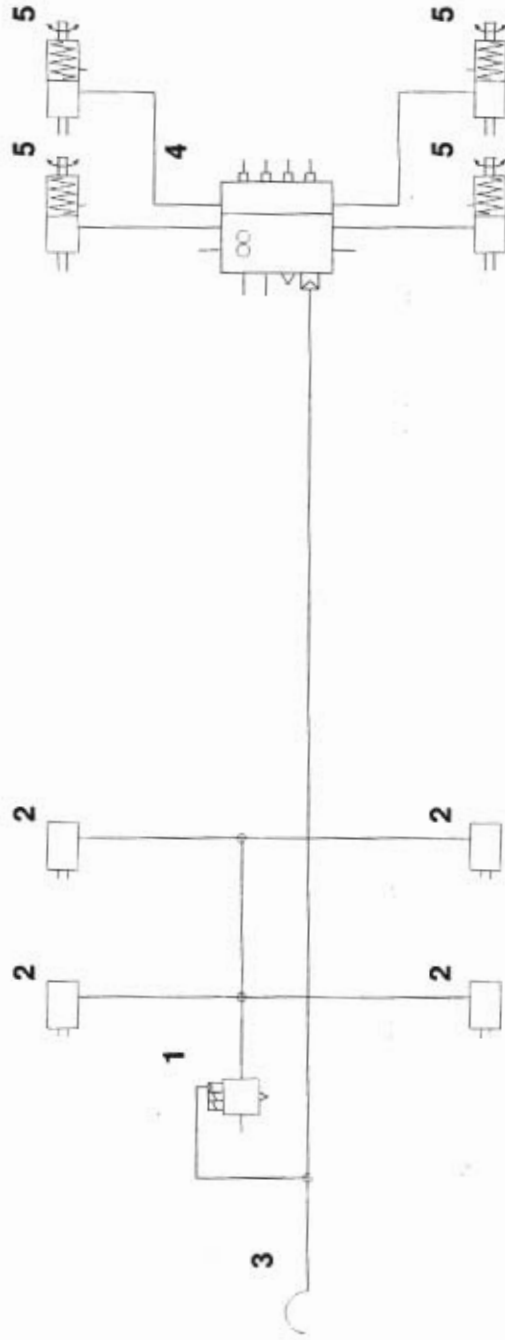
Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	4.77
Laden (max.) mass [kg]	26000.00
Laden (max.) front axle group load [kg]	13000.00
Laden vertical position of CoG [m]	1.80
Unladen (min.) mass [kg]	5820.00
Unladen (min.) front axle group load [kg]	2960.00
Unladen vertical position of CoG [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
Tyre size	361-0071-04-FBKV	305/70 R 22.5	305/70 R 22.5	305/70 R 22.5	305/70 R 22.5
Dyn. tyre radius [mm]		485	485	485	485
Stat. tyre radius [mm]		462	462	462	462
Brake type		Disc	Disc	Disc	Disc
Brake size [mm]		Elsa195 LE	Elsa195 LE	Elsa195 LE	Elsa195 LE
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	6588	6588
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  
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

Created: 1/09/2009 Document: 7A8H9000296901513  
Modified: 1/09/2009 Page: 3 / 7

Database version: 9.0.13

### System components

No.	Name	Type	Characteristics
1	ABS Modulator	BR9234	Sensors on axle 1
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 3
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

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

Created: 1/09/2009  
Modified: 1/09/2009

Document: 7A8H9000296901513  
Page: 4 / 7

Database version: 9.0.13

### Laden vehicle

Intact system	Front circuit only	Rear circuit only	Calculation press.
Deceleration [m/s <sup>2</sup> ]	6.57	-	5.53
Pressure [bar]	6.50	-	6.50

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.



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/s<sup>2</sup>] : 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**

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

Braking rate [%] -

**Rear axle group**

Deceleration [m/s<sup>2</sup>] : 5.53

Braking rate [%] 56.4

**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.





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]	Unladen :	Laden :
	0.54	4.03

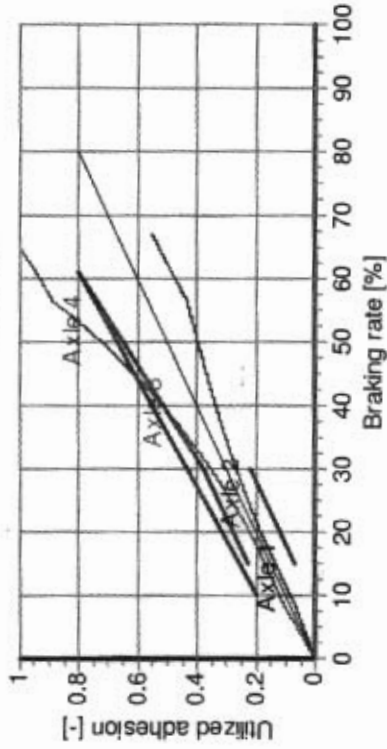
  

Axle boogie load [kg]	Unladen	Laden
	2860	13000



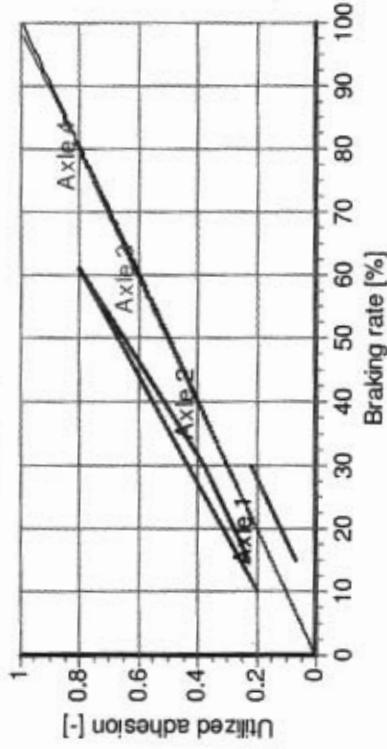


Laden vehicle - adhesion utilisation



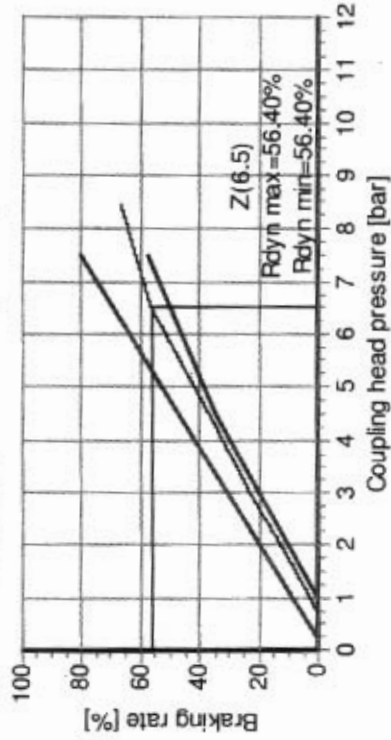
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation



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

Laden vehicle - compatibility



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.

Unladen vehicle - compatibility

