



Heavy Vehicle Specialist Inspector and Inspecting Organisation

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

CHRIS CURCE

ID

CJC

Vehicle Registration*

VIN / Chassis Number

7A8H9000296164778

Component being certified:

Chassis Modification

Load Anchorage

Log Bolsters

Towing Connection

Brake Code

SRT

Certification Category

HUER

Description of Work

SET UP OF TRAILER EBS SYSTEM AND COMPLIANCE TO
NZHUBR 32015 SCHEDULE 5

Code/Standard Certified to

NZHUBR 32015 SCHEDULE 5

Component Load Rating(s)

N/A

General Drawing Number(s)

N/A

Supporting Documents

BRAKE PERFORMANCE CALCULATION DOCUMENTATION

*Special Conditions

N/A

Certification Expiry Date

N/A

OR

Hubodometer Reading (whichever comes first)

[Empty 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

18.07.2008

Number

296518

COF Vehicle Inspector ID:

COF Vehicle Inspector Signature:

Date

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



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

Vehicle: 7A8H9000296164778

Project: 4 axle tanker trailer

Vehicle

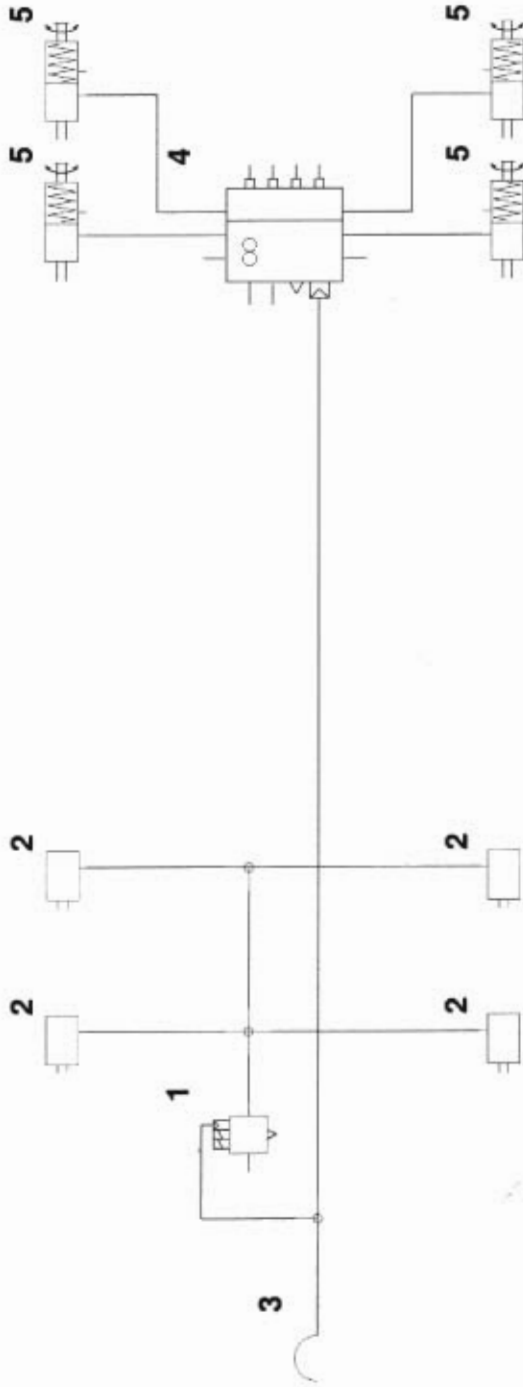
Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	4.98
Laden (max.) mass [kg]	26000.00
Laden (max.) front axle group load [kg]	13000.00
Laden vertical position of CoG [m]	2.00
Unladen (min.) mass [kg]	6718.00
Unladen (min.) front axle group load [kg]	4048.00
Unladen vertical position of CoG [m]	1.36
Laden/unladen front air spring press. [bar]	-/-
Laden/unladen rear air spring press. [bar]	4.50/0.40

Axles

Type	Axle 1	Axle 2	Axle 3	Axle 4
Tyre size	MERITOR (ROR) 361-0022-02-FBKV 265/70 R 19.5	MERITOR (ROR) 361-0022-02-FBKV 265/70 R 19.5	MERITOR (ROR) 361-0022-02-FBKV 265/70 R 19.5	MERITOR (ROR) 361-0022-02-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]	340x200	340x200	340x200	340x200
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

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: 18/07/2008
Modified: 18/07/2008

Document: 7A8H9000296164778
Page: 3 / 7

Database version: 9.0.13

Laden vehicle

	Intact system	Front circuit only	Rear circuit only	Calculation press.
Deceleration [m/s ²]	6.39	-	-	5.79
Pressure [bar]	8.50	-	-	6.50

Unladen vehicle

	Intact system	Front circuit only	Rear circuit only	Calculation press.
Deceleration [m/s ²]	14.29	-	-	14.29
Pressure [bar]	8.50	-	-	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] : 3.00

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

Axle1 : 2.52 Axle2 : 2.52 Axle3 : 2.27 Axle4 : 2.27

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

Deceleration [m/s²] : 3.86

Braking rate [%] 39.3

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] : 5.79

Braking rate [%] 59.0

Parking brake Laden vehicle Unladen vehicle

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

(max.spring force = 7120 N at 30 mm strok

Required spring force at 18% slope

Axle 1 [N] - - - -

Axle 2 [N] - - - -

Axle 3 [N] 2935 2935 820 820

Axle 4 [N] 2935 2935 820 820

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]: 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: 4.60
 Unladen: 1.40

Air spring pressure [bar]

Laden : 4.50
 Unladen : 0.40

Axle boogie load [kg]

Laden: 13000
 Unladen: 2670

Pressure limitation [bar]

4.60

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	0.56	
1.6	0.75	1.39
6.5	1.40	4.60

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	13000



Company: Genese Ltd
Author: Chris Clarke

Created: 18/07/2008 Document: 7A8H9000296164778
Modified: 18/07/2008 Page: 6 / 7

Database version: 9.0.13

Load sensing valve settings at 6.5 bar on rear axle group. Type: ES20..

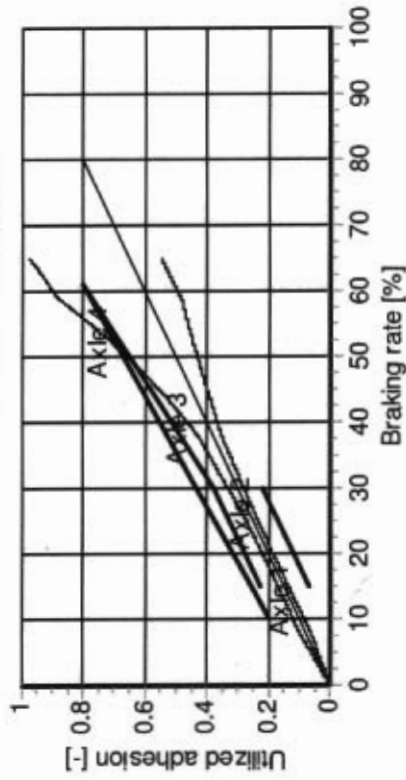
Gross weight [kg]	Axle load [kg]	Air spring pressure [bar]	LSV ratio [-]	LSV Output pressure [bar] input:6,5bar	6.5 bar
26000	6500	4.50	1.41	4.6	4.6
25000	6250	4.30	1.46	4.4	4.4
24000	6000	4.10	1.52	4.3	4.3
23000	5750	3.90	1.57	4.1	4.1
22000	5500	3.71	1.63	4.0	4.0
21000	5250	3.51	1.70	3.8	3.8
20000	5000	3.31	1.77	3.7	3.7
12718	2835	1.59	2.79	2.3	2.3
11718	2585	1.39	2.99	2.2	2.2
10718	2335	1.19	3.22	2.0	2.0
9718	2085	1.00	3.49	1.9	1.9
8718	1835	0.80	3.80	1.7	1.7
7718	1585	0.60	4.18	1.6	1.6
6718	1335	0.40	4.64	1.4	1.4

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.

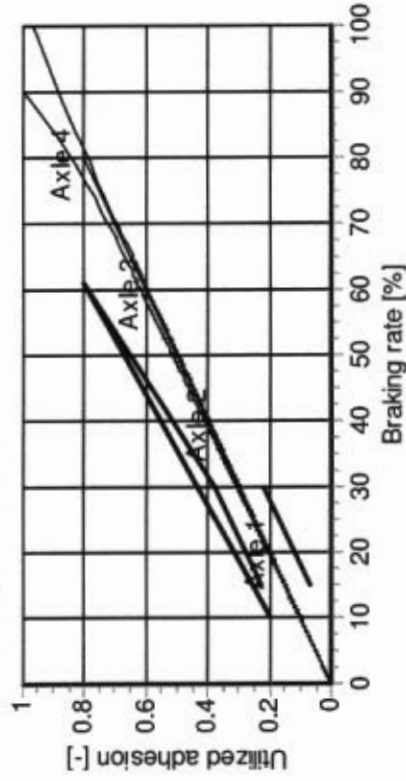


Laden vehicle - adhesion utilisation



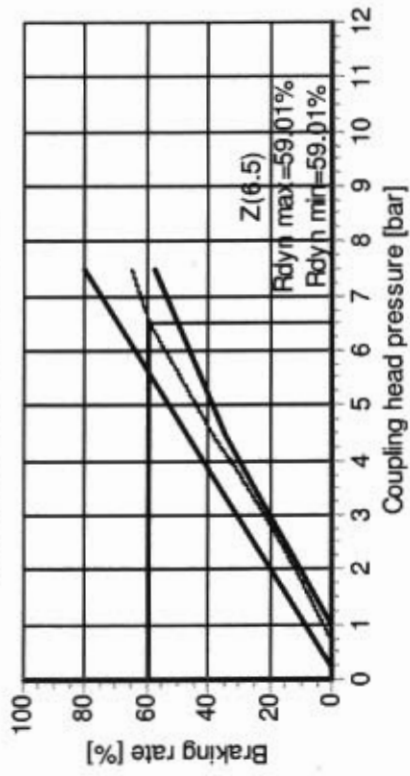
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

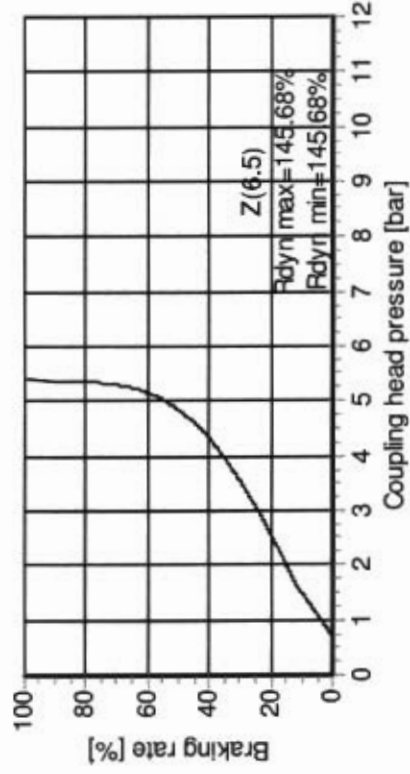


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Laden vehicle - compatibility



Unladen vehicle - compatibility





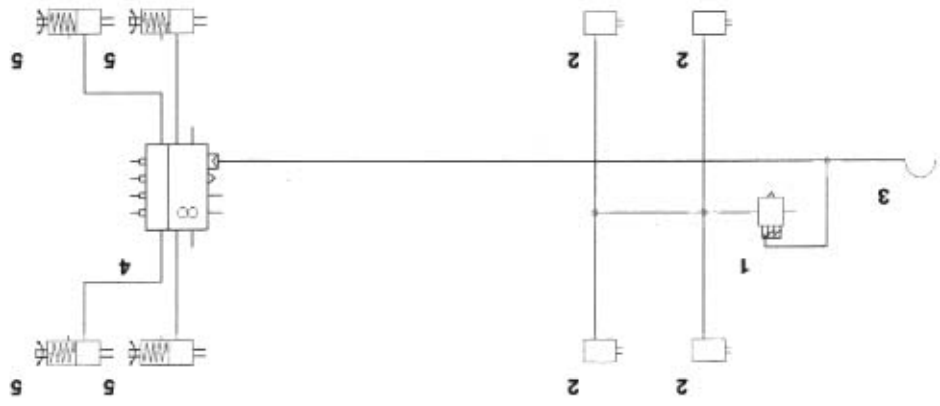
Company: Genese Ltd
Author: Chris Clarke

Created: 18/07/2008
Modified: 18/07/2008

Document: 7A8H9000296164778

Page: for Workshops

Complete system diagram



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

Trailer EBS parameters

Coupling head pressure [bar]		Brake chamber pressure [bar]	
Unladen	Laden	Unladen	Laden
0.70	0.56	0.75	1.39
6.5	1.40	4.60	0.20
Brake pressure compensation at 1.6 bar coupling head pressure [bar]			
Unladen	Laden	Unladen	Laden
0.40	4.50	2670	13000
Air spring pressure [bar]		Axle bogie load [kg]	
Unladen	Laden	Unladen	Laden
4.50	4.50	2670	13000
Pressure limitation [bar]		Slip differential [%]	
4.60	4.60	-0.20	-0.20

ABS Modulator
 Sensors on axle 2
 Brake Chamber 16" stroke: 64 BZ 122.1 15/09/2000
 Brake Chamber 16" stroke: 64 BZ 122.1 15/09/2000
 Coupling head - brake
 Trailer EBS ECU
 Sensors on axle 4
 Spring Brake Actuator 16/24" stBZ 141.0 08/03/2002
 Spring Brake Actuator 16/24" stBZ 141.0 08/03/2002
 Spring Brake Actuator 16/24" stBZ 141.0 08/03/2002
 Spring Brake Actuator 16/24" stBZ 141.0 08/03/2002

Project: 4 axle tanker trailer

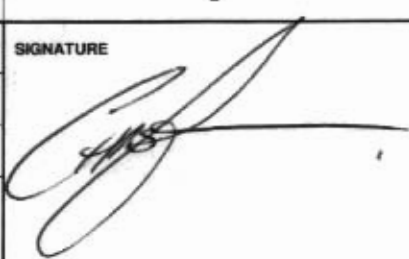
Customer: Fonterra

Vehicle: 7A8H9000296164778



KNORR-BREMSE
ECUtalk V.3.3.1.10

EOL PROTOCOL REPORT

SYSTEM		Trailer EBS		MATCH CODE		ES 2053					
PRODUCTION DATE		week 49 in 2007		SERIAL NUMBER		185					
PART NUMBER		# 39782		VIN		7ABH9000296164778					
MANUFACTURER		Domett Trailers		BRAKE CALCULATION NO.		7ABH9000296164778					
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	18	-	
	AUX3	OFF	IN C	Disabled		RSP	St 2	2	18	-	
	AUX4	ON	IN D	-		ABS CONFIGURATION	4S/3M	3	1824	-	
	AUX5	-		POLE WHEEL TEETH SR, SL 90		DYN.TYRE DIAMETER [MM]	840	4	1824	-	
				POLE WHEEL TEETH SAR, SAL 90				5	-	-	COMPENSATION AT 1.8 BAR
REAR AXLE PRESSURE LIMIT [BAR]		4.6		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	-	6500	0	-	-	-	-	-	
2	2024	0	-	6500	0	-	-	-	-	-	
3	1335	0.4	1.4	6500	4.5	0.56	1.4	4.6			
4	1335	0.4	1.4	6500	4.5	0.56	1.4	4.6			
5	-	-	-	-	-	-	-	-	-	-	
KILOMETER COUNTER [KM]	0	NEXT SERVICE [KM]	8000000	ECU SUPPLY VOLTAGE [V]	20.9	VALVE SUPPLY VOLTAGE [V]	21.4				
AIR GAP SPEED SL [KM/H]	1.2	AIR GAP SPEED SR [KM/H]	3.2	AIR GAP SPEED SAL [KM/H]	1.4	AIR GAP SPEED SAR [KM/H]	4.2				
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	18/07/2008										
ADDITIONAL INFORMATION	Fonterra Retrofit No 4										