Domett Copy 18015 #5

Land Transport

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 7A8MOC302957874O6

Component being certified: Chassis Modification ___ Load Anchorage ___ Log Bolsters ___ Towing Connection ✓ Brake Code ___ SRT

Certification Category
HUEK

Description of Work
CARRY OUT SET UP OF TRAILER EBS SYSTEM AND COMPLIANCE TO NZ HEAVY VEHICLE BRAKE RULE 32015 SCHEDULE 5.

Code/Standard Certified to
NZ HVBR 32015 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 N/A or Hubodometer Reading *(whichever comes first)*

Designer's ID *(if certified by a manufacturer)*

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.

Inspector's / Delegate's Signature

*Delegate's Name *(PRINT IN CAPS)*

Date 24-09-2008 Number 306860

COF Vehicle Inspector ID: COF Vehicle Inspector Signature: Date

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

Form ID LT400 Version No. 12/05

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: 7A8M0030295787406

Project: 4 axle milk collection full trailer

Vehicle

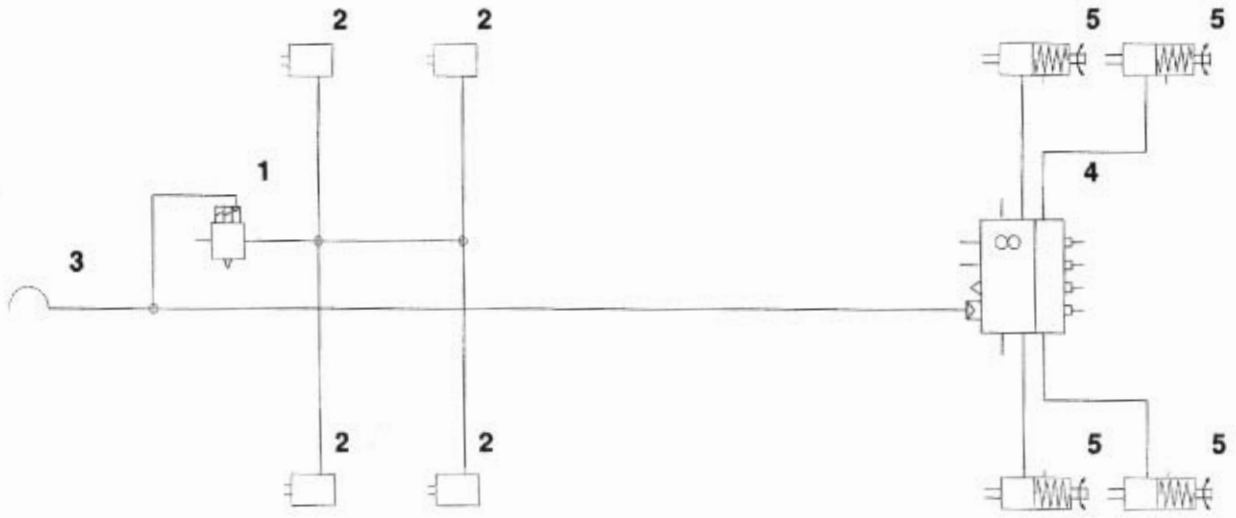
Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	4.70
Laden (max.) mass [kg]	26000.00
Laden (max.) front axle group load [kg]	13000.00
Laden vertical position of CoG [m]	1.85
Unladen (min.) mass [kg]	5570.00
Unladen (min.) front axle group load [kg]	2900.00
Unladen vertical position of CoG [m]	1.24
Laden/unladen front air spring press. [bar]	-/-
Laden/unladen rear air spring press. [bar]	4.50/0.50

Axles

	Axle 1	Axle 2	Axle 3	Axle 4
Type	MERITOR (ROR) 361-0022-02-FBKV	MERITOR (ROR) 361-0022-02-FBKV	MERITOR (ROR) 361-0022-02-FBKV	MERITOR (ROR) 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 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 responsiblity 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

Laden vehicle

	Intact system	Front circuit only	Rear circuit only	Calculation press.
Deceleration [m/s^2]	6.56	-	-	5.96
Pressure [bar]	8.50	-	-	6.50

Unladen vehicle

	Intact system	Front circuit only	Rear circuit only	Calculation press.
Deceleration [m/s^2]	17.84	-	-	17.84
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] : 2.90

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

Axle1 : 2.59 Axle2 : 2.59 Axle3 : 2.32 Axle4 : 2.32

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

Deceleration [m/s^2] : 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		**Rear axle group**	
Deceleration [m/s^2] :	-	Deceleration [m/s^2] :	5.96
Braking rate [%]	-	Braking rate [%]	60.7

Parking brake

	Laden vehicle		Unladen vehicle	
Max.slope [%]	Up	Down	Up	Down
(must be > 18%)	**-46.52**	**31.18**	**-49.88**	**32.49**

(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	694
Axle 4 [N]	2935	694

Calculation pressure [bar]: 6.5

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:	4.90
Unladen:	1.50
Air spring pressure [bar]	
Laden :	4.50
Unladen :	0.50
Axle boogie load [kg]	
Laden:	13000
Unladen:	2670
Pressure limitation [bar]	4.90
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	0.77	1.43
6.5	1.50	4.90

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

Air spring pressure [bar]	Unladen :	Laden :
	0.50	4.50

Axle boogie load [kg]	Unladen	Laden
	2670	13000

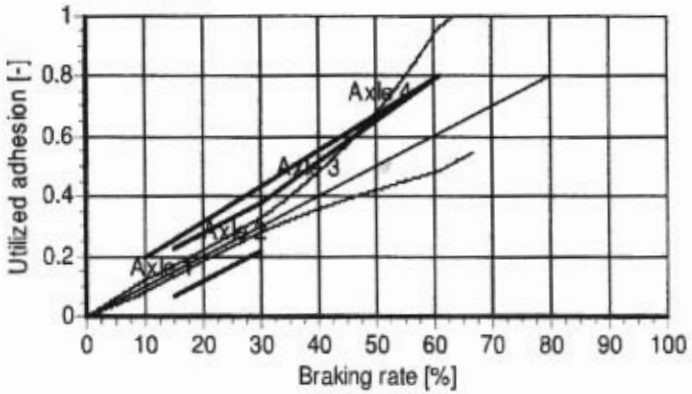
Calculation pressure [bar]: 6.5

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	1.33	4.9	4.9
25000	6250	4.31	1.37	4.7	4.7
24000	6000	4.11	1.42	4.6	4.6
23000	5750	3.92	1.48	4.4	4.4
22000	5500	3.73	1.53	4.2	4.2
21000	5250	3.53	1.59	4.1	4.1
20000	5000	3.34	1.66	3.9	3.9
11570	2835	1.66	2.61	2.5	2.5
10570	2585	1.47	2.80	2.3	2.3
9570	2335	1.27	3.01	2.2	2.2
8570	2085	1.08	3.26	2.0	2.0
7570	1835	0.89	3.55	1.8	1.8
6570	1585	0.69	3.90	1.7	1.7
5570	1335	0.50	4.33	1.5	1.5

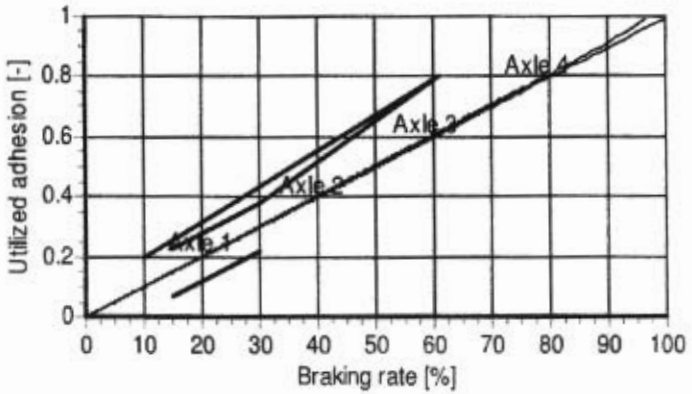
Calculation pressure [bar]: 6.5

Laden vehicle - adhesion utilisation



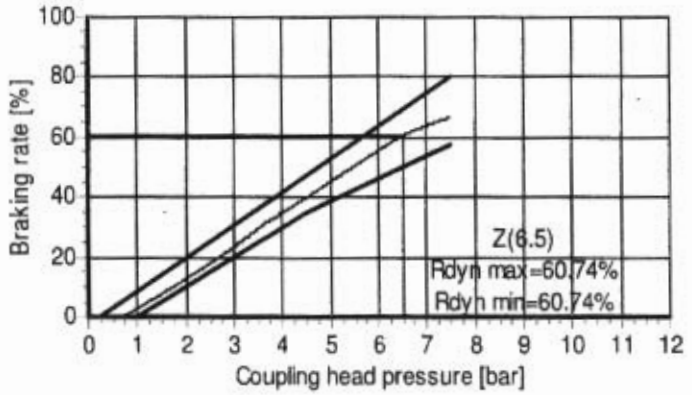
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

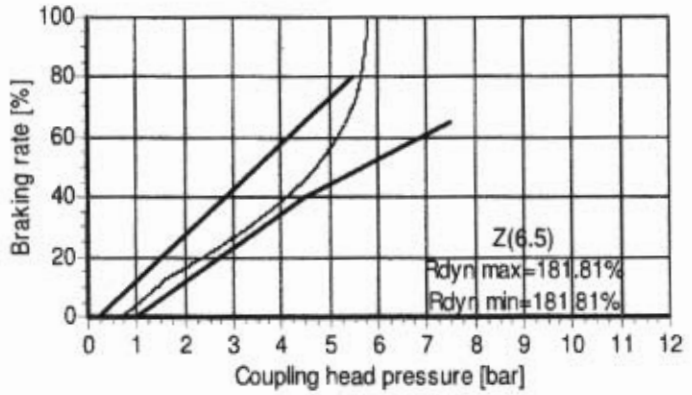


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

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 50 in 2007	SERIAL NUMBER	407
PART NUMBER	II 39782	VIN	7A8M0030295787406
MANUFACTURER	Nickel Engineering	BRAKE CALCULATION NO.	7A8M0030295787406
TYPE	Full trailer	FORMER PIN / ACTUAL PIN	30 32 4D 52 / 30 32 4D 52

DIFFERENTIAL SLIP [%]	AUX1	OFF	IN A	Disabled
	AUX2	OFF	IN B	Disabled
	AUX3	OFF	IN C	Disabled
-0.2	AUX4	ON	IN D	-
			POLE WHEEL TEETH SR, SL	90
	AUX5	-	POLE WHEEL TEETH SAR, SAL	90

SOFTWARE VERSION	521.17
ISS INVERTED	-
RSP	St 2
ABS CONFIGURATION	4S/3M
DYN.TYRE DIAMETER [MM]	840

AXLE	BRAKE CHAMBER SIZE	LEVER LENGTH
1	-	-
2	-	-
3	-	-
4	-	-
5	-	-
COMPENSATION AT 1.6 BAR		0.2

REAR AXLE PRESSURE LIMIT [BAR]	4.9	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	-	0	-	-	0	-	-	-
2	-	0	-	-	0	-	-	-
3	1335	0.6	1.5	6500	4.5	0.56	1.4	4.9
4	1335	0.6	1.5	6500	4.5	0.56	1.4	4.9
5	-	-	-	-	-	-	-	-

KILOMETER COUNTER[KM]	0	NEXT SERVICE [KM]	8000000	ECU SUPPLY VOLTAGE [V]	21.1	VALVE SUPPLY VOLTAGE [V]	21.4
AIR GAP SPEED SL [KM/H]	1.2	AIR GAP SPEED SR [KM/H]	5.3	AIR GAP SPEED SAL [KM/H]	2.1	AIR GAP SPEED SAR [KM/H]	3.8

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	24/09/2008	
ADDITIONAL INFORMATION	Fonterra Refurb Hawera No 5	