





**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		14					
PART NUMBER		II 39782		VIN		7A8H9000200131775					
MANUFACTURER		Domett Trailers		BRAKE CALCULATION NO.		7A8H9000200131775					
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	15	-	
	AUX3	OFF	IN C	Disabled		HSP	St 2	2	16	-	
	AUX4	ON	IN D	-		ABS CONFIGURATION	4S/3M	3	1604	-	
	AUX5	-	-	POLE WHEEL TEETH SR, SL 90		DYN.TYRE DIAMETER [MM]	840	4	1604	-	
NEAR AXLE PRESSURE LIMIT [BAR]		5.1		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	1568	0	-	7250	0	-	-	-	-	-	
2	1568	0	-	7250	0	-	-	-	-	-	
3	1335	0.4	1.5	7250	4.5	0.56	1.5	5.5	-	-	
4	1335	0.4	1.5	7250	4.5	0.56	1.5	5.5	-	-	
5	-	-	-	-	-	-	-	-	-	-	
KILOMETER COUNTER [KM]	0	NEXT SERVICE [KM]	8000000	ECU SUPPLY VOLTAGE [V]	21.7	VALVE SUPPLY VOLTAGE [V]	22.1				
AIR GAP SPEED SL [KM/H]	1.8	AIR GAP SPEED SR [KM/H]	2.5	AIR GAP SPEED SAL [KM/H]	5.0	AIR GAP SPEED SAR [KM/H]	4.4				
<b>EOL TEST RESULTS</b>											
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	21/07/2009										
ADDITIONAL INFORMATION	Fonterra F10 Refurb No 2										



Company: Genese Ltd  
Author: Chris Clarke

Created: 21/07/2009 Document: 7A8H9000200131775  
Modified: 21/07/2009 Page: 1 / 7

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-operative Dairys

Vehicle: 7A8H9000200131775

Project: 4 axle milk collection trailer

### Vehicle

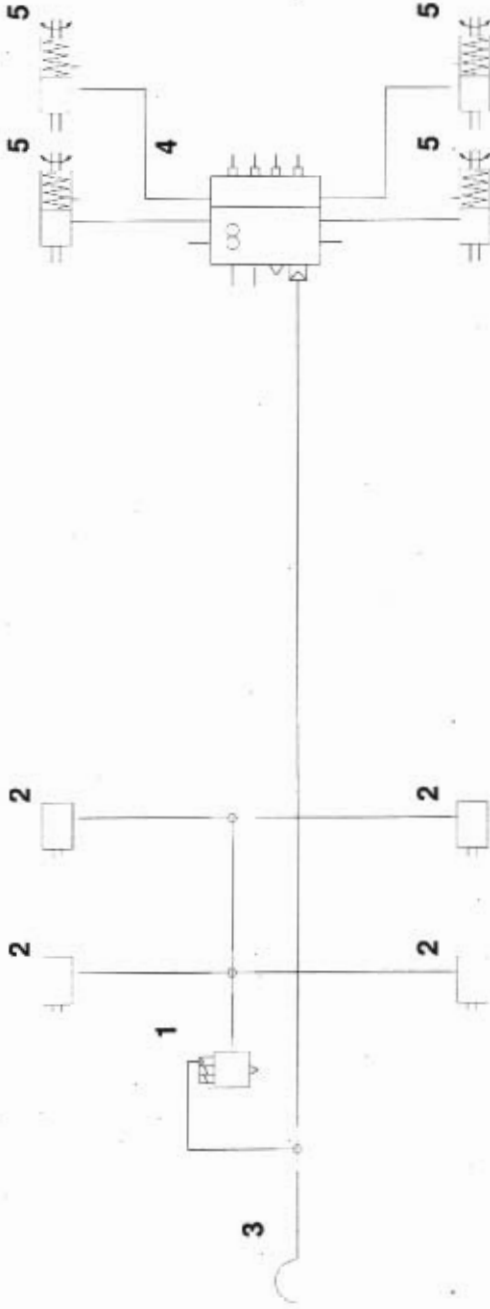
Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	4.79
Laden (max.) mass [kg]	29000.00
Laden (max.) front axle group load [kg]	14500.00
Laden vertical position of CoG [m]	1.80
Unladen (min.) mass [kg]	5806.00
Unladen (min.) front axle group load [kg]	3136.00
Unladen vertical position of CoG [m]	1.27
Laden/unladen front air spring press. [bar]	-/-
Laden/unladen rear air spring press. [bar]	4.50/0.50

### 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	361-0022-02-FBKV	361-0022-02-FBKV	361-0022-02-FBKV	361-0022-02-FBKV	361-0022-02-FBKV
	265/70 R 19.5	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	421
Stat. tyre radius [mm]	401	401	401	401	401
Brake type	Disc	Disc	Disc	Disc	Disc
	Elsa195 LE	Elsa195 LE	Elsa195 LE	Elsa195 LE	Elsa195 LE
Brake size [mm] or drum/disc radius [mm]	340x200	340x200	340x200	340x200	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.



### 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: 21/07/2009 Document: 7A8H9000200131775  
Modified: 21/07/2009 Page: 3 / 7

Database version: 9.0.13

### 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: 76/76	ROR	BZ 141.0 08/03/2002
9	Spring Brake Actuator 16/24" stroke: 76/76	ROR	BZ 141.0 08/03/2002
10	Spring Brake Actuator 16/24" stroke: 76/76	ROR	BZ 141.0 08/03/2002
11	Spring Brake Actuator 16/24" stroke: 76/76	ROR	BZ 141.0 08/03/2002

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:** 21/07/2009 **Document:** 7A8H9000200131775  
**Modified:** 21/07/2009 **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>]      5.98      -      -      5.44

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 : 2.68 Axle2 : 2.68 Axle3 : 2.54 Axle4 : 2.54

**Automatic braking performance ( at 6.0 [bar], laden case )**  
Deceleration [m/s<sup>2</sup>] : 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/s<sup>2</sup>] : -  
Braking rate [%] -

**Rear axle group**  
Deceleration [m/s<sup>2</sup>] : 5.65  
Braking rate [%] 57.6

**Parking brake** Laden vehicle

Max.slope [%]	Up	Down
(must be > 18%)	-40.99	31.53
(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	3264
Axle 4 [N]	3264	3264

**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: 5.50  
 Unladen: 1.50

**Air spring pressure [bar]**

Laden : 4.50  
 Unladen : 0.50

**Axle boogie load [kg]**

Laden: 14500  
 Unladen: 2670

**Pressure limitation [bar]**

5.10

**Slip differential [%]**

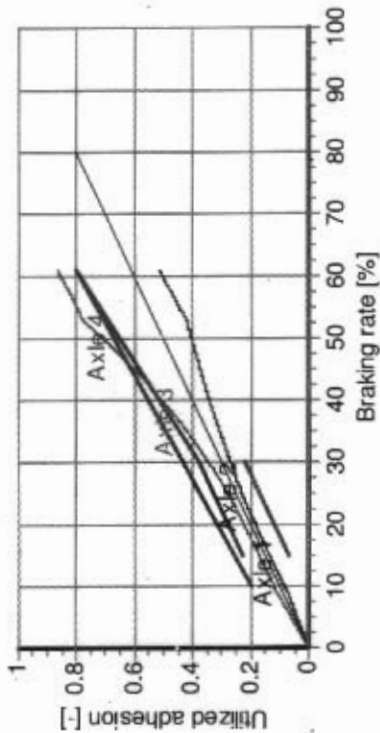
-0.20

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	0.76	1.53
6.5	1.50	5.50
<b>Brake pressure compensation at 1.6 bar coupling head pressure [bar]</b>		
		0.20
<b>Air spring pressure [bar]</b>	<b>Unladen :</b>	<b>Laden :</b>
	0.50	4.50
<b>Axle boogie load [kg]</b>	<b>Unladen</b>	<b>Laden</b>
	2670	14500

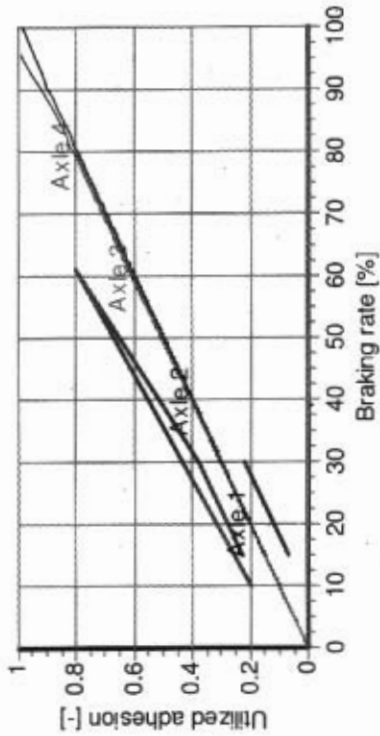


### Laden vehicle - adhesion utilisation



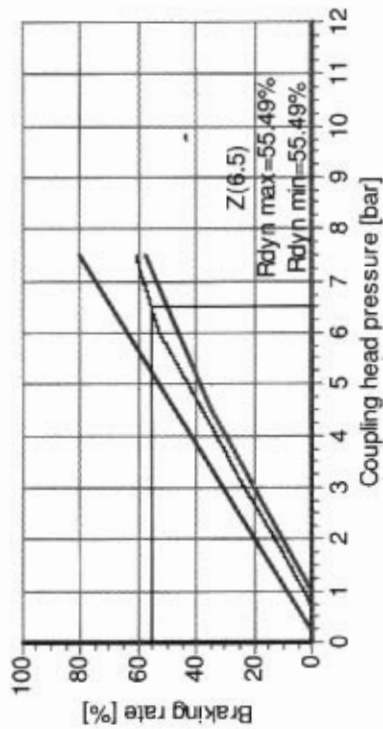
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

### Unladen vehicle - adhesion utilisation

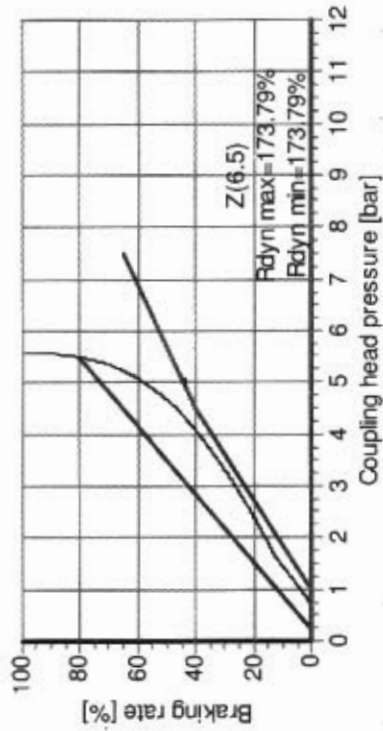


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

### Laden vehicle - compatibility



### Unladen vehicle - compatibility



Calculation pressure [bar]: 6.5

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.