



Heavy Vehicle Specialist Certificate

Heavy Vehicle Specialist Inspector and Inspecting Organisation

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

ID

DON FORDHAM.

HDF.

Vehicle Registration*

VIN / Chassis Number

7A9E3811ZC1023041

Component being certified:

- Chassis Modification
- Load Anchorage
- Log Bolsters
- Towing Connection
- Brakes
- SRT

Certification Category

HVEK.

Description of Work

TO COMPLY BRAKE SYSTEM (DOMESTIC 5 AXLE FULL)

Code/Standard Certified to

N.Z. HVFB RULES 32015

Component Load Rating(s)

GVM ? 33000 Kg.

General Drawing Number(s)

N/A

Supporting Documents

COMPLIANCE PAPERS

*Special Conditions

N/A

Certification Expiry Date *(if applicable)*

N/A.

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

05-07-2012.

Number

404894

COF Vehicle Inspector ID:

COF Vehicle Inspector Signature:

Date

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



Company: Brakespec
 Author: Don Fordham

Created: 5/09/2012 Document: 7A9E38112C1023041
 Modified: 5/09/2012 Page: 1 / 7

Calculation in accordance with ECE Regulation 13 (11 Series) and EEC Directive 71/320 EEC (2002/78/EC) using Knorr-Bremse Braking System Designer software (level 1.1.0).

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: Domett
 Vehicle: 5-axle full
 Project: 7A9E38112C1023041

Vehicle

Type 2x3 Drawbar trailer
 Calculated effective wheelbase [m] 7.35
 Laden (max.) mass [kg] 35000.00
 Laden (max.) front axle group load [kg] 16000.00
 Laden vertical position of CoG [m] 1.70
 Unladen (min.) mass [kg] 7000.00
 Unladen (min.) front axle group load [kg] 3580.00
 Unladen vertical position of CoG [m] 0.91
 Laden/unladen front air spring press. [bar] 4.00/0.50
 Laden/unladen rear air spring press. [bar] 3.80/0.40

Axles

	Axle 1	Axle 2	Axle 3	Axle 4	Axle 5
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	MERITOR (ROR) 361-0022-02-FBKV
Tyre size	265/70 R 19.5	265/70 R 19.5	355/50 R 22.5	355/50 R 22.5	355/50 R 22.5
Dyn. tyre radius [mm]	421	421	448	448	448
Stat. tyre radius [mm]	401	401	428	428	428
Brake type	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE	Disc Elsa195 LE
Brake size [mm] or drum/disc radius [mm]	16/24	16/24	16/24	16	16
Actuator size	6145	6145	6145	6146	6146
Actuator force at 6.5 bar [N]	81.00	81.00	81.00	81.00	81.00
Slack adjuster length [mm]	20.3	20.3	20.3	20.3	20.3
Thresh.mom.[Nm] or force[N]	74	74	74	74	74
Brake Factor by Annex 19					
Discbrake lever length [mm]					
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

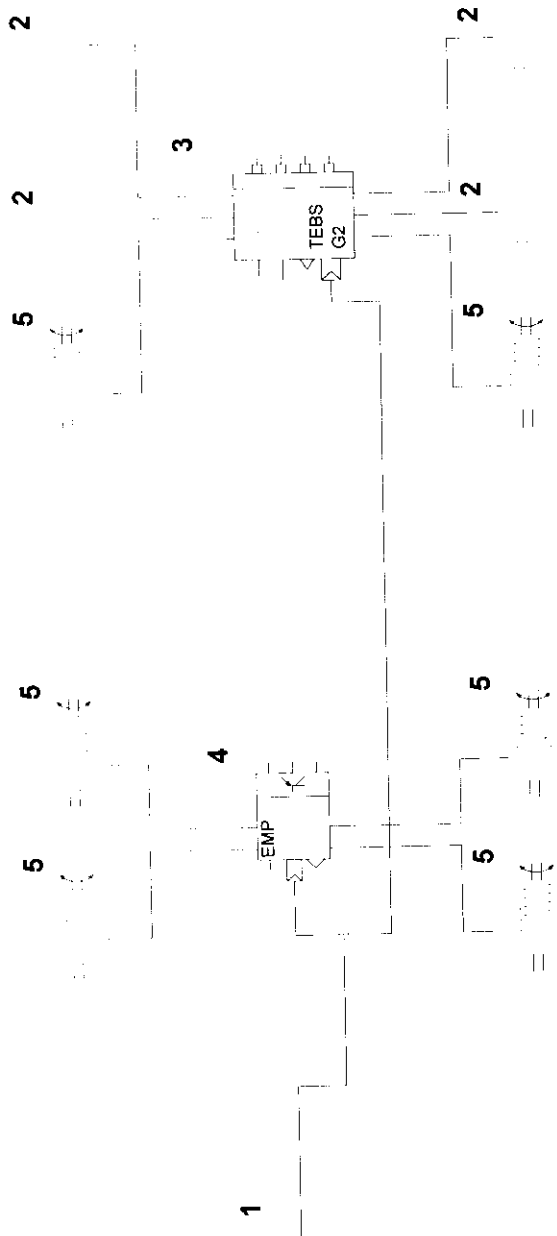
Database version: 11.0.2

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: Brakespec
 Author: Don Fordham

Created: 5/09/2012 Document: 7A9E38112C1023041
 Modified: 5/09/2012 Page: 2 / 7



Part list

No.	Name	Type	Characteristics	Qty.
1	Coupling head	KU1...	-	1
2	Brake Chamber	MASTER	-	4
3	Trailer EBS G2	ES206.	-	1
4	Electronic Module Premi	User data	-	1
5	Spring Brake Actuator	MASTER	-	6

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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: Brakespec
Author: Don Fordham

Created: 5/09/2012 Document: 7A9E38112C1023041
Modified: 5/09/2012 Page: 3 / 7

System components

No.	Name	Type	Characteristics
1	Coupling head	KU1...	
2	Brake Chamber 16" stroke: 67	MASTER	BZ 163.1 20/10/2003
3	Brake Chamber 16" stroke: 67	MASTER	BZ 163.1 20/10/2003
4	Trailer EBS G2	ES206.	Sensors on axle 3
5	Brake Chamber 16" stroke: 67	MASTER	BZ 163.1 20/10/2003
6	Brake Chamber 16" stroke: 67	MASTER	BZ 163.1 20/10/2003
7	Electronic Module Premium	ES2071	
8	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005
9	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005
10	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005
11	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005
12	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005
13	Spring Brake Actuator 16/24" stroke: 61/61	MASTER	BZ 161.2 11/01/2005

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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: Brakespec
 Author: Don Fordham

Created: 5/09/2012 Document: 7A9E38112C1023041
 Modified: 5/09/2012 Page: 4 / 7

Laden vehicle

Service	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
brake	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coupling head pres. [bar]	0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50
Deceleration [m/s ²]	0.00	0.25	0.73	1.21	1.69	2.17	2.66	3.14	3.62	4.10	4.58	5.06	5.54	6.02	6.50
Braking rate [%]	0.00	2.54	7.44	12.35	17.25	22.16	27.07	31.97	36.87	41.78	46.68	51.59	56.49	61.40	66.30
Axle 1 actuator pres. [bar]	0.20	0.76	1.28	1.81	2.33	2.85	3.37	3.89	4.41	4.94	5.46	5.98	6.50	7.02	7.54
Axle 1 braking torque [kNm]	0.00	0.82	2.40	3.98	5.56	7.14	8.72	10.29	11.87	13.45	15.03	16.61	18.18	19.76	21.34
Axle 1 braking force [kN]	0.00	1.96	5.70	9.46	13.20	16.95	20.70	24.45	28.20	31.94	35.70	39.44	43.19	46.94	50.69
Axle 1 adhesion utilised	0.00	0.02	0.07	0.11	0.15	0.19	0.23	0.27	0.30	0.34	0.37	0.40	0.43	0.46	0.48
Axle 2 actuator pres. [bar]	0.20	0.76	1.28	1.81	2.33	2.85	3.37	3.89	4.41	4.94	5.46	5.98	6.50	7.02	7.54
Axle 2 braking torque [kNm]	0.00	0.82	2.40	3.98	5.56	7.14	8.72	10.29	11.87	13.45	15.03	16.61	18.18	19.76	21.34
Axle 2 braking force [kN]	0.00	1.96	5.70	9.46	13.20	16.95	20.70	24.45	28.20	31.94	35.70	39.44	43.19	46.94	50.69
Axle 2 adhesion utilised	0.00	0.02	0.07	0.11	0.15	0.19	0.23	0.27	0.30	0.34	0.37	0.40	0.43	0.46	0.48
Axle 3 actuator pres. [bar]	0.20	0.73	1.19	1.65	2.11	2.57	3.03	3.49	3.96	4.42	4.88	5.34	5.80	6.26	6.72
Axle 3 braking torque [kNm]	0.00	0.72	2.11	3.51	4.90	6.30	7.69	9.09	10.48	11.88	13.27	14.67	16.07	17.46	18.86
Axle 3 braking force [kN]	0.00	1.60	4.71	7.82	10.94	14.06	17.17	20.29	23.40	26.52	29.63	32.75	35.86	38.97	42.09
Axle 3 adhesion utilised	0.00	0.03	0.08	0.13	0.19	0.25	0.31	0.38	0.45	0.52	0.60	0.68	0.76	0.85	0.94
Axle 4 actuator pres. [bar]	0.20	0.73	1.19	1.65	2.11	2.57	3.03	3.49	3.96	4.42	4.88	5.34	5.80	6.26	6.72
Axle 4 braking torque [kNm]	0.00	0.72	2.11	3.51	4.90	6.30	7.69	9.09	10.49	11.88	13.27	14.67	16.07	17.46	18.86
Axle 4 braking force [kN]	0.00	1.60	4.72	7.83	10.94	14.06	17.17	20.29	23.41	26.52	29.63	32.75	35.86	38.98	42.09
Axle 4 adhesion utilised	0.00	0.03	0.08	0.13	0.19	0.25	0.31	0.38	0.45	0.52	0.60	0.68	0.76	0.85	0.94
Axle 5 actuator pres. [bar]	0.20	0.73	1.19	1.65	2.11	2.57	3.03	3.49	3.96	4.42	4.88	5.34	5.80	6.26	6.72
Axle 5 braking torque [kNm]	0.00	0.72	2.11	3.51	4.90	6.30	7.69	9.09	10.49	11.88	13.27	14.67	16.07	17.46	18.86
Axle 5 braking force [kN]	0.00	1.60	4.72	7.83	10.94	14.06	17.17	20.29	23.41	26.52	29.63	32.75	35.86	38.98	42.09
Axle 5 adhesion utilised	0.00	0.03	0.08	0.13	0.19	0.25	0.31	0.38	0.45	0.52	0.60	0.68	0.76	0.85	0.94

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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: Brakespec
Author: Don Fordham

Created: 5/09/2012 Document: 7A9E38112C1023041
Modified: 5/09/2012 Page: 5 / 7

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 : 2.85 Axle2 : 2.85 Axle3 : 2.57 Axle4 : 2.57 Axle5 : 2.57

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

Deceleration [m/s²] : 4.35

Braking rate [%] 44.4

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] : 5.54

Braking rate [%] 56.5

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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: Brakespec
 Author: Don Fordham

Created: 5/09/2012 Document: 7A9E38112C1023041
 Modified: 5/09/2012 Page: 6 / 7

Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
Pneu.:0.70, CAN:0.70	0.45	
1.6	0.77	1.28
6.5	2.50	5.80
Low-range comp. at 1.6 bar	0.00	0.00
High-range comp. at 4.5 bar	0.00	0.00
Air spring pressure [bar]	Unladen :	Laden :
	0.40	3.80
Axle boogie load [kg]	Unladen	Laden
	3420	19000

Pressure limitation [bar] - 0.00 from 3.00 [bar]
 Slip differential [%]

Axle and Tyre information

Number of axles: 5
 Dynamic tyre radius [cm]: 42.1

3rd modulator logic is LS characteristic

3rd Modulator parameters:

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
Pneu.:0.70, CAN:0.70	0.45	
1.6	0.85	1.39
6.5	3.00	6.50
Compen- at 1.6 bar	0.00	0.00
sations : at 4.5 bar	0.00	0.00
Air spring pressure [bar]	Unladen :	Laden :
	0.50	4.00
Axle boogie load [kg]	Unladen	Laden
	3580	16000

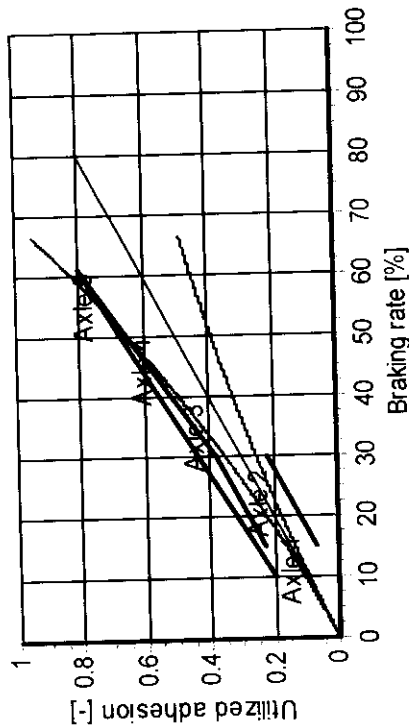
Calculation pressure [bar]: 6.5

Database version: 11.0.2

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.

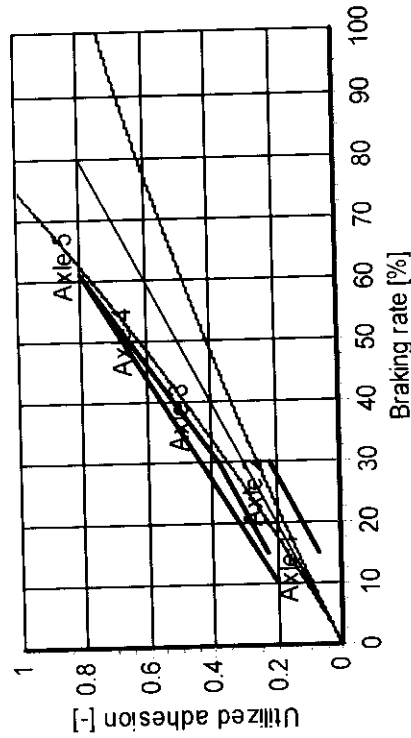


Laden vehicle - adhesion utilisation



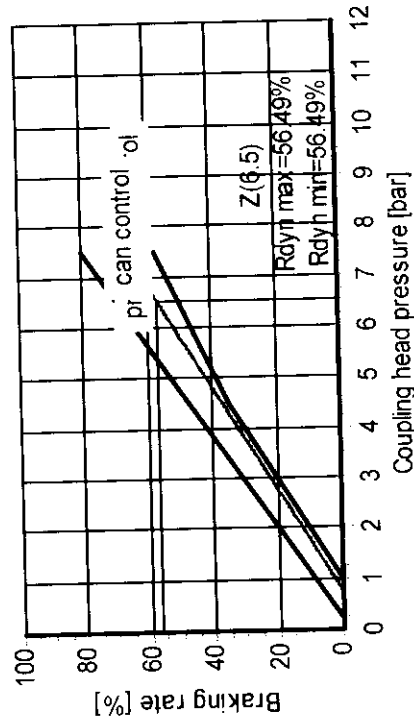
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

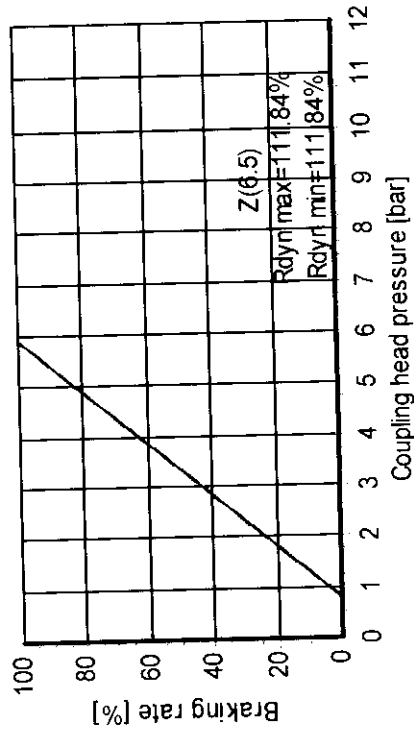


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Laden vehicle - compatibility with Pneumatic and CAN control

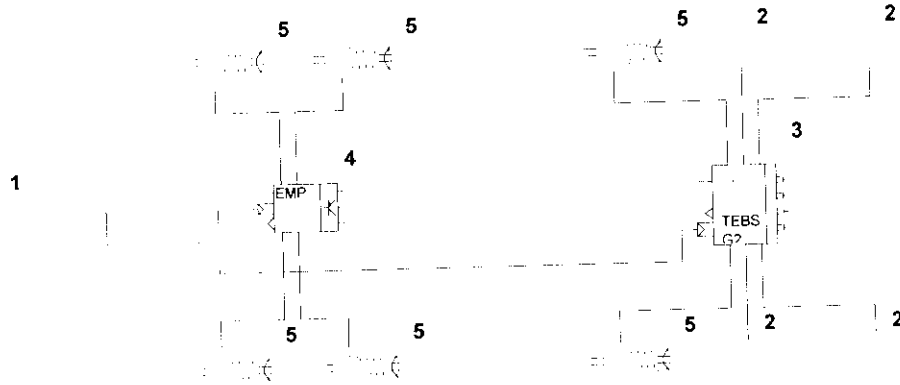


Unladen vehicle - compatibility with Pneumatic and CAN control





Complet system diagram



Part list

No.	Name	Type	Characteristics	Qty.
1	Coupling head	KU1...	-	1
2	Brake Chamber	MASTER	-	4
3	Trailer EBS G2	ES206.	-	1
4	Electronic Module Premium	User data	-	1
5	Spring Brake Actuator	MASTER	-	6

Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
0.70	0.45	
1.6	0.77	1.28
6.5	2.50	5.80
Low-range comp at 1.6 bar inp. [bar]	0.00	0.00
High-range comp at 4.5 bar inp. [bar]	0.00	0.00
Air spring pressure [bar]	Unladen	Laden
	0.40	3.80
Axle boogie load [kg]	Unladen	Laden
	3420	19000
Pressure limitation [bar]	-	
Slip differential [%]	0.00	

- Coupling head -
- Brake Chamber 16" stroke: 67 BZ 163.1 20/10/2003
- Brake Chamber 16" stroke: 67 BZ 163.1 20/10/2003
- Trailer EBS G2 Sensors on axle 3
- Brake Chamber 16" stroke: 67 BZ 163.1 20/10/2003
- Brake Chamber 16" stroke: 67 BZ 163.1 20/10/2003
- Electronic Module Premium -
- Spring Brake Actuator 16/24" stBZ 161.2 11/01/2005
- Spring Brake Actuator 16/24" stBZ 161.2 11/01/2005
- Spring Brake Actuator 16/24" stBZ 161.2 11/01/2005
- Spring Brake Actuator 16/24" stBZ 161.2 11/01/2005
- Spring Brake Actuator 16/24" stBZ 161.2 11/01/2005
- Spring Brake Actuator 16/24" stBZ 161.2 11/01/2005

Customer: Domett
 Vehicle: 5-axle full

Project: 7A9E38112C1023041

HALDEX EB+ END OF LINE TEST REPORT



ECU Configuration	4S : 3M Front Remote, Rear Master ECU Left
Vehicle Ident Number	7A9E38112C1023041
Brake Calculation	023041
Manufacturer	Domett
ECU Serial Number	INVALID
Software	C618
Odometer (km)	0
Date (DD/MM/YY)	06/09/12
Time	16:03

Wheel Scale	Rdyn (mm)	No. Of Teeth
S1A/S1B	421	80
S2A/S2B	448	80

Sensor Tests			Not Applicable
S1A	S1B	S2A	S2B
-	-	-	-

Sensor Modulator Tests			Passed
S1A	S1B	S2A	S2B
Passed	Passed	Passed	Passed

Push Through Tests			Passed
P21	P22	P23	
7.4	7.4	7.5	

EBS Pressure Tests						Passed		
	INPUTS		OUTPUTS		Results			
	MASTER	REMOTE	MASTER	REMOTE	P21	P22	P23	
Unladen Suspension	0.4	0.5						
Laden Suspension	3.8	4.0						
P0	0.5	0.5						
PD	0.7	0.7	0.5	0.5	0.5	0.4	0.4	
PP1 [U]					0.7	0.9	0.8	
PP1 [L]	1.5	1.5	1.2	1.3	1.1	1.3	1.3	
PP2 [U]					1.4	1.4	1.6	
PP2 [L]	3.0	3.0	2.6	2.9	2.5	2.5	2.9	
PP3 [U]	6.5	6.5	2.5	3.0	2.6	2.6	3.0	
PP3 [L]	6.5	6.5	5.8	6.5	5.7	5.8	6.7	
P Limit			8.0	8.0				

Options			
		REV	

Auxiliary Tests			
Lamp			On / Off
Aux 1	No Aux		-
Aux 2	No Aux		-
Aux 3	No Aux		-
Aux 4	No Aux		-
Aux 5	No Aux		-
Lat Acc Internal	Fitted		Passed
24N			-

Notes	

Operator's Name	Brakespec Ltd
Signature	