NZ TRANSPORT AGENCY
WAKA KOTAHI

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: 7A9D20016B1023012

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

Certification Category: HUEK.

Description of Work

CARRY OUT SET UP OF TRAILER EBS SYSTEM IN COMPLIANCE WITH THE NZ HEAVY VEHICLE BRAKE RULE.

Code/Standard Certified to: HUBNZ 32015/2 SCHED 5.

Component Load Rating(s): N/A.

General Drawing Number(s): N/A

Supporting Documents: KNORR-BREMSE BSD PERFORMANCE CALCULATION

*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: 16.11.2011

Number: 388746

COF Vehicle Inspector ID: | COF Vehicle Inspector Signature: | Date

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

KNORR-BREMSE

ECUtalk® for TEBS G2 (v.2.3.18.2)

EOL Report

TEBS G2 ES2060	ES2060	K019302V04N00	E48 13R-
SW Version	TBSG.0000700.0000137	KB Help Centre	+ 49 (0) 180 566 77 05
Type	Full-trailer	Manufacturer	Domett Trailers
Brake calculation no.	7AD20016B1023012	VIN	7AD20016B1023012
Serial number	20111110086	PIN	00 00 05 D2

	Front pressure parameters				Rear pressure parameters			
Demand	Pneumatic (CAN) [bar]				Pneumatic (CAN) [bar]			
Control pressure [bar]	0.70	1.6	4.5	6.5	0.70	1.6	4.5	6.5
Brake press. unladen [bar]	0.48	0.9	2.3 (2.1)	3.3 (2.9)		0.8	2.0 (1.7)	2.8 (2.4)
Brake press. laden [bar]		1.4	4.4	6.5		1.4 (1.3)	4.4 (4.1)	6.5 (6.0)

Axle	Max. load [kg]		
1	7500	16	0
2	7500	16	0
3	7500	16	0
4	7500	16	0
5	-	-	-

	O	OOO	Ext.brake demand	None
Bogie load unladen [kg]	3420	3100	Differential slip [%]	-
Bogie load laden [kg]	15000	15000	Max slip demand [bar]	-
Tyre diameter [mm]	842	842	Pressure limit [bar]	6.5
Sensing ring teeth	90	90	ABS Configuration	4S/3M
Module turned	No		3rd modulator	TEPM Premium
TBM LS Type	TBM-Internal		TEPM LS Type	TEPM-Internal
LS1 U_unladen [V]	-		LS-TEPM U_unladen [V]	-
LS1 U_laden [V]	-		LS-TEPM U_laden [V]	-
Spring deflection TBM	-		Spring deflection TEPM-P	-
Lever length TBM	-		Lever length TEPM	-

AUXIO1	Disabled
AUXIO2	Disabled
AUXIO3	Supply
SENS_IN1	Disabled
SENS_SUP	Disabled
INPUT_E	Disabled
INPUT_F	Disabled
P28	Disabled
TEPM-AUXIO1	Disabled
TEPM-AUXIO2	Disabled
TEPM-SENS_IN1	Disabled
TEPM-SENS_IN2	Disabled

	Unladen	Laden
Airspring pressure TBM [bar]	0.6	4.8
Airspring pressure TEPM [bar]	0.7	4.8
Suspension pressure TBM [bar]	-	-
Suspension pressure TEPM [bar]	-	-

Kilometre counter [km]	0
Next service [km]	9999999
Next service [date]	31/12/2254

20CE14277177E7E3

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(v.2.3.18.2)

EOL Report

TEBS G2 ES2060	ES2060	K019302V04N00	E48	13R-
SW Version	TBSG.0000700.0000137	KB Help Centre		+ 49 (0) 180 566 77 05
Type	Full-trailer	Manufacturer		Domett Trailers
Brake calculation no.	7AD20016B1023012	VIN		7AD20016B1023012
Serial number	20111110086	PIN		00 00 05 D2

EOL Test Result: OK

EOL Test Step Results

Initial "Fault" status (0.0)	OK (1)		
Installation check (1)	OK (1)		
System pressure test (2)	OK (1)		
Warning lamp test (3)	OK (1)		
S-A sensor test (11.1)	OK (1)		
Air gap speed at SA [km/h]	1.96		
S-C sensor test (11.3)	OK (1)		
Air gap speed at SC [km/h]	1.82		
S-D sensor test (11.4)	OK (1)		
Air gap speed at SD [km/h]	2.02		
S-B sensor test (11.2)	OK (1)		
Air gap speed at SB [km/h]	1.86		
RSP installation test (13)	OK (1)		
Final "Fault" status (0.1)	OK (1)		

Tester's name	Chris Clarke
Location	Genese Ltd
Date	Wednesday, 16 November 2011
Additional information	Turners & Growers 4 axle full trailer

Signature

20CE14277177E7E3

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 11.0).

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 Trailers Ltd

Vehicle: 7A9D20016B1023012

Project: Turners & Growers 4 axle full trailer

Vehicle

Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	6.94
Laden (max.) mass [kg]	30000.00
Laden (max.) front axle group load [kg]	15000.00
Laden vertical position of CoG [m]	2.01
Unladen (min.) mass [kg]	6520.00
Unladen (min.) front axle group load [kg]	3420.00
Unladen vertical position of CoG [m]	1.20
Laden/unladen front air spring press. [bar]	4.80/0.70
Laden/unladen rear air spring press. [bar]	4.80/0.60

Axles

	Axle 1	Axle 2	Axle 3	Axle 4
Type	MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-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]	-	-	-	-
Actuator size	16	16	16/24	16/24
Actuator force at 6,5 bar [N]	6146	6146	6145	6145
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

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 responsiblity for any resulting errors.

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Customer: Domett Trailers Ltd

Vehicle: 7AD20016B1023012

Project: Turners & Growers 4 axle full trailer

Vehicle

Type	2x2 Drawbar trailer
Calculated effective wheelbase [m]	6.94
Laden (max.) mass [kg]	30000.00
Laden (max.) front axle group load [kg]	15000.00
Laden vertical position of CoG [m]	2.01
Unladen (min.) mass [kg]	6520.00
Unladen (min.) front axle group load [kg]	3420.00
Unladen vertical position of CoG [m]	1.20
Laden/unladen front air spring press. [bar]	4.80/0.70
Laden/unladen rear air spring press. [bar]	4.80/0.60

Axles

	Axle 1	Axle 2	Axle 3	Axle 4
Type	MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-FBKV	MERITOR (ROR) 361-0071-04-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]	-	-	-	-
Actuator size	16	16	16/24	16/24
Actuator force at 6,5 bar [N]	6146	6146	6145	6145
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

Database version: 11.0.2

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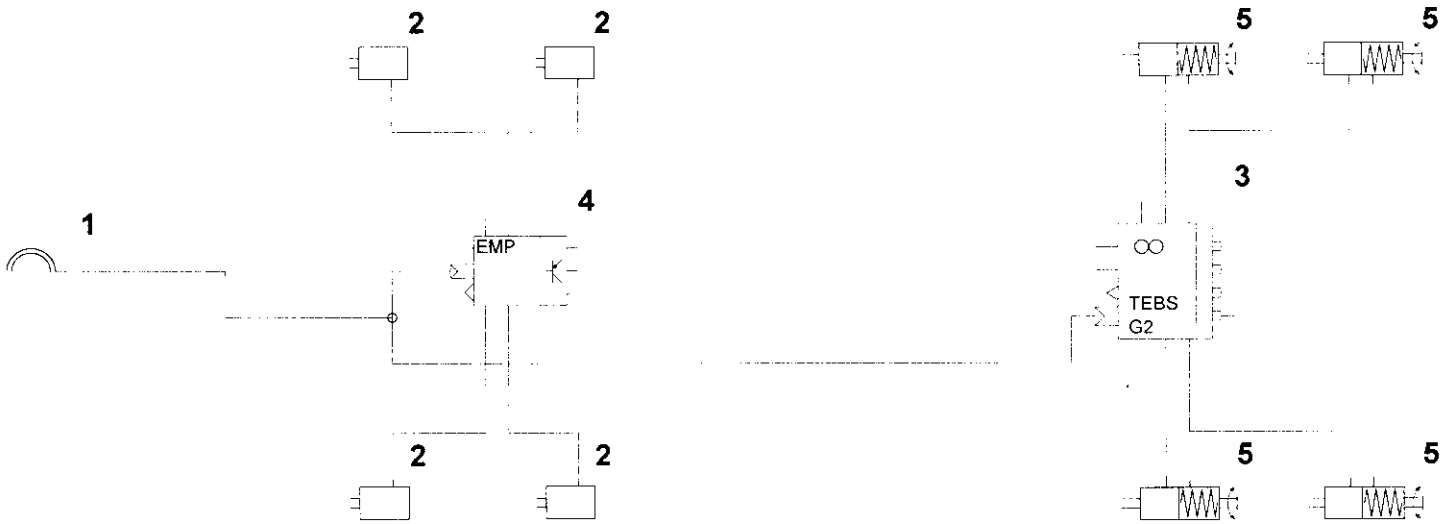

Part list

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	-	4

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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 4
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

Service brake Laden vehicle

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	0.28	0.75	1.23	1.71	2.18	2.66	3.14	3.61	4.09	4.57	5.04	5.47	5.72	5.97
Braking rate [%]	0.00	2.82	7.68	12.54	17.39	22.25	27.11	31.97	36.83	41.69	46.54	51.41	55.78	58.31	60.85
Axle 1 actuator pres. [bar]	0.20	0.79	1.31	1.83	2.35	2.87	3.39	3.91	4.42	4.94	5.46	5.98	6.50	7.02	7.54
Axle 1 braking torque [kNm]	0.00	0.91	2.48	4.05	5.62	7.19	8.76	10.33	11.90	13.48	15.04	16.61	18.19	19.75	21.33
Axle 1 braking force [kN]	0.00	2.17	5.90	9.63	13.35	17.09	20.82	24.54	28.28	32.01	35.73	39.46	43.20	46.92	50.65
Axle 1 adhesion utilised	0.00	0.03	0.08	0.12	0.16	0.21	0.24	0.28	0.32	0.35	0.38	0.41	0.44	0.48	0.51
Axle 2 actuator pres. [bar]	0.20	0.79	1.31	1.83	2.35	2.87	3.39	3.91	4.42	4.94	5.46	5.98	6.50	7.02	7.54
Axle 2 braking torque [kNm]	0.00	0.91	2.48	4.05	5.62	7.19	8.76	10.33	11.90	13.48	15.04	16.61	18.19	19.75	21.33
Axle 2 braking force [kN]	0.00	2.17	5.90	9.63	13.35	17.09	20.82	24.54	28.28	32.01	35.73	39.46	43.20	46.92	50.65
Axle 2 adhesion utilised	0.00	0.03	0.08	0.12	0.16	0.21	0.24	0.28	0.32	0.35	0.38	0.41	0.44	0.48	0.51
Axle 3 actuator pres. [bar]	0.20	0.77	1.24	1.72	2.19	2.67	3.14	3.62	4.10	4.57	5.05	5.52	5.90	5.90	5.90
Axle 3 braking torque [kNm]	0.00	0.83	2.27	3.71	5.15	6.59	8.03	9.47	10.91	12.35	13.79	15.23	16.37	16.37	16.37
Axle 3 braking force [kN]	0.00	1.98	5.40	8.82	12.24	15.65	19.08	22.50	25.92	29.34	32.76	36.18	38.88	38.88	38.88
Axle 3 adhesion utilised	0.00	0.03	0.08	0.13	0.18	0.24	0.31	0.38	0.45	0.53	0.61	0.70	0.78	0.80	0.82
Axle 4 actuator pres. [bar]	0.20	0.77	1.24	1.72	2.19	2.67	3.14	3.62	4.10	4.57	5.05	5.52	5.90	5.90	5.90
Axle 4 braking torque [kNm]	0.00	0.83	2.27	3.71	5.15	6.59	8.03	9.47	10.91	12.35	13.79	15.23	16.37	16.37	16.37
Axle 4 braking force [kN]	0.00	1.98	5.40	8.82	12.24	15.65	19.08	22.50	25.92	29.34	32.76	36.18	38.88	38.88	38.88
Axle 4 adhesion utilised	0.00	0.03	0.08	0.13	0.18	0.24	0.31	0.38	0.45	0.53	0.61	0.70	0.78	0.80	0.82

Service brake Unladen vehicle

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	0.45	1.28	2.10	2.93	3.75	4.57	5.40	6.22	7.05	7.87	8.70	9.52	10.35	11.17
Braking rate [%]	0.00	4.61	13.01	21.42	29.82	38.24	46.63	55.05	63.45	71.87	80.26	88.68	97.08	105.50	113.89
Axle 1 actuator pres. [bar]	0.20	0.61	0.81	1.02	1.23	1.44	1.65	1.86	2.07	2.27	2.48	2.69	2.90	3.11	3.32
Axle 1 braking torque [kNm]	0.00	0.35	0.98	1.61	2.24	2.88	3.51	4.14	4.77	5.40	6.03	6.66	7.29	7.92	8.55
Axle 1 braking force [kN]	0.00	0.83	2.33	3.83	5.33	6.83	8.33	9.83	11.32	12.83	14.32	15.83	17.32	18.82	20.32
Axle 1 adhesion utilised	0.00	0.05	0.13	0.21	0.29	0.36	0.43	0.50	0.56	0.62	0.68	0.73	0.78	0.83	0.88
Axle 2 actuator pres. [bar]	0.20	0.61	0.81	1.02	1.23	1.44	1.65	1.86	2.07	2.27	2.48	2.69	2.90	3.11	3.32
Axle 2 braking torque [kNm]	0.00	0.35	0.98	1.61	2.24	2.88	3.51	4.14	4.77	5.40	6.03	6.66	7.29	7.92	8.55
Axle 2 braking force [kN]	0.00	0.83	2.33	3.83	5.33	6.83	8.33	9.83	11.32	12.83	14.32	15.83	17.32	18.82	20.32
Axle 2 adhesion utilised	0.00	0.05	0.13	0.21	0.29	0.36	0.43	0.50	0.56	0.62	0.68	0.73	0.78	0.83	0.88
Axle 3 actuator pres. [bar]	0.20	0.58	0.74	0.91	1.08	1.24	1.41	1.57	1.74	1.90	2.07	2.23	2.40	2.57	2.73
Axle 3 braking torque [kNm]	0.00	0.27	0.77	1.27	1.77	2.27	2.77	3.27	3.78	4.28	4.78	5.28	5.78	6.28	6.78
Axle 3 braking force [kN]	0.00	0.64	1.83	3.02	4.21	5.40	6.59	7.78	8.97	10.16	11.35	12.54	13.72	14.91	16.10
Axle 3 adhesion utilised	0.00	0.04	0.13	0.22	0.31	0.41	0.52	0.64	0.77	0.90	1.05	1.22	1.40	1.59	1.81
Axle 4 actuator pres. [bar]	0.20	0.58	0.74	0.91	1.08	1.24	1.41	1.57	1.74	1.90	2.07	2.23	2.40	2.57	2.73
Axle 4 braking torque [kNm]	0.00	0.27	0.77	1.27	1.77	2.27	2.77	3.27	3.78	4.28	4.78	5.28	5.78	6.28	6.78
Axle 4 braking force [kN]	0.00	0.64	1.83	3.02	4.21	5.40	6.59	7.78	8.97	10.16	11.35	12.54	13.72	14.91	16.10
Axle 4 adhesion utilised	0.00	0.04	0.13	0.22	0.31	0.41	0.52	0.64	0.77	0.90	1.05	1.22	1.40	1.59	1.81

Calculation pressure [bar]: 6.5

Database version: 11.0.2

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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 : 2.87 Axle2 : 2.87 Axle3 : 2.67 Axle4 : 2.67

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

Deceleration [m/s^2] : 3.45

Braking rate [%] 35.2

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] :	5.52
Braking rate [%]	-	Braking rate [%]	56.3

Parking brake Laden vehicle

	Up	Down
Max.slope [%] (must be > 18%)	**-40.93**	**33.29**

(max.spring force = 7354 N at 30 mm strok
Required spring force at 18% slope

Axle 1 [N]	-
Axle 2 [N]	-
Axle 3 [N]	3374
Axle 4 [N]	3374

Trailer EBS parameters

Coupling head pressure [bar]	Brake chamber pressure [bar]	
	Unladen	Laden
Pneu.:0.70, CAN:0.70	0.48	
1.6	0.78	1.34
6.5	2.40	6.00

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 :
	0.60	4.80

Axle boogie load [kg]	Unladen	Laden
	3100	15000

Pressure limitation [bar] 6.50

Slip differential [%] 0.00 **from** 3.00 **[bar]**

Axle and Tyre information

Number of axles: 4

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		0.48	
1.6		0.86	1.41
6.5		2.90	6.50
Compen-sations :	**at 1.6 bar**	0.00	0.00
	at 4.5 bar	0.00	0.00

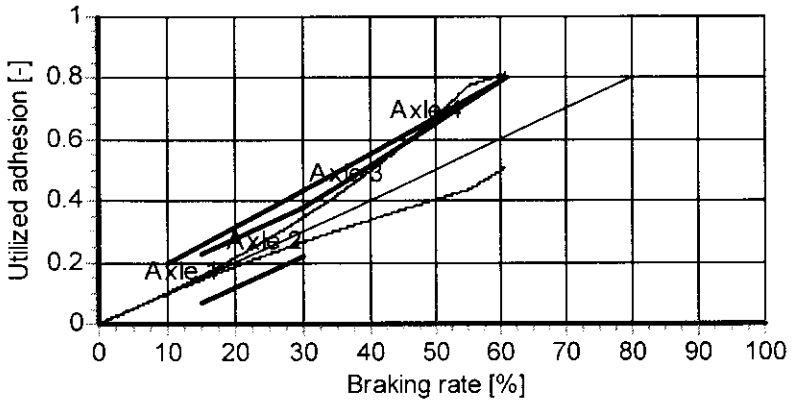
Air spring pressure [bar]	Unladen :	Laden :
	0.70	4.80

Axle boogie load [kg]	Unladen	Laden
	3420	15000

Calculation pressure [bar]: 6.5

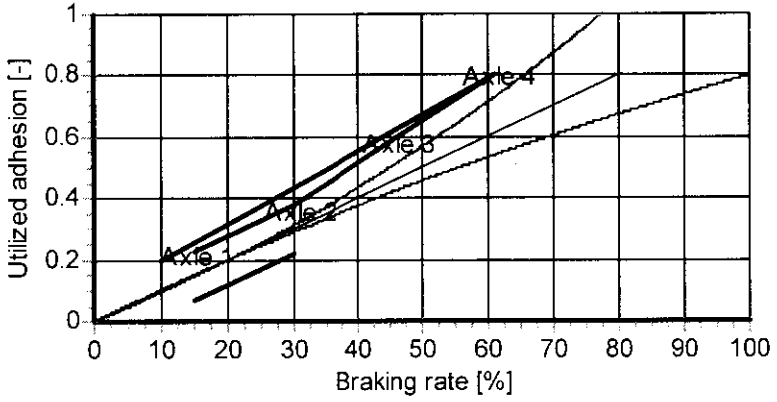
Database version: 11.0.2

Laden vehicle - adhesion utilisation



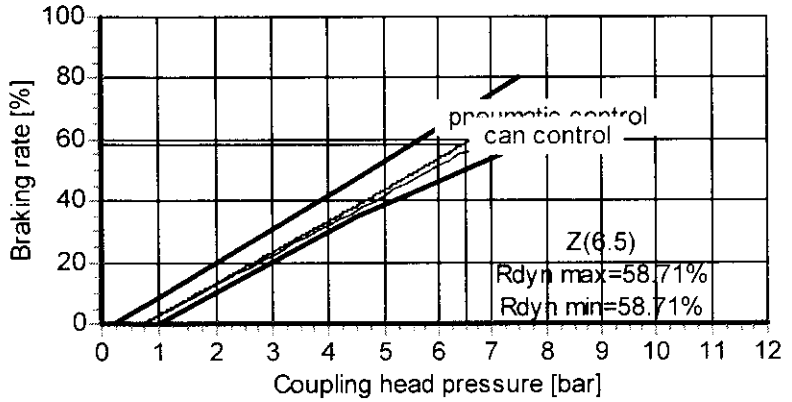
(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Unladen vehicle - adhesion utilisation

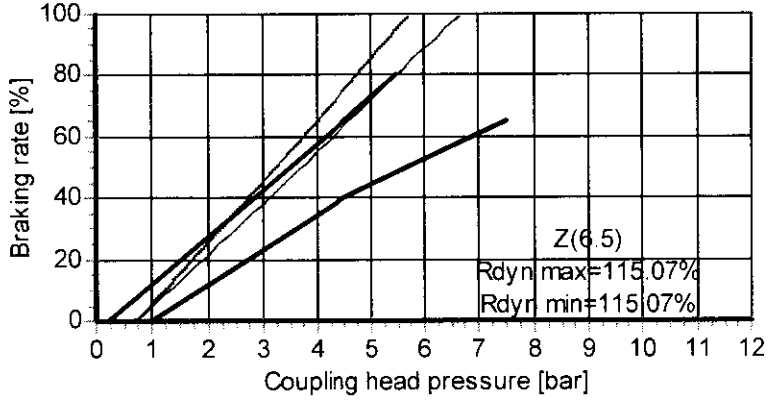


(With anti-lock system the adhesion requirements do not have to be fulfilled.)

Laden vehicle - compatibility with Pneumatic and CAN control



Unladen vehicle - compatibility with Pneumatic and CAN control



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 responsiblity for any resulting errors.