



NZ TRANSPORT AGENCY
WAKA KOTIHI

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Exemption: HVB 0/246

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**EXEMPTION FROM SPECIFIED REQUIREMENTS OF LAND TRANSPORT RULE:
Heavy-vehicle Brakes 2006, Rule 32015**

Pursuant to Section 166(1) of the Land Transport Act 1998, and pursuant to the powers delegated to me, I Eugene Girardin, Vehicles Unit Engineer, hereby exempt the motor vehicle specified in Schedule 1 hereto from the section of Land Transport Rule: Heavy-vehicle Brakes 2006 (the Rule) listed in Schedule 2, subject to the conditions specified in Schedule 3.

SCHEDULE 1:

Make/Model: NDA 4 Axle Full Trailer
VIN/Chassis: 7A85N0J0296348960

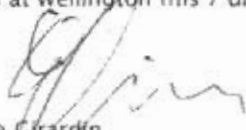
SCHEDULE 2: - Exempted Requirement

Section 2.3(9); The parking brake of a vehicle, whether or not it is being operated as a combination vehicle, must be able to be applied by the driver from the normal driving position using one control only.

SCHEDULE 3: - Conditions of this exemption:

- 1) The vehicle must be fitted with a Wabco park-release emergency valve (PREV), Part Number: 971 002 900 0.
- 2) The vehicle must be fitted with the Wabco PREV name plate, Part Number 971 002 103 4, adjacent to the PREV.
- 3) The vehicle must still be fitted with a parking brake that complies with all parking brake requirements in the Rule other than the requirement in Clause 2.3(9) of the Rule.
- 4) The installation of the PREV must be approved in writing by Transport Specialties Limited (Transpecs). Transpecs must keep a written record of their approval.
- 5) Transpecs must provide full operator training in the use of the PREV and furnish the operator with full written operating instructions for the PREV.
- 6) The vehicle must not be modified in any way while operating under this exemption.
- 7) This original exemption must be kept by Transport Specialties LTD.
- 8) A copy of this exemption (printed on a silver WABCO Sticker) must be affixed to the exempted vehicle as close to the WABCO PREV as possible.
- 9) The sticker in 8) must be legible and include all printed area's of this original exemption letter.
- 10) This exemption can be revoked at any time in writing by the NZ Transport Agency.

Signed at Wellington this 7 day of July 2010


Eugene Girardin
Engineer
Vehicles Unit

NOTICE TO VEHICLE OPERATOR

This trailer is equipped with an Electronic Brake System.

To comply with the New Zealand Heavy Vehicle Brake Rule, it must be used only in conjunction with a truck/tractor equipped with a 5 or 7 pin ABS/EBS power supply socket.

Failure to connect to such supply invalidates Brake Rule compliance.

The trailer ABS/EBS warning light on the towing vehicle dashboard must illuminate when the ignition is switched on and extinguish when the vehicle is in motion.

If the light does not illuminate when ignition is switched on, the system must be checked. If the light remains illuminated when the vehicle is in motion, Brake Rule compliance is compromised. Repairs must be made as soon as possible.

NB:

If this vehicle is fitted with mechanical (spring) suspension, the load sense valving has been adjusted to suit exactly the performance of the original springs. In event of replacement being required, original equipment springs **must** be fitted to ensure correct ongoing operation. Fitment of non genuine springs can affect operation and therefore, compliance.

If you are unsure of your responsibilities and/or obligations. please contact either the vehicle manufacturer or myself.



L P CAWTE
(LPC HVEK)
(09 980 7300)

NOTICE TO VEHICLE OPERATOR

THIS VEHICLE HAS A BRAKE SYSTEM WHICH HAS BEEN DESIGNED AND FITTED IN ACCORDANCE WITH THE NEW ZEALAND HEAVY VEHICLE BRAKE RULE 32015: SCHEDULE 5.

IF THIS VEHICLE IS OPERATED IN CONJUNCTION WITH NON-CODED VEHICLES, THERE MAY BE OPERATIONAL FACTORS WHICH NEED TO BE TAKEN INTO CONSIDERATION.

PLEASE REFER TO THE CERTIFIER FOR FURTHER INFORMATION.

EXCERPT FROM NZ HEAVY VEHICLE BRAKE RULE 32015

10.1 Responsibilities of operators

A person who operates a vehicle must ensure that the vehicle complies with this Rule

10.4 Responsibilities of repairers

A person who repairs or adjusts a brake must ensure that the repair or adjustment:

- (c) does not prevent the vehicle from complying with the rule : and*
- (d) complies with Land Transport Rule: Vehicle Repair 1998.*

10.5 Responsibilities of modifiers

A person who modifies a vehicle so as to affect the braking performance of the vehicle must:

- (c) ensure that the modification does not prevent the vehicle from complying with this rule: and*
- (d) notify the operator that the vehicle must be inspected and. If necessary. Certified by a person or organisation appointed to carry out specialist inspection and certification of heavy vehicle brakes.*

10.6 Responsibilities of manufactures and retailers

A person may manufacture, stock, or offer for sale a brake or its components. Intended for fitting to a vehicle to be used on New Zealand roads, only if that brake or component:

- (c) complies with this Rule: and*
- (d) does not prevent a repair to a vehicle, its structure, systems, components and equipment from complying with this Rule.*

IF YOU ARE UNSURE ABOUT YOUR RESPONSIBILITIES, PLEASE CONTACT THE VEHICLE MANUFACTURER, OR MYSELF.

COMPLAINTS. Complaints and Warranty issues which relate to Brake Certification will be acknowledged within 7 working days and a resolution proposed within 25 working days. Resolution of complaints and Warranty issues is subject to Transpecs Warranty policy. Customers have the right to appeal to the NZ Transport Agency if dissatisfied with a Compliance issue. (refer NZTA Deed Of Appointment Para 47.4)

NZ Transport Agency Helpdesk 0800 699 000


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L.P.CAWTE
(LPC HVEK)

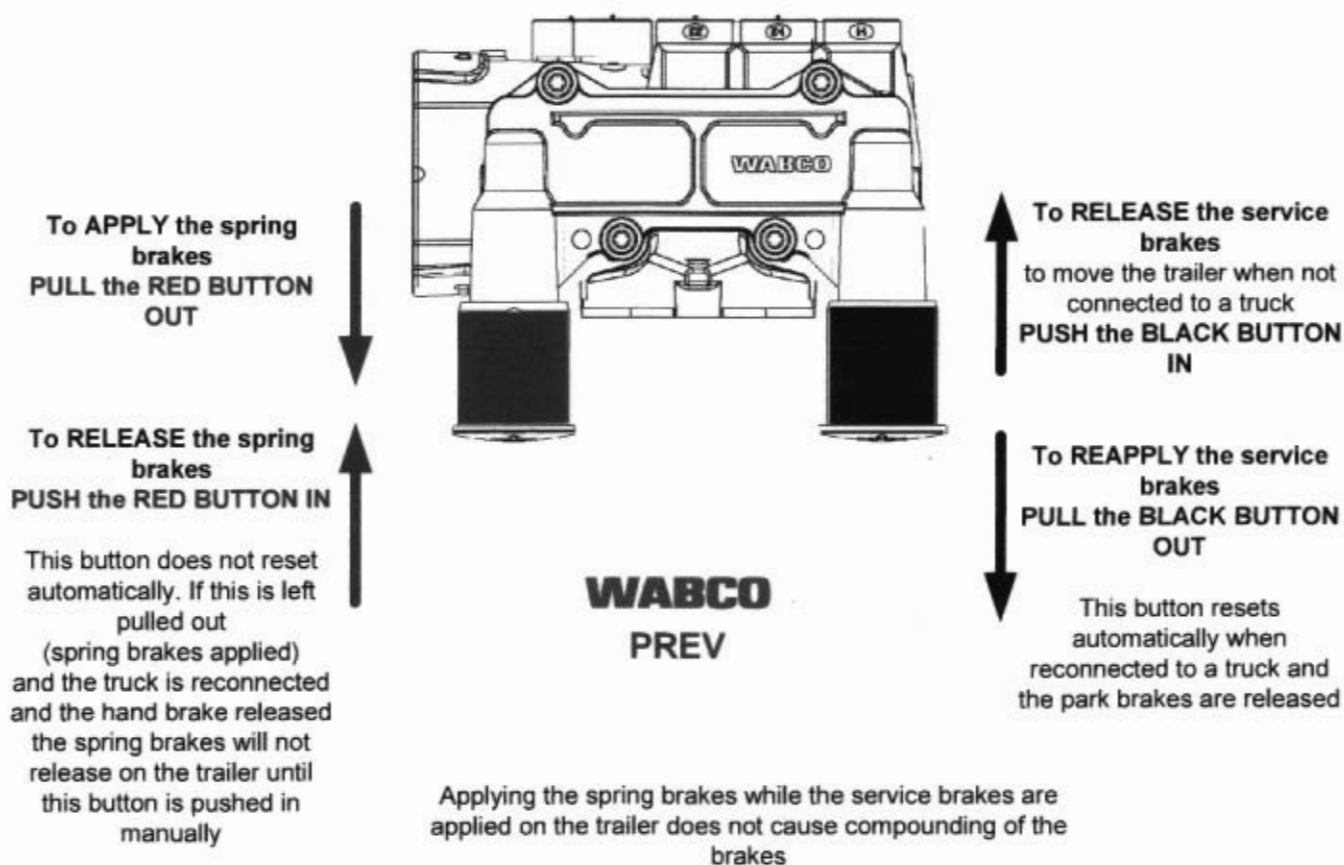
PREV

Park Release Emergency Valve

Operating Instructions

When the vehicle is parked or the handbrake on the towing vehicle is applied the service (foot) brakes are applied on the trailer.

If there is a service brake air leak on the trailer the spring (Emergency) brakes automatically apply.



**** It is recommended that when the trailer is detached from the towing ****
vehicle that the RED button is pulled out to apply the spring brakes

trailer (full, semi-, centre-axle) with air brake system acc. to 71/320/EEC, last amended by 98/12/EC and 2006/96/EC or UN/ECE-R.13.10

please note!

This brake calculation is made under consideration of
 -the legal prescriptions mentioned above in the version valid at the time of making the program (V6.09.06.08).
 -the functional characteristics of our products, but not of those of other manufacturers, and
 -the other vehicle data included in the brake calculation.
 Please check whether these data correspond to the actual vehicle data.
 Our conditions of delivery apply (particularly section 9.0).
 WABCOBrake V6.09.06.08 db 08.06.2009

distribution: TRAILER
 CHASSIS 2448
 LC100910
 LT400, 349089

vehicle manufacturer: TRAILER
 trailer model : NDA3A
 trailer type : 4-axle-full-trailer
 remarks : air / hydraulic / VA suspension
 WABCO TRAILER - EBS E
 TRISTOP 3+4: T.14/24
 265/70 R 19,5

axle 1 + 2 + 3 + 4 : SAF, PAN 19-1, TDB 0749 ECE,

		<u>unladen</u>	<u>laden</u>
total mass	P in kg	5400	28000
axle 1	P1 in kg	1450	7000
axle 2	P2 in kg	1450	7000
axle 3	P3 in kg	1250	7000
axle 4	P4 in kg	1250	7000
wheel base	E in mm	4650 - 4650	
centre of gravity height	h in mm	1120	1755

	<u>axle 1</u>	<u>axle 2</u>	<u>axle 3</u>	<u>axle 4</u>
no. of combined axles	1	1	1	1
no. of brake chambers per axle line KDZ	2	2	2	2
The power output corresponds to	BZ 122.1	BZ 122.1	BZ 119.6	BZ 119.6
brake chamber manufacturer	Meritor	Meritor	Meritor	Meritor
chamber size	14.	14.	T.14/24	T.14/24
lever length 1Bh in mm	69	69	69	69
brake factor [-]	23.03	23.03	23.03	23.03
dyn. rolling radius rdyn min in mm	421	421	421	421
dyn. rolling radius rdyn max in mm	421	421	421	421
threshold torque Co Nm	6.0	6.0	6.0	6.0

calculation:

chamber pressure(rdyn min)pH at z=22,5%bar	2.4	2.4	2.1	2.1
chamber pressure(rdyn max)pH at z=22,5%bar	2.4	2.4	2.1	2.1
chamber press.(servo)pcha at pm6,5bar bar	5.8	5.8	4.6	4.6
piston force ThA at pm6,5bar N	5588	5588	4385	4385
brake force(rdyn min)T lad. at pm6,5bar N	42260	42260	33173	33173
brake force(rdyn max)T lad. at pm6,5bar N	42260	42260	33173	33173
brake force within 1 % rolling friction proportion %	25.0	25.0	25.0	25.0

braking rate z laden 0.549 for rdyn min
 z = sum (TR)/PRmax 0.549 for rdyn max

Trailer may only be operated in combination with trucks/tractors with ISO 7638 supply (5 or 7 polar).

brake diagram :

maximum pressure: 8.5 bar

axle 1:

valve 1: 971 002 ... 0 WABCO
EBS emergency valve

valve 2: 480 102 ... 0 WABCO
EBS trailer modulator

axle 2:

valve 1: 971 002 ... 0 WABCO
EBS emergency valve

valve 2: 480 102 ... 0 WABCO
EBS trailer modulator

axle 3:

valve 1: 971 002 ... 0 WABCO
EBS emergency valve

valve 2: 480 207 0.. 0 WABCO
EBS relay valve

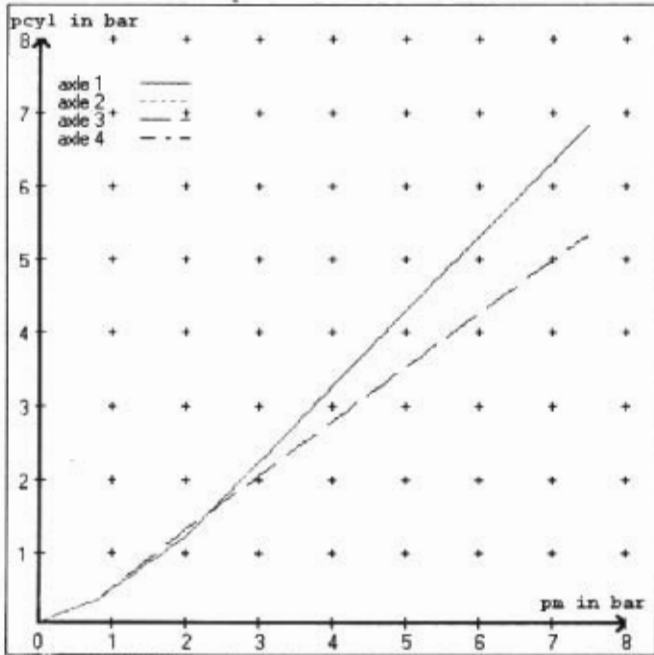
axle 4:

valve 1: 971 002 ... 0 WABCO
EBS emergency valve

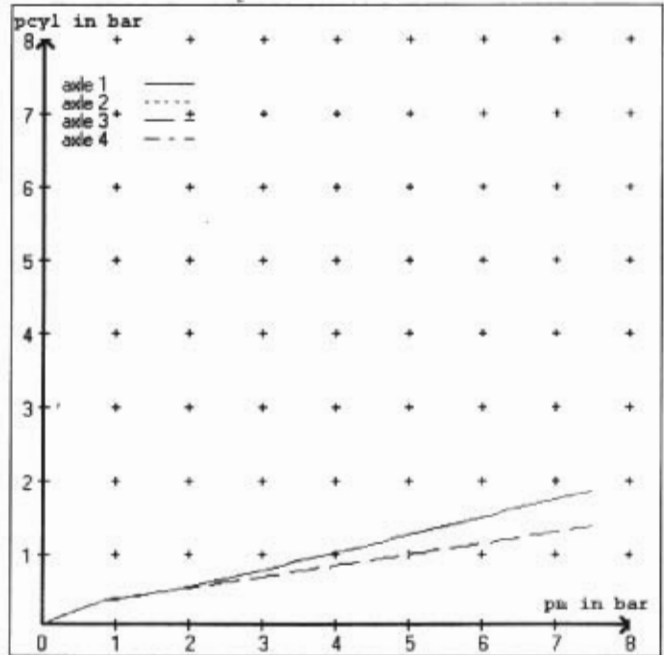
valve 2: 480 207 0.. 0 WABCO
EBS relay valve

test type III (zIII = 0.30)	for rdyn min :	axle1	axle2	axle3	axle4	
at pm 3.9 bar =>	pcha in bar :	3.2	3.2	2.7	2.7	
test type III (zIII = 0.06)	for rdyn min :	axle1	axle2	axle3	axle4	
at pm 1.4 bar =>	pcha in bar :	0.7	0.7	0.8	0.8	

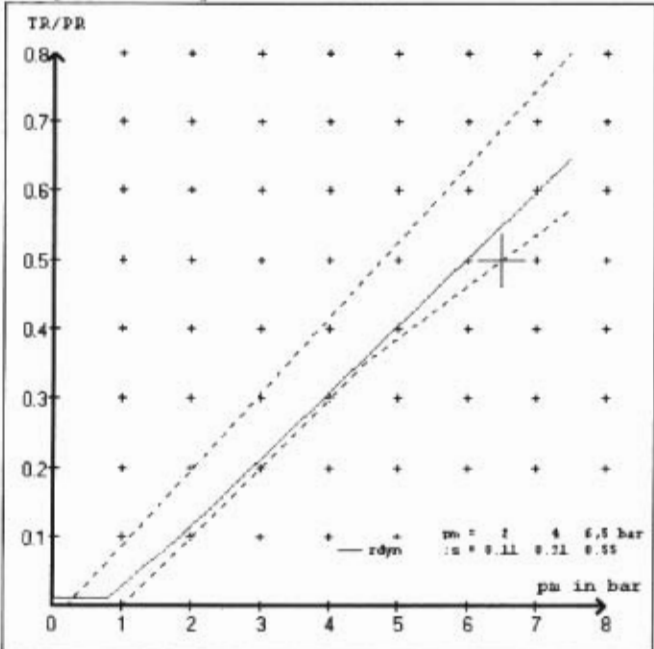
brake chamber pressure laden



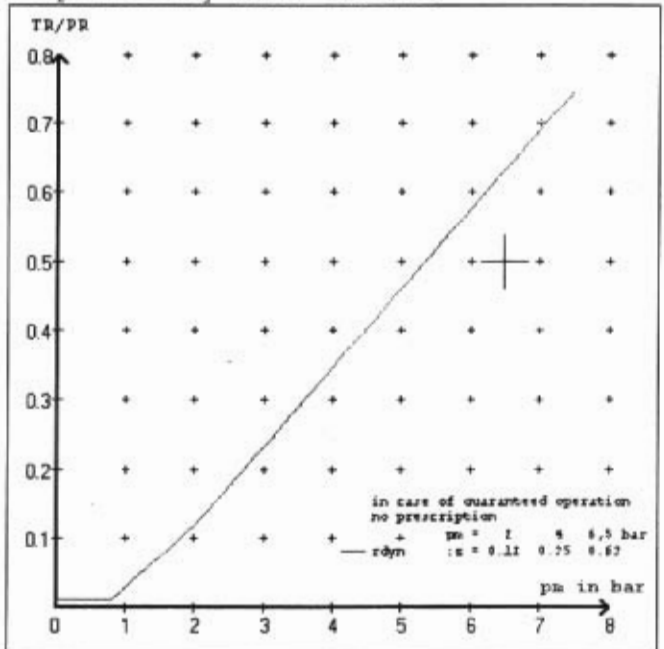
brake chamber pressure unladen



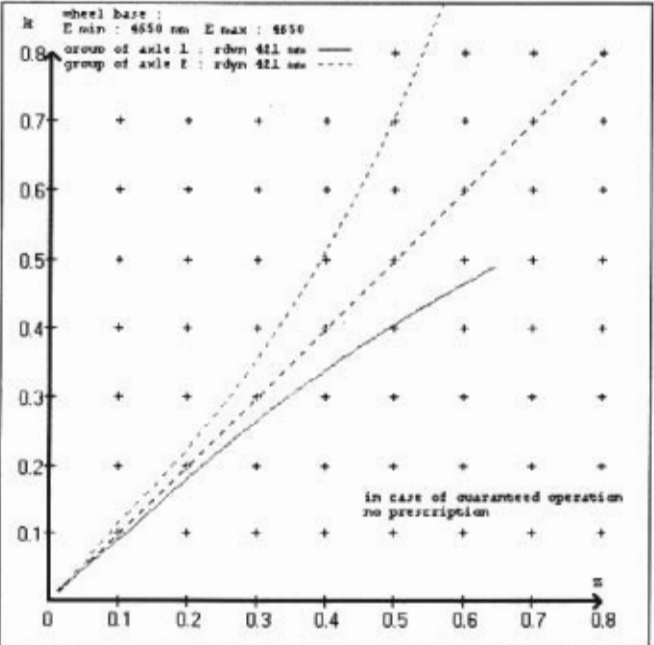
compatibility band laden



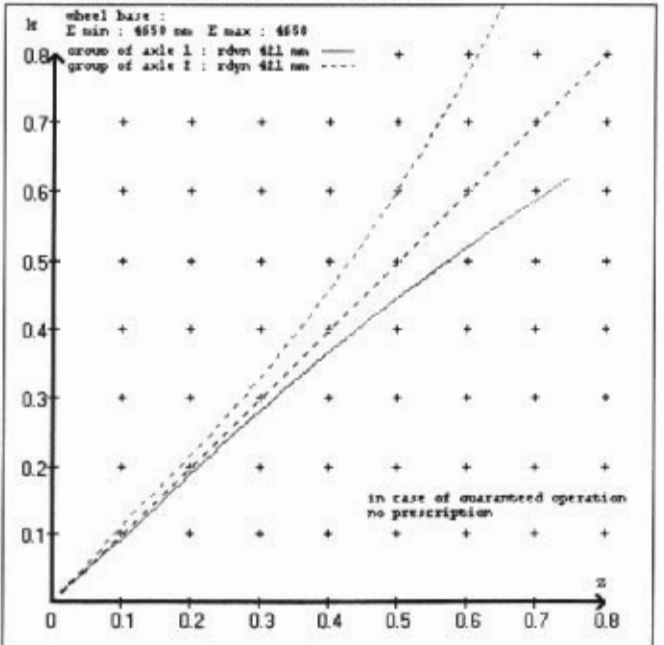
compatibility band unladen



curves of friction laden



curves of friction unladen



vehicle manufacturer: TRAILER
 trailer model : NDA3A
 trailer type : 4-axle-full-trailer

brake chamber and lever length :

axle 1 : 2 x type/diameter 14. (Meritor) lever length 69 mm
 axle 2 : 2 x type/diameter 14. (Meritor) lever length 69 mm
 axle 3 : 2 x type/diameter T.14/24 (Meritor) lever length 69 mm
 axle 4 : 2 x type/diameter T.14/24 (Meritor) lever length 69 mm

brake diagram :

valve :

971 002 ... 0 WABCO EBS emergency valve
 480 102 ... 0 WABCO EBS trailer modulator
 480 207 0.. 0 WABCO EBS relay valve

EBS input data

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vehicle manufacturer: TRAILER
 trailer model : NDA3A
 trailer type : 4-axle-full-trailer
 brake calculation no. : TP 83A

tire circumference main axle : 2650 for rdyn max
 tire circumference auxiliary axle : 2650 for rdyn max

assignment pm / deceleration z: pm 0.8 bar z = 0.000
 (laden condition) 2.0 bar z = 0.116
 6.5 bar z = 0.550

axle	control pressure pm		6,5	control pressure pm		0.8	2.0	6.5
	axle load unladen	bellow pr. unladen		axle load laden	bellow pr. laden			
1	1450	to be	1.6	7000	to be	0.3	1.2	5.8
2	1450	entered by	1.6	7000	entered by	0.3	1.2	5.8
3	1250	the vehicle	1.2	7000	the vehicle	0.3	1.3	4.6
4	1250	manufact.	1.2	7000	manufact.	0.3	1.3	4.6
5	0		0,0	0		0,0	0,0	0,0

The unladen values indicated in the above table are values for the basic parameter set. Higher unladen axle loads and liftaxles are automatically recognized and do not require separate adjustment. The above unladen axle loads must not be fallen below.

axle 1	axle 2	axle 3	axle 4
axle load pcy1	axle load pcy1	axle load pcy1	axle load pcy1
1450 1.6	1450 1.6	1250 1.2	1250 1.2
1950 2.0	1950 2.0	1750 1.5	1750 1.5
2450 2.4	2450 2.4	2250 1.8	2250 1.8
2950 2.7	2950 2.7	2750 2.1	2750 2.1
3450 3.1	3450 3.1	3250 2.4	3250 2.4
3950 3.5	3950 3.5	3750 2.7	3750 2.7
4450 3.9	4450 3.9	4250 3.0	4250 3.0
4950 4.2	4950 4.2	4750 3.3	4750 3.3
7000 5.8	7000 5.8	7000 4.6	7000 4.6

data sheet to EC/ECE vehicle type-approval certificate concerning braking equipment: according to 98/12/EC annex IX 2.7.4 / ECE R13 annex 11

axle 1 : reference axle: SAF	SBW 1937-...	brake lining: Jurid 539
test report :	TDB 0749 ECE	date : 13.10.2008
axle 2 : reference axle: SAF	SBW 1937-...	brake lining: Jurid 539
test report :	TDB 0749 ECE	date : 13.10.2008
axle 3 : reference axle: SAF	SBW 1937-...	brake lining: Jurid 539
test report :	TDB 0749 ECE	date : 13.10.2008
axle 4 : reference axle: SAF	SBW 1937-...	brake lining: Jurid 539
test report :	TDB 0749 ECE	date : 13.10.2008

calc. verif. of residual (hot) braking force type III
(item 4.2 of appendix I to annex VII)

axle 1	(rdyn 421 mm)	T = 22.3 % Pe
axle 2	(rdyn 421 mm)	T = 22.3 % Pe
axle 3	(rdyn 421 mm)	T = 18.9 % Pe
axle 4	(rdyn 421 mm)	T = 18.9 % Pe

calculated actuator stroke in mm
(item 4.3.1.1 of appendix I to annex VII)

axle 1	(sp = 57 mm)	s = 39 mm
axle 2	(sp = 57 mm)	s = 39 mm
axle 3	(sp = 56 mm)	s = 39 mm
axle 4	(sp = 56 mm)	s = 39 mm

average thrust output in N at pm = 6,5 bar (however max. pcha = 7,0 bar)

axle1	ThA = 5588 N
axle2	ThA = 5588 N
axle3	ThA = 4385 N
axle4	ThA = 4385 N

calc. residual (hot) braking force in N
(item 4.3.1.4 of appendix I to annex VII)

axle 1	(rdyn 421 mm)	T = 33284 N
axle 2	(rdyn 421 mm)	T = 33284 N
axle 3	(rdyn 421 mm)	T = 26161 N
axle 4	(rdyn 421 mm)	T = 26161 N

	basic test	type III
	of subject	(calculated)
	trailer (z)	residual
braking rate of the vehicle		(hot)braking
(item 4.3.2 to appendix I to annex VII)	0.55	0.43

required braking rate $\geq 0,4$ and $\geq 0,6 \cdot z$ (0.33)
(items 1.3.3 and 1.6.2 to annex II)

calc. residual (hot) braking force in N
(item 4.3.1.4 of appendix I to annex VII)

axle 1	(rdyn 421 mm)	T = 33284 N
axle 2	(rdyn 421 mm)	T = 33284 N
axle 3	(rdyn 421 mm)	T = 26161 N
axle 4	(rdyn 421 mm)	T = 26161 N

	basic test	type III
	of subject	(calculated)
	trailer (z)	residual
braking rate of the vehicle		(hot)braking
(item 4.3.2 to appendix I to annex VII)	0.55	0.43

required braking rate $\geq 0,4$ and $\geq 0,6 \cdot z$ (0.33)
(items 1.3.3 and 1.6.2 to annex II)

spring parking brake

	axle 3	axle 4
no of TRISTOP-actuators per axle line KDZ	2	2
TRISTOP-actuator type	T.14/24	T.14/24
lever length lBh in mm	69	69
stat. tyre radius rstat max in mm	401	401
at a stroke of s in mm	30	30
min. force of spring brake TFZ in N	7605	7605
sp.brake chamber no Meritor.....	4	4
release pressure pls in bar	4.8	4.8

calculation:

ratio until road	3.9674	3.9674
$iFb = lBh \cdot \eta \cdot C \cdot rBt / (rBn \cdot rstat)$ for rstat in mm	401	401
brake force of spring br. Tf in N $Tf = (TFZ \cdot KDZ - 2 \cdot Co / lBh) \cdot iFb$	59654	59654
braking rate zf laden	0.444	
$zf = \text{sum}(Tf) / P + 0,01$		

Test of the frictional connection required by the parking brake

minimum wheelbase/minimum supporting width min Ef necessary to fulfil the regulations

$$\min Ef = E \cdot (1 - PR/P + zferf \cdot h/E) / (1 - zferf / (fzul \cdot nf/ng))$$

$$\min Ef = 3408 \text{ mm} \quad \text{for } E = 4650 \text{ mm}$$

$$\min Ef = 3408 \text{ mm} \quad \text{for } E = 4650 \text{ mm}$$

min Ef = minimum distance between front axle(s) (trailer) or support (semitraile) and the rear axle(s) (resultant of the bogie)

E = wheel base

fzul = 0.80 maximum permissible frictional connection required

zferf = 0.18 maximum required braking ratio of the parking brake

h = 1755 mm height of center of gravity - laden

PR = 14000 kg maximum bogie mass - laden

P = 28000 kg maximum total mass - laden

nf = 2 no. of axle(s) with TRISTOP spring brake actuators

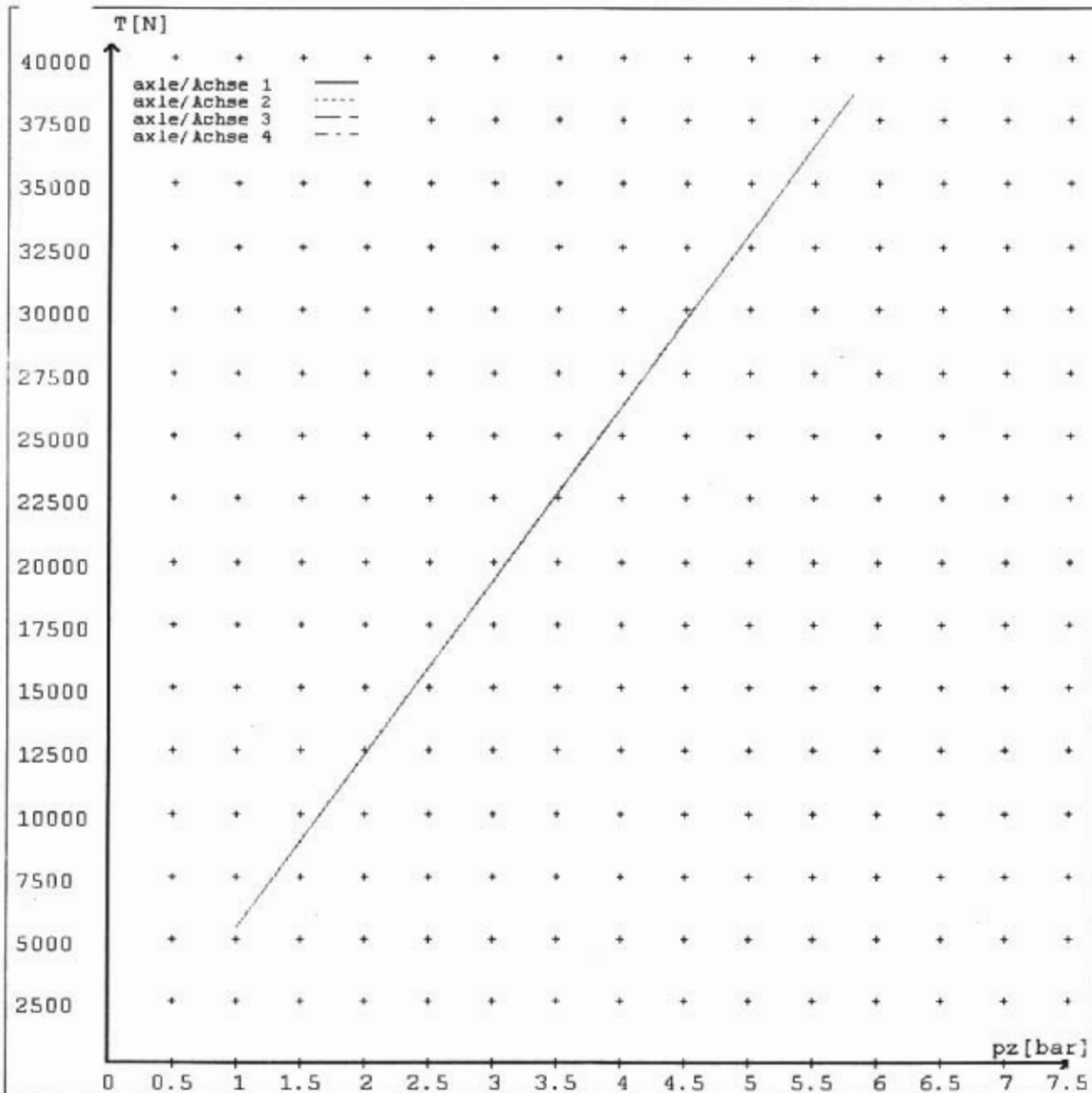
ng = 2 no. of bogie axle(s)

reference values

reference values for z = 50%

	pz [bar]	T [N]	T [N]
axle 1	1.0	5383	
	5.8	38488	
axle 2	1.0	5383	
	5.8	38488	
axle 3	1.0		5383
	4.6		30212
axle 4	1.0		5383
	4.6		30212

VIN - no.:

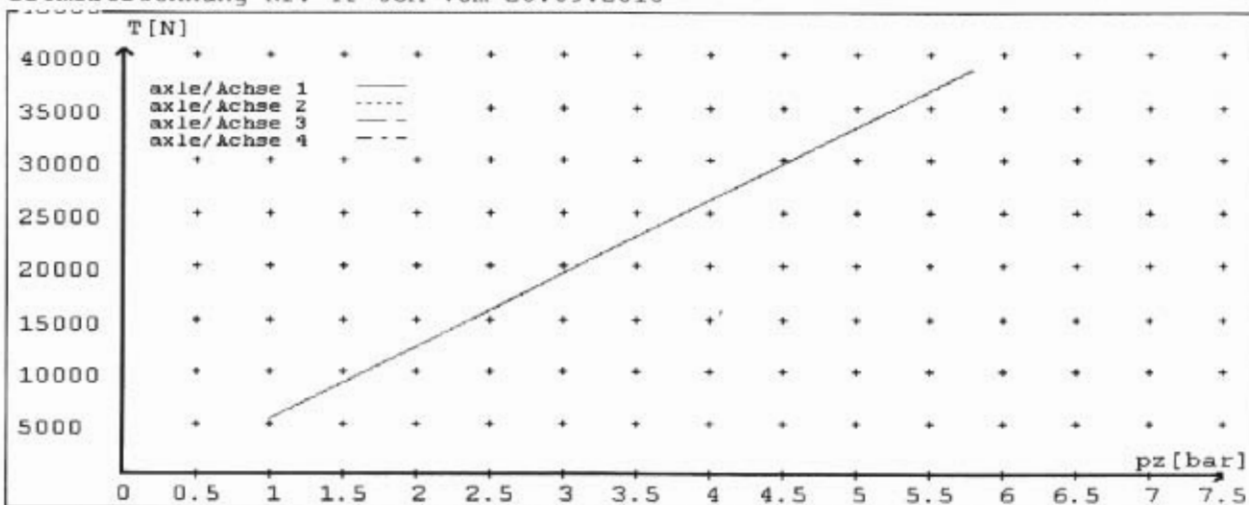


reference values for $z = 0.5$

Angabe der Referenzwerte für $z = 0.5$

brake calculation no: TP 83A date 20.09.2010

Bremsberechnung Nr: TP 83A vom 20.09.2010



	Axle(s) / Achse(n)				
brake cylinder type (service / parking) Bremszylinder Typ (Betrieb / Fest)	14./	14./	T.14/24	T.14/24	/
Maximum stroke $s_{max} = \dots mm$ maximaler Hub $s_{max} = \dots mm$	64	64	64	64	
Lever length = $\dots mm$ Hebellänge = $\dots mm$	69.08	69.08	69.08	69.08	