NZ TRANSPORT AGENCY
WAKA KOTAHI

Heavy Vehicle Specialist Certificate

Must be presented to a Transport Service Delivery Agent

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: 7A9D20013BO023930

Component being certified:

- [ ] Chassis Modification
- [ ] Load Anchorage
- [ ] Log Bolsters
- [ ] Towing Connection
- [x] Brakes
- [ ] SRT
- [ ] PSV Stability
- [ ] PSV Rollover
- [ ] Swept Path
- [ ] PBS

Certification Category: HUEK

Description of Work

CARRY OUT COMPLIANCE OF VEHICLE TO THE NZ HEAVY VEHICLE BRAKE RULE.

ROLL STABILITY FUNCTION (RSS) ACTIVATED

Code/Standard Certified to: HUBNZ 3205/2 SCHED 5

Component Load Rating(s): 33000 KG.

General Drawing Number(s): N/A

Supporting Documents

BRAKE DESIGN CERTIFICATE - CJC2032
TREV EXEMPTION - HUB10/390

*Special Conditions

WARNING LAMP MUST ILLUMINATE WHEN IGNITION IS SWITCHED ON + THEN EXTINGUISH IMMEDIATELY OR WHEN VEHICLE EXCEEDS 7 KPH

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/Inspector's Name *(PRINT IN CAPS)*:

ID number:

Date: 02.09.2013

Number: 447101

COF Vehicle Inspector ID:

COF Vehicle Inspector Signature:

Date:

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

trailer (full, semi-, centre-axle) with air brake system acc. to UN/ECE-R.13.11

distribution: Domett T&T
7A9D20013B0023920
PREV: HVB10/390
CJC2032

please note!

This brake calculation is made under consideration of
-the legal precriptions mentioned above in the version valid at the time of making the program (V6.12.08.27).
-the functional characteristics of our products as well as the data of the brake out of the test approvals of the axle 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).
In any case we commend to do a braking harmonisation!
WABCOBrake V6.12.08.27 db 02.10.2012

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

axle 1 + 2 + 3 + 4 + 5 : SAF, PAN 19-1, TDB 0749 ECE,

		unladen	laden
total mass	P in kg	7100	33020
axle 1	P1 in kg	1600	7000
axle 2	P2 in kg	1600	7000
axle 3	P3 in kg	1300	6340
axle 4	P4 in kg	1300	6340
axle 5	P5 in kg	1300	6340
wheel base	E in mm	8150 - 8150	
centre of gravity height	h in mm	1060	2054

		axle 1	axle 2	axle 3	axle 4	axle 5
no. of combined axles		1	1	1	1	1
no. of brake chambers per axle line	KDZ	2	2	2	2	2
The power output corresponds to		BZ 122.1	BZ 122.1	BZ 119.6	BZ 119.6	BZ 119.6
brake chamber manufacturer		Meritor	Meritor	Meritor	Meritor	Meritor
chamber size		14.	14.	T.14/24	T.14/24	T.14/24
lever length	lBh in mm	69	69	69	69	69
brake factor	[-]	23.03	23.03	23.03	23.03	23.03
dyn. rolling radius	rdyn min in mm	421	421	421	421	421
dyn. rolling radius	rdyn max in mm	421	421	421	421	421
threshold torque	Co Nm	6.0	6.0	6.0	6.0	6.0

calculation:

chamber pressure(rdyn min)	pH at z=22,5%	bar	2.2	2.2	2.1	2.1	2.1
chamber pressure(rdyn max)	pH at z=22,5%	bar	2.2	2.2	2.1	2.1	2.1
chamber press.(servo)	pcha at pm6,5bar	bar	5.7	5.7	5.1	5.1	5.1
piston force	ThA at pm6,5bar	N	5487	5487	4886	4886	4886
brake force(rdyn min)	T lad. at pm6,5bar	N	41503	41503	36894	36894	36894
brake force(rdyn max)	T lad. at pm6,5bar	N	41503	41503	36894	36894	36894
brake force within 1 % rolling friction proportion		%	20.0	20.0	20.0	20.0	20.0

braking rate z laden	0.598	for rdyn min
z = sum (TR)/PRmax	0.598	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: 480 207 0.. 0 WABCO or 480 207 2.. 0
EBS relay valve

brake cylinder: Meritor 14HSCLD64

axle 2:
valve 1: 971 002 ... 0 WABCO
EBS emergency valve

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

brake cylinder: Meritor 14HSCLD64

axle 3:
valve 1: 971 002 ... 0 WABCO
EBS emergency valve

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

brake cylinder: Meritor 1424HTLD64

axle 4:
valve 1: 971 002 ... 0 WABCO
EBS emergency valve

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

brake cylinder: Meritor 1424HTLD64

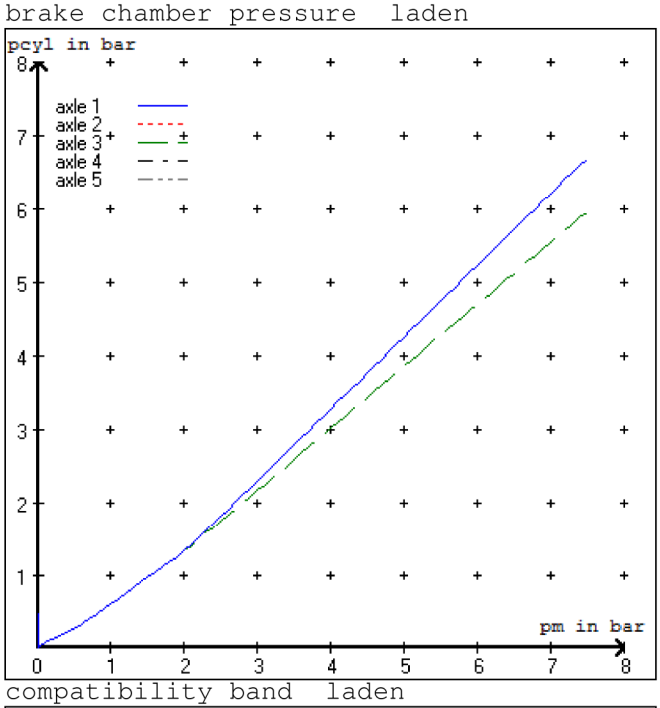
axle 5:
valve 1: 971 002 ... 0 WABCO
EBS emergency valve

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

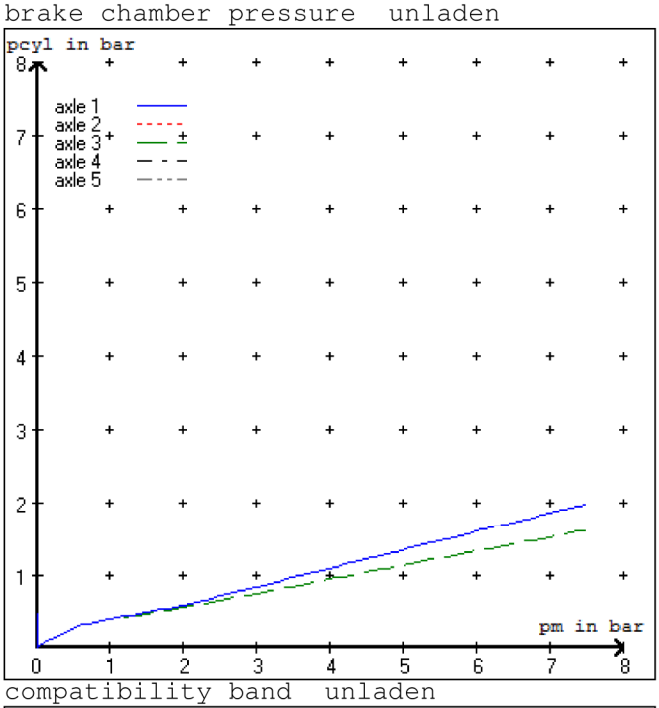
brake cylinder: Meritor 1424HTLD64

test type III (zIII = 0.30)	for rdyn min :	axle1	axle2	axle3	axle4	axle5
at pm 3.7 bar =>	pcha in bar :	2.9	2.9	2.7	2.7	2.7
test type III (zIII = 0.06)	for rdyn min :	axle1	axle2	axle3	axle4	axle5
at pm 1.2 bar =>	pcha in bar :	0.7	0.7	0.7	0.7	0.7

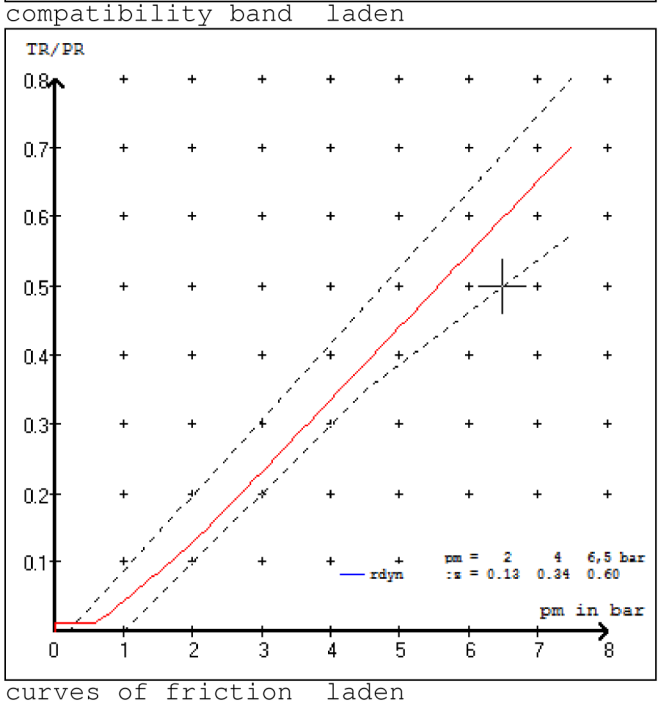
brake chamber pressure laden



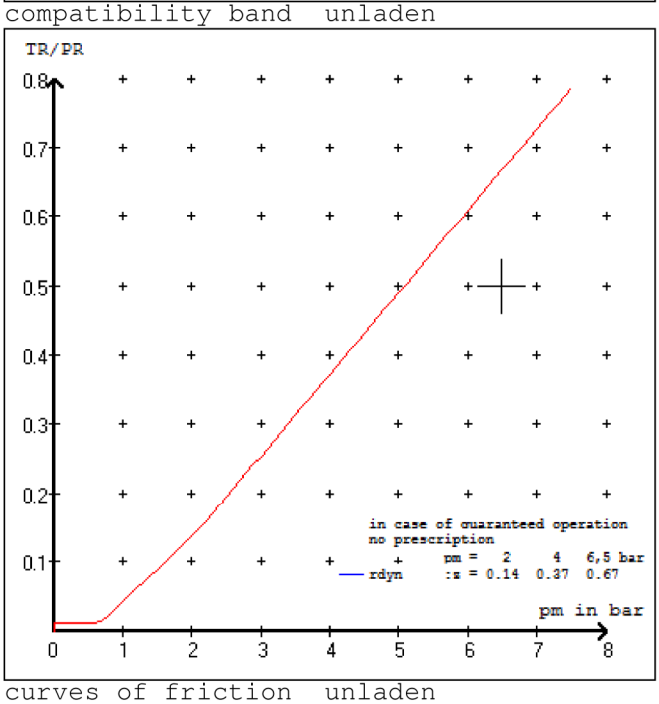
brake chamber pressure unladen



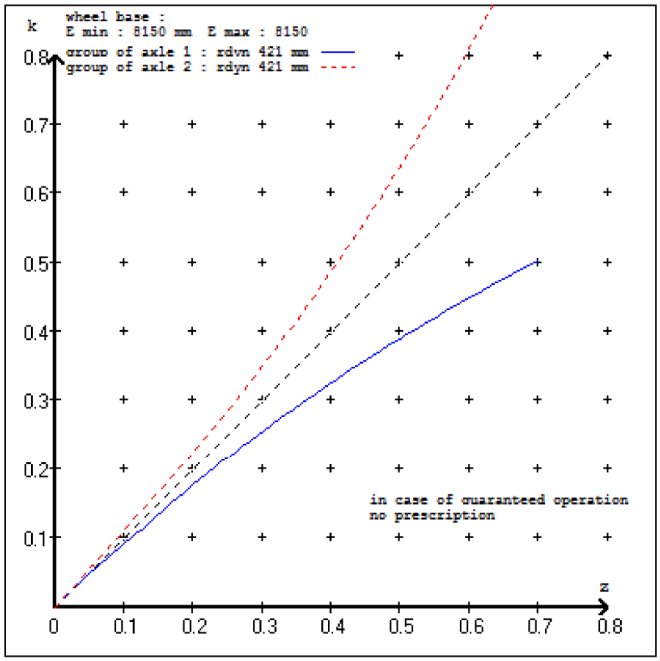
compatibility band laden



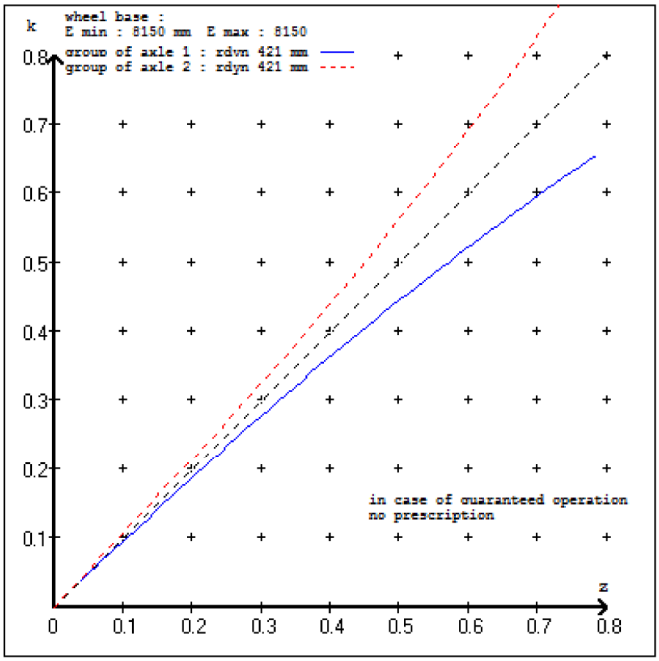
compatibility band unladen



curves of friction laden



curves of friction unladen



vehicle manufacturer: Domett T&T
trailer model : 5 axle full trailer
trailer type : 5-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
axle 5 : 2 x type/diameter T.14/24 (Meritor) lever length 69 mm

brake diagram :

valve :
971 002 ... 0 WABCO EBS emergency valve
480 207 0.. 0 WABCO EBS relay valve or 480 207 2.. 0
480 102 ... 0 WABCO EBS trailer modulator

EBS input data
==========
vehicle manufacturer: Domett T&T
trailer model : 5 axle full trailer
trailer type : 5-axle-full-trailer
brake calculation no. : GenNZ 29A

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

assignment pm / deceleration z: pm 0.6 bar z = 0.010
(laden condition) 2.0 bar z = 0.130
6.5 bar z = 0.600

control pressure pm			6,5	control pressure pm		0.6	2.0	6.5
axle	axle load unladen	bellow pr. unladen	brake pr. unladen	axle load laden	bellow pr. laden	brake pr. laden		
1	1600	to be entered by the vehicle manufact.	1.7	7000	to be entered by the vehicle manufact.	0.3	1.3	5.7
2	1600		1.7	7000		0.3	1.3	5.7
3	1300		1.4	6340		0.3	1.3	5.1
4	1300		1.4	6340		0.3	1.3	5.1
5	1300		1.4	6340		0.3	1.3	5.1

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.
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axle 1		axle 2		axle 3		axle 4		axle 5	
axle load	pcyl	axle load	pcyl	axle load	pcyl	axle load	pcyl	axle load	pcyl
1600	1.7	1600	1.7	1300	1.4	1300	1.4	1300	1.4
2100	2.1	2100	2.1	1800	1.8	1800	1.8	1800	1.8
2600	2.4	2600	2.4	2300	2.1	2300	2.1	2300	2.1
3100	2.8	3100	2.8	2800	2.5	2800	2.5	2800	2.5
3600	3.2	3600	3.2	3300	2.9	3300	2.9	3300	2.9
4100	3.6	4100	3.6	3800	3.2	3800	3.2	3800	3.2
4600	3.9	4600	3.9	4300	3.6	4300	3.6	4300	3.6
5100	4.3	5100	4.3	4800	4.0	4800	4.0	4800	4.0
7000	5.7	7000	5.7	6340	5.1	6340	5.1	6340	5.1

data sheet to ECE vehicle type-approval certificate concerning braking equipment: according to 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
axle 5 : 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 4.2.1 of appendix 2 to annex 11)

axle 1	(rdyn 421 mm)	T = 20.5 % Fe
axle 2	(rdyn 421 mm)	T = 20.5 % Fe
axle 3	(rdyn 421 mm)	T = 18.7 % Fe
axle 4	(rdyn 421 mm)	T = 18.7 % Fe
axle 5	(rdyn 421 mm)	T = 18.7 % Fe

calculated actuator stroke in mm
(item 4.3.1.1 of appendix 2 to annex 11)

axle 1	(sp = 56 mm)	s = 39 mm
axle 2	(sp = 56 mm)	s = 39 mm
axle 3	(sp = 56 mm)	s = 39 mm
axle 4	(sp = 56 mm)	s = 39 mm
axle 5	(sp = 56 mm)	s = 39 mm

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

axle1	ThA = 5487 N
axle2	ThA = 5487 N
axle3	ThA = 4886 N
axle4	ThA = 4886 N
axle5	ThA = 4886 N

calc. residual (hot) braking force in N
(item 4.3.1.4 of appendix 2 to annex 11)

axle 1	(rdyn 421 mm)	T = 32690 N
axle 2	(rdyn 421 mm)	T = 32690 N
axle 3	(rdyn 421 mm)	T = 29063 N
axle 4	(rdyn 421 mm)	T = 29063 N
axle 5	(rdyn 421 mm)	T = 29063 N

	basic test of subject trailer (E)	type III (calculated) residual (hot)braking
braking rate of the vehicle (item 4.3.2 to appendix 2 to annex 11)	0.60	0.47
required braking rate (items 1.5.3 and 1.7.2 to annex 11)		>= 0,4 and >= 0,6*E (0.36)

axle 1	(rdyn 421 mm)	T = 32690 N
axle 2	(rdyn 421 mm)	T = 32690 N
axle 3	(rdyn 421 mm)	T = 29063 N
axle 4	(rdyn 421 mm)	T = 29063 N
axle 5	(rdyn 421 mm)	T = 29063 N

	basic test of subject trailer (E)	type III (calculated) residual (hot)braking
braking rate of the vehicle (item 4.3.2 to appendix 2 to annex 11)	0.60	0.47
required braking rate (items 1.5.3 and 1.7.2 to annex 11)		>= 0,4 and >= 0,6*E (0.36)

spring parking brake

	axle 3	axle 4	axle 5
no of TRISTOP-actuators per axle line KDZ	2	2	2
TRISTOP-actuator type	T.14/24	T.14/24	T.14/24
lever length lBh in mm	69	69	69
stat. tyre radius rstat max in mm	401	401	401
at a stroke of s in mm	30	30	30
min. force of spring brake TFZ in N	7605	7605	7605
sp.brake chamber no Meritor.....	4	4	4
release pressure pLs in bar	4.8	4.8	4.8

calculation:

ratio until road	3.9674	3.9674	3.9674
iFb = lBh*Eta*C*rBt/(rBn*rstat) for rstat in mm	401	401	401
brake force of spring br. Tf in N	59654	59654	59654
Tf = (TFZ*KDZ-2*Co/lBh)*iFb			
braking rate zf laden	0.562		
zf = 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 * (1 - PR/P + zferf * h/E) / (1 - zferf / (fzul * nf/ng))

min Ef = 4936 mm for E = 8150 mm
==========
min Ef = 4936 mm for E = 8150 mm
==========

min Ef = minimum distance between front axle(s) (trailer) or support (semitrailer) 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	=	2054 mm	height of center of gravity - laden
PR	=	19020 kg	maximum bogie mass - laden
P	=	33020 kg	maximum total mass - laden
nf	=	3	no. of axle(s) with TRISTOP spring brake actuators
ng	=	3	no. of bogie axle(s)

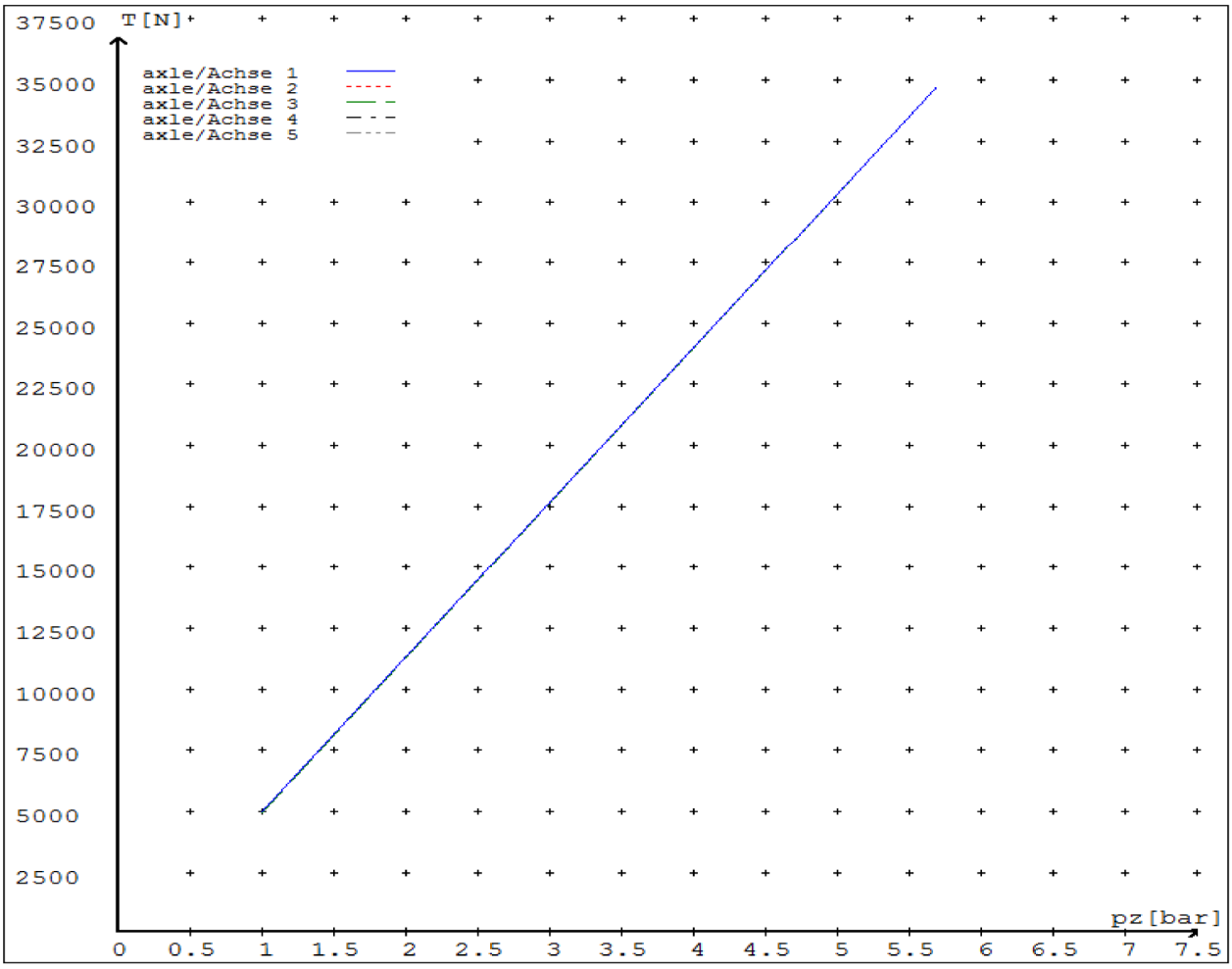
reference values

reference values for z = 50% for max rdyn: 421 mm

	pz [bar]	T [N]	T [N]
axle 1	1.0 5.7	4942 34701	
axle 2	1.0 5.7	4942 34701	
axle 3	1.0 5.1		4888 30848
axle 4	1.0 5.1		4888 30848
axle 5	1.0 5.1		4888 30848

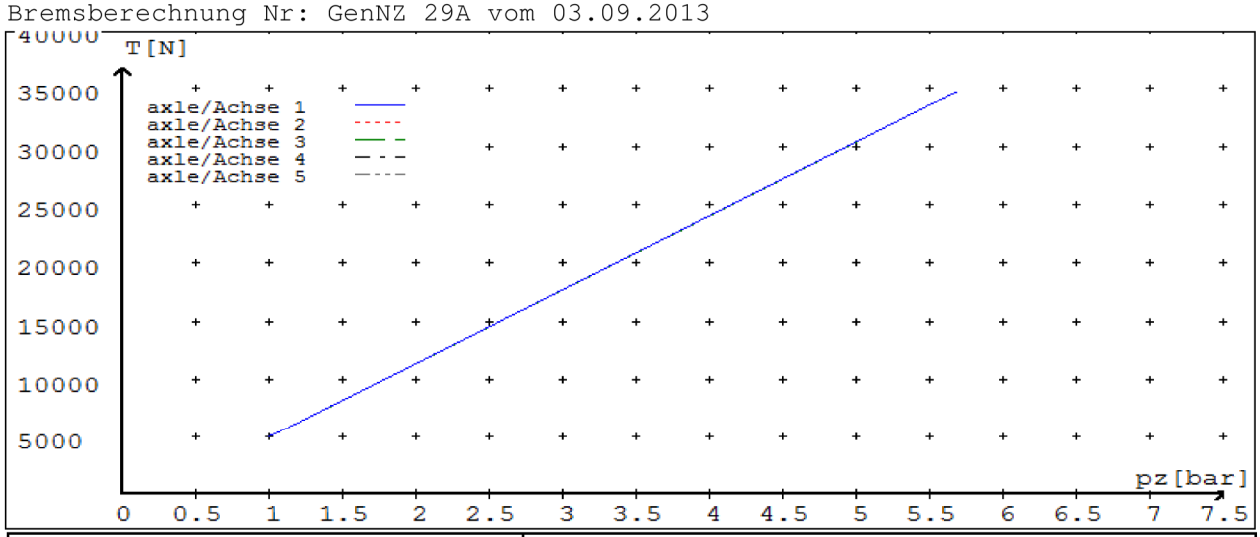
VIN - no.:

	Axle(s) / Achse(n)				
brake cylinder type (service / parking) Bremszylinder Typ (Betrieb / Fest)	14./	14./	T.14/24	T.14/24	T.14/24
Maximum stroke smax = ...mm maximaler Hub smax = ...mm	64	64	64	64	64
Lever length = ...mm Hebellänge = ...mm	69.08	69.08	69.08	69.08	69.08



Print on WABCO no. 899 200 922 4 (only possible with laser printers!)

reference values for z = 0.5 **for max rdyn: 421 mm**
Angabe der Referenzwerte für z = 0.5 für max rdyn: 421 mm
brake calculation no: GenNZ 29A date 03.09.2013
Bremsberechnung Nr: GenNZ 29A vom 03.09.2013



	Axle(s) / Achse(n)				
brake cylinder type (service / parking) Bremszylinder Typ (Betrieb / Fest)	14./	14./	T.14/24	T.14/24	T.14/24
Maximum stroke smax = ...mm maximaler Hub smax = ...mm	64	64	64	64	64
Lever length = ...mm Hebellänge = ...mm	69.08	69.08	69.08	69.08	69.08