



# Heavy Vehicle Specialist Certificate

Must be presented to a Transport Service Director, Agent, Heavy Vehicle Specialist Inspector and Inspecting Organisation

Heavy Vehicle Specialist Inspector's Name (Handwritten)

CHRIS CLARKE

ID

CJC

Vehicle Identification

VIN / Chassis Number

7A9C70045D1023180

Component Load Rating(s)

Chassis Modification

Load Anchorage

Log Bolsters

Towing Connection

✓ Brakes

SRT

Permitted Gross Mass

PSV Stability

PSV Rollover

Swept Path

HUEK

PBS

Details of Work

CARRY OUT SET UP OF TRAILER ABS SYSTEM.

Code/Standard/Reference to

HUBN232015/2 SCHED 5.

Component Load Rating(s)

22700 KG

General Drawing Number(s)

N/A.

Supporting Documents

BRAKE DESIGN CERTIFICATE - CJC 1994.

\*Special Features

N/A

Left Hand Drive (LHD) or Right Hand Drive (RHD)

N/A

or

Hub/Drumster Rating (where applicable)

### Declaration

I, the undersigned, declare that I am the Heavy Vehicle Specialist Inspector named above and I hold a current licence to practise as such, that the above mentioned vehicle complies with the relevant standards and installation, and this certificate is issued in accordance with the Land Transport Act 2002 and my Deed of Agreement, and to the best of my knowledge the information contained herein is true and correct.

Designer's ID (if not a manufacturer)

Inspector's / Designer's Signature

Inspector/Designer's Name (Print)

ID Number

Date

Number

01-09-2013

442494

Approved, Transport Service Director

Date

\* Fields marked with \* must be completed before this certificate can be issued.

System	VCS II
WABCO part number	400 500 081 0
Production date	2012-W30
ECU serial number	3180232495

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### Component

### Test result

Parameter setting	carried out
Assigned Wheel	OK
Trailer ABS warning lamp	OK
Generic IO	Not fitted
Diagnostic memory	OK
CAN interface	Not tested

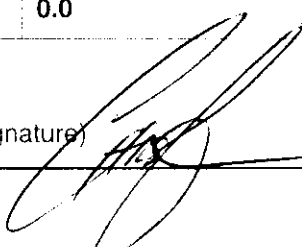
### System parameters

### Value

System configuration	4S/3M
Pole wheel tooth count sensors c-d (H-axis)	90
Tyre circumference sensors c-d (R axle)	2650 mm
Pole wheel tooth count sensors e-f (Z-axis)	90
Tyre circumference sensors d-f (A axle)	2650 mm
Installation direction of ECU	Sensor plug in driving direction
Function of the ABS warning light	On - Off
Activate CAN messages	Send/receive active
Lift axle detection	Deactivated

### Generic IO parameter settings

No data available

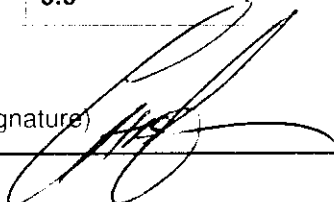
Manufacturer	Domett Trailers Ltd	Vehicle ident. no.	7A9D70015D1023180
Vehicle type	3 axle full trailer	Odometer reading	0.0
Tested by	Genese		
Date / time	2013-08-01 / 14:48:29		

System	VCS II
WABCO part number	400 500 081 0
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### Identification data

Manufacturer	Domett Trailers Ltd
Vehicle type	3 axle full trailer
Vehicle ident no.	7A9D70015D1023180
Brake calculation no.	7A9D70015D1023180
Vehicle manufacturing date	2013-W28
Start-up at (km)	0.0
Label	-

Manufacturer	Domett Trailers Ltd	Vehicle ident. no.	7A9D70015D1023180
Vehicle type	3 axle full trailer	Odometer reading	0.0
Tested by	Genese	 (Signature)	
Date / time	2013-08-01 / 14:48:29		

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

distribution: Domett Trailers  
 WABCO 0015D1023180

PLEASE READ:

This brake calculation is made under consideration of  
 -the legal prescriptions mentioned above in the version valid  
 at the time of making the program (V6.12.08.27),  
 -the functional characteristics of our products  
 as well as the data of the brake out of the test  
 approvals of the axle manufacture's 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!  
 WABCO Brake V6 12.08.27 db 02.10.2012

vehicle manufacturer: Domett Trailers  
 trailer model : 3 Axle Full Trailer  
 trailer type : 3-axle-full trailer  
 remarks : air / hydraulic / VA suspension  
 2 load sensing valve  
 ABS: WABCO VCS  
 TRISTOP 2+3: T.16/24  
 265/70 R 19,5  
 laden condition controlled!!!

axle 1 + 2 + 3 : ROR, Elsa 195 LE, 33107104 FFR.

		unladen	laden
total mass	P in kg	6000	22700
axle 1	F1 in kg	2600	8200
axle 2	F2 in kg	1700	7250
axle 3	F3 in kg	1700	7250
wheel base	E in mm	4200 - 4200	
centre of gravity height	h in mm	1360	1744

		axle 1	axle 2	axle 3
no. of combined axles		1	1	1
no. of brake chambers per axle line	FCB	2	2	2
The power output corresponds to		10 102.1	B7 119.6	B7 119.6
brake chamber manufacturer		Moritor	Moritor	Moritor
chamber size		20	T.16/24	T.16/24
lever length	LBh in mm	74	74	74
brake factor		20.26	20.26	20.26
dyn. rolling radius	rdyn min in mm	421	421	421
dyn. rolling radius	rdyn max in mm	421	421	421
threshold torque	Co Nm	6.0	6.0	6.0

calculation:

chamber pressure (rdyn min) p <sub>H</sub> at z=22,5 bar		2.9	2.1	2.1
chamber pressure (rdyn max) p <sub>H</sub> at z=22,5 bar		2.9	2.1	2.1
chamber press. (ave) p <sub>cha</sub> at p <sub>m6</sub> , 5 bar	bar	6.0	4.8	4.8
piston force TEA at p <sub>m6</sub> , 5 bar	N	4736	4736	4736
brake force (rdyn min) T <sub>lad.</sub> at p <sub>m6</sub> , 5 bar	N	33863	33863	33863
brake force (rdyn max) T <sub>lad.</sub> at p <sub>m6</sub> , 5 bar	N	33863	33863	33863
brake force within 1 % rolling friction proportion	%	31.5	31.7	31.7

braking rate  $\alpha$  laden  
 $\alpha = \frac{a_{br}}{g} = \frac{TEA}{m \cdot g}$

	rdyn min	0.449
	rdyn max	0.449

brake diagram :

maximum pressure : 3.5 bar

axle 1:

valve 1: 400 110 01.0 WABCO  
 1 way sensing valve  
 10V valve                      laden/unladen      1 bar      0.8 bar      0.8 bar

valve 2: 400 110 01.0 WABCO  
 3RD relay valve

brake cylinder: Wabtec      20HSCLD60

axle 2:

valve 1: 400 110 01.0 WABCO  
 1 way sensing valve  
 10V valve                      laden/unladen      1 bar      0.8 bar      0.8 bar

valve 2: 400 110 01.0 WABCO  
 3RD relay valve

brake cylinder: Wabtec      1624HILD64

axle 3:

valve 1: 400 110 01.0 WABCO  
 1 way sensing valve  
 10V valve                      laden/unladen      1 bar      0.8 bar      0.8 bar

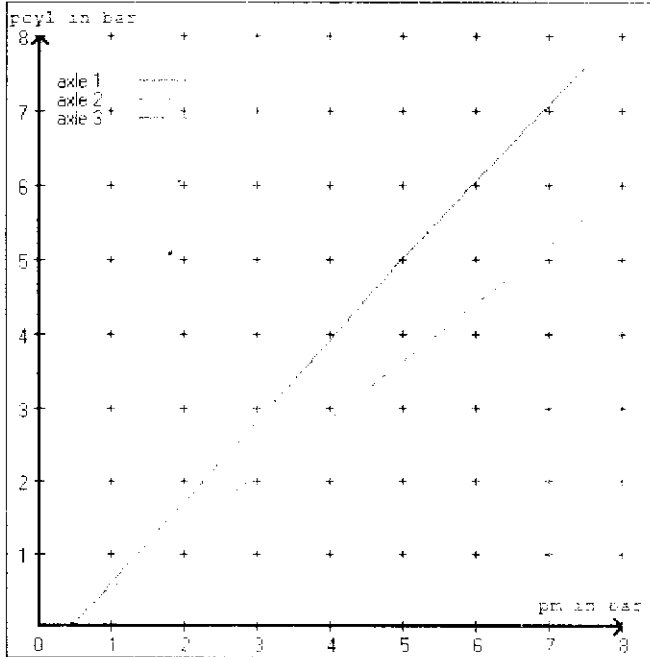
valve 2: 400 110 01.0 WABCO  
 3RD relay valve

brake cylinder: Wabtec      1624HILD64

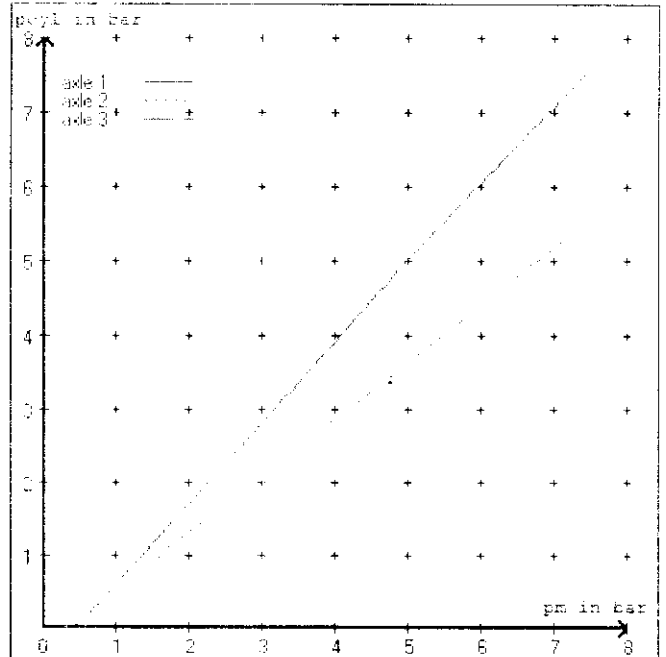
test type 111 (n111 = 0.30) for rden min : axle1 axle2 axle3  
 at pr 3.9 bar :                      pcha in bar :      3.8      2.7      2.7

test type 111 (n111 = 0.06) for rden min : axle1 axle2 axle3  
 at pr 1.8 bar :                      pcha in bar :      1.0      0.8      0.8

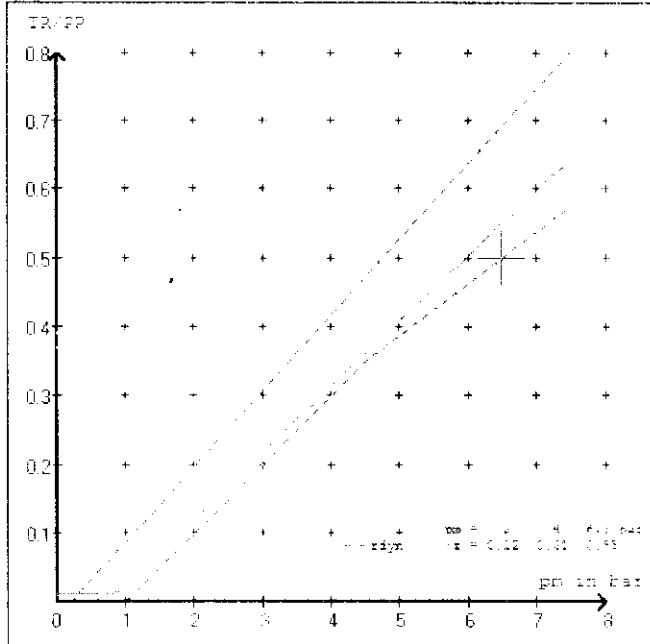
brake chamber pressure laden



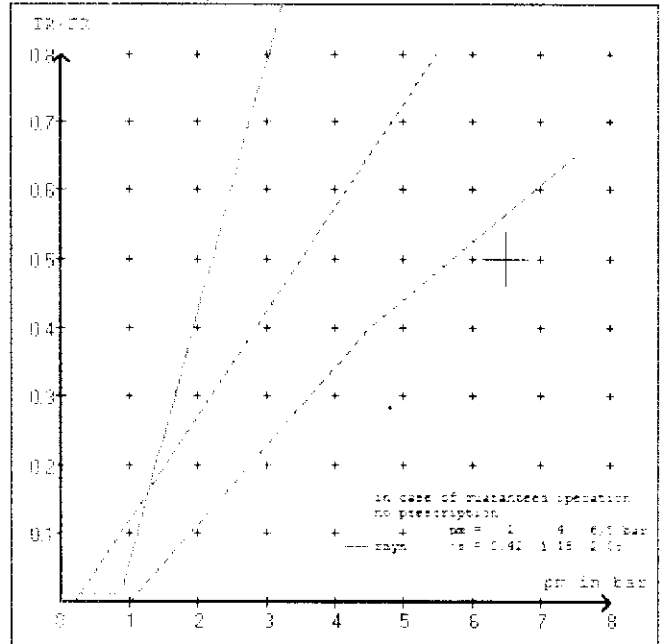
brake chamber pressure unladen



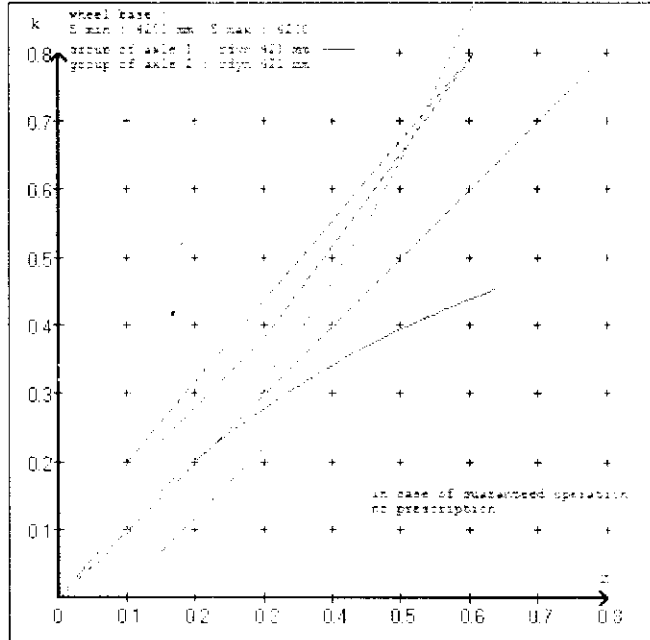
compatibility band laden



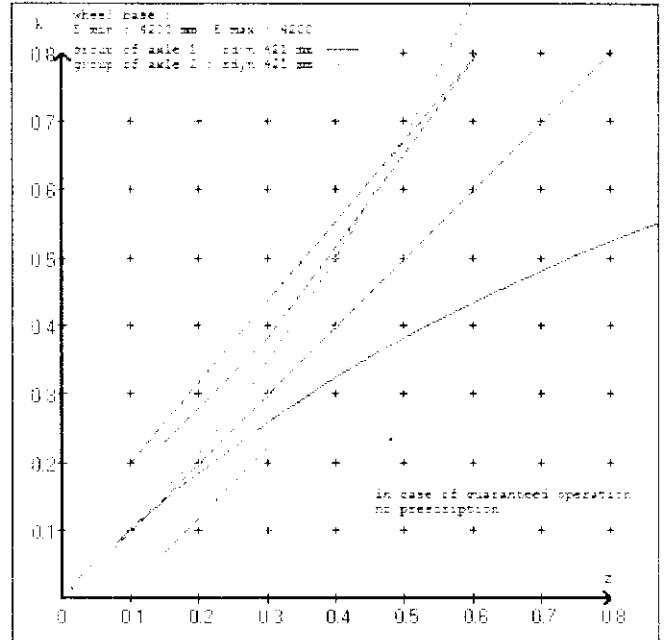
compatibility band unladen



curves of friction laden



curves of friction unladen



vehicle manufacturer: Dematt Trailers  
 trailer model : 3-Axle Full Trailer  
 trailer type : 3-axle full trailer

## brake chamber and lever length :

axle 1 : 2 x type/diameter 30. (Moritor) lever length 74 mm  
 axle 2 : 2 x type/diameter T.16/24 (Moritor) lever length 74 mm  
 axle 3 : 2 x type/diameter T.16/24 (Moritor) lever length 74 mm

## brake diagram :

valve :  
 475 713 5...0 WABCO Load sensing valve  
 472 195 03./04...0 WABCO ABS relay valve  
 400 500 3...0 WABCO ABS relay valve or 472 195 03./04...0

The values in the tables are only for the unladen and laden condition.  
 No calculations are made for any intermediate load conditions !

## axle 1:

axleload in kg	brake ch. pressure at $p_{in} = 6,5$ bar	ratio $i = \frac{p_{inLSV} = 6.5 \text{ bar}}{p_{outLSV}}$
4200	4.5	0.93

## axle 2:

axleload in kg	brake ch. pressure at $p_{in} = 6,5$ bar	ratio $i = \frac{p_{inLSV} = 6.5 \text{ bar}}{p_{outLSV}}$
4250	4.8	1.33

## axle 3:

axleload in kg	brake ch. pressure at $p_{in} = 6,5$ bar	ratio $i = \frac{p_{inLSV} = 6.5 \text{ bar}}{p_{outLSV}}$
4250	4.8	1.33

data sheet to ECE vehicle type-approval certificate concerning braking equipment: according to ECE R13 annex 11

axle 1 : reference axle: ROR	.../.../.../K brake lining: ROR 8616 AF
test report : 36137104 ECE	date : 30.10.2006
axle 2 : reference axle: ROR	.../.../.../K brake lining: ROR 8616 AF
test report : 36137104 ECE	date : 30.10.2006
axle 3 : reference axle: ROR	.../.../.../K brake lining: ROR 8616 AF
test report : 36137104 ECE	date : 30.10.2006

calc. verif. of residual (hot) braking force type III  
(item 4.3.1 of appendix 2 to annex 11)

axle 1	(rdyn 421 mm)	T = 11,8 % F <sub>0</sub>
axle 2	(rdyn 421 mm)	T = 11,0 % F <sub>0</sub>
axle 3	(rdyn 421 mm)	T = 11,0 % F <sub>0</sub>

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

axle 1	(s <sub>0</sub> = 58 mm)	s = 40 mm
axle 2	(s <sub>0</sub> = 57 mm)	s = 40 mm
axle 3	(s <sub>0</sub> = 57 mm)	s = 40 mm

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

axle1	THA = 1471 N
axle2	THA = 1438 N
axle3	THA = 1438 N

calc. residual (hot) braking force in N  
(item 4.3.1.1 of appendix 2 to annex 11)

axle 1	(rdyn 421 mm)	F = 36349 N
axle 2	(rdyn 421 mm)	F = 36226 N
axle 3	(rdyn 421 mm)	F = 36226 N

basic test	type III
of subject	(calculated)
trailer (E)	residual
	(hot)braking

braking rate of the vehicle  
(item 4.3.2 of appendix 2 to annex 11) 0,59 0,59

required braking rate  
(items 1.5.3 and 1.7.2 to annex 11) >= 0,4 and >= 0,65 (0,33)

axle 1	(rdyn 421 mm)	F = 36349 N
axle 2	(rdyn 421 mm)	F = 36226 N
axle 3	(rdyn 421 mm)	F = 36226 N

basic test	type III
of subject	(calculated)
trailer (E)	residual
	(hot)braking

braking rate of the vehicle  
(item 4.3.2 of appendix 2 to annex 11) 0,59 0,59

required braking rate  
(items 1.5.3 and 1.7.2 to annex 11) >= 0,4 and >= 0,65 (0,33)



spring parking brake

	<u>axle 1</u>	<u>axle 2</u>
no of TRISTOP actuators per axle line REF	2	2
TRISTOP actuator type	T.18014	T.18014
lever length IBh in mm	74	74
stat. tyre radius rstat max in mm	311	311
at a stroke of s in mm	70	70
min. force of spring brake TFP in N	7805	7805
sp.brake chamber no Meritor.....	4	4
release pressure pls in bar	4.8	4.9

calculation:

ratio until load	1.7376	3.7398
$iFb = IBh \cdot E \cdot C \cdot B / (r \cdot k \cdot rstat)$		
for rstat in mm	311	311
brake force at spring br. Tf in N	8000	8000
$Tf = (TFP \cdot REF \cdot E \cdot C / IBh) \cdot iFb$		
braking rate zf laden	0.16	
$zf = sum(Tf) / P \cdot 0,01$		

Test of the frictionless connection required by the parking brake

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

$$\min Ef = E \cdot (1 - FR/E + zferf \cdot h/E) / (1 - zferf / (fzul \cdot uf/ng))$$

min Ef = 2310 mm for E = 4200 mm

min Ef = 2200 mm for E = 4200 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 = 0,30 maximum permissible frictionless connection required
- zferf = 0,16 maximum required braking ratio of the parking brake
- h = 1400 mm height of center of gravity - laden
- FR = 11000 kg maximum bogie mass - laden
- P = 32000 kg maximum total mass - laden
- nf = no. of axle(s) with TRISTOP spring brake actuators
- ng = no. of bogie axle(s)

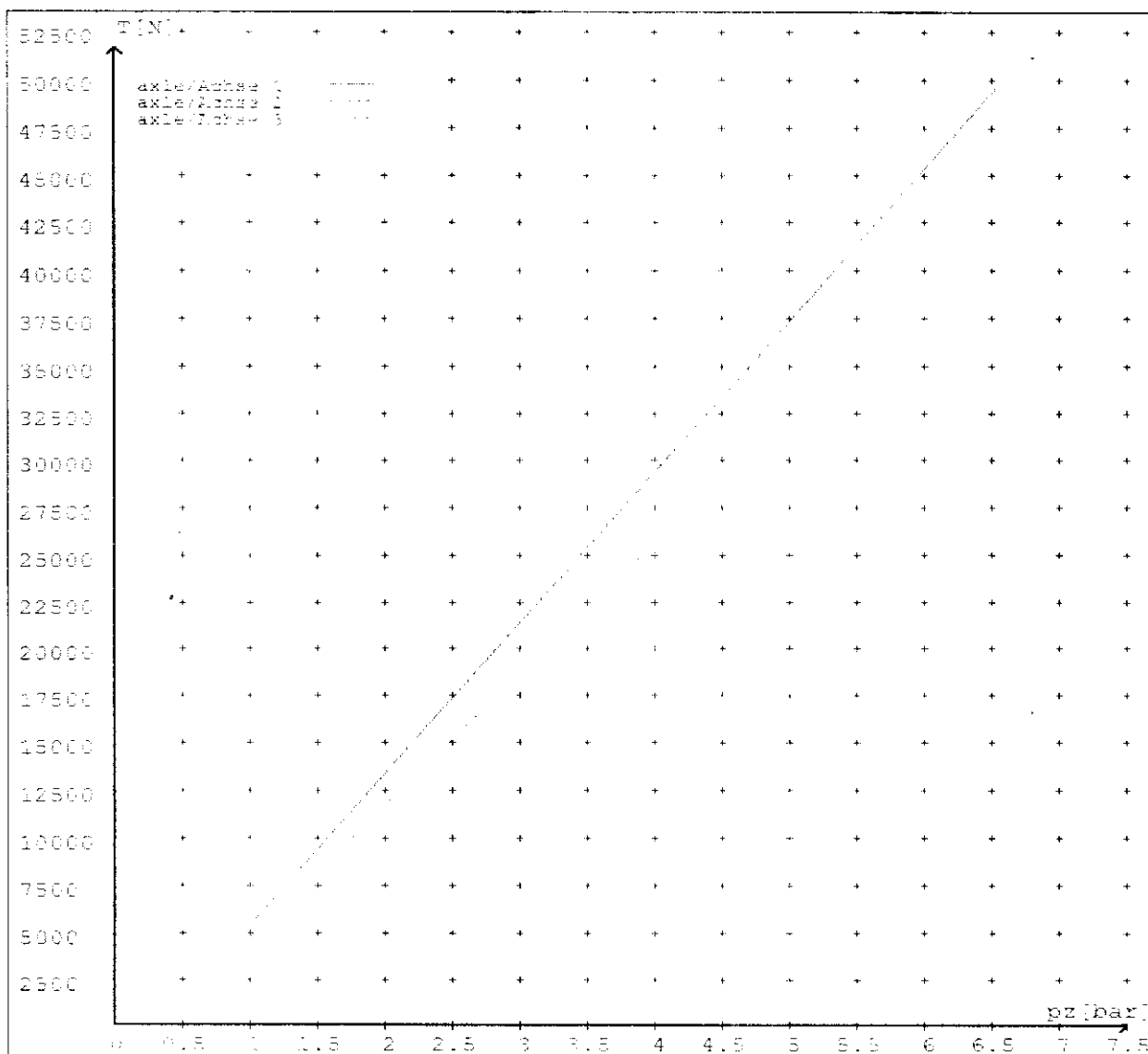
**reference values**

reference values for  $\mu = 50\%$  for max. dyn: 40%  $\mu$

	pz [bar]	T [N]	T [N]
axle 1	1.0	5318	
	1.5	49643	
axle 2	1.0		1676
	1.8		30841
axle 3	1.0		1676
	1.8		30841

VIN - no.:

	Axle (n) / Achse (n)				
Brake cylinder type (Service / parking)	30.7	30.7/30.7	30.16.34	/	/
Brake cylinder type (Service / Post)					
Maximum piston stroke = 11.1mm maximaler Hub = 11.1mm	65	65	65		
Lever length = 11.1mm Hebelhöhe = 11.1mm	74	74	74		



reference values for z = 0.5

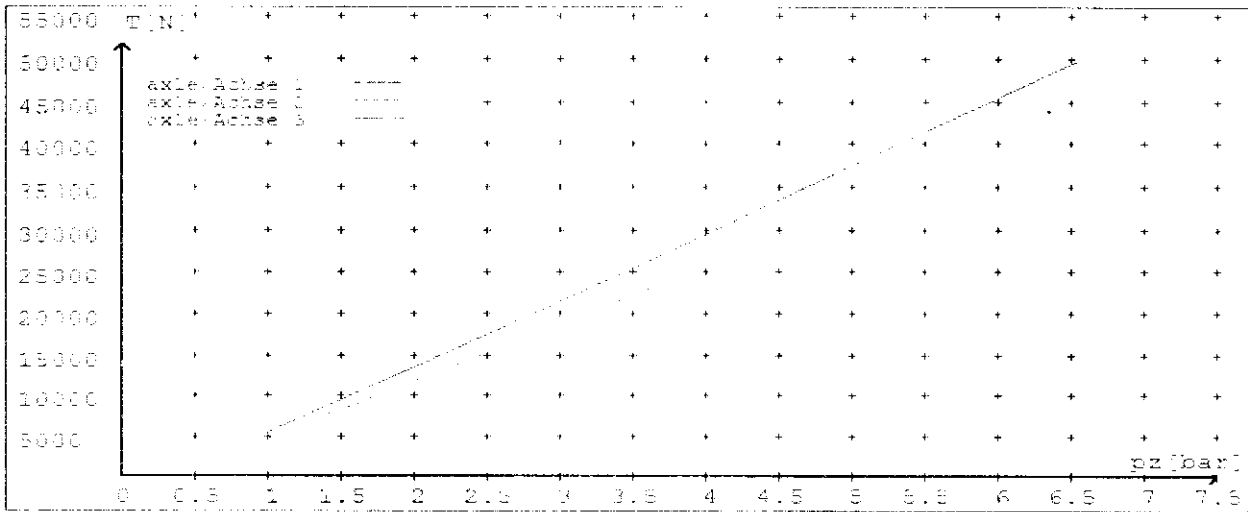
for max rdyn: 421 mm

Angabe der Referenzwerte für z = 0.5

für max rdyn: 421 mm

brake calculation no: GenNZ 21A date 01.08.2013

Bremsberechnung Nr: GenNZ 21A vom 01.08.2013



	Achse (s) / Achse (n)				
max. zulässige Bremskraft (parking) max. zulässige Bremskraft (normal)	21.7	21.7/224	21.6/221	/	/
Maximaler zulässiger Bremsdruck	7.5	7.4	7.4		
zulässige Bremsleistung Bremsleistung	74	74	74		