









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

distribution: DOMETTS  
 2015, 5A, SAF, TANKER  
 7A9E10015F1023368  
 LC150704  
 CJC LT400 518662

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 (V6.14.04.20).  
 -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 V6.14.04.20 db 08.07.2014

vehicle manufacturer: DOMETTS  
 trailer model : 2015 5A TANKER, E1001  
 trailer type : 5-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 + 5 : SAF, SBW 1937, TDB 0749 ECE,

		<u>unladen</u>	<u>laden</u>
total mass	P in kg	6300	32500
axle 1	P1 in kg	1500	7250
axle 2	P2 in kg	1500	7250
axle 3	P3 in kg	1100	6000
axle 4	P4 in kg	1100	6000
axle 5	P5 in kg	1100	6000
wheel base	E in mm	5695 - 5695	
centre of gravity height	h in mm	1000	1582

	<u>axle 1</u>	<u>axle 2</u>	<u>axle 3</u>	<u>axle 4</u>	<u>axle 5</u>
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 brake chamber manufacturer	BZ 122.1 Meritor	BZ 122.1 Meritor	BZ 119.6 Meritor	BZ 119.6 Meritor	BZ 122.1 Meritor
chamber size	18.	18.	T.14/24	T.14/24	14.
lever length	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
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	2.2	2.2	2.0	2.0	2.0	
chamber pressure(rdyn max)pH at z=22,5%bar	2.2	2.2	2.0	2.0	2.0	
chamber press.(servo)pcha at pm6,5bar bar	5.8	5.8	4.5	4.5	4.5	
piston force	ThA at pm6,5bar N	6172	6172	4285	4285	4285
brake force(rdyn min)T lad. at pm6,5bar N	46701	46701	32317	32317	32317	
brake force(rdyn max)T lad. at pm6,5bar N	46701	46701	32317	32317	32317	
brake force within 1 % rolling friction proportion	%	21.2	21.2	19.2	19.2	19.2

braking rate z laden 0.597 for rdyn min  
 z = sum (TR)/PRmax 0.597 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: 480 207 0.. 0 WABCO or 480 207 2.. 0  
EBS relay valve

brake cylinder: Meritor 18HSCLD64

axle 2:

valve 1: 480 207 0.. 0 WABCO or 480 207 2.. 0  
EBS relay valve

brake cylinder: Meritor 18HSCLD64

axle 3:

valve 1: 480 102 0.. 0 WABCO  
EBS trailer modulator

brake cylinder: Meritor 1424HTLD64

axle 4:

valve 1: 480 102 0.. 0 WABCO  
EBS trailer modulator

brake cylinder: Meritor 1424HTLD64

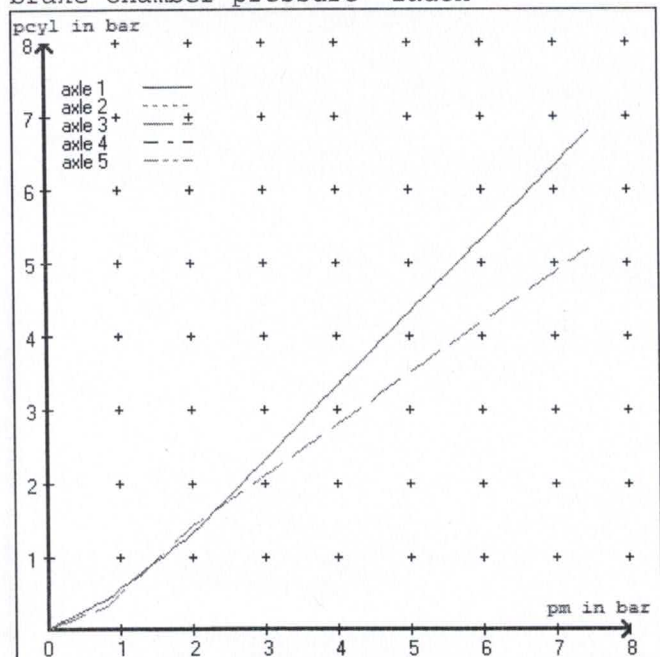
axle 5:

valve 1: 480 102 0.. 0 WABCO  
EBS trailer modulator

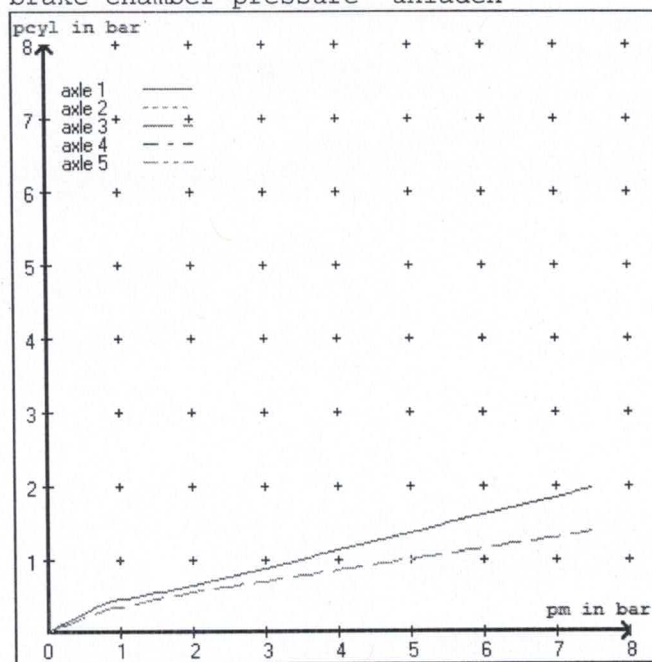
brake cylinder: Meritor 14HSCLD64

test type III (zIII = 0.30)	for rdyn min :	axle1	axle2	axle3	axle4	axle5	
at pm 3.6 bar =>	pcha in bar :	2.9	2.9	2.5	2.5	2.5	
test type III (zIII = 0.06)	for rdyn min :	axle1	axle2	axle3	axle4	axle5	
at pm 1.3 bar =>	pcha in bar :	0.8	0.8	0.7	0.7	0.7	

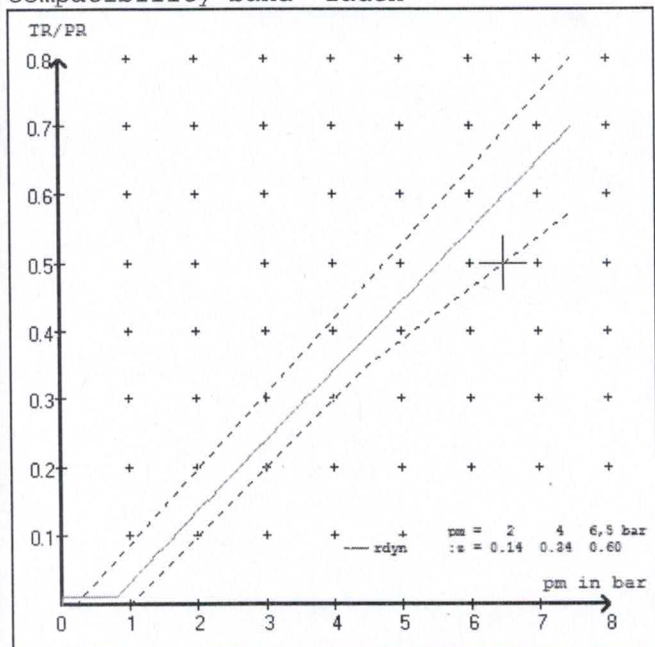
brake chamber pressure laden



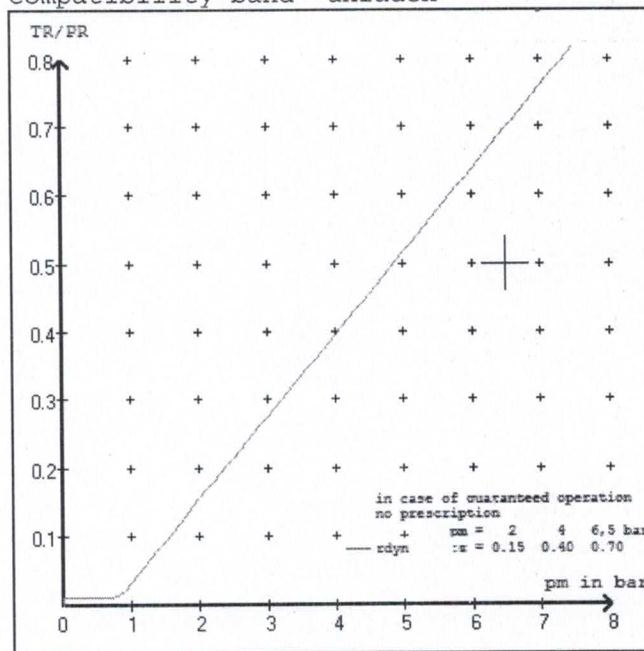
brake chamber pressure unladen



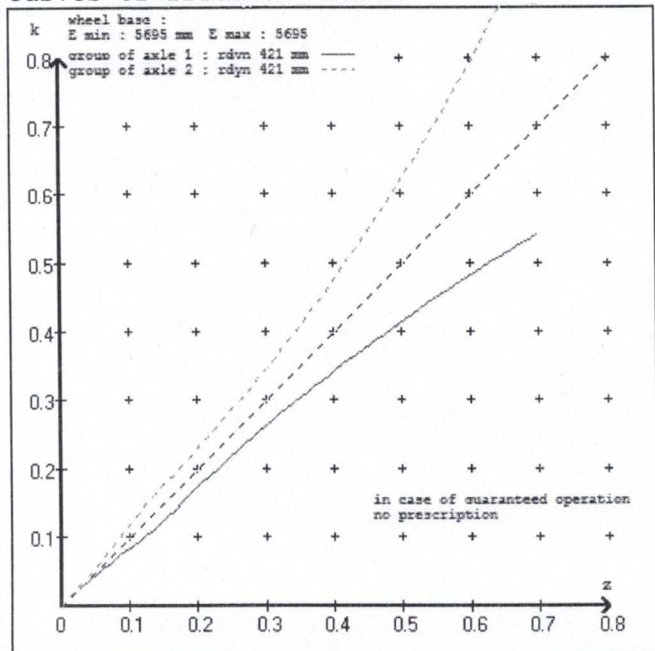
compatibility band laden



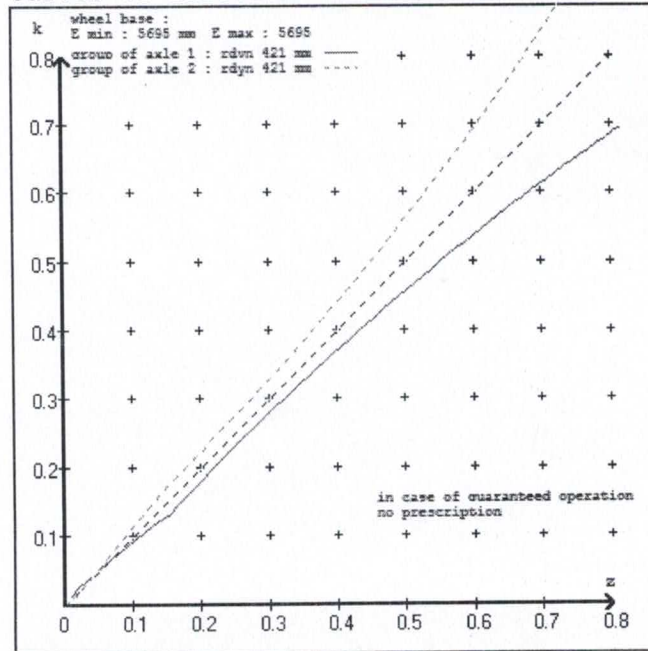
compatibility band unladen



curves of friction laden



curves of friction unladen





vehicle manufacturer: DOMETTS  
 trailer model : 2015 5A TANKER, E1001  
 trailer type : 5-axle-full-trailer

brake chamber and lever length :

axle 1 : 2 x type/diameter 18. (Meritor) lever length 69 mm  
 axle 2 : 2 x type/diameter 18. (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 14. (Meritor) lever length 69 mm

brake diagram :

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

EBS input data

=====

vehicle manufacturer: DOMETTS  
 trailer model : 2015 5A TANKER, E1001  
 trailer type : 5-axle-full-trailer  
 brake calculation no. : TP 2015A

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 = 0.010  
 (laden condition) 2.0 bar z = 0.134  
 6.5 bar z = 0.600

control pressure pm			6,5	control pressure pm			0.8	2.0	6.5
axle	axle load unladen	bellow pr. unladen	brake pr. unladen	axle load laden	bellow pr. laden	brake pr. laden			
1	1500	to be	1.7	7250	to be	0.4	1.3	5.8	
2	1500	entered by the vehicle manufact.	1.7	7250	entered by the vehicle manufact.	0.4	1.3	5.8	
3	1100		1.2	6000		0.3	1.4	4.5	
4	1100		1.2	6000		0.3	1.4	4.5	
5	1100		1.2	6000		0.3	1.4	4.5	

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
1500	1.7	1500	1.7	1100	1.2	1100	1.2	1100	1.2
2000	2.1	2000	2.1	1600	1.5	1600	1.5	1600	1.5
2500	2.4	2500	2.4	2100	1.9	2100	1.9	2100	1.9
3000	2.8	3000	2.8	2600	2.2	2600	2.2	2600	2.2
3500	3.1	3500	3.1	3100	2.5	3100	2.5	3100	2.5
4000	3.5	4000	3.5	3600	2.9	3600	2.9	3600	2.9
4500	3.8	4500	3.8	4100	3.2	4100	3.2	4100	3.2
5000	4.2	5000	4.2	4600	3.6	4600	3.6	4600	3.6
7250	5.8	7250	5.8	6000	4.5	6000	4.5	6000	4.5

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 : 20130930 30.09.2013
axle 2 : reference axle: SAF	SBW 1937	brake lining: Jurid 539
test report :	TDB 0749 ECE	date : 20130930 30.09.2013
axle 3 : reference axle: SAF	SBW 1937	brake lining: Jurid 539
test report :	TDB 0749 ECE	date : 20130930 30.09.2013
axle 4 : reference axle: SAF	SBW 1937	brake lining: Jurid 539
test report :	TDB 0749 ECE	date : 20130930 30.09.2013
axle 5 : reference axle: SAF	SBW 1937	brake lining: Jurid 539
test report :	TDB 0749 ECE	date : 20130930 30.09.2013

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 = 22.0 % Fe
axle 2	(rdyn 421 mm)	T = 22.0 % Fe
axle 3	(rdyn 421 mm)	T = 17.2 % Fe
axle 4	(rdyn 421 mm)	T = 17.2 % Fe
axle 5	(rdyn 421 mm)	T = 17.2 % Fe

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

axle 1	(sp = 58 mm)	s = 39 mm
axle 2	(sp = 58 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 = 6172 N
axle2	ThA = 6172 N
axle3	ThA = 4285 N
axle4	ThA = 4285 N
axle5	ThA = 4285 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 = 36490 N
axle 2	(rdyn 421 mm)	T = 36490 N
axle 3	(rdyn 421 mm)	T = 25301 N
axle 4	(rdyn 421 mm)	T = 25301 N
axle 5	(rdyn 421 mm)	T = 25301 N

	basic test	type III
	of subject	(calculated)
braking rate of the vehicle	trailer (E)	residual
(item 4.3.2 to appendix 2 to annex 11)	0.60	(hot)braking
		0.47

required braking rate	>= 0,4 and
(items 1.5.3 and 1.7.2 to annex 11)	>= 0,6*E (0.36)

axle 1	(rdyn 421 mm)	T = 36490 N
axle 2	(rdyn 421 mm)	T = 36490 N
axle 3	(rdyn 421 mm)	T = 25301 N
axle 4	(rdyn 421 mm)	T = 25301 N
axle 5	(rdyn 421 mm)	T = 25301 N

	basic test	type III
	of subject	(calculated)
braking rate of the vehicle	trailer (E)	residual
(item 4.3.2 to appendix 2 to annex 11)	0.60	(hot)braking
		0.47

required braking rate	>= 0,4 and
(items 1.5.3 and 1.7.2 to annex 11)	>= 0,6*E (0.36)



spring parking brake

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

calculation:

ratio until road	3.9674	3.9674
$iFb = lBh * \eta * C * rBt / (rBn * rstat)$ for rstat in mm	401	401
brake force of spring br. Tf in N $Tf = (TFZ * KDZ - 2 * Co / lBh) * iFb$	59654	59654
braking rate <span style="float: right;">zf laden</span>	0.384	
$zf = \text{sum}(Tf) / P + 0,01$		

Test of the frictional connection required by the parking brake

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

$$\text{min Ef} = E * (1 - PR/P + zferf * h/E) / (1 - zferf / (fzul * nf/ng))$$

min Ef = 4265 mm for E = 5695 mm  
 =====  
 min Ef = 4265 mm for E = 5695 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 = 1582 mm height of center of gravity - laden  
 PR = 18000 kg maximum bogie mass - laden  
 P = 32500 kg maximum total mass - laden  
 nf = 2 no. of axle(s) with TRISTOP spring brake actuators  
 ng = 3 no. of bogie axle(s)

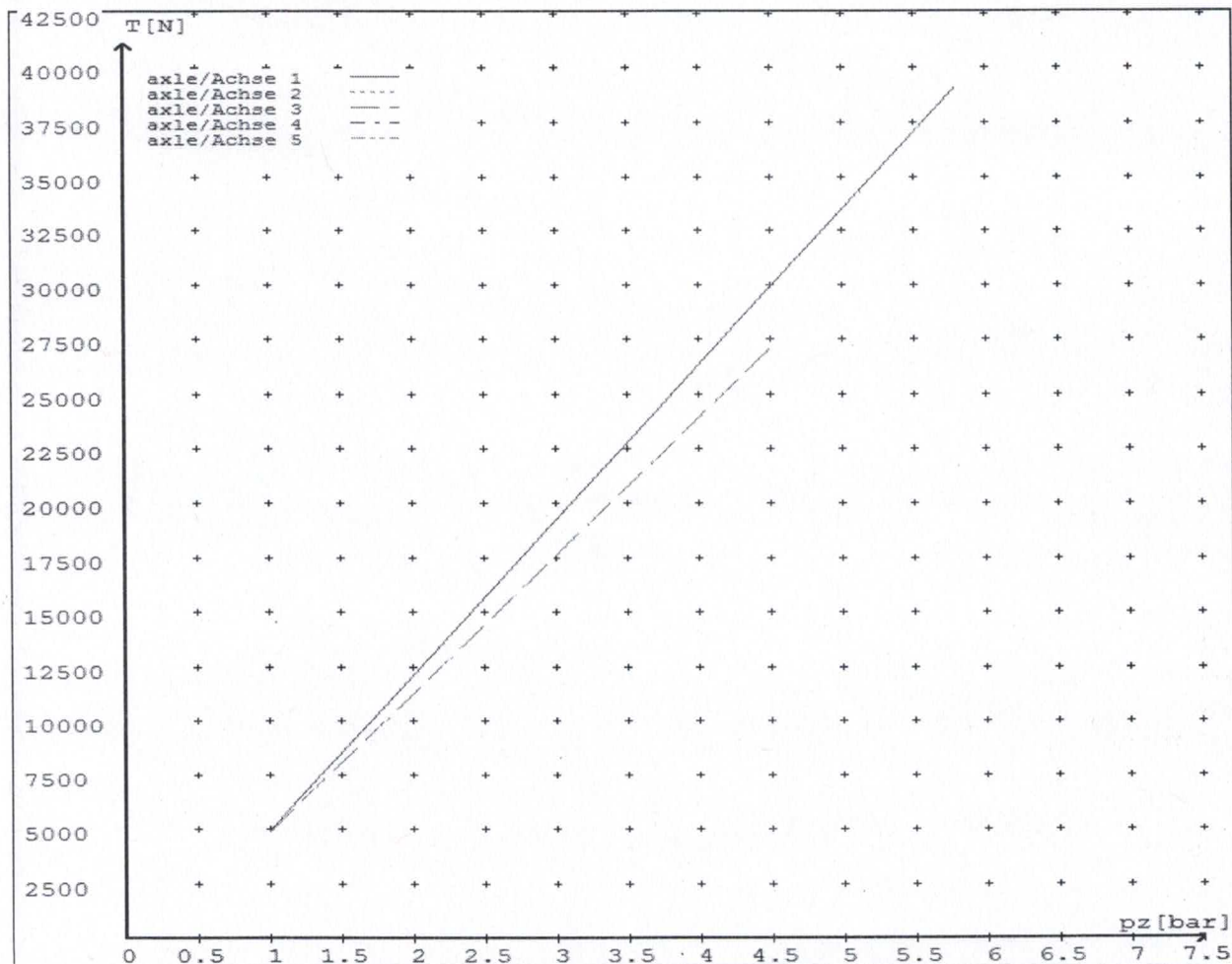
reference values

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

	pz [bar]	T [N]	T [N]
axle 1	1.0	4932	
	5.8	39113	
axle 2	1.0	4932	
	5.8	39113	
axle 3	1.0		4868
	4.5		27066
axle 4	1.0		4868
	4.5		27066
axle 5	1.0		4868
	4.5		27066

VIN - no.:

	Axle(s) / Achse(n)				
brake cylinder type (service / parking) Bremszylinder Typ (Betrieb / Fest)	18./	18./	T.14/24	T.14/24	14./
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





reference values for  $z = 0.5$

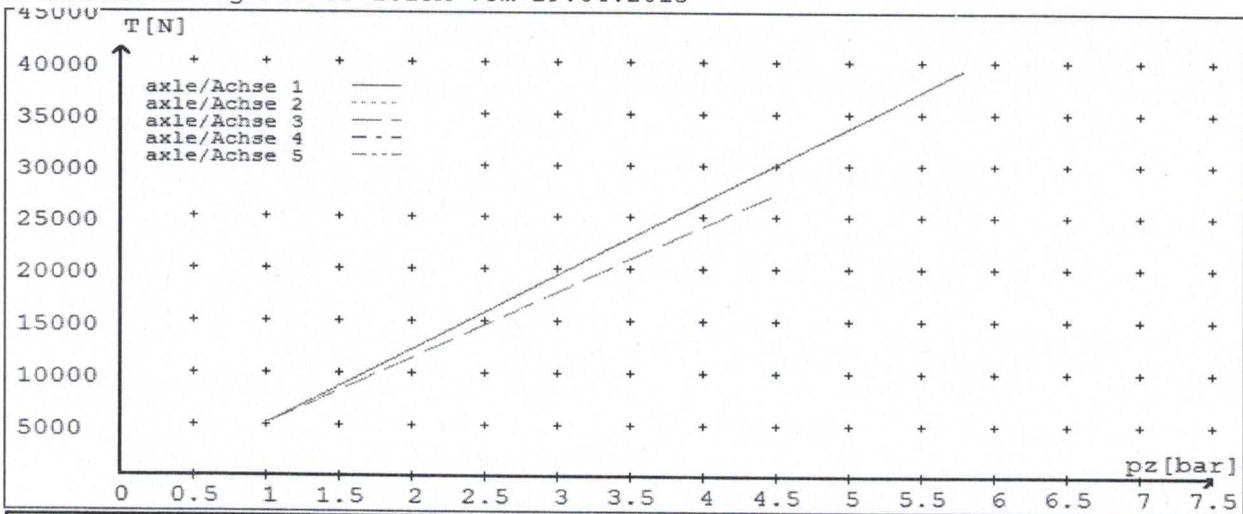
Angabe der Referenzwerte für  $z = 0.5$

for max rdyn: 421 mm

für max rdyn: 421 mm

brake calculation no: TP 2015A date 19.04.2015

Bremsberechnung Nr: TP 2015A vom 19.04.2015



	Axle (s) / Achse (n)				
brake cylinder type (service / parking) Bremszylinder Typ (Betrieb / Fest)	18./	18./	T.14/24	T.14/24	14./
Maximum stroke $s_{max} = \dots$ mm maximaler Hub $s_{max} = \dots$ mm	64	64	64	64	64
Lever length = $\dots$ mm Hebellänge = $\dots$ mm	69.08	69.08	69.08	69.08	69.08

**NATIONAL OFFICE**

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Exemption: HMRE15/043

**EXEMPTION FROM SPECIFIED REQUIREMENTS OF LAND TRANSPORT RULE:  
Heavy Vehicles 2004 and Vehicle Dimensions and Mass 2002**

Pursuant to Section 166(1) of the Land Transport Act 1998, and pursuant to the powers delegated to me, I Jackie Hartley, Administrator (Assessments) hereby exempt the motor vehicle specified in Schedule 1 hereto from the section of Land Transport Rule: Heavy Vehicles 2004 and Vehicle Dimensions and Mass 2002 listed in Schedule 2, subject to the conditions specified in Schedule 3.

**SCHEDULE 1:**

Make/Model: **Domett Truck & Trailer, 5 Axle Tanker**  
VIN/CHASSIS: **7A9E10015F1023368**

**SCHEDULE 2: - Exempted Requirement**

Heavy Vehicles 2004

- Clause 3.5(2)

Vehicle Dimensions and Mass 2002

- Clause 4.2(7)

**SCHEDULE 3: - Conditions of this exemption:**

- 1) The Wabco OptiTurn function of the TEBS-E system is to be activated.
- 2) The vehicle must not be modified in any way while operating under this exemption.
- 3) This original exemption must be kept by Gough Transpecs.
- 4) A copy of this exemption including the OptiTurn function (printed on a silver WABCO Sticker) must be affixed to the exempted vehicle.
- 5) The sticker in 4) must be legible and include all printed areas of this original exemption letter.
- 6) This exemption can be revoked at any time in writing by the NZ Transport Agency.

Signed at Wellington this 5th day of March 2015.



Jackie Hartley  
Administrator (Assessments)



**HVBR WORKSHEET**  
(PROCEDURE & COMPLIANCE DOCUMENTATION SHEET)

CERTIFICATE No. LC150704

CUSTOMER NAME

DOMETT TRAILERS

CUSTOMER ORDER No.

DATE RECEIVED

20.07.15

VEHICLE TYPE

5 AXLE FULL TRAILER

REG No.

CHASSIS No.

7A9E10015F1023368

**BRIEF SPECIFICATION AS CERTIFIED TO HVBR**

**BRAKE CHAMBERS:**

<u>Ax #</u>	<u>Make/model</u>	<u>Max stroke</u>	<u>Lever length</u>
1,2:	TSE/18HSCLD65	65 mm	69 mm
3&4:	TSE/1416HTLD64	64 mm	69 mm
5:	TSE/14HSCLD64	64 mm	69 mm

**BRAKE VALVES:**      **Ratio Valve Setting:**      **EBS CONTROL**  
   **Test Points:**      3 4 5 7

**FRICITION LINING:**                      OEM                      Aftermarket  
   (All) Lining Brand      JURID 539

EBS CONTROL: IF SPECIAL CONDITIONS APPLY – SEE INSTRUCTION ON LT400

VALVES: AS PER BRAKE CALCULATION TP 2015A & SO1550738

TYRE SIZE: 265 70 R 19.5

**NOTES**

PACKING SLIP NO.

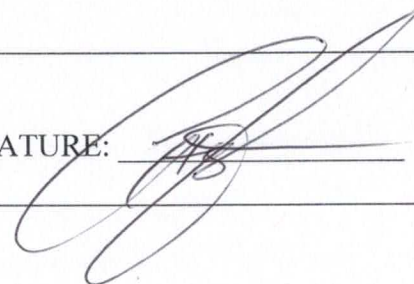
PROCESS TIME:

1

BRAKE CALC #TP2015A – THE MERITOR CHAMBERS ARE THE TSE VARIANT.

COMPLETION DATE : 20<sup>th</sup> June 2015

SIGNATURE:



## Statement of Compliance with the New Zealand Heavy Brake Rule

Documentation required supporting Statements of Compliance with the New Zealand Heavy Brake Rule, to be made available to the Statutory Authority on request, must include all calculations and test reports.

### Confirmation of compliance

I confirm that the vehicle identified on page 1 of this Statement of Compliance complies with all relevant requirements of the current New Zealand Heavy Vehicle Brake Rule 32015/3, Schedule 5.

Date: 20<sup>th</sup> June 2015

Signed: 

### Certifier's identification

Name: C J Clarke

Phone (bus): (09) 980 7300

Fax (bus): (09) 980 7306

Postal address: Transport Specialties, Cnr Kerrs & Ash Roads

Wiri, Auckland, PO Box 98 971 Manukau City 2241

Position: CJC

### Confirmation of continued compliance of modification

I confirm the brake system of the vehicle identified on page 1 of this Statement of Compliance as modified by myself, continues to comply with all the relevant requirements of the current New Zealand Heavy Vehicle Brake Rule 32015/3, Schedule 5.

Date: \_\_\_\_\_

Signed: \_\_\_\_\_

Certifier's identification: CJC

Name:

Phone (bus): (09) 980 7300

Fax (bus): (09) 980 7306

Postal address: Transport Specialties Ltd

Cnr Kerrs & Ash Roads, Wiri, Auckland

PO Box 98 971, Manukau City 2241