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 or Manufacturing Inspecting Organisation's Name *(PRINT IN CAPS)*: CHRIS CLARKE

ID: CJC

Vehicle Registration*:

VIN/Chassis Number: 7A9E1C04A9E102331D

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 TO THE NZ HEAVY VEHICLE BRAKE RULE.

ROLL STABILITY FUNCTION ACTIVATED

Code/Standard/Rule Certified to: HVBR 2015/3 SCHED 5

Component Load Rating(s): 32500KG

General Drawing Number(s): N/A

Supporting Documents:

BRAKE DESIGN CERTIFICATE - 9JC2750

OPITURN EXEMPTION

Special Conditions*:

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

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 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 Appointment. To the best of my knowledge the information contained in the Certificate is true and correct.

Designer's ID *(if different from inspector below)*:

Inspector's Signature:

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

ID Number:

Date: 05.11.2014

Number: 487900

CoF Vehicle Inspector ID:

CoF Vehicle Inspector Signature:

Date:

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

FORKLIFTS 22
#4300

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

distribution: DOMETT T&T
7A9E10019E1023310
CJC2750
OPTI: HMRE14/325

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 (V6.13.06.12).
-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 V6.13.06.12 db 12.06.2013

vehicle manufacturer: DOMETT T&T
trailer model : 5AFT TANKER
trailer type : 5-axle-full-trailer
remarks : air / hydraulic / VA suspension
WABCO TRAILER - EBS E
TRISTOP 3+4: T.14/16
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	6600	32500
axle 1	P1 in kg	1500	7250
axle 2	P2 in kg	1500	7250
axle 3	P3 in kg	1200	6000
axle 4	P4 in kg	1200	6000
axle 5	P5 in kg	1200	6000
wheel base	E in mm	5695 - 5695	
centre of gravity height	h in mm	1000	1577

		axle 1	axle 2	axle 3	axle 4	axle 5
no. of combined axles		11111				
no. of brake chambers per axle line	KDZ	22222				
The power output corresponds to		BZ 122.1	BZ 122.1	BZ 119.6	BZ 119.6	BZ 122.1
brake chamber manufacturer		Meritor	Meritor	Meritor	Meritor	Meritor
chamber size		18.	18.	T.14/16	T.14/16	14.
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	2.0	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	5.5	5.5	4.5	4.5	4.5
piston force ThA at pm6,5bar	N	5835	5835	4285	4285	4285
brake force(rdyn min)T lad. at pm6,5bar	N	44151	44151	32317	32317	32317
brake force(rdyn max)T lad. at pm6,5bar	N	44151	44151	32317	32317	32317
brake force within 1 % rolling friction proportion	%	21.2	21.2	19.2	19.2	19.2

braking rate z laden	0.581	for rdyn min
z = sum (TR)/PRmax	0.581	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 1416HTLD64

axle 4:
valve 1: 480 102 0.. 0 WABCO
EBS trailer modulator

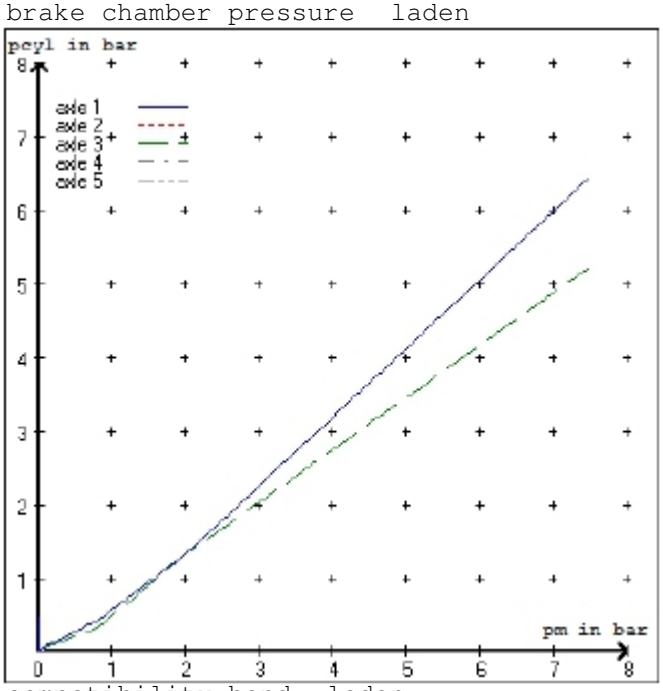
brake cylinder: Meritor 1416HTLD64

axle 5:
valve 1: 480 102 0.. 0 WABCO
EBS trailer modulator

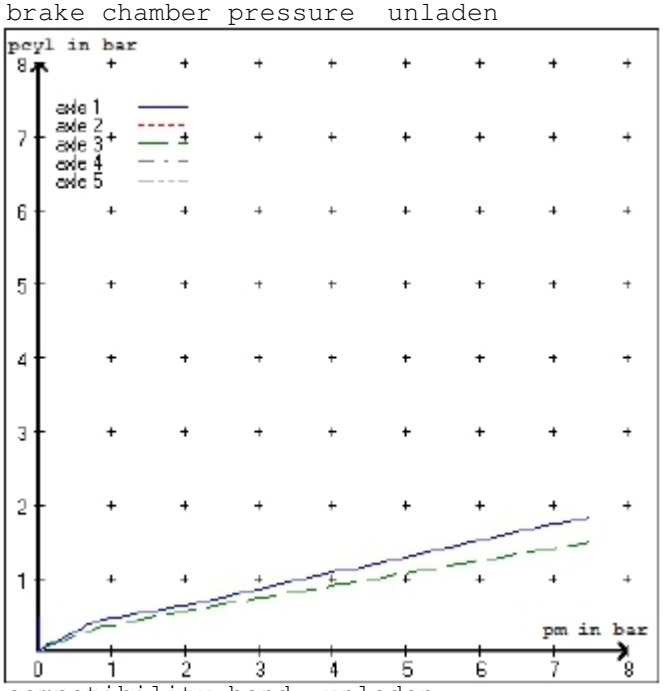
brake cylinder: Meritor 14HSCLD64

test type III (zIII = 0.30)	for rdyn min :	axle1	axle2	axle3	axle4	axle5
at pm 3.7 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

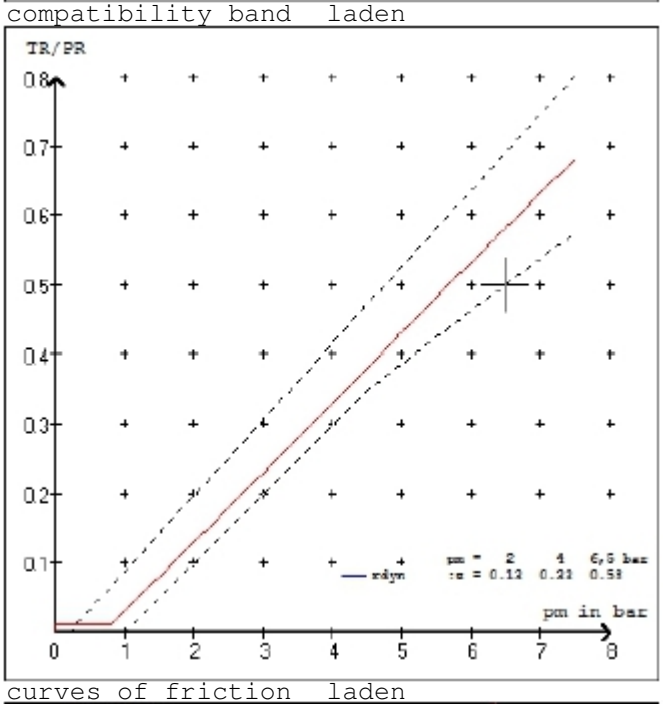
brake chamber pressure laden



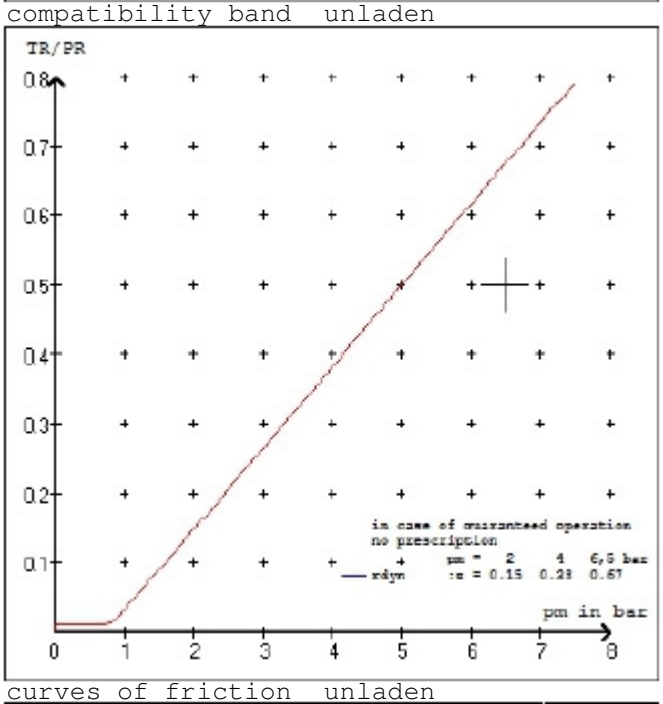
brake chamber pressure unladen



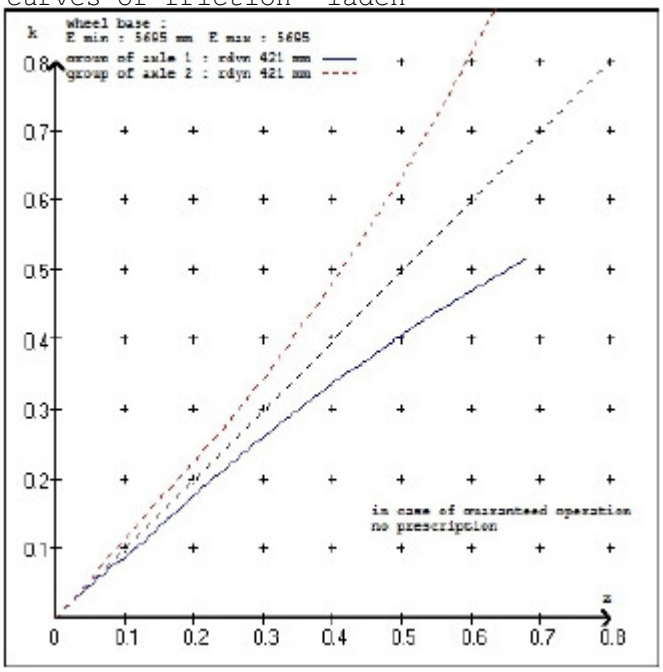
compatibility band laden



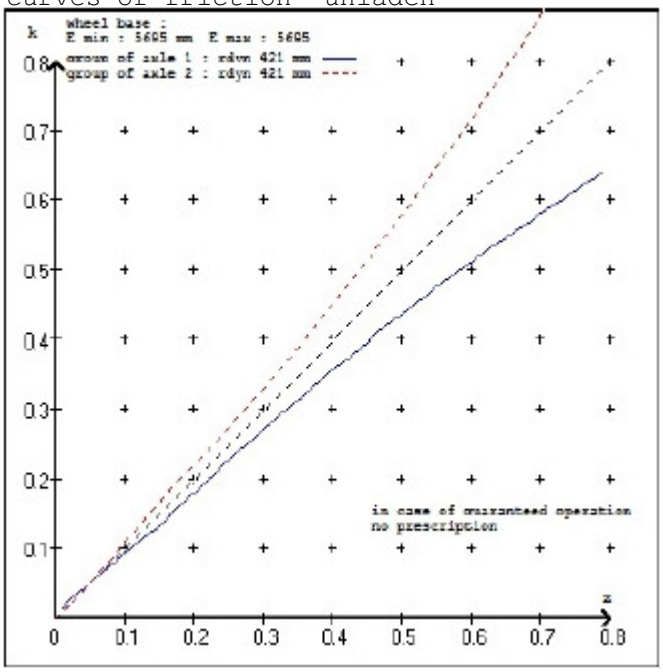
compatibility band unladen



curves of friction laden



curves of friction unladen



vehicle manufacturer: DOMETT T&T
trailer model : 5AFT TANKER
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.14/16 (Meritor) lever length 69 mm
axle 4 : 2 x type/diameter T.14/16 (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
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vehicle manufacturer: DOMETT T&T
trailer model : 5AFT TANKER
trailer type : 5-axle-full-trailer
brake calculation no. : TP 50853A

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 = 0.130
6.5 bar z = 0.580

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	rbke	laden	r.
1	1500	to be	1.6	7250	to be	0.4	1.3	5.5
2	1500	entered by	1.6	7250	entered by	0.4	1.3	5.5
3	1200	the vehicle	1.3	6000	the vehicle	0.3	1.3	4.5
4	1200	manufact.	1.3	6000	manufact.	0.3	1.3	4.5
5	1200		1.3	6000		0.3	1.3	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	1.6	1500	1.6	1200	1.3	1200	1.3	1200	1.3
2000	1.9	2000	1.9	1700	1.6	1700	1.6	1700	1.6
2500	2.3	2500	2.3	2200	2.0	2200	2.0	2200	2.0
3000	2.6	3000	2.6	2700	2.3	2700	2.3	2700	2.3
3500	3.0	3500	3.0	3200	2.6	3200	2.6	3200	2.6
4000	3.3	4000	3.3	3700	3.0	3700	3.0	3700	3.0
4500	3.6	4500	3.6	4200	3.3	4200	3.3	4200	3.3
5000	4.0	5000	4.0	4700	3.6	4700	3.6	4700	3.6
7250	5.5	7250	5.5	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	: 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 = 21.9 % Fe
axle 2	(rdyn 421 mm)	T = 21.9 % 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 = 5835 N
axle2	ThA = 5835 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 = 34771 N
axle 2	(rdyn 421 mm)	T = 34771 N
axle 3	(rdyn 421 mm)	T = 25468 N
axle 4	(rdyn 421 mm)	T = 25468 N
axle 5	(rdyn 421 mm)	T = 25468 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)	0.58	0.46
required braking rate (items 1.5.3 and 1.7.2 to annex 11)		>= 0,4 and >= 0,6*E (0.35)

axle 1	(rdyn 421 mm)	T = 34771 N
axle 2	(rdyn 421 mm)	T = 34771 N
axle 3	(rdyn 421 mm)	T = 25468 N
axle 4	(rdyn 421 mm)	T = 25468 N
axle 5	(rdyn 421 mm)	T = 25468 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)	0.58	0.46
required braking rate (items 1.5.3 and 1.7.2 to annex 11)		>= 0,4 and >= 0,6*E (0.35)

spring parking brake

		axle 3	axle 4
no of TRISTOP-actuators per axle line	KDZ	2	2
TRISTOP-actuator type		T.14/16	T.14/16
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	6160	6160
sp.brake chamber no Meritor.....		4	4
release pressure	pLs in bar	4.5	4.5

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	48188	48188
Tf = (TFZ*KDZ-2*Co/lBh)*iFb			
braking rate	zf laden	0.312	

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 = 4263 mm for E = 5695 mm

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min Ef = 4263 mm for E = 5695 mm

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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	=	1575 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 5.5	5068 37995	
axle 2	1.0 5.5	5068 37995	
axle 3	1.0 4.5		5002 27812
axle 4	1.0 4.5		5002 27812
axle 5	1.0 4.5		5002 27812

VIN - no.:

	Axle(s) / Achse(n)				
brake cylinder type (service / parking) Bremszylinder Typ (Betrieb / Fest)	18./	18./	T.14/16	T.14/16	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