WAKA KOTAHI
NZ TRANSPORT AGENCY

Heavy vehicle specialist certificate

Must be presented to a CoF (heavy) inspecting organisation if not entered into LANDATA

Heavy vehicle specialist inspector's or manufacturing inspecting organisation's name *(PRINT IN CAPS)*: **CHRIS CLARKE**

ID: **CJC**

Plate number *(optional)*:

VIN/chassis number: **7A9D10011N2023162**

Make: **DOMETT**

Model *(optional)*: **D1001**

Certification category: **HVEK**

Component being certified:

- [ ] Chassis
- [ ] Load anchorage
- [ ] Log bolsters
- [ ] Towing connection
- [X] Brakes
- [ ] SRT
- [ ] PSV stability
- [ ] PSV rollover
- [ ] Swept path
- [ ] PBS

Description of work

CERTIFY TO SCHEDULE 5 OF LTR 32015: NZ HEAVY VEHICLE BRAKE SPECIFICATION.
CARRY OUT BRAKE CALCULATIONS, INSPECTION AND ECU END OF LINE PROTOCOL.
4A TANKER RSS ON TYRE: 265 70 R19.5
FOR SYSTEM ARCHITECTURE, PLEASE REFER TO PDS WORKSHEET & SCHEMATIC.

Code/standard/rule certified to: LTR 32015, SCHEDULE 5

Component load rating(s): 26 Tonnes GVM
15 Tonne (Front group ratings)
15 Tonne (Rear group ratings)

General drawing number(s): N/A

Supporting documents

BRAKE RULE CERTIFICATE LC220805
BRAKE CALCULATION # 2022 ROR 4A WPC

Special conditions *(optional)*

WARNING LAMP MUST ILLUMINATE WHEN IGNITION IS SWITCHED ON & THEN EXTINGUISH IMMEDIATELY OR WHEN VEHICLE SPEED EXCEEDS 7 KM/H

Certification expiry date *(if applicable)*: N/A [UNLESS MODIFIED]

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)*: LANCE CAWTE L P C

Inspector's signature:

Inspector's name *(PRINT IN CAPS)*: CHRIS CLARKE

ID number: CJC

Date: 12.05.2022

Number: 837688

CoF vehicle inspector ID *(if applicable)*:

CoF vehicle inspector signature *(if applicable)*:

Date:

All fields are mandatory unless otherwise stated.

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

distribution: DOMETT
2022 ROR 4A WPC

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 (V6.18.07.12).
-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 V6.18.07.12 db 31.08.2018

vehicle manufacturer: DOMETT
trailer model : 4A TANKER, D1001
trailer type : 4-axle-full-trailer
remarks : air / hydraulic / VA suspension
WABCO TRAILER - EBS
TRISTOP 3+4: T.16/24
265/70 R 19,5

axle 1 + 2 + 3 + 4 : Assali Stefen, K, 361-071-04 ECE Re 432,

		unladen	laden
total mass	P in kg	5200	30000
axle 1	P1 in kg	1400	7500
axle 2	P2 in kg	1400	7500
axle 3	P3 in kg	1200	7500
axle 4	P4 in kg	1200	7500
wheel base	E in mm	5070 - 5070	
centre of gravity height	h in mm	700	1492

		axle 1	axle 2	axle 3	axle 4
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		20.	20.	T.16/24	T.16/24
lever length	lBh in mm	74	74	74	74
brake factor	[-]	20.26	20.26	20.26	20.26
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	7.0	7.0	7.0	7.0

calculation:

chamber pressure(rdyn min)pH at z=22,5%bar		2.4	2.4	2.3	2.3
chamber pressure(rdyn max)pH at z=22,5%bar		2.4	2.4	2.3	2.3
chamber press.(servo)pcha at pm6,5bar	bar	6.1	6.1	5.3	5.3
piston force ThA at pm6,5bar	N	7071	7071	5304	5304
brake force(rdyn min)T lad. at pm6,5bar	N	50425	50425	37841	37841
brake force(rdyn max)T lad. at pm6,5bar	N	50425	50425	37841	37841
Brake force incl. 1 % rolling resistance proportion	%	26.7	26.7	23.3	23.3

braking rate z laden
z = sum (TR)/PRmax

0.600 for rdyn min
0.600 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 20HSCLD65

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

brake cylinder: Meritor 20HSCLD65

axle 3:
valve 1: 480 102 ... 0 WABCO
EBS trailer modulator

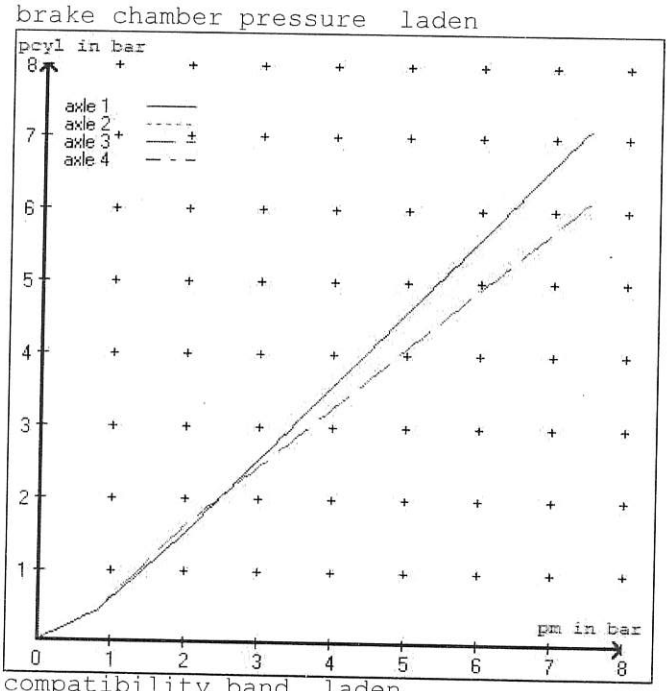
brake cylinder: Meritor 1624HTLD64

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

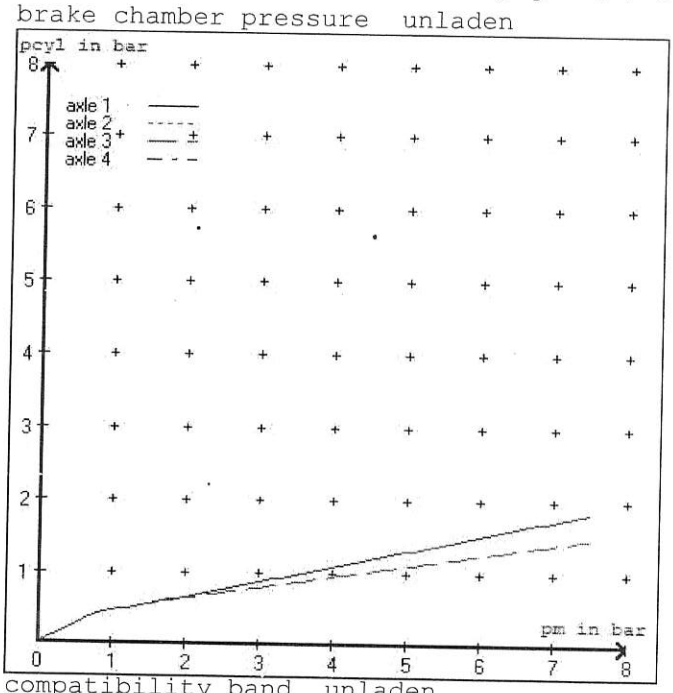
brake cylinder: Meritor 1624HTLD64

test type III (zIII = 0.30)	for rdyn min :	axle1	axle2	axle3	axle4	
at pm 3.6 bar =>	pcha in bar :	3.1	3.1	2.9	2.9	
test type III (zIII = 0.06)	for rdyn min :	axle1	axle2	axle3	axle4	
at pm 1.3 bar =>	pcha in bar :	0.9	0.9	0.9	0.9	

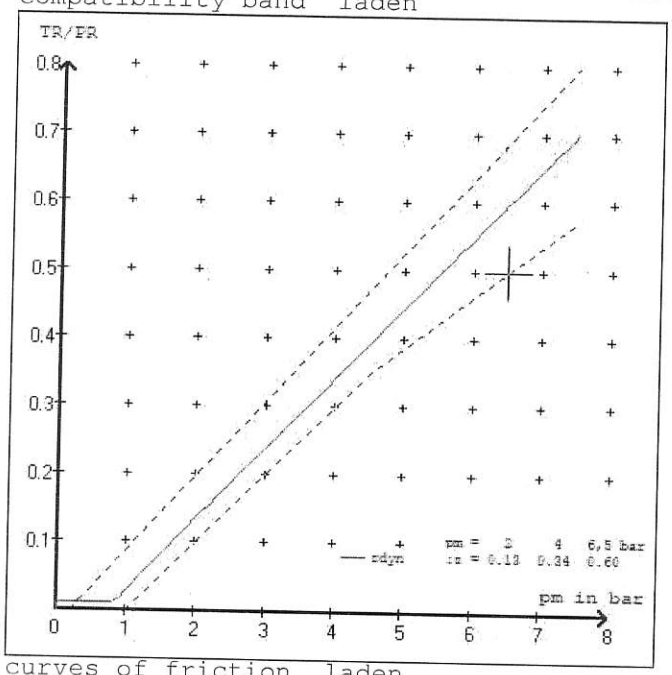
brake chamber pressure laden



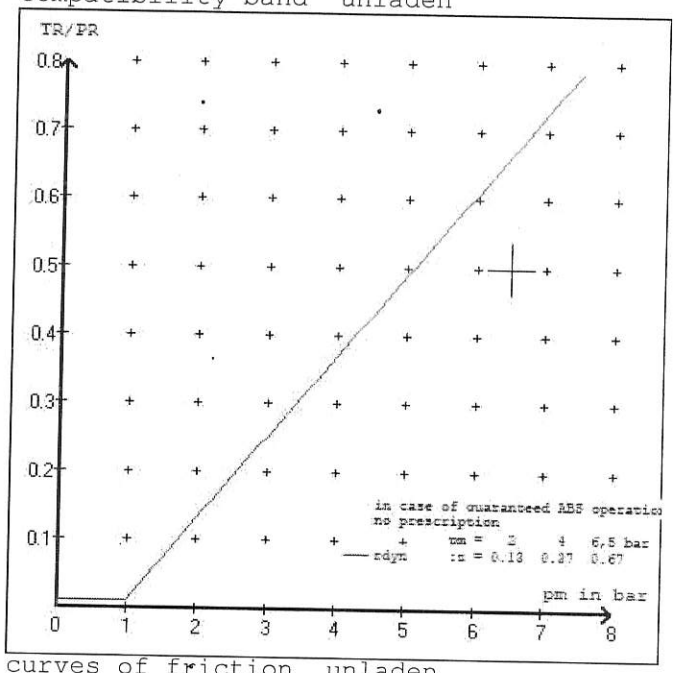
brake chamber pressure unladen



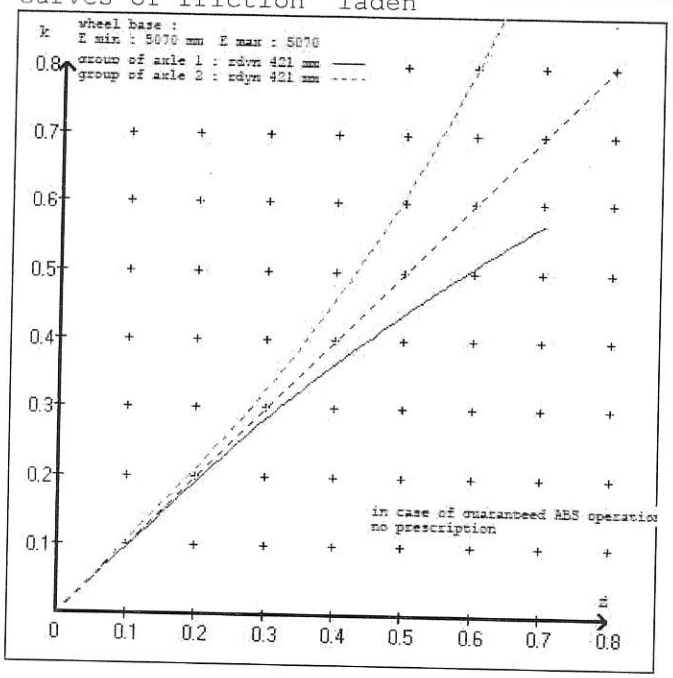
compatibility band laden



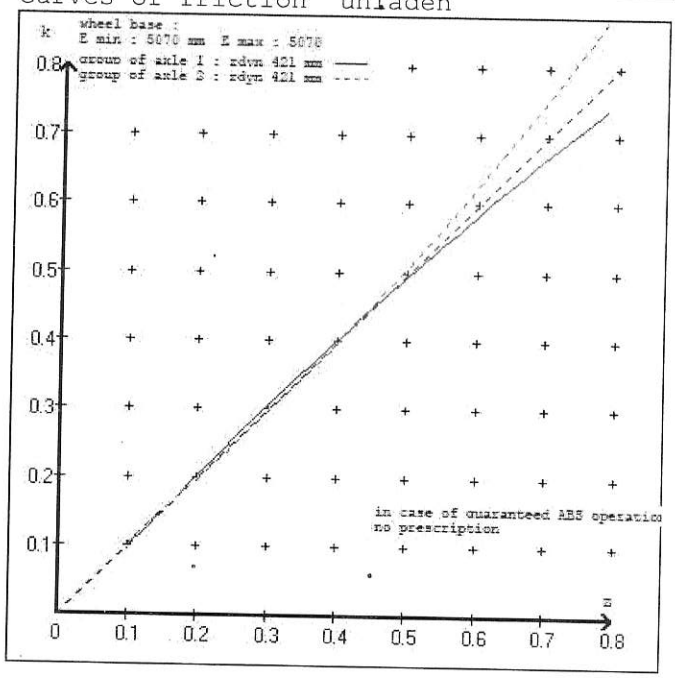
compatibility band unladen



curves of friction laden



curves of friction unladen



vehicle manufacturer: DOMETT
trailer model : 4A TANKER, D1001
trailer type : 4-axle-full-trailer

brake chamber and lever length :

axle 1 :	2 x type/diameter	20.	(Meritor)	lever length 74 mm
axle 2 :	2 x type/diameter	20.	(Meritor)	lever length 74 mm
axle 3 :	2 x type/diameter	T.16/24	(Meritor)	lever length 74 mm
axle 4 :	2 x type/diameter	T.16/24	(Meritor)	lever length 74 mm

brake diagram :

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
trailer model : 4A TANKER, D1001
trailer type : 4-axle-full-trailer
brake calculation no. : TP 2022A

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	1400	to be entered by the vehicle manufact.	1.6	7500	to be entered by the vehicle manufact.	0.4	1.5	6.1
2	1400		1.6	7500		0.4	1.5	6.1
3	1200		1.3	7500		0.4	1.6	5.3
4	1200		1.3	7500		0.4	1.6	5.3
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	pcyl	axle load	pcyl	axle load	pcyl	axle load	pcyl
1400	1.6	1400	1.6	1200	1.3	1200	1.3
1900	2.0	1900	2.0	1700	1.6	1700	1.6
2400	2.3	2400	2.3	2200	1.9	2200	1.9
2900	2.7	2900	2.7	2700	2.3	2700	2.3
3400	3.1	3400	3.1	3200	2.6	3200	2.6
3900	3.4	3900	3.4	3700	2.9	3700	2.9
4400	3.8	4400	3.8	4200	3.2	4200	3.2
4900	4.2	4900	4.2	4700	3.5	4700	3.5
7500	6.1	7500	6.1	7500	5.3	7500	5.3

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

axle 1 :	reference axle: Assali StefTM or LM or LCen		brake lining: ROR 8616 AF (M13)
	test report : 361-071-04 ECE Re 432		date : GA310709
axle 2 :	reference axle: Assali StefTM or LM or LCen		brake lining: ROR 8616 AF (M13)
	test report : 361-071-04 ECE Re 432		date : GA310709
axle 3 :	reference axle: Assali StefTM or LM or LCen		brake lining: ROR 8616 AF (M13)
	test report : 361-071-04 ECE Re 432		date : GA310709
axle 4 :	reference axle: Assali StefTM or LM or LCen		brake lining: ROR 8616 AF (M13)
	test report : 361-071-04 ECE Re 432		date : GA310709

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 = 22.7 % Fe
axle 2	(rdyn 421 mm)	T = 22.7 % Fe
axle 3	(rdyn 421 mm)	T = 18.2 % Fe
axle 4	(rdyn 421 mm)	T = 18.2 % Fe

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

axle 1	(sp = 58 mm)	s = 38 mm
axle 2	(sp = 58 mm)	s = 38 mm
axle 3	(sp = 57 mm)	s = 38 mm
axle 4	(sp = 57 mm)	s = 38 mm

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

axle1	ThA = 7071 N
axle2	ThA = 7071 N
axle3	ThA = 5304 N
axle4	ThA = 5304 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 = 43214 N
axle 2	(rdyn 421 mm)	T = 43214 N
axle 3	(rdyn 421 mm)	T = 32459 N
axle 4	(rdyn 421 mm)	T = 32459 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	0.51
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 = 43214 N
axle 2	(rdyn 421 mm)	T = 43214 N
axle 3	(rdyn 421 mm)	T = 32459 N
axle 4	(rdyn 421 mm)	T = 32459 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	0.51
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
no of TRISTOP-actuators per axle line	KDZ	2	2
TRISTOP-actuator type		T.16/24	T.16/24
lever length	lBh in mm	74	74
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 iFb = lBh*Eta*C*rBt/(rBn*rstat)		3.7388	3.7388
	for rstat in mm	401	401
brake force of spring br. Tf Tf = (TFZ*KDZ-2*Co/lBh)*iFb	in N	56159	56159
braking rate zf = sum (Tf)/P + 0,01	zf laden	0.392	

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 = 3617 mm for E = 5070 mm
==========
min Ef = 3617 mm for E = 5070 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	=	1492 mm	height of center of gravity - laden
PR	=	15000 kg	maximum bogie mass - laden
P	=	30000 kg	maximum total mass - laden
nf	=	2	no. of axle(s) with TRISTOP spring brake actuators
ng	=	2	no. of bogie axle(s)

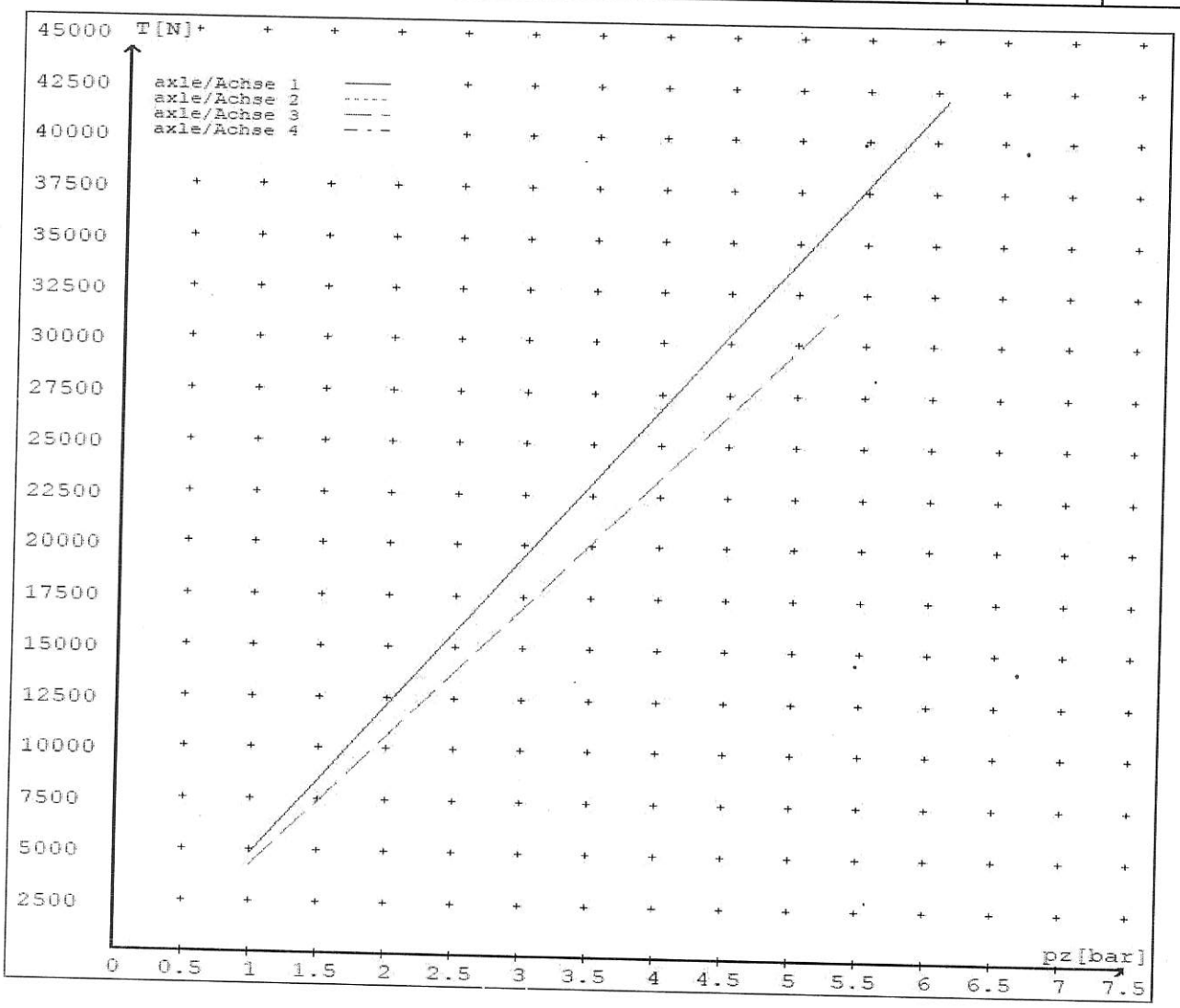
reference values

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

	pz [bar]	T [N]	T [N]
axle 1	1.0 6.1	4729 42021	
axle 2	1.0 6.1	4729 42021	
axle 3	1.0 5.3		4200 31534
axle 4	1.0 5.3		4200 31534

VIN - no.:

	Axle(s) / Achse(n)				
brake cylinder type (service / parking) Bremszylinder Typ (Betrieb / Fest)	20./	20./	T.16/24	T.16/24	/
Maximum stroke smax = ...mm maximaler Hub smax = ...mm	65	65	64	64	
Lever length = ...mm Hebellänge = ...mm	74	74	74	74	

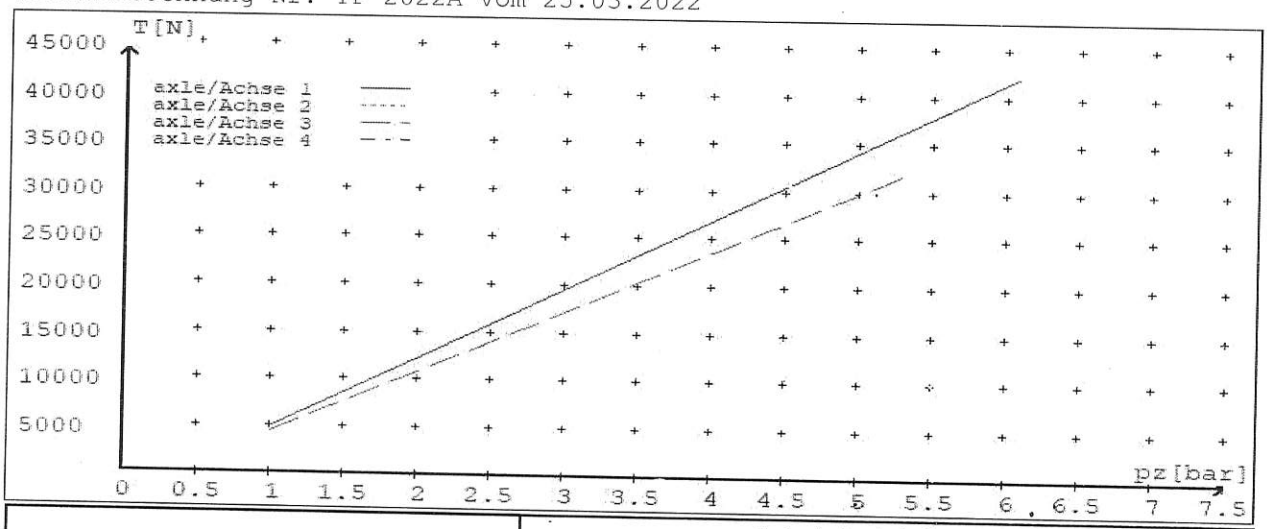


Print on WABCO no. 899 200 922 4 (only possible with laser printers!)

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 2022A date 25.03.2022
Bremsberechnung Nr: TP 2022A vom 25.03.2022



	Axle(s) / Achse(n)				
brake cylinder type (service / parking) Bremszylinder Typ (Betrieb / Fest)	20./	20./	T.16/24	T.16/24	/
Maximum stroke smax = ...mm maximaler Hub smax = ...mm	65	65	64	64	
Lever length = ...mm Hebellänge = ...mm	74	74	74	74	

NEW ZEALAND HEAVY VEHICLE BRAKE RULE 32015
WORKSHEET, PROCEDURE DOCUMENTATION SHEET
& CONFIRMATION OF COMPLIANCE

CLIENT

MANUFACTURER:	DOMETT TRAILERS
ADDRESS:	Taurikura Drive, Tauranga 3110
FLEET:	FONTERRA

VEHICLE DETAILS

VEHICLE TYPE:	4A TANKER	**CERT #:**	LC220805
YEAR:	2022	**CALCULATION #:**	2022 ROR 4A WPC
MAKE:	DOMETT	**REGO #:**	
MODEL:	D1001	**LT400 #:**	837688
CHASSIS #:	2162	**ORDER #:**	8852
VIN #:	7A9D10011N2023162		
GVM: *t*	26	**PRIME MOVER:**	EBS / EUROPEAN
LOAD CONFIGURATION:	UNIFORM DENSITY		

GROUP RATINGS: *t*	**FRONT**	**REAR**
	15	15
WHEEL BASE: *m*	5.07	

	UNLADEN COG *m*	**MAX HEIGHT** *m*	**HEIGHT DECK** *m*
	0.7	2.38	1.00
COG: *m*	1.492		

	FRONT	**REAR**	**TOTAL**
TARE: t	2.8	2.4	5.2

	FRONT	**REAR**	**FITTED**
TYRE SIZE:	265 70 R19.5	265 70 R19.5	265 70R 19.5
ROLLING CIRCUMFERENCE: *MM*	2645	2645	
AXLE SPACING: *m*	1.3	1.3	

BRAKE & AXLE DETAILS

	MAKE	MODEL	TEST REPORT
AXLE:	ROR_ASSALI_STEFEN	ROR-SLX9 LRC DISC	361-071-04
POLE WHEEL FRONT:	90	**POLE WHEEL REAR:**	90
LINING MATERIAL:	ROR 8616	**BRAKE FACTOR:**	20.26
SENSED AXLES:	1 + 3		**NOTES:**
SERIAL NUMBERS:	1		
	2		
	3		
	4		
	5		

CHAMBER AND VALVING DETAILS

CHAMBERS:	**AXLE 1 & 2**	**AXLE 3 & 4**	**AXLE 5**
BRAND:	HALDEX_CHAMBERS	HALDEX_BERTOCCO	N/A
SIZE:	20, (125 200)	1616 (925/464/461/0)	N/A
STROKE: *mm*	66	63	
TEST REPORT #:	BC0175.0	BC 0006.0	
SPRING BRAKE FORCE: *kN*	N/A	6.28	
HOLDOFF PRESSURE: *Bar*	N/A	5	
FOUNDATION BRAKE:	MERITOR	MERITOR	
LEVER LENGTH: *mm*	74	74	N/A

BRAKE VALVES:	**MAKE:**	**PART NUMBER:**	**PM PRESS.** *kPa*
ECU PART #:	WABCO	480 102 08. 0 (MV)	80 kPa
3RD MODULATOR #:	WABCO	480 207 001 0 (24V)	80 kPa
ANTI-COMPOUNDING:	YES		
SPRING BRAKE RELAY:	SEALCO_SBR	110701	
YARD RELEASE VALVE:	SEALCO_YR	17600B	
INLINE RELAY FITTED:	N/A	N/A	

ECU DIRECTION: ☑ FRONT ☐ REAR **FRONT FRICTION: μ** 0.51

SUBSYSTEMS:

☐ SMARTBOARD ☐ OPTI-LINK ☐ CAN ROUTER 446 122 050 0

☐ ELEX 446 122 070 0 ☐ TAILGUARD

SUSPENSION

	FRONT	REAR
SUSPENSION TYPE:	PNEUMATIC	PNEUMATIC
MAKE:	ROR_AIRSPRING	ROR_AIRSPRING
MODEL:	ROR_INTRA	ROR_INTRA
BELLOW SIZE:	SLX LRC	SLX LRC
HEIGHT CONTROL VALVE:	464 008 011 0	464 008 011 0
OTHER VALVES:	NORGREN 3042402	NORGREN 3042402
RIDE HEIGHT *MM*:	250	250
HANGER HEIGHT *MM*:		
PEDESTAL HEIGHT *MM*:		
LIFT AXLE:		N/A
DUMP SWITCH:		PNEUMATIC
LIFT AXLE VALVE:		N/A
PRESSURE LIMITING:		N/A

AIR TANKS

AIR TANKS STANDARD: SAE J10A / EN286-2

	FRONT	REAR
BRAKE TANK SIZE: *L*	C51902, 48L	C51902, 48L
AUXILIARY TANK SIZE: *L*		C51901, 25L x 2
PRESSURE PROTECTION:	WABCO PEM: 461 513 002 0	

AIR LINES

TEST POINTS:

CONTROL LINE:	FILTER X 1	TANK:	ECU X 1
REAR CHAMBER:	ECU X 2	FRONT CHAMBER:	LEFT 1st
DUOMATIC COLOUR CODED:	YES		

ELECTRONIC HEIGHT SENSOR CALIBRATION

	TIMER TICKS [F/R]	MILLIMETRE [F / R]
UPPER LEVEL:		
NORMAL LEVEL:		
LOWER LEVEL:		

CHECKS AT COMMISSION OF VEHICLE

CHAMBER BUNGS REMOVED: ☑ VALVE MOUNTING: ☑

ECU BLANKING PLUGS CHECKED: ☑

RESPONSE TIME:	MODULATOR 2.1	MODULATOR 2.2	RELAY VALVE
ms:	280	290	320

NOTES AND SPECIAL CONDITIONS

3/12/2021 received est build schedule.15/12/2021 request to do project, receive drawings etc.
24/3/2022 start files, request and receive product and trailer data. 25/3/2022 do calculations and ECU files, start paperwork.
29/03/2022 Advised air reservoirs changed. Redo paperwork to reflect change.
10/8/2022 Advised vehicle files required. 11/8/2022 check & complete files, program, send SODC.

REASON FOR CERTIFICATION: NEW TRAILER

I UNDERSTAND AND DECLARE THAT I AM THE CERTIFIER IDENTIFIED BELOW AND HOLD A CURRENT VALID APPOINTMENT. I CERTIFY THAT AT THE TIME OF INSPECTION THE ABOVE MENTIONED VEHICLE COMPONENT DESIGN 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.

RULE / STD COMPLIED TO:

NEW ZEALAND HEAVY VEHICLE BRAKE RULE 32015, **SCHEDULE 5,** ~~ADR 35, ECE R13, FMVSS 121~~

DATE: 11/08/2022

SIGNED: *Lance Cawte*

CERTIFIER NAME & ID: **CHRIS CLARKE** **CJC**

SODC BY: **LANCE CAWTE** **LPC**

PHONE (BUS): **09-980-7300**

FAX:

POSTAL ADDRESS: **P.O. Box 98-971, Manukau 2241**
New Zealand