Heavy vehicle specialist certificate

WAKA KOTAHI
NZ TRANSPORT AGENCY

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)*	ID
CHRIS CLARKE	**CJC**

Plate number *(optional)*

Make
DOMETT

Model *(optional)*
E2001 PH

Certification category
HVEK

VIN/chassis number
7 A 9 E 2 0 0 1 7 P 2 0 2 3 3 4 7

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.

5AFT CURTAINSIDE   **RSP ON TYRE:** 265 70 R19.5

FOR SYSTEM ARCHITECTURE, PLEASE REFER TO PDS WORKSHEET & SCHEMATIC.

REASON FOR CERTIFICATE: NEW TRAILER BUILD

Code/standard/rule certified to
LTR 32015

General drawing number(s)
N/A

Component load rating(s)

32 Tonnes GVM

16 Tonne (Front brake mass)

19 Tonne (Rear brake mass)

Supporting documents

BRAKE RULE CERTIFICATE	CJC239126
BRAKE CALCULATION #	DT023361

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 *(optional)*
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)*

Inspector's signature

Inspector's name *(PRINT IN CAPS)*   **ID number**
CHRIS CLARKE   CJC

Date 10-Nov-23   **Number**
A 02926

CoF vehicle inspector ID *(if applicable)*	CoF vehicle inspector signature *(if applicable)*	Date

All fields are mandatory unless otherwise stated.

HALDEX EBS/ABS END OF LINE TEST REPORT

Haldex

ECU Configuration	4S:3M ECUFront Facing ,RearMaster,CentreSlave
Vehicle Identification Number	7A9E20017P2023347
Brake Calculation	023347
Manufacturer	DOMETT
EBS Assembly Number	
ECU Software	A820 B30
Odometer	0.441
Date	10/11/23
Time	13:41
CAN Hub	Not Fitted

Wheel Scale	Rdyn(mm)	No. of teeth
S1A/S1B	421	90
S2A/S2B	0	0
SA/SB(SL1)	421	90
SA/SB(SL2)	0	0

Sensor Tests							Not Applicable
S1A	S1B	S2A	S2B	SA(1)	SB(1)	SA(2)	SB(2)
Passed	Passed	-	-	Passed	Passed	-	-

Sensor Modulator Tests							Passed
S1A	S1B	S2A	S2B	SA(1)	SB(1)	SA(2)	SB(2)
Passed	Passed	-	-	Passed	Passed	-	-

Push Through Tests			Passed
P21	P22	P2(1)	P2(2)
6.35	6.30	6.20	-
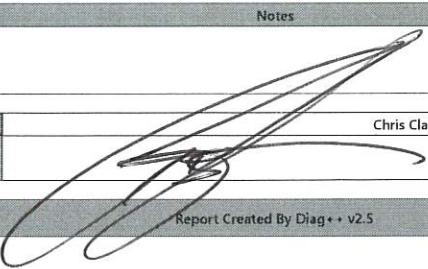
EBS Pressure Test										Failed
	INPUTS			OUTPUTS			Results			
	MASTER	SLAVE1	SLAVE2	MASTER	SLAVE1	SLAVE2	P21	P22	P2(1)	P2(2)
Unladen Suspension	0.30	0.50	-							
Laden Suspension	3.40	4.40	-							
P0	0.40	0.30	-							
PD	0.70	0.70	-	0.40	0.30	-	0.40	0.45	-	-
PP1[U]	1.50	1.50	-	0.55	0.50	-	0.40	0.45	-	-
PP1[L]	1.50	1.50	-	0.95	1.05	-	0.85	0.85	-	-
PP2[U]	4.50	4.50	-	1.35	1.40	-	1.40	1.25	-	-
PP2[L]	4.50	4.50	-	3.20	3.90	-	3.10	3.10	-	-
PP3[U]	6.50	6.50	-	2.00	2.00	-	1.90	2.00	-	-
PP3[L]	6.50	6.50	-	5.00	5.80	-	4.85	4.85	-	-
P Limit										
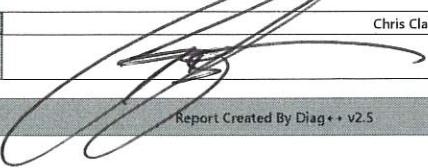
Options			
No REV			LSV on 24N
Slave Suspension			

Lamp and Auxiliary Tests			Passed
Lamp		Used	Passed
Aux0 Red	Not Used	(unknown options),B+	-
Aux0 Yellow	Not Used	(unknown options),B+	-
Aux1 Red	Not Used	(unknown options),B+	-
Aux1 Yellow	Not Used	(unknown options),B+	-
Aux2 Red	Not Used	(unknown options),B+	-
Aux2 Yellow	Not Used	(unknown options),B+	-
Aux3 Red	Not Used	(unknown options),B+	-
Aux3 Yellow	Not Used	(unknown options),B+	-
Aux4	Not Used	(unknown options)	-
Aux5	Not Used	(unknown options)	-
Lat Acc Internal	Fitted		Passed
24N			-

System Leak Test			Not Applicable
Pressure Drop	-	Time Period	-

EB+ Soft Docking			Not Applicable
Channels	Sensors	Offset (0 ... 60)	
Yellow Channels	-	-	-
Green Channel	-	-	-
Beeper	-	Lights	-

Notes

Operator's Name	Chris Clarke
Signature	

Report Created By Diag++ v2.5

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

distribution: DOMETT TRAILERS
               7A9E20017P2023347
               CJC239124

vehicle manufacturer: DOMETT TRAILERS

trailer model   :   5AFT CURTAINSIDE

trailer type   :   5-axle-full-trailer

remarks   :   air / hydraulic / VA suspension
                           TRAILER - EBS
                           TRISTOP 3+4: 16/24
                           265/70 R 19,5

axle 1 + 2 + 3 + 4 + 5 : Assali Stefen, K, 361-071-04 ECE Re 432,

			unladen	laden
total mass	P in kg		7200	35050
axle 1	P1 in kg		1650	8000
axle 2	P2 in kg		1650	8000
axle 3	P3 in kg		1300	6350
axle 4	P4 in kg		1300	6350
axle 5	P5 in kg		1300	6350
wheel base	E in mm		7380 - 7380	
centre of gravity height	h in mm		1035	2090

			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 122.1BC	0165.0BC	0165.0BC	0169.0
brake chamber manufacturer			Meritor	Meritor	Haldex	Haldex	Haldex
chamber size			20.	20.	16/24	16/24	16"
lever length	lBh in mm		74	74	74	74	74
brake factor	[-]		20.26	20.26	20.26	20.26	20.26
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		7.0	7.0	7.0	7.0	7.0

calculation:

		axle 1	axle 2	axle 3	axle 4	axle 5
chamber pressure(rdyn min)pH at z=22,5%bar		2.4	2.4	2.3	2.3	2.3
chamber pressure(rdyn max)pH at z=22,5%bar		2.4	2.4	2.3	2.3	2.3
chamber press.(servo)pcha at pm6,5bar bar		6.3	6.3	5.0	5.0	5.0
piston force ThA at pm6,5bar N		7318	7318	4779	4779	4779
brake force(rdyn min)T lad. at pm6,5bar N		52229	52229	33987	33987	33987
brake force(rdyn max)T lad. at pm6,5bar N		52229	52229	33987	33987	33987
brake force within 1 % rolling friction						
proportion %		22.2	22.2	18.5	18.5	18.5

braking rate   z laden   0.600   for rdyn min
z = sum (TR)/PRmax   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: 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   20HSCLD65

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   20HSCLD65

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

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

   brake cylinder: Haldex   135 1624 ...

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

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

   brake cylinder: Haldex   135 1624 ...
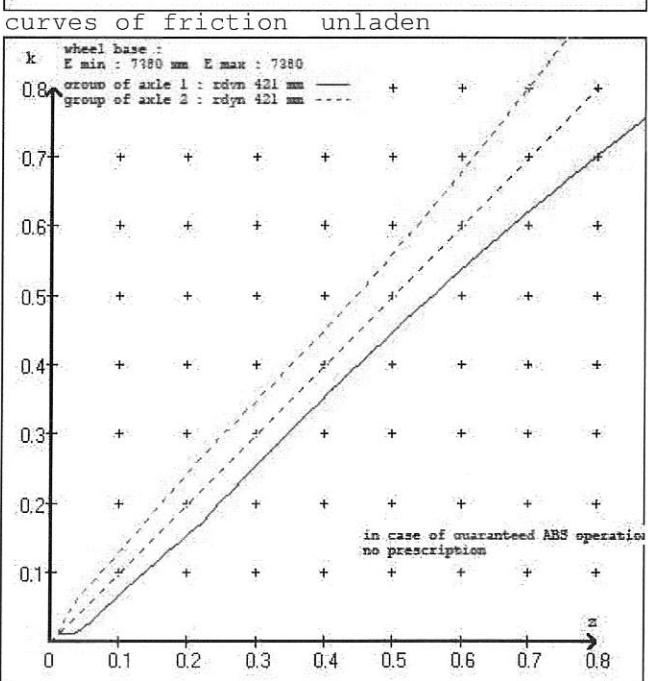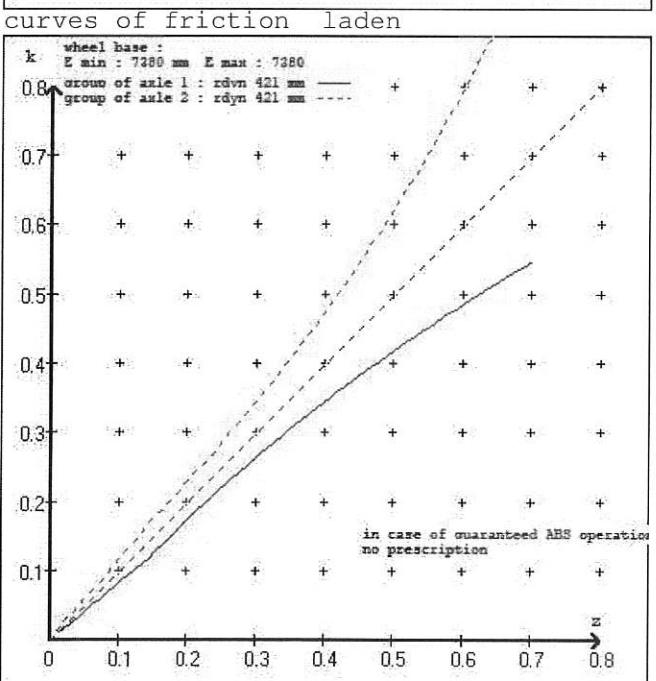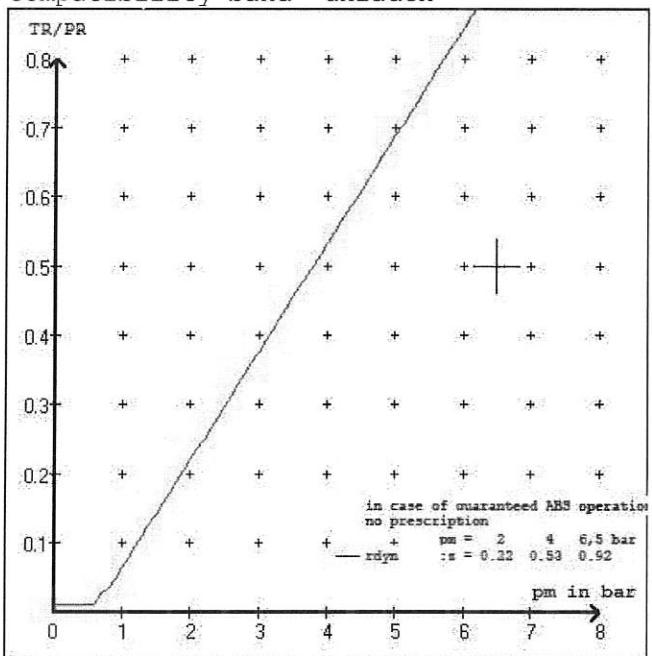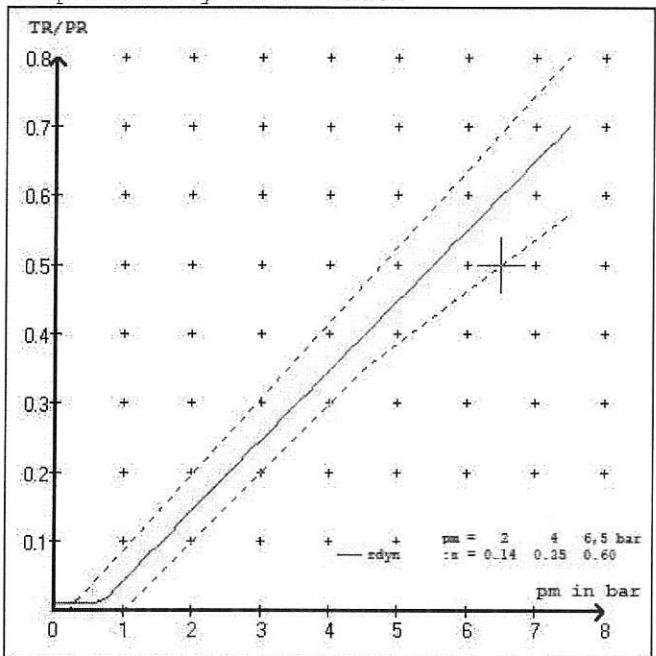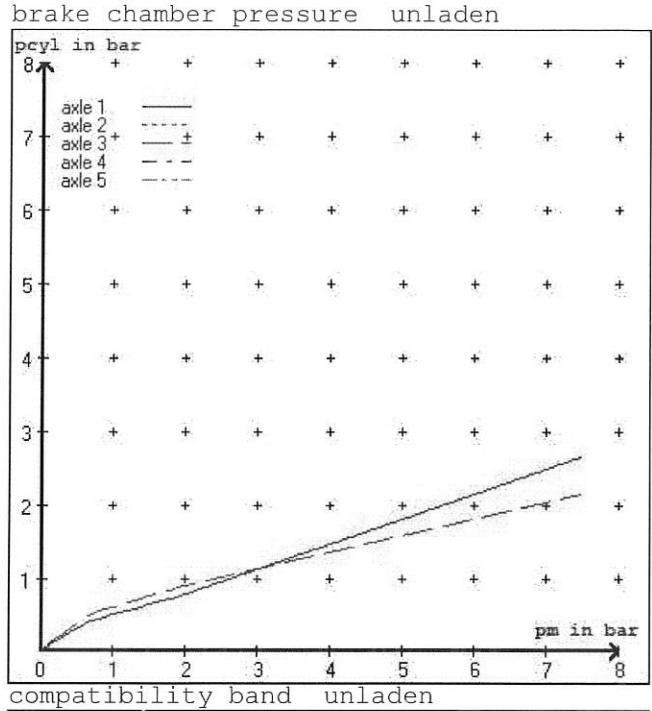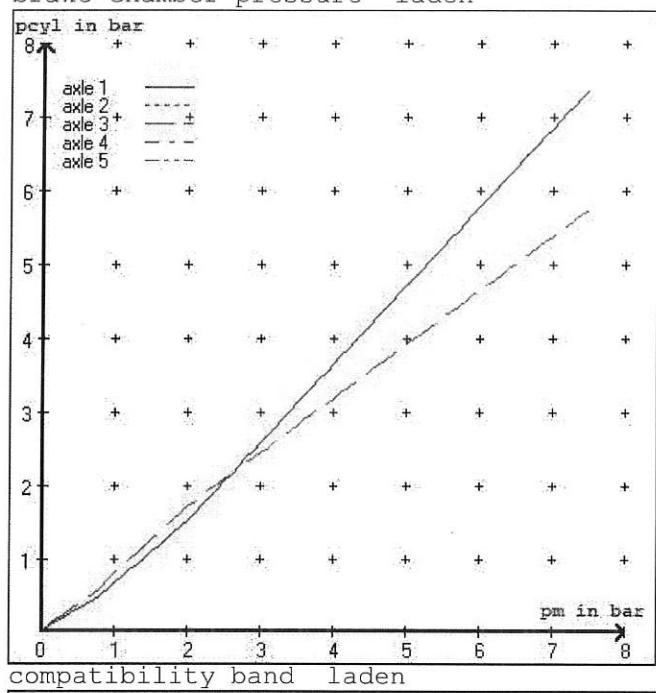
axle 5:
   valve 1: 971 002 ... 0   WABCO
           EBS emergency valve

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

   brake cylinder: Haldex   125 160 ...

test type III (zIII = 0.30) for rdyn min : axle1 axle2 axle3 axle4 axle5
at pm 3.5 bar =>   pcha in bar :   3.1   3.1   2.8   2.8   2.8
test type III (zIII = 0.06) for rdyn min : axle1 axle2 axle3 axle4 axle5
at pm 1.2 bar =>   pcha in bar :   0.8   0.8   0.9   0.9   0.9

brake chamber pressure   laden

pcyl in bar

axle 1
axle 2
axle 3
axle 4
axle 5

pm in bar

brake chamber pressure   unladen

pcyl in bar

axle 1
axle 2
axle 3
axle 4
axle 5

pm in bar

compatibility band   laden

TR/PR

pm =   2   4   6,5 bar
:z = 0.14 0.35 0.60
rdyn

pm in bar

compatibility band   unladen

TR/PR

in case of guaranteed ABS operation
no prescription

pm =   2   4   6,5 bar
:z = 0.22 0.53 0.92
rdyn

pm in bar

curves of friction   laden

k
wheel base :
E min : 7380 mm E max : 7380
group of axle 1 : rdyn 421 mm
group of axle 2 : rdyn 421 mm

in case of guaranteed ABS operation
no prescription

z

curves of friction   unladen

k
wheel base :
E min : 7380 mm E max : 7380
group of axle 1 : rdyn 421 mm
group of axle 2 : rdyn 421 mm

in case of guaranteed ABS operation
no prescription

z

vehicle manufacturer: DOMETT TRAILERS
trailer model   :   5AFT CURTAINSIDE
trailer type   :   5-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   16/24 (Haldex)   lever length 74 mm
axle 4 :   2 x type/diameter   16/24 (Haldex)   lever length 74 mm
axle 5 :   2 x type/diameter   16" (Haldex)   lever length 74 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 TRAILERS
trailer model   : 5AFT CURTAINSIDE
trailer type   : 5-axle-full-trailer
brake calculation no.   : GenNZ 50368A

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

assignment pm / deceleration z: pm 0.7 bar z = 0.010
(laden condition)   2.0 bar z = 0.142
                                   6.5 bar z = 0.600

		control pressure pm	6,5		control pressure pm	0.7	2.0	6.5
axle	axle load unladen	bellow pr. unladen	brake pr. unladen	axle load laden	bellow pr. laden	brake pr. laden		
1	1650	to be	2.3	8000	to be	0.4	1.5	6.3
2	1650	entered by	2.3	8000	entered by	0.4	1.5	6.3
3	1300	the vehicle	1.9	6350	the vehicle	0.5	1.7	5.0
4	1300	manufact.	1.9	6350	manufact.	0.5	1.7	5.0
5	1300		1.9	6350		0.5	1.7	5.0

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 5	
axle load	pcyl	axle load	pcyl	axle load	pcyl	axle load	pcyl	axle load	pcyl
1650	2.3	1650	2.3	1300	1.9	1300	1.9	1300	1.9
2150	2.6	2150	2.6	1800	2.2	1800	2.2	1800	2.2
2650	2.9	2650	2.9	2300	2.5	2300	2.5	2300	2.5
3150	3.2	3150	3.2	2800	2.8	2800	2.8	2800	2.8
3650	3.6	3650	3.6	3300	3.1	3300	3.1	3300	3.1
4150	3.9	4150	3.9	3800	3.4	3800	3.4	3800	3.4
4650	4.2	4650	4.2	4300	3.7	4300	3.7	4300	3.7
5150	4.5	5150	4.5	4800	4.0	4800	4.0	4800	4.0
8000	6.3	8000	6.3	6350	5.0	6350	5.0	6350	5.0

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
axle 5 : 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 = 16.7 % Fe
axle 4            (rdyn 421 mm)              T = 16.7 % Fe
axle 5            (rdyn 421 mm)              T = 16.7 % 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 = 51 mm)           s = 38 mm
axle 4            (sp = 51 mm)           s = 38 mm
axle 5            (sp = 51 mm)           s = 38 mm
```

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

```
axle1                          ThA = 7318 N
axle2                          ThA = 7318 N
axle3                          ThA = 4779 N
axle4                          ThA = 4779 N
axle5                          ThA = 4779 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 = 44763 N
axle 2            (rdyn 421 mm)              T = 44763 N
axle 3            (rdyn 421 mm)              T = 29147 N
axle 4            (rdyn 421 mm)              T = 29147 N
axle 5            (rdyn 421 mm)              T = 29147 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                      >= 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 = 44763 N
axle 2            (rdyn 421 mm)              T = 44763 N
axle 3            (rdyn 421 mm)              T = 29147 N
axle 4            (rdyn 421 mm)              T = 29147 N
axle 5            (rdyn 421 mm)              T = 29147 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                      >= 0,4 and
(items 1.5.3 and 1.7.2 to annex 11)        >= 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		16/24	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		6003	6003
sp.brake chamber no Haldex		135 162	135 162
release pressure pLs in bar			
		5.2	5.2

calculation:

	axle 3	axle 4
ratio until road	3.7388	3.7388

$iFb = lBh*Eta*C*rBt/(rBn*rstat)$

	axle 3	axle 4
for rstat in mm	401	401
brake force of spring br. Tf in N	44180	44180

$Tf = (TFZ*KDZ-2*Co/lBh)*iFb$

	axle 3
braking rate zf laden	0.267

$zf = sum (Tf)/P + 0,01$

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 =   5653 mm   for E =   7380 mm
==================
min Ef =   5653 mm   for E =   7380 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	=	2090 mm	height of center of gravity - laden
PR	=	19050 kg	maximum bogie mass - laden
P	=	35050 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 6.3	4770 43524	
axle 2	1.0 6.3	4770 43524	
axle 3	1.0 5.0		3869 28322
axle 4	1.0 5.0		3869 28322
axle 5	1.0 5.0		3869 28322

VIN - no.:

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

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 50368A date 13.11.2023
Bremsberechnung Nr: GenNZ 50368A vom 13.11.2023

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