



# 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 Name *(PRINT IN CAPS)*

ID

CHRIS CARKE

CJC

Vehicle Registration\*

VIN / Chassis Number

7A9E38111D1023159

Component being certified:

Chassis Modification

Load Anchorage

Log Bolsters

Towing Connection

✓ Brakes

SRT

Certification Category

PSV Stability

PSV Rollover

Swept Path

HUEK

PBS

Description of Work

CARRY OUT SET UP OF TRAILER EBS SYSTEM.

Roll STABILITY FUNCTION ACTIVATED

Code/Standard Certified to

Component Load Rating(s)

HUBNZ 3205/2 SCHED 5.

General Drawing Number(s)

35000 K.G.

N/A.

Supporting Documents

Brake Design Certificate - JH 130902.  
PREV EXEMPTION HUB 13/277

\*Special Conditions

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

Certification Expiry Date *(if applicable)*

or Hubodometer Reading *(whichever comes first)*

N/A

## Declaration

I the undersigned, declare that I am the Heavy Vehicle Specialist Inspector identified above and I hold a current valid appointment to 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 Deed of Appointment. To the best of my knowledge the information contained in this Certificate is true and correct.

Designer's ID *(if certified by a manufacturer)*

Inspector's / Delegate's Signature

\*Delegate's/Inspector's Name *(PRINT IN CAPS)*

ID number

Date

Number

17.10.23

450524

COF Vehicle Inspector ID

COF Vehicle Inspector Signature

Date

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



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

distribution: DOMETT T&T  
 7A9E38111D1023159  
 SODC: JH130902  
 PREV: HVB13/277

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 : SAFT BULK  
 trailer type : 5-axle-full-trailer  
 remarks : air / hydraulic / VA suspension  
 WABCO TRAILER - EBS  
 TRISTOP 1+2+3: T.16/24  
 265/70 R 19,5  
 355/50 R 22,5

axle 1 + 2 + 3 + 4 + 5 : Assali Stefen, ELSA 195 LE, 361-0071-04 ext05 ECE,

		unladen	laden
total mass	P in kg	6900	35000
axle 1	P1 in kg	1800	7600
axle 2	P2 in kg	1800	7600
axle 3	P3 in kg	1100	6600
axle 4	P4 in kg	1100	6600
axle 5	P5 in kg	1100	6600
wheel base	E in mm	6950 - 6950	
centre of gravity height	h in mm	1040	2307

	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 119.6	BZ 119.6	BZ 119.6	BZ 122.1	BZ 122.1
brake chamber manufacturer	Meritor	Meritor	Meritor	Meritor	Meritor
chamber size	T.16/24	T.16/24	T.16/24	16.	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	449	449	449
dyn. rolling radius rdyn max in mm	421	421	449	449	449
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	2.5	2.5	2.4	2.4	2.4
chamber pressure(rdyn max)pH at z=22,5%bar	2.5	2.5	2.4	2.4	2.4
chamber press.(servo)pcha at pm6,5bar bar	6.5	6.5	5.2	5.2	5.2
piston force ThA at pm6,5bar N	6590	6590	5197	5197	5197
brake force(rdyn min)T lad. at pm6,5bar N	47100	47100	34814	34814	34814
brake force(rdyn max)T lad. at pm6,5bar N	47100	47100	34814	34814	34814
brake force within 1 % rolling friction proportion %	20.8	20.8	19.5	19.5	19.5

braking rate z laden 0.579 for rdyn min  
 z = sum (TR)/PRmax 0.579 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 1624HTLD64

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 1624HTLD64

axle 3:

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

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

brake cylinder: Meritor 1624HTLD64

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axle 4:

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

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

brake cylinder: Meritor 16HSCLD64

axle 5:

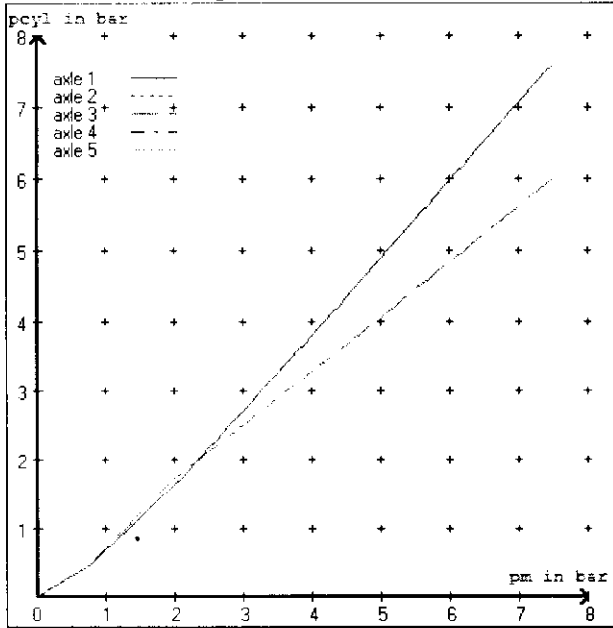
valve 1: 971 002 ... 0 WABCO  
EBS emergency valve

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

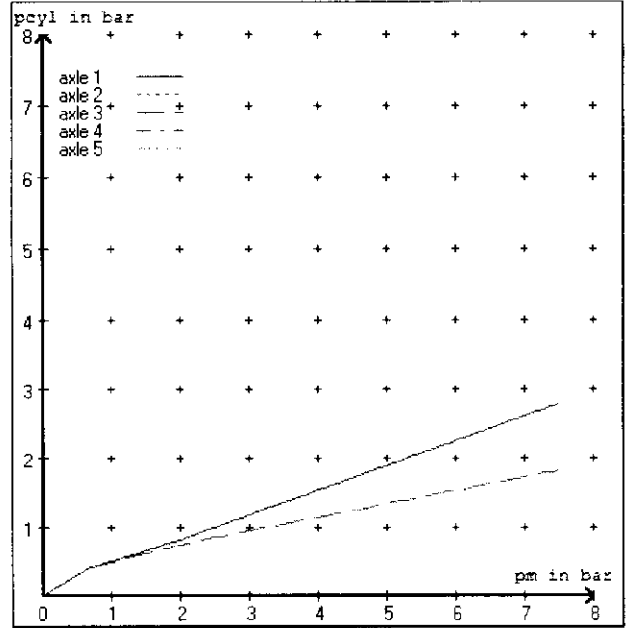
brake cylinder: Meritor 16HSCLD64

test type III (zIII = 0.30)	for rdyn min :	axle1	axle2	axle3	axle4	axle5	
at pm 3.6 bar =>	pcha in bar :	3.4	3.4	3.0	3.0	3.0	3.0
test type III (zIII = 0.06)	for rdyn min :	axle1	axle2	axle3	axle4	axle5	
at pm 1.2 bar =>	pcha in bar :	0.9	0.9	0.9	0.9	0.9	0.9

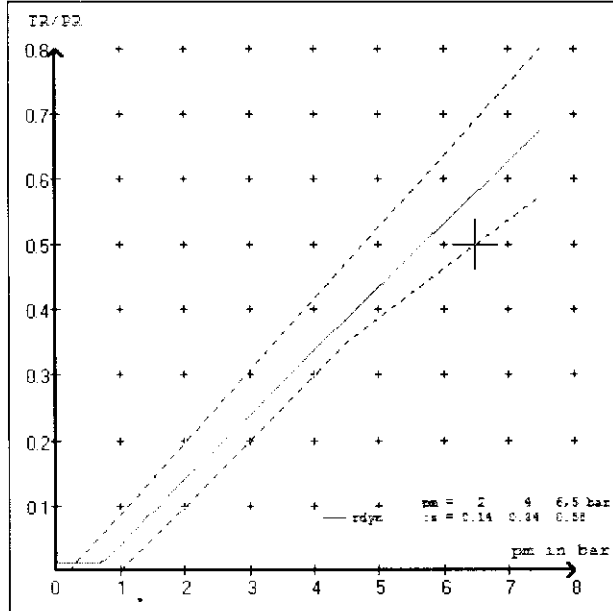
brake chamber pressure laden



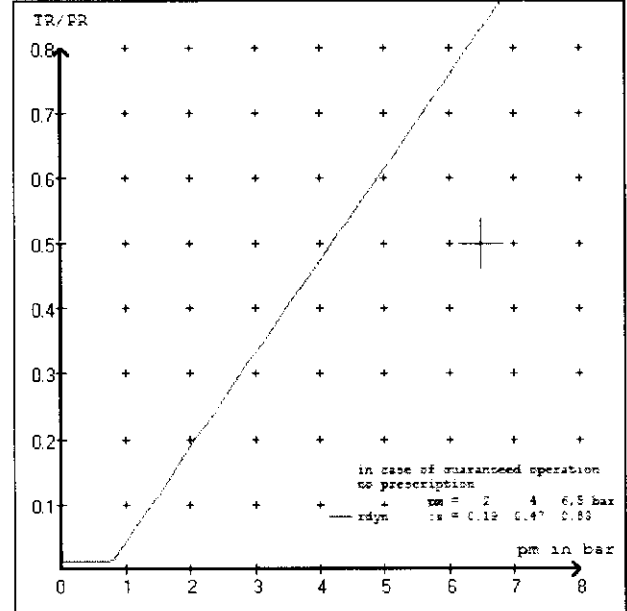
brake chamber pressure unladen



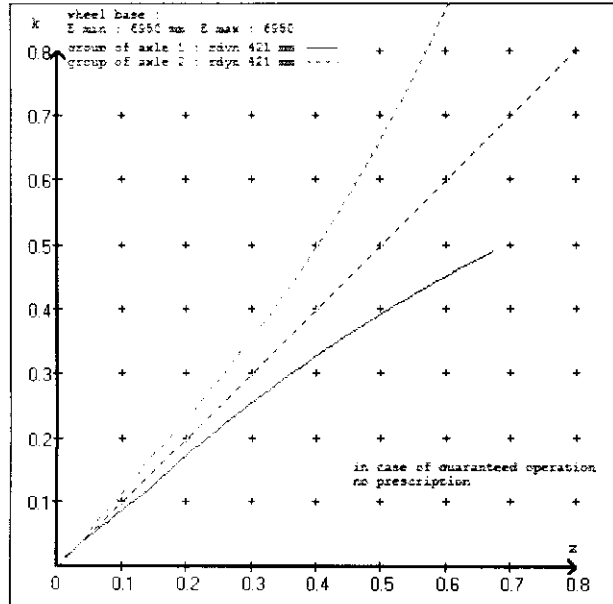
compatibility band laden



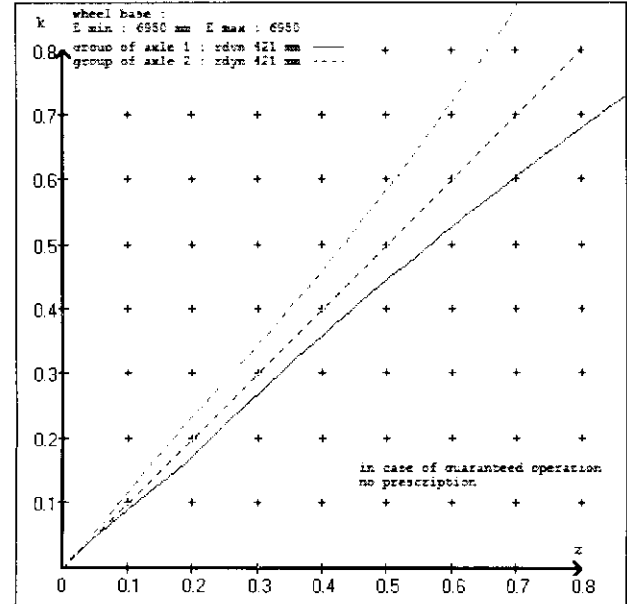
compatibility band unladen



curves of friction laden



curves of friction unladen



vehicle manufacturer: DOMETT T&T  
 trailer model : 5AFT BULK  
 trailer type : 5-axle-full-trailer

brake chamber and lever length :

axle 1 : 2 x type/diameter T.16/24 (Meritor) lever length 74 mm  
 axle 2 : 2 x type/diameter T.16/24 (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 16. (Meritor) lever length 74 mm  
 axle 5 : 2 x type/diameter 16. (Meritor) 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

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vehicle manufacturer: DOMETT T&T  
 trailer model : 5AFT BULK  
 trailer type : 5-axle-full-trailer  
 brake calculation no. : TP 50843A

tire circumference main axle : 2825 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 = 0.138  
 6.5 bar z = 0.580

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	1800	to be	2.4	7600	to be	0.4	1.6	6.5
2	1800	entered by the vehicle manufact.	2.4	7600	entered by the vehicle manufact.	0.4	1.6	6.5
3	1100		1.6	6600		0.4	1.7	5.2
4	1100		1.6	6600		0.4	1.7	5.2
5	1100		1.6	6600		0.4	1.7	5.2

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
1800	2.4	1800	2.4	1100	1.6	1100	1.6	1100	1.6
2300	2.8	2300	2.8	1600	1.9	1600	1.9	1600	1.9
2800	3.1	2800	3.1	2100	2.3	2100	2.3	2100	2.3
3300	3.5	3300	3.5	2600	2.6	2600	2.6	2600	2.6
3800	3.8	3800	3.8	3100	2.9	3100	2.9	3100	2.9
4300	4.2	4300	4.2	3600	3.2	3600	3.2	3600	3.2
4800	4.5	4800	4.5	4100	3.6	4100	3.6	4100	3.6
5300	4.9	5300	4.9	4600	3.9	4600	3.9	4600	3.9
7600	6.5	7600	6.5	6600	5.2	6600	5.2	6600	5.2

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

axle 1 : reference axle: Assali Stef---/--- ---/K brake lining: ROR8616AF(M13)  
 test report : 361-0071-04 e date : 17.06.2011  
 axle 2 : reference axle: Assali Stef---/--- ---/K brake lining: ROR8616AF(M13)  
 test report : 361-0071-04 e date : 17.06.2011  
 axle 3 : reference axle: Assali Stef---/--- ---/K brake lining: ROR8616AF(M13)  
 test report : 361-0071-04 e date : 17.06.2011  
 axle 4 : reference axle: Assali Stef---/--- ---/K brake lining: ROR8616AF(M13)  
 test report : 361-0071-04 e date : 17.06.2011  
 axle 5 : reference axle: Assali Stef---/--- ---/K brake lining: ROR8616AF(M13)  
 test report : 361-0071-04 e date : 17.06.2011

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 = 21.5 % Fe
axle 2	(rdyn 421 mm)	T = 21.5 % Fe
axle 3	(rdyn 449 mm)	T = 17.5 % Fe
axle 4	(rdyn 449 mm)	T = 17.5 % Fe
axle 5	(rdyn 449 mm)	T = 17.5 % Fe

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

axle 1	(sp = 58 mm)	s = 37 mm
axle 2	(sp = 58 mm)	s = 37 mm
axle 3	(sp = 57 mm)	s = 37 mm
axle 4	(sp = 57 mm)	s = 37 mm
axle 5	(sp = 57 mm)	s = 37 mm

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

axle1	ThA = 6590 N
axle2	ThA = 6590 N
axle3	ThA = 5197 N
axle4	ThA = 5197 N
axle5	ThA = 5197 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 = 41860 N
axle 2	(rdyn 421 mm)	T = 41860 N
axle 3	(rdyn 449 mm)	T = 30953 N
axle 4	(rdyn 449 mm)	T = 30953 N
axle 5	(rdyn 449 mm)	T = 30953 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)	0.58	(hot)braking
		0.51

required braking rate	>= 0,4 and
(items 1.5.3 and 1.7.2 to annex 11)	>= 0,6*E (0.35)

axle 1	(rdyn 421 mm)	T = 41860 N
axle 2	(rdyn 421 mm)	T = 41860 N
axle 3	(rdyn 449 mm)	T = 30953 N
axle 4	(rdyn 449 mm)	T = 30953 N
axle 5	(rdyn 449 mm)	T = 30953 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)	0.58	(hot)braking
		0.51

required braking rate	>= 0,4 and
(items 1.5.3 and 1.7.2 to annex 11)	>= 0,6*E (0.35)



spring parking brake

	<u>axle 1</u>	<u>axle 2</u>	<u>axle 3</u>
no of TRISTOP-actuators per axle line KDZ	2	2	2
TRISTOP-actuator type	T.16/24	T.16/24	T.16/24
lever length                      lBh in mm	74	74	74
stat. tyre radius                      rstat max in mm	401	401	432
at a stroke of                      s            in mm	30	30	30
min. force of spring brake            TFZ in N	7605	7605	7605
sp.brake chamber no Meritor.....	4	4	4
release pressure                      pLs in bar	4.8	4.8	4.8

calculation:

ratio until road	3.7388	3.7388	3.4705
$iFb = lBh * \eta * C * rBt / (rBn * rstat)$ for rstat            in mm	401	401	432
brake force of spring br. Tf            in N	56260	56260	52223
$Tf = (TFZ * KDZ - 2 * Co / lBh) * iFb$			
braking rate                      zf laden	0.490		
$zf = \sum (Tf) / P + 0,01$			

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 = . 4430 mm    for E =    6950 mm  
 =====  
 min Ef =    4430 mm    for E =    6950 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            =            2307 mm    height of center of gravity - laden  
 PR          =            19800 kg    maximum bogie mass - laden  
 P            =            35000 kg    maximum total mass - laden  
 nf           =            3            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: 449 mm

	pz [bar]	T [N]	T [N]
axle 1	1.0	4444	
	6.5	40674	
axle 2	1.0	4444	
	6.5	40674	
axle 3	1.0		4123
	5.2		30064
axle 4	1.0		4123
	5.2		30064
axle 5	1.0		4123
	5.2		30064

VIN - no.:

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

