WABCO

TRAILER EBS-E

HERSTELLER MANUFACTURER CONSTRUCTEUR	DOMETT T&T
TYP TYPE TYPE	5AX F/T TANKER
FAHRZEUG IDENTNR. CHASSIS NUMBER NUMERO DE CHASSIS	7A9E10012C1023905
BREMSBERECHNUNGS-NR. BRAKE CALCULATION NO. CALCUL DE FREINAGE NO.	TP50674

POLRADZAHNEZAHL c-d | e-f POLE WHEEL TEETH c-d | e-f DENTS ROUE DENTÉE c-d | e-f	90	90	ABS-System ABS-System Système ABS	4S/3M

RSS RSS RSS	Einfachbereifung Single Tyre Monte simple		Lenkachse Steering axle Essieu vireur	
	Zwillingsbereifung Twin Tyre Monte jumelée	X	Kippkritisches Fahrzeug Critical Trailer Véhicule critique	

Subsystems	---		I/O	

GIO	Pin1	Pin3	Pin4
1	---	---	---
2	---	---	---
3	ALS2	ALS2	---
4	---	---	---
5	DIAG	DIAG	DIAG
6	---	---	---
7	---	---	---

	pm (bar)	6.5	pm (bar)	0.8	2.0	---	6.5		TYP TYPE	(mm)	(mm)	1.0	Pz
ACHSE AXLE ESSIEU							pz					TR (daN)	
1	1400	0.7	1.5	7250	4.8	0.3	1.4	---	5.8	-	14	64	69	493	3517
2	1400	0.7	1.5	7250	4.8	0.3	1.4	---	5.8	-	14	64	69	493	3517
3	1100	0.5	1.3	6600	4.3	0.3	1.4	---	5.4	-	14 / 16	64	69	488	3260
4	1100	0.5	1.3	6600	4.3	0.3	1.4	---	5.4	-	14 / 16	64	69	488	3260
5	1100	0.5	1.3	6600	4.3	0.3	1.4	---	5.4	-	14	64	69	488	3260

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

distribution: DOMETT T&T
               FONTERRA 5AX

vehicle manufacturer: DOMETT T&T

trailer model   :   5AX F/T TANKER

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, PAN 19-1, TDB 0749 ECE,

			unladen	laden
total mass	P in kg		6100	34300
axle 1	P1 in kg		1400	7250
axle 2	P2 in kg		1400	7250
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		6465 - 6465	
centre of gravity height	h in mm		975	1600

			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 122.1	BZ 119.6	BZ 119.6	BZ 122.1
brake chamber manufacturer			Meritor	Meritor	Meritor	Meritor	Meritor
chamber size			14.	14.	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:

		axle 1	axle 2	axle 3	axle 4	axle 5
chamber pressure(rdyn min)pH at z=22,5%bar		2.3	2.3	2.2	2.2	2.2
chamber pressure(rdyn max)pH at z=22,5%bar		2.3	2.3	2.2	2.2	2.2
chamber press.(servo)pcha at pm6,5bar bar		5.8	5.8	5.4	5.4	5.4
piston force ThA at pm6,5bar N		5588	5588	5187	5187	5187
brake force(rdyn min)T lad. at pm6,5bar N		42285	42285	39192	39192	39192
brake force(rdyn max)T lad. at pm6,5bar N		42285	42285	39192	39192	39192
brake force within 1 % rolling friction						
proportion %		20.0	20.0	20.0	20.0	20.0

braking rate   z laden   0.601   for rdyn min
z = sum (TR)/PRmax   0.601   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   14HSCLD64

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   14HSCLD64

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

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

    brake cylinder: Meritor   1416HTLD64

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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    1416HTLD64


axle 5:
   valve 1: 971 002 ... 0              WABCO
          EBS emergency valve

   valve 2: 480 102 ... 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 :    3.0    3.0    2.8    2.8    2.8
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    0.8    0.8    0.8
```

brake chamber pressure   laden

pcyl in bar

axle 1
axle 2
axle 3
axle 4
axle 5

pm in bar
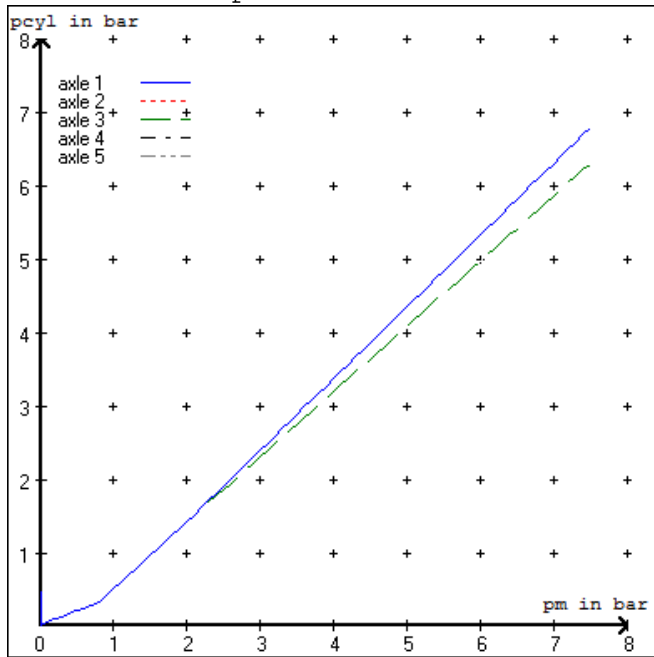
brake chamber pressure   unladen

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
rdyn   :z = 0.13 0.34 0.60

pm in bar
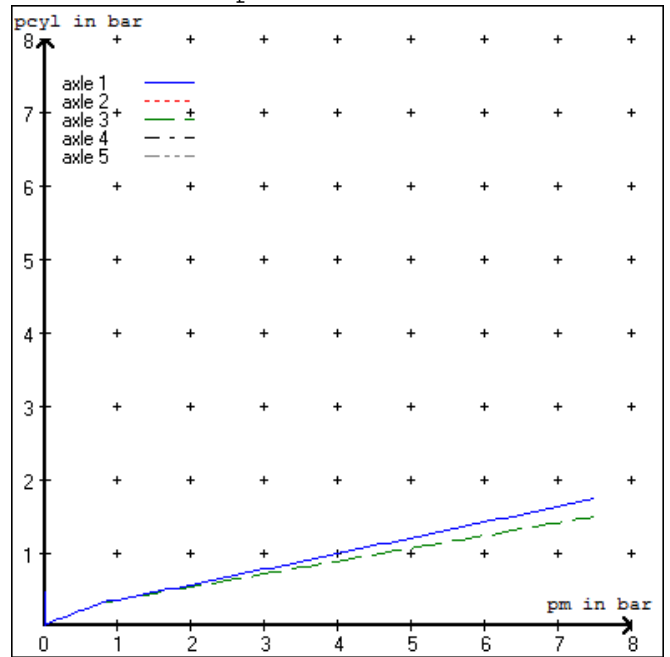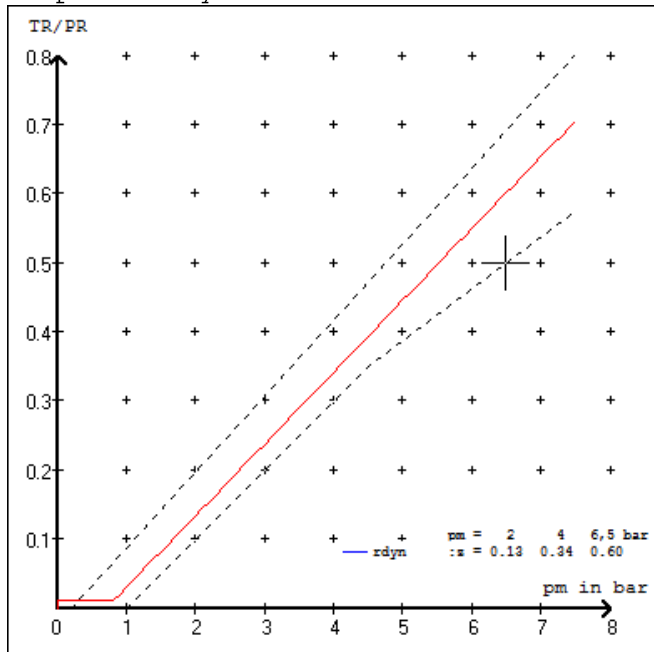
compatibility band   unladen

TR/PR

in case of guaranteed operation
no prescription
pm =   2   4   6,5 bar
rdyn   :z = 0.15 0.39 0.69

pm in bar

curves of friction   laden

k

wheel base :
E min : 6465 mm E max : 6465
group of axle 1 : rdyn 421 mm
group of axle 2 : rdyn 421 mm

in case of guaranteed operation
no prescription

z
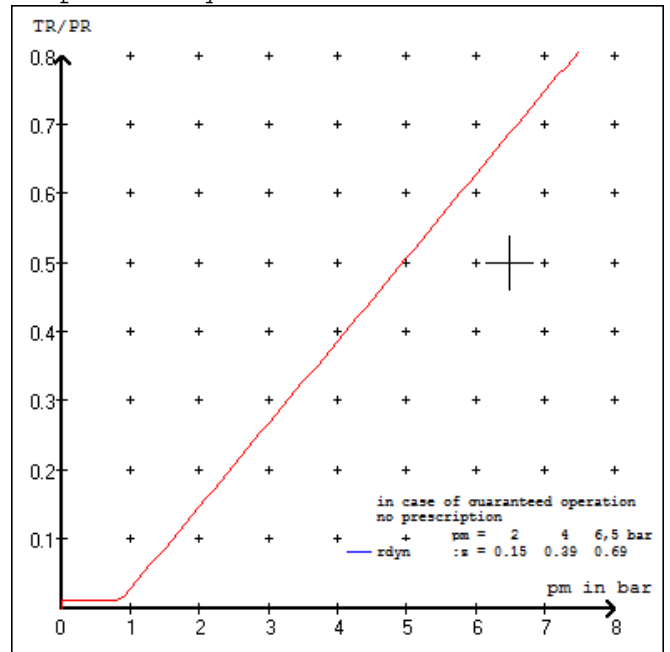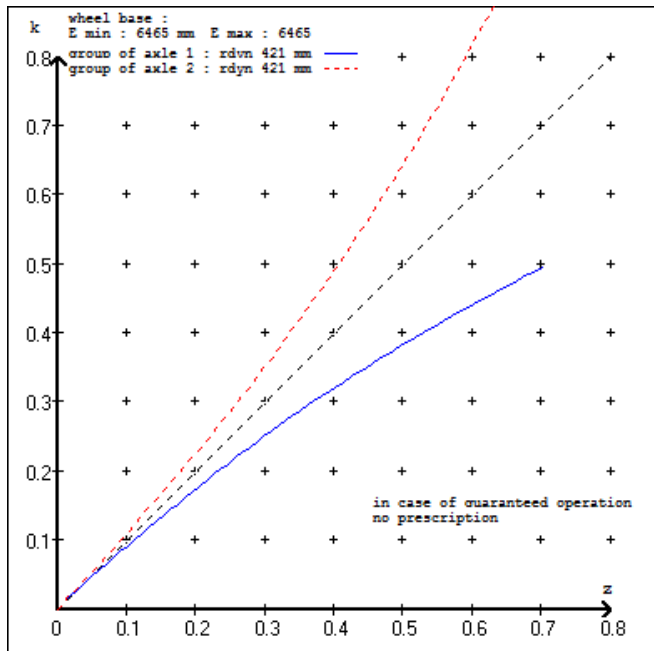
curves of friction   unladen
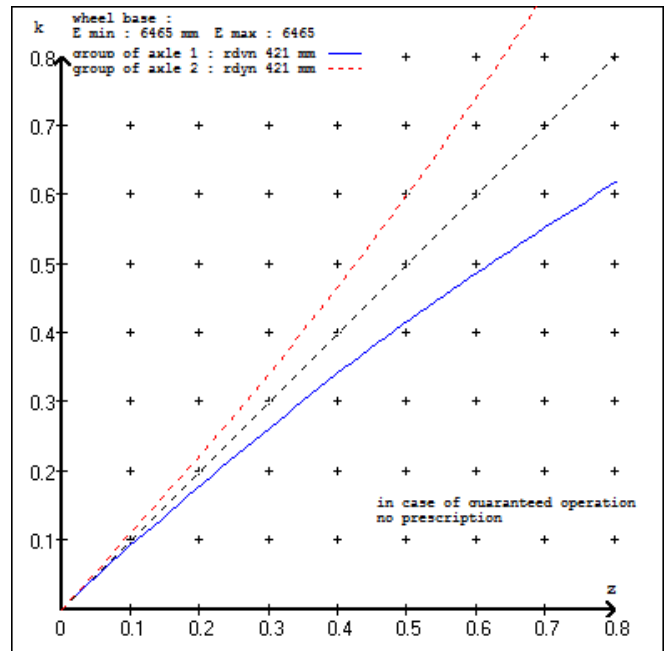
k

wheel base :
E min : 6465 mm E max : 6465
group of axle 1 : rdyn 421 mm
group of axle 2 : rdyn 421 mm

in case of guaranteed operation
no prescription

z

vehicle manufacturer: DOMETT T&T
trailer model   :   5AX F/T TANKER
trailer type   :   5-axle-full-trailer

brake chamber and lever length :
axle 1 :   2 x type/diameter   14.   (Meritor)   lever length 69 mm
axle 2 :   2 x type/diameter   14.   (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   WABCO EBS trailer modulator

EBS input data
==============
vehicle manufacturer: DOMETT T&T
trailer model   : 5AX F/T TANKER
trailer type   : 5-axle-full-trailer
brake calculation no.   : TP 50674A

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	1.5	7250	to be	0.3	1.4	5.8
2	1400	entered by	1.5	7250	entered by	0.3	1.4	5.8
3	1100	the vehicle	1.3	6600	the vehicle	0.3	1.4	5.4
4	1100	manufact.	1.3	6600	manufact.	0.3	1.4	5.4
5	1100		1.3	6600		0.3	1.4	5.4

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
1400	1.5	1400	1.5	1100	1.3	1100	1.3	1100	1.3
1900	1.9	1900	1.9	1600	1.7	1600	1.7	1600	1.7
2400	2.2	2400	2.2	2100	2.0	2100	2.0	2100	2.0
2900	2.6	2900	2.6	2600	2.4	2600	2.4	2600	2.4
3400	3.0	3400	3.0	3100	2.8	3100	2.8	3100	2.8
3900	3.3	3900	3.3	3600	3.2	3600	3.2	3600	3.2
4400	3.7	4400	3.7	4100	3.5	4100	3.5	4100	3.5
4900	4.1	4900	4.1	4600	3.9	4600	3.9	4600	3.9
7250	5.8	7250	5.8	6600	5.4	6600	5.4	6600	5.4

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 = 20.9 % Fe
axle 2   (rdyn 421 mm)   T = 20.9 % Fe
axle 3   (rdyn 421 mm)   T = 19.7 % Fe
axle 4   (rdyn 421 mm)   T = 19.7 % Fe
axle 5   (rdyn 421 mm)   T = 19.7 % Fe

calculated actuator stroke in mm
(item 4.3.1.1 of appendix 2 to annex 11)
axle 1   (sp = 57 mm)   s = 39 mm
axle 2   (sp = 57 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 = 5588 N
axle2   ThA = 5588 N
axle3   ThA = 5187 N
axle4   ThA = 5187 N
axle5   ThA = 5187 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 = 33309 N
axle 2   (rdyn 421 mm)   T = 33309 N
axle 3   (rdyn 421 mm)   T = 30870 N
axle 4   (rdyn 421 mm)   T = 30870 N
axle 5   (rdyn 421 mm)   T = 30870 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	0.47
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 = 33309 N
axle 2   (rdyn 421 mm)   T = 33309 N
axle 3   (rdyn 421 mm)   T = 30870 N
axle 4   (rdyn 421 mm)   T = 30870 N
axle 5   (rdyn 421 mm)   T = 30870 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	0.47
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.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			
		4.8	4.8

calculation:

		axle 3	axle 4
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		0.296	
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 =   4560 mm   for E =   6465 mm
==================
min Ef =   4560 mm   for E =   6465 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   =   1600 mm height of center of gravity - laden
PR   = 19800 kg   maximum bogie mass - laden
P   = 34300 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 5.8	4937 35179	
axle 2	1.0 5.8	4937 35179	
axle 3	1.0 5.4		4884 32605
axle 4	1.0 5.4		4884 32605
axle 5	1.0 5.4		4884 32605

VIN - no.:

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