

# Heavy Vehicle Specialist Certificate

Must be presented to a CoF (Heavy) Inspecting Organisation  
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 **7A9E35014F1023434**

Component being certified:

|  |  |                                       |
|--|--|---------------------------------------|
| <input type="checkbox"/> Chassis           | <input type="checkbox"/> Load Anchorage    | <input type="checkbox"/> Log Bolsters |
| <input type="checkbox"/> Towing Connection | <input checked="" type="checkbox"/> Brakes | <input type="checkbox"/> SRT          |
| <input type="checkbox"/> PSV Stability     | <input type="checkbox"/> PSV Rollover      | <input type="checkbox"/> Swept Path   |
| <input type="checkbox"/> PBS               |  |                                       |

Certification Category **HVEK**

Description of Work

**CERTIFY TO SCHEDULE 5**

**ROLL STABILTY FUNCTION ACTIVATED**

Code/Standard/Rule Certified to **HVBR 32015/3 Schedule 5** Component Load Rating(s) **32000KG**

General Drawing Number(s) **N/A**

Supporting Documents **BRAKE RULE CERTIFICATE - CJC153460**

Special Conditions\* **WARNING LAMP MUST ILLUMINATE WHEN IGNITION IS SWITCHED ON & THEN EXTINGUISH IMMEDIATELY OR WHEN VEHICLE SPEED EXCEEDS 7 KPH**

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) **CHRIS CLARKE** ID Number **CJC**

Date **12-Nov-15** Number **531360**

CoF Vehicle Inspector ID \_\_\_\_\_ CoF Vehicle Inspector Signature \_\_\_\_\_ Date \_\_\_\_\_

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

# WABCO

# START-UP PROTOCOL

|   |  |                   |               |
|---|--|-------------------|---------------|
| System  | Trailer EBS-E  | WABCO part number | 480 102 080 0 |
| Production date   | 2015-07-02   | Serial number     | 437001475700D |
| Serial number (modulator)                                       | 000000041027   |                   |               |
| Fingerprint Customer EOL / Customer Development / Flash Program | W503643 / 2015-11-11 ; 00000000 / 0000-00-00 ; 00000000 / 0000-00-00 |                   |               |

| WABCO  |   | TRAILER EBS-E  |          | GGVS/ADR TUEH TB 2007 - 019.00<br>361-0071-04 |      |      |     |             |      |      |         |     |    |     |      |
|--|---|--|----------|---|------|------|-----|-------------|------|------|---------|-----|----|-----|------|
| HERSTELLER<br>MANUFACTURER<br>CONSTRUCTEUR   | DOMETT T&T                                      |  | GIO      | Pin1  | Pin3 | Pin4 |     |             |      |      |         |     |    |     |      |
| TYP<br>TYPE<br>TYPE  | 5AFT TIPPER                                     |  | 1        | 24V-O1  | ---  | ---  |     |             |      |      |         |     |    |     |      |
| FAHRZEUG IDENTIF.<br>CHASSIS NUMBER<br>NUMERO DE CHASSIS                               | 7A9E35014F1023434                               |  | 2        | ---   | ---  | ---  |     |             |      |      |         |     |    |     |      |
| BREMSENRECHNUNGS-NR.<br>BRAKE CALCULATION NO.<br>CALCUL. DE FREINAGE NO.               | TP51374A  |  | 3        | ALS2  | ALS2 | ---  |     |             |      |      |         |     |    |     |      |
| POLRADZÄHNEZAHL c-d   e-f<br>POLE WHEEL TEETH c-d   e-f<br>DENTS ROUE DENTÉE c-d   e-f | 90  | 90   | 4        | ---   | ---  | ---  |     |             |      |      |         |     |    |     |      |
| RSS<br>RSS<br>RSS  | Einfachbereifung<br>Single Tire<br>Monte simple | Lenkachse<br>Steering axle<br>Essieu vireur                      | 5        | DIAG  | DIAG | DIAG |     |             |      |      |         |     |    |     |      |
|  | Zwillingsbereifung<br>Twin Tire<br>Monte jumele | X  | 6        | ---   | ---  | ---  |     |             |      |      |         |     |    |     |      |
|  |   | Rippkritisches Fahrzeug<br>Critical Trailer<br>Véhicule critique | 7        | ---   | ---  | ---  |     |             |      |      |         |     |    |     |      |
| Subsystems   | SB  | I/O  | 24N      |   |      |      |     |             |      |      |         |     |    |     |      |
| ACHSE<br>AXLE<br>ESSIEU  | pm (bar)  | 6.5  | pm (bar) | 0.6   | 2.0  | ---  | 6.5 | TYP<br>TYPE | (mm) | (mm) | (bar)   | 1.0 | Pz |     |      |
|  | TR (daN)  |  |          |   |      |      |     |             |      |      |         |     |    |     |      |
| 1  | 1700  | 0.6  | 2.6      | 8000  | 4.9  | 0.4  | 1.5 | ---         | 6.8  | -    | 20      | 65  | 74 | 503 | 4905 |
| 2  | 1700  | 0.6  | 2.6      | 8000  | 4.9  | 0.4  | 1.5 | ---         | 6.8  | -    | 20      | 65  | 74 | 503 | 4905 |
| 3  | 1300  | 0.4  | 1.6      | 6400  | 3.9  | 0.4  | 1.6 | ---         | 4.1  | -    | 16 / 24 | 64  | 74 | 435 | 2480 |
| 4  | 1300  | 0.4  | 1.6      | 6400  | 3.9  | 0.4  | 1.6 | ---         | 4.1  | -    | 16 / 24 | 64  | 74 | 435 | 2480 |
| 5  | 1300  | 0.4  | 1.6      | 6400  | 3.9  | 0.4  | 1.6 | ---         | 4.1  | -    | 16      | 64  | 74 | 435 | 2480 |

### TEBS-E

|                       |             |                                |            |
|-----------------------|-------------|--------------------------------|------------|
| Diagnostic memory     | OK          | Warning lamp control           | OK         |
| Parameter setting     | carried out | Stop light power supply        | OK         |
| EBS pressure test     | Not tested  | Lifting axle test              | Not tested |
| Redundancy test       | OK          | ECAS height sensor calibration | Not tested |
| ABS sensor assignment | OK          | Height sensor axle load        | Not tested |
| RTR check             | Not tested  | Leak test                      | Not tested |
| Immobilizer test      | Not tested  | Signal outputs                 | Not tested |
| Signal inputs         | Not tested  | Tag axle test                  | Not tested |

### Electronic Extension Module

|                   |            |                |            |
|-------------------|------------|----------------|------------|
| Diagnostic memory | Not tested | Signal outputs | Not tested |
| TailGUARDlight    | Not tested | TailGUARD      | Not tested |

|              |                         |                   |                   |
|--------------|-------------------------|-------------------|-------------------|
| Manufacturer | DOMETT T&T              | Vehicle ident. no | 7A9E35014F1023434 |
| Vehicle type | 5AFT TIPPER             | Odometer reading  | 0.0 km            |
| next Service | 0 km                    | Trip reading      | 0.0 km            |
| Tester       | Chris Clarke            | Signature         |                   |
| Date         | 2015-11-11 5:13:22 p.m. |                   |                   |



**NOTICE TO VEHICLE OPERATOR**

***THIS VEHICLE HAS A BRAKE SYSTEM WHICH HAS BEEN DESIGNED AND FITTED IN ACCORDANCE WITH THE LAND TRANSPORT HEAVY VEHICLE BRAKE RULE 32015/3.***

***IF THIS VEHICLE IS OPERATED IN CONJUNCTION WITH NON-CERTIFIED VEHICLES, THERE MAY BE OPERATIONAL FACTORS WHICH NEED TO BE TAKEN INTO CONSIDERATION.***

***PLEASE REFER TO THE CERTIFIER FOR FURTHER INFORMATION.***

**EXCERPT FROM LAND TRANSPORT RULE; HEAVY-VEHICLE BRAKES RULE 32015/3. SECTION 10,**

**10.1 RESPONSIBILITIES OF OPERATORS**

A person who operates a vehicle must ensure that the vehicle complies with this rule.

**10.2 RESPONSIBILITIES OF REPAIRERS**

A person who repairs or adjusts a brake must ensure that the repair or adjustment:

- a) does not prevent the vehicle from complying with this rule;
- b) complies with Land Transport Rule: Vehicle Repair 1998.

**10.3 RESPONSIBILITIES OF MODIFIERS**

A person who modifies a vehicle so as to affect the braking performance of the vehicle must:

- a) ensure that the modification does not prevent the vehicle from complying with this Rule; and
- b) notify the operator that the vehicle must be inspected and, if necessary, certified by person or organisation appointed to carry out specialist inspection and certification of heavy vehicle brakes.

***IF YOU ARE UNSURE ABOUT YOUR RESPONSIBILITIES, PLEASE CONTACT THE VEHICLE MANUFACTURER, OR MYSELF.***

***COMPLAINTS. Complaints and Warranty issues which relate to Brake Certification will be acknowledged within 7 working days and a resolution proposed within 25 working days. Resolution of complaints and Warranty issues is subject to Transpecs Warranty policy. Customers have the right to appeal to the New Zealand Transport Authority if dissatisfied with a Compliance issue. (Refer NZTA Deed Of Appointment Para 47.4) NZTA Helpdesk 0800 699 000***

(p.p.).....  
(J.Hirst (JEH) HVEK)

**NOTICE TO VEHICLE OPERATOR**

This trailer is equipped with an Electronic Brake System.

To comply with the New Zealand Heavy Vehicle Brake Rule 32015/3, it must be used only in conjunction with a truck/tractor equipped with a 5 or 7 pin ABS/EBS power supply socket.

Failure to connect to such supply invalidates Brake Rule compliance.

The trailer ABS/EBS warning light on the towing vehicle dashboard must illuminate when the ignition is switched on and extinguish when the vehicle is in motion.

If the light does not illuminate when ignition is switched on, the system must be checked. If the light remains illuminated when the vehicle is in motion, Brake Rule compliance is compromised. Repairs must be made as soon as possible.

**If you are unsure of your responsibilities and/or obligations, please contact either the vehicle manufacturer or myself.**

(p.p.) \_\_\_\_\_  
J E Hirst  
(JEH HVEK)  
(09 980 7300)

**NOTICE TO VEHICLE OPERATOR**

**WABCO Park Release Emergency Valve**  
**(PREV)**

This trailer is equipped with a WABCO PREV  
Part # 971 002 900 0

Application of the park brake via the cab control valve will actuate and apply all service brakes on the trailer. In the event of a leak in the service brake system the Spring Brakes will automatically override and hold the vehicle in compliance to Land Transport Rule: Heavy-vehicle Brakes Rule 32015/3.

When the vehicle is presented for COF the trailer park brake system is tested by pulling the red actuation knob on the PREV, situated mid way down the chassis rail. The cab control in the prime mover does not have to be applied for this test procedure.

**If you are unsure of any aspect relating to this instruction please contact either the vehicle manufacturer or myself.**

(p.p.) \_\_\_\_\_  
J E Hirst  
(JEH HVEK)  
(09 980 7300)

**HVBR WORKSHEET**  
(PROCEDURE & COMPLIANCE DOCUMENTATION SHEET)

CERTIFICATE No. JH151113

CUSTOMER NAME

DOMETT TRAILERS LTD

CUSTOMER ORDER No.

4484

DATE RECEIVED

Oct 15

VEHICLE TYPE

5 AXLE FULL TRAILER

REG No.

CHASSIS No.

7A9E35014F1023434

**BRIEF SPECIFICATION AS CERTIFIED TO HVBR**

**BRAKE CHAMBERS:**

| <u>Ax #</u> | <u>Make/model</u> | <u>Max stroke</u> | <u>Lever length</u> |
|-------------|-------------------|-------------------|---------------------|
| 1&2         | TSE 20HSCLD65     | 65 mm             | 74 mm               |
| 3&4         | TSE 1624HTLD64    | 64 mm             | 74 mm               |
| 5*          | TSE 16HSCLD64     | 64 mm             | 74 mm               |

**BRAKE SYSTEM:**

WABCO EBS : RSS ACTIVATED

**# TEST POINTS FITTED:**

3 4 5 7

**FRICITION LINING:**

(All) Lining Brand

OEM

Aftermarket

ROR 8616 AF

EBS CONTROL: SPECIAL CONDITIONS APPLY – SEE INSTRUCTION ON LT400:

VALVES: AS PER BRAKE CALCULATION TP 51374 & SO213406

TYRE SIZE: 265 70 R 19.5

**NOTES**

PACKING SLIP NO.

SO213406

PROCESS TIME:

1

BRAKE CALC #TP51374 THE MERITOR CHAMBERS ARE THE TSE VARIANT.  
AXLE 5 COULD ALSO BE FITTED TSE1624HTLD IF REQUIRED.

COMPLETION DATE : 9<sup>th</sup> November 2015

SIGNATURE (pp.): \_\_\_\_\_

# Statement of Compliance with the New Zealand Heavy Brake Rule

Documentation required supporting Statements of Compliance with the New Zealand Heavy Brake Rule, to be made available to the Statutory Authority on request, must include all calculations and test reports.

## Confirmation of compliance

I confirm that the vehicle identified on page 1 of this Statement of Compliance complies with all relevant requirements of the current New Zealand Heavy Vehicle Brake Rule 32015/3, Schedule 5.

Date: 9<sup>th</sup> November 2015

Signed (pp.): \_\_\_\_\_

## Certifier's identification

Name: J E Hirst

Phone (bus): (09) 980 7300 Fax (bus): (09) 980 7306

Postal address: Transport Specialties, Cnr Kerrs & Ash Roads  
Wiri, Auckland, PO Box 98 971 Manukau City 2241

Position: JEH

## Confirmation of continued compliance of modification

I confirm the brake system of the vehicle identified on page 1 of this Statement of Compliance as modified by myself, continues to comply with all the relevant requirements of the current New Zealand Heavy Vehicle Brake Rule 32015/3, Schedule 5.

Date: \_\_\_\_\_

Signed: \_\_\_\_\_

Certifier's identification: JEH

Name:

Phone (bus): (09) 980 7300 Fax (bus): (09) 980 7306

Postal address: Transport Specialties Ltd  
Cnr Kerrs & Ash Roads, Wiri, Auckland  
PO Box 98 971, Manukau City 2241

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

distribution: DOMETT T&T  
 7A9E35014F1023434  
 SODC: JH151113  
 LT400: CJC ...

please note!

This brake calculation is made under consideration of  
 -the legal prescriptions mentioned above in the version valid at the time of making the program (V6.14.04.20).  
 -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 V6.14.04.20 db 08.07.2014

vehicle manufacturer: DOMETT T&T  
 trailer model : 5AFT TIPPER  
 trailer type : 5-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 + 5 : Assali Stefen, ELSA 195 LE, 361-0071-04 ext05 ECE,

|                          |          | <u>unladen</u> | <u>laden</u> |
|--------------------------|----------|----------------|--------------|
| total mass               | P in kg  | 7300           | 35200        |
| axle 1                   | P1 in kg | 1700           | 8000         |
| axle 2                   | P2 in kg | 1700           | 8000         |
| axle 3                   | P3 in kg | 1300           | 6400         |
| axle 4                   | P4 in kg | 1300           | 6400         |
| axle 5                   | P5 in kg | 1300           | 6400         |
| wheel base               | E in mm  | 5300 - 5300    |              |
| centre of gravity height | h in mm  | 1205           | 2170         |

|   | <u>axle 1</u> | <u>axle 2</u> | <u>axle 3</u> | <u>axle 4</u> | <u>axle 5</u> |
|---|---------------|---------------|---------------|---------------|---------------|
| 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                            | 20.           | 20.           | T.16/24       | T.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                  | 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   | 2.1   | 2.1   | 2.1   |
| chamber pressure(rdyn max)pH at z=22,5%bar | 2.5   | 2.5   | 2.1   | 2.1   | 2.1   |
| chamber press.(servo)pcha at pm6,5bar bar  | 6.8   | 6.8   | 4.1   | 4.1   | 4.1   |
| piston force ThA at pm6,5bar N             | 7934  | 7934  | 4019  | 4019  | 4019  |
| brake force(rdyn min)T lad. at pm6,5bar N  | 56713 | 56713 | 28676 | 28676 | 28676 |
| brake force(rdyn max)T lad. at pm6,5bar N  | 56713 | 56713 | 28676 | 28676 | 28676 |
| brake force within 1 % rolling friction %  | 21.7  | 21.7  | 18.9  | 18.9  | 18.9  |

braking rate z laden 0.578 for rdyn min  
 z = sum (TR)/PRmax 0.578 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: Meritor    1624HTLD64

axle 4:

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

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

brake cylinder: Meritor 1624HTLD64

axle 5:

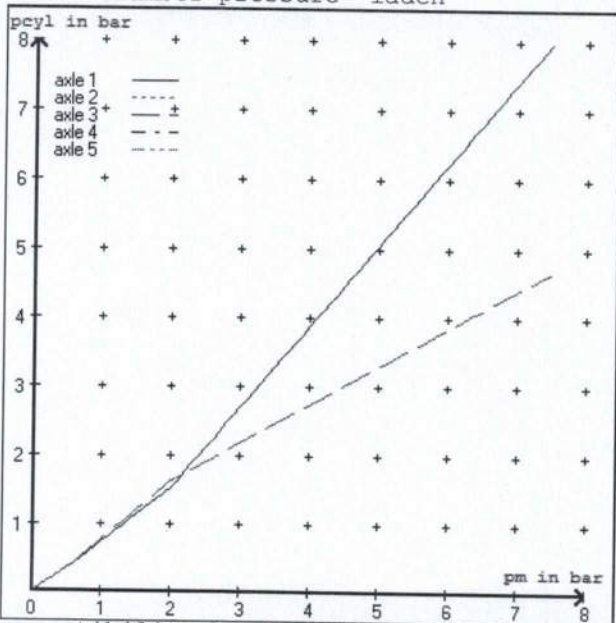
valve 1: 971 002 ... 0 WABCO  
EBS emergency valve

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

brake cylinder: Meritor 16HSCLD64

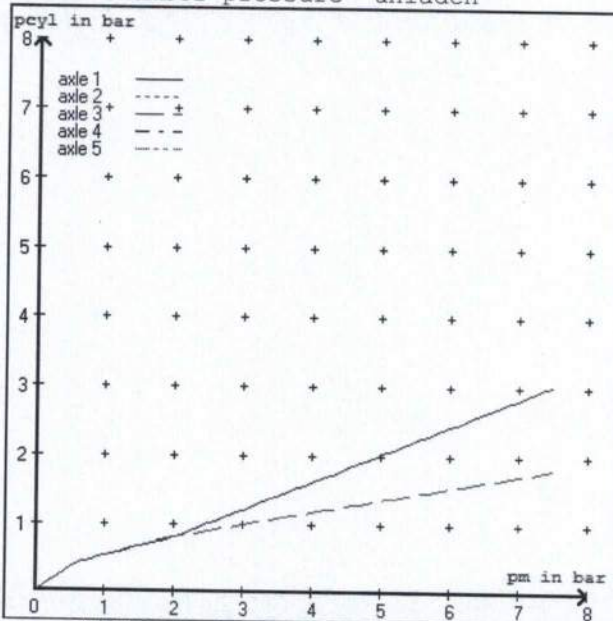
|                             |                |       |       |       |       |       |  |
|-----------------------------|----------------|-------|-------|-------|-------|-------|--|
| test type III (zIII = 0.30) | for rdyn min : | axle1 | axle2 | axle3 | axle4 | axle5 |  |
| at pm 3.6 bar =>            | pcha in bar :  | 3.4   | 3.4   | 2.5   | 2.5   | 2.5   |  |
| test type III (zIII = 0.06) | for rdyn min : | axle1 | axle2 | axle3 | axle4 | axle5 |  |
| at pm 1.1 bar =>            | pcha in bar :  | 0.8   | 0.8   | 0.9   | 0.9   | 0.9   |  |

brake chamber pressure laden

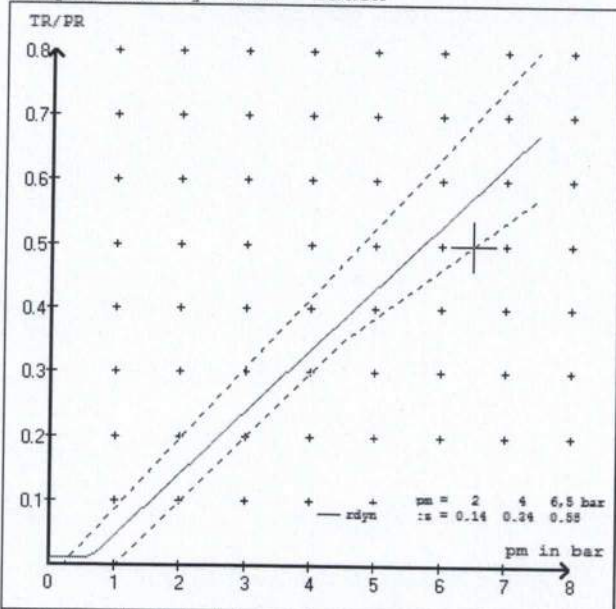


compatibility band laden

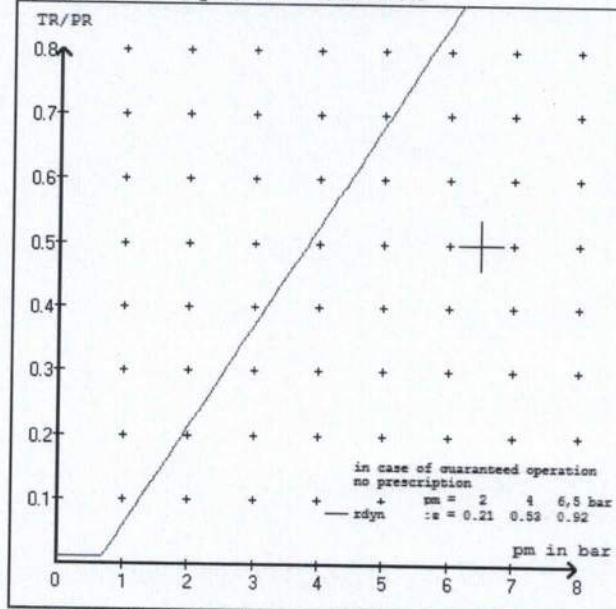
brake chamber pressure unladen



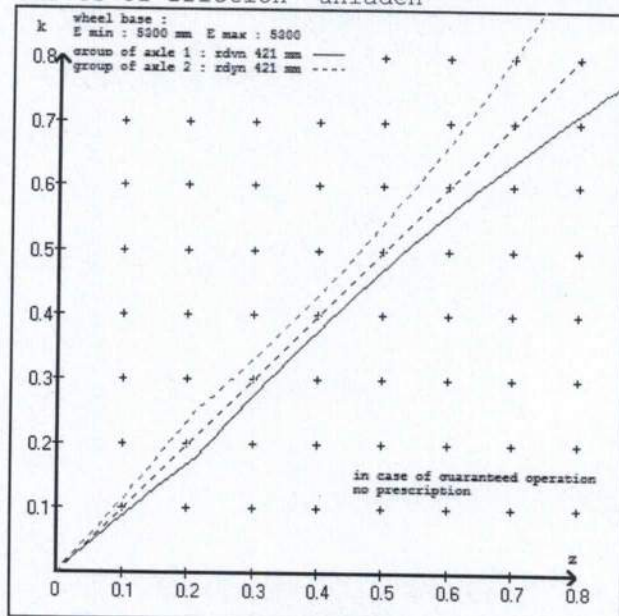
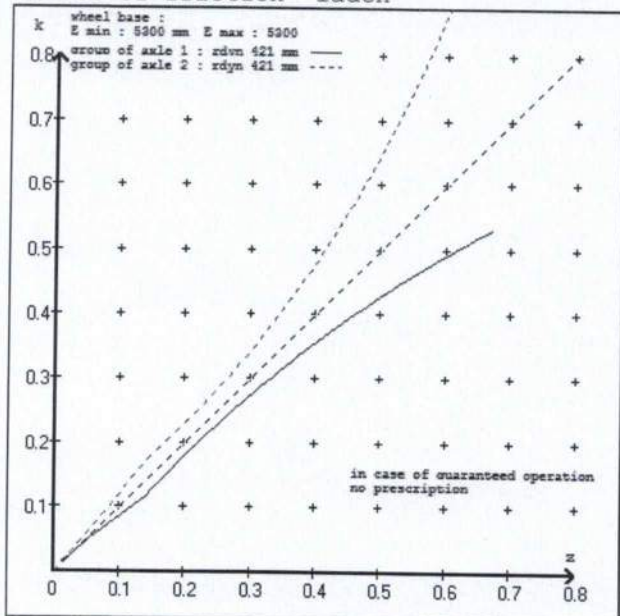
compatibility band unladen



curves of friction laden



curves of friction unladen



vehicle manufacturer: DOMETT T&T  
 trailer model : 5AFT TIPPER  
 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 T.16/24 (Meritor) lever length 74 mm  
 axle 4 : 2 x type/diameter T.16/24 (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

=====

vehicle manufacturer: DOMETT T&T  
 trailer model : 5AFT TIPPER  
 trailer type : 5-axle-full-trailer  
 brake calculation no. : TP 51374A

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

assignment pm / deceleration z: pm 0.6 bar z = 0.010  
 (laden condition) 2.0 bar z = 0.145  
 6.5 bar z = 0.580

| control pressure pm |                   |                    | 6,5               | control pressure pm |                  |                 | 0.6 | 2.0 | 6.5 |
|---------------------|-------------------|--------------------|-------------------|---------------------|------------------|-----------------|-----|-----|-----|
| axle                | axle load unladen | bellow pr. unladen | brake pr. unladen | axle load laden     | bellow pr. laden | brake pr. laden |     |     |     |
| 1                   | 1700              | to be              | 2.6               | 8000                | to be            | 0.4             | 1.5 | 6.8 |     |
| 2                   | 1700              | entered by         | 2.6               | 8000                | entered by       | 0.4             | 1.5 | 6.8 |     |
| 3                   | 1300              | the vehicle        | 1.6               | 6400                | the vehicle      | 0.4             | 1.6 | 4.1 |     |
| 4                   | 1300              | manufact.          | 1.6               | 6400                | manufact.        | 0.4             | 1.6 | 4.1 |     |
| 5                   | 1300              |                    | 1.6               | 6400                |                  | 0.4             | 1.6 | 4.1 |     |

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 pcy1 | axle load pcy1 | axle load pcy1 | axle load pcy1 | axle load pcy1 |
| 1700 2.6       | 1700 2.6       | 1300 1.6       | 1300 1.6       | 1300 1.6       |
| 2200 2.9       | 2200 2.9       | 1800 1.8       | 1800 1.8       | 1800 1.8       |
| 2700 3.3       | 2700 3.3       | 2300 2.1       | 2300 2.1       | 2300 2.1       |
| 3200 3.6       | 3200 3.6       | 2800 2.3       | 2800 2.3       | 2800 2.3       |
| 3700 3.9       | 3700 3.9       | 3300 2.6       | 3300 2.6       | 3300 2.6       |
| 4200 4.3       | 4200 4.3       | 3800 2.8       | 3800 2.8       | 3800 2.8       |
| 4700 4.6       | 4700 4.6       | 4300 3.1       | 4300 3.1       | 4300 3.1       |
| 5200 4.9       | 5200 4.9       | 4800 3.3       | 4800 3.3       | 4800 3.3       |
| 8000 6.8       | 8000 6.8       | 6400 4.1       | 6400 4.1       | 6400 4.1       |

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

|  |                               |
|--|-------------------------------|
| axle 1 : reference axle: Assali Stef---/--- ---/K---en | brake lining: ROR8616AF (M13) |
| test report : 361-0071-04 ext05 ECE                    | date : 17.06.2011             |
| axle 2 : reference axle: Assali Stef---/--- ---/K---en | brake lining: ROR8616AF (M13) |
| test report : 361-0071-04 ext05 ECE                    | date : 17.06.2011             |
| axle 3 : reference axle: Assali Stef---/--- ---/K---en | brake lining: ROR8616AF (M13) |
| test report : 361-0071-04 ext05 ECE                    | date : 17.06.2011             |
| axle 4 : reference axle: Assali Stef---/--- ---/K---en | brake lining: ROR8616AF (M13) |
| test report : 361-0071-04 ext05 ECE                    | date : 17.06.2011             |
| axle 5 : reference axle: Assali Stef---/--- ---/K---en | brake lining: ROR8616AF (M13) |
| test report : 361-0071-04 ext05 ECE                    | 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 = 25.1 % Fe |
| axle 2 | (rdyn 421 mm) | T = 25.1 % Fe |
| axle 3 | (rdyn 421 mm) | T = 15.3 % Fe |
| axle 4 | (rdyn 421 mm) | T = 15.3 % Fe |
| axle 5 | (rdyn 421 mm) | T = 15.3 % 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 = 7934 N |
| axle2 | ThA = 7934 N |
| axle3 | ThA = 4019 N |
| axle4 | ThA = 4019 N |
| axle5 | ThA = 4019 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 = 50388 N |
| axle 2 | (rdyn 421 mm) | T = 50388 N |
| axle 3 | (rdyn 421 mm) | T = 25508 N |
| axle 4 | (rdyn 421 mm) | T = 25508 N |
| axle 5 | (rdyn 421 mm) | T = 25508 N |

|             |              |
|-------------|--------------|
| basic test  | type III     |
| of subject  | (calculated) |
| trailer (E) | residual     |

|   |      |                      |
|---|------|----------------------|
| braking rate of the vehicle<br>(item 4.3.2 to appendix 2 to annex 11) | 0.58 | (hot)braking<br>0.51 |
|---|------|----------------------|

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

|        |               |             |
|--------|---------------|-------------|
| axle 1 | (rdyn 421 mm) | T = 50388 N |
| axle 2 | (rdyn 421 mm) | T = 50388 N |
| axle 3 | (rdyn 421 mm) | T = 25508 N |
| axle 4 | (rdyn 421 mm) | T = 25508 N |
| axle 5 | (rdyn 421 mm) | T = 25508 N |

|             |              |
|-------------|--------------|
| basic test  | type III     |
| of subject  | (calculated) |
| trailer (E) | residual     |

|   |      |                      |
|---|------|----------------------|
| braking rate of the vehicle<br>(item 4.3.2 to appendix 2 to annex 11) | 0.58 | (hot)braking<br>0.51 |
|---|------|----------------------|

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

spring parking brake

|   |                 | <u>axle 3</u> | <u>axle 4</u> |
|---|-----------------|---------------|---------------|
| 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                             |                 | 3.7388 | 3.7388 |
| $iFb = lBh * \eta * C * rBt / (rBn * rstat)$ | for rstat in mm | 401    | 401    |
| brake force of spring br. Tf in N            |                 | 56260  | 56260  |
| $Tf = (TFZ * KDZ - 2 * Co / lBh) * iFb$      |                 |        |        |
| braking rate                                 | zf laden        | 0.336  |        |
| $zf = \sum (Tf) / P + 0,01$                  |                 |        |        |

Test of the frictional connection required by the parking brake

minimum wheelbase/minimum supporting width min Ef necessary  
to fulfil the regulations

$$\min Ef = E * (1 - PR/P + zferf * h/E) / (1 - zferf / (fzul * nf/ng))$$

$$\min Ef = 4226 \text{ mm} \quad \text{for } E = 5300 \text{ mm}$$

$$\min Ef = 4226 \text{ mm} \quad \text{for } E = 5300 \text{ mm}$$

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 = 2170 mm height of center of gravity - laden

PR = 19200 kg maximum bogie mass - laden

P = 35200 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      | 5034  |       |
|        | 6.8      | 49059 |       |
| axle 2 | 1.0      | 5034  |       |
|        | 6.8      | 49059 |       |
| axle 3 | 1.0      |       | 4350  |
|        | 4.1      |       | 24806 |
| axle 4 | 1.0      |       | 4350  |
|        | 4.1      |       | 24806 |
| axle 5 | 1.0      |       | 4350  |
|        | 4.1      |       | 24806 |

VIN - no.:

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

