

# Test Report

No. TDB 0109 dated 28.03.2003

for application of Annex 11, ECE Regulation No. 13

RWTÜV Fahrzeug GmbH

A RWTÜV Group Company

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Board:  
Elmar Legge

Management:  
Prof. Dr. Claus Wolff (Vors.)  
Friedo Schäfer

## 1 IDENTIFICATION

### 1.1 Axle

Manufacturer: BPW Bergische Achsen  
Kommanditgesellschaft  
D-51674 Wiehl  
Make: BPW  
Type: ZZ 60  
Model: -  
Technically permissible axle load  $P_e$ <sup>1)</sup>: 7357,5 daN ( $\hat{=}$  7500 kg)

### 1.2 Brake

Manufacturer: see 1.1  
Make: BPW  
Type: SN 3015  
Model: -  
Technically permissible camshaft  
input torque  $C_{max,e}$ : 2450 Nm  
(for calculation: 2000 Nm at 6,5 bar)

Brake drum - internal diameter: 300 mm  
- mass: 22 kg  
- material: cast iron (grey cast iron)

Brake lining - manufacturer: TMD Friction GmbH  
- make: Textar  
- type: T 090  
- identification: type indication at front  
- width  $b_e$ : 150 mm  
- thickness  $s_e$ : 13...18 mm (crescent-shaped)  
- surface area  $F_e$ : 819 cm<sup>2</sup>  
- method of attachment: riveted

Brake geometry: see appendix 2 dated 28.03.2003

### 1.3 Wheel (Twin)

Rim diameter  $D_e$ : see appendix 1 dated 28.03.2003  
Dimensions: see appendix 1 dated 28.03.2003

### 1.4 Tyres

Dynamic rolling radius  $R_e$   
at reference load  $P_e$ : 405 mm

<sup>1)</sup> See sheet 3/3

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Manufacturer : BPW  
 Type of axle : ZZ 60

**1.5 Actuation**

Brake actuator -manufacturer: GRAU  
 - type: diaphragm brake actuator  
 - model: 30" (30 LH)  
 Lever length  $l_e$ : 165 mm

**1.6 Automatic brake adjustment device:**

- manufacturer: see 1.1  
 - make: BPW  
 - type: Eco-Master  
 - version: AGS 2

**2 RECORD OF TEST RESULTS <sup>2)</sup>**

(corrected to take account of rolling resistance  $\hat{=} 0,01 P_e$ )

**2.1 In the case of vehicles of category O<sub>2</sub> and O<sub>3</sub>:** not applicable

**2.2 In the case of vehicles of category O<sub>4</sub>:**

Test type:		0	III	
Annex 11, Appendix 2, paragraph :		3.5.1.2	3.5.3.1.2	3.5.3.2
Test speed				
initial	km/h	60	60	60
final	km/h	0	30	0
Brake actuator pressure $p_e$	bar	4,8	-	4,8
Number of brake applications	-	-	20	-
Duration of braking cycle	s	-	60	-
Brake force developed $T_e$	daN	4334	2474	4769
Brake efficiency $T_e / P_e$	-	0,59	0,34	0,65
Actuator stroke $s_e$	mm	58	-	61
Camshaft input torque	$C_e$ Nm	1488	-	1488
	$C_{0,e}$ Nm	30	-	30

<sup>2)</sup> See sheet 3/3



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Manufacturer : BPW  
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### 2.3 Performance of the automatic brake adjustment device

2.3.1 Free running according to paragraphs 3.6.1. and 3.6.3. of Annex 11,  
Appendix 2: yes

## 3 NAME OF TECHNICAL SERVICE CONDUCTING THE TEST

RWTÜV Fahrzeug GmbH  
Technischer Dienst für Bremsanlagen  
D-45307 Essen

4 **DATE OF TEST:** 03.05.2002

5 This test has been carried out and the results reported in accordance with ECE Regulation No.13, Supplement 6 to the 09 series of amendments, paragraph 4 and Annex 11, Appendix 2.

6 At the end of test defined in paragraph 3.6 of Annex 11, Appendix 2 the requirements of paragraph 5.2.2.8.1 of ECE Regulation No.13 were deemed to be fulfilled.

Essen, 28.03.2003  
Wli - 205 10 001-

Dipl.-Ing. Waling



LABORATORY FOR VEHICLE TECHNOLOGY  
Testing Laboratory for Braking Systems  
according to ECE Regulation No. 13

## 7 TEST DOCUMENTS

- / Appendix 1: Dimensions brake drum / wheel / tyre (2 sheets)
- / Appendix 2: Brake geometry (1 sheet)

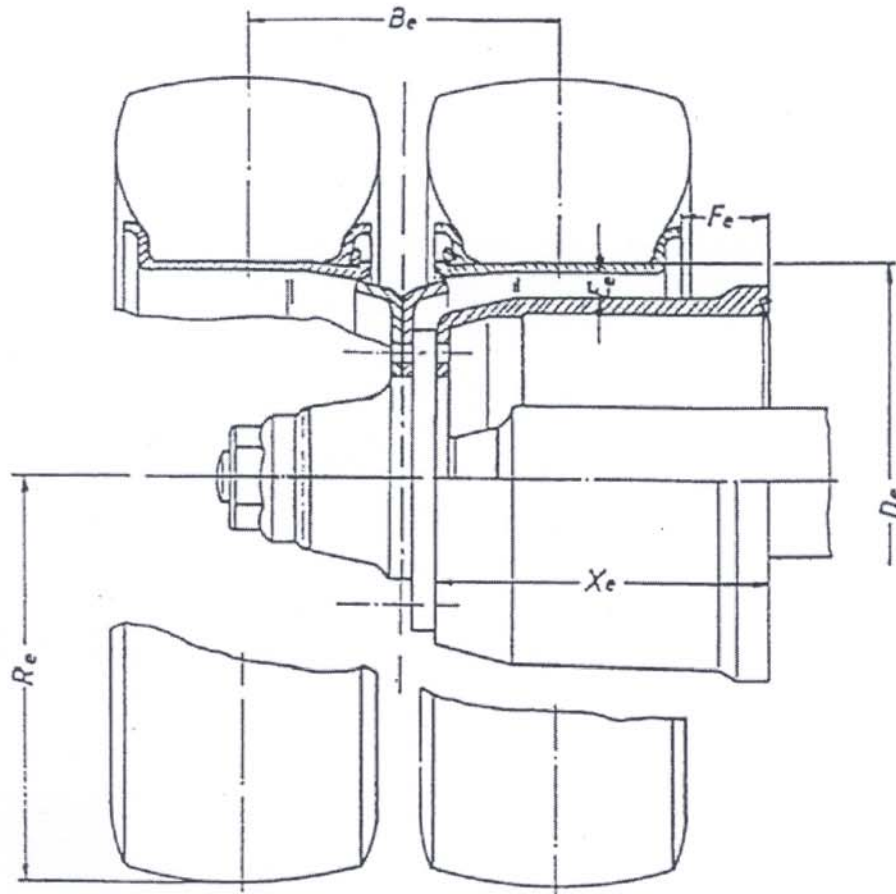
<sup>1)</sup> Calculation with  $g = 9,81 \text{ m/s}^2$

<sup>2)</sup> Inertia dynamometer test, twin,  $R_e = 405 \text{ mm}$

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Manufacturer : BPW  
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Brake drum- width $x_e$ (mm)	mass (kg)	Axle load $P_e$		Tyre	Rim	$B_e$	$R_e$	$D_e$ (mm)	$E_e$	$F_e$
		(daN)	(kg)							
$\geq 200$	22	7357,5	7500	8,25 R 15	6,5 -15	270	402	381	12	-8
$\geq 200$	22	7357,5	7500	205/80 R15	6,5 -15	270	347	381	12	-8
$\geq 200$	22	7357,5	7500	205/70 R 15	6,5 -15	270	325	381	12	-8

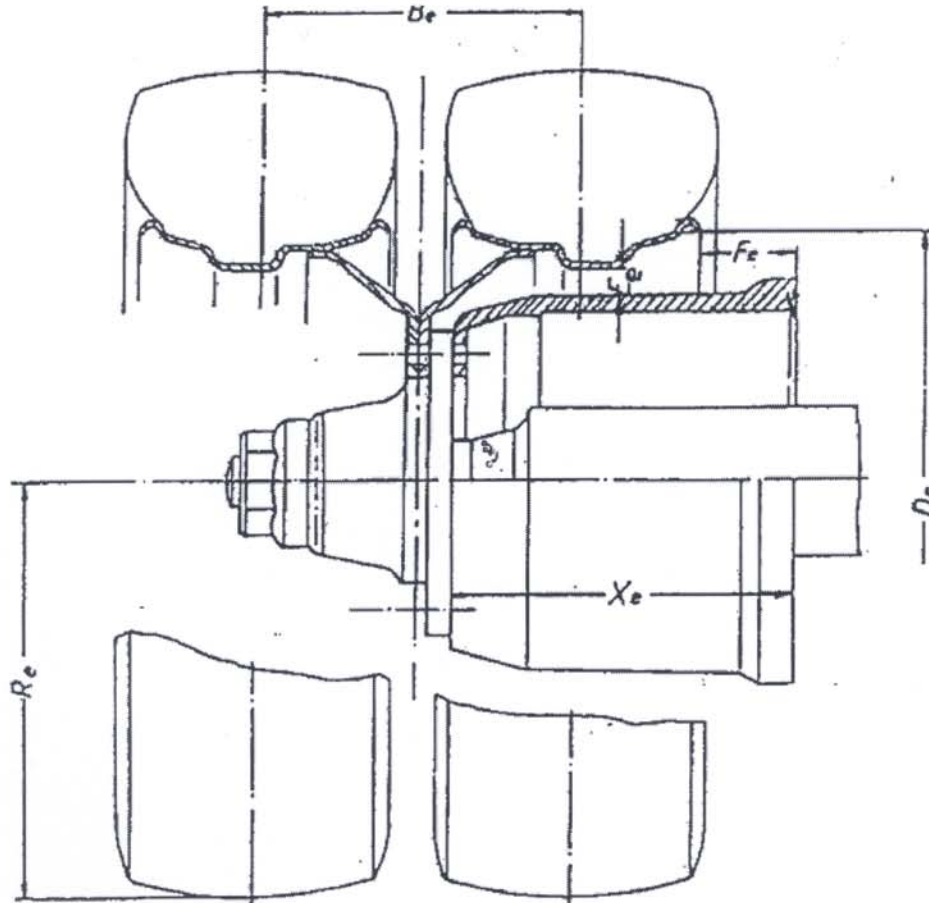




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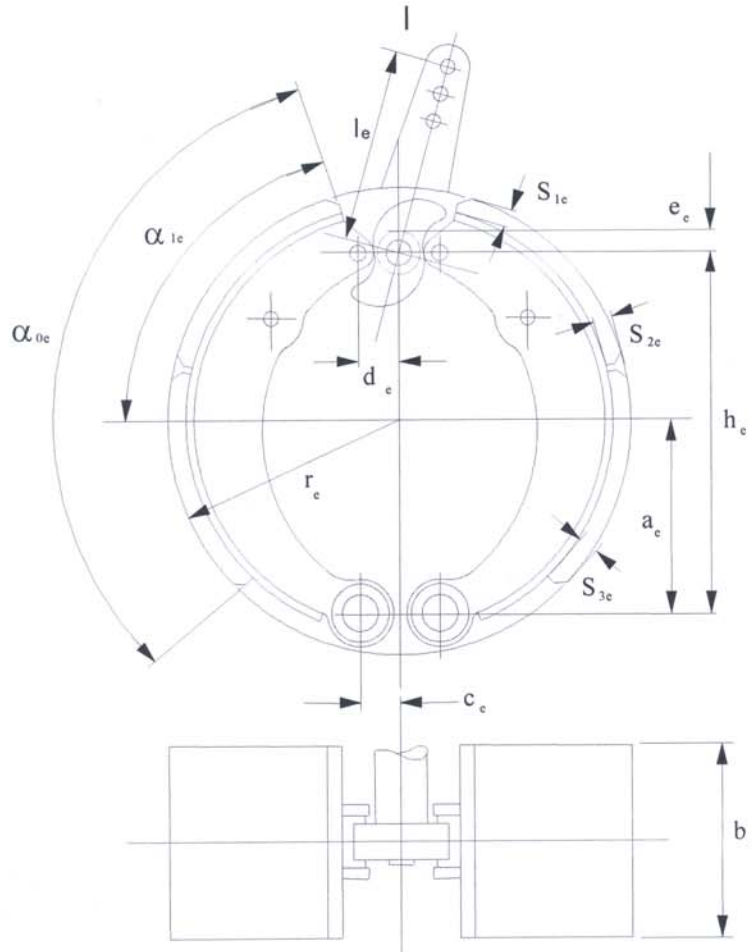
Brake drum- width $x_e$ (mm)	mass (kg)	Axle load $P_e$		Tyre	Rim	$B_e$	$R_e$	$D_e$ (mm)	$E_e$	$F_e$
		(daN)	(kg)							
$\geq 200$	22	7357,5	7500	10 R 17,5	17,5 x 6,75	304	416	444,5	20	-36
$\geq 200$	22	7357,5	7500	285/70 R 19,5	19,5 x 8,25	320	432	495,3	44	-65



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- All dimensions - except  $\alpha_{0e}$ ,  $\alpha_{1e}$  et  $F_e$  - in mm
- $b_e$  = brake lining width
- $F_e$  = braking surface per brake in  $\text{cm}^2$
- $l_e$  see test report, no. 1.5

Brake	$a_e$	$h_e$	$c_e$	$d_e$	$e_e$	$\alpha_{0e}$	$\alpha_{1e}$	$b_e$	$r_e$	$F_e$	$S_{1e}$	$S_{2e}$	$S_{3e}$
SN 3015	110	223	30	26,5	13	114,5°	67,25°	150	150	819	13	18	13

