

Test Report

No. TDB 0678 dated 10.06.2002

for application of Annex VII Directive 71/320/EEC

RWTÜV Fahrzeug GmbH

A RWTÜV Group Company

Institute for Vehicle Technology

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1 IDENTIFICATION

1.1 Axle

Manufacturer:

OTTO SAUER

Achsenfabrik Keilberg

D-63854 Bessenbach

Make:

SAF

Type:

SBW 1937-11S

Model:

-

Technically permissible axle load P_e ¹⁾:

10006 daN (≈ 10200 kg)

Corporate seat: Essen

Commercial Register section

B 9975

Chairman of the Supervisory

Board:

Elmar Legge

Management:

Prof. Dr. Claus Wolff (Vors.)

Friedo Schäfer

1.2 Brake

Manufacturer:

See 1.1

Make:

SAF

Caliper:

- Manufacturer:

WABCO

- Type:

PAN 19-1

- Variant:

PAN 19-1 +

Note: The variant "+" is added by WABCO to the original PAN 19-1 type designation and represents a version which has identical brake characteristics compared to the original one.

- Method of construction: Floating caliper brake (pneumatic)

Brake lever:

- Ratio l_e / e_e :

69,08 mm / 4,82 mm

Technically permissible camshaft
input torque $C_{max,e}$:

830 Nm

(for calculation: 640 Nm at 6,5 bar)

Automatic brake adjustment device:

Integrated

¹⁾ See sheet 4/4



Test Report No. : TDB 0678
Sheet : 2 / 4
Date : 10.06.2002



Manufacturer : SAF
Type of axle : SBW 1937-11S

Brake disc: - Outside diameter: 375 mm
- Effective radius r_e : 150
- Thickness x_e : 45 mm
- Mass: 23 kg
- Material: Cast iron (grey cast iron)
- Method of construction: Internally ventilated brake disc

Brake pad: - Make, - Type: JURID, 539
- Identification: Type indication on brake-pad plate
- Width b_e : 210,7 mm
- Thickness d_e : 30 mm (incl. 9mm back plate)
- Surface area F_e : 2 x 146 cm²
- Method of attachment: Friction material pressed on back plate

Schematic representation: See appendix 2 dated 10.06.2002

1.3 Wheel (single)

Rim diameter D_e : See appendix 1 dated 10.06.2002
Dimensions: See appendix 1 dated 10.06.2002

1.4 Tyres

Dynamic rolling radius R_e
at reference load P_e : See appendix 1 dated 10.06.2002

1.5 Actuation

Brake actuator - Manufacturer: KNORR-BREMSE
- Type: Diaphragm brake actuator
- Model: 30" (BS 3603)



Test Report No. : TDB 0678
 Sheet : 3 / 4
 Date : 10.06.2002



Manufacturer : SAF
 Type of axle : SBW 1937-IIS

2 RECORD OF TEST RESULTS ²⁾

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

2.1 In the case of vehicles of categories O₂ and O₃

Test type:		0	I	
Annex VII, Appendix 1, point:		3.5.1.2	3.5.2.2/3	3.5.2.4
Test speed	km/h	40	40	40
Brake actuator pressure p_e	bar	5,2	-	5,2
Braking time	min	-	2,55	-
Brake force developed T_e	daN	6047	700	5319
Brake efficiency T_e / P_e	-	0,60	0,07	0,53
Actuator stroke s_e	mm	40	-	38
Camshaft input torque C_e	Nm	653	-	653
$C_{0,e}$	Nm	6	-	6

2.2 In the case of vehicles of category O₄

Test type:		0	III	
Annex VII, Appendix 1, point:		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	5,1	-	5,1
Number of brake applications	-	-	20	-
Duration of braking cycle	s	-	60	-
Brake force developed T_e	daN	5628	3317	4602
Brake efficiency T_e / P_e	-	0,56	0,33	0,46
Actuator stroke s_e	mm	34	-	36
Camshaft input torque C_e	Nm	640	-	640
$C_{0,e}$	Nm	6	-	6

²⁾ See sheet 4/4



Test Report No. : TDB 0678
Sheet : 4 / 4
Date : 10.06.2002

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3 NAME OF TECHNICAL SERVICE CONDUCTING THE TEST

RWTÜV Fahrzeug GmbH
Technischer Dienst für Bremsanlagen
D-45307 Essen

4 DATE OF TEST: 24.01.2000

5 This test has been carried out and the result reported in accordance with Directive 71/320/EEC as last amended by Directive 98/12/EC and Annex VII, Appendix 1.

Essen, 10.06.2002
Wli -205 16 655-


Dipl.-Ing. Wahner



LABORATORY FOR VEHICLE TECHNOLOGY
Testing Laboratory for Braking Systems
according to Directive 71/320/EEC in the
version of Directive 98/12/EC

6 APPROVAL AUTHORITY, if different from the technical service

Flensburg, 05. Juli 02
i. A. Inesula Seese



7 TEST DOCUMENTS

/ Appendix 1: Dimensions brake drum / wheel / tyre (2 sheet)
/ Appendix 2: Schematic representation of brake (1 sheet)

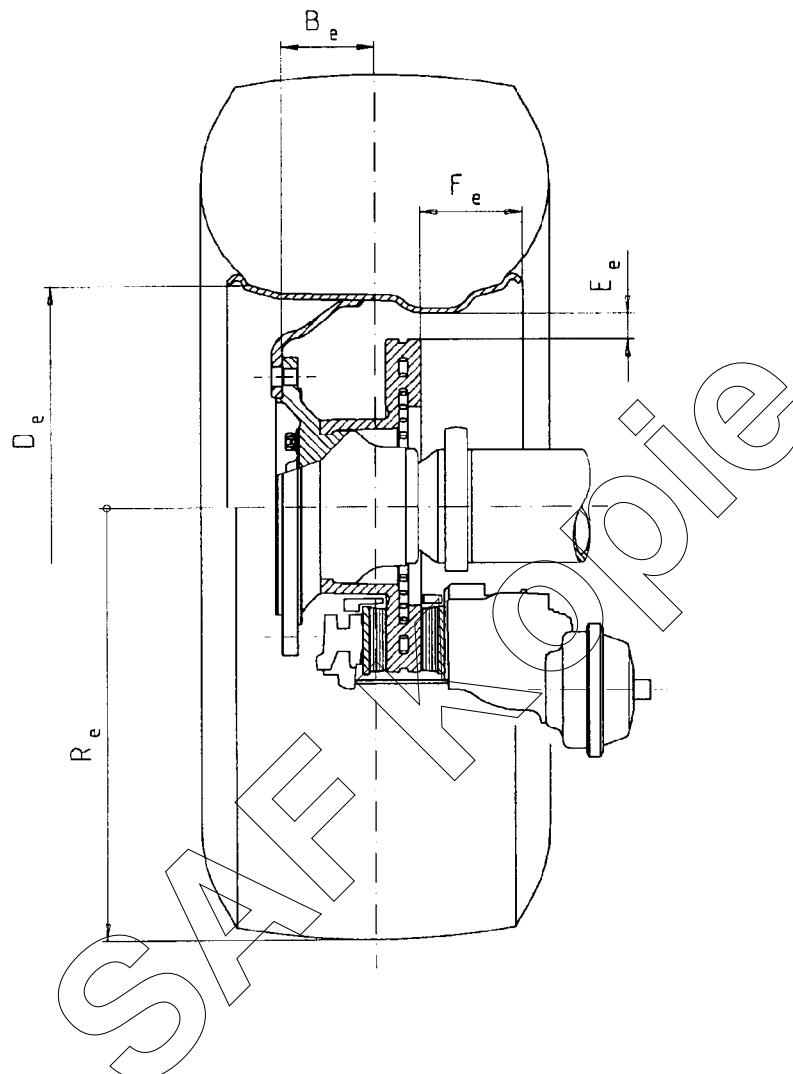
¹⁾ Calculation with $g = 9,81 \text{ m/s}^2$

²⁾ Inertia dynamometer test, brake type PAN 19.1, single (ET120), $R_e = 518 \text{ mm}$

Test Report No. : TDB 0678
Appendix : 1
Sheet : 1 / 2
Date : 10.06.2002



Manufacturer : SAF
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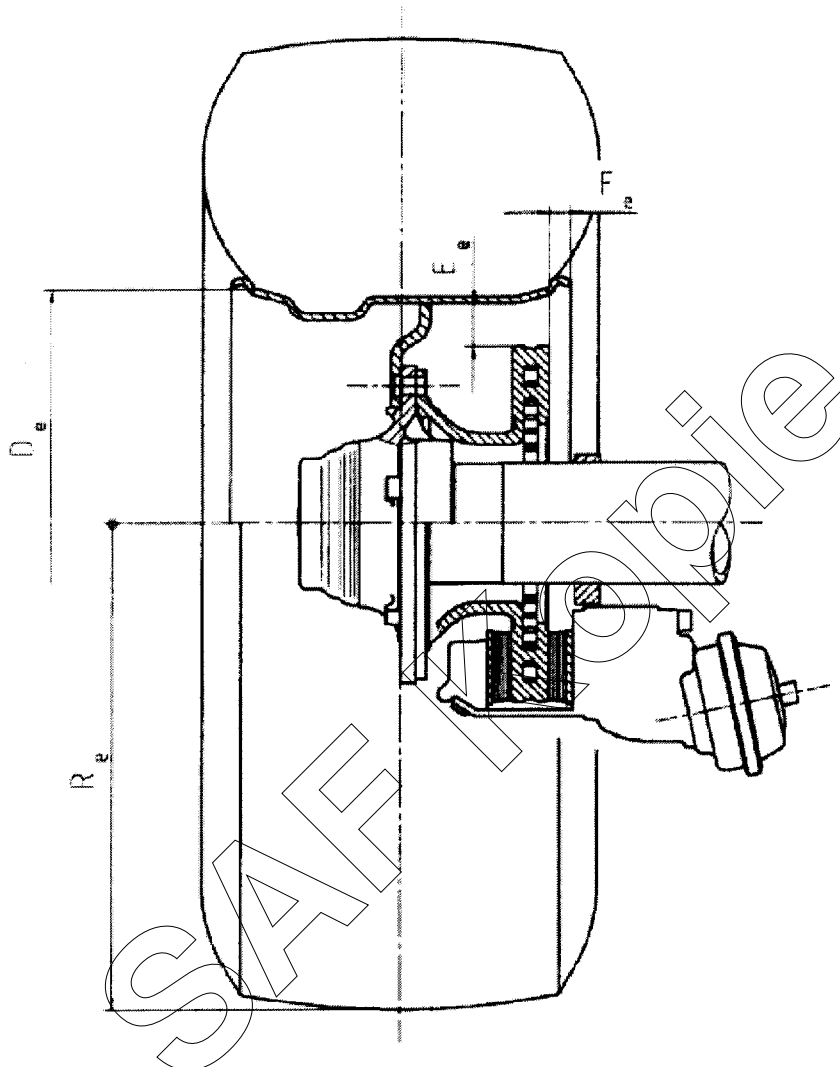
Brake disc		Axle capacity		Tyre	Rim	B _e	R _e	D _e (mm)	E _e	F _e
width X _e (mm)	mass (kg)	P _e (daN)	(kg)							
-	23	10006	10200	385/65 R 22,5	22,5 x 11,75	120	520	571,5	60	-107
-	23	10006	10200	445/45 R 19,5	19,5 x 14,00	120	434	495,3	22	-134
-	23	10006	10200	425/55 R 19,5	19,5 x 13,00	120	467	495,3	22	-121



Test Report No. : TDB 0678
Appendix : 1
Sheet : 2 / 2
Date : 10.06.2002



Manufacturer : SAF
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Brake disc		Axle capacity		Tyre	Rim	B _e	R _e	D _e (mm)	E _e	F _e
width X _e (mm)	mass (kg)	P _e (daN)	(kg)							
-	25	10006	10200	385/65 R 22,5	22,5 x 11,75	-	520	571,5	79	-1
-	25	10006	10200	445/45 R 19,5	19,5 x 14,00	-	434	495,3	42,5	-25
-	25	10006	10200	425/55 R 19,5	19,5 x 13,00	-	467	495,3	42,5	-12



Test Report No. : TDB 0678
Appendix : 2
Sheet : 1 / 1
Date : 10.06.2002

Manufacturer : SAF
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