

Test Report

No. TDB 0503 dated 27.10.99

for application of Annex VII Directive 71/320/EEC

1 IDENTIFICATION

1.1 Axle

Manufacturer: OTTO SAUER Achsenfabrik Keilberg
D-63854 Bessenbach
Make: SAF
Type: SNK 3720-11S
Model: -
Technically permissible axle load P_e ¹⁾: See appendix 1 dated 11.11.98

1.2 Brake

Manufacturer: See 1.1
Make: SAF
Type: SNK 367x200
Model: -
Technically permissible camshaft
input torque $C_{max,e}$: 2800 Nm
(for calculation: 2250 Nm at 6,5 bar)

Brake drum - Internal diameter: 367 mm
- Mass: 47 kg
- Material: Cast iron (grey cast iron)

Brake lining - Manufacturer: BREMSKERL-Reibbelagwerke
Emmerling GmbH & Co. KG
D-31629 Estorf
- Type: BREMSKERL 6386
- Identification: Type indication at front
- Width: 200 mm
- Thickness: 12,2...20,2 mm (sickle-shaped)
- Surface area: 1370 cm²
- Method of attachment: Rivited

Brake geometry: See appendix 1 dated 11.11.98
See appendix 2 dated 11.11.98

1.3 Wheel (Single)

Rim diameter D_e : See appendix 1 dated 11.11.98
Dimensions: See appendix 1 dated 11.11.98

¹⁾ See sheet 3/3



1.4 Tyres

Dynamic rolling radius R_e
 at reference load P_e :

See appendix 1 dated 11.11.98

1.5 Actuation

Brake actuator -Manufacturer: GRAU
 - Type: Diaphragm brake actuator
 - Model: 30 (120 361 101)
 Lever length l_e : 150 mm ²⁾ 152 mm ³⁾

2 RECORD OF TEST RESULTS

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

2.1 In the case of vehicles of categories O₂ and O₃ ²⁾

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	6,5	-	6,5
Braking time	min	-	2,55	-
Brake force developed T_e	daN	6373	818	5218
Brake efficiency T_e/P_e	-	0,58	0,07	0,47
Actuator stroke s_e	mm	40	-	59
Camshaft input torque C_e	Nm	1853	-	1853
$C_{0,e}$	Nm	30	-	30

2.2 In the case of vehicles of category O₄ ³⁾

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	6,5	-	6,5
Number of brake applications	-	-	20	-
Duration of braking cycle	s	-	60	-
Brake force developed T_e	daN	7001	3528	6375
Brake efficiency T_e/P_e	-	0,64	0,32	0,58
Actuator stroke s_e	mm	47	-	52
Camshaft input torque C_e	Nm	1877	-	1877
$C_{0,e}$	Nm	30	-	30

^{2) 3)} See sheet 3/3

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Sheet : 3 / 3
Date : 27.10.99

RWTÜV

Manufacturer : SAF
Type of axle : SNK 3720-11S

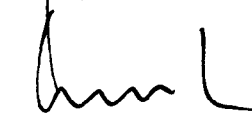
3 NAME OF TECHNICAL SERVICE CONDUCTING THE TEST

RWTÜV Fahrzeug GmbH
Technischer Dienst für Bremsanlagen
D-45307 Essen

4 DATE OF TEST: 20.04.93 and 28.05.98

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, 27.10.99



Dipl.-Ing. Kaesler



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, 08 NOV. 1999

i. A.



7 TEST DOCUMENTS

- / Appendix 1: Dimensions brake drum/wheel/tyre
- / Appendix 2: Brake geometry

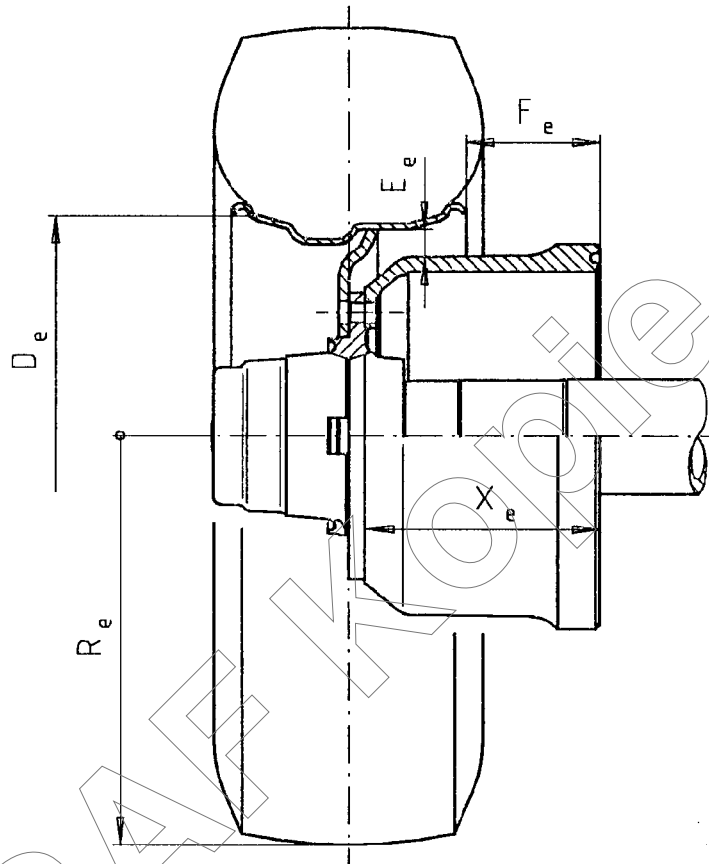
- 1) Calculation with $g = 10 \text{ m/s}^2$
- 2) Rolling road dynamometer test; $P_e = 11000 \text{ daN}$, $R_e = 518 \text{ mm}$
- 3) Inertia dynamometer test; $P_e = 11000 \text{ daN}$, $R_e = 518 \text{ mm}$

RWTÜV Fahrzeug GmbH - Institute for Vehicle Technology, Adlerstr. 7, D - 45307 Essen
The Testing Laboratory is accredited by the Accreditation Body of the German Federal Motor Transport Authority (KBA) to conduct inspections according to ECE, EG-TypV (EEC), StVZO and FzTV (KBA-P 00009-95).

Annex 1 to brake test record:
Annexe 1 au procès verbal:
Allegato 1 al verbale di Omologazione Nr.:

Zeichn. Nr.: 6 077 9128 00	Blatt: 1
Datum: 11.11.1998	Name: Roth

Grundtyp:
basis type: SNK 3720 - 11S
modèle de base:
Modello di base:

[illegible]

Annex 2 to brake test record
Annexe 2 au procès verbal
Allegato 2 al verbale di Omologazione Nr.

Zeichn. Nr.: 6 077 9089 01	Blatt: 1
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Datum:	11.11.1998	Name:	Roth
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voir procès verbal 1.5
vedi verbale 1.5

The diagram shows a cross-section of a circular mechanical component. Key dimensions and labels include:

- α_{0e} : Angle subtended by the outer arc.
- α_{1e} : Angle subtended by the inner arc.
- l_e : Length of the outer arc.
- r_e : Radius of the outer arc.
- d_e : Diameter of the outer arc.
- c_e : Thickness of the component.
- S_{1e} , S_{2e} , S_{3e} : Stresses or forces at different points.
- h_e : Height of the component.
- a_e : Distance from the center to the point of application of S_{2e} .
- b_e : Distance from the center to the point of application of S_{1e} .
- n_e : Number of segments or teeth.
- F_e : Effort or force.
- Z_n : Zone or area.

* F_e : wirk
Effi
Zon

* F_e : wirksame Bremsfläche pro Bremse (cm^2)
Efficient braking area (cm^2)
Zone de freinage active (cm^2)
Zona di frenatura attiva (cm^2)

[illegible]