

Test Report

No. TDB 0487 dated 12.06.99

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 3020-13Z
Model: -
Technically permissible axle load P_e ¹⁾: See appendix 1 dated 11.11.98

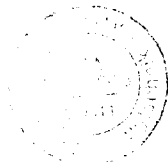
1.2 Brake

Manufacturer: See 1.1
Make: SAF
Type: SNK 300x200
Model: -
Technically permissible camshaft
input torque $C_{max,e}$: 2800 Nm
(for calculation: 2250 Nm at 6,5 bar)
Brake drum - Internal diameter: 300 mm
- Mass: 42 kg
- Material: Cast iron (grey cast iron)
Brake lining - Manufacturer: Federal-Mogul Friction Products GmbH
D-51709 Marienheide
- Make: FERODO BERAL
- Type: 1561
- Identification: Type indication at front
- Width: 200 mm
- Thickness: 8,5...16 mm (sickle-shaped)
- Surface area: 1025 cm²
- Method of attachment: Rivited
Brake geometry: See appendix 1 dated 11.11.98
See appendix 2 dated 11.11.98

1.3 Wheel (Twin)

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

¹⁾ See sheet 3/3



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Manufacturer : SAF
Type of axle : SNK 3020-13Z

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 : 152 mm

2 RECORD OF TEST RESULTS ²⁾

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

2.1 In the case of vehicles of categories O₂ and O₃ ³⁾

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	7055	932	6559
Brake efficiency T_e/P_e	-	0,54	0,07	0,50
Actuator stroke s_e	mm	40	-	59
Camshaft input torque	C_e Nm	1877	-	1877
	$C_{0,e}$ Nm	30	-	30

2.2 In the case of vehicles of category O₄ ⁴⁾

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	7189	4114	5902
Brake efficiency T_e/P_e	-	0,55	0,32	0,45
Actuator stroke s_e	mm	42	-	60
Camshaft input torque	C_e Nm	1877	-	1877
	$C_{0,e}$ Nm	30	-	30

2) 3) 4) See sheet 3/3

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

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RWTÜV

Manufacturer : SAF
Type of axle : SNK 3020-13Z

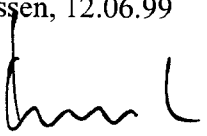
3 NAME OF TECHNICAL SERVICE CONDUCTING THE TEST

RWTÜV Fahrzeug GmbH
Technischer Dienst für Bremsanlagen
D-45307 Essen

4 DATE OF TEST: 20.10.94 and 24.06.98

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, 12.06.99

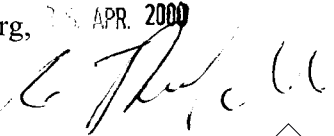

Dipl.-Ing. Kaesler

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, 25. APR. 2000

i. A. 



7 TEST DOCUMENTS

- / Appendix 1: Dimensions brake drum/wheel/tyre (3 sheet)
- / Appendix 2: Brake geometry

- 1) Calculation with $g = 10 \text{ m/s}^2$
- 2) $P_e = 13000 \text{ daN}$, $R_e = 435 \text{ mm}$
- 3) Rolling road dynamometer test
- 4) Inertia dynamometer test

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

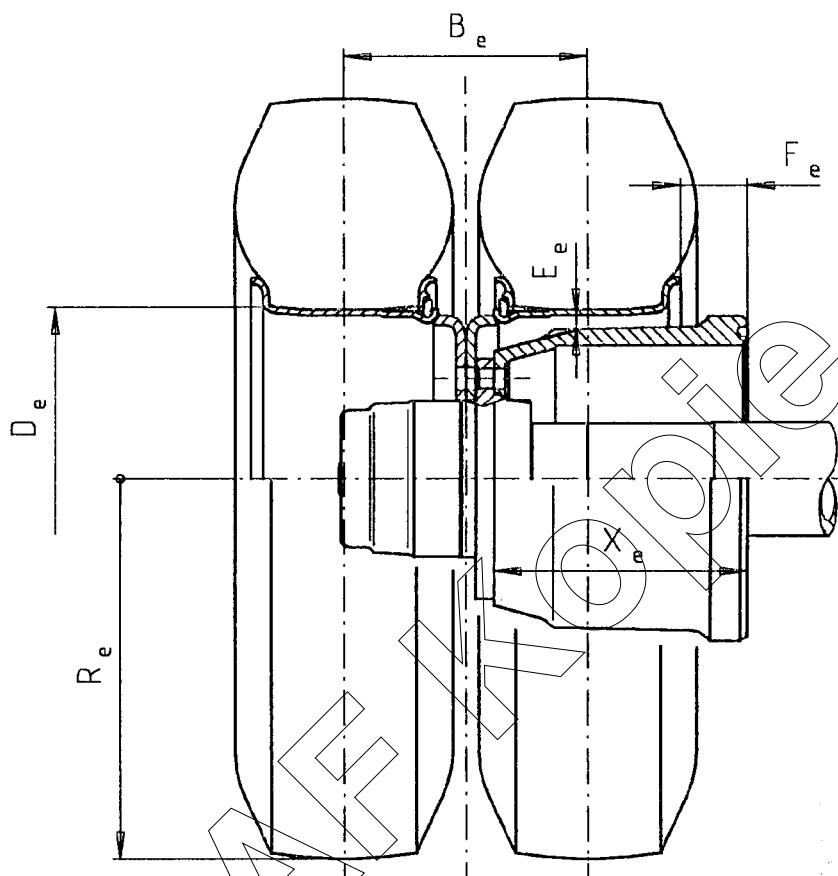
Zeichn. Nr.: 6 077 9119 00	Blatt: 1
Datum: 11.11.1998	Name: Roth

Bremse:
brake: SNK 300 x 200
frein:
Freno:

Grundtyp:
basis type: SNK 3020-13 Z
modèle de base:
Modello di base:

Zeichn. Nr.: 6 077 9119 00	Blatt: 1
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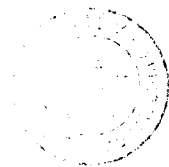
Datum:	11.11.1998	Name:	Roth
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[illegible]

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

Zeichn. Nr.: 6 077 9120 00	Blatt: 2
Datum: 11.11.1998	Name: Roth

Grundtyp:
basis type: SNK 3020-13 Z
modèle de base:
Modello di base:

[illegible]

gemäß DIN 34 behalten wir uns für diese Unterlage alle Rechte vor!

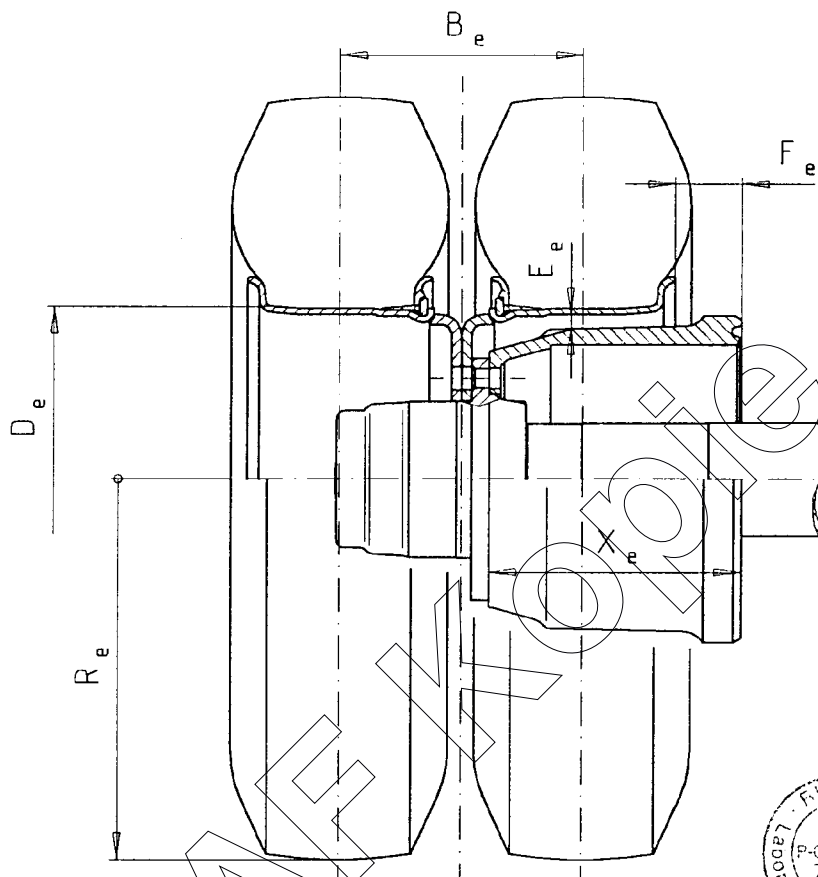
Annex 1 to brake test record:
Annexe 1 au procès verbal:
Allegato 1 al verbale di Omologazione Nr.:

SAF OTTO SAUER
ACHSENFABRIK KEILBERG
D - 63854 BESENBAACH
GERMANY

Grundtyp:
basis type: SNK 3020-13 Z
modèle de base:
Modello di base:

Blatt: 3

Name: Roth

[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
Datum: 11.11.1998	Name: Roth

voir procès verbal 1.5
vedi verbale 1.5

Technical drawing of a circular mechanical component, likely a valve or a similar device. The drawing shows a cross-section of the component with various dimensions and labels. Key dimensions include:

- α_{0e} : Angle subtended by the arc at the top of the component.
- α_{1e} : Angle subtended by the arc at the bottom of the component.
- l_e : Length of the arc at the top.
- S_{1e} : Distance from the center to the top edge.
- S_{2e} : Distance from the center to the bottom edge.
- S_{3e} : Distance from the center to the side edge.
- d_e : Diameter of the central hole.
- r_e : Radius of the central hole.
- c_e : Distance from the center to the bottom edge.
- a_e : Distance from the center to the side edge.

The drawing also includes a small detail view of the top edge, showing a series of holes and a central slot. A large watermark 'KOP' is visible in the background.

* 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]