

Test Report

No. TDB 0381 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 4218-11S
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 420x180
Model: -
Technically permissible camshaft
input torque $C_{max,e}$: 2800 Nm
(for calculation: 2250 Nm at 6,5 bar)
Brake drum - Internal diameter: 420 mm
- Mass: See appendix 1 dated 11.11.98
- 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: 180 mm
- Thickness: 13...20,2 mm (sickle-shaped)
- Surface area: 1322 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



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Manufacturer : SAF
 Type of axle : SNK 4218-11S

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 ³⁾ 152 mm ⁴⁾

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	5,6	-	5,6
Braking time min	-	2,55	-
Brake force developed T_e daN	7082	786	6436
Brake efficiency T_e/P_e -	0,64	0,07	0,59
Actuator stroke s_e mm	40	-	55
Camshaft input torque C_e Nm	1588	-	1588
$C_{0,e}$ 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
Test speed final km/h	0	30	0
Brake actuator pressure p_e bar	6,4	-	6,4
Number of brake applications -	-	20	-
Duration of braking cycle s	-	60	-
Brake force developed T_e daN	6902	3377	5614
Brake efficiency T_e/P_e -	0,63	0,31	0,51
Actuator stroke s_e mm	42	-	56
Camshaft input torque C_e Nm	1847	-	1847
$C_{0,e}$ 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 4218-11S

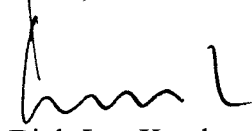
3 NAME OF TECHNICAL SERVICE CONDUCTING THE TEST

RWTÜV Fahrzeug GmbH
Technischer Dienst für Bremsanlagen
D-45307 Essen

4 DATE OF TEST: 31.01.97 and 03.02.99

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



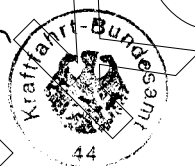
Dipl.-Ing. Kaesler

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, 24. JUNI 1999

i. A. 



7 TEST DOCUMENTS

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

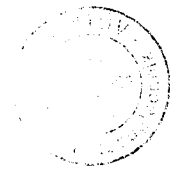
- 1) Calculation with $g = 10 \text{ m/s}^2$
- 2) $P_e = 11000 \text{ daN}$, $R_e = 545 \text{ mm}$, $X_e = 227 \text{ mm}$
- 3) Rolling road dynamometer test, $l_e = 150 \text{ mm}$
- 4) Inertia dynamometer test, $l_e = 152 \text{ mm}$

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Allegato 1 al verbale di Omologazione Nr.:

Blatt: 1

Name: Roth



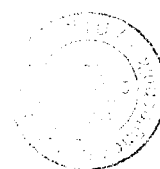
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Allegato 1 al verbale di Omologazione Nr.:

Name:	Roth
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Modello di base:



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

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

Technical drawing of a cylindrical container with a flange at the bottom. A horizontal dimension line at the top indicates a width of b_e . A vertical dashed line represents the central axis. A horizontal line with a circular detail on the left indicates a specific cross-section or feature.

* 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]