RWTÜV

Ein Unternehmen der
TÜV Mitte Gruppe

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Test Report

No. TDB 0623 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 3015-9Z
Model:	-
Technically permissible axle load P_e [1]:	9000 daN

1.2 Brake

Manufacturer:		See 1.1
Make:		SAF
Type:		SNK 300x150
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:	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:	150 mm
	- Thickness:	8,5...16 mm (sickle-shaped)
	- Surface area:	760 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:	381 mm (15")
Dimensions:	See appendix 1 dated 11.11.98

[1] See sheet 3/3

Manufacturer : SAF
Type of axle : SNK 3015-9Z

1.4 Tyres

Dynamic rolling radius R_e
at reference load P_e: 406 mm

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 O_2 and O_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	4,0	-	4,0
Braking time	min	-	2,55	-
Brake force developed T_e	daN	5729	630	4951
Brake efficiency T_e/P_e	-	0,64	0,07	0,55
Actuator stroke s_e	mm	37	-	48
Camshaft input torque C_e	Nm	1132	-	1132
$C_{o,e}$	Nm	30	-	30

2.2 In the case of vehicles of category O_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	4,0	-	4,0
Number of brake applications	-	-	20	-
Duration of braking cycle	s	-	60	-
Brake force developed T_e	daN	6158	2700	5538
Brake efficiency T_e/P_e	-	0,68	0,30	0,62
Actuator stroke s_e	mm	42	-	52
Camshaft input torque C_e	Nm	1132	-	1132
$C_{o,e}$	Nm	30	-	30

[2)] See sheet 3/3

3 NAME OF TECHNICAL SERVICE CONDUCTING THE TEST

RWTÜV Fahrzeug GmbH
Technischer Dienst für Bremsanlagen
D-45307 Essen

4 DATE OF TEST: 22.06.98

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

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

Dipl.-Ing. Kaesler

6 APPROVAL AUTHORITY, if different from the technical service

Flensburg, 08. NOV. 1999

i. A.

Kraftfahrt-Bundesamt 44

7 TEST DOCUMENTS

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

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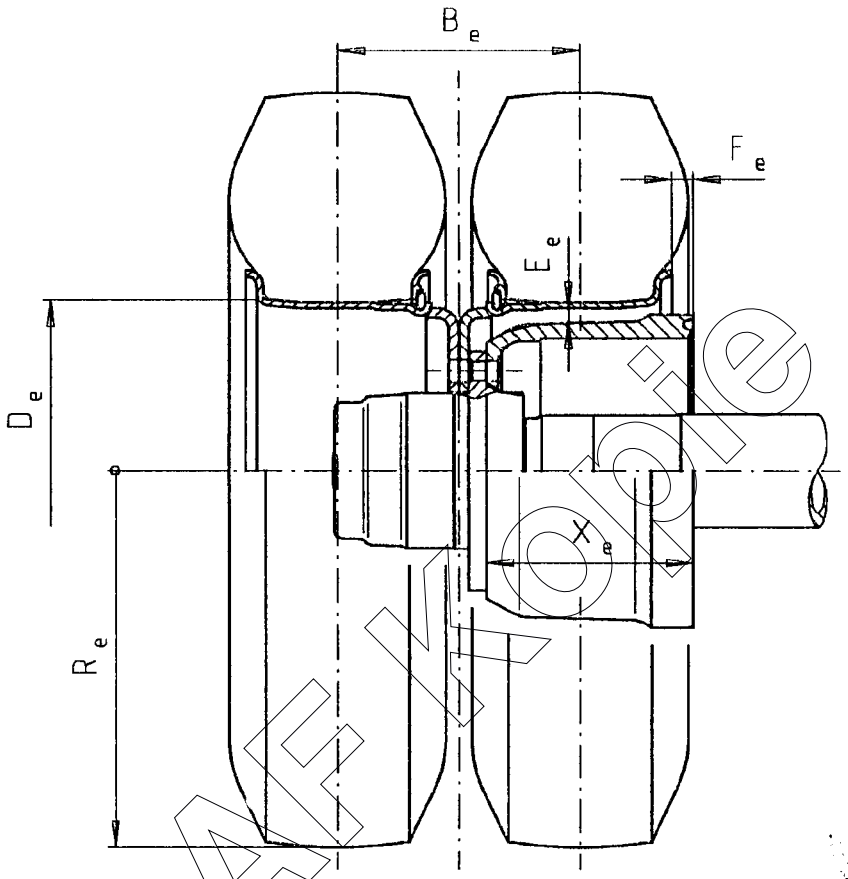
1) Calculation with g = 10 m/s²
2) Inertia dynamometer test

Anlage 1 zum Prüfprotokoll Nr.: TDB 0623

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

OTTO SAUER
ACHSENFABRIK KEILBERG
D - 63654 BESSENBACH
G E R M A N Y

Bremse: brake: frein: Freno:	SNK 300 × 150	Grundtyp: basis type: modèle de base: Modello di base:	SNK 3015-9 Z	Zeichn. Nr.: 6 077 9157 00	Blatt: 1
				Datum: 11.11.1998	Name: Roth



Bremse Brake Tambour Freno: Breite width largeur Largh. X_e (mm)	Bremse: Masse weight masse Peso kg	Achslast Axle capacity Charge de l'essieu Portata assale P_e (daN)	Reifen Tyre Pneu Pneumatico	Felge Rim Jante Cerchio	B_e (mm)	R_e (mm)	D_e (mm)	E_e (mm)	F_e (mm)
230	36,5	9 000	8.25 R 15	6,5 – 15	270	406	381	15	+23

Anlage 2 zum Prüfprotokoll Nr. TDB 0623

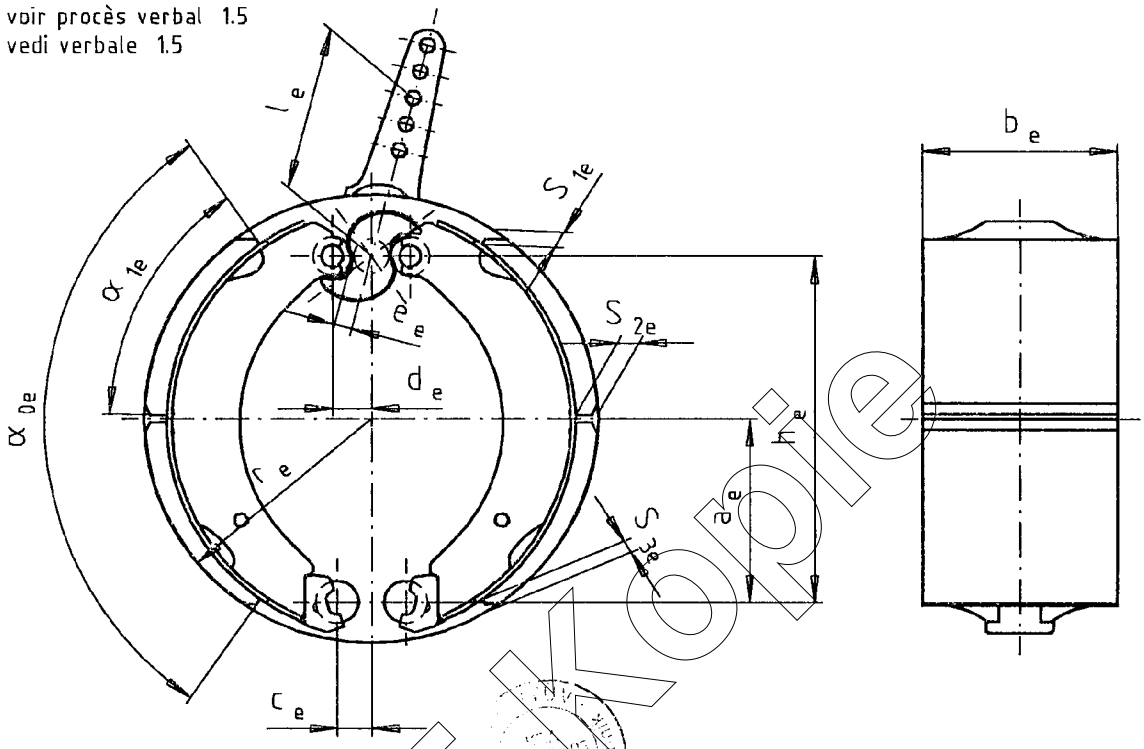
Annex 2 to brake test record
Annexe 2 au procès verbal
Allegato 2 al verbale di Omologazione Nr.

SAF OTTO SAUER ACHSENFABRIK KEILBERG D - 63854 BESSENBACH GERMANY

Zeichn. Nr.: 6 077 9089 01 | Blatt: 1

Datum: 11.11.1998 | Name: Roth

l_e : siehe Prüfprotokoll 1.5
see brake test record 1.5
voir procès verbal 1.5
vedi verbale 1.5



✳ 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)

Bremsen-Typ Brake-type Type de frein Type de freno	a_e	h_e	c_e	d_e	e_e	α_{0e}	α_{1e}	b_e	r_e	✳ F_e	S_{1e}	S_{2e}	S_{3e}
SNK 420 × 150	171,5	323,9	31,75	36	13,2	110°	53°20'	150	210	1086	17,4	20,2	13
SNK 420 × 180	171,5	323,9	31,75	36	13,2	110°	53°20'	180	210	1322	17,4	20,2	13
SNK 420 × 200	171,5	323,9	31,75	36	13,2	110°	53°20'	200	210	1474	17,4	20,2	13
SNK 367 × 150	145	273	31,75	36	13,2	104°30'	57°	150	183,5	1007	17,2	20,2	12,2
SNK 367 × 180	145	273	31,75	36	13,2	104°30'	57°	180	183,5	1226	17,2	20,2	12,2
SNK 367 × 200	145	273	31,75	36	13,2	104°30'	57°	200	183,5	1370	17,2	20,2	12,2
SNK 300 × 150	113	225	25	29,75	13,2	111°	55°30'	150	150	760	13	16	8,5
SNK 300 × 200	113	225	25	29,75	13,2	111°	55°30'	200	150	1025	13	16	8,5