RWTÜV

Ein Unternehmen der
TÜV Mitte Gruppe

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Test Report

No. TDB 0718 dated 24.01.2001

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 4220-14,5Z
Model:	-
Technically permissible axle load P_e [1]:	14500 daN

1.2 Brake

Manufacturer:		See 1.1
Make:		SAF
Type:		SNK 420x200
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:	54 kg
	- Material:	Cast iron (grey cast iron)
Brake lining	- Manufacturer:	BREMSKERL-Reibbelagwerke Emmerling & Co. KG D-31629 Estorf
	- Type:	BREMSKERL 6386
	- Identification:	Type indication at front
	- Width:	200 mm
	- Thickness:	13...20,2 mm (sickle-shaped)
	- Surface area:	1474 cm²
	- Method of attachment:	Rivited
Brake geometry:		See appendix 1 dated 24.01.2001 See appendix 2 dated 24.01.2001

1.3 Wheel (Twin)

Rim diameter D_e:	See appendix 1 dated 24.01.2001
Dimensions:	See appendix 1 dated 24.01.2001

[1] See sheet 3/3

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Manufacturer : SAF
Type of axle : SNK 4220-14,5Z

1.4 Tyres

Dynamic rolling radius R_e
at reference load P_e: See appendix 1 dated 24.01.2001

1.5 Actuation

Brake actuator - Manufacturer: DeWe
- Type: Diaphragm brake actuator
- Model: 36

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 : Not applicable

2.2 In the case of vehicles of category O_4 [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	8544	4397	5946
Brake efficiency T_e/P_e	-	0,59	0,30	0,41
Actuator stroke s_c	mm	41	-	67
Camshaft input torque C_e	Nm	2164	-	2164
$C_{o,e}$	Nm	30	-	30

3 NAME OF TECHNICAL SERVICE CONDUCTING THE TEST

RWTÜV Fahrzeug GmbH
Technischer Dienst für Bremsanlagen
D-45307 Essen

4 DATE OF TEST: 24.01.2001

2) See sheet 3/3

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, 24.01.2001

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, 31. JAN. 2001

i. A.

7 TEST DOCUMENTS

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

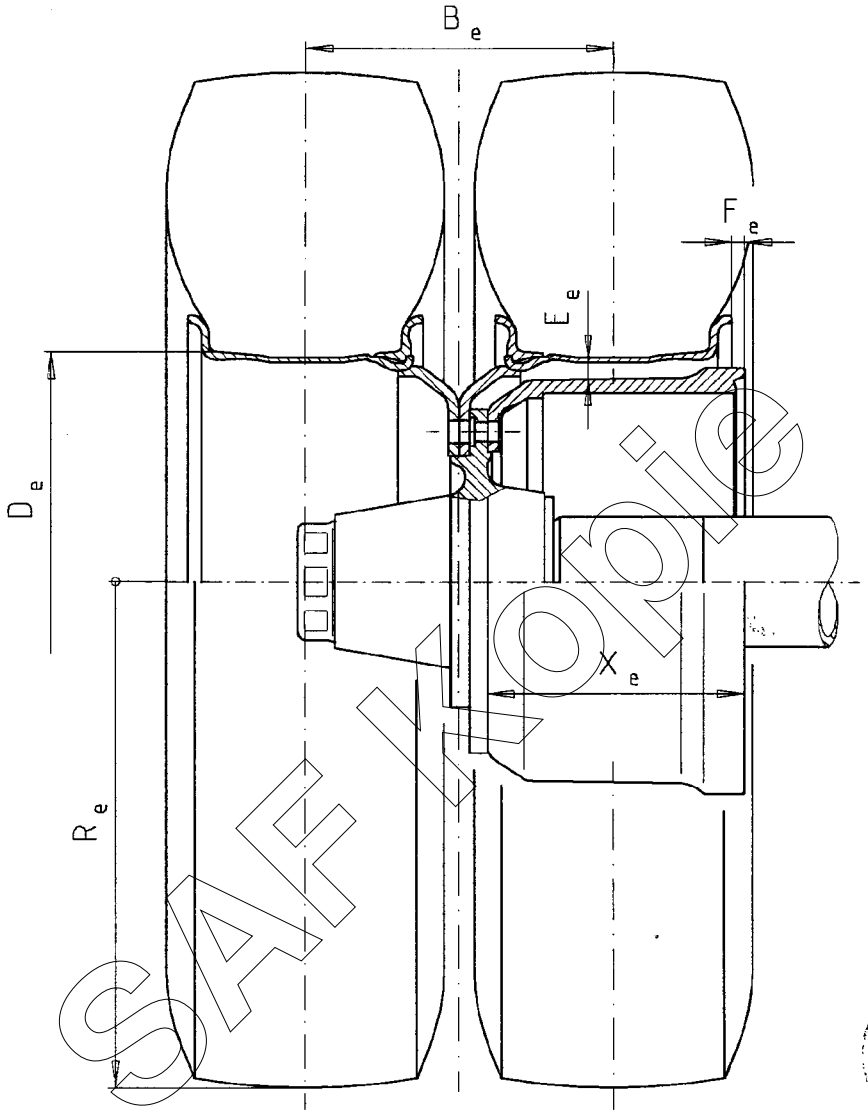
1) Calculation with g = 10 m/s²
2) Inertia dynamometer test; Re = 595 mm

Anlage 1 zum Prüfprotokoll Nr.: TDB 0718

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 BESSENBACH GERMANY

Bremse: brake: frein: Freno:	Grundtyp: basis type: modèle de base: Modello di base:	Zeichn. Nr.:	Blatt:
SNK 420 × 200	SNK 4220 - 14,5Z	6 077 9172 00	1
		Datum: 24.01.2001	Name: Roth



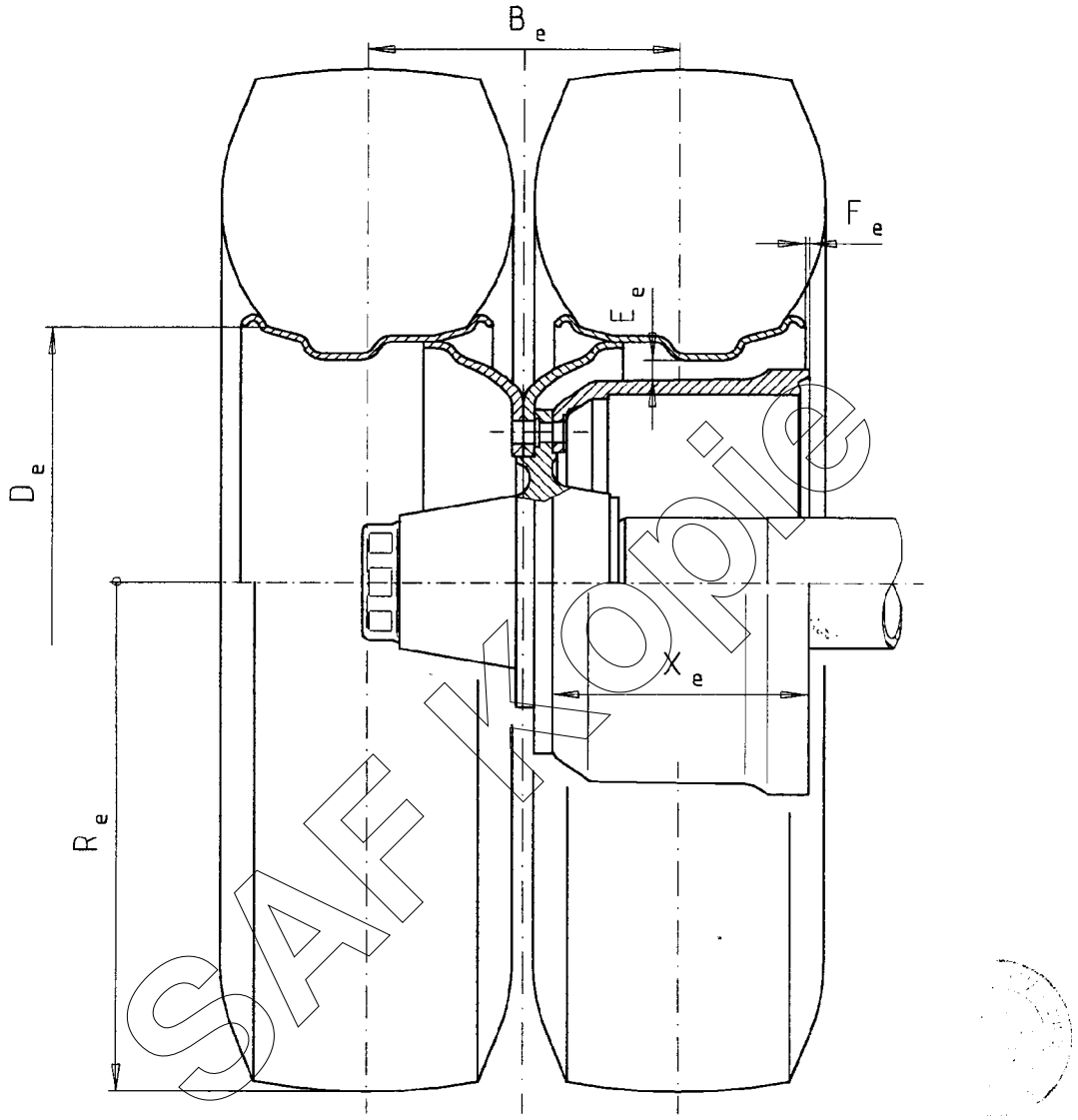
Bremse Brake Tambour Freno: Breite width largeur Largh. X_e (mm)	Masse weight masse Peso kg	Achslast Axle capacity Charge de l'essieu Portata assale P_e (daN)	Reifen Tyre Pneu Pneumatico	Felge Rim Jante Cerchio	B_e (mm)	R_e (mm)	D_e (mm)	E_e (mm)	F_e (mm)
287	54	14 500	12,00 R 20	8,5 - 20	344	545	508	18	14
287	54	14 500	12,00 R 24	8,5 - 24	360	595	609	43	10

Anlage 1 zum Prüfprotokoll Nr.: TDB 0718

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

OTTO SAUER ACHSENFABRIK KEILBERG D - 63854 BESSENBACH GERMANY

Bremse: brake: frein: Freno:	SNK 420 × 200	Grundtyp: basis type: modèle de base: Modello di base:	SNK 4220 - 14,5Z	Zeichn. Nr.: 6 077 9173 00	Blatt: 2
				Datum: 24.01.2001	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)
287	54	14 500	13 R 22,5	22,5 × 9,00	350	546	571	21	4

Anlage 2 zum Prüfprotokoll Nr. TDB 0718

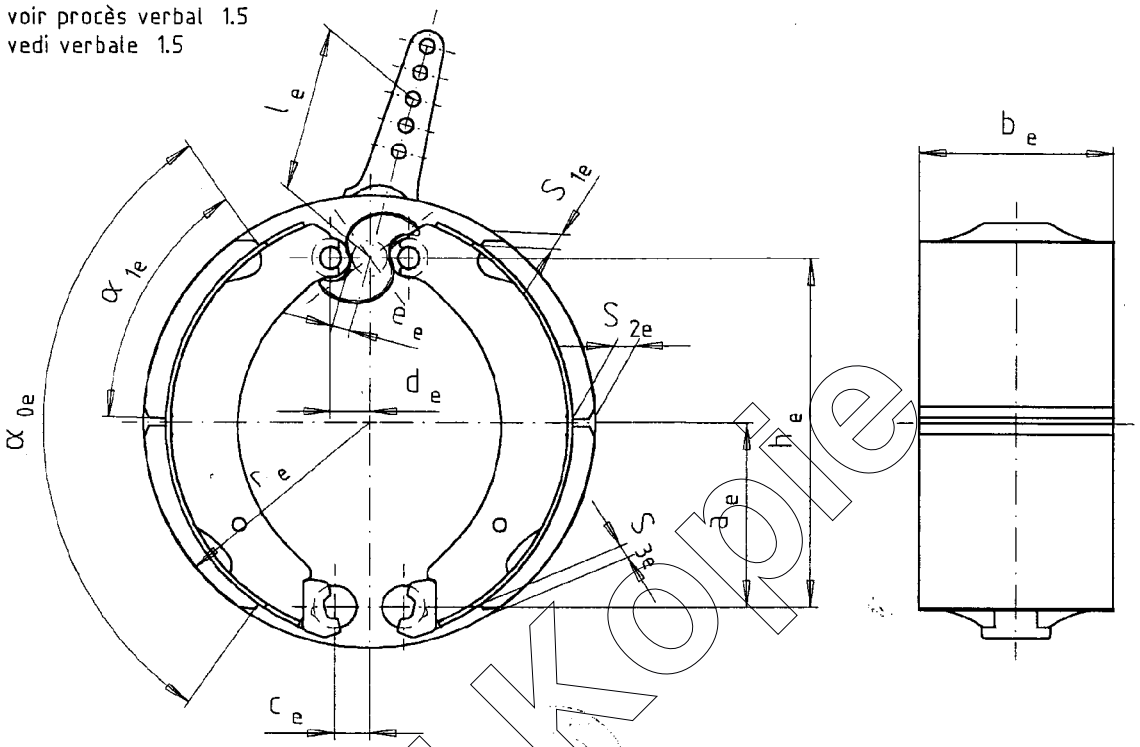
Annex 2 to brake test record
Annexe 2 au procès verbal
Allegato 2 al verbale di Omologazione Nr.

SAF OTTO SAUER ACHSENFABRIK KEILBERG D - 63854 BESSENBACH GERMANY

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

Datum:	Name:
24.01.2001	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