

# Test Report

No. AR 2007 dated 21.02.2002

for a mechanical brake according to  
Annex VIII, Appendix 3, Directive 71/320/EEC

- 1 Manufacturer: BPW Bergische Achsen  
Kommanditgesellschaft  
D-51674 Wiehl
- 2 Make: BPW
- 3 Type: S 3006-7 RASK
- 4 Technically permissible maximum  
mass per wheel  $G_{Bo}$ : 1500 kg
- 5 Maximum braking torque  $M_{max}$ : 5700 Nm
- 5.1 Tested braking torque: 5400 Nm
- 6 Dynamic tyre rolling radius  $R_{min}$ : 0,31 m  
 $R_{max}$ : 0,44 m
- 7 Brief description  
Simplex brake: Application with expanding lever and brake cable pull with 90° or 115° deflection; 2 equal brake shoes with symmetrical linings, brake lining stuck on: Make FERODO BERAL, type 1517; 1 cylindrical return spring; manual readjustment with adjusting nut on the floating brake shoe support; return system with travel-dependent action.  
List of plans and dimensional drawings see appendix 1.
- 8 Main diagram of the brake: See drawing no. TE-1823.0
- 9 Test result
- 9.1 Reduction ratio  $i_g$ :  $2 \cdot \frac{70 \cdot 217}{19,6 \cdot 112,5} = 13,78$
- 9.2 Half shoe centre lift  $s_B$ : > 2 mm
- 9.3 Half minimum shoe centre lift  $s_B^*$ : 1,8 mm
- 9.4 Withdrawal force  $P_0$ : 140 N
- 9.5 Coefficient  $p$ : 0,94 m

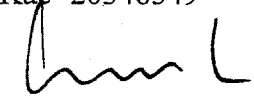


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Manufacturer : BPW  
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- 9.6 Overload protector according to point 3.6 of Annex VIII: Not provided
- 9.7 Maximum permissible force  $P_{max}$  for  $M_{max}$ : 6400 N
- 10 Technical service which carried out the test: RWTÜV Fahrzeug GmbH  
Technischer Dienst für Bremsanlagen  
D-45307 Essen
- 11 The above brake does conform to the requirements of points 3 and 6 of the testing conditions for vehicles fitted with inertia braking described in Annex VIII.  
The brake may be used for an inertia braking system without an overload.

Essen, 21.02.2002  
Kae -20346549-

  
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

- 12 Attached test documents  
Appendix 1 dated 21.02.2002: List of plans and dimensional drawings  
Appendix 2 dated 25.03.99: Characteristic diagram  
Appendix 3 dated 25.03.99: Test of thermal properties  
Appendix 4 dated 25.03.99: Braking performance with vehicle reversing  
Drawing No. TE-1823.0 dated 04.12.96  
Plans and dimensional drawings acc. to list in appendix 1
- 13 Remarks on appendices 2, 3 and 4  
The test results were determined using a brake pull-cable with 90 ° deflection (**perpendicular** brake pull-cable connection) and on the basis of a comparative test they are also valid for 115 ° deflection (**oblique** brake pull-cable connection).

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Manufacturer : BPW  
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**List of plans and dimensional drawings**

<b>Description (Benennung)</b>	<b>Number (Nummer)</b>	<b>Date (Datum)</b>
Spreizhebelbremse, links	B-06.360.24.62.0	07.08.98
Spreizhebelbremse, links	B-06.360.24.29.0	09.06.97
Spreizhebelbremse, links	B-06.360.24.91.0	04.06.99
Spreizhebelbremse, links (Stückliste)	B-06.360.24.62.0	13.02.02
Spreizhebelbremse, rechts	B-06.360.24.37.0	07.08.98
Spreizhebelbremse, rechts	B-06.360.24.30.0	10.06.97
Spreizhebelbremse, rechts	B-06.360.24.94.0	07.06.99
Spreizhebelbremse, rechts (Stückliste)	B-06.360.24.37.0	13.02.02
Bremsschildgruppe links	D-06.100.20.11.0	06.05.98
Bremsschildgruppe links	D-06.100.13.95.0	26.05.97
Bremsschildgruppe rechts	D-06.100.20.12.0	07.05.98
Bremsschildgruppe rechts	D-06.100.13.96.0	05.06.97
Bremsschild, links	B-06.099.30.03.0	26.05.97
Bremsschild, rechts	B-06.099.30.02.0	06.06.97
Schlauchführung	E-06.338.05.05.0	27.05.97
Bremsschildgruppe; links	C-06.100.14.87.0	04.06.99
Bremsschildgruppe; rechts	C-06.100.14.90.0	04.06.99
Bremsschild, links	C-06.099.30.07.0	04.06.99
Bremsschild, rechts	C-06.099.30.08.0	04.06.99
Schlauchführung, links	D-06.338.05.07.0	02.06.99
Schlauchführung, rechts	D-06.338.05.08.0	04.06.99
Schlauchführung	E-06.338.05.09.0	02.06.99
Platte	C-06.285.57.36.0	06.05.98
Scheibe	E-06.320.37.22.0	02.06.99
Lager	E-06.030.12.95.0	26.05.97
Stopfen	E-06.379.00.34.0	27.05.97
Schild	E-06.325.01.01.0	28.06.94
Schild	E-06.325.01.02.0	28.06.94
Formteil	E-06.001.14.53.0	27.05.97
Bolzen	E-06.084.73.51.0	27.05.97
Bolzen	E-06 00 226 086	18.05.95
Nachstellbolzen	E-06.276.13.02.0	28.05.97
Nachstellmutter	E-06.263.92.01.0	27.05.97
Schraube	E-06.341.02.33.0	28.05.97
Sicherungsklammer	E-06.350.20.11.0	28.05.97
Sicherungsklammer	E-06 00 226 083	17.05.95
Bolzen	E-06.084.32.30.0	28.05.97
Zugfeder	E-06.397.22.09.0	28.05.97
Bremsbackengruppe	D-06.091.11.54.0	06.05.98
Bremsbackengruppe	D-06.091.11.55.0	18.02.02
Bremsbelag	D-06.092.11.21.0	29.05.98
Bremsbacke	D-06.090.11.26.0	07.05.98



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**RWTVV**

Manufacturer : BPW  
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<b>Description (Benennung)</b>	<b>Number (Nummer)</b>	<b>Date (Datum)</b>
Bremsbacke	D-06.090.11.27.0	18.02.02
Backensegment	D-06.078.00.44.0	30.05.97
Backensteg	D-06.079.00.78.0	07.05.98
Backensteg	D-06.079.00.79.0	18.02.02
Zugfeder	E-06.397.34.18.0	02.06.97
Spannstift	E-06.001.08.15.0	02.06.97
Spannfeder	E-06.352.00.04.0	02.06.97
Spreizschloß	E-06.359.04.05.0	02.06.99
Spreizhebel	E-06.358.04.05.0	02.06.99
Spreizbügelplatte	E-06.356.04.04.0	02.06.99
Spreizbügelplatte	E-06.356.04.05.0	02.06.99
Spreizschloß	E-06.359.04.03.0	02.06.97
Spreizschloß	E-06 00 225 942	15.05.95
Spreizhebel	E-06.358.02.08.0	02.06.97
Spreizhebel	E-06 00 225 956	15.05.95
Bolzen	E-06.084.52.38.0	03.06.97
Bolzen	E-06 00 225 959	15.05.95
Spreizbügelplatte	D-06.356.04.02.0	03.06.97
Spreizbügelplatte	D-06 00 225 955	15.05.95
Spreizbügelplatte	D-06.356.04.01.0	03.06.97
Zugbügel	D-06.396.63.01.0	03.06.97
Trommelnabe	C-06.274.15.05.1	16.05.95
Trommelnabe	B-06.274.33.14.1	04.08.98
Trommelnabe	C-06.274.39.03.1	16.05.95
Trommelnabe	B-06.274.39.07.1	12.06.97
Trommelnabe	B-06.274.39.17.1	04.08.98
Trommelnabe	B-06.274.39.21.0	18.03.99
Trommelnabe	B-06.274.46.04.1	04.08.98
Bremstrommel	D-06.105.14.28.1	04.08.98
Bremstrommel	D-06.105.14.29.1	04.08.98
Bremsseilzug	D-06.089.51.33/60.0	04.06.97
Typschild	E-06.386.16.62.0	04.06.97
Typschild	E-06.386.16.68.0	10.08.98

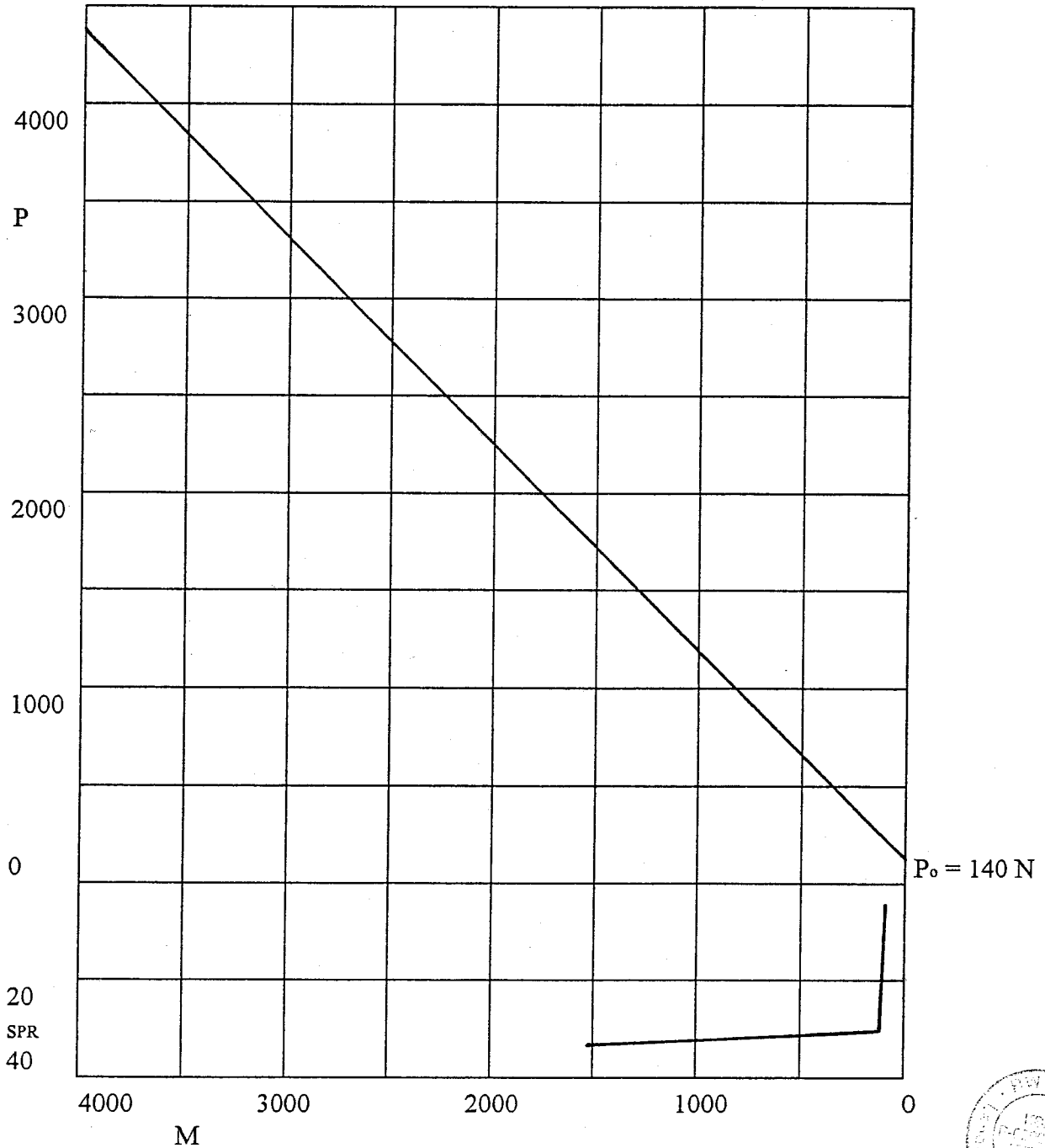


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### Characteristic diagram

M Braking torque in Nm  
P Force on brake cable pull in N  
SPR Application travel at brake cable pull with vehicle reversing  
 $\rho$   $4000 \text{ Nm} / (4380\text{N}-140\text{N}) = 0,94 \text{ m}$



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Manufacturer : BPW  
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### Test of thermal properties

A specimen of the brakes was examined according to Annex II Directive 71/320/EEC on an inertia dynamometer:

1 Brake test type 0

Test speed: 40 km/h  
Braking ratio: 61 %  
Force on brake cable pull: 4100 N

2 Brake test type I


Test speed: 40 km/h  
Sustained braking ratio: 7 %  
Braking time: 153 s  
Hot performance: 50 % ( $\hat{=}$  82 % of brake test type 0)  
Force on brake cable pull: 4100 N  
Temperature attained at  
brake drum: 420 °C

The rolling resistance of 1 % of the allowable mass per wheel has been taken into account.

### Overall result

The brake meets the requirements of Annex II, Appendix 1.3.3, Directive 71/320/EEC in the version of 27.01.98.

Essen, 25.03.99



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### Braking performance with vehicle reversing

The following applies for the direction of rotation with reverse travel

Reversing braking torque Mr: 120 Nm (incl. rolling resistance  $\hat{=} 0,01 G_{Bo}$ )

With an application travel SPR at the

- traction shackle: Up to 28 mm

- brake cable pull: Up to 30 mm

Necessary application travel  
for the parking brake at the

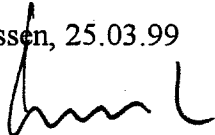
- traction shackle:  $\geq 32$  mm

- brake cable pull:  $\geq 35$  mm

The travel condition (reversing)  
for the inertia (overrun) braking  
system is:

$$s'/iH \leq SPR$$

Essen, 25.03.99

  
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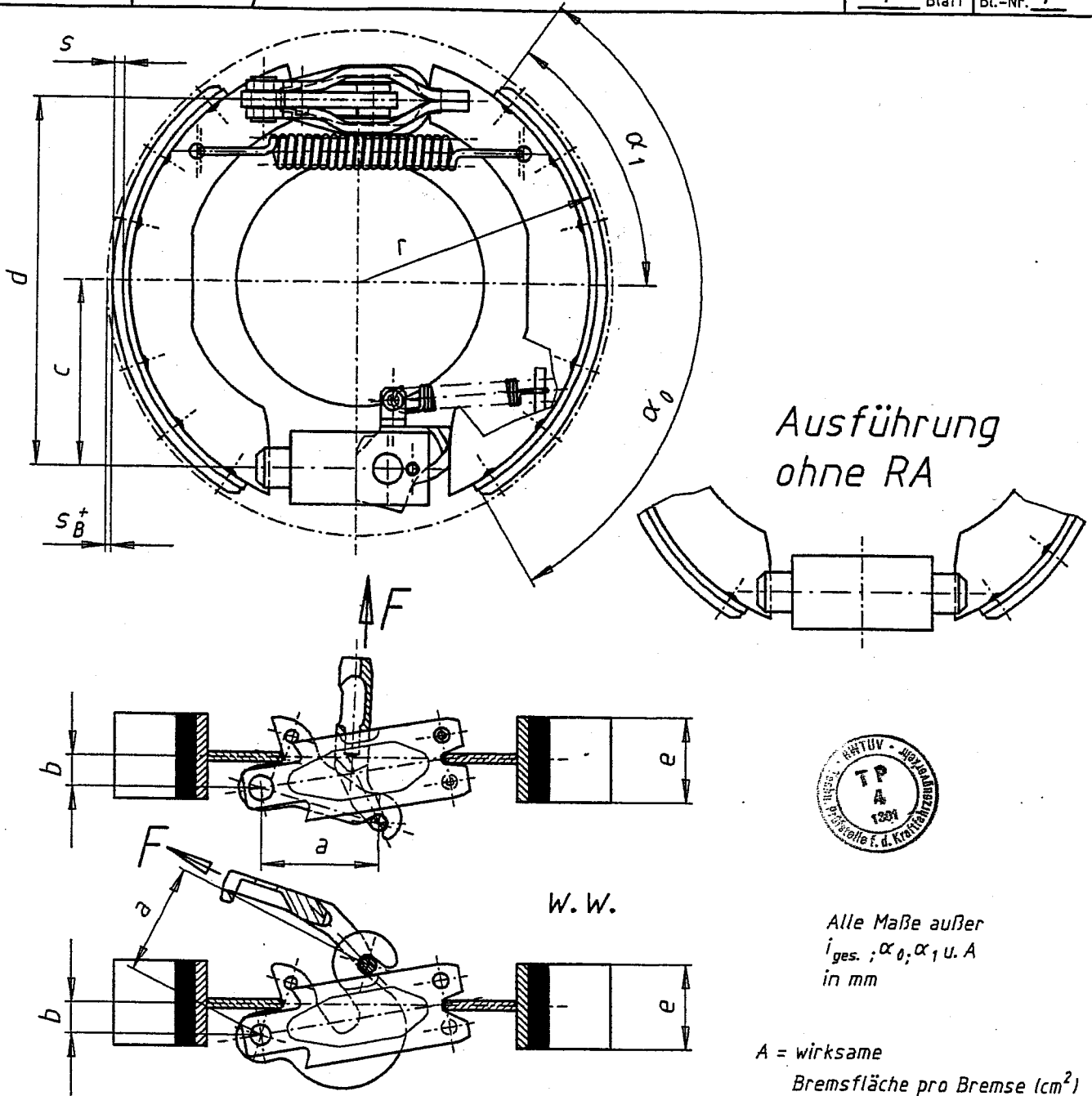


# Schemazeichnung Spreizhebelbremse

TE-1823.0

1 Blatt Bl.-Nr. 1

BPW BERGISCHE ACHSEN Kommanditgesellschaft D-51674 WIEHL



Alle Maße außer  
 $i_{ges.}$ ;  $\alpha_0$ ;  $\alpha_1$  u. A  
in mm

A = wirksame  
Bremsfläche pro Bremse (cm<sup>2</sup>)

Bremsen-Größe	c	d	$i_{ges.}$	$s_B^+$	a	b	r	e	s	A	$\alpha_0$	$\alpha_1$
S 2035-7 RA	75	149	14,1	1,6	49,7	14	100	35	4	136,5	114°	54°30'
S 2035-7												
S 2005-7 RA	75	149	14,1	1,6	49,7	14	100	50	4	195	115°	55°
S 2005-7												
S 2304-7 RA	84	166	14,0	1,66	56,8	16	115	40	4	192	122°	61°
S 2304-7												
S 2504-7 RA	93	186	14,2	1,7	56,8	16	125	40	5	200	117°	58°
S 2504-7												
S 3006-7 RASK	112,5	217	13,7	1,8	70	19,6	150	60	5	348	115°	57°
S 3006-7 RAZG	"	"	"	"	"	"	"	"	"	"	"	"

3	04.12.96	Datum 30.06.94 Name Bode	Datum 30.06.94 Name Mollerus
Revision	Datum	Erstellt	Genehmigt

CAD-erstellt