



**TEST REPORT**  
**Compulsory Specification**  
**VC8053**

**REPLACEMENT BRAKE LINING**  
**ASSEMBLIES FOR ROAD VEHICLES**

Date: 10 November 2004

Client: **Mr. D. Van Tonder**  
**SABS Automotive Regulatory**  
Private Bag X191  
Pretoria 0001  
South Africa

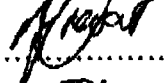
Report No.: **8111/C2970**


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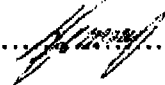
Sample Tested: **DYNOTHERM STD 25353**  
**RE02763**

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Sample Part Number: **MP 36**

Tested by: M. J. Prevot.....  
(Lab Assistant) 

Checked by: H. Makitla.....  
(Senior Technician) 

Approved by: L. Ferreira .....  
(Section Head) 

Our Reference: 8111/C2970

Submitted for test: 23 September 2004

**Conclusion:**

The brake lining assembly tested complied with the requirements of the compulsory specification VC8053 specific to the tests mentioned in this report.

*This report relates only to the samples tested and is issued subject to the conditions printed on the last page of the report. It does not imply approval by the South African Bureau of Standards of the quality and/or performance of the commodity that has been tested. It does not authorize the use of the Standardization Mark.*  
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## **1. Introduction**

### **1.1 Object**

To evaluate replacement brake linings against the requirements of the compulsory specification "Replacement brake lining assemblies for road vehicles", VC8053 as published by Government Notice R95 in Government Gazette no 22014, of 2 February 2001, specific to those tests conducted in this report.

### **1.2 Submitted information**

The sample was delivered together with:

- Inspection Report and Test Request from Automotive Regulatory.

### **1.3 Sampling procedure**

Automotive regulatory submitted the test sample personally. The test house had no influence on the selection of the sample. The sample handed in was in a test worthy condition.

### **1.4 Conditioning**

The sample brake lining assembly was conditioned by conducting repeated stops from various speeds using random pressures. On completion of the conditioning schedule more than 80% contact area between lining assemblies and drum was obtained.

### **1.5 Test method**

The tests were conducted in accordance with clause 3.1 of the compulsory specification for replacement brake lining assemblies for road vehicles.

## 1.6 General information

Table 1: Original Equipment component (Benchmark)

OE part number	MP 36
OE manufacturer	Ferodo
OE component description	Ferodo Bcral
Vehicle description	MAN 30-300 DFT
Vehicle category	M <sub>3</sub>
Gross axle mass	10 200 kg
Torque benchmark for replacement linings	10 561 Nm

Table 2: Replacement component

Replacement part number	MP36
Replacement supplier	Dynotherm
Replacement manufacturer	Dynotherm
Replacement component description	MP36 Brake Linings (2 Anchor and 2 Cam)
Replacement component batch number	DNA STD 25353

## 2. TEST RESULTS

### Summary of the results

The symbols referred to in the results column are as follows:

N/A = not applicable	P = compliance
N/T = not tested	F = non compliance
N/F = not fitted	I = inspected
N/I = not inspected	* = see remark
T = tested	

Table 3: Summary of the results

Test	Clause	Details on page	Result
Laboratory tests	3.2	5	P
Brake lining attachment - bonded	3.3.1	5	N/A
Brake lining attachment - riveted	3.3.2	6	N/T*
Packing	6.1	6	LP
Marking	6.2	6	LP

Clause	Description	Result
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### 3. DESCRIPTION OF THE CLAUSES

#### Laboratory test

- |        |  |      |
|--------|--|------|
| 3.2    | When a replacement brake lining assembly is tested in accordance with clauses 4.3.2 and clause 4.3.3:  |      |
| 3.2 a) | the mean braking torque recorded during the type O test, using the value of test speed 2 relevant to the category of vehicle given in table 1, shall for the same input force, be within 15 % of the mean braking torque recorded when the original brake lining assembly is tested in the same way. The mean braking torque recorded with the original brake lining assembly is the average of the braking torques recorded during at least five tests on the original brake lining assembly. | T/P  |
| 3.2 b) | The difference in the mean braking torque recorded during the type O test on the replacement brake lining assemblies, at the three different speeds, shall be within: <ol style="list-style-type: none"> <li>1) in the case of vehicles of categories M<sub>1</sub>, M<sub>2</sub> and N<sub>1</sub>, 15 % of one another and</li> <li>2) in the case of vehicles of categories M<sub>3</sub>, N<sub>2</sub> and N<sub>3</sub>, 25 % of one another</li> </ol>                                 | T/P  |
| 3.2 c) | The residual performance after the type I test shall be not less than 60 % of the figure recorded in the type O test.  | T/P  |
|        | Upon completion of the test, the replacement brake lining shall be subjected to visual inspection, to check that it is in a satisfactory condition for continued use under normal working conditions.  | T/P* |

#### Brake lining attachment

- |          |   |     |
|----------|---|-----|
| 3.3.1    | When a bonded replacement brake lining assembly is tested in accordance with clause 5:  |     |
| 3.3.1 a) | Failure shall not occur before the shearing force reaches the appropriate of the following values; <ol style="list-style-type: none"> <li>1) pad assembly: 2.5 N per square millimeter of surface area of the brake lining; and</li> <li>2) shoe assembly: 1.0 N per square millimeter of surface area of the brake lining;</li> </ol>  | N/A |
| 3.3.1 b) | Depending on the actual value of the ultimate shearing force, the failure pattern of the sheared surface shall comply with the following requirements: <ol style="list-style-type: none"> <li>1) pad assembly: if the ultimate shearing force is less than 1.8 times the minimum value given in (a)(1) above, the bond over at least 70 % of the interface between the brake lining and the back plate shall not have failed. The bond shall not have failed anywhere at the edge; and</li> <li>2) shoe assembly: if the ultimate shearing force is less than twice the minimum value given in (a)(2) above, the bond over at least 65 % of the interface between the brake lining and the brake shoe shall not have failed, and no single area of failed adhesion shall exceed 15 % of the total area. The bond shall not have failed anywhere at the edge.</li> </ol> | N/A |

Clause	Description	Result
<b>Brake lining attachment (continued)</b>		
3.3.2	When riveted replacement brake lining assemblies are inspected, they shall comply with the following requirements:	
3.3.2 a)	There shall be no evidence of cracks in the lining;	N/T*
3.3.2 b)	The lining shall not be askew to the back plate;	N/T*
3.3.2 c)	There shall be no separation of the lining from the brake shoe;	N/T*
3.3.2 d)	The leading edge of the lining shall be on the correct side;	N/T*
3.3.2 e)	The diameter of the rivet head shall not be obviously smaller than the diameter of the lining hole when correctly seated;	N/T*
3.3.2 f)	The rivet head shall not be flush or proud of the lining;	N/T*
3.3.2 g)	There shall be no damage to the rivets;	N/T*
3.3.2 h)	The rivets shall not be loose; and	N/T*
3.3.2 i)	There shall be no sign of the rivet hole on the underside of the brake shoe.	N/T*

**Packing and marking**

6.1	<b>Packing</b> Replacement brake lining assemblies shall be so packed as to prevent damage or contamination during transportation and storage.	I/P
6.2	<b>Marking</b> Replacement brake lining assemblies shall be so marked as to clearly identify the manufacturer and the vehicle model and any derivative for which they are intended. A parts numbering system that corresponds to the vehicle parts list shall be deemed to satisfy these requirements.	I/P

**4. SUMMARY OF TEST DATA**

Run No.	Mean torque within 15% of prescribed value				Mean torque not less than 60% of the figure recorded during type-O Cold performance			
	Req Type O	Act. Type O	Variance	Result	Req Res.	Act. Res.	Variance	Result
	Nm	Nm	%		Nm	Nm	%	
2	10561	11567	10	P	11567	9680	86	P

Type-O Cold performance test at 60km/h, 80km/h and 110km/h					
Mean torque to be within 25%					
Run No.	60km/h	80 km/h	110 km/h	Variance	Result
	Nm	Nm	Nm	%	
2	12290	12400	10806	12	P

**5. REMARKS**

- The four friction lining segments were supplied loosely.
- ETC made use of a sub-contractor to have the linings riveted and radius ground (where applicable).

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## 6. CONDITIONS

*This report relates only to the specific sample(s) tested as identified herein. It does not imply SABS approval of the quality and/or performance of the item(s) in question and the test results do not apply to any similar item that has not been tested.*

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