

**Expert Opinion
TÜH-TB 2002-064.01**

by order of the TÜH Staatliche Technische Überwachung Hessen
Type Approval Test Division of TÜH

TÜV Technische Überwachung Hessen GmbH

Automotive



Type : **BVA** (Pad wear indicator for disc brake)
Applicant : **WABCO GmbH**

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with regard to the assessment in accordance with
§ 19 clause 2 of the StVZO (Federal Motor Vehicle Safety Standards)
provided for the presentation in case of vehicle checks
-additional considering the International Agreement for the Transport of Dangerous (ADR)-

1. General statements

- 1.1 Trade name : **WABCO**
(manufacturer's company name)
Applicant's name and address : **WABCO GmbH**
Am Lindener Hafen 21
D-30453 Hannover
<http://www.wabco-auto.com>
- 1.2 Type of components : **BVA** (Pad wear indicator for disc brake)
612 480 036 2 / 612 480 040 2 (Sensors in connection
with peripheral-equipment see annex 1)
- 1.3 Present type approval and tests : **See following tabular**
- 1.4 Identification control electronics : **See following tabular**

Approval status			
directive	type	Approval number / Test Report	Marking of type
EEC	TEBS-D	e1*72/245*95/54*1206*00 (EMC approval)	e1 02 1206
EEC	TEBS-E	e1*72/245*2006/28*4868*00 (EMC approval)	e1 03 4868

- 1.5 Reason for the application for an additional expert opinion : **The WABCO Company, being the manufacturer of the system, would like to submit to the customer a clear assessment with regard to the valid technical regulations defined in the StVZO (Federal Motor Vehicle Safety Standards), particularly for using in vehicle for the transport of dangerous goods (ADR and GGVS).**

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2. Result of the Assessment

- 2.1. Test result : From the technical point of view, there are no objections to the installation of the Pad wear indicator for disc brake for towed vehicles, provided that the installation conditions defined below are observed.
The installation or later installation of the Pad wear indicator for disc brake (see annex 1) does not annul the homologation certificate established on the basis of § 19 clause 2 of the Federal Motor Vehicle Safety Standards.
- 2.2. Statement substantiating the result of assessment : The installation or later installation of the Pad wear indicator for disc brake, including the connecting cables and further accessory parts mentioned in annex 1 does not in any way affect the vehicle and trailer safety equipment's effectiveness or function.

- 3. Requirements and conditions** :
1. Installation Instruction of the Pad wear indicator for disc brake
 2. **For GGVS / ADR – vehicles, the addition of installation instruction according ANNEX 1 must consider.**
 3. For further informations see: www.wabco-auto.com (Inform)

4. Annexes

1. : **Addition of installation instruction for ADR-vehicles overview: BVA-components in connection with TEBS**

Name and address of the authority issuing the assessment : TÜV Technische Überwachung Hessen GmbH
-Automotive- - Type Approval Test Division of TÜH -
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D-64285 Darmstadt, **2008-09-12**

41863205



Signature of Official Vehicle Expert
(licence by state government)
Diplom-Engineer Preiß
Leader of Type Approval Test Division of TÜH

Type : **BVA** (Pad wear indicator for disc brake)
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Addition of installation instruction for ADR-vehicles:

Complement to the Installation Instruction provided for ADR vehicles:

If used in vehicles that require an ADR certificate (*International Agreement for the Transport of Dangerous Goods*) or that are subject to the GGVS (*Act Governing the Road Haulage of Hazardous Materials (Germany)*), the installation of the BVA sensors as well as the connecting cables and accessories (see annex) for the EBS have to meet the special requirements concerning the electrical equipment according to the directive 98/91/EG dated 14.12.1998 or the regulation ECE-R 105 including amendment 02 or to clause 9.2.2 of the ADR 2007.

Energized electrical circuits shall be protected against damage (e.g. cable sheath)

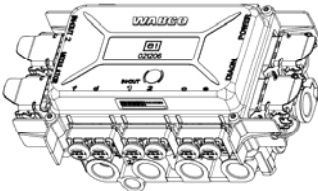
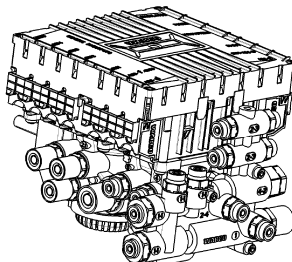
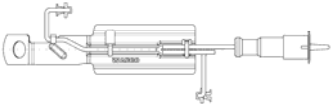
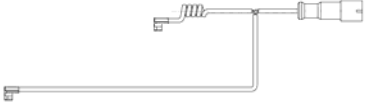
Photo: BVA-Sensor





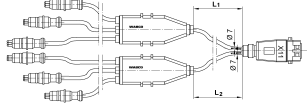
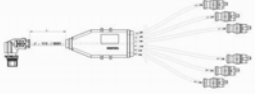
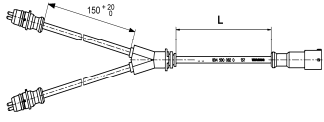

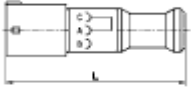
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overview: BVA-components in connection with TEBS.

Trailer brake systems			
System-parts number	System-designation	Number system	Connecting BVA cable
480 102 0xx 0 	TEBS-D	480 102 010 0 bis 480 102 019 0	In/out
480 102 0xx 0 	TEBS-E Standard Premium	480 102 030 0 bis 480 102 058 0 480 102 060 0 bis 480 102 088 0	GIO 1-7
BVA-sensor			
Sensor	Application		
612 480 036 2 	WABCO brake		
612 480 040 2 	Knorr brake		



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Connecting cable				
Cable family	Function/ Designation	Termination device plug	Degree of protection (in connection with pendant)	requirements
449 834 000 0 	Connecting cable TEBS-D Modulator	Modulator	IP 6K9K IP IP67	-
		Sensor/ Extension cable/ Branch cable [6x]	IP 68 IP 69K	The connectors that are not used shall be closed with electrical bridge 441 902 312 2
449 816 000 0 	Connecting cable TEBS-E Modulator	Modulator	IP 6K6K IP 6K9K	-
		Sensor/ Extension cable Branch cable [6x]	IP 68 IP 69K	The connectors that are not used shall be closed with electrical bridge 441 902 312 2
894 590 082 0 	Branch cable	Connecting cable 449 834 000 0 449 816 000 0	IP 68 IP 69K	-
		Sensor Extension cable	IP 68 IP 69K	-
449 720 000 0 	Extension cable	Connecting cable 449 834 000 0 449 816 000 0 Branch cable 894 590 082 0	IP 68 IP 69K	-
		Sensor		-
Further accessory parts				
	Function/ Designation	Termination device plug	Degree of protection (in connection with pendant)	requirements
441 902 312 2 	Cable jumper	Sensor connecting device plug	IP 68 IP 69K	-