

1. Identification

1.1 Manufacturer: WABCO Vehicle
Control Systems
Am Lindener Hafen 21
D - 30453 Hannover

1.2 Applicant: s. 1.1

1.3 System: Trailer EBS

1.3.1 Versions: Trailer EBS D

Trailer EBS with TCE*

* TCE: Trailer Central Electronic

with the following progress numbers on the modulator nameplate:

Part number	Progress number from	to
480 102 000 0	160.000	175.018
480 102 010 0	50	10.400
480 102 014 0	100	9.100
480 102 015 0	50	207

These part numbers relate to the manufacturing period October 2002 to April 2003.

2 Subject of the Appraisal

As a result of field experience accumulated, the company WABCO found that when operating trailer vehicles with trailer EBS D with the modulator versions indicated above in 1.3.1, delayed braking may arise if no EBS from WABCO is installed in the towing vehicle.

This delayed braking can only arise in cases where all the following conditions apply **simultaneously**:

1. Towing vehicle equipped with an EBS-system not produced by WABCO
2. Electric control signal from the towing vehicle is exactly 1536 digit (0,3 bar) and constant for a time between 100 and 150 ms.
3. Within the period from 100 to 150 ms the electric signal is increased
4. Both modulator outlet pressures left/right exceed 0.3 bar

3 Measures taken by WABCO

3.1 To prevent the delay in response in the cases mentioned, WABCO has taken the following action:

- They wrote to all vehicle manufacturers supplied with the versions of the modulators indicated above (see 1.3).
- The vehicle manufacturers were instructed to tell their customers to have parameter changes made immediately (see annex).

During this change of parameters a parameter update is conducted in the WABCO Service Center using a special parameter update programme.

With this parameter update only the electric control signals of the vehicle above 0.4 bar are taken into account to generate the pressure of the modulators. This prevents the delayed braking mentioned in paragraph 2 from occurring, because the condition indicated there no longer applies (see condition 2).

3.2 The parameter update changes the braking behaviour of the trailer vehicle as follows:

- Change of response threshold (pm value) to 0.4 bar for 0.0 bar brake cylinder pressure
- Increase in the gradient of the automatic load-dependent brake force distribution force characteristic for the unladen and partial laden vehicle (gradient of the "laden characteristic" practically unchanged)

This change means that, in the lower pressure range, a somewhat lower brake cylinder pressure and, in the upper pressure range, a higher one is selected as compared to the original series parameter settings.

This change is not made in order to change the general braking behaviour, but is intended to eliminate the delayed braking described in paragraph 2 above.

4. Statutory Approval Regulations

The measures taken by WABCO are related to trailers already approved.

The regulations considered here are those which applied when these vehicles were approved and which relate to the aforementioned WABCO measures.

The "Trailer EBS" is installed in trailers which are subject to the provisions of Directive 71/320/EEC and/or the ECE Regulation No. 13.

These regulations lay down minimum braking decelerations for the unladen and laden vehicle. In addition these vehicles must satisfy the "compatibility requirements" of the diagrams 2 and 3 according to annex 10 of ECE Regulation No. 13 or appendix to annex II of Directive 71/32/EEC for the laden vehicle.

Because of these changes it was ensured that the deceleration values determined during the homologation of these vehicles are not fallen below.

The "compatibility requirements" only relate to the **laden** vehicle. Since the "laden characteristic" remains almost unchanged during the parameter update, the braking behaviour is not influenced with respect to this requirement.

5. Provisions of the StVZO

Art. 19/2 StVZO lays down, among other things, that the vehicle's operating permit does not expire if a modification is made, provided there is not reason to expect an danger to others on the road.

With the parameter update, equal or higher deceleration values are achieved for the trailer vehicle and the statutory regulations are satisfied with respect to the "compatibility requirements".

The parameter update does not therefore lead to any change in the braking force distribution ("brake valves with modified characteristic") **with respect to the statutory requirements.** The deceleration values determined in the type or individual approval are also ensured by the parameter update. The greater deceleration values obtained or achievable in unladen state are not critical, because the requirements regarding braking force distribution for the **unladen** state do not apply for vehicles with ABS.

Para. 7.5 of annex 10 of the ECE Regulation No. 13 waives an ALB plate for vehicles with electronically controlled braking force distributions (see diagram 5 of annex 10). With the system "Trailer EBS" from WABCO, the current parameters are documented on the vehicle on the so-called EBS plate so that they can be referred to if there is a repair and the modulator must be exchanged.

Expert Opinion

Manufacturer: **WABCO Fahrzeugbremsen**

System: **Trailer EBS**

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The change in the response threshold (pm value) to 0.4 bar for 0.0 bar brake cylinder pressure is regarded as non-critical because it practically has only a minor effect as compared to the original series parameter settings, and anyway in this low pressure range there would be no build-up of braking forces due to the response pressures of the wheel brakes.

There is no reason to expect any danger to others on the roads.

6. Annex

"Instructions for Parameter update V1.0 for Trailer EBS D" from WABCO

7. Summary

There are no technical objections to the procedure of the company WABCO as described above. The regulations referred to in this Expert Opinion are regarded as satisfied. The minor change in series parameter settings takes place automatically by manufacturer update. Since there is not reason to expect any danger to road-users, it is not considered necessary to apply for a new operating permit.

Essen, 05.05.2003

Date of English version: 14.05.2003

TDB/Gaupp

Order No. 205 707 78

**Institute for Vehicle Technology
Technical Service for Braking Systems**

A handwritten signature in black ink, appearing to read 'W. Gaupp', is located to the left of the official seal.



Dipl.-Ing. Gaupp

Officially Recognised Expert
for Motor-Vehicles Traffic

Instruction for Parameter update V1.0 for Trailer EBS D

1. **Attention! A parameter update is only necessary for not updated modulators with the following series numbers at the company label:**

Number	series number from	to
480 102 000 0	160000	175.018
480 102 010 0	50	10.400
480 102 014 0	100	9.100
480 102 015 0	50	207

Remark: Modulators produced beginning KW 17 are marked with a green dot next to the label temporarily.

2. **Attention! A parameter update is only permissible with the diagnostic program *TEBS D Parameter update V1.0*, because it is the only possibility to change all necessary parameters. Not observance will affect the function of the braking system.**
3. Install the program *Trailer EBS D Parameter update V1.0* at your PC.
4. Connect power supply to the trailer.
5. Connect the Diagnostic Interface at the diagnostic plug.
6. Connect the Diagnostic Interface with your PC.
7. The green control lamp at the Diagnostic Interface should be illuminated.
8. Start the program for the parameter update. The update needs 5 minutes.
9. Follow the instructions in the program.
10. If the program recognises a device which does not need the update the following message appears:

Parameter update not necessary.

11. If the program recognises a device which hasn't pass the end of line test successful the following message appears:

Please start at first the end of line test.

12. If the program recognises a device which is already updated the following message appears:

Parameter update has already carried out .

- 13. If the program recognises one of the affected Trailer EBS, the parameter update runs automatically .
- 14. After finishing the parameter update successfully the following message appears:

The parameter update has passed successfully.

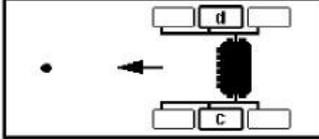
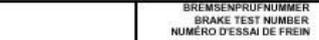
To document the modifications please
change the EBS-System label with the from WABCO available stickers.
or
print a new EBS-System label with the PC-Diagnostic .

Print the modification report (with Notepad) and send it to:

WABCO help desk

Note: the data of the changing report will be stored in a database.

- 15. Use the supplied adhesive labels to correct the Trailer EBS-System label or print a new EBS-System label with the PC-Diagnostic.

WABCO				TRAILER EBS						
HERSTELLER MANUFACTURER CONSTRUCTEUR		WABCO		ELEKTR: SCHALTER 1 ELECTR: SWITCH 1 COMMUTATEUR ELECTR.1		ILS1				
TYP TYPE TYPE		P4-D_01		ISS GESCHW: ISS SPEED COMMUTATEUR VITESSE		1				
FAHRGESTELLNUMMER CHASSIS NUMBER NUMERO DE CHASSIS		WDE234957G7484657		ISS.PIN INVERTERT ISS. PIN INVERT COMMUTATEUR INVERSE		---				
BREMSBERECHNUNGS-NR. BRAKE CALCULATION NO. CALCUL DE FREINAGE NO.		WDE34587		10 s PULS 10 s PULSE IMPULSION 10s		---				
POLRADZAHNEZAHL c,d POLE WHEEL TEETH c,d DENTS ROUE DENTEE c,d		100	ABS-System	2S/2M		ELEKTR: SCHALTER 2 ELECTR: SWITCH 2 COMMUTATEUR ELECTR.2		---		
POLRADZAHNEZAHL e,f POLE WHEEL TEETH e,f DENTS ROUE DENTEE e,f		100	POS. LIFTACHSEN POS. LIFTAXLE PRÉP. ESS. RELEV.	1		WARNLAMPE WARNING LAMP VOYANT DE SECURITE		2s	GGVS/ADR	TPN 1805/99
EXT. BREMSDRUCKSENS. EXT. BRAKE PRESS. SENS. EXT. CAPT. PRES. DE FREIN.		---	W01	TH		LIFTACHSE HEBEN V LIFT AXLE SPEED V VITESSE ESS. RELEVABLE		0	ANFAHRHILFE GESCHW. TRACTION HELP V VITESSE AIDE DEMARRAGE	30
CAN2		---	RSS RSS RSS	RSS-S		LIFTACHSE SENKEN % LOWER LIFT AXLE % BAISSER ESSIEU RELEV. %		100	ANFAHRHILFE DRUCK TRACTION HELP PRESS. PRES. AIDE DEMARRAGE	6.5
		STEUERDRUCK PM (BAR) CONTROL PRESSURE (BAR) PRESSION DE SERVICE PM (BAR)		6.5		STEUERDRUCK PM (BAR) CONTROL PRESSURE (BAR) PRESSION DE SERVICE PM (BAR)		0.4	2.0	6.5
ACHSE AXLE ESSIEU	ACHSLAST LEER AXLE LOAD UNLADEN CHARGE ESSIEU A VIDE (KG)	BALGDRUCK LEER SUSP. PRESS. UNLADEN PRESS. SUSP. A VIDE (BAR)		BREMSDRUCK LEER BRAKE PRESS. UNLADEN PRESS. DE FREIN. A VIDE (BAR)		ACHSLAST BELADEN AXLE LOAD LADEN CHARGE ESSIEU EN CHARGE (KG)	BALGDRUCK BELADEN SUSP. PRESS. LADEN PRESS. SUSP. EN CHARGE (BAR)	0.0	BREMSDRUCK BELADEN BRAKE PRESS. LADEN PRESS. DE FREIN. A CHARGE (BAR)	
1	1500	0.1		1.5		9000	5.0		1.5	6.5
2	1500	0.1		1.5		9000	5.0		1.5	6.5
3	1500	0.1		1.5		9000	5.0	1.5	6.5	

- 16. Print the modification report (with Notepad) and send it to your known WABCO help desk. After entry of a completely filled out modification report WABCO reimburses once 30.-Euro net. Please have comprehension that WABCO accumulates the credits before paying.