15th June 2005

WABCO Trailer EBS
Now available for vehicles with mechanical suspensions too

Since May 2005, the Trailer EBS has also been released for vehicles with mechancial (leaf-spring) supension. The necessary report EB 123.5E is available on our internet portal www.wabco-auto.com, under Publications in INFORM.

The following vehicle types and functions have been released:

Trailer type	EBS	EBS+RSS*
Semitrailer	X	X
Single-axle trailer	X	X
Drawbar trailer	X	--

**RSS = Roll Stability Support*

For the time being, the RSS may not be enabled in drawbar trailers with leaf spring suspensions. In addition, only mechanically-sprung axles with a minimum suspension travel which lie within the light-coloured area of the loaded/unloaded ratio diagram (*Figure 1*) are approved.

The control ratio is calculated using the formula $i_{BL} = \frac{\text{Axle load laden [kg]}}{\text{Axle load empty [kg]}}$.

Example:

A vehicle has an axle load of 8000 kg when loaded and an axle load of 1500 kg when empty, its suspension travel is 20 mm. This gives an i_{BL} of:

$$i_{BL} = \frac{8000\ \text{kg}}{1500\ \text{kg}} \approx 5{,}3$$

As can be seen from the diagram, the suspension travel for this vehicle lies between 13 and 50 mm. The Trailer EBS can therefore be used.

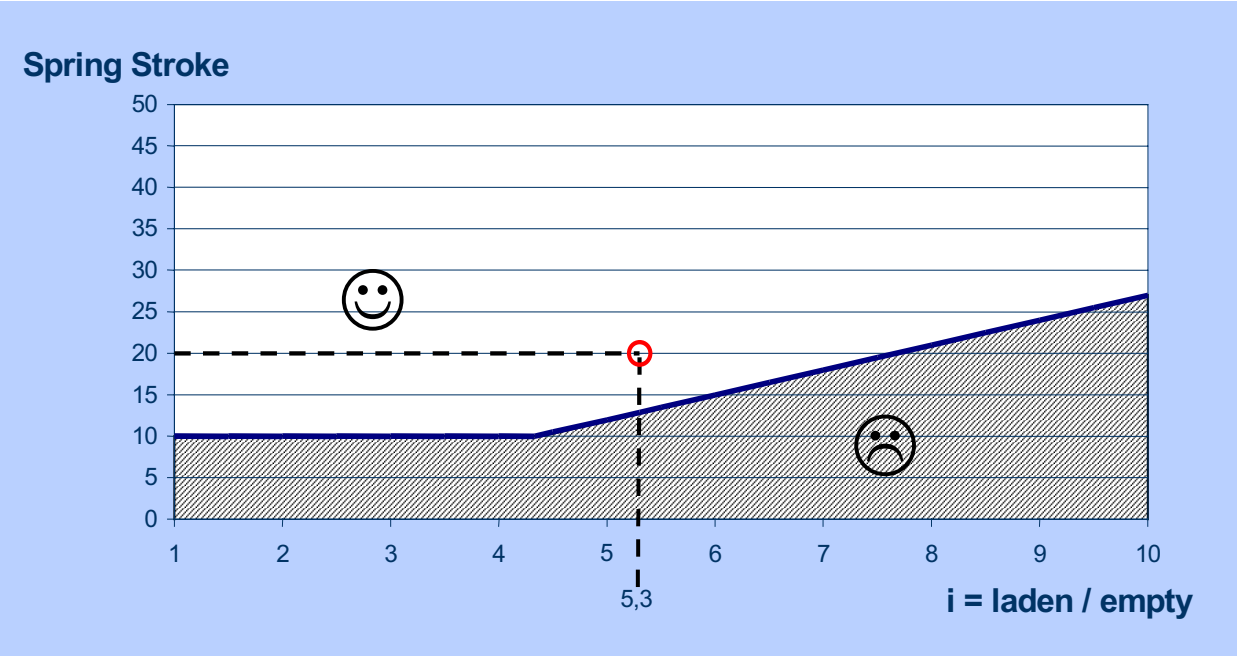

Figure 1: Loaded/empty ratio diagram

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■ How is the load recorded and sensed?

In these vehicle types the load is measured by a mechanical displacement/pressure conversion. To this end, a newly developed, dynamic, load-sensing control valve is used; part number 475 713 002 0. This valve is permanently supplied with a constant pressure of 3.0 bar at port 1 via the pressure-limiting valve 475 015 014 0.

The control valve proportionally converts the suspension travel into a pressure, which is then evaluated by the integrated pressure sensor of the trailer modulator. To do this, the pressure pressure outlet port 2 of the control valve must be connected with port 5 (bellows pressure) of the trailer modulator.
Ensure that the vehicle compresses proportional to the load and reaches the suspension travel specified by the manufacturer at full payload.

A rigid coupling is required as tension and pressure forces occur. For this reason, trailer may not be linked by a rope/cable.

Please note, only the control valve 475 713 002 0 may be used.

The necessary components are also available as a set:

WABCO Set order number: **400 602 572 0** consisting of:

Load-sensing control valve 475 713 002 0
Pressure limiting valve: 475 015 014 0

■ Determination of the lever length for the load-sensing control valve 475 713 002 0:

The length of the lever travel (L) depends on the static suspension travel of the axle assembly. The lever length can be determined using the Windows ALB program from Version 1.60. You can download this program via our Internet portal www.wabco-auto.com. It also enables you to printout a special, additional ALB label as shown in Figure 2.

The ALB label must be printed out and attached to the vehicle in addition to the trailer's EBS system label, to document the set values.

The order number for the system and additional reference plate is the same: 899 200 922 4

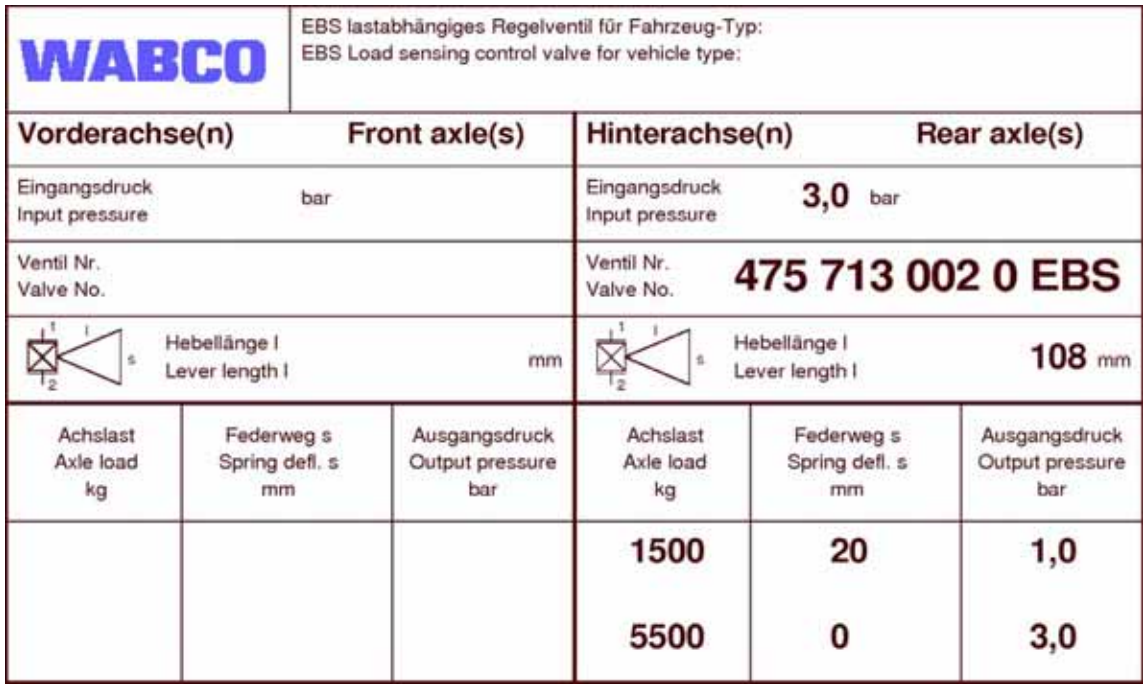

Figure 2: Additional ALB reference plate with example values

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■ Installing the control valve:

The control valve is installed in the middle of the axle. The lever length determined is set at the control valve. This can be pushed in the shaft by releasing the central screw on the coupling. Select the fitted length so that the coupling rod is vertical.

- **Setting the initial "Unladen" pressure:**

Set with filled brake system.
A manometer is required at port 2 to determine the no load position[1]. The control valve lever is placed in the position in which an initial pressure of 1 bar results. The connecting rod is set to this position and fixed.

- **Checking the "laden" braking pressure:**

If the no load pressure is correct, the lever is raised by the calculated suspenstion travel (difference between unladen/laden heights, to do this unhitch coupling rod at lever). The initial pressure of the control valve must continuously rise to 3 bar.

- **If the controlled pressure is less than 2.8 bar:**

Shorten lever and start again with the braking pressure setting "unladen".

- **If the controlled pressure equals 3.0 bar:**

Lower lever by approx. 10% of spring travel. The output pressure must now be less than the input pressure. In this case the setting is completed. If not: Lengthen lever and start again with the "unladen" braking pressure.

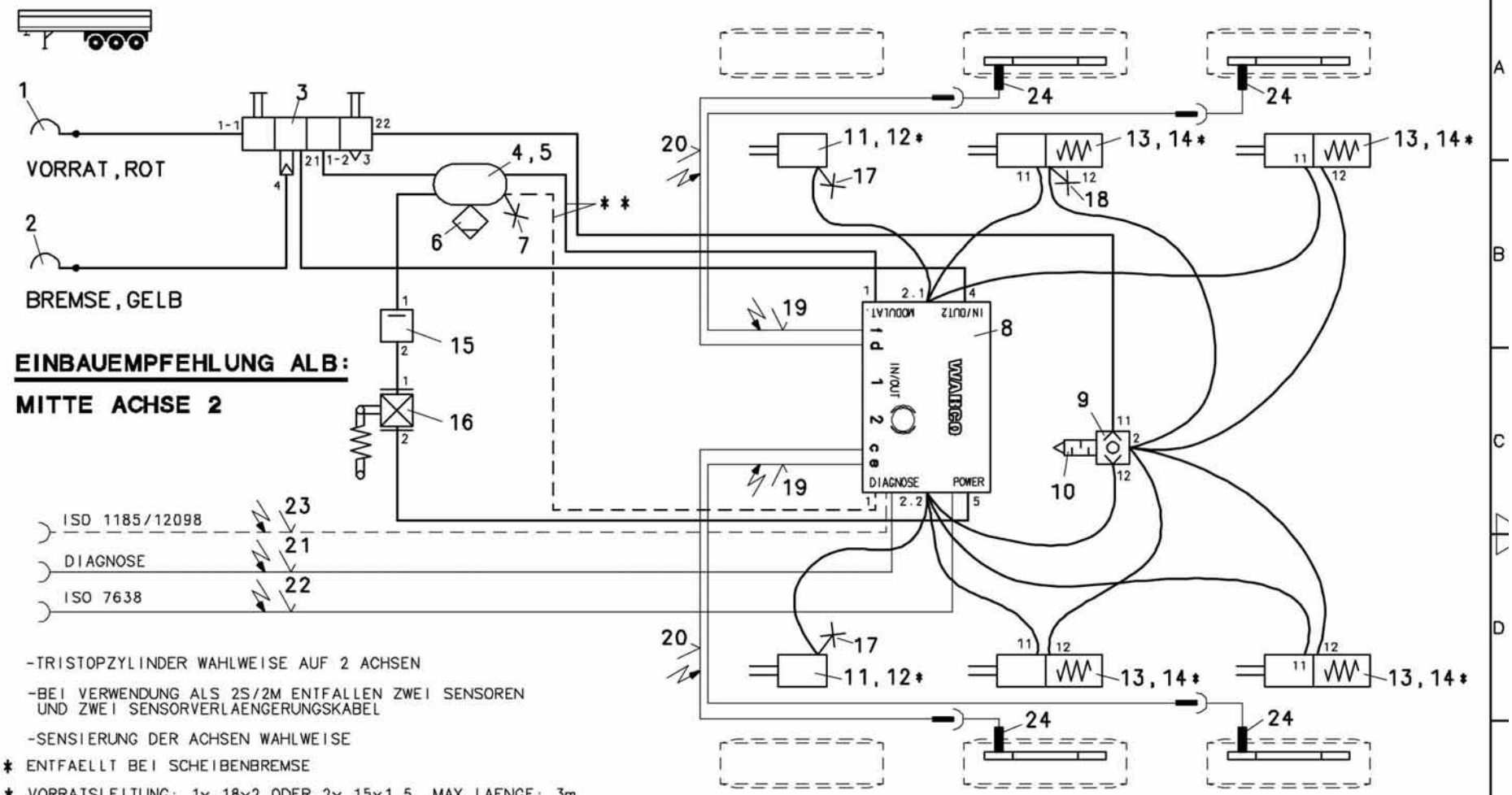
The control valve must be set so that a controlled pressure of 1 bar results when the vehicle is empty and 3 bar when the vehicle is laden. The control valve's default setting is set to 1 bar.
These values must also be parameterised in the EBS as unladen and loaded bellows pressure.

	Initial pressure P2 at the control valve	Parameterised bellows pressure in the EBS
Unladen/empty	**1 bar**	**1 bar**
Loaded	**3 bar**	**3 bar**

Auf den folgenden Seiten sind die Bremsschemata für Sattel-/Zentralachsanhänger und Deichselanhänger dargestellt.The braking diagrams for semi/single-axle trailers and drawbar trailers are shown on the following pages.

[1] The manometer is not necessary if using the TEBS diagnosis:

1. *Start diagnosis and connect to the TEBS.*
2. *Call up menu item Measured values → Driving test… .*
3. *The pressure at outlet 2 is displayed as the bellows pressure c, d.*



POS.	PCS.	DENOMINATION		PRODUCT IDENTIFICATION NO.
13	4	TRISTOPZYLINDER		925 0
12	2	BEIPACK	*	423 000 ... 2
11	2	MEMBRANZYLINDER		423 10. ... 0
10	1	GERAEUSCHDAEMPFER		432 407 060 0
9	1	ZWEIW.-SCHNELLOESEV.		973 500 051 0
8	1	ANHAENGER-MODULATOR		480 102 01. 0
7	1	PRUEFANSCHLUSS		463 703 115 0
6	1	ENTWAESSERUNGSVENTIL		934 300 001 0
5	2	SPANNBAND		451 999 ... 0
4	1	LUFTBEHAELTER		950 0
3	1	PARK-LOESE-SICHERH.	VENT.(PREV)	971 002 9.. 0
2	1	KUPPLUNGSKOPF M. INT.	LEITUNGSFILTER	952 201 001 0
•1	1	KUPPLUNGSKOPF M. INT.	LEITUNGSFILTER	952 201 002 0

POS.	PCS.	DENOMINATION		PRODUCT IDENTIFICATION NO.
24	4	ABS-SENSOR		441 032 8.. 0
23	1	DIAGNOSE/24N-KABEL	* * *	449 684 ... 0
22	1	VERSORGUNGSKABEL		449 172 1.. 0
21	1	DIAGNOSEKABEL		449 672 ... 0
20	2	VERLAENGERUNGSKABEL	FUER SENSOR	449 712 ... 0
19	2	VERLAENGERUNGSKABEL	FUER SENSOR	449 712 ... 0
18	1	PRUEFANSCHLUSS		463 703 036 0
17	2	PRUEFANSCHLUSS		463 703 120 0
16	1	ALB-REGLER F. EBS	MECH.	475 713 002 0
15	1	DRUCKBEGRENZUNGSV.	3,0BAR	475 015 014 0
14	4	BEIPACK	*	423 903 532 2

DCN-NO.	REV.	DATE
088993	A	05-02-25

CADAM-DRAWING COPYRIGHT

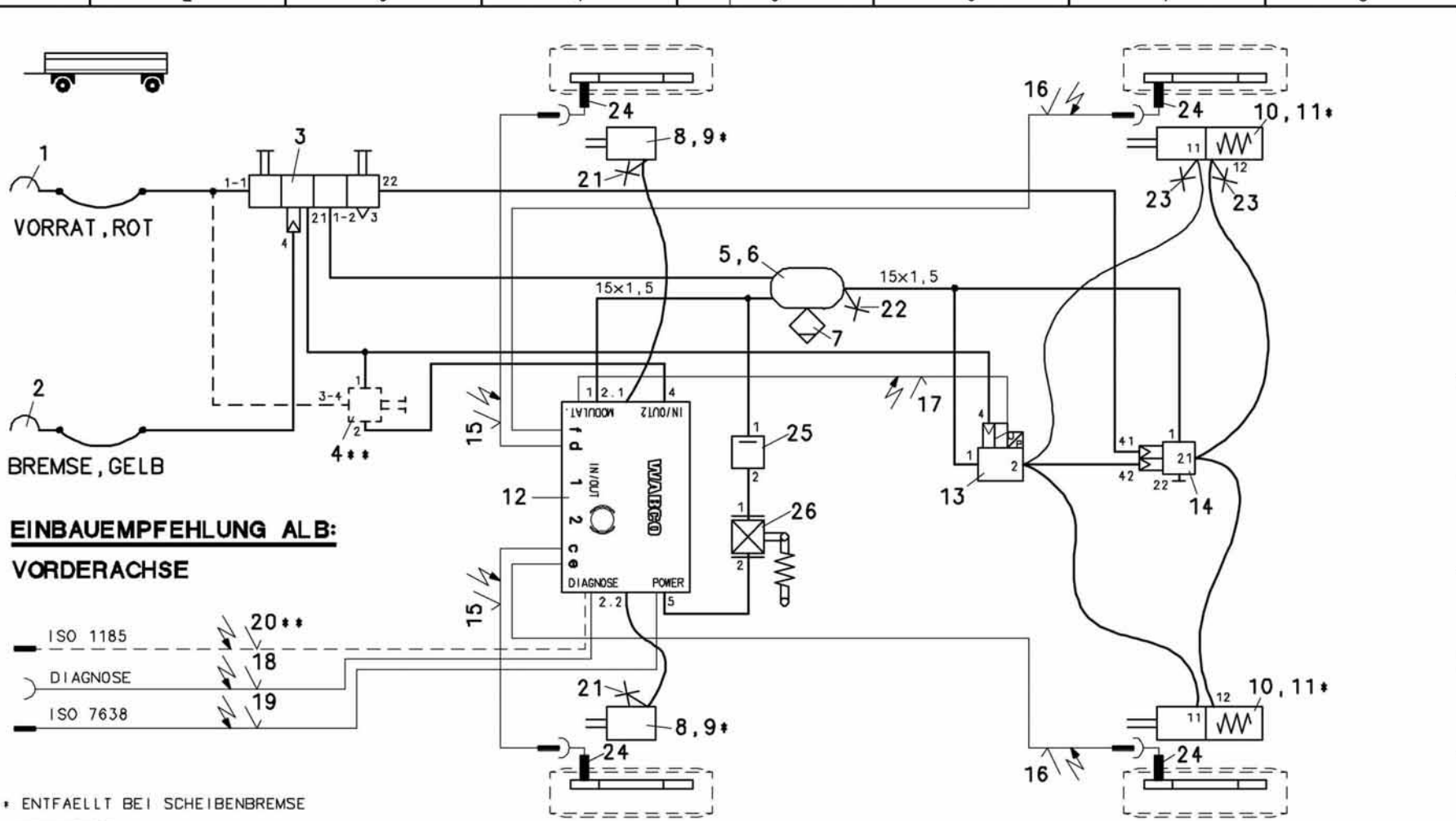
DATE	SIGNATURE
DRAWN 04-11-25	APITHY
CHECKED 04-11-25	GROSSK.
STANDARDIZATION	

WABCO

TRAILER - EBS - D PLUS
FUER 3-ACHS-SATTELANHAENGER
4S/2M ODER 2S/2M
MIT ALB-REGLER, MECH. GEFEDERT

T.R.I.	PRODUCT IDENTIFICATION NO.	CODE FOR DOCUMENT	SHEET
171	841 701 034 0	502	01
SIZE A 3	CODE FOR FUNCTION 3125	CODE FOR SHAPE	REPLACEMENT FOR

100mm



POS.	PCS.	DENOMINATION		PRODUCT IDENTIFICATION NO.
13	1	EBS-RELAISVENTIL		480 207 D.. 0
12	1	ANHAENGER-MODULATOR		480 102 ... 0
11	2	BEIPACK	*	423 903 532 2
10	2	TRISTOPZYLINDER		925 0
9	2	BEIPACK	*	423 0
8	2	MEMBRANZYLINDER		423 0
7	1	ENTWAESSERUNGSVENTIL		934 300 001 0
6	2	SPANNBAND		451 999 ... 2
5	1	LUFTBEHAELTER		950 0
4	1	ANH.-LOESEVENTIL	**	463 034 005 0
3	1	PARK-LOESE-SICHERH.-	VENT.(PREV)	971 002 9.. 0
2	1	KUPPLUNGSKOPF M. INT.	LEITUNGSFILTER	952 201 003 0
*1	1	KUPPLUNGSKOPF M. INT.	LEITUNGSFILTER	952 201 004 0

POS.	PCS.	DENOMINATION		PRODUCT IDENTIFICATION NO.
26	1	ALB-REGLER F.EBS	MECH.	475 713 002 0
25	1	DRUCKBEGRENZUNGSV.	3,0BAR	475 015 014 0
24	4	ABS-SENSOR		441 0
23	2	PRUEFANSCHLUSS		463 703 036 0
22	1	PRUEFANSCHLUSS		463 703 027 0
21	2	PRUEFANSCHLUSS		463 703 120 0
20	1	DIAGNOSE/24N-KABEL	**	449 684 ... 0
19	1	VERSORGUNGSKABEL		449 272 ... 0
18	1	DIAGNOSEKABEL		449 672 ... 0
17	1	KABEL ZUM EBS-RV		449 372 ... 0
16	2	VERLAENGERUNGSKABEL	FUER SENSOR	449 712 ... 0
15	2	VERLAENGERUNGSKABEL	FUER SENSOR	449 712 ... 0
14	1	UEBERLASTSCHUTZ-RV		973 011 201 0

DCN-NO.	REV.	DATE
088992	A	05-02-25

CADAM-DRAWING COPYRIGHT

DATE	SIGNATURE
DRAWN 05-01-21	APITHY
CHECKED 05-01-21	GROSSK.
STANDARDIZATION	

WABCO

TRAILER - EBS - D PLUS
2-ACHS-ANHAENGER
4S/3M
MIT ALB-REGLER, MECH.GEFEDERT

T.R.I.	PRODUCT IDENTIFICATION NO.	CODE FOR DOCUMENT	SHEET
171	841 601 088 0	502	01
SIZE A 3	CODE FOR FUNCTION 2124	CODE FOR SHAPE	REPLACEMENT FOR

100mm