

ODR-Tracker

Operating Instructions



WABCO

ODR-Tracker

Operating Instructions

Edition 1

This publication is not subject to any update service.
New versions are available in INFORM at
www.wabco-auto.com

© 2008 WABCO

WABCO

The right of amendment is reserved.

Version 1/01.2008en

815 010 149 3

1	Symbols used	5
2	Introduction	6
3	System requirements	7
4	Connection diagram	8
5	Software	9
6	Function	10
6.1	Diagnostics	10
6.2	Tools	10
6.2.1	Resetting the ODR (deleting)	10
6.2.2	ODR password management	11
6.2.3	Limit Value Data Editor	12
6.3	Settings	13
6.4	Help	14
7	ODR Evaluation	15
7.1	Overview	15
7.2	Trip recorder	16
7.3	Histograms	19
7.4	Event Recorder	20
7.5	Brake lining	22
7.6	Long-/Short-term comparison	23

1 Symbols used

DANGER

Imminent hazard situation which can cause serious personal injury or death if the safety instruction is not observed.

WARNING

Potential hazard situation which can cause serious personal injury or death if the safety instruction is not observed.

CAUTION

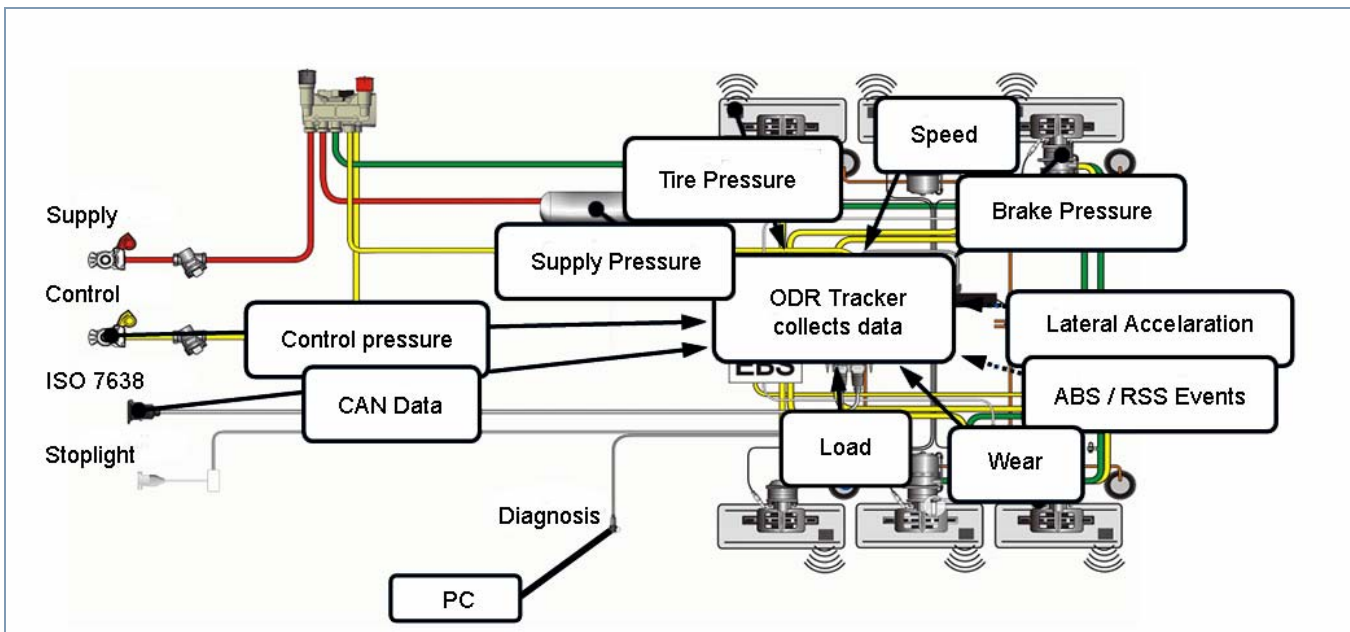
Potential hazard situations that can cause minor or moderate personal injury if the safety instruction is not observed.



Important instructions, information or tips that you should always observe.

- List Action step
- Step
- Result of an action

2 Introduction



WABCO is also offering a software with the release of the Trailer EBS E generation, the so-called ODR-Tracker.

ODR stands for the Operating Data Recorder integrated in the TEBS modulator.

A Tracker is the "log book", which shows the conditions that the trailer was operated under.

Every vehicle that is equipped with a trailer EBS of the D generation (as of production week 01/2004) or the new E generation, has this integrated operating data recorder.

This data is used for analyzing the vehicle usage and the evaluation of the towing vehicle used.

The ODR-Tracker is a self-contained program that enables an evaluation and analysis directly on the vehicle or on the desk - without the TEBS diagnostic software.

3 System requirements

- PC with operating system Windows 98, 2000, ME, NT, XP or Vista*)
- at least 64 MB main memory
- approx. 30 MB free hard drive space
- Colour display with resolution of min. 800x600 pixels (Recommended: 1024x768)
- 1 free COM interface (9-pin) or resp. USB connection

! *) The Diagnostic Interface 446 301 001 0 of set 446 301 022 0 (with USB connection) can only be used under Windows systems that support USB (98, 2000, ME, XP, Vista).

4 Connection diagram

Diagnosis TEBS E		
Option 1		
Diagnostic Interface with USB Interface 446 301 022 0 	Diagnostic cable 446 300 361 0 	Connection adapter ISO 7638 with CAN socket 446 300 360 0 
Option 2		
Diagnostic Interface with serial interface 446 301 021 0 	CAN Converter 446 300 470 0 	Connection adapter ISO 7638 with CAN socket 446 300 360 0 
Option 3		
Diagnostic Interface with serial interface 446 301 021 0  or Diagnostic Interface with USB interface 446 301 022 0 	Diagnostic cable 446 300 361 0 	Diagnostic Connection with yellow cap 449 611 ... 0 

5 Software

ODR-Tracker program is orderable on the USB stick and has the WABCO order number 446 301 692 0.

The software is installed on a PC with the Windows operating system (Windows 98, 2000, ME, NT, XP and Vista) with the WABCO installation program and is started via the respective Icon from the WABCO program group or from the Start menu.

Installing the ODR-Tracker program

Open file *setup.exe* on the USB stick to install the program.

Now enter the user identification.

Activation

Enter the registration data and request the activation code online, by fax, email, data exchange or telephone.

Demo function

The program is equipped with demo functionality. This can be called up with parameter *DEMO: Start menu => DEMO - ODR-Tracker*

A connection for starting the program in DEMO mode is provided in the program group. A connection to the ECU is not required in this mode and all dialogs can be opened.

Copy-protection

The Diagnostic software has a copy-protection that binds the software to a single PC hardware and limits the activation on a PC to one license.

After the installation on a target system, the software can be used without any restrictions for a short period but must be activated afterward.

6 Function

After the program is started, the diagnostics connection to the controller is established and the vehicle-specific data is read and displayed.

The ODR-Tracker software contains the following displayed functions.

When the program starts with automatic initialisation, the last used diagnostic interface is used.

If the connection cannot be established, a respective error message appears with the capability of selecting another diagnostic interface.

In Offline mode, a file with operation data can be loaded and saved.

6.1 Diagnostics

Start

A connection to the ECU can be established. A selection then appears showing which diagnostics connection should be used for the communication (CAN 5 V, CAN 24 V or K-Line).

If a valid ECU has been detected, the ODR data memory is read automatically and the ODR evaluation is started and displayed.

End

A connection to the ECU is closed.

Read from ECU

If a connection to the ECU has already been established, the ODR data memory can be read again (e. g. after deleting individual ODR data areas).

Read from file

A stored data record is read on the PC. The selected file is checked for its data content. If valid data exists, the evaluation is started and displayed.

Write to file

A valid data record from an ECU can be stored in a file. The file name derived from a compilation of the vehicle license number and the current kilometre reading is recommended.

When storing the data, the vehicle license number can be entered.

Print

Print evaluation: The evaluation that is being displayed is printed as a log. The report is then shown in a preview window and can be printed from there.

Exit: The program is ended, any possible connection with the ECU is closed automatically.

6.2 Tools

6.2.1 Resetting the ODR (deleting)

The following areas of the ODR can be deleted:

- Overview, histogram and trip accumulator

- ABS accumulator
- RSS accumulator

6.2.2 ODR password management

The screenshot shows a dialog box titled "ODR password management" with a close button (X) in the top right corner. The main text reads: "Define a password to protect access to the ODR of this control unit. If the ODR should be made accessible again, the password must be deleted in the control unit." Below this, there are two panels. The left panel, titled "Define ODR password", contains the text: "A password for the ODR is stored in the ECU. Subsequently, access is only possible after entering the password." It features two input fields labeled "Enter password" and "Repeat password", and a "Store password in ECU" button. The right panel, titled "ODR permanently accessible", contains the text: "The password in the ECU is deleted. The ODR can be accessed at any time." It features a "Delete password in ECU" button. At the bottom right of the dialog are "OK" and "Cancel" buttons.

Access to the ODR can be password protected. A password is then required for read access.

The password can be changed or deleted again in the ODR Password window (see figure).

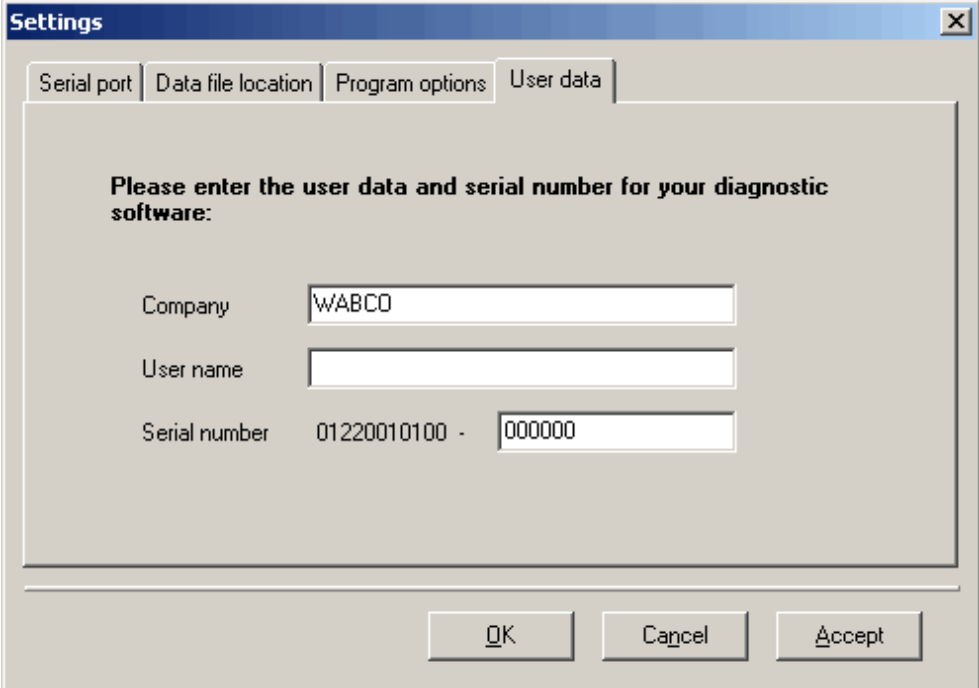
6.2.3 Limit Value Data Editor

	Min.	Max.	Description
Brake applications	0	100000	Example
Braking frequency	0	1.5	
Average aggregate load	0	27	
Average aggregate load (%)	0	100	
Average control pressure	0	2.5	
Drives with overload	0	0	
Braking with stop light power supply	0	0	
Brake action with hand brake	0	100000	
Braking with anti-jackknifing brake	0	0	
Brake actions without CAN presettings	0	100000	
RSS interventions, stage 1	0	100	
RSS interventions, stage 2	0	100	

An evaluation of the values read can be performed in the evaluation on the overview page. The relevant limit values can be set and stored in a file in this case. This data can be selected in the overview.

- ! The limit values specified by WABCO should be maintained to the greatest degree possible.

6.3 Settings



The screenshot shows a 'Settings' dialog box with four tabs: 'Serial port', 'Data file location', 'Program options', and 'User data'. The 'User data' tab is selected. The dialog contains the following text and input fields:

Please enter the user data and serial number for your diagnostic software:

Company: WABCO

User name: [Empty field]

Serial number: 01220010100 - [000000]

Buttons: OK, Cancel, Accept

Various settings for program behaviour, such as settings for the serial interface, file storage, program options or user information can be made on tabs in this window. The information is stored in the ODR-Tracker file.

Serial interface

This tab can be used for setting the serial interface (USB or COM port) to which the Diagnostic Interface is connected.

Data file location

The setting for the read and write directory can be changed on this tab.

Programme options

This tab can be used for defining settings for program behaviour, such as:

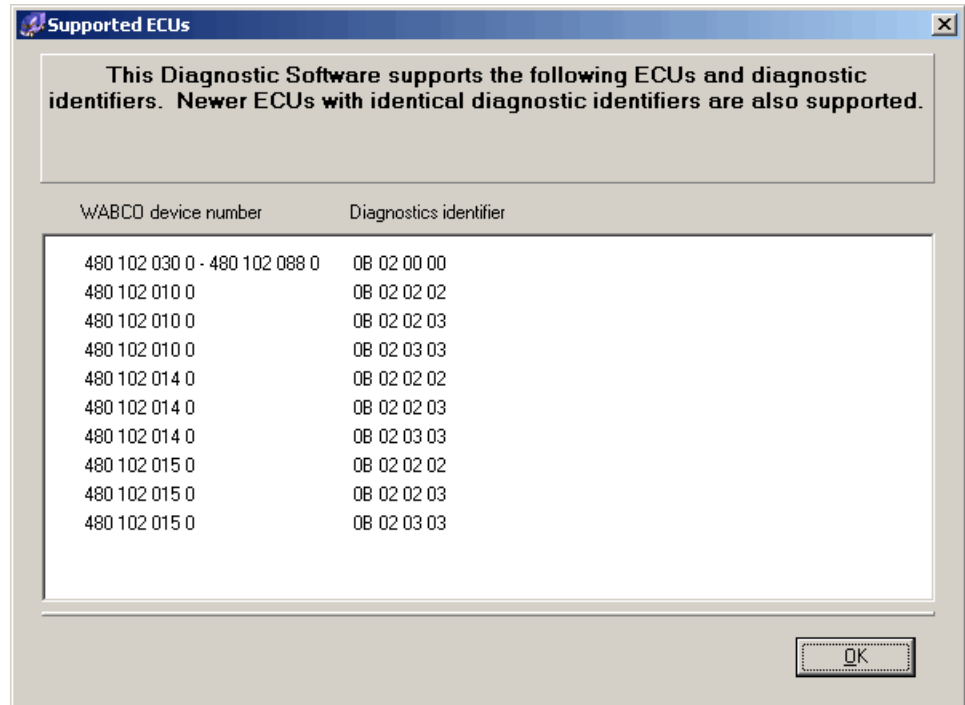
- Start in full-screen mode
- Direct diagnosis start-up upon program start
- Display of help text

User data

This tab can be used for changing user information such as company, user name and serial number, even after the installation, see figure.

6.4 Help

Supported ECUs



All of the ECUs supported by this program are listed in window *Supported ECUs*.

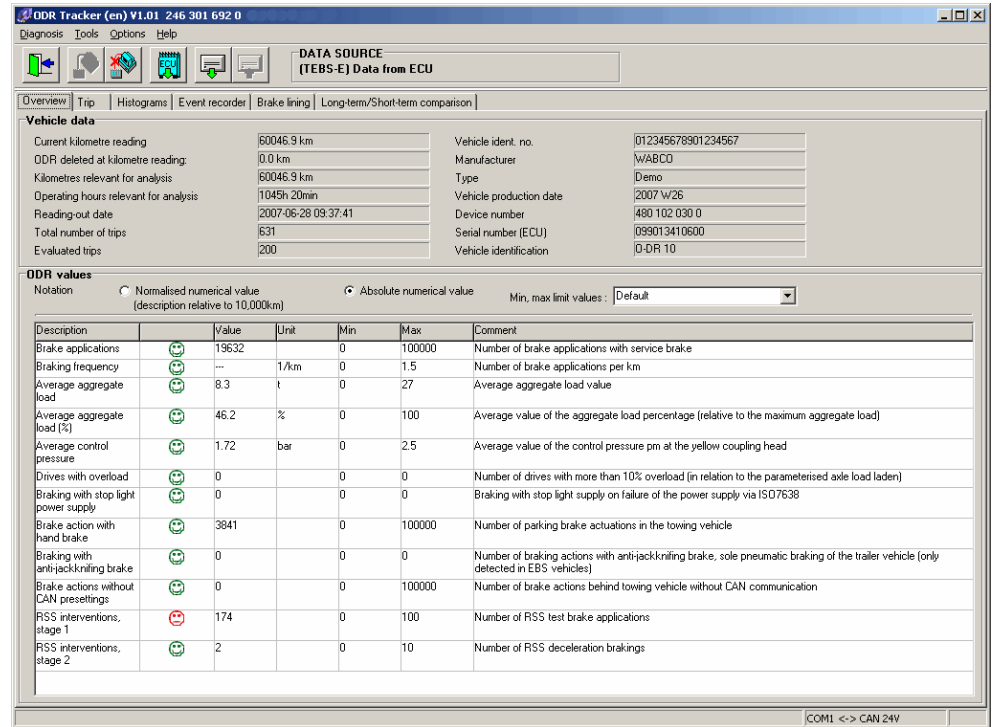
About

The version of the diagnostic software, the registered user and the serial number are shown in window *About*. The name and program version in the Diagnostic Interface are also shown.

7 ODR Evaluation

Evaluating the ODR is displayed over several screen pages, which are explained in the following pages. The data is partially shown in tables and the respective graphic.

7.1 Overview



Vehicle data

Tab Overview shows *Vehicle data* or the ECU, e. g. *Current kilometre reading* for evaluating the relevant kilometres or hours of operation, *Total number of trips*, etc.

ODR values

The ODR values can be shown as an *Absolute numerical value* or a *Normalised numerical value (description relative to 10,000km)*.

The limits that apply for the evaluation can be loaded individually from the file of the vehicle to be analyzed.

Characteristics	Comment
<i>Brake applications</i>	<i>Number of brake applications with service brake</i>
<i>Braking frequency</i>	<i>Number of brake applications per km</i>
<i>Average aggregate load</i>	<i>Average aggregate load value (all axles combined) with 3-axle low-bed semi-trailer e. g. 3 x 8000 kg</i>
<i>Average aggregate load (%)</i>	<i>Average value of the aggregate load percentage (relative to the maximum aggregate load)</i>

Characteristics	Comment
<i>Average control pressure</i>	<i>Average value of the control pressure pm at the yellow coupling head</i>
<i>Drives with overload</i>	<i>Number of drives with more than 10% overload (in relation to the parameterised axle load laden)</i>
<i>Braking with stop light power supply</i>	<i>Braking with stop light on failure of the power supply via ISO7638</i>
<i>Brake actuations with hand brake</i>	<i>Number of parking brake actuations in towing vehicle The recognition is made only on towing vehicles with a CAN connection because only the pneumatic braking desire of the driver exists with the applied hand brake</i>
<i>Braking with anti-jackknifing brake</i>	<i>Number of braking actions with anti-jackknifing brake, sole pneumatic braking of the trailer vehicle (only detected in EBS vehicles) Recognition only with towing vehicles braked with EBS</i>
<i>Brake actions without CAN presetting</i>	<i>Number of brake actions behind towing vehicles without CAN communication</i>
<i>RSS interventions, stage 1</i>	<i>Number of RSS test brake applications (with RSS stage 1)</i>
<i>RSS interventions, stage 2</i>	<i>Number of RSS deceleration brakings (with RSS stage 2)</i>

7.2 Trip recorder

Definition of Trip: A trip has a travel distance of at least 5 km and a minimum speed of 30 km/h and the ignition must be switched on at the time.

In the trip recorder of the Trailer EBS E Modulator, the data of the last 200 trips are stored.

Description	Unit	1	2	3	4	5	6	7	8	9	10
Kilometres at start of drive	km	39959.4	35987.1	36083.7	36532.6	36637.0	36654.2	36672.4	36691.3	36723.8	367
Distance driven in kilometres	km	22.8	96.2	448.9	103.0	17.1	18.2	18.3	32.4	7.2	29.5
Operating hours at start of drive	h	---	---	---	631h 30min	633h 13min	633h 40min	633h 59min	634h 26min	635h 4min	639
Date at start of drive 1)		2007-05-11	2007-05-14	2007-05-16	---	---	---	---	---	---	---
Time at start of drive 1)		12:08	10:43	12:04	---	---	---	---	---	---	---
Driving hours	h	0h 33min	1h 28min	6h 10min	1h 20min	0h 24min	0h 19min	0h 21min	0h 39min	0h 12min	0h 3
Maximum speed	km/h	71	89	94	91	85	86	76	86	85	86
Average speed	km/h	40.6	65.1	72.7	77.2	41.7	56.6	50.4	50.6	33.5	58.2
Average control pressure	bar	1.70	1.90	1.70	1.70	1.80	1.70	1.40	1.65	1.75	1.60
Brake actuations		23	23	42	16	24	11	21	25	13	7
Braking frequency	1/km	1.01	0.24	0.09	0.16	1.40	0.60	1.15	0.77	1.81	0.24
Aggregate load at beginning of trip	t	6.3	9.2	9.0	9.0	7.0	7.1	7.1	6.2	6.1	15.0
Min. aggregate load per trip	t	6.1	8.7	8.7	8.7	6.7	6.7	6.7	5.6	5.6	14.3
Max. aggregate load per trip	t	6.7	9.7	10.8	9.2	7.2	7.2	7.2	6.7	6.1	15.4
ABS brake actions		0	0	0	0	0	0	0	0	0	0
RSS interventions, stage 1		0	0	1	1	0	0	0	0	1	0
RSS interventions, stage 2		0	0	0	0	0	0	0	0	0	0

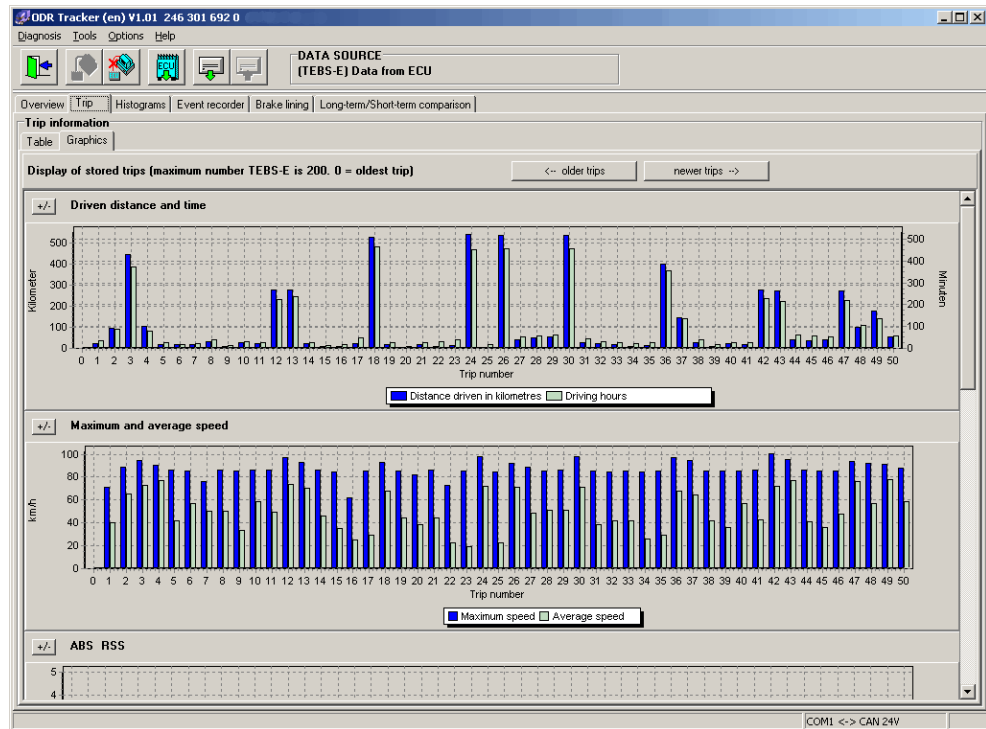
Table

The data of the present trip is shown. Data can be displayed as a graphic or in a table.

Characteristics	TEBS D	TEBS E without SmartBoard	TEBS E with Smart-Board
<i>Kilometres at start of drive</i>	X	X	X
<i>Distance driven in kilometres</i>	X	X	X
<i>Operating hours at start of drive</i>	X	X	
<i>Hours of operation at trip start with date</i>			X
<i>Driving hours</i>	X	X	X
<i>Maximum speed</i>	X	X	X
<i>Average speed</i>	X	X	X
<i>Average control pressure</i>	X	X	X
<i>Brake actuations</i>	X	X	X
<i>Braking frequency</i>	X	X	X
<i>Aggregate load at beginning of trip</i>	X	X	X

Characteristics	TEBS D	TEBS E without SmartBoard	TEBS E with SmartBoard
Display of min. and max. power unit load, in order to e. g. recognise added load on a dumper with the ignition switched on.		X	X
ABS brake actions	X	X	X
RSS interventions, stage 1	X (with RSS variant only)	X	X
RSS interventions, stage 2	X (with RSS variant only)	X	X

Graphic



The stored trips in the trip memory can be displayed as a graphic on the tab *Graphic*.

- *Driven distance and time*
- *Maximum and average speed*
- *ABS RSS (-control)*
- *Power unit load*
- *Braking frequency*
- *Control pressure*

Buttons <-- *older trips* and *newer trips* --> can also be used with TEBS D to show up to 30 trips and with TEBS E up to 200 trips.

7.3 Histograms

Definition of a Histogram: A histogram represents the distribution of events as they occur over the operating time of the vehicle.

The values of the histogram are shown in individual classes.

Table

The screenshot shows the ODR Tracker V1.01 interface with the 'Histograms' tab selected. It displays four data tables:

Distance travelled vs. aggregate load			Distance travelled vs. axle load		
Class	Aggregate load in %	Distance travelled in km	Class	Axle load in %	Distance travelled in km
1	0 - 20 %	580	1	0 - 20 %	580
2	20 - 50 %	33110	2	20 - 50 %	31930
3	50 - 80 %	23420	3	50 - 80 %	24500
4	80 - 90 %	2010	4	80 - 90 %	2080
5	90 - 100 %	400	5	90 - 100 %	430
6	100 - 110 %	90	6	100 - 110 %	90
7	110 - 120 %	0	7	110 - 120 %	0
8	> 120 %	0	8	> 120 %	0

Number of brake actions vs. control pressure			Braking time vs. control pressure		
Class	Control pressure in bar	Number of brake actions	Class	Control pressure in bar	Braking time in seconds
1	0.0 - 1.0 bar	1422	1	0.0 - 1.0 bar	735
2	1.0 - 1.2 bar	1240	2	1.0 - 1.2 bar	869
3	1.2 - 1.4 bar	2330	3	1.2 - 1.4 bar	2095
4	1.4 - 1.7 bar	5190	4	1.4 - 1.7 bar	3542
5	1.7 - 2.0 bar	4308	5	1.7 - 2.0 bar	5152
6	2.0 - 2.5 bar	3393	6	2.0 - 2.5 bar	4007
7	2.5 - 4.5 bar	1584	7	2.5 - 4.5 bar	1564
8	<4.5 bar	23	8	<4.5 bar	7

The following values are available under the tab *Table*:

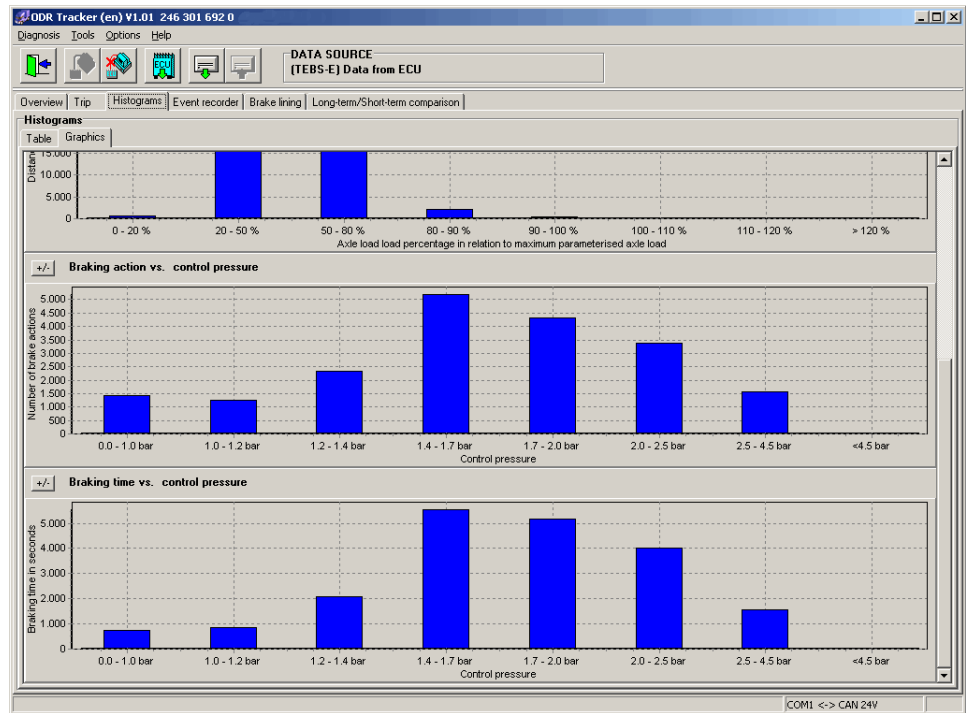
- *Distance travelled vs. aggregate load* (only available for TEBS E)
- *Distance travelled vs. axle load*
- *Number of brake actions vs. control pressure*
- *Braking time vs. control pressure* (only available for TEBS E)

Aggregate load (sum of all axles): This histogram stores how many kilometres were driven for each combined multi-axle class.

Axle load (axle load for one axle): This histogram stores how many kilometres were driven for each combined multi-axle class.

Control pressure: This histogram stores how many brake actions were performed for each class. The maximum pressure that occurred is also saved.

Graphic



The values shown under the *Table* are shown as a graphic representation here. Individual graphics can be either shown or hidden.

7.4 Event Recorder

The screenshot shows the Event Recorder interface with a table of recorded events. The table includes columns for No., Type, Odometer reading, Operating hours/Day, Speed, Control pressure, Aggregate load, Kilometre reading, and Operating hours/Day.

No.	Type	Odometer reading	Operating hours/Day	Speed	Control pressure	Aggregate load	Kilometre reading [e...]	Operating hours/Day
0	RSS test braking acti...	50651.0 km	887h 41min	37 km/h	0.00 bar	6.7 t	50651.0 km	887h 41m
1	RSS test braking acti...	50986.5 km	893h 06min	20 km/h	0.80 bar	6.1 t	50986.5 km	893h 06m
2	Warning lamp on	638.6 km	10h 46min	12 km/h	0.00 bar	3.1 t	640.0 km	10h 48m
3	RSS test braking acti...	51000.4 km	893h 22min	34 km/h	0.00 bar	6.1 t	51000.5 km	893h 22m
4	Warning lamp on	1982.5 km	34h 39min	10 km/h	0.65 bar	3.1 t	1982.5 km	34h 39m
5	Warning lamp on	2147.7 km	39h 03min	9 km/h	0.55 bar	11.3 t	2147.8 km	39h 03m
6	Warning lamp on	2147.6 km	39h 04min	12 km/h	0.00 bar	11.3 t	2148.8 km	39h 07m
7	RSS test braking acti...	52963.7 km	927h 23min	40 km/h	8.2 t	0.00 bar	52963.7 km	927h 23m
8	RSS test braking acti...	54327.6 km	948h 26min	33 km/h	0.00 bar	9.2 t	54327.7 km	948h 26m
9	RSS test braking acti...	54878.6 km	957h 53min	33 km/h	0.00 bar	5.6 t	54878.7 km	957h 53m
10	ABS control	2892.0 km	52h 43min	7 km/h	0.00 bar	13.8 t	2892.1 km	52h 43m
11	RSS test braking acti...	57467.7 km	989h 42min	30 km/h	0.00 bar	6.7 t	57467.8 km	989h 42m
12	RSS test braking acti...	58057.3 km	1008h 58min	32 km/h	0.00 bar	6.1 t	58057.3 km	1008h 58m
13	RSS test braking acti...	58062.1 km	1009h 07min	35 km/h	0.00 bar	6.1 t	58062.1 km	1009h 07m
14	RSS test braking acti...	58332.6 km	1014h 18min	48 km/h	0.00 bar	9.7 t	58332.6 km	1014h 18m
15	RSS test braking acti...	58939.4 km	1024h 37min	47 km/h	0.00 bar	9.2 t	58939.4 km	1024h 37m
16	Warning lamp on	3430.8 km	61h 32min	2 km/h	0.00 bar	3.1 t	3430.8 km	61h 32m
17	Warning lamp on	3430.9 km	61h 32min	4 km/h	1.00 bar	3.1 t	3430.9 km	61h 38m
18	RSS test braking acti...	59052.8 km	1026h 13min	23 km/h	0.00 bar	8.7 t	59052.9 km	1026h 13m
19	Warning lamp on	4064.3 km	73h 25min	14 km/h	0.00 bar	5.1 t	4064.3 km	73h 25m
20	RSS test braking acti...	59124.5 km	1027h 17min	44 km/h	0.00 bar	8.7 t	59124.5 km	1027h 17m
21	Warning lamp on	4719.0 km	84h 45min	6 km/h	0.00 bar	3.1 t	4718.1 km	84h 45m
22	Warning lamp on	5342.8 km	99h 57min	18 km/h	2.6 t	5.1 t	5342.8 km	95h 57m
23	Warning lamp on	5342.9 km	95h 57min	13 km/h	1.85 bar	3.1 t	5342.9 km	95h 57m
24	RSS test braking acti...	59126.9 km	1027h 41min	39 km/h	12.8 t	0.00 bar	59126.9 km	1027h 41m
25	Warning lamp on	6026.4 km	107h 14min	14 km/h	0.00 bar	3.1 t	6026.7 km	107h 16m
26	RSS test braking acti...	59342.1 km	1030h 33min	37 km/h	0.00 bar	13.3 t	59342.1 km	1030h 33m
27	RSS test braking acti...	59923.9 km	1040h 08min	26 km/h	0.00 bar	10.8 t	59924.0 km	1040h 08m
28	Warning lamp on	6704.4 km	118h 32min	16 km/h	0.00 bar	2.6 t	6704.7 km	118h 33m
29	Warning lamp on	7918.4 km	138h 53min	10 km/h	0.00 bar	5.1 t	7918.6 km	139h 16m
30	ABS control	7982.6 km	141h 49min	1 km/h	7.20 bar	4.1 t	7982.6 km	141h 49m
31	Warning lamp on	8539.5 km	151h 11min	9 km/h	0.00 bar	5.6 t	8540.1 km	151h 38m
32	RSS test braking acti...	59964.2 km	1040h 40min	45 km/h	0.00 bar	10.8 t	59964.3 km	1040h 40m
33	RSS test braking acti...	59985.0 km	1040h 58min	45 km/h	0.00 bar	10.2 t	59985.0 km	1040h 58m

The events recorded while traveling are displayed in a table.

The filter function can be used to change the display so that only individual event types are displayed.

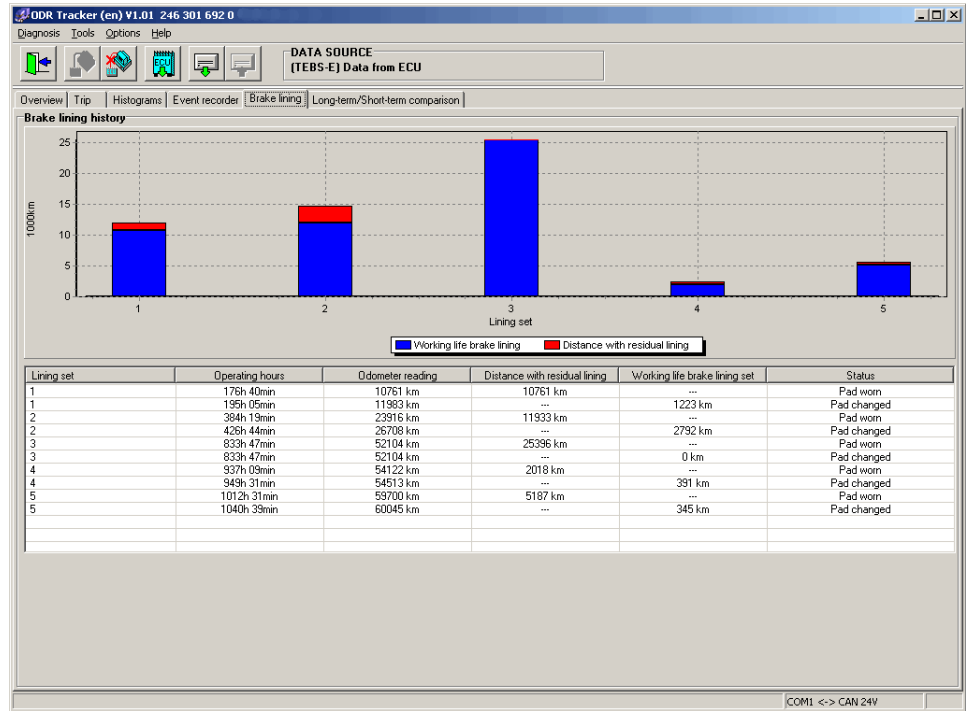
The following events are displayed:

- *ABS ctrl interventions*
- *RSS test brake actions*
- *RSS deceleration brakings*
- *Warning lamp on* (only available for TEBS E)
- *Brake pad worn* (only available for TEBS E)
- *Tyre pressure too low* (only available for TEBS E)
- *GIO-FKA ()* (FKA = freely configurable analogue input) Function (only available for TEBS E)
- *GIO-FKD ()* (FKD = freely configurable digital input) Function (only available for TEBS E)
- *Other* (only available for TEBS E)

Detailed information is available for every event. This information can be displayed (if available, otherwise "---") as:

- *(Event-)Type*
- *Odometer reading* (at event start)
- *Operating hours/Date* (at event start)
- *Speed*
- *Control pressure*
- *Aggregate load*
- *Kilometre reading (End)* at event end
- *Operating hours/Date (End)* at event end

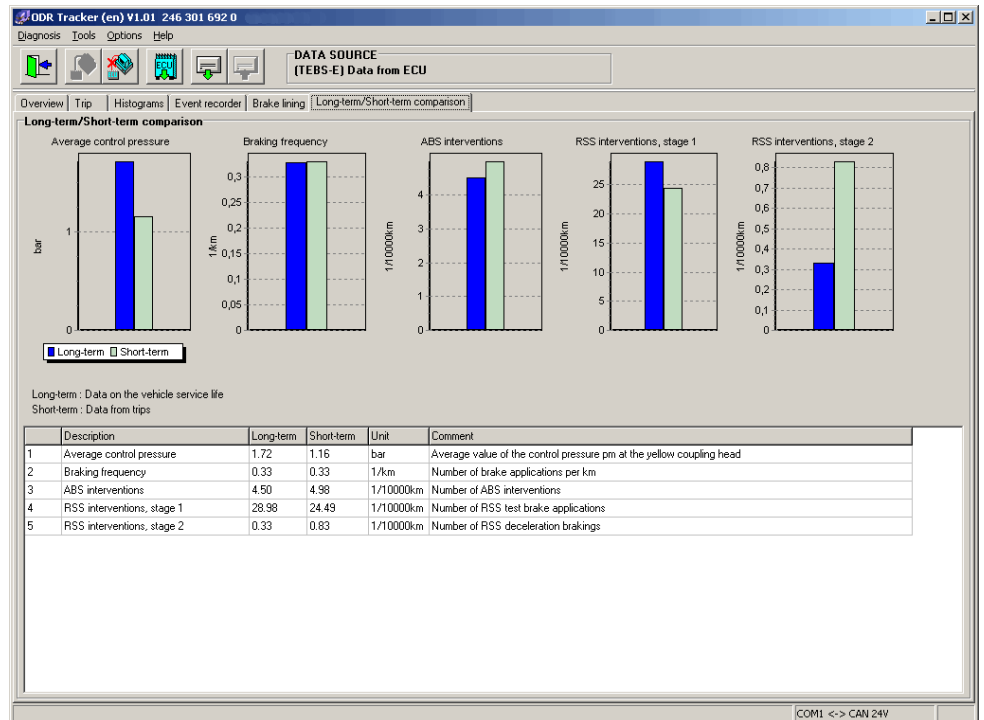
7.5 Brake lining



Brake lining history

The last 5 documented brake lining changes are shown under the tab *Brake lining*. The kilometres that have been driven are shown in a table to indicate the hours of operation elapsed when the brake linings were worn or changed. This data is then used to determine and show the stationary and driving time with residual lining. The stationary and driving times with residual thicknesses for the brake lining are shown graphically for every lining set.

7.6 Long-/Short-term comparison



A comparison of the long-term data (total lifespan of the ECU) is made with the short-term data (recording period of the trip recorder) under the tab *Long-/Short-term comparison*.

The following values are shown as tables and graphically:

- *Average control pressure*
- *Braking frequency*
- *ABS interventions*
- *RSS interventions, stage 1*
- *RSS interventions, stage 2*



WABCO Vehicle Control Systems, is one of the world's leading providers of electronic braking, stability, suspension and transmission control systems for heavy duty commercial vehicles. WABCO products are also increasingly used in luxury cars and sport utility vehicles (SUVs). Customers include the world's leading commercial truck, trailer, bus and passenger car manufacturers. Founded in the U.S. in 1869 as Westinghouse Air Brake Company, WABCO

was acquired by American Standard in 1968 and spun off in 2007. Headquartered in Brussels, Belgium, the business today employs more than 7,000 people in 34 offices and production facilities worldwide. In 2006, total sales were \$2 billion. WABCO is a publicly traded company and is listed on the New York Stock Exchange with the stock symbol WBC.

www.wabco-auto.com



WABCO