



ECU Diagnostics Software



User's Manual

Diagnostics software
(as of Version 2.0.0)



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Dear customer!

The ECU (Electronic Control Unit) diagnostics software is required for installing, servicing and troubleshooting with an exhaust-gas aftertreatment system from HJS. With the aid of a commercially available laptop computer and a diagnostics cable, the diagnostics software can be used to communicate with the HJS ECU of the DPF® system. Data can be read out, commands given and actions executed.

The program is split up into different modules for recording characteristic values and the procedures of putting the system into operation, maintenance and troubleshooting. This manual provides you with an overview of the main functions of the software.

In view of the fact that the software is the subject of continuous improvement, certain points described in this manual may differ slightly from the software version you are running on your computer.

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We reserve the right to make technical changes.
Date: 02/2012





General information

Prerequisites for using the ECU diagnostics software

PC

Compatibility with all versions of Windows as of Windows XP (incl. Windows Vista and Windows 7)
Minimum screen resolution: 1024x768

HJS ECU for exhaust-gas aftertreatment systems

For all systems based on the HJS ECU as of software release 0.10.157
SMF®-AR, CRT®, FBC, SCRT®

Hardware

Diagnostics cable: all versions

Software:

Microsoft.Net 3.5

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Safety instructions and warnings



These safety instructions must be observed for the sake of your own safety and the safety of others.



General instructions and additional pieces of information must be observed in order to prevent damage to the vehicle or the exhaust-gas aftertreatment system.



All work procedures with the HJS ECU diagnostics software must be carried out by qualified staff of a vehicle workshop.



The internal components of your electronics can become damaged by electrostatic discharges.

General information on ECU Diagnostics

Components and accessories

ECU diagnostics software with activation key
ECU diagnostics kit, incl. diagnostics cable with serial connector (1) or USB connector (2).
Commercially available PC

Remark:

The driver for the diagnostics cable with USB connector can be found on the CD supplied.

Please note that the ECU diagnostics software (Version 1.x and higher) is only able to function with COM ports 1 to 8.

For this reason, please take care during installation that the virtual COM port of the USB adapter is set up for one of these ports.





General information



The HJS system contains components (HJS ECU, HJS Service Unit, and sensors) that can be damaged or destroyed by electrostatic discharge (ESD). For this reason, whenever handling components of the HJS system, always take the necessary precautionary measures against electrostatic discharge (ESD) as laid down in EN 61340-5-1 and EN 61340-5-2. Always follow the ESD-related instructions when installing and putting the HJS system into operation, in order to prevent damage to the unit and the entire system.

The internal components of your electronics can become damaged by electrostatic discharges. To prevent such damage from occurring, you must conduct static electricity out of your body by, for example, touching an uncoated metal surface before you touch electronic components of the system (e.g. cables). This measure of touching uncoated metal surfaces must be repeated regularly while working on the system, in order to discharge static charges that may build up in the body in the interim periods. Measures taken in the electronics themselves against static discharges and electrical fields are described in EN 61340-5-1. Please follow all instructions strictly.

Installing the ECU diagnostics software

> The ECU diagnostics software requires Microsoft's .NET Framework as its runtime environment. This software package from Microsoft will in most cases already be installed on your PC. If not, you can download the latest version from the Microsoft website free of charge.



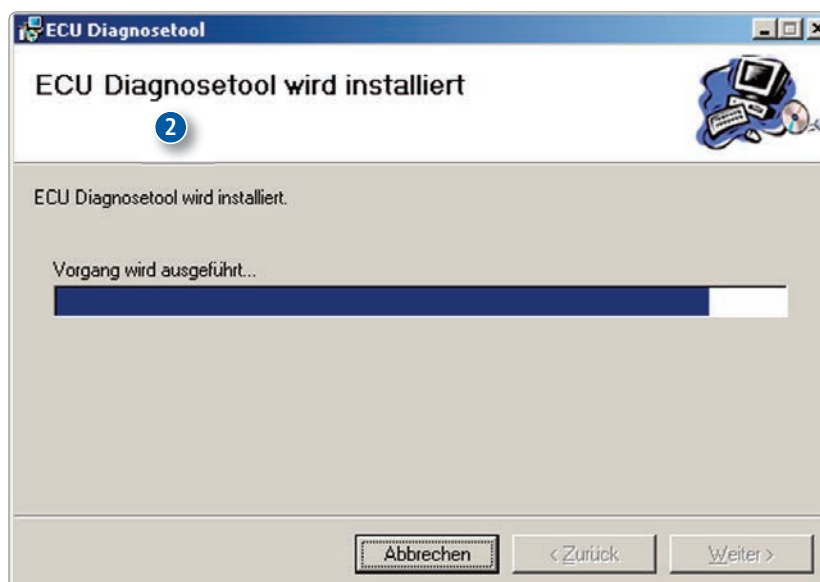
The steps necessary to do this are described in the relevant documentation from Microsoft.

> You are now ready to install the ECU diagnostics software, which you do by double-clicking the "setup.exe" file (1) on the Installation CD.

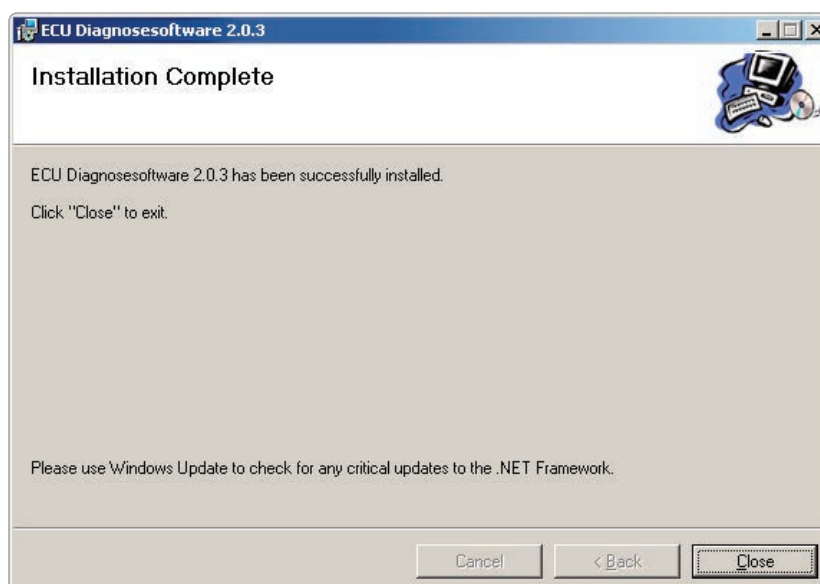
The latest version of the software can also be downloaded from HJS's website under Service & Customers / ECU Diagnostics.

> An installation wizard (2) then navigates you through the steps to be followed.

Name	Größe	Typ	Geändert am
dotnetfx		Dateiordner	19.07.2010 11:05
Info		Dateiordner	19.07.2010 11:37
Autorun	1 KB	Setup-Informationen	19.07.2010 09:54
ECUdiagnosesoftwareSetup	13.965 KB	Windows Installer-P...	19.07.2010 09:54
logo_hjs_icon	1 KB	ACDSee ICO Bild	14.04.2010 09:59
setup	428 KB	Anwendung	19.07.2010 09:53



> Once installed, you can start the ECU diagnostics software either from the icon on the desktop or from Programs after clicking the Start button.



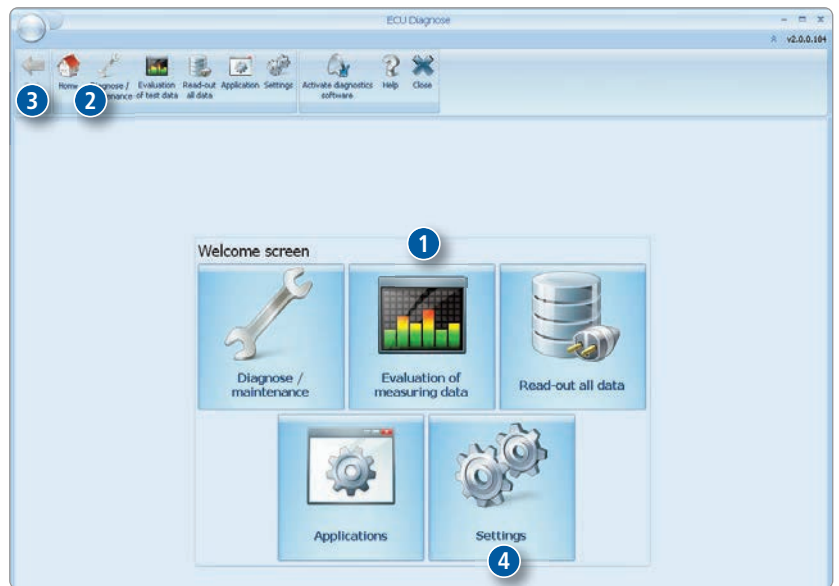
ECU diagnostics software

First steps

> When you start the ECU diagnostics software, the start screen of the user interface appears on the monitor (1). This start screen lets you reach all the software modules required.

> By clicking the **[Home]** button (2) in the top toolbar, you can return to this start screen whenever you want. Clicking the **[Back]** button (3) will display the last screen you used.

> Before you use the ECU diagnostics software for the first time, you have to make a number of basic settings via the **[Settings]** button (4).

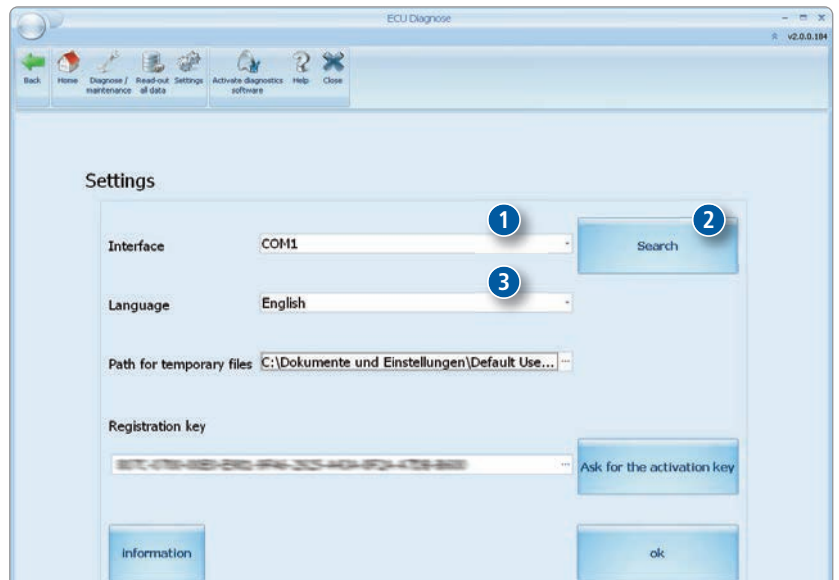


Port

> The first setting to make is to select the COM port (1) to be used. If the computer is already connected to the ECU by the HJS diagnostics cable and the vehicle's ignition is on, you can also use the automatic search function (2). If not, you have to select the COM port or virtual COM port of the USB-RS232 adapter.

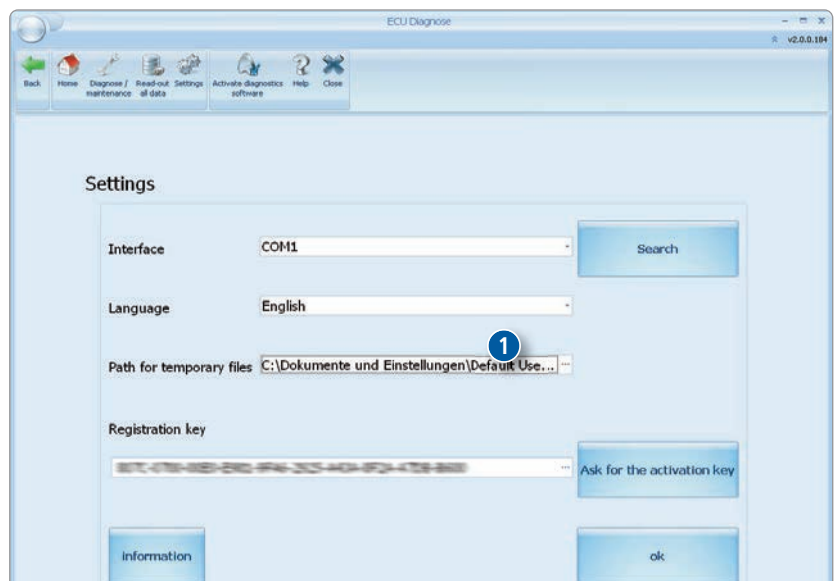
Language

> The language used by the ECU diagnostics software is chosen automatically based on the system language set in your computer. Optionally, you can select a different language here (3).



Path for temporary files

> All temporary files generated by the ECU diagnostics software are saved to this path (1). This path can be changed if necessary.





Activation key, step 1:

> For safety reasons, you can only access basic functions in the ECU diagnostics software if you have not registered it. Functions such as measured data evaluation and maintenance mechanisms are not supported until the software has been registered and activated. You register the software by clicking the [Ask for the activation key] button (1).

Activation key, step 2:

> All registration fields have to be filled in correctly for registration to be successful.

> After filling in the necessary details for registration, you then have to contact the sales partner responsible by e-mail, phone or fax in order to request an activation key.

Activation key, step 3:

> Once you have entered the activation key (1), all necessary functions the software offers are available for you to use.

> Click the [OK] button (2) to complete registration.

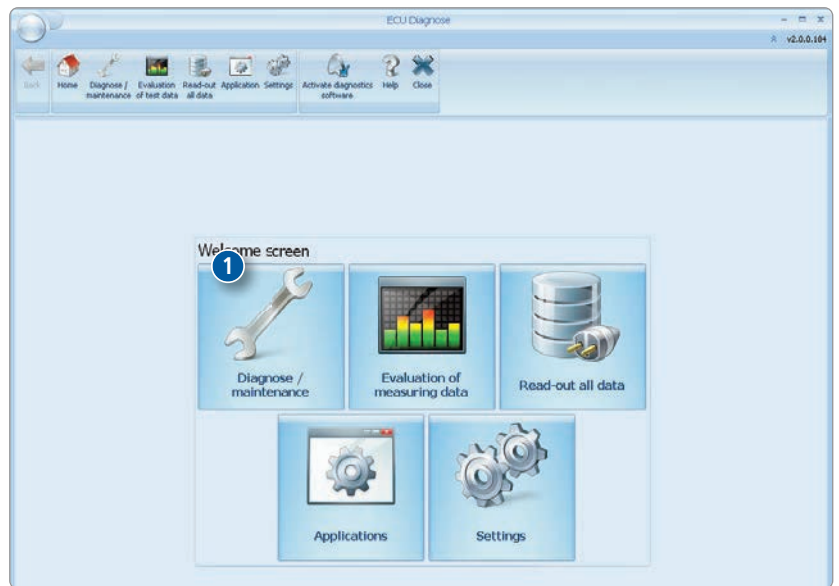


Diagnostics / Maintenance

> The [Diagnose / maintenance] module (1) is intended specifically for diagnosis and maintenance purposes.



This module can only be used once the PC can be connected to an HJS ECU by means of the HJS diagnostics cable and the vehicle's ignition has been switched on.



Diagnosesoftware mit der ECU verbinden

> The cable harness includes the diagnostics connector (1) for the ECU.

> Please refer to the User's Manual for the position of the connector in the vehicle.



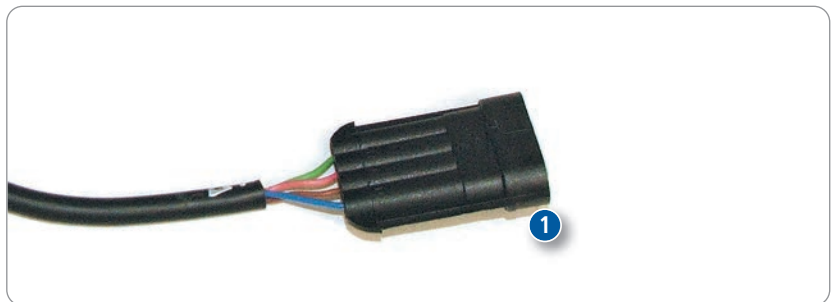
In the case of the universal system, the 4-pin connector on the display module (2) also serves as the diagnostics connector.

> Make the connection between the PC and the diagnostics port using the diagnostics cable with serial connector (3) or USB connector (4).

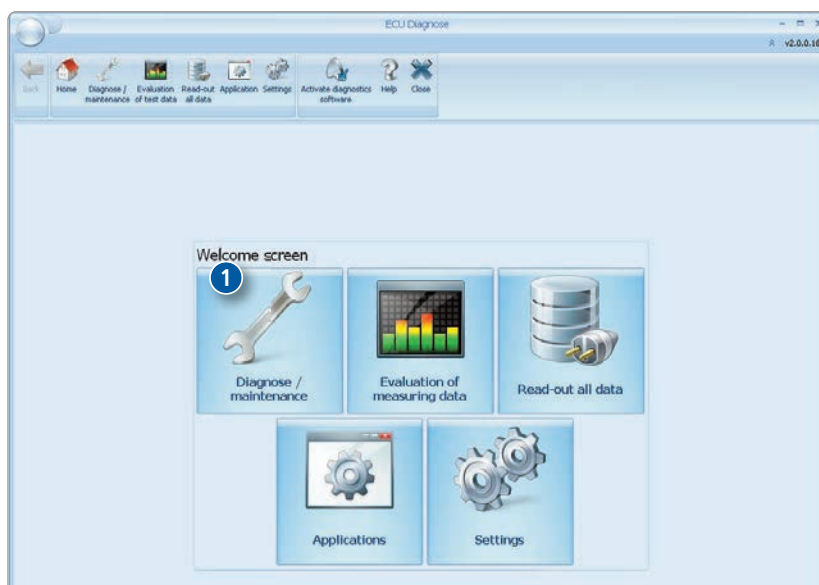
> Make the connection between the ECU diagnostics software and the ECU.

> Switch on the ignition of the vehicle and start the diagnostics program.

> In the case of systems with a display module integrated, the plug connection has to be disconnected first in order to connect the HJS diagnostics cable.

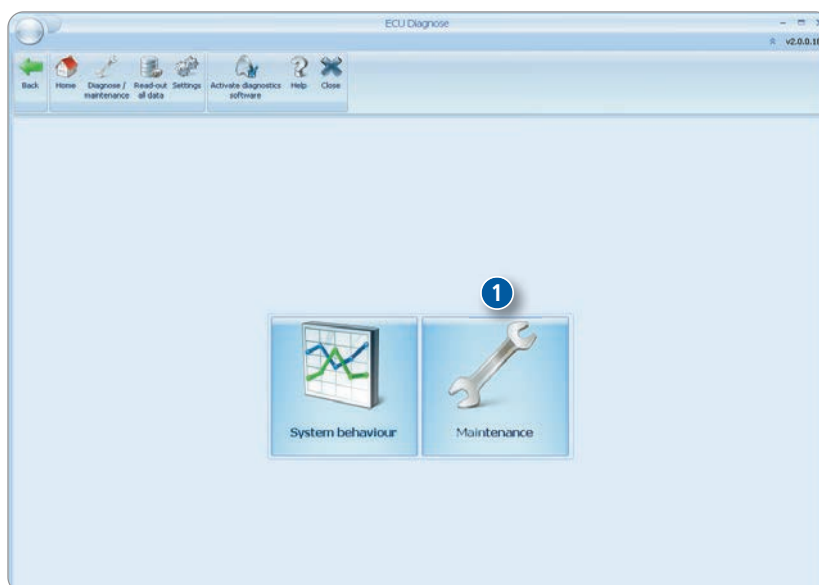


> Click the **[Diagnose / maintenance]** button. The software now connects to the HJS ECU. This step may take a few seconds.



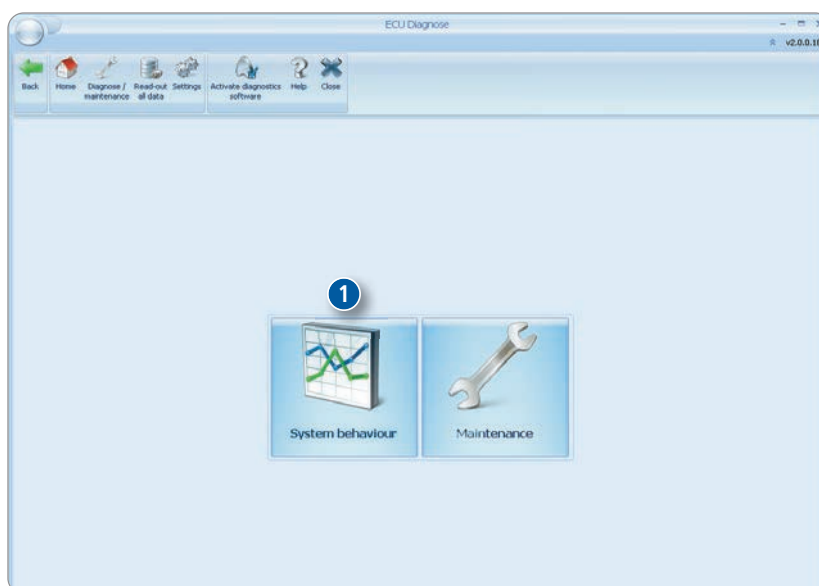
Maintenance

> The **[Maintenance]** module (1) lets you confirm that a filter cleaning operation or additive service has been carried out. The details of these operations are described in the maintenance documentation supplied with your system.



Diagnostics via "System Behaviour"

> The **[System behaviour]** module (1) enables you to analyse all aspects of your system's behaviour.



Diagnostics / Maintenance

The screenshot shows the 'ECU Diagnose' software interface. At the top, there is a toolbar with buttons for Back, Home, Diagnose / maintenance, Evaluation of test data, Read-out all data, Application Settings, Disconnect connection, Activate diagnostics software, Help, and Close. Below the toolbar, the main window is titled 'Systemverhalten' (1). It is divided into several sections:

- Istwerte** (1): A list of system parameters with their current values, such as Operating voltage (12,196 V), Differential pressure (0 mBar), and Temperature before filter (299,4 °F).
- production data** (4): A table with columns for production data, serial number, hw-version, sw-version, cfg-version, and kf-version.
- Error** (2): A table listing error events with columns for Id, Event name, Status, First ap..., Last ap..., Appear..., and quantity.
- Behaviour** (3): A list of system behaviors, such as 'Warning light yellow'.
- Control Panel** (4): A vertical stack of buttons on the right side, including 'Start of regeneration', '10 dosing pulses', 'Delete error log', and 'Export / printing' (5).

At the bottom of the window, there is a status bar showing 'connected date / time: 01.07.2011, 13:37'.

> How the various commands function depends on the HJS system connected. With some systems, certain commands may be inactive.

> The following real-time information is displayed:

- (1) Instantaneous system data (actual values that are displayed graphically when selected)
- (2) Instantaneous error (or errors that were active) in HJS system
- (3) Instantaneous system behaviour

> The button on the right-hand side (4) can be used to send specific system commands to the HJS ECU.

> The **[Export / printing]** function (5) lets you generate an overview of the system's behaviour (as a PDF). This information is necessary in order, among other things, to be able to offer the best possible support in the case of a complaint or a request for support.

> Pressing the **[Home]** button in the top toolbar will take you back to the start screen.

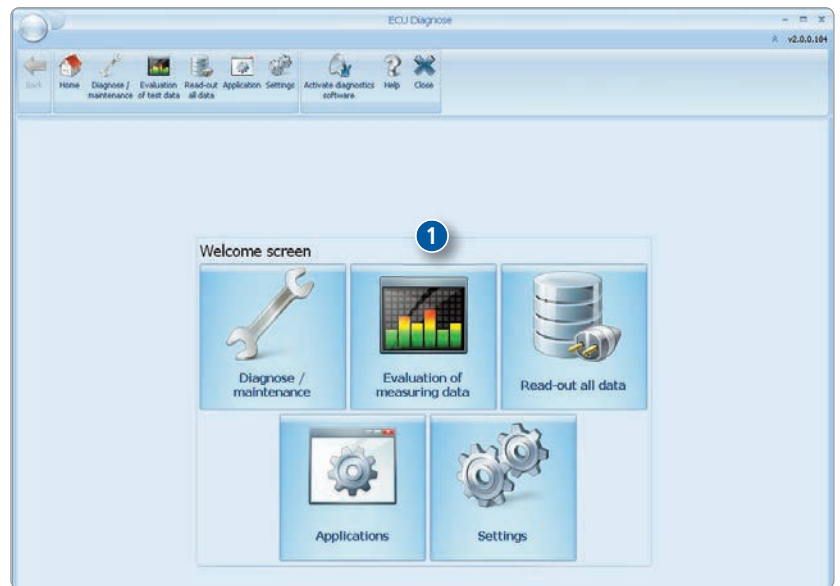


Evaluating the measured data

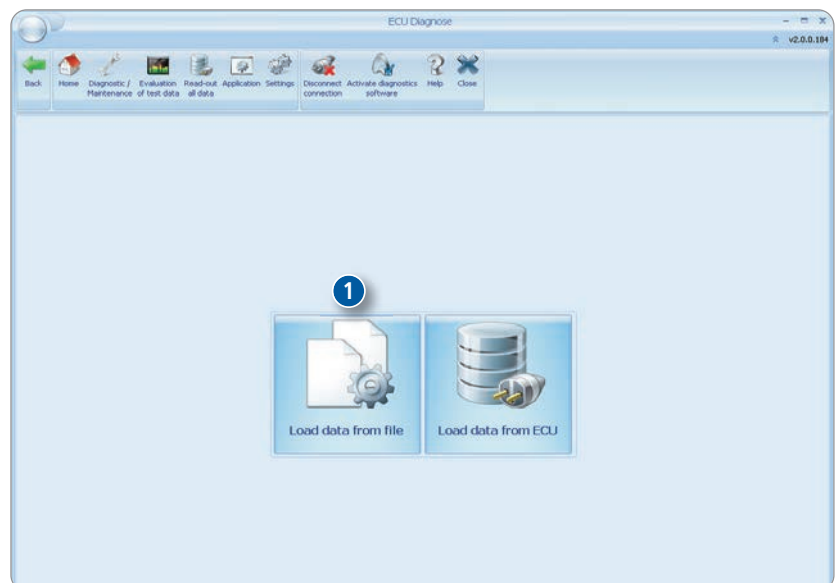
> The [Evaluation of measuring data] module (1) lets you read and evaluate the system data stored in the HJS ECU (logger function).



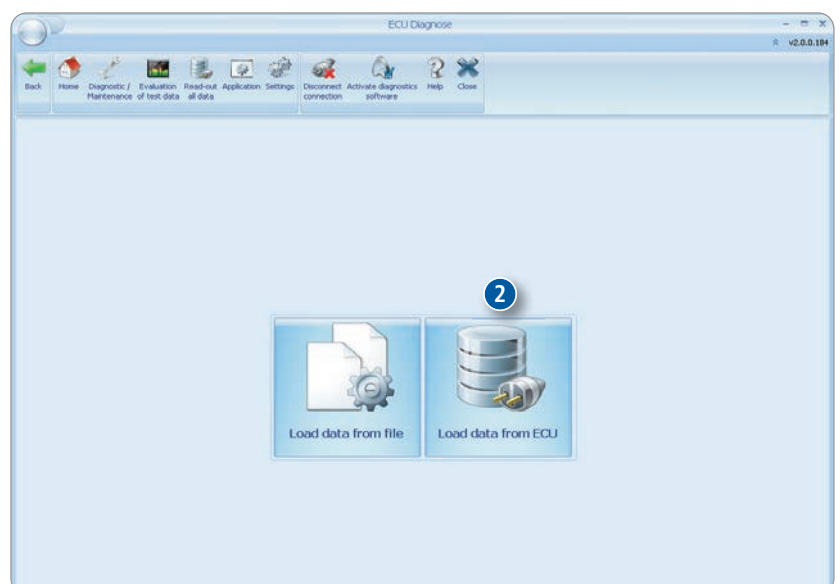
You require an activation key to be able to select and use this function.



> By clicking the [Load data from file] button (1), you can retrieve data stored on the PC and display the evaluation of these data.



> The [Load data from ECU] button (2) enables you to load the measured data from the HJS ECU connected. The vehicle's ignition must be switched on for this function. This procedure can take up to 15 minutes





Evaluating the measured data

ECU Diagnose v2.0.0.184

Back Home Diagnose / maintenance Evaluation of test data Read-out all data Application Settings Disconnect connection Activate diagnostics software Help Close

Evaluation of measuring data

acquisition actual values

- Differenzdruck AVG (mBar)
- Temperatur vor Filter AVG (°C)
- Drehzahl AVG (U/min)

view: calendar period show all data: date: 19.08.2010 date 2: 19.08.2010

production data serial number hw-version sw-version cfg-version kf-version

11.08.2010	5000765	1.36a	1.02.007	3405.0.007	3405.0.007
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error error ring behaviour

Drag a column header here to group by that column.

event name	status	first occurrence	last occurrence	occurred until	quantity
Fehler: Motorlauferkennung	Inaktiv	30.06.2011 14:25	30.06.2011 14:38	30.06.2011 14:38	0

save print

graph statistics

Differenzdruck AVG (mBar) error ring Temperatur vor Filter AVG (°C) Missings

connected date / time: 01.07.2011, 13:37

> This screen has a similar setup and layout to the "System Behaviour" screen. The various tabs in the centre section allow you to view the following system parameters:

- (1) Instantaneous error in the HJS system
- (2) Fault memory (error history)
- (3) Instantaneous system behaviour

> You can sort the order in which the entries are displayed by selecting one of the columns in the area above the table marked blue.

> The left-hand section of the screen lets you select the system data recorded by the HJS ECU (4) and display them in the form of a graph. You can choose from a number of options on which to base how the data are visualised, e.g. according to time.

> The bottom section (5) of the screen contains the graph or graphs you select. The **[statistics]** tab (6) also enables you to display characteristic values, such as a mean value or frequency distribution, in addition to the system data selected. A zoom function also allows you to analyse the data more closely.

> Clicking the **[save]** button (7) on the right-hand side saves the measured data to a file. This information is necessary in order, among other things, to be able to offer the best possible support in the case of a complaint or a request for support.

> The **[print]** button (8) lets you generate an overview of the system's behaviour (as a PDF).

> Pressing the **[Home]** button in the top toolbar will take you back to the start screen.

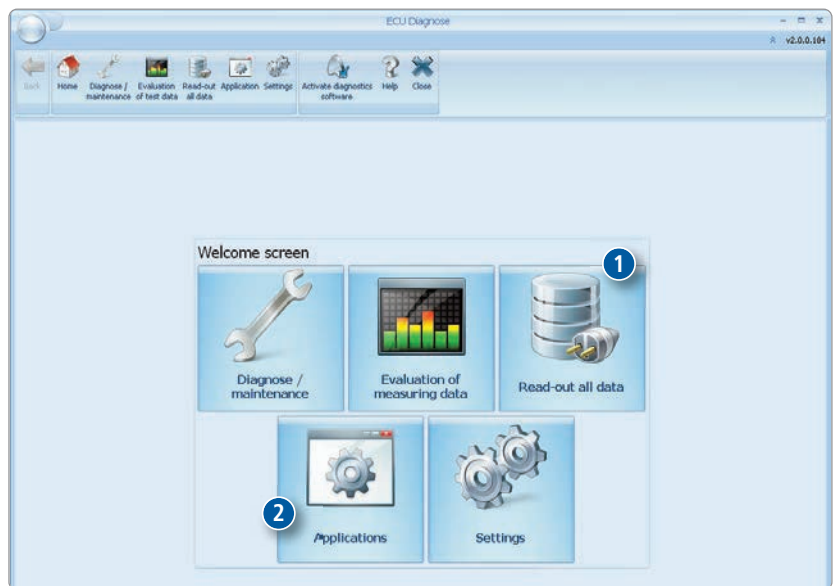
Other buttons

[Read-out all data] (1)

> This button executes a function that reads out all data from the ECU and saves them on the PC.

[Applications] (2)

> The [Applications] module (2) is required for setting up modular DPF® systems. Instructions on how to use this module can be found in the respective system documentation.



Notes

> All modules can also be started at any time via the icons in the toolbar. You require an activation key to be able to select and use these modules.

> Many of the functions of the software are explained on the screen by a tooltip that appears when you hold the mouse over the button or icon for a few seconds.

FAQ

Why does the software have to be activated?

> The software is capable of making changes to the HJS ECU and the exhaust-gas aftertreatment system. In extreme cases, this could lead to malfunctioning of the system. To ensure that only appropriately trained persons perform such actions, these functions can only be used once the software has been activated.

Where can I make a connection to the ECU and start the timer?

> These functions from the previous version of the HJS diagnostics software have been removed from the latest version. The connection is made automatically by the software when necessary.

How do I save the data acquired (acquisition), the fault memory and the other read-out files?

> All of these files are now read out automatically one after the other and saved to a file with the extension ".hjsdat". You can open and evaluate this file in the "Measured Data Evaluation" module.

How do I know which COM port I have to use?

> The easiest way is to connect your computer and to use the automatic COM port search function in the "Settings" module. If this doesn't work, please check whether the USB adapter is properly installed and connected to the right USB port, or whether a different application has been assigned to the COM port.

Fault list

SMP-AR®	FBC	SMP®	SCR	SCR1®	No.	Description	New Description	Possible Cause of Fault	Test Steps	Fault Rectification
x	x				1	Tank sensor short circuit	Fault: Tank sensor signal	<ol style="list-style-type: none"> Short circuit to ground Tank sensor short-circuited to ground Open circuit in wiring Loose contact or poor contact at connector for tank sensor signal from vehicle 	<ol style="list-style-type: none"> Test wires to ground. Disconnect connectors from ECU and tank sensor Check tank sensor Disconnect connectors from ECU and tank sensor and check wire for continuity Check connectors/wiring of tank sensor 	<ol style="list-style-type: none"> Test wire and repair if nec. Repair tank sensor in acc. w. manufacturer's specifications Test wire and repair if nec. Replace plug connectors if nec.
x	x				2	Tank sensor open circuit	Fault: Tank sensor signal	<ol style="list-style-type: none"> Short circuit to ground Tank sensor short-circuited to ground Open circuit in wiring Loose contact or poor contact at connector for tank sensor signal from vehicle 	<ol style="list-style-type: none"> Test wires to ground. Disconnect connectors from ECU and tank sensor Check tank sensor Disconnect connectors from ECU and tank sensor and check wire for continuity Check connectors/wiring of tank sensor 	<ol style="list-style-type: none"> Test wire and repair if nec. Repair tank sensor in acc. w. manufacturer's specifications Test wire and repair if nec. Replace plug connectors if nec.
x	x				3	No tank sensor pulse	Fault: Tank sensor signal	<ol style="list-style-type: none"> Short circuit to ground Tank sensor short-circuited to ground Open circuit in wiring Loose contact or poor contact at connector for tank sensor signal from vehicle 	<ol style="list-style-type: none"> Test wires to ground. Disconnect connectors from ECU and tank sensor Check tank sensor Disconnect connectors from ECU and tank sensor and check wire for continuity Check connectors/wiring of tank sensor 	<ol style="list-style-type: none"> Test wire and repair if nec. Repair tank sensor in acc. w. manufacturer's specifications Test wire and repair if nec. Replace plug connectors if nec.
x	x				4	Air metered	Fault: Air metered	<ol style="list-style-type: none"> Additive tank empty Supply line between tank and pump defective Fault in ECU 	<ol style="list-style-type: none"> Check fill level of additive tank Check lines between additive tank, additive filter and dosing pump Ascertain serial number and software/configuration versions and contact HJS 	<ol style="list-style-type: none"> Top up additive and vent line (using ECU diagnostics software or ServiceCheck) Check lines and filter and repair if nec. Top up additive and vent lines (using ECU diagnostics software or ServiceCheck) Replace ECU if nec.
x	x				5	Dosing pump defective	Fault: Dosing system	<ol style="list-style-type: none"> Short circuit in dosing wire Short circuit in pump Electrical defect in pump 	<ol style="list-style-type: none"> Check wires between HJS ECU and dosing pump for continuity Connect replacement pump, implement 20 dosing pulses and check whether fault still present Check resistance of dosing pump <ul style="list-style-type: none"> With a 12V dosing pump, resistance must be between 4 and 7 ohms. With a 24V dosing pump, resistance must be between 17 and 25 ohms. Implement dosing pulses manually by means of ECU diagnostics software (min. 30 pulses) and check dosing pump is functioning properly Ascertain serial number and software/configuration versions and contact HJS 	<ol style="list-style-type: none"> Test wire and repair if nec. Install new dosing pump Replace dosing pump if nec.



SME-AR®	FBC	SME®	SCR	SCR T®	No.	Description	New Description	Possible Cause of Fault	Test Steps	Fault Rectification
x	x				6	Dosing pressure too high	Fault: Dosing system	1) Additive line from pump to T-piece has blockage 2) Additive pump defective 3) Additive pump connected to fuel supply line	1) Check whether line from pump to T-pieces is blocked 2) Remove connecting hose between additive pump and T-piece on pump. Make sure additive is delivered by dosing manually by means of HJS ECU 3) Connect dosing pump to fuel return line	1) Check line and repair if blocked 2) If no additive is delivered, replace pump 3) Connect dosing pump to fuel return line
x	x				7	Dosing pump current incorrect	Fault: Dosing system	1) Electrical defect in pump 2) Try using an incorrect dosing pump (12V instead of 24V, or vice versa)	1) Implement dosing pulses manually by means of ECU diagnostics software (min. 30 pulses) and check dosing pump is functioning properly 2) Check on-board power supply system and compare with dosing pump used	1) Replace dosing pump if nec. 2) Replace dosing pump if nec.
x	x				8	Event: Additive on reserve	Event: Additive on reserve	Additive tank is almost empty	Visual check on additive level in additive tank	Carry out maintenance work as described in User's Manual
x	x				9	No dosing status	Fault: Dosing system	1) Electrical defect in pump 2) ECU defective	1) Check resistance of dosing pump With a 12V dosing pump, resistance must be between 4 and 7 ohms. With a 24V dosing pump, resistance must be between 17 and 25 ohms. Implement dosing pulses manually by means of ECU diagnostics software (min. 30 pulses) and check dosing pump is functioning properly 2) Ascertain serial number and software/configuration versions, and contact HJS	1) Replace dosing pump if nec. 2) Replace ECU if nec.
x	x				10	Dosing pump open circuit	Fault: Dosing system	1) Fault in wiring to dosing pump 2) Defective dosing pump	1) Check wires between ECU and dosing pump for continuity 2) Check dosing pump for continuity using multimeter	1) Test wire and repair if nec. 2) If no continuity, replace dosing pump
x	x				11	No tank sensor pulse	Fault: Tank sensor signal	1) Short circuit to ground 2) Tank sensor short-circuited to ground 3) Open circuit in wiring 4) Loose contact or poor contact at connector for tank sensor signal from vehicle	1) Test wires to ground. Disconnect connectors from ECU and tank sensor 2) Check tank sensor 3) Disconnect connectors from ECU and tank sensor and check wire for continuity 4) Check connectors/wiring of tank sensor	1) Test wire and repair if nec. 2) Repair tank sensor in acc. w. manufacturer's specifications 3) Test wire and repair if nec. 4) Replace plug connectors if nec.
x					12	CAN fault	Fault: CAN bus	1) Contact problems/short circuit/open circuit in CAN bus connection from vehicle to HJS ECU. Wiring faulty: CAN high/CAN low mistakenly swapped over (pin 66 yellow/white and pin 86 yellow)	1) Check connection between ECU and CAN terminal, including plug connection 2) Check plausibility of actual values. Speed and/or tank level depending on system	1) Test wire and connector and repair if nec.
x					13	Greater than 115% emergency regeneration	Event: Emergency regeneration	Filter monitoring event		
x					14	Loading per characteristic map/air mass flow meter	Event: Filter loading	Filter monitoring event		



Fault list

SMP-AR®	FBC	SMP®	SCR	SCR1®	No.	Description	New Description	Possible Cause of Fault	Test Steps	Fault Rectification
x					15	Regeneration interlock	Event: Regeneration Interlock	Filter monitoring event No fault		
			x	x	16	Fault: Charge-air pressure open circuit/short circuit	Fault: Charge-air pressure open circuit/short circuit	1) Fault in wiring or sensor defective. Possible short circuit or open circuit in wire to charge-air pressure sensor. 2) Voltage dip in on-board supply system when starting engine (starter).	1) Check operation using ECU diagnostics software. A plausible charge-air pressure value must be displayed in "Actual Values" tab while engine is running. If reading for charge-air pressure is "short", there is probably a short circuit in wiring. If reading for charge-air pressure is "open", there is probably an open circuit (wire break) in wiring.	1) Check wiring for short circuit/open circuit or replace sensor if nec.
x					17	Operating profile: Do not trigger regen.	Event: DPF	Filter monitoring event No fault		
x					18	Heater undervoltage	Fault: Heater	1) On-board supply voltage low 2) Voltage dip in on-board supply system when starting engine (starter).	1) Check on-board supply voltage, if nec. carry out manual regeneration (24-hour password is required for ECU software version 0.10.173 and lower) and monitor operating voltage at rated speed by means of ECU diagnostics software. Value should not fall below 11.5V/24V 2) Switch on ignition and check whether fault detected again	1) Replace battery and/or alternator if nec. 2) If on-board supply voltage below 13V when idling -> troubleshoot: replace battery and/or alternator if nec.
x	x	x	x	x	19	No characteristic map	Fault: No characteristic map	No plausible value / wrong configuration	2) Ascertain serial number and software/configuration versions and contact HJS	2) Replace ECU if nec.
x					20	Load detection	Event: Filter loading	Filter monitoring event No fault		
x					21	Pressure averaging error	SMP®-AR systems: Event: Pressure sensor	Filter monitoring event No fault		
		x		x	21	Pressure averaging error	CRT systems: Fault: Pressure sensor	1) Fault averaging differential pressure	Check wiring of differential pressure sensor and sensor itself. Use ECU diagnostics software to check plausibility of differential pressure value	1) Replace wiring and/or replace sensor if nec.
x					22	Triggering of regeneration	Event: Regeneration	Filter monitoring event: regeneration is/has been carried out No fault		
x					23	Monitor averaging	Event: Monitor averaging	Filter monitoring event No fault		
x					24	Loading per characteristic map/air mass flow meter	Event: Filter loading	Filter monitoring event No fault		

SMF-AR®	FBC	SMF®	SCR	SCR T®	No.	Description	New Description	Possible Cause of Fault	Test Steps	Fault Rectification
x					25	Zero current	Fault: Heater	1) Missing or defective earthing strap 2) Heater circuits defective	1) Check whether earthing strap is fitted. Check for good contact to filter and vehicle bodywork 2) Carry out manual regeneration (password is required for ECU software version 0.10.173 and lower), monitor heating output and heating current of the two heater circuits at rated speed by means of ECU diagnostics software and check plausibility (current of heaters should be between 28A and 54A with a 12V on-board supply system (33A to 60A with 24V on-board supply system) and roughly the same for both heating circuits)	1) Install earthing strap. Check contact resistance to filter and bodywork 2) Replace filter module if nec.
x					26	Heater output stage fault	Fault: Heater	1) Heater fuse (100A) defective 2) Open circuit/short circuit in heater power lead	1) Check fuse and power lead from battery to ECU 2) Check connection between HJS ECU and heater, including plug connection	1) Replace fuse. If lead is defective, replace cable harness 2) If lead is defective, replace cable harness
x					27	Heater current incorrect	Fault: Heater	2) Open circuit/short circuit in heater power lead 2) Defective heater	1) Check earthing strap at filter. Check power lead between ECU and heater for short circuit and continuity 2) Carry out manual regeneration (24-hour password is required for ECU software version 0.10.173 and lower), monitor heating output and heating current of the two heater circuits at rated speed by means of ECU diagnostics software and check plausibility (current of heaters should be between 28A and 54A with a 12V on-board supply system (33A to 60A with 24V on-board supply system) and roughly the same for both heating circuits)	1) Replace earthing strap and/or power lead if nec. 2) Replace filter module if nec.
x					28	EGR cannot be operated	Fault: EGR	1) Sporadic; term. 15 has loose contact or wire to EGR valve open- or short-circuited	1) Check fuse and wire at term. 15 2) Delete fault memory three times and check whether fault is still present	1) Check wiring for break/oxidisation 2) Replace ECU
x					29	Filter damaged	Fault: Filter damaged	1) Differential pressure hose connected incorrectly or defective, or HI line hose blocked => REF connection must be connected to filter outlet 2) Filter defective	1) Check differential pressure hose: - Check connections at sensor and filter => HI connection on sensor must be connected to filter inlet. - Check hose lines are not blocked 2) Check filter outlet for traces of soot (particulate matter)	1) Connect hoses correctly and replace if nec.. Check whether pressure values in diagnostics software are plausible (1 mbar to 20 mbar at idle) 2) Replace filter if nec.

Fault list

SMF-AR®	FBC	SMF®	SCR	SCR T®	No.	Description	New Description	Possible Cause of Fault	Test Steps	Fault Rectification
x	x	x		x	30	Analogue short circuit/open circuit	Fault: Sensors (differential-pressure/temperature sensor)	<p>1) Fault in wiring or sensor defective. Possible short circuit or open circuit in temperature sensor</p> <p>2) Fault in wiring or sensor defective. Possible short circuit or open circuit in differential pressure sensor</p> <p>3) Differential pressure hose HI blocked.</p>	<p>1) Check operation using ECU diagnostics software. A plausible temperature value must be displayed in "Actual Values" tab. If reading for temperature is "short", there is probably a short circuit in wiring. If reading for temperature is "open", there is probably an open circuit (wire break) in wiring. If nec. check plausibility of temperature sensor resistance using multimeter (200 to 600 ohms).</p> <p>2) Check operation using ECU diagnostics software. A plausible differential pressure value must be displayed in "Actual Values" tab. If reading for differential pressure is "short", there is probably a short circuit in wiring. If reading for differential pressure is "open", there is probably an open circuit (wire break) in wiring. Furthermore, a plausible backpressure (>1 mbar) must be displayed when engine idling, which must increase as revs/load increases</p> <p>3) Check hose</p>	<p>1) Check wiring for short circuit/open circuit or replace temperature sensor if nec.</p> <p>1) Check wiring for short circuit/open circuit or replace differential pressure sensor if nec.</p>
x	x	x		x	31	Pressure sensor calibration	Fault: Differential pressure sensor	Faulty differential pressure sensor	Fault must be rectified by specialist workshop within 500 km	
x					32	Air mass sensor short circuit/open circuit	Fault: Air mass flow meter sensor	<p>1) Fault in wiring or sensor defective. Possible short circuit or open circuit in air mass flow meter sensor</p>	<p>1) Check operation using ECU diagnostics software. A plausible air mass flow value must be displayed in "Actual Values" tab. If reading for air mass flow is "short", there is probably a short circuit in wiring. If reading for air mass flow is "open", there is probably an open circuit (wire break) in wiring. Furthermore, a plausible air mass flow (>0.1g/h) must be displayed when engine idling, which must increase as revs/load increases</p>	<p>1) Check wiring for short circuit/open circuit or replace air mass flow sensor if nec.</p>
x	x	x		x	33	Temperature gradient low	Fault: T sensor	<p>1) Incorrect installation position of temperature sensor</p> <p>2) If fault occurs sporadically, it may possibly be owing to operating profile</p>	<p>1) Check installation of temperature sensor</p> <p>2) -</p>	<p>1) Adjust installation position if nec.</p> <p>2) -</p>
x	x	x		x	34	Temperature gradient high	Fault: T sensor	<p>1) Incorrect installation position of temperature sensor</p> <p>2) If fault occurs sporadically, it may possibly be owing to operating profile</p>	<p>1) Check installation of temperature sensor</p> <p>2) -</p>	<p>1) Adjust installation position if nec.</p> <p>2) -</p>



SMF-AR®	FBC	SMF®	SCR	SCR™	No.	Description	New Description	Possible Cause of Fault	Test Steps	Fault Rectification
		x		x	35	Temperature efficiency too low	Event: CRT temperature profile	Efficiency of CRT filter not within optimum range.	If yellow lamp lights up constantly, vehicle must be taken to specialist workshop after no more than 1000 km (600 miles) in order to have HUS Service Unit read out	
	x				35	Temperature efficiency too low	Event: FBC temperature profile	Internal event of ECU No fault		
x				x	36	Filter damaged	Fault: Filter damaged	1) Differential pressure hoses connected incorrectly or defective 2) Filter defective	1) Check differential pressure hose: - Check connections at sensor and filter => Hi connection on sensor must be connected to filter inlet. => REF connection must be connected to filter outlet - Check hose lines are not blocked 2) Check values using ECU diagnostics software. A plausible backpressure (>1 mbar) must be displayed under "Actual Values" when engine idling. Actions: measure opacity, remove filter in acc. w. installation instructions and visually inspect filter for damage	1) Connect hoses correctly and replace if nec.. Check whether measured values in diagnostics software are plausible 2) Remove filter, check and replace if nec.
	x	x			36	Filter damaged	Fault: Filter damaged	1) Differential pressure hoses connected incorrectly or defective 2) Filter defective 3) Engine running detection cable not connected to D+ but to term. 15	1) Check differential pressure hose: - Check connections at sensor and filter => Hi connection on sensor must be connected to filter inlet. => REF connection must be connected to filter outlet - Check hose lines are not blocked 2) Check values using ECU diagnostics software. A plausible backpressure (>1 mbar) must be displayed under "Actual Values" when engine idling. Actions: measure opacity, remove filter in acc. w. installation instructions and visually inspect filter for damage 3) Check wiring	1) Connect hoses correctly and replace if nec. Check whether measured values in diagnostics software are plausible 2) Remove filter, check and replace if nec. 3) Change wiring
x	x	x		x	37	Pressure too high	Fault: Filter pressure too high	Differential pressure of filter too high	Have filter serviced	Have filter serviced
x	x	x		x	38	Pressure high	Fault: Filter pressure high	Differential pressure of filter high	Vehicle can continue to be operated, but appointment must be made for filter to be serviced. "Fault 37" message will be displayed soon	Have filter serviced
x	x	x	x	x	39	5V short circuit	Fault: Short circuit	Short circuit in 5V supply of differential pressure sensor or air mass flow sensor or diagnostics cable.	Check entire wiring for short circuit	Connect wires correctly and replace if nec.



Fault list

SMF-AR®	FBC	SMF®	SCR	SCR™	No.	Description	New Description	Possible Cause of Fault	Test Steps	Fault Rectification
			x	x	41	Fault: SCR fault	Fault: SCR fault	Internal fault in SCR dosing pump	Follow user's manual of SCR dosing pump	Follow instructions in "Software for SCR Dosing Pump" user's manual
x					42	-	-	Internal event of ECU No fault		
x					43	Event: Filter loading	Event: Filter loading	Filter monitoring event No fault		
x	x	x		x	44	Filter cleaning (ash)	Event: Filter maintenance	Filter requires servicing	After no more than 500 km (300 miles) / 10 operating hours, vehicle must be taken to specialist workshop in order to have filter serviced	Carry out filter service
		x		x	45	Pressure drop deviation too large	Fault: CRT pressure drop too high	Downward deviation (drop) of hourly averaged differential pressure not within valid range	After no more than 500 km (300 miles), vehicle must be taken to specialist workshop in order to have filter serviced	
		x		x	46	Pressure rise deviation too large	Fault: High CRT pressure rise too high	Upward deviation (rise) of hourly averaged differential pressure not within valid range	Vehicle must be taken to specialist workshop within 6 hours in order to have diesel particulate filter checked	
x	x	x	x	x	47	Login	Event: Login	Internal event of ECU No fault		
			x	x	48	Event: AdBlue tank empty	Event: AdBlue tank empty	AdBlue tank empty. No fault present		Fill AdBlue tank
x					48	No go-ahead for regen.	Fault: Operating profile	1) Operating profile not enough to be able to trigger electric regeneration. This can be promoted by stop'n go traffic or by on-board supply voltage being too low	1) Take vehicle for regeneration run. When yellow indicator lamp flashes, regeneration run must be carried out as described in User's Manual	
			x	x	49	Event: AdBlue tank on reserve	Event: AdBlue tank on reserve	AdBlue tank level low. No fault present		
x					49	Regen. suppression	Event: Regeneration suppression	ECU event. Regeneration suppression has been actuated by driver (function not available with all SMF®-AR systems) No fault		
x	x				50	Filled up	Event: Dosing	ECU event. Change in tank sensor signal detected No fault		
x	x				51	Overtosing	Event: Dosing	ECU event. Additive dosing has been conducted by ECU No fault		
x	x	x	x	x	52	Series of measurements: Calc	Event: Series of measurements: Calc	Internal event of ECU No fault		

SMF-AR®	FBC	SMF®	SCR	SCR T®	No.	Description	New Description	Possible Cause of Fault	Test Steps	Fault Rectification
x	x	x	x	x	53	Fault Red fault lamp	Fault: Red fault lamp	1) Short circuit or open circuit in wiring of red fault lamp 2) Lamp 'bulb' defective 3) Lamp 'bulb' defective 4) Faulty connection to ground	1) Check wire from ECU to red fault lamp for continuity and short circuit using multimeter 2) Check lamp 'bulb' for continuity using multimeter 3) Check lamp 'bulb' for continuity using multimeter 4) Check ground pins/contacts	1) Test wire and repair if nec. 2) Replace lamp 'bulb' if nec. 3) Replace lamp 'bulb' if nec.
x	x	x	x	x	54	Fault Yellow indicator lamp	Fault: Yellow indicator lamp	1) Short circuit or open circuit in wiring of yellow indicator lamp 2) Short circuit or open circuit in wiring of yellow indicator lamp 3) Lamp 'bulb' defective	1) Check lamp test following system start (term. 15 activation) 2) Check wire from ECU to yellow indicator lamp for continuity and short circuit using multimeter 3) Check lamp 'bulb'	1) Test wire and repair if nec. 2) Test wire and repair if nec. 3) Replace lamp 'bulb' if nec.
					55	Fault MIL3	Fault: MIL3	1) Short circuit or open circuit in wiring of yellow indicator lamp 2) Lamp 'bulb' defective	1) Check wire from ECU to yellow indicator lamp for continuity and short circuit using multimeter 2) Check lamp 'bulb'	1) Test wire and repair if nec. 2) Replace lamp 'bulb' if nec.
x	x	x	x	x	56	Temperature high	Fault: Temperature high	Temperature of filter high	Vehicle can continue to be operated, but appointment must be made for filter to be serviced. "Fault 57" message will be displayed soon	Have filter serviced
x	x	x	x	x	57	Temperature too high	Fault: Temperature too high	Temperature of filter too high	Have filter serviced	Have filter serviced
x	x	x	x	x	58	Fault Engine running detection	Fault: Engine running detection	Speed signal or D+ signal not active or pressure sensor defective	Check wiring check pressure sensor	Connect wires correctly and replace if nec.
x					59	Loading stable	Event: Loading stable	Filter monitoring event No fault		
x					60	Reg. Log	Event: Regeneration log	Filter monitoring event: regeneration is/has been carried out No fault		
					61	Fault: Charge-air temperature open circuit/short circuit	Fault: Charge-air temperature open circuit/short circuit	1) Fault in wiring or sensor defective. Possible short circuit or open circuit in wire to charge-air temperature sensor	1) Check operation using ECU diagnostics software. A plausible charge-air temperature value must be displayed in "Actual Values" tab while engine is running. If reading for charge-air temperature is "short", there is probably a short circuit in wiring. If reading for charge-air temperature is "open", there is probably an open circuit (wire break) in wiring.	1) Check wiring for short circuit/open circuit or replace sensor if nec.
x					61	-	Event: Internal	Internal event of ECU No fault		
x	x	x	x	x	62	-	Event: order	Internal event of ECU No fault		
x	x	x	x	x	63	-	Event: order	Internal event of ECU No fault		

Notes





HJS Emission Technology GmbH & Co. KG is a medium-sized company based in Menden in central Germany and has many years of experience and expertise in the field of exhaust-gas aftertreatment. Some 500 employees are engaged in the development, production and marketing of modular systems for reducing pollutant emissions. These innovative environmental protection technologies can be used either as original equipment or for retrofitting in passenger cars, commercial vehicles as well as a wide range of non-road mobile machinery and stationary applications.

In addition to systems for spark-ignition engines, HJS today focuses on solutions for diesel engines – especially for reducing the emissions of soot particles (PM) and nitrogen oxides (NO_x). With extensive patents for DPF® (diesel particulate filter) and SCRT® (Selective Catalytic Reduction Technology) systems, HJS sets benchmarks.



HJS technology portfolio for OE and retrofitting

- > Diesel Particulate Filters (DPF®)
Reduction of soot-particle emissions (PM)
- > SCR-Systems
Reduction of nitrogen-oxide (NO_x) emissions
- > SCRT®-Systems
Simultaneous reduction of soot-particle (PM) and nitrogen-oxide (NO_x) emissions
- > Thermal Management
For DPF®-regeneration and SCR-functionality
- > Electronic Control Units and Software
Monitoring and controlling of all system functions

A clean future with HJS!

See www.hjs.com