

Voith Turbo

VOITH

DIWA BlueCom K-Line-Interface Operating Instructions

**Diagnostic Level
150.00584510_EN**

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Preface

This manual is intended for the operating staff of DIWA transmissions who are responsible for the regular maintenance and the adherence to the maintenance schedule of the transmissions.

The work must be performed carefully in order to avoid personal injury and material damage.

The operating personnel must read, understand and observe the manual. We would like to point out that we do not assume any liability for damage or operational malfunctions resulting from non-observance of the manual.

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Contact

Voith Turbo GmbH & Co. KG

Alexanderstrae 2
D-89522 Heidenheim
Tel. +49 (73 21) 37 - 0
Fax +49 (73 21) 37 - 7618
diwa-service@voith.com
www.voithturbo.com

Table of Contents

1	Preliminary Remarks on this Manual	1-1
1.1	Description of the warnings, symbols and signs	1-1
1.1.1	Warnings	1-1
1.1.2	Symbols and signs	1-2
2	Safety	2-1
2.1	Safety notes	2-1
2.1.1	General information	2-1
2.1.2	State of the art	2-1
2.1.3	Intended use	2-1
2.1.4	Conditions for usage	2-2
2.1.5	Staff qualification	2-2
2.1.6	Responsibilities	2-2
2.1.7	Unsafe instructions	2-2
2.1.8	Hoisting devices	2-2
2.1.9	Risk of burning	2-2
2.1.10	Risk of accidents caused by oil	2-3
2.1.11	Spare parts	2-3
2.1.12	Work on the transmission	2-3
2.1.13	Cleaning the transmission	2-4
2.1.14	Conversion or modification of the transmission	2-4
2.1.15	Disposal	2-4
2.1.16	Towing	2-4
3	Description	3-1
3.1	Overview	3-1
3.2	Bluetooth driver installation	3-2
3.3	Connecting the DIWA BlueCom K-line interface with the PC (pairing)	3-2
3.4	Installation example with Microsoft Bluetooth stack	3-3
3.5	USB installation	3-6
3.6	Settings of the diagnosis tools	3-7

3.6.1	DIWAgnosis 3.5	3-7
3.6.2	ALADIN 3	3-8
3.6.3	DIANA 5.9	3-9
3.7	Notes	3-10
3.7.1	Notes on the Bluetooth/USB connection	3-10
3.7.2	LED display	3-10
3.7.3	Ports	3-11

1 Preliminary Remarks on this Manual

This manual uses symbols and characters that help you to find information quickly.
Please read the comments on the symbols in the section below.

Pay special attention to the safety instructions in this manual.

Safety instructions can be found in chapter 2 and always precede action instructions.

1.1 Description of the warnings, symbols and signs

1.1.1 Warnings

This manual uses warnings to prevent any personal injury or property damage.

Please always read and observe these warnings!

Warnings are marked by the following symbols:

Symbol	Description
	Imminent danger! Non-observance will lead to death or severe injury.
	Probable imminent danger! Non-observance may lead to death or severe injury.
	Dangerous situation! Non-observance may lead to minor injury.
	Dangerous situation! Non-observance may lead to damage to property.

Tab. 1-1 Identification of warnings

1.1.2 Symbols and signs

This manual uses symbols and signs to provide you with fast access to information.

Symbol	Use	Description
	Note	Indicates information on the proper handling of the transmission. It does not indicate dangerous situations.
	Environment	Indicates a potentially harmful situation for the environment owing to operation, maintenance or repair of the transmission.
	Help in the event of problems	Provides help if problems occur.

Tab. 1-2 Symbols in the right text column

Symbol	Use	Description
	Action instruction	You are required to do something here.
1. 2.	Action instruction comprising several steps	Action instructions have to be carried out in the given order. Deviations from the given order may cause damage to the machine or accidents.
	Please note especially!	
• —	Listing with two stages	Listings do not imply any activities.
	Cross reference	References to pictures, tables, other chapters or other manuals

Tab. 1-3 Symbols in the text

2 Safety

2.1 Safety notes

2.1.1 General information

Operation, maintenance and repair of the transmission are always subject to the relevant local safety and accident prevention regulations.

These regulations can apply to, for example, the handling of hazardous materials, the provision and wearing of personal protective gear, or motor vehicle regulations.

Anyone operating the transmission or any persons involved in installation, repair or maintenance have to familiarize themselves with the warning notes and precautions described in this document.

Anyone who operates the transmission or who carries out installation, repair or maintenance work has to make sure that his/her personal safety or the safety of other people is ensured.

2.1.2 State of the art

This transmission is designed and constructed with state of the art technology and in accordance with the acknowledged safety regulations. Nevertheless, operation, installation, repair and maintenance of the transmission can involve the risk of injury and death of persons or may damage the transmission and other material assets if:

- the transmission is put to different use than prescribed,
- the transmission is operated, serviced or repaired by unqualified staff,
- the transmission is modified or reconstructed improperly and/or
- the safety instructions are not observed.

2.1.3 Intended use

The intended use of the DIWA transmission is its application as an automatic transmission for buses.

Any use other than the one described above is considered improper. Voith Turbo GmbH & Co. KG does not assume any liability for improper use. In this case, the risk lies solely with the user.

The persons in charge, in particular the staff engaged in operation and maintenance, must absolutely observe the guidelines for the proper and correct use of the transmission.

2.1.4 Conditions for usage

The transmission may only be operated:

- in a technically flawless condition,
- for its intended use,
- with safety and risk awareness, observing the technical manual and other technical documents.

Malfunctions that impair the safety must be eliminated immediately.

2.1.5 Staff qualification

Work on the transmission may only be carried out by staff who have been properly trained, instructed and authorized by the operator. The statutory minimum age has to be observed.

Maintenance and repair require special knowledge and training (e.g. Voith diagnosis and repair training) and may only be carried out by personnel qualified accordingly.

Personnel that is currently being trained, instructed, introduced to a job or undergoes a general training may work on the transmission only under the permanent supervision of a person assigned for this purpose.

2.1.6 Responsibilities

The responsibilities of the personnel working on the transmission must be clearly defined and complied with.

Only such personnel that is explicitly assigned, authorized and trained for this purpose is allowed to work on the transmission.

Work on the chassis, brakes or steering systems may only be carried out by personnel qualified accordingly.

2.1.7 Unsafe instructions

The personnel working on the transmission must refuse to carry out any unsafe instructions of third parties.

2.1.8 Hoisting devices

Use only appropriate and technically immaculate hoisting devices and load suspension devices with sufficient load capacity.

When replacing transmission, assemblies or individual parts, these must be carefully attached to hoisting devices and secured so that they do not present any risk.

Never stay or work under suspended loads.

2.1.9 Risk of burning

The oil can become very hot - in extreme cases up to 130 C.

Improper handling may cause burns to the skin.

Therefore, let the transmission cool down to approx. 60 C before changing the oil.

2.1.10 Risk of accidents caused by oil

Oil that escapes through lines, gaskets or O-rings that were not installed correctly or that have become leaky after prolonged time in operation can cause accidents.

The oil can be under high pressure in pipes and conduits or in the converter.

Shut off the drive motor before conducting maintenance work or repairs.

2.1.11 Spare parts

Use only original spare parts for repair work since only these can guarantee that the transmission complies with the road safety regulations and the technical state at delivery.

When replacing parts, it is crucial to observe the notes in the spare parts catalogue.

Original spare parts are designed especially for the Voith transmission. We would like to point out that original spare parts which are not supplied by Voith are neither tested nor approved by Voith. The installation and/or use of non-original spare parts might adversely affect the specified design characteristics of the transmission and thus compromise safety.

In case of any damage due to the use of non-original spare parts, Voith does not assume any liability.

2.1.12 Work on the transmission

Prior to maintenance or inspection work on the installed transmission and during installation and removal of the transmission, the engine of the bus must be secured against starting.

Prior to performing maintenance or inspection work on the installed transmission and during installation and removal of the transmission, the bus must be secured such that it cannot be put in motion, neither deliberately nor accidentally (slope!).

The prescribed service work must be carried out regularly, on time and with the intended fuels and fluids.

The work must be performed in accordance with the Voith provisions, e.g. the customer service information describing improvements and modifications to the transmission, so that no parts and tools take damage.

Performing work on the transmission requires a suitable workshop equipment.

After work has been performed on the transmission, all transmission oil lines must be checked for leaks, loose connections, chafing and damage. Any defects must be eliminated immediately.

After work on the transmission has been performed, all joints must be checked for leakage.

All screwed connections loosened during work on the transmission must be tightened to the tightening torques specified in the technical documents on the transmission.

2.1.13 Cleaning the transmission

Before cleaning the transmission with water or steam jet (high-pressure cleaner) or other cleaning agents, any openings into which no water, steam or cleaning agent is allowed for reasons of safety and functioning must be sealed.

Outside oil hose lines must not be directly exposed to the jet of the high-pressure cleaner.

After cleaning, remove all covers/adhesives completely.

2.1.14 Conversion or modification of the transmission

Any modifications, attachments or conversions of the transmission must not be implemented without approval from Voith Turbo GmbH & Co. KG.

2.1.15 Disposal

Fluids and auxiliary substances (e.g. used oil) and disassembled parts must be disposed of in a safe and environmentally sound manner.

The local regulations and laws on environmental protection and disposal of hazardous materials must be observed.

2.1.16 Towing

Shift the transmission to idle position (N key).

Disconnect the connecting cable between control and transmission from the control unit.

If the transmission is damaged: Remove the prop shaft or stub shaft of the rear axle.

If the transmission is not damaged, the vehicle can also be towed with the prop shaft:

- max. permissible distance: 10 km
- max. permissible speed: 30 km/h.

For transmissions with angle drives it is in any case necessary to remove the prop shaft or stub shaft of the rear axle.

If this is not possible, please contact the Voith customer service.

3 Description

3.1 Overview

The DIWA BlueCom K-line interface allows for a wireless Bluetooth connection between PC and transmission control unit. On the PC, a customary external USB Bluetooth module or, if available, the installed Bluetooth module can be used.

The maximum range depends on the Bluetooth module in the PC:

- Bluetooth Class 1: approx. 100 m
- Bluetooth Class 2: approx. 10-20 m

In addition to the Bluetooth interface, there is also a USB interface available, which can be used as an alternative to Bluetooth. USB allows for a fast data transmission so that the programming of transmission control units can be accomplished much faster than in the case of a data transmission via Bluetooth.

3.2 Bluetooth driver installation

If no Bluetooth driver is installed on the PC yet:

⇒ Install Bluetooth driver.

Afterwards, a blue Bluetooth icon should be displayed in the Windows system tray (2) or in the Windows control panel (1).

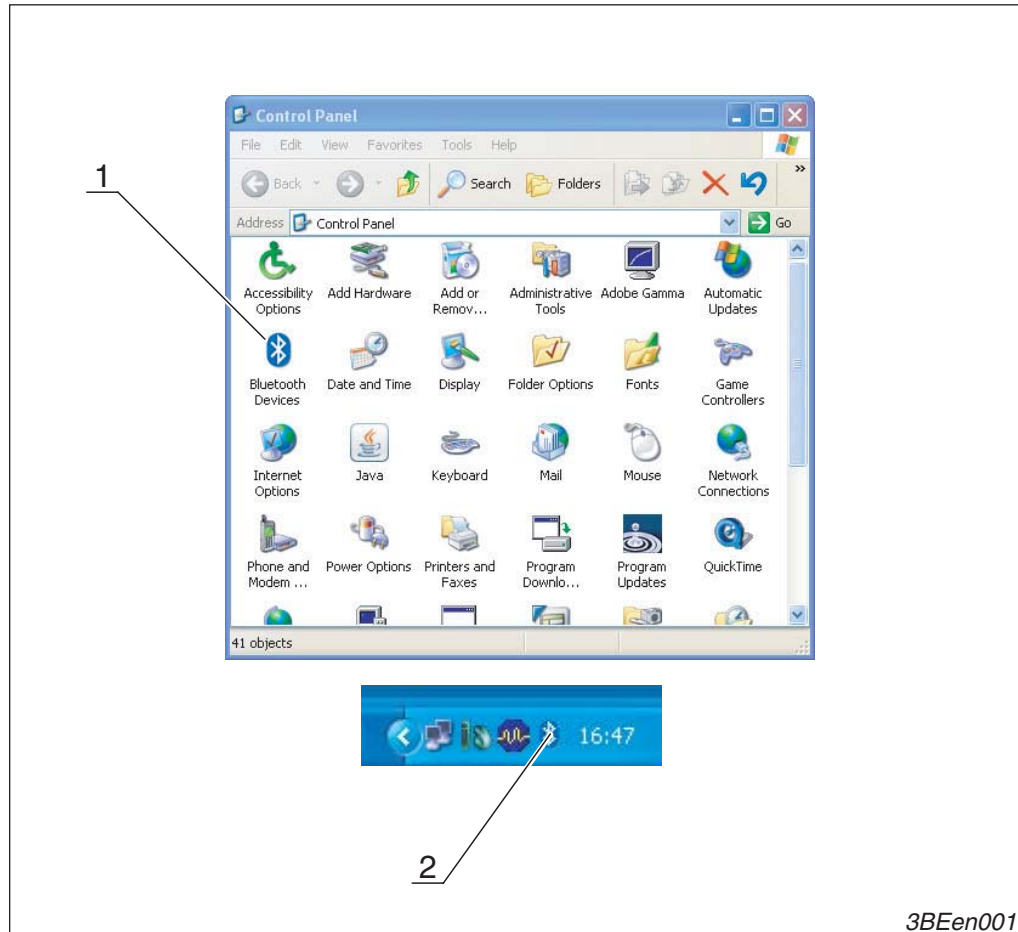


Fig. 3-1 Bluetooth icon

3BEen001

3.3 Connecting the DIWA BlueCom K-line interface with the PC (pairing)

First, the DIWA BlueCom K-line interface has to be registered once on the PC (pairing). The procedure for that depends on the Bluetooth driver (also called Bluetooth stack). There are various manufacturers (Microsoft, Toshiba, Broadcom,...).

1. Make sure that the Bluetooth module of the PC is switched on.
2. Connect the DIWA BlueCom K-line interface with the transmission control unit.
3. Switch on the vehicle ignition.

The UBat LED (supply voltage ok) on the DIWA BlueCom K-line interface should light up. The further steps depend on the Bluetooth driver used.

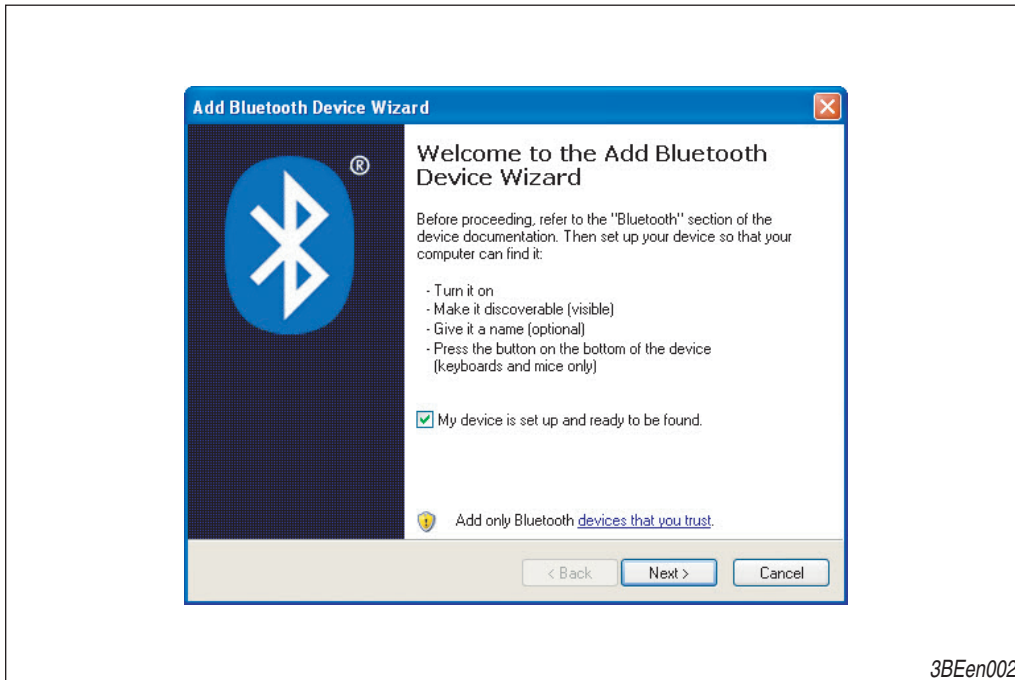
Important:

Since every Bluetooth device has an unambiguous device ID, the pairing has to be repeated as soon as a different DIWA BlueCom K-line interface is used.



3.4 Installation example with Microsoft Bluetooth stack

1. Right-click the Bluetooth icon in the system tray (bottom right, next to the clock).
2. Select the "Add Bluetooth device" function.
3. Select "My device is set up and ready to be found".



3BEen002

Fig. 3-2 Adding a Bluetooth device

The following entry appears in the dialogue:

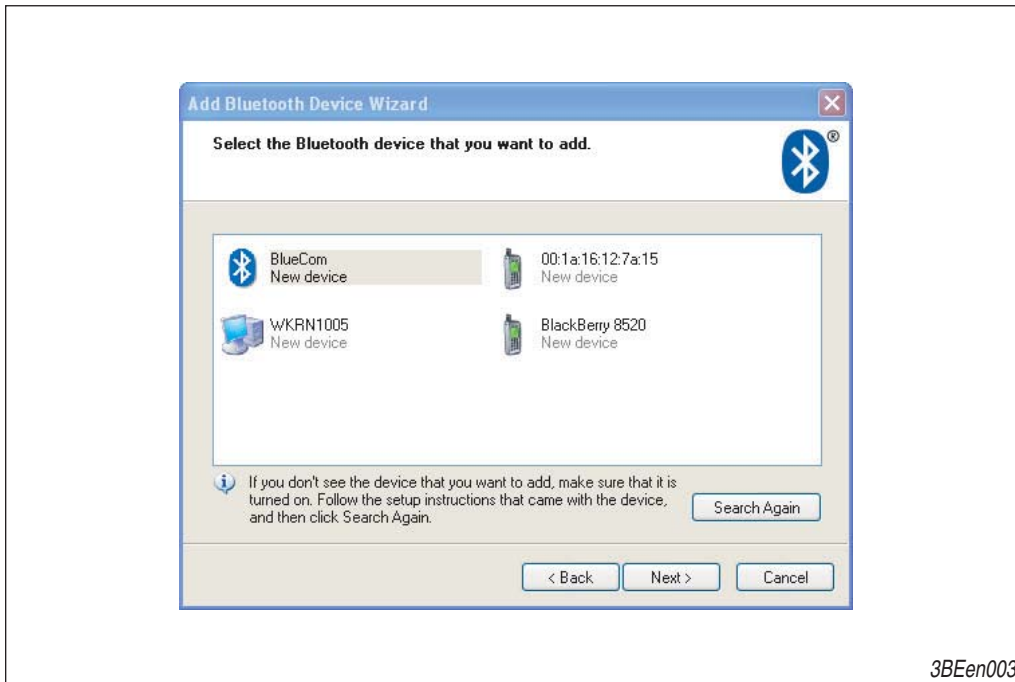


Fig. 3-3 Adding a Bluetooth device

4. Select this entry.
5. Click "Next".

The dialogue for entering the key is opened.

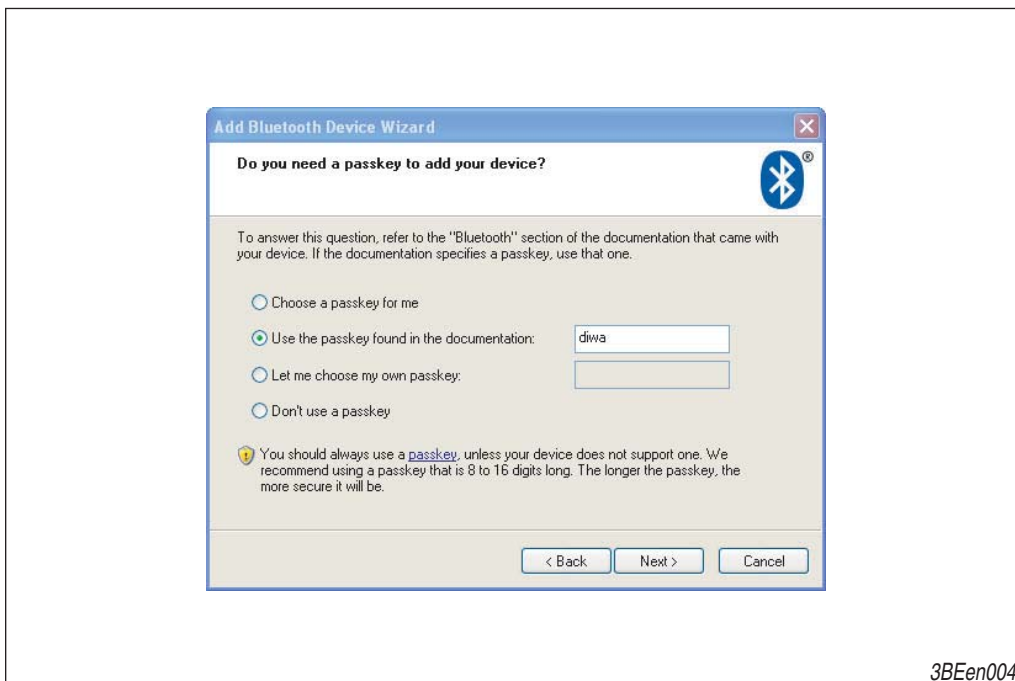


Fig. 3-4 Adding a Bluetooth device

6. Select the item "Main key from documentation".
7. Enter "diwa".
8. Click "Next".

The following dialogue appears:

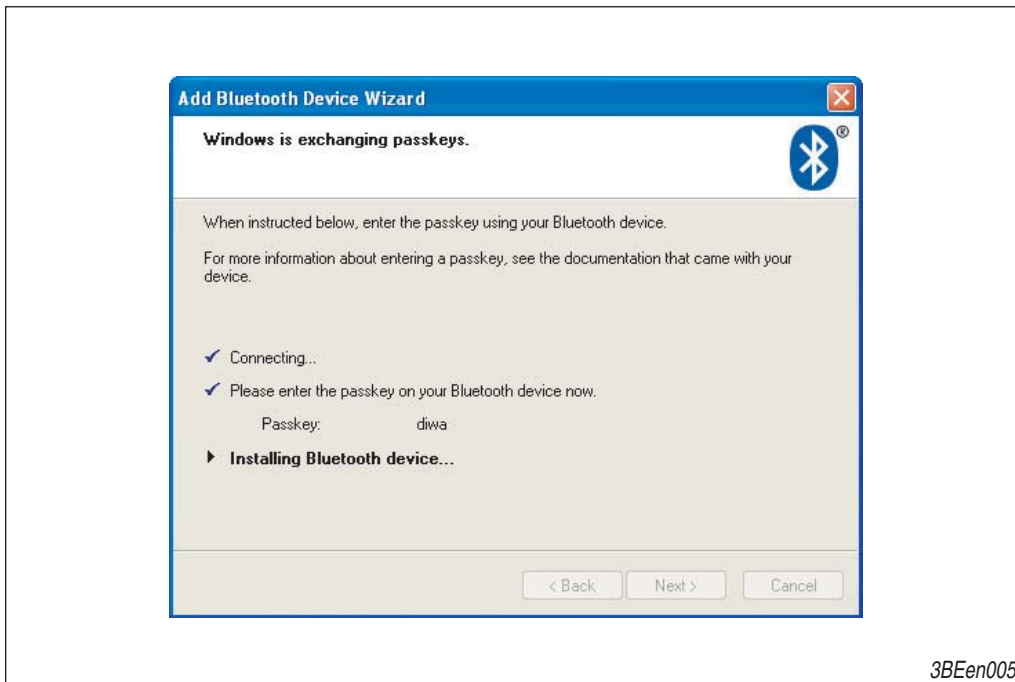


Fig. 3-5 Adding a Bluetooth device

A dialogue stating the COM port which has to be used appears automatically. In this example, it is **COM6** (outgoing COM port). The incoming COM port can be ignored.

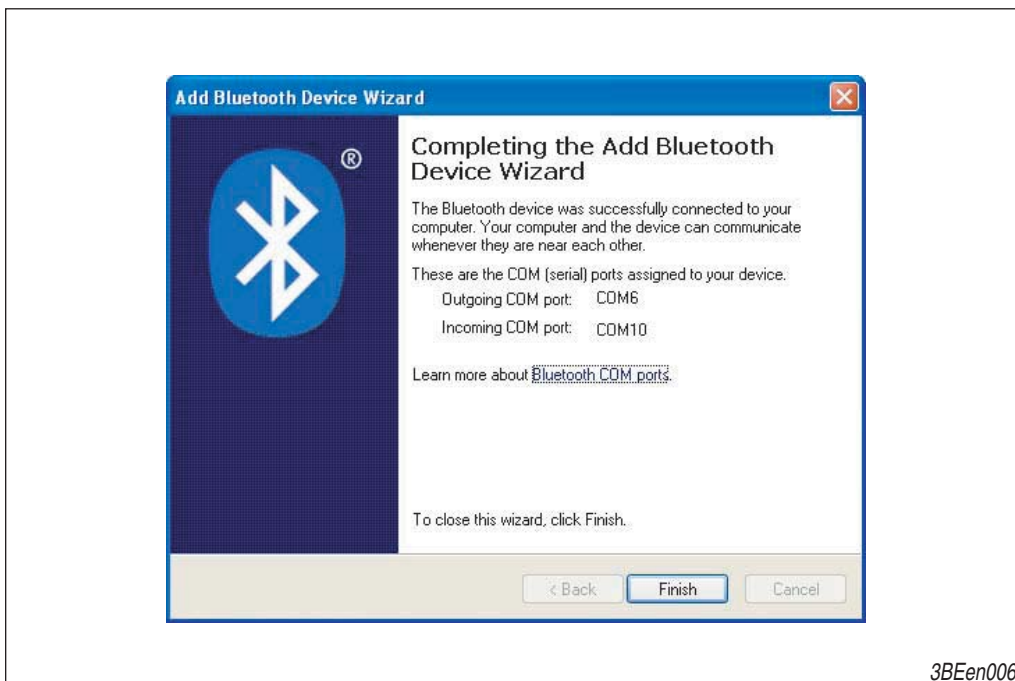


Fig. 3-6 Adding a Bluetooth device

9. Complete the dialogue with "Finish".

3.5 USB installation

As an alternative to Bluetooth, the DIWA BlueCom K-line interface can also be used as USB interface with the help of the additional USB cable. The required driver is included in the delivery of Voith Aladin and DIWAgnosis 3.5. It can also be downloaded at <http://www.ftdichip.com/drivers/vcp.htm> Device: FT232R.

When the DIWA BlueCom K-line interface is connected to the USB port of a PC for the first time, Windows signals a new USB device.

⇒ Select the driver on the installation CD or in the directory.

Windows creates a new virtual COM port. That has a different COM port number than the Bluetooth COM port. The USB COM port number can be determined in the Windows device manager:

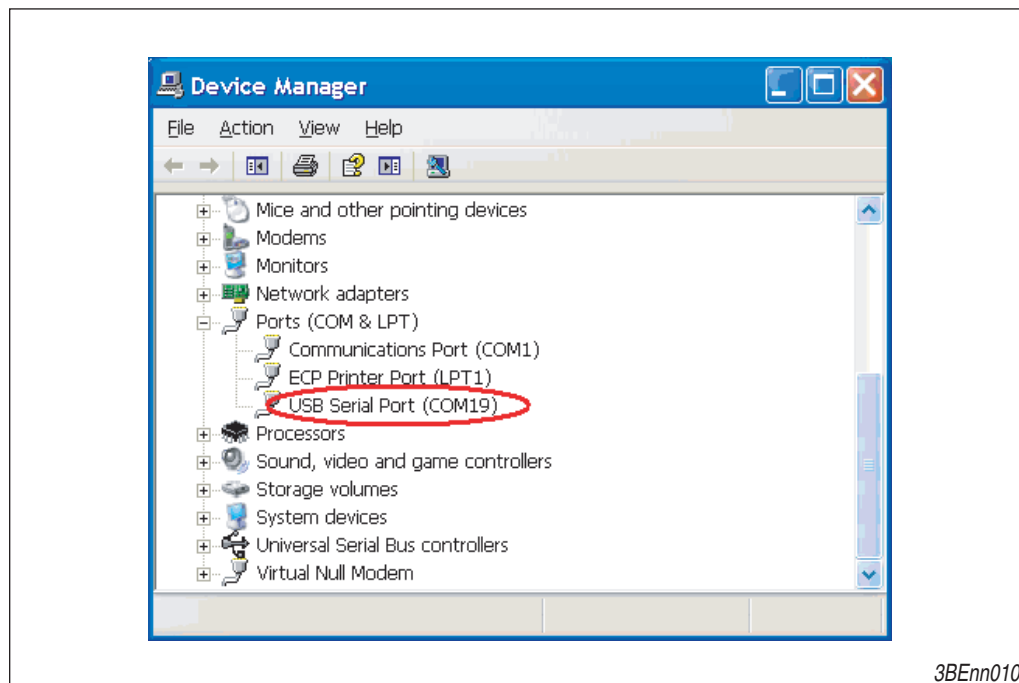


Fig. 3-7 USB port

3.6 Settings of the diagnosis tools

3.6.1 DIWAgnosis 3.5

1. Select the Bluetooth COM port and, if necessary, the USB COM port in DIWAgnosis.
2. Tick Voith BlueCom in the DIWAgnosis setup.

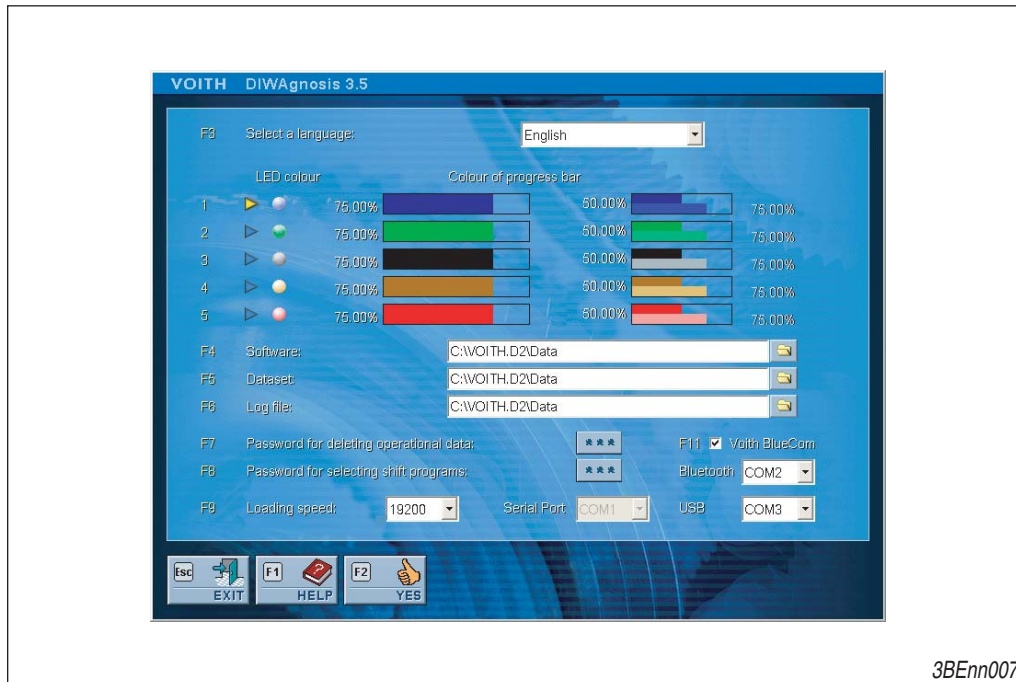


Fig. 3-8 Settings in DIWAgnosis

If USB is generally not used, USB has to be set to "off". If a wrong COM port is set here, this might lead to connection problems.

3.6.2 ALADIN 3

1. Select Bluetooth COM port or, if desired, USB COM port in the Aladin selection box "Interface port BlueCom".
2. Restart Aladin.

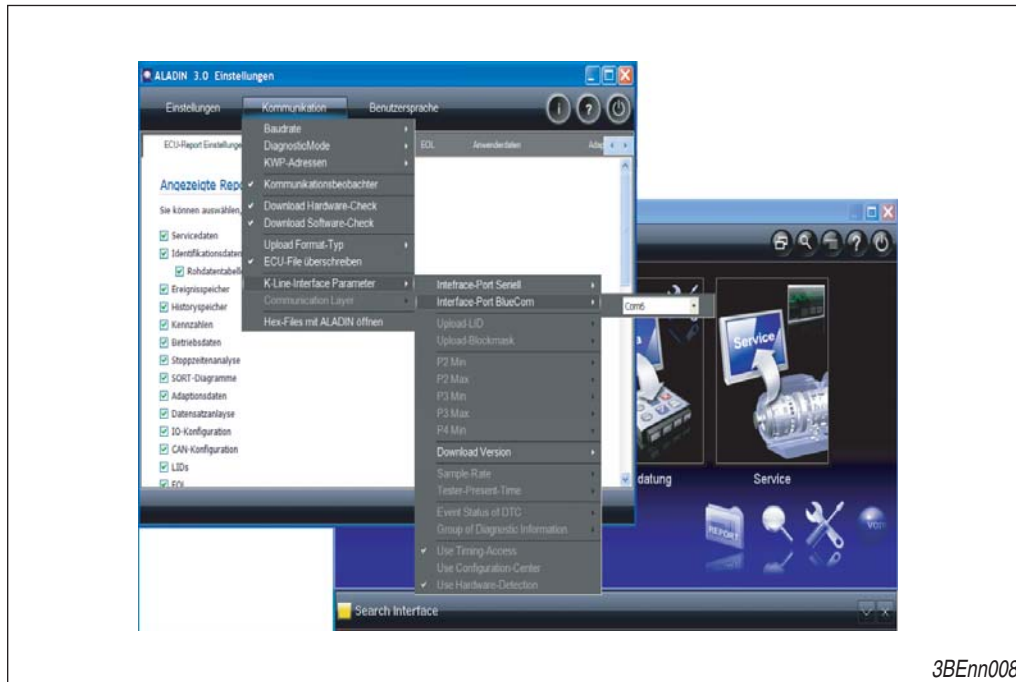


Fig. 3-9 Settings in ALADIN

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3.6.3 DIANA 5.9

1. Select Bluetooth COM port and USB COM port in the DIANA program settings.
2. Select Voith BlueCOM interface at "ECU connection".

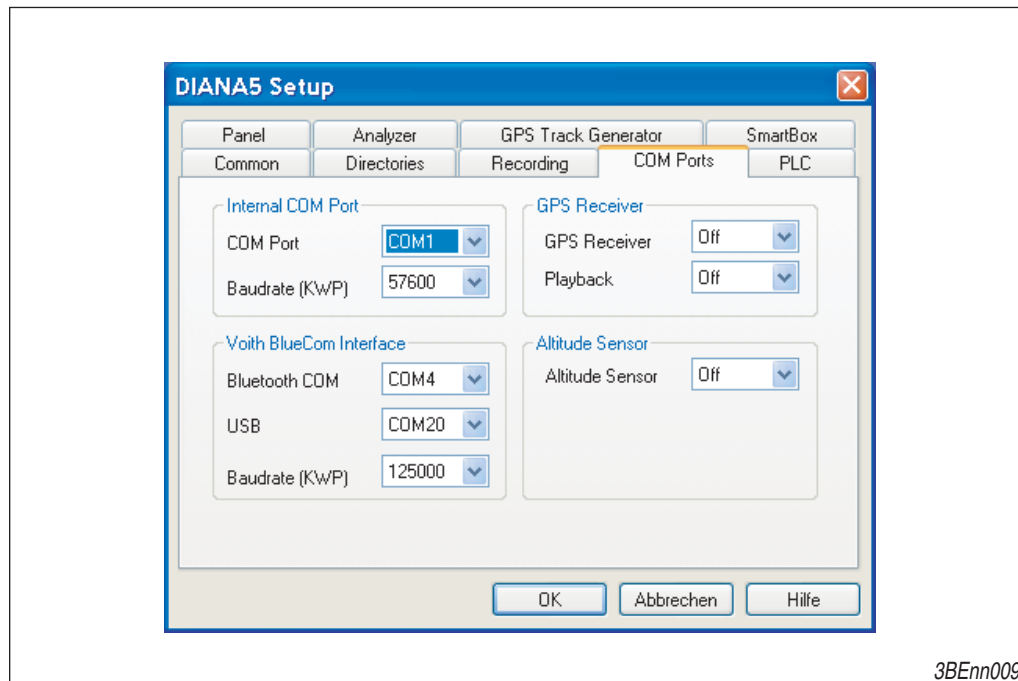


Fig. 3-10 Settings in DIANA

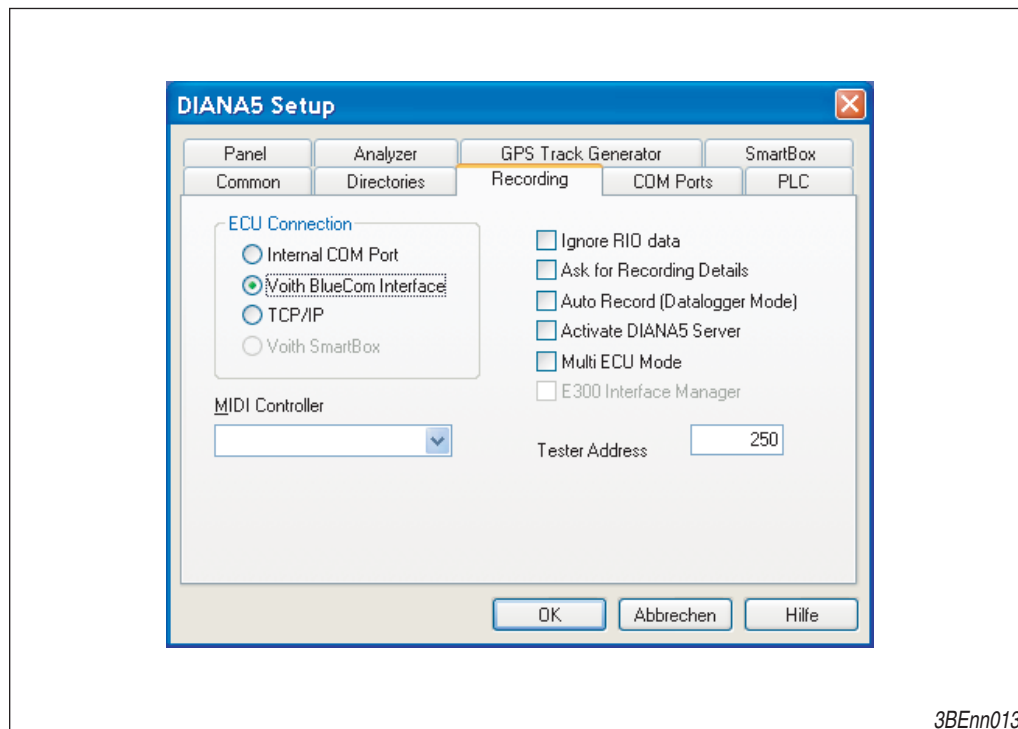


Fig. 3-11 Settings in DIANA

3.7 Notes

3.7.1 Notes on the Bluetooth/USB connection

As soon as the USB connection between the DIWA BlueCom K-line interface and PC has been established, the Bluetooth connection to the DIWA BlueCom K-line interface is cut off. If the USB connection is cut off, the Bluetooth connection is automatically activ.

For ALADIN only: When changing between USB and Bluetooth, each time the corresponding COM port has to be selected in the diagnosis tool beforehand.

The ignition should not be switched off and on while the communication is running.

If the Bluetooth connection is not possible any longer, the Voith DIWA BlueCom K-line interface can be removed from the Bluetooth device list and added again (pairing).

3.7.2 LED display

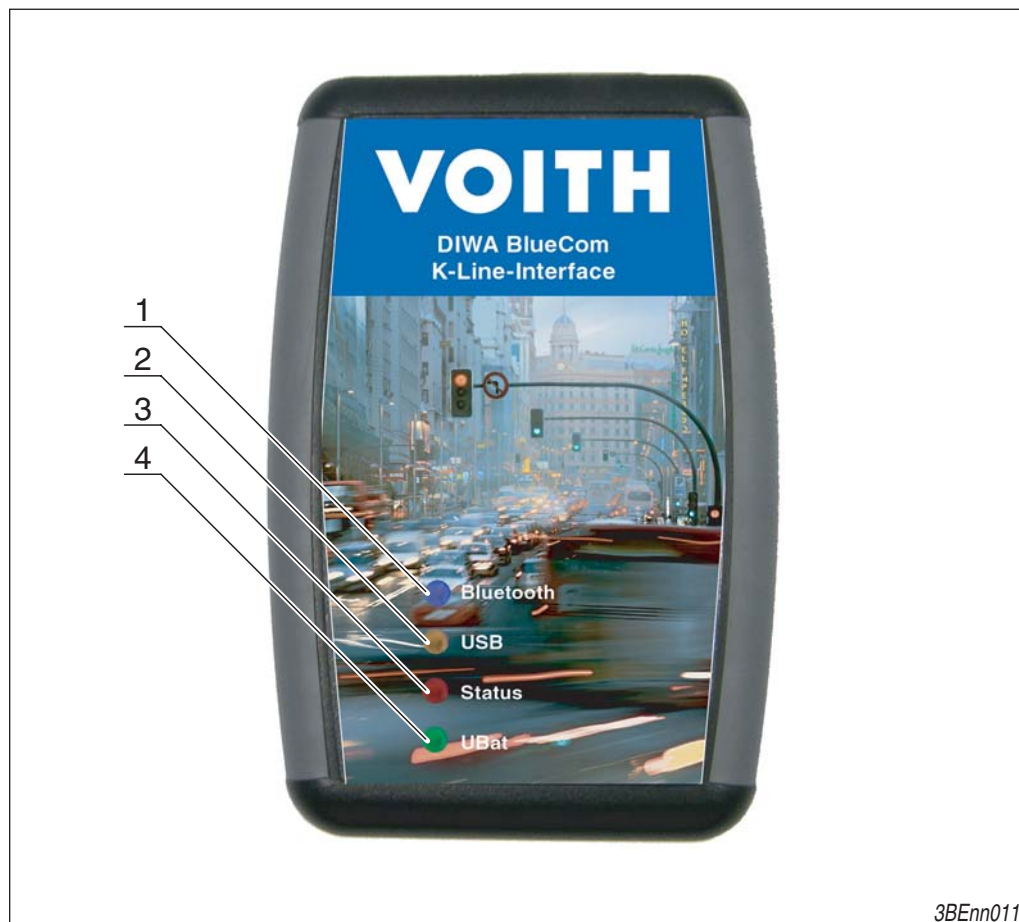


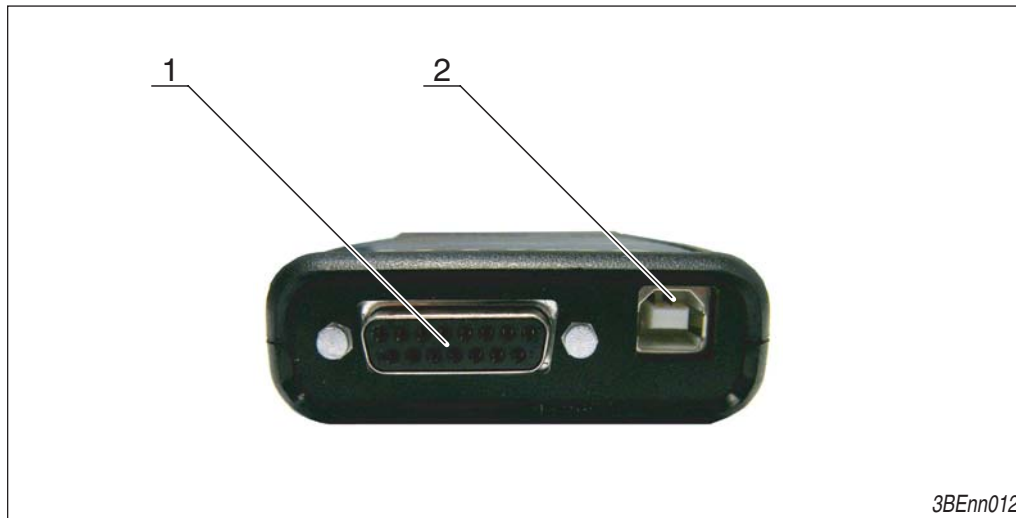
Fig. 3-12 LED display of the DIWA BlueCom K-line interface

The Bluetooth LED (1) lights up as soon as data is transmitted via Bluetooth between PC and control unit.

The USB LED (2) lights up as soon as data is transmitted via USB between PC and control unit.

The UBat LED (4) lights up as soon as the ignition is switched on.

The status LED (3) lights up as soon as the E200 control is in the programming mode.

3.7.3 Ports*Fig. 3-13 Ports***1** Port for diagnosis cable**2** USB port

Voith Turbo GmbH & Co. KG
Alexanderstraße 2
89522 Heidenheim
Germany
Phone: +49 7321 37 0
Fax: +49 7321 37 7618
E-Mail to: service-diwa@voith.com
Internet: www.voithturbo.com

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Engineered reliability.