



# DICE INSTALLATION INSTRUCTION



## CONTENTS

---

1	INTRODUCTION.....	3
1.1	SUPPORT.....	3
1.2	COMPONENTS.....	3
1.3	PRODUCT LINE-UP.....	5
1.3.1	REPLACEMENT PARTS.....	6
2	GETTING STARTED.....	7
2.1	PROCEDURE FLOWCHART.....	7
2.2	UNINSTALL BLUETOOTH STACK.....	7
2.3	PLUG IN SUPPORTED BLUETOOTH USB ADAPTER.....	8
2.4	INSTALL THE LATEST VERSION OF VIDA.....	8
2.5	INSTALLATION OF USB DRIVER FOR DICE.....	8
2.6	CHECK AND UPDATE THE INTERNAL SOFTWARE IN THE DICE UNIT.....	12
2.7	TEST DICE COMMUNICATION WITH VIDA.....	14
2.8	ADDING MORE DICE UNITS.....	20
2.9	CONNECTING THE DICE TO A VEHICLE.....	20
2.10	REMOVING A DICE UNIT.....	20
2.11	DICE FULL TEST BY USING THE DICE TEST UNIT.....	21
3	ADDING AN ADDITIONAL DICE UNIT IN VIDA.....	27
4	COMMUNICATION PROTOCOLS.....	28
4.1	BLUETOOTH.....	28
4.2	REMARKS ON BLUETOOTH.....	28
4.2.1	PERFORMANCE.....	28
4.2.2	SAFETY AND RELIABILITY.....	28
4.3	USB.....	28
5	DESCRIPTION OF STATUS LEDS.....	30
5.1	FIRMWARE STATUS.....	30
5.2	USB COM STATUS (YELLOW).....	31
5.3	BLUETOOTH COM STATUS (BLUE).....	31
5.4	VEHICLE INTERFACE STATUS (ORANGE).....	31
6	ABBREVIATIONS.....	33
7	HISTORY LOG.....	34
7.1	135EN02.....	34
7.2	135EN03.....	34
7.3	135EN04.....	34
7.4	135EN05.....	34
	INDEX.....	35

# 1 INTRODUCTION

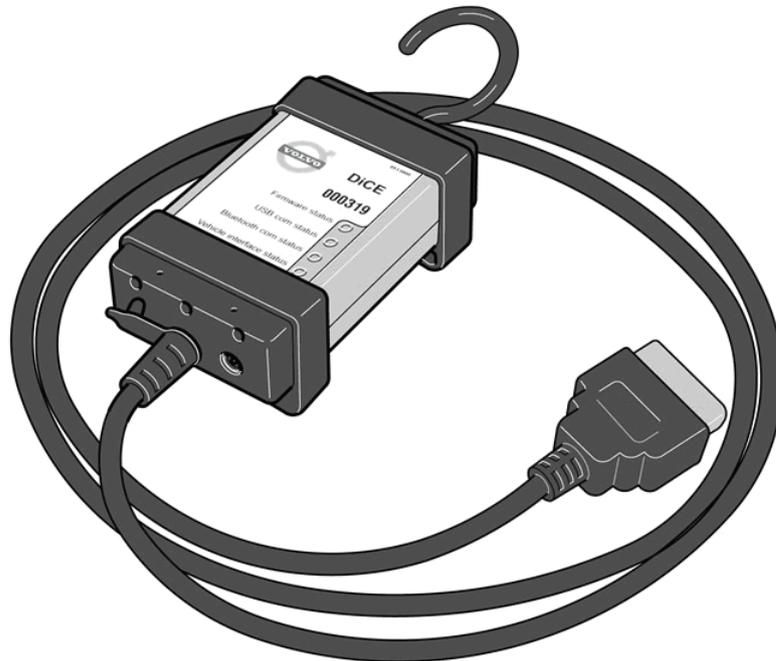
DiCE (Diagnostic Communication Equipment) is used together with VIDA All-in-one to communicate with the vehicle. Communication makes it possible to troubleshoot and diagnose the vehicle, as well as download software.

The technicians are given more flexibility as DiCE transfers information via Bluetooth between the vehicle and VIDA All-in-one. A USB cable can be used as an alternative to the Bluetooth communication.



## NOTE

The screenshots in this instruction might differ from those the user sees on the computer screen while making the installation depending on which operating system the computer has.



*Fig. 1 A DiCE unit*

## 1.1 Support

For support contact your local Helpdesk or submit a help request via [volvotechinfo.com](http://volvotechinfo.com).

## 1.2 Components

DiCE has an integrated OBD cable, which can be connected to the vehicle's diagnostic socket. When connected to the vehicle, DiCE is powered as long as the battery is charged.

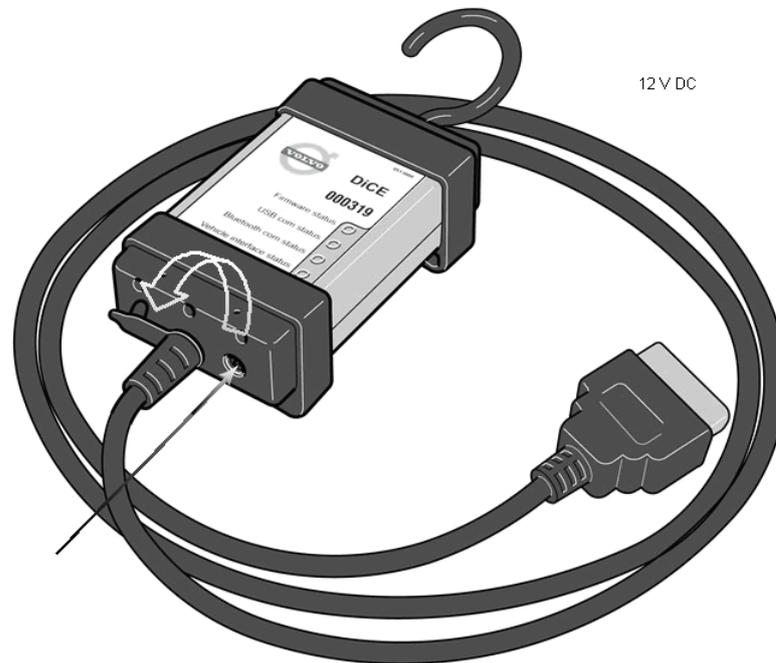
Use the DiCE unit's folding hook to hang it from e.g. one of the grab handles. The DiCE unit should be hung in such a way that the Bluetooth reception is optimised, i.e. a clear line of sight from the USB dongle to the DiCE unit.

**DiCE has four status LEDs that indicate:**

- Firmware Status
- USB Communication Status
- Bluetooth Communication Status
- Vehicle Interface Status

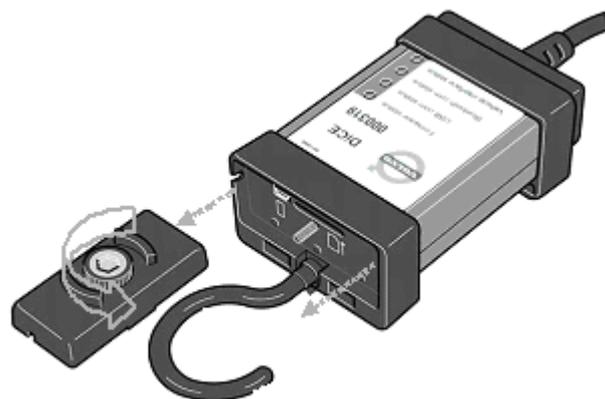
For more information, see *chapter 5 DESCRIPTION OF STATUS LEDS* on page 30.

DiCE has a DC input where a battery cable or adapter (12 V) can be connected. The adapter is used when upgrading and troubleshooting the DiCE. It may also be used when performing complex methods in VIDA, which requires the vehicle battery to be temporarily disconnected.



*Fig. 2 Attach power supply here*

On the other side of the unit there is a removable cover. To remove the cover turn the screw, see picture below:



*Fig. 3 DiCE unit with detached cover*

The inputs for USB [1] and memory card [2] are located here. Memory card (Secure Digital) is used with Volvo CAN Recorder.

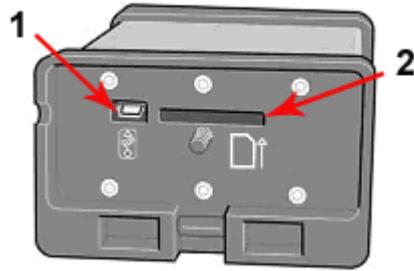


Fig. 4 DiCE unit without cover

In order to communicate wireless with DiCE, the VIDA client must also be provided with Bluetooth. The supported adapter for DiCE is Ezurio's USB-to-Bluetooth-adapter, which is connected to the computer's USB port. Please note that no third party Bluetooth dongles can be used with DiCE, only VCC DiCE equipment can be used.

When upgrading DiCE, a USB cable must be used. DiCE supports USB 2.0.

### 1.3 Product Line-up

In the tables below all part numbers available are explained.

Name	Part number	Purpose
DiCE	9513000	With integrated OBD cable.
DiCE Test Unit	9513001	Used for troubleshooting DiCE.
USB cable, 5 meters (16 feet)	9513002	Used for Vehicle communication, if Bluetooth is not used.
USB cable, 1 meter (3 feet)	9513003	Used when installing and updating DiCE software.
Battery cable	9513004	Used for troubleshooting and updating software for DiCE.
USB Bluetooth adapter	9513005	Used for wireless Vehicle communication.
USB extension cable 2 meters (7 feet)	9513006	Used as an extension for Bluetooth adapter.
USB extension cable 0.5 meter (2 feet)	9513007	Used as an extension for Bluetooth adapter.

### 1.3.1 Replacement parts

Name	Part number	Purpose
DiCE Plastic Hook	9989814	

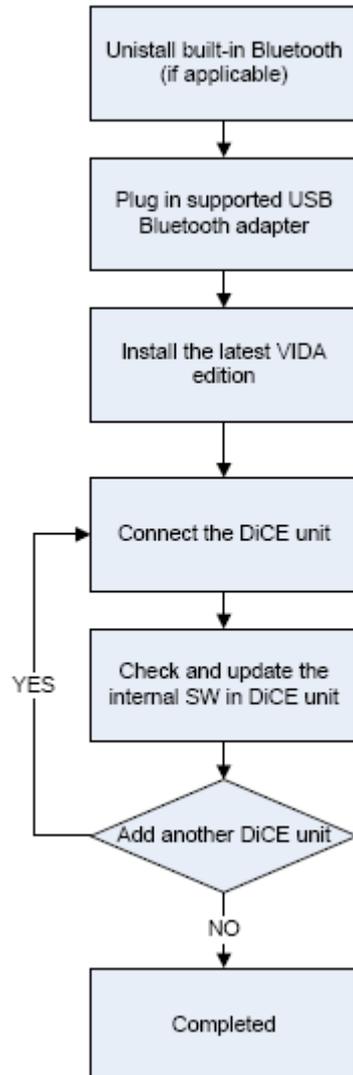
Contact SPX Corporation 1-800-345-3399.

## 2 GETTING STARTED

This chapter contains information about how to install the DiCE unit and test communication with VIDA.

### 2.1 Procedure Flowchart

The following flowchart shows the DiCE installation procedure. Please read the following chapters for details regarding the installation.

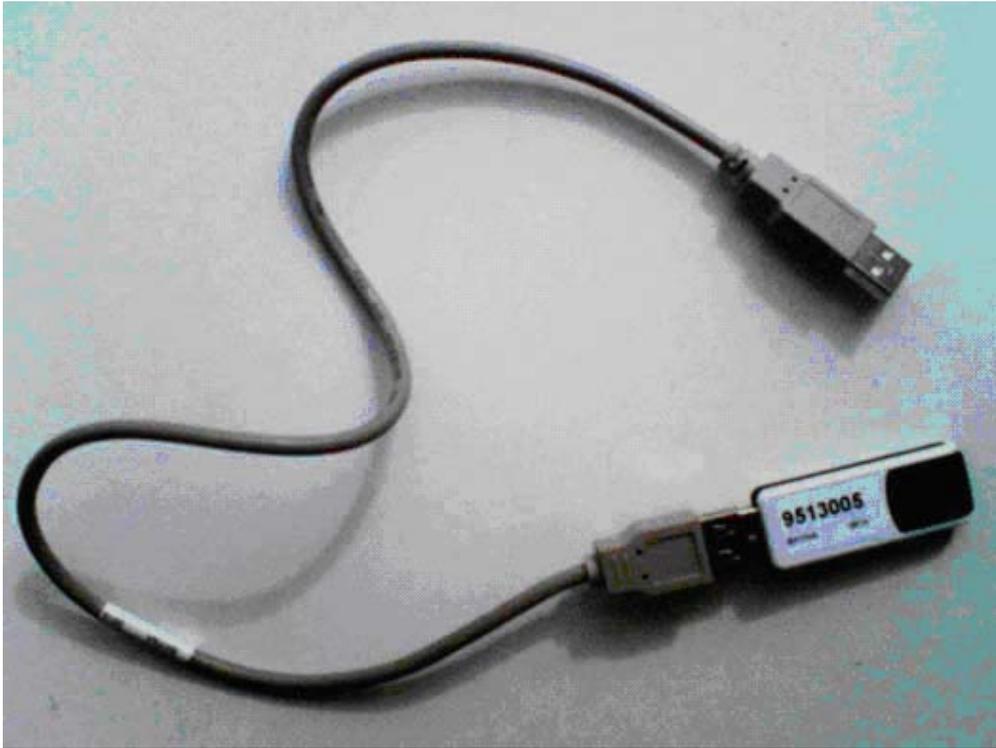


*Fig. 5 Installation procedure flowchart*

### 2.2 Uninstall Bluetooth stack

If your computer already has a bluetooth stack installed, it needs to be un-installed before DiCE can be installed. For more information on how to perform this operation, contact your Sales Company.

### 2.3 Plug in supported Bluetooth USB adapter



*Fig. 6 Bluetooth adapter*

Insert the adapter in the USB port. The only supported Bluetooth adapter is the Volvo supplied adapter, part number 9513005.

When the USB adapter is found and identified by the computer, the following message appears:



*Fig. 7 Message in the notification area*

### 2.4 Install the latest version of VIDA

Install the latest version of VIDA, according to the normal installation procedure.

### 2.5 Installation of USB driver for DiCE

For each new or additional DiCE unit that is going to be used in VIDA, the USB driver must be installed separately. This is done automatically in Windows when the DiCE unit is connected to a USB port. Carry out the instructions below:



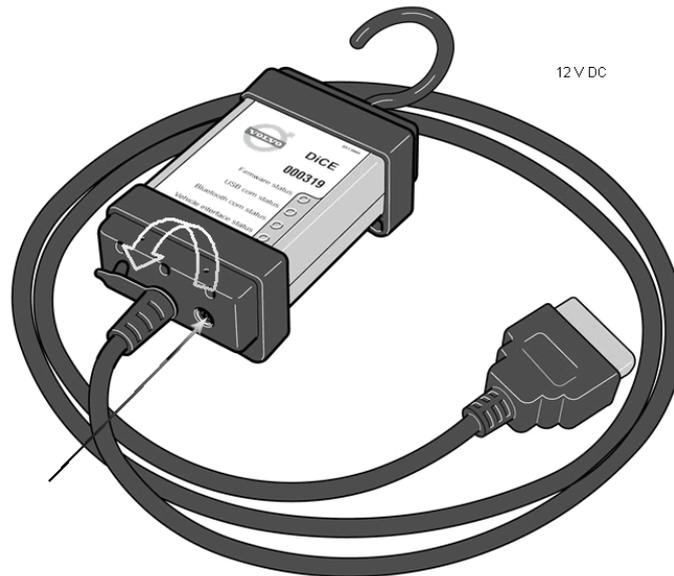
#### Note

To install the DiCE USB driver, the user has to have administrator's rights for the computer that is used.

**1. Power up and connect DiCE to a PC via USB**

Power up the DiCE unit by connecting it to the 12 V DC adapter, see the picture below. Alternatively, use the Battery cable (part number 9513004) and connect it to the vehicle battery.

→

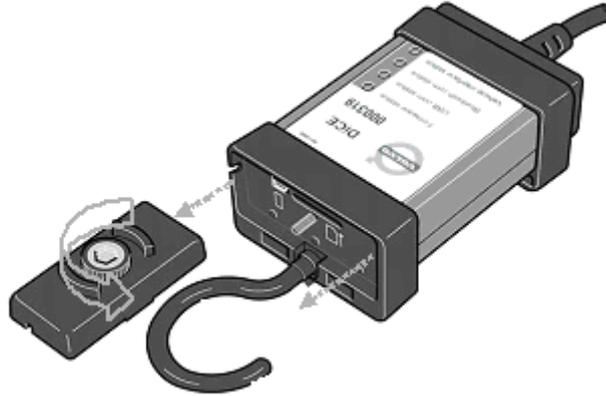


*Fig. 8 Attach power supply here*



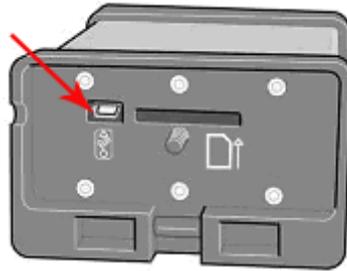
*Fig. 9 Battery cable attached*

2. Remove the cover of the DiCE unit by turning the screw on the cover.  
→



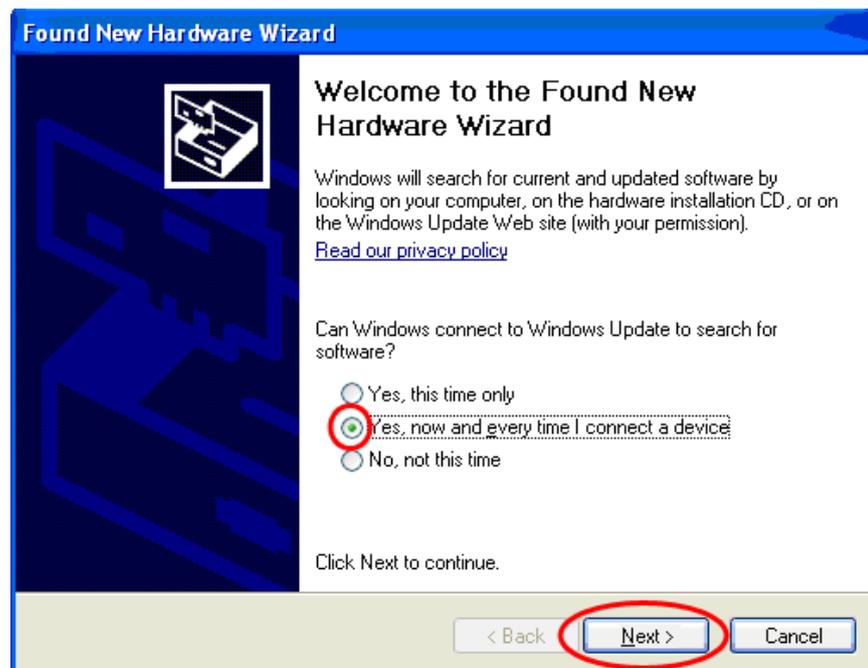
*Fig. 10 Remove the cover by turning the screw*

3. Connect a short USB cable to the DiCE unit.  
→



*Fig. 11 Input for USB*

4. Connect the USB cable to a free USB port in the computer. Detach the Bluetooth adapter cable temporarily if there is only one USB port in the computer.  
→ Windows will automatically install the DiCE unit when the USB cable is connected to the USB port. This might take several minutes.



*Fig. 12*

5. Follow the instructions on the picture above and click **Next**.

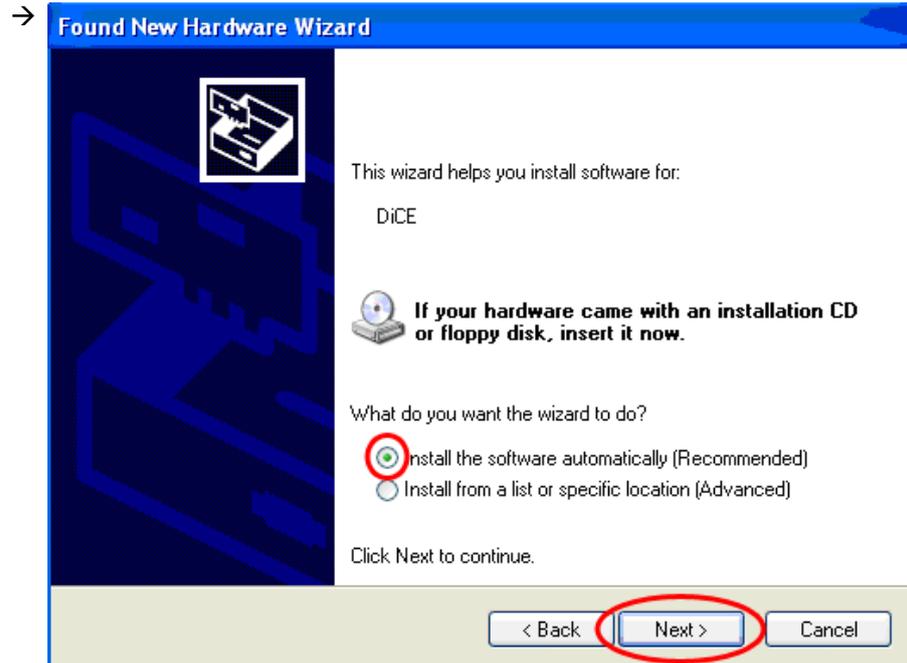


Fig. 13

6. Choose as marked and click **Next**.



Fig. 14

7. Click **Finish** to complete the installation. When done the following message appears:



Fig. 15 Message in the notification area

## 2.6 Check and update the internal software in the DiCE unit

Updating the internal software (also called firmware) in a DiCE unit is done via VIDA All-in-one or the DiCE Firmware Update application. This assumes that the USB driver has been installed for the DiCE unit, *see chapter 2.5 Installation of USB driver for DiCE on page 8*.

The DiCE unit shall be connected with a USB cable and 12 V feed. Ensure that the Firmware status LED is flashing green.

The user interface for updating software is available in English only.

### 1. Connecting DiCE

Connect the DiCE unit to a 12 V voltage supply.

→



*Fig. 16 Battery cable attached*

2. Connect the DiCE unit via the USB cable to the computer, *see chapter 2.5 Installation of USB driver for DiCE on page 8.*

→

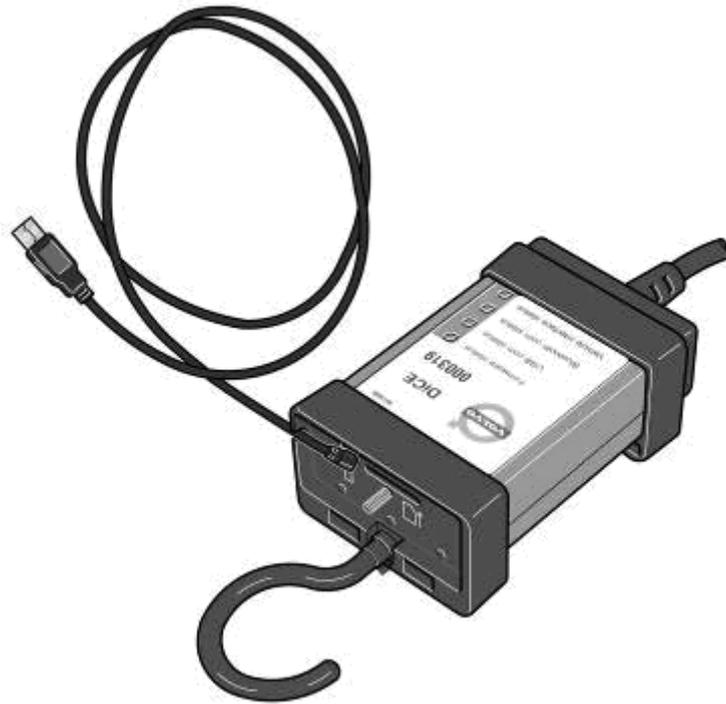


Fig. 17 USB cable attached

3. **Choose DiCE unit in VIDA**

Select the **VEHICLE PROFILE** tab and choose the appropriate DiCE in the Communication tool drop-down list.



**NOTE**

Do not click on the three dots next to the drop-down box. (This will start communication tests.)

→ The DiCE UPDATE button will appear.

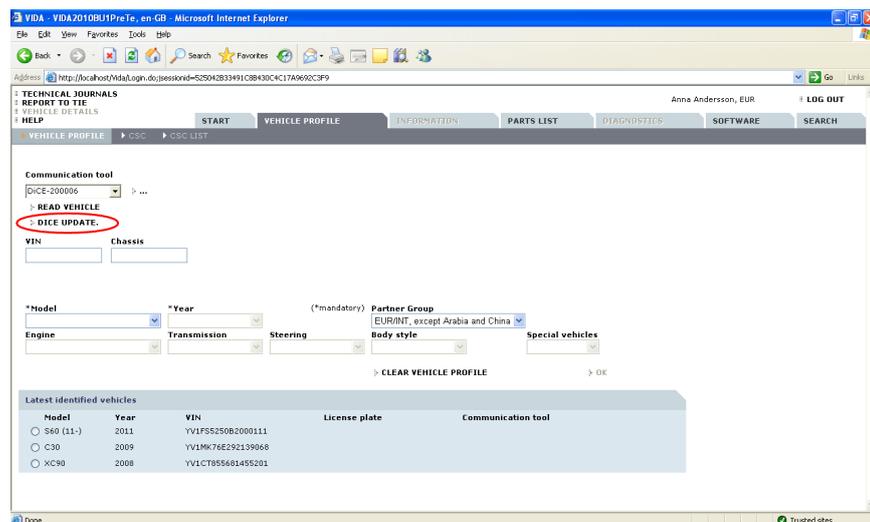
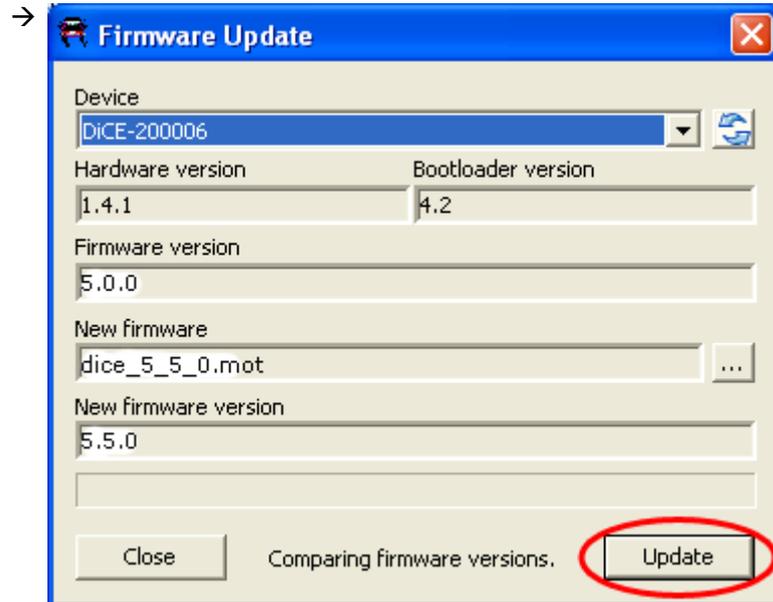


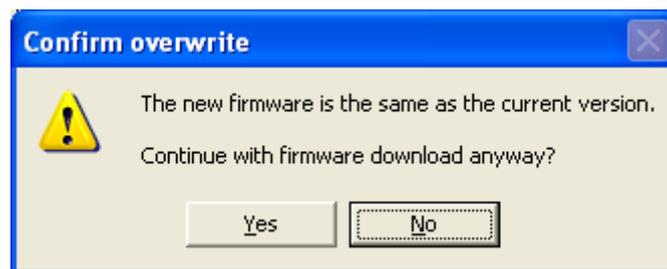
Fig. 18 DiCE update

4. Click **DiCE UPDATE**. The Firmware Update window is opened.  
The DiCE Firmware Update application can also be started from **Start → All Programs → DiCE → DiCE Firmware Update**.



*Fig. 19 Firmware updater*

5. **Updating the DiCE unit software**  
Ensure that the correct DiCE unit and software, "New Firmware file", are selected in the Firmware Update window. The required Firmware file will be sent separately. The first time DiCE is installed on a computer, the Firmware file must be located. It is located at C:\Program Files\DiCE \Tools \DiCE\_x\_x\_x.mot .
6. Click **UPDATE**.  
→ The update should not take more than a few minutes. If the DiCE unit already has the latest firmware, the dialogue box below is shown. Choose "No" to not load the firmware again or click "Yes" to reload the firmware.



*Fig. 20 Confirm firmware update*

7. Close the Firmware Update application tool by clicking **CLOSE**.  
→ If this fails, please restart the DiCE and retry.  
When the update is finished, the text "Device update OK" appears.

## 2.7 Test DiCE communication with VIDA

To test DiCE communication with VIDA, follow this procedure:

1. Connect the new DiCE unit by USB cable to your system.
2. Start VIDA All-in-one.

3. Choose the **VEHICLE PROFILE** tab.

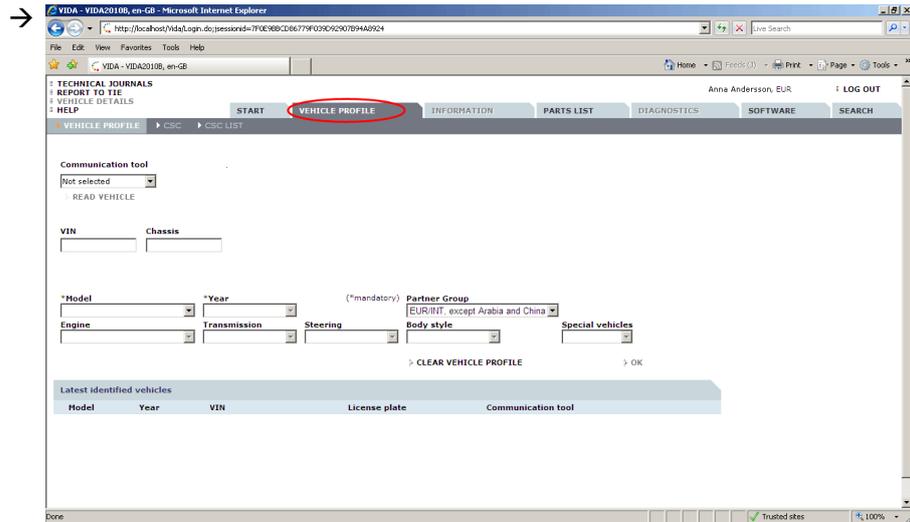


Fig. 21 Vehicle profile tab

4. Select the DiCE to be tested in the Communication tool drop-down list.

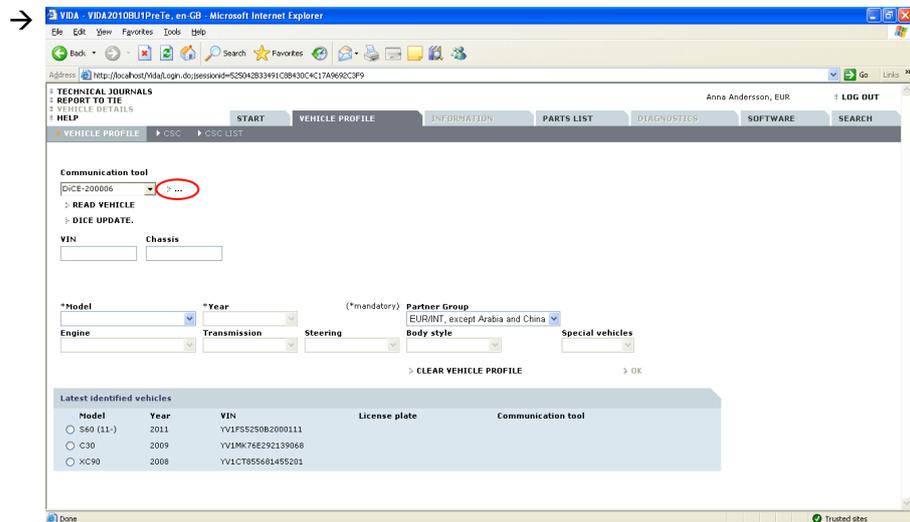


Fig. 22 Test DiCE

5. To test a DiCE, click on the button with three dots (...) to the right of the Communication tool drop-down list. The dots appears when the DiCE unit has been selected.



Fig. 23 Test/Remove DiCE window

6. Click on **TEST COMMUNICATION TOOL** to start the test of the USB connection.  
→ The "Test communication tool" window is opened.

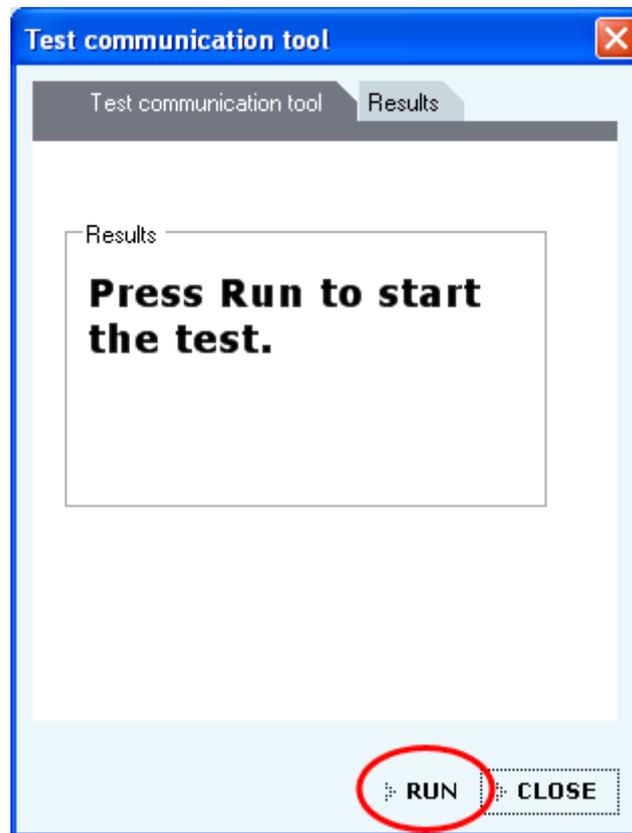
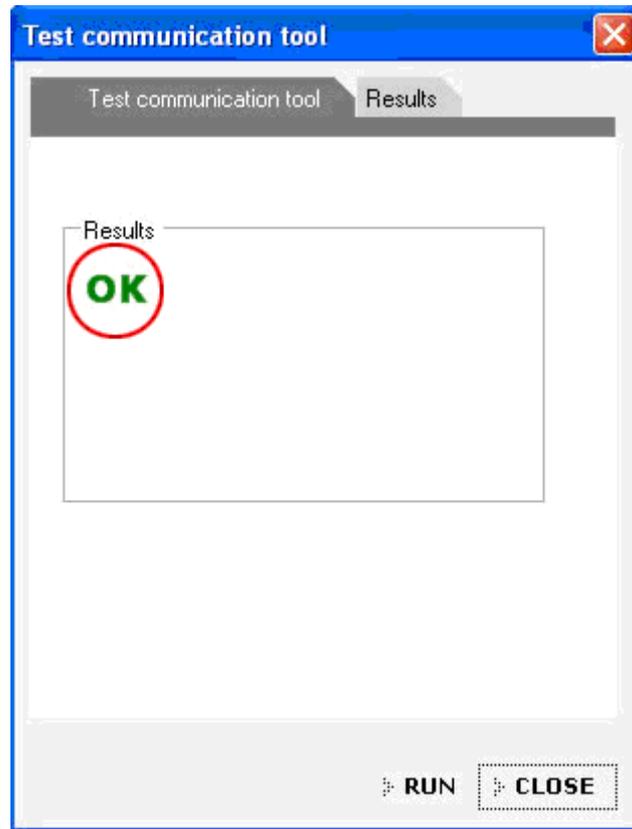


Fig. 24

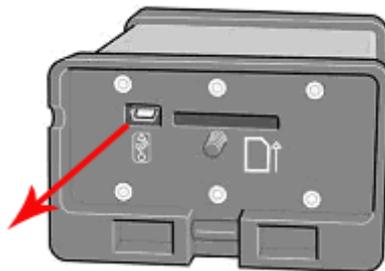
Step 7 to 14 are performed to ensure, verify and initiate communication between VIDA and the DiCE unit.

7. Click **RUN** to start the test.  
→ The result should be a green **OK**. See image below.



*Fig. 25*

8. Click on **CLOSE** in the "Test communication tool" window.  
Do NOT close the "Test/Remove DICE" window.
9. Remove the USB cable from the DiCE unit. Replace the cover. Note the positioning.  
→



*Fig. 26 Input USB*

10. Connect the Bluetooth adapter to a free USB port on the computer.



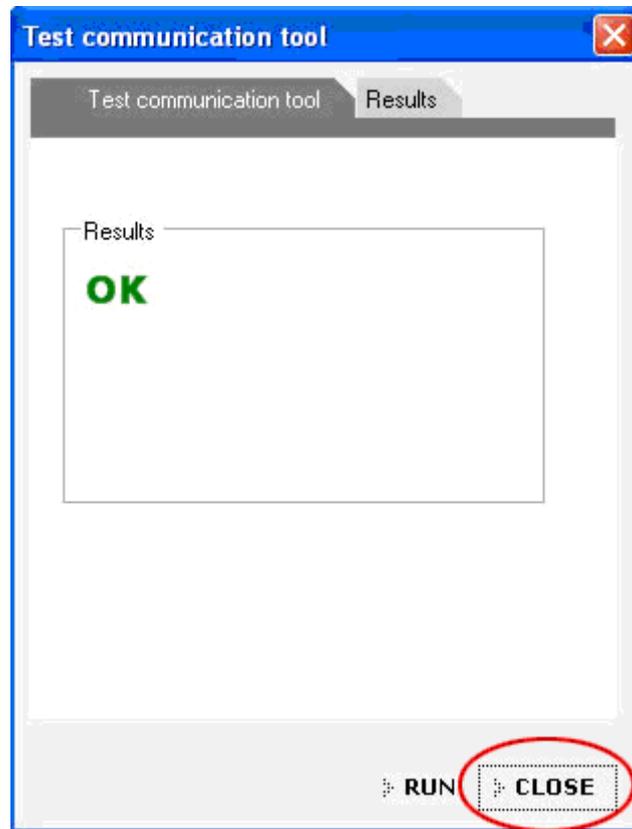
Fig. 27 Test/Remove DICE window

Click **TEST COMMUNICATION TOOL** to start the next test, (the Bluetooth connection).



Fig. 28

12. Click **RUN** in the "Test communication tool" window. The Bluetooth connection will be initiated and configured. This will take about one minute.  
 → When the Bluetooth connection test is finished, a green OK is shown. See image below.



*Fig. 29*

13. Click **CLOSE** in the "Test communication tool" window.



*Fig. 30 Test/Remove DICE window*

14. Close the window "Test/Remove DiCE" by clicking **CLOSE**. You have now successfully managed to install and configure the DiCE.  
 → The DiCE unit is now configured for both USB and Bluetooth connection at the VIDA client. If DiCE is connected with a USB cable, the communication will always go through the cable.

## 2.8 Adding more DiCE units

To add more DiCE units to VIDA, see *chapter 2.5 Installation of USB driver for DiCE on page 8* and the following two chapters. Repeat for each additional DiCE unit.

## 2.9 Connecting the DiCE to a vehicle

Connecting the DiCE to a vehicle is simple and straight forward. Carry out the following:

1. Ensure that the Bluetooth adapter is connected to the VIDA client.
2. Always ensure that the vehicle is connected to a battery charger before the DiCE is connected to the vehicle. DiCE is powered by the vehicle, not via USB.
3. Connect DiCE to the diagnostic socket in the vehicle. Hang the DiCE unit so that it is visible. Put the ignition key in position II.
4. Start VIDA All-in-one.
5. Choose the **VEHICLE PROFILE** tab in VIDA.
6. Ensure that the correct DiCE is chosen in the Communication tool drop-down.
7. Click **READ VEHICLE** to read the VIN number from the vehicle.

## 2.10 Removing a DiCE unit

All DiCE units that are installed and added to VIDA become Communication tools that can be selected in the drop-down list. To remove a DiCE unit, carry out the following:

1. Start VIDA All-in-one. Select the **VEHICLE PROFILE** tab.
2. Select the DiCE to be removed in the Communication tool drop-down list.

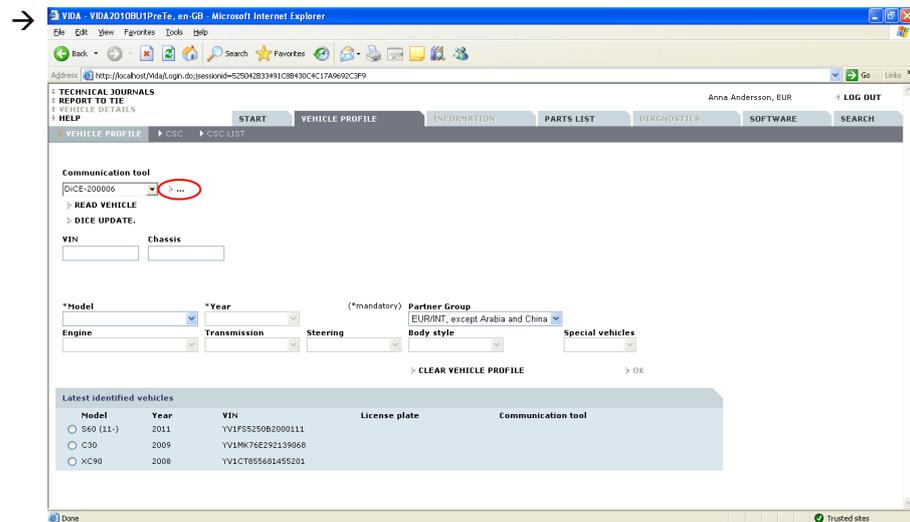


Fig. 31

3. Click on the dots beside the Communication tool box.

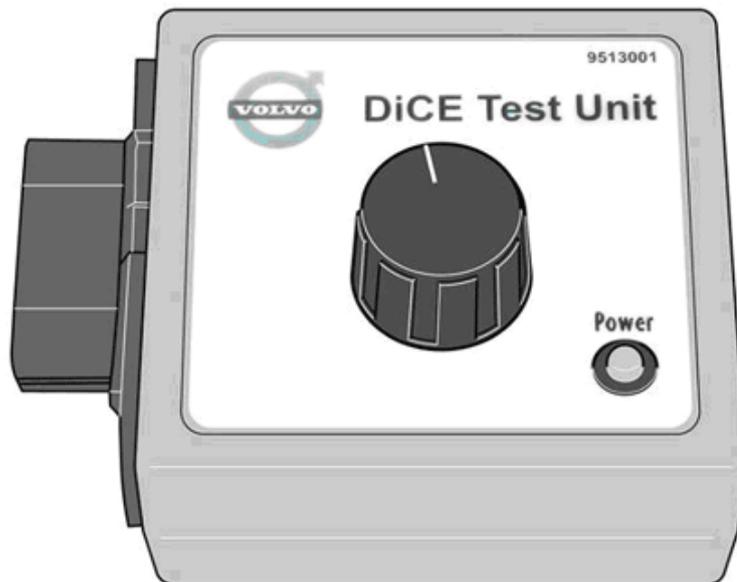


*Fig. 32 Remove DiCE*

4. In the DiCE unit dropdown, select the DiCE unit to be removed and click on REMOVE.

## 2.11 DiCE Full Test by using the DiCE Test Unit

Follow the steps below to perform a Full Test by using the DiCE Test Unit.



*Fig. 33 DiCE Test Unit*

1. Power up the DiCE by connecting it to a 12 V power supply. The power LED should be lit when connected correctly.

→



Fig. 34 Battery cable attached

2. Connect the DiCE to the DiCE Test Unit. The vehicle interface status LED is now lit (firm red light).
3. Start VIDA All-in-one. Select the **VEHICLE PROFILE** tab.
4. Select the appropriate DiCE in the Communication tool drop-down.

→

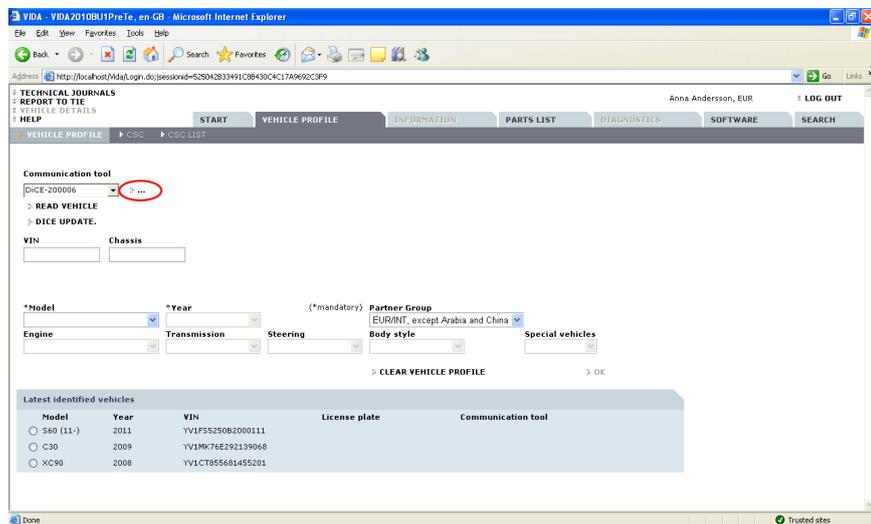


Fig. 35

- Click on the dots beside the Communication tool box.



Fig. 36

- Select the appropriate DiCE in the DiCE unit dropdown list, and click TEST COMMUNICATION TOOL.

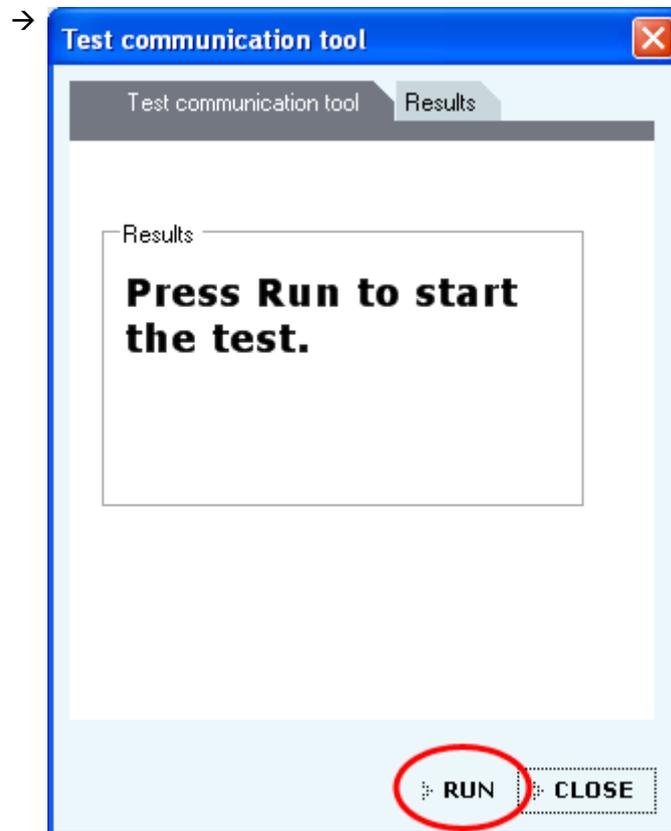


Fig. 37 Test communication tool

- Click RUN.

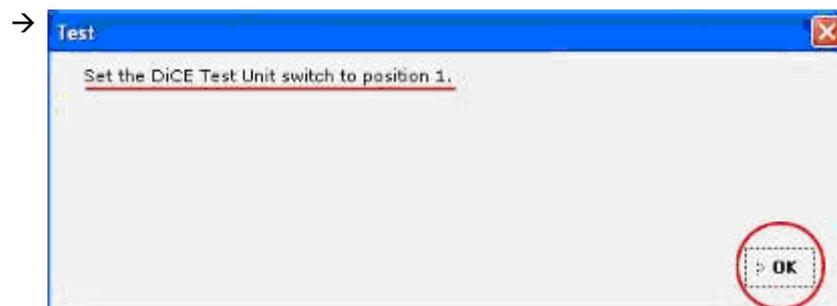
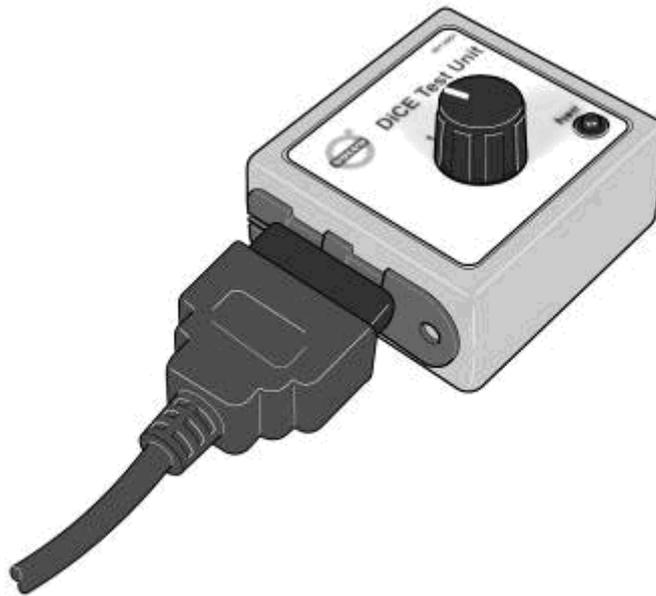
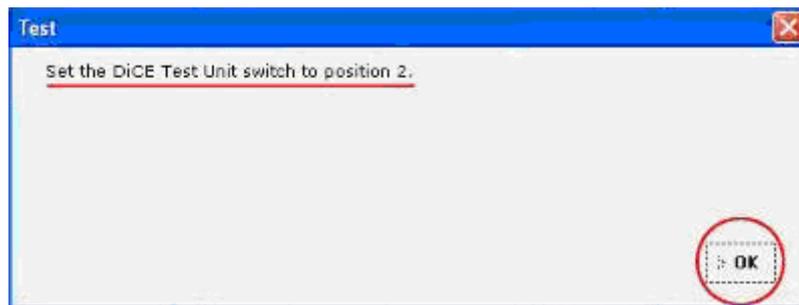


Fig. 38 DiCE dialogue

8. Set the DiCE Test Unit Switch to position 1. Click OK.  
→

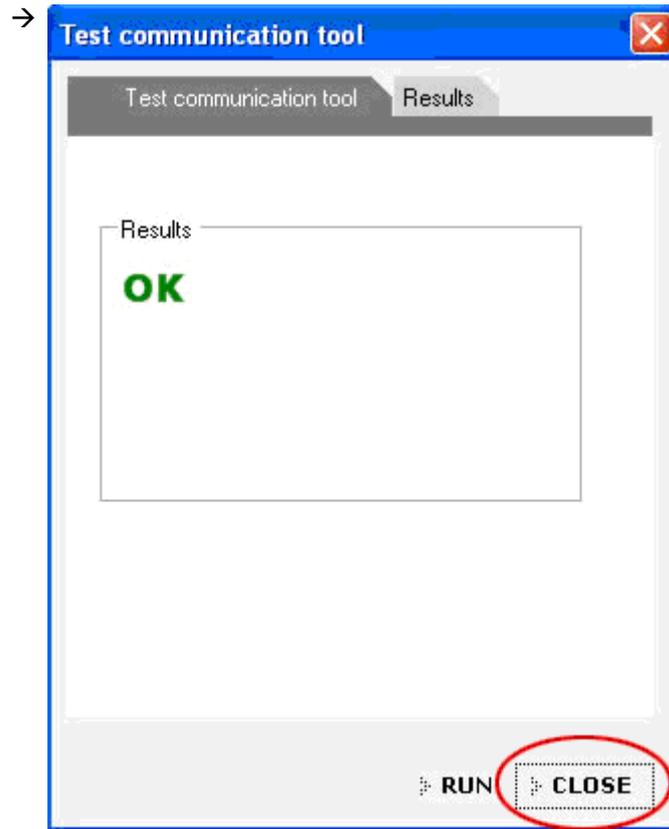


*Fig. 39 OBD cable contact*



*Fig. 40 DiCE dialogue*

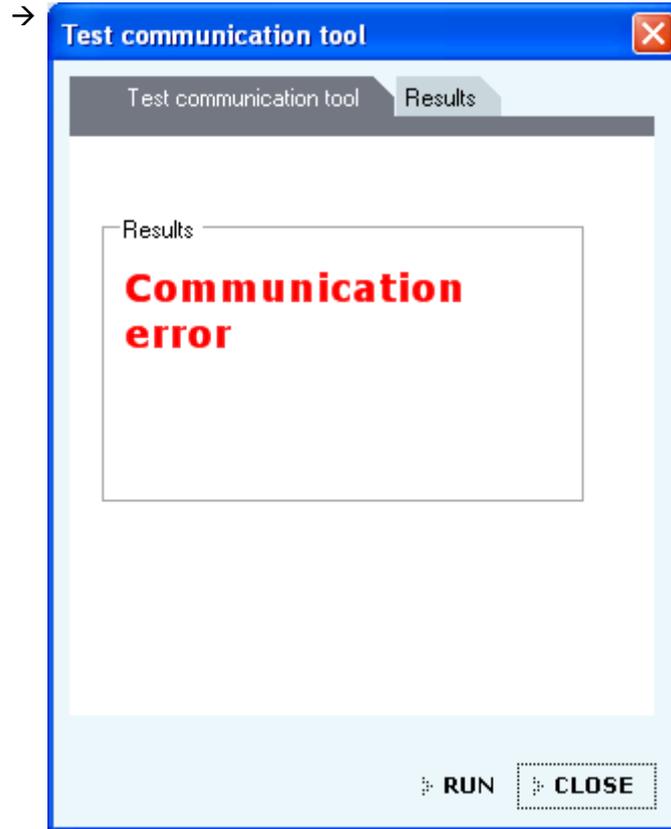
9. Set the DiCE Unit Switch to position 2. Click OK.



*Fig. 41 Test communication tool*

10. Click **CLOSE** to complete the test
11. You have now successfully performed a DiCE Full Test by using the DiCE Test Unit.

12. If this does not work, the following message will be shown. See image below.



*Fig. 42 Communication test error message*

Please check the switch positions and try again. If it still does not work, the DiCE Unit is out of order and has to be replaced.

Repeat this section for both DiCE connected via USB and Bluetooth.

### 3 ADDING AN ADDITIONAL DICE UNIT IN VIDA

---

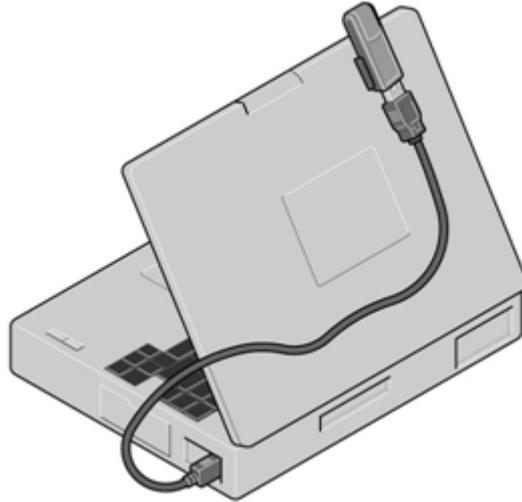
To connect DiCE and communicate with the vehicle, the unit must be added to the VIDA client. Make sure that the latest version of VIDA is installed, *see chapter 2.4 Install the latest version of VIDA on page 8*.

Every DiCE that is going to be used by a VIDA client must be configured separately. As a suggestion, install all DiCE units when configuring the VIDA application, *see chapter 2.5 Installation of USB driver for DiCE on page 8*.

## 4 COMMUNICATION PROTOCOLS

### 4.1 Bluetooth

Bluetooth is used for wireless communication between the vehicle and VIDA All-in-one.



*Fig. 43 Bluetooth adapter*

### 4.2 Remarks on Bluetooth

#### 4.2.1 Performance

To optimise the performance for wireless transfer, it is important to remember that some electronic appliances compete for the same frequency band. WLAN, DECT telephones, mobile telephones and other Bluetooth units are a few examples of equipment that limit the performance if they are used at the same time as DiCE in a workshop environment. The signals can be weakened by walls, furniture, panels, people etc.

DiCE has a wireless range of 100 meters with clear visibility. To achieve stable communication with the vehicle, the distance should be limited to approximately 50 meters. Hang the DiCE in the vehicle by using the hook and point the Bluetooth adapter towards the DiCE.

Make sure that no obstacles are positioned between the DiCE and the Bluetooth.

#### 4.2.2 Safety and reliability

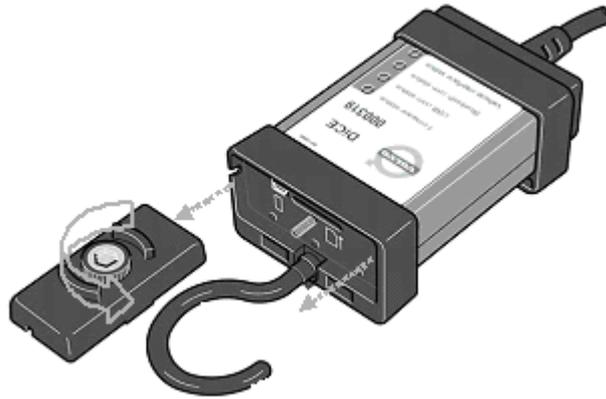
Bluetooth technology guarantees interference protection and increases data security in many ways. The technology uses 128 bit encryption to prevent data being read by another party in the event of the signal being hijacked, which is rare.

To guarantee a high level of reliability, the signal can be transmitted over 70 different frequencies (on the 2.4 GHz frequency band). DiCE shifts between different intervals up to 1600 times per second to find the most reliable frequency.

### 4.3 USB

A USB cable can be used as an alternative to Bluetooth. The USB cable is connected to the DiCE.

The cover of the DiCE unit is removed by turning the screw, as shown below.  
USB has priority over Bluetooth.



*Fig. 44 Remove the cover by turning the screw*

## 5 DESCRIPTION OF STATUS LEDS

This chapter will explain how to interpret the status LEDs on the DiCE unit. In the picture below, the four status LEDs are indicated:



*Fig. 45 DiCE Status LEDs*

**The four status LEDs are:**

1. Firmware status
2. USB com status
3. Bluetooth com status
4. Vehicle interface status

### 5.1 Firmware status

The Firmware status LED can either be red or green. See the table below for details on how to interpret the LED:

Firmware status	Description
Flashing green	DiCE is powered and operational.
Flashing red	Corrupt software or no software. Upgrading of internal software (Firmware) is necessary.
Flashing red and green alternately	DiCE is being programmed.
Continuous red	Serious fault in the DiCE unit.
Off	Standby.

## 5.2 USB com status (yellow)

The USB com status LED is yellow. See the table below for details on how to interpret the LED:

USB com status	Description
Continuous yellow	USB connection connected.
Flashing yellow	USB communication in progress.
Off	Standby.

When connecting USB while DiCE is powered, the status LED for USB flashes quickly for approximately three seconds.

The LED Status lamp for USB communication has nothing to do with the USB standard.

## 5.3 Bluetooth com status (blue)

The Bluetooth com status LED is blue. See the table below for details on how to interpret the LED:

Bluetooth com status	Description
Continuous blue	Bluetooth connection connected.
Flashing blue	Bluetooth communication in progress.
Off	Standby.

When DiCE is powered, the status LED for Bluetooth communication flashes quickly for approximately three seconds. If initiation fails, the status LED continues to flash. If no Bluetooth module is mounted on the DiCE unit or if the module is broken, the status LED is never lit.

The status LED for Bluetooth communication has nothing to do with the Bluetooth standard.

## 5.4 Vehicle interface status (orange)

The Vehicle interface status LED is orange. See the table below for details on how to interpret the LED:

Vehicle Interface status	Description
Flashing orange	Communication on one more of the vehicle's interfaces in progress.
Continuous orange	DiCE Test Unit connected.
Off	Standby.

Flashing orange indicates communication in progress. It is not possible to differentiate between:

- Internal communication (DiCE transmits something or loop back test is performed).
- Vehicle activity (DiCE not involved).
- Communication between DiCE and ECU in the vehicle. The status does not flash if DiCE transmits data without being connected to the vehicle or DiCE Test Unit.

## 6 ABBREVIATIONS

---

DECT – Digital Enhanced Cordless Telecommunications  
DiCE – Diagnostic Communication Equipment  
ECU – Electronic Control Unit  
LED – Light Emission Diod  
OBD – On Board Diagnostics  
TIE – Technical Information Exchange  
VCC – Volvo Car Corporation  
VIDA – Vehicle Information and Diagnostics for Aftersales  
WLAN – Wireless Local Area Network

## **7 HISTORY LOG**

---

### **7.1 135EN02**

The procedure flowchart has been updated. Information regarding supported bluetooth adapter added.

### **7.2 135EN03**

Document updated with new document template. The procedure flowchart has been updated. Information regarding DiCE Installation procedure has been updated. The structure of the document has been improved.

### **7.3 135EN04**

New images.

Parts numbers are updated.

Information about installation of USB driver has been updated.

Information about how to update DiCE internal software has been updated.

### **7.4 135EN05**

Information regarding the communication tool settings in VIDA has been updated.

## 8 INDEX

<b>A</b>		<b>R</b>	
Abbreviations .....	33	Remove .....	20
Adapter .....	8	Replacement parts .....	6
Administrator .....	8	<b>S</b>	
<b>B</b>		Safety and reliability .....	28
Bluetooth .....	3, 7, 28	Software .....	12
Bluetooth com status .....	31	Status LEDs .....	4, 30
<b>C</b>		Support .....	3
Communication protocols .....	28	<b>T</b>	
Connecting .....	20	Test DiCE .....	14
<b>D</b>		<b>U</b>	
Diagnostic socket .....	3	Update .....	12
DiCE Test Unit .....	21	USB .....	3, 28
<b>F</b>		USB com status .....	31
Firmware .....	12	USB driver .....	8
Firmware status .....	30	<b>V</b>	
<b>L</b>		Vehicle interface status .....	31
LED .....	30	VIDA .....	8, 27
<b>O</b>			
OBD cable .....	3		
<b>P</b>			
Part number .....	5, 6		
Performance .....	28		
Procedure Flowchart .....	7		