



**PORSCHE**



## **PIWIS Tester**

Operating instructions

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## 1. Important information



Before connecting, starting up and operating test units, always read the Operating Instructions of the tester thoroughly in order to rule out any uncertainty and associated risks with regard to safety when working with testers.

All operations and workings as well as the connecting of testers close to the engine and to the ignition system must be executed only when the engine does not turn and the ignition circuit is switched off.

### 1.1 Agreement

Your use of the product means that you accept the following conditions:

#### Copyright

Software and data are the property of Porsche AG or its suppliers and are protected against unauthorized reproduction under copyright laws, international contracts and other national legal provisions. The reproduction or sale of data and software or any part thereof is prohibited and punishable by law; in the event of violations, Porsche AG reserves the right to prosecute and to assert claims for damages.

### 1.2 User group

This product may only be used in the automotive sector by skilled personnel who are trained and instructed in it, such as motor-vehicle mechanics, electricians, foremen, technicians and engineers.

### 1.3 Employer's obligation

The employer is obliged to ensure that all measures geared towards the prevention of accidents, industrial diseases, labor-related health risks are taken and measures towards making the workplace fit for people to work in are carried out. Electrical engineering in Germany is subject to the accident prevention regulations of the trade association "Electrical Plant and Equipment as under BGV A2" (previously VBG 4). In all other countries the applicable national regulations or acts or decrees are to be adhered to.

#### Basic rules

The employer is bound to ensure that all electrical equipment and operating material is set up, modified and maintained by skilled electricians only or under the guidance and supervision of a skilled electrician in accordance with electrical engineering principles. Furthermore, the employer must ensure that all electrical equipment and operating material is operated in keeping with electrical engineering principles.

If a piece of electrical equipment or operating material is found to be defective, i. e. it does not or no longer complies with electrical engineering principles, the employer must ensure that the fault is rectified immediately and, in the event that imminent danger exists, also ensure that the electrical equipment or the electrical operating material is not used.

#### Tests (taking Germany as an example)

- The employer must ensure that all electrical equipment and operating material is tested to see if it is in proper working order:
  1. **Before starting up for the first time and, after any modification or repair work**, before the restart by a skilled electrician or under the guidance and supervision of a skilled electrician. A test prior to initial start up is not necessary, if the employer has received confirmation from the manufacturer or constructor stating that the electrical equipment and operating material has been produced in accordance with relevant accident prevention regulations.
  2. **At specific time intervals.** The periods are to be measured such that faults that occur, ones which must be expected to occur, are determined in good time.
- The test is to take the electrical engineering principles relating hereto into account.
- Upon request of the trade association a test manual is to be maintained into which specific entries are made.

## 2. Safety instructions



### Mains voltages High voltage



Hazardous voltages occur in both the lighting system and the electrical system of a motor vehicle. If contact is made with live parts (e.g. with the ignition coil), there is a risk of electric shock from flashover voltages caused by damaged insulation (e.g. ignition cables which have been attacked by martens). This applies to both the primary side and the secondary side of the ignition system, to the cable harness and the plug connections, to the lighting systems (Litronic) and to the tester connections.

#### Safety precautions:

- All testers must be connected to properly grounded, shock-proof sockets (in accordance with VDE 0100 or the corresponding country-specific regulations).
- Testers must always be connected using the power cables supplied with them.
- All extension cables must be fitted with shock-proof contacts.
- Any cables with damaged insulation must be replaced (e.g. power or ignition cables).
- Connect testers to the lighting system and switch them on before connecting them to the vehicle.
- Connect testers to the engine ground or to the battery (B-) before switching on the ignition.
- Always switch off the ignition before performing any work on the electrical system of the vehicle. The term „work“ includes connecting testers, replacing parts of the ignition system, removing assemblies (e.g. generators), connecting assemblies to a test bench, etc.
- Wherever possible, tests and settings should always be carried out with the ignition switched off and the engine stationary.
- If tests or settings are carried out with the ignition switched on or the engine running, care must be taken not to touch any live parts. This applies to all the connecting cables of the testers as well as to the connections of any assemblies at the test bench.
- Test connections must always be made using suitable connectors.
- Make sure that all test connections are properly plugged in and secure.
- Switch off the ignition before disconnecting the tester from the engine ground or the battery (B-).
- Never open the casing of the screen.
- Never open the housing of the tester.



### Danger of Implosion

There is a danger of the screen tube imploding if the screen is improperly handled (e.g. the tube is subjected to some form of impact, sudden temperature change, the glass is damaged).

#### Safety precautions:

- Make sure that the screen is well vented so that heat can properly dissipate.
- Never cover the vents (e.g. with a towel) while the screen is switched on.
- Never allow a fluid to penetrate the screen.
- Place the screen away from direct sunlight.



### Danger of acid burning



When **exhaust gas measurements are taken, the sampling hoses** which are used release a highly caustic gas (hydrogen fluoride) that can cause acid burning in the respiratory system when heated to temperatures in excess of 250 °C (482 °F) or in the event of fire.

#### Rules of conduct:

- Consult a doctor immediately after inhaling!



- Always wear gloves made of neoprene or PVC when removing residues left after a fire.
- Neutralize any residues left after a fire with a calcium hydroxide solution. This produces non-toxic calcium fluoride, which can be washed away.

**Acids and alkalis** can cause severe burning on unprotected skin. Hydrogen fluoride in combination with moisture (water) forms hydrofluoric acid.

The **condensate** which accumulates in the sampling hose and in the condensate container likewise contains acid.

When replacing the **O<sub>2</sub> measuring sensor**, bear in mind that it contains alkali.

When replacing the **NO measuring sensor**, bear in mind that it contains acid.

#### Rules of conduct:

- Rinse any affected parts of the skin immediately in water, then consult a doctor!
- NO and O<sub>2</sub> measuring sensors are hazardous waste and must be disposed of separately.

If liquid crystal escapes from a damaged **liquid crystal display**, it is imperative to avoid direct skin contact, inhalation and swallowing.

#### Rules of conduct:

- Wash the skin and clothing thoroughly with soap and water if it has come into contact with liquid crystal.
- If you have inhaled or swallowed liquid crystal, consult a doctor immediately!

If fluid (electrolyte) escapes from **batteries and rechargeable batteries**, avoid getting it on your skin or in your eyes.

#### Rules of conduct:

- If contact with skin or eyes happens nevertheless, wash the affected parts immediately with clean water and then consult a doctor.

## Safety instructions



### Danger of injury Danger of crushing

If the vehicle is not prevented from rolling away, there is a danger of people being crushed against a workbench, for example. Both running and stationary engines have rotating and moving parts (e.g. belt drives) which may cause injuries to fingers and arms. A special hazard is presented by electrically driven fans, in that they may be switched on without warning while the engine is stationary and the ignition is switched off.

#### Safety precautions:

- Take steps to prevent the vehicle from rolling away while it is being tested.  
Select the park position if the vehicle has an automatic transmission and apply the handbrake or lock the wheels with chocks (wedges).
- Operating staff must wear work clothes without loose bands and loops.
- Keep well away from rotating/moving parts while the engine is running.
- When working on or in the vicinity of electrically driven fans, allow the engine to cool down first, then disconnect the plug of the fan motor.
- Keep the tester connecting cables well away from all rotating parts.
- Lay the connecting cables in such a way that no-one can trip over them.
- Lock the brakes on the test system trolley so that it cannot roll away.
- Do not place heavy objects on or lean on the sensor holder.



### Danger of asphyxiation

Car exhaust fumes contain carbon monoxide (CO) - a colorless, odorless gas. If inhaled, carbon monoxide causes an oxygen deficiency in the body. Extreme caution is therefore essential when working in a pit, as some of the components of the exhaust gas are heavier than air and settle at the bottom of the pit. Caution is also necessary when working on LPG-driven vehicles.

#### Safety precautions:

- Always ensure effective ventilation and suction (especially when working in a pit).
- Always switch on and connect the suction plant in a closed area.



### Danger of burning

When working on a hot engine, there is a risk of injury from burning if such components as the exhaust gas manifold, the turbocharger, the Lambda sensor, etc. are touched or if parts of the body come too close to them. These components may be heated to temperatures of several hundred degrees Celsius. Depending on the duration of the exhaust gas measurements, the sampling probe of the exhaust gas measuring instrument may also become extremely hot.

#### Safety precautions:

- Always wear protective clothing, e.g. gloves.
- Allow the engine to cool down first (this also applies to auxiliary heating systems).
- Keep the tester connecting cables well away from all hot parts.
- Do not leave the engine running any longer than necessary for the test or setting.



### Danger of fire Danger of explosion



There is a risk of fire and explosion from fuels and fuel vapors when work is performed on the fuel system or on the mixture control system.

#### Safety precautions:

- Switch off the ignition.
- Allow the engine to cool down first.
- Avoid naked flames and potential sources of sparks.
- Do not smoke.
- Collect any leaked fuel.
- Always ensure effective ventilation and suction when working in closed areas.



### Noise

Noise levels in excess of 70 dB(A) can occur when measurements are carried out on a vehicle, especially at high engine speeds. Damage to hearing may result if human beings are exposed to noise at such levels over an extended period of time.

#### Safety precautions:

- If necessary, noise protection facilities must be provided by the owner at all workplaces in the vicinity of the testing area.
- If necessary, suitable personal noise protection facilities must be used by the operator.

### 3. General information


#### 3.1 Important information concerning deployment of the PIWIS Tester



#### Danger!

Risk of injury to persons during test and trial operations with the PIWIS Tester!

- The PIWIS Tester must be operated by a second person when the vehicle is being driven. **Never** by the driver!
- Never suspend the PIWIS Tester from the steering wheel.
- As a general rule, place the PIWIS Tester and other tools outside all airbag and rollover protection bar deployment zones.
- Test or system assessments may impair the drivability of the vehicle; for this reason, these should not be conducted on public roads.

 The current operating instructions for the PIWIS Tester are always available in the software start screen under the **"Help"** menu item. The further development of the PIWIS Tester means we reserve the right to make alterations.

#### 3.2 Use

The PIWIS Tester is a tester for mobile test technology in vehicle workshops. It enables a control unit diagnosis to be performed on electronic control units in a motor vehicle:

- the fault log to be read out
- actual values to be displayed
- actuators to be activated,
- the graphic display of actual values during a period (time curves) to be provided,
- the utilization of other control-module specific features such as interval reset to be displayed.

The PIWIS Tester is a precision instrument and should not be exposed to heat (e.g., direct sunlight), impacts or vibrations, magnetic fields, and excessive dirt.

#### 3.3 Transport

The connecting lines on the rear of the unit must be disconnected before transporting. Also, the PIWIS Tester should only be transported and stored in the included case.

#### 3.4 Connection to the vehicle

The PIWIS Tester is designed to operate at a supply voltage of 12 V (passenger vehicle) and 24 V (commercial vehicle).



#### Caution!

Danger of damage to property if improperly handled!

Make sure that the diagnostic cable on the PIWIS Tester is plugged in correctly. If incorrectly plugged in, the pins on the male connector may be broken off.

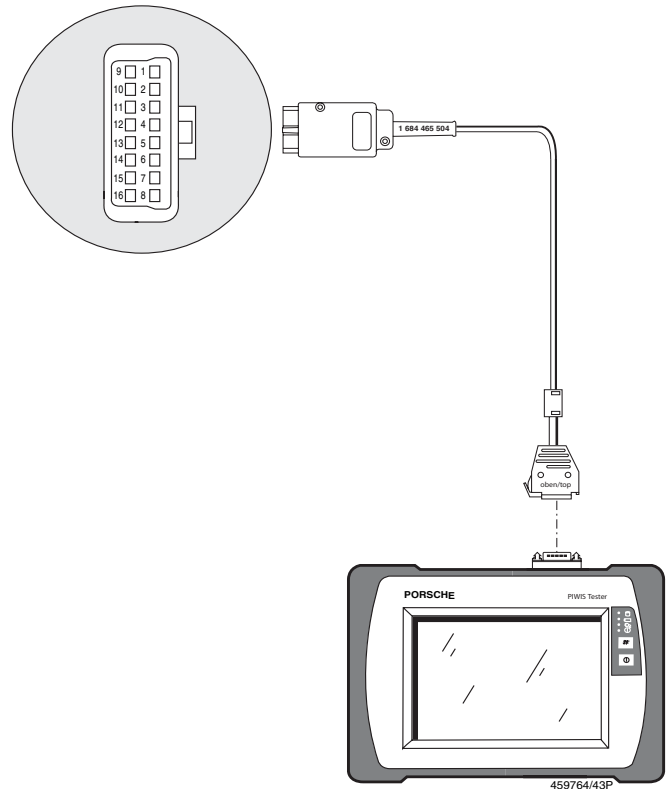


Figure 1: Connection diagram PIWIS Tester

#### 4. Delivery scope

- PIWIS Tester
- Power pack 90/264 VAC
- Power cord for power pack
- OBD Porsche Diagnostics cable
- USB mouse
- Red test cable
- Blue test cable
- Yellow test cable
- Black ground cable
- 2 red probe tips
- Black terminal
- Y connecting cable for supply
- 2 tracer pins
- 3 fuses (5 AF)
- Case
- External DVD drive (USB)
- Diagnostics adapter cable (26-pin to 8-pin)
- Test connector for OBD Porsche diagnosis lines
- Adapter socket for OBD-Porschediagnostics cable connection
- Operating instructions

#### 5. Technical description

The PIWIS Tester is a modular, portable diagnostic, information, and measuring system.

The unit contains a computer, hard disk with installed software, LCD display, and a Lithium-ion battery.

A virtual keyboard and a USB mouse is available for operation in addition to the tracer pin for the LCD touch screen. A country-specific PS/2 keyboard (special accessories) can also be connected.

Data and measured values can be printed using the USB-interface with an external printer, e.g., PDR 370 (special accessories).

The LCD display is used as the display. An external monitor can also be connected.

The PIWIS Tester and the accessories are housed in a protective case.

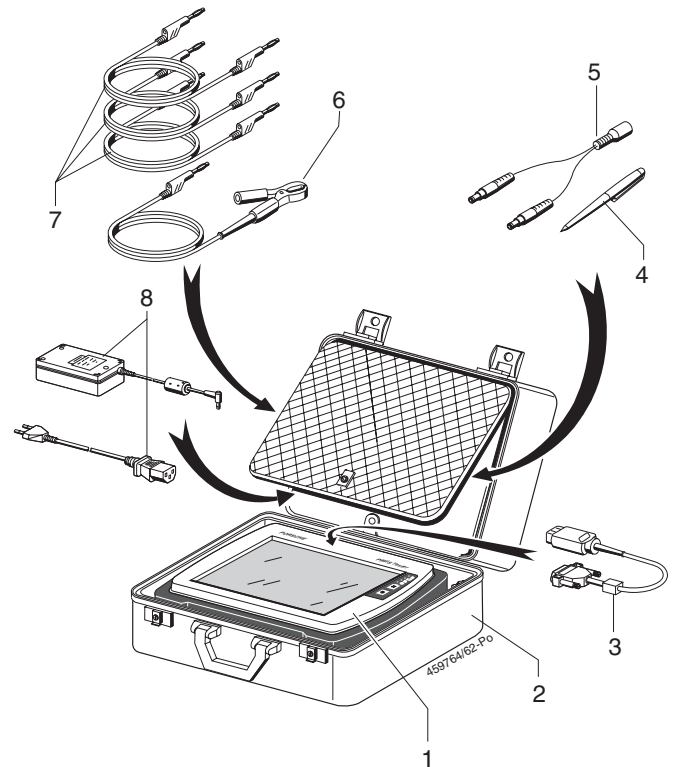


Figure 2: Case layout PIWIS Tester and accessories

- 1 PIWIS Tester
- 2 Case
- 3 OBD Porsche Diagnostics cable
- 4 Tracer pin
- 5 Y-connection piece to connect the PIWIS Tester and the DVD drive to the power pack.
- 6 Ground cable with terminal
- 7 Cables for the multimeter (for future expansion)
- 8 Power pack with German power cord

## 5.1 PIWIS Tester



### Caution!

Danger of damage to property if improperly handled!

There is the risk of short-circuit for the vehicle battery because of the metallic housing base, when setting the PIWIS Tester in the engine compartment. If the KTS 650 is hooked onto the steering wheel, there is a risk of injury if the airbag is deployed.

### 5.1.1 Operating and display unit

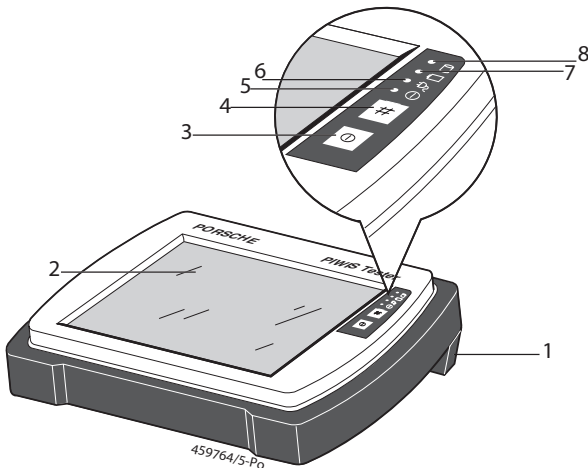


Figure 3: PIWIS Tester operating and display unit

- 1 Handle
- 2 LCD display with touch screen
- 3 On/Off button
- 4 Virtual keyboard
- 5 LED for Unit on
- 6 LED for external supply
- 7 LED for battery charging state
- 8 LED for access to hard disk

### 5.1.2 Terminal strip

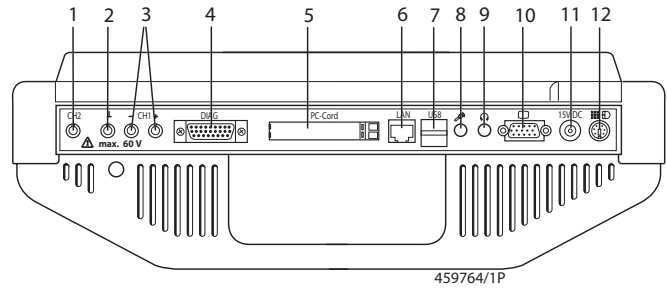


Figure 4: PIWIS Tester connector strip

- 1 Connection jack for oscilloscope and U/I measurements (CH2; for future expansions)
- 2 Ground jack
- 3 Connection jack for oscilloscope and U/I/I measurements (CH1; for future expansions)
- 4 Connection jack with Adapter socket for diagnostics cable connection
- 5 PCMCIA channel
- 6 Connection jack (RJ45) for network (LAN)
- 7 USB ports for mouse, printer or DVD drive
- 8 Connection jack for microphone
- 9 Connection jack for headphones
- 10 Connection jack for external monitor (video output)
- 11 Connection jack for power pack
- 12 Connection jack for country-specific keyboard, (no connection jack for a PS/2 mouse)

On the rear of the PIWIS Tester is a legend for the terminal strip.

## 5.2 Keyboard

The PIWIS Tester can also be operated using an external PS/2 keyboard. The PS/2 keyboard (Connection, see Fig. 4, Pos. 12) is available as a special accessory in various country-specific designs.

## 5.3 Mouse

Only a USB mouse (scope of delivery) can be connected (Connection, see Fig. 4, Pos. 7) to the PIWIS Tester.

## 5.4 External monitor


When connecting an external monitor (Connection, see Fig. 4, Pos. 10), the same user interface appears as can be seen on the LCD display of the PIWIS Tester. Both displays are active. Do not switch the PIWIS Tester on until the monitor has been connected to the tester and switched on.



## 6. Commissioning the PIWIS Tester

### 6.1 Before switching on the first time

Before putting the unit into operation, make sure that the electrical power system voltage and the voltage specified on the power pack are the same (use the accompanying power cord).

 The German power cord is included in the scope of delivery. Other country-specific power cords are not included in the scope of delivery.

### 6.2 Recharging the battery

The battery of the PIWIS Tester is always being charged automatically if connected to an external power supply. If a battery is nearly empty, it takes approximately 3 hours to be ready for operation and capable of powering the PIWIS Tester. The LED for the display of the battery charging state flashes when the charge is < 80%. If the battery is charged < 20% , a warning is (beep) signaled. The battery should immediately be charged again.


### 6.3 Installing the operating system and diagnostics software

The operating system Windows XP and the current PIWIS software is pre-installed in English on the PIWIS Tester.


### 6.4 Power supply


The PIWIS Tester can be operated with the following power supplies:

- Power pack (only use the power pack included in the scope of delivery!).
- Vehicle battery (supply is via the OBD Porsche cable connected to the diagnostic socket in the vehicle. The voltage of the vehicle battery (UBatt) should be at least 12 V).

 The power consumed by the PIWIS Tester can discharge the vehicle battery when in operation for a long time. In this case power the PIWIS Tester additionally with the power pack.

- Internal battery (see Chapter 6.4.2).

 Do not operate the PIWIS Tester without the battery.

 If the PIWIS Tester is only operated with the battery, the charging state LED of the tester lights up (Figure 3; item 7).

#### 6.4.1 Battery operation of the PIWIS Tester


The fully charged battery integrated in the PIWIS Tester is designed as a buffer battery to ensure approx. 1 hour of independent operation. Therefore, it is essential to ensure that a continuous external voltage supply (power pack) is available during this time period when the PIWIS Tester is being used.

#### 6.4.2 Charging the battery

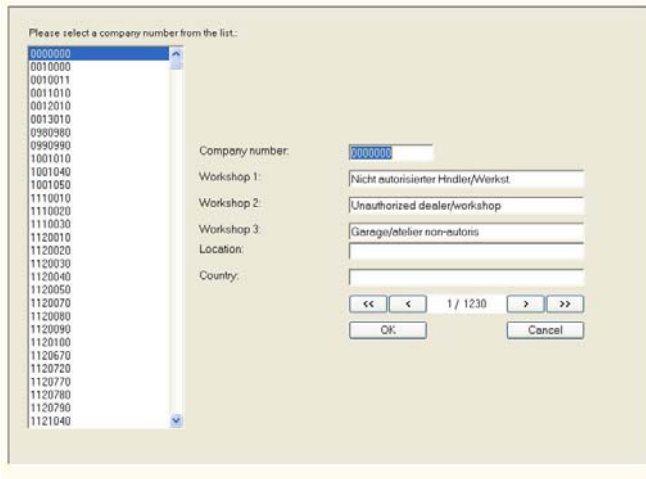
The charging of the battery in the PIWIS Tester is controlled automatically. Whenever the PIWIS Tester is connected to the power pack or to the vehicle battery (via the diagnostic cable/ adapter lead connected to the diagnostic socket in the vehicle), the battery is being charged. As long as the battery capacity is less than 80%, the charging state LED flashes when the PIWIS Tester is switched off while the battery is being charged (Figure 3, item 7), and when the PIWIS Tester is switched on, the LED for the external supply flashes (Figure 3, item 8). The charging process ends on reaching the maximum capacity.

## 6.5 Switching the PIWIS Tester on/off


### 6.5.1 Putting the unit into operation

Switch on the PIWIS Tester using the  button (Figure 3, item 3). After Windows XP starts up, the PIWIS software is started. Now you have to select the Porsche operating number and enter the operating data which release the PIWIS Tester. These settings are stored **permanently**.

### 6.5.2 "Switching on the first time" diagnostics



Selecting the dealer

 Select your dealer address. If the dealer address is not present, use a similar address as a template and make changes to it.

Enter a new address or change the existing address and confirm with "OK".



Saving data

The user must expressly confirm the specifications displayed. If "OK" the dealer address is saved **permanently**. If "Cancel" the previous screen is displayed.




The PIWIS Tester is now set to the respective dealer address/number. The PIWIS tester is shown in the start screen „PIWIS user interface“ after the device has been switched on.



Start screen "PIWIS user interface"

### 6.5.3 Switching off the PIWIS Tester

There are two ways to switch off the PIWIS Tester:

-  Press the On/Off button.
  - In the start screen of the PIWIS user interface, click on "Close" and then „Turn off“.
-  If the PIWIS Tester can no longer be operated due to a computer error, simultaneously pressing the  (on/off) button (Figure 3, item 3) and the # (virtual keyboard) button (Figure 3, item 4) for at least 3 seconds will switch off the PIWIS Tester.

## 7. Operation PIWIS Tester

The unit is operated via:

- the touch screen with tracer pin, or
- the virtual screen keyboard with tracer pin, or
- the USB mouse, or
- a PS/2 keyboard.

### 7.1 Touch screen with tracer pin

The touch screen of the PIWIS Tester is operated using the tracer pin. The tracer pin has essentially the same functions as the mouse.



#### Caution!

Danger of damage to property if improperly handled!

- Only operate the touchscreen with the tracer pin.
- Do **not use sharp objects** such as screwdrivers which could damage the touchscreen.

- Clicking once with the left mouse button corresponds to the touching the tracer pin once on an icon, for example, or positioning the cursor in an entry field.
- Double clicking with the left mouse button corresponds to touching the tracer pin to the touch screen twice. This can be used to start an application, for example.
- Clicking with the right mouse button corresponds to pressing the tracer pin on the touch screen for more than 2 seconds and opens any existing help menus.

### 7.2 Virtual screen keyboard with tracer pin

The PIWIS Tester provides you with a virtual keyboard. When you press the # key (see figure 3; item 4) the virtual keyboard is opened.




Virtual screen keyboard

Tap the button you want transferred to the entry field with the tracer pin.

Clicking on the shft button will change the keyboard to upper case characters.

## 8. PIWIS user interface

In the start screen of the PIWIS user interface, you can select the language for all PIWIS modules and their content.

 The language configured in the PIWIS user interface is not accepted in the control unit diagnostics for all vehicles. In these cases, you must also change the language ion the control unit diagnostics with „F7 / Configuration Setting / Language“.



PIWIS user interface start screen

### 8.1 PIWIS user interface start bar

The start bar contains 8 menus with the following functions:

#### Diagnostics:

Selection of a vehicle model and start of control unit diagnostics with selected model. In addition to this general model special functions can also be called up.

#### Wiring Diagrams:

Wiring diagrams can be called up here. You can view these on screen and print them out.

#### Fault finding:

Guided fault finding can be called up. You are supported here by the PIWIS tester when fault finding.


#### Information:

Current information over PIWIS.


#### Settings:


In this menu you can set the following system settings:

- Diagnostics update CD/DVD  
Start update of PIWIS module.
- Touchscreen calibration  
Carry out touch screen adjustment (see Ch. 12).
- Screen brightness:  
Changes contrast of LCD display.

 Different screen brightness values have been saved for rechargeable battery mode and for external power supply

- **Printer:**  
Change the printer settings, select a new standard printer, control network printers and install a new Microsoft certified printer.
  - **Network:**  
Change the network configuration and install new PCMCIA network cards.
  - **Version information:**  
Display of installed programs and their versions.
  - **Date / Time:**  
Change date and time.
  - **System self test:**
    - Self diagnosis of the system with Windows diagnosis, network plant self diagnosis and hard drive diagnosis.
    - Hard drive repair (hard drive test is carried out).

 As the hard drive test can take up to one hour, the power supply must be connected.

    - Test PAG-Diagnostic plug  
Check the OBD-Porsche diagnosis line (Ch. 10).
    - Show result  
After the self-diagnosis or the hard drive repair has been carried out, the result can be displayed.
  - **Remote access:**  
Start the remote access for the support.
  - **Transfer:**  
Data from the PIWIS tester is transferred to a network drive.
  - **Antivirus:**  
Search for and remove viruses in the system.
  - **Firmwareupdate:**  
Updating of firmware for installed SD module. This is only necessary if requested by the PIWIS tester.
-  If the Update window is only briefly displayed, then the current firmware is already installed.

**What's new:**

New and modified content and data of each PIWIS version is displayed.

**Help:**

Online Help start for your PIWIS tester. Here you will find application examples on operation of the control unit diagnostics' software.

**Close:**

Click on „Turn off“ in the log-off window to switch off the PIWIS tester.

## 9. Measuring module

The PIWIS Tester provides a 2-channel multimeter and a 2-channel oscilloscope.



**Caution!**

Danger of damage to property if improperly handled!

Only use the accompanying measuring cables with touch protection. Always connect the measuring cables first to the PIWIS Tester and then to the vehicle.



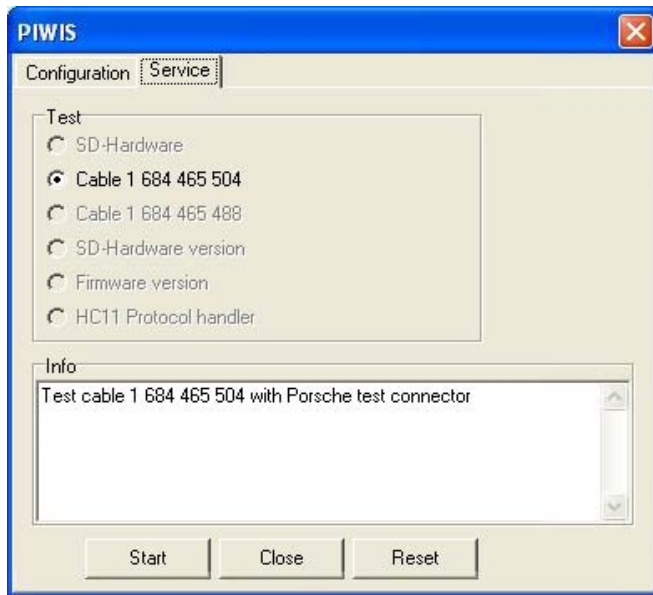
Use the PIWIS Tester only on the vehicle and not for measuring AC / DC voltages > 60 V.

If no diagnostic line is connected, the PIWIS Tester must be connected to the vehicle ground using the earth cable supplied before any U, R or I measurements are taken. Measuring without a ground cable may result in voltages which are dangerous to life due to static charge. Connect the ground cable as close as possible to the object of measurement.

## 10. Test PAG-diagnostic Plug

Carry out the test based on the following procedure:

1. Connect the 15 V connection of the power pack with the plug socket of the test connector.
2. Connect the 15 V connection of the test connector with the plug socket of the power pack on the PIWIS tester (Fig. 4; Pos. 11).
3. Insert the OBD-Porsche diagnosis line (1 684 465 504) in the PIWIS tester (Fig. 4; Pos. 4).
4. Connect the test connector with the OBD-Porsche diagnosis line.
5. Switch on the PIWIS tester.
6. In the start screen of the PIWIS user interface, start „Settings / Check diagnosis cable“.



7. Click on „Start“.

The test routine for testing the OBD-Porsche diagnosis line is started. The result of the test is then shown in the Info window. If the test has been completed successfully, the „No Errors“ message appears.

If an error is shown, check all connections again and repeat the test. To carry out a further test, you must first confirm the “reset“ button and start the test again.

If an error is still shown, repeat the test with a different OBD-Porsche diagnosis line (if available).

After the test has been carried out, contact PIWIS Support with details of the error and agree on further procedure.

## 11. What to do if

- **the device cannot be switched on and the display stays dark or a beep tone can only be heard briefly.**

The capacity of the internal batteries is insufficient to start the unit. Connect the external power pack or the diagnosis lead to the vehicle (ignition "on") to make it ready for operation and to charge the battery.

- **the unit does not react to any button command.**

The unit must be put in a defined stated. **To do this, press the 0 and # for approx. 3 seconds.**

**!** Only do this if the unit will not respond to pressing any button. Switching it off in this manner can cause data loss on the hard disk if it is done during regular operation. Data created within this diagnostic application could require entering again.

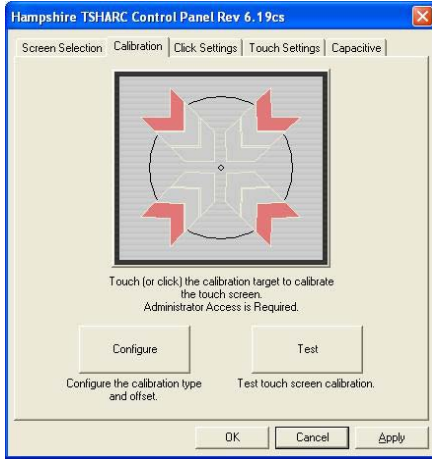
- **Problems are displayed in the information line (Info line) during operation.**

Follow the instructions on the LCD display.

## 12. Touchscreen calibration

If the mouse pointer is not displayed at the same position after clicking with the tracer pin on the touch screen, you have to make a touch screen adjustment.

Call up the "**Touchscreen calibration**" menu under "**Settings**" in the Start bar.



Click on the **'Calibration'** tab card with the test pin. Click on the center of the calibration graphic with the test pin and carry out the adjustment. Do not change the other parameters of the program under any circumstances.

**I** To avoid parallax errors, your eyes must be directly vertical above the calibration points. Click on the calibration points as precisely as possible.

The touch screen adjustment menu offers a total of 20 calibration points that you must click on, one after the other. This makes the adjustment very precise.

When the adjustment is finished, you can check the calibration. Using the tracer pin, click on various positions on the LCD display and compare them with the mouse pointer.

## 13. Fuse change F1

**I** Fuse F1 can be changed only on PIWIS Testers manufactured after 9/2005 or converted by central maintenance.

Fuse F1 is located either on the PCB (see Ch. 13.1) or in the battery compartment below the battery holder (see Ch. 13.2). If Fuse F1 is not at either of these locations, it cannot be changed.

**I** Fuse F1 is available through the vehicle spare parts trade (manufacturer, e.g. Littlefuse; Order designation: Mini Fuse 5 A flink, 32 V).

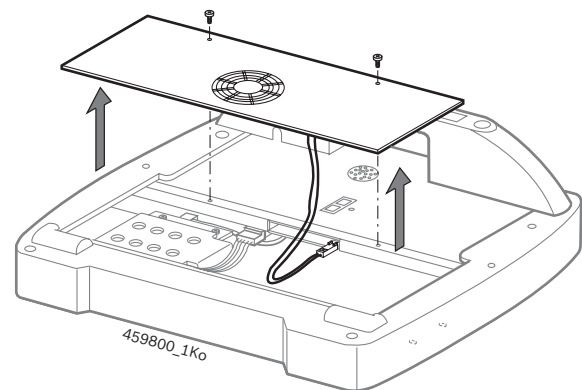
The following symptoms/effects indicate a faulty fuse:

- Despite the diagnostic cable being correctly attached to the vehicle, a connection cannot be made to any of the vehicle's control units, and / or
- the LED for the external supply (Fig. 3, Pos. 6) does not illuminate, despite the diagnostic cable being correctly attached to the vehicle.

In this case, the internal fuse F1 must be replaced by a new one.

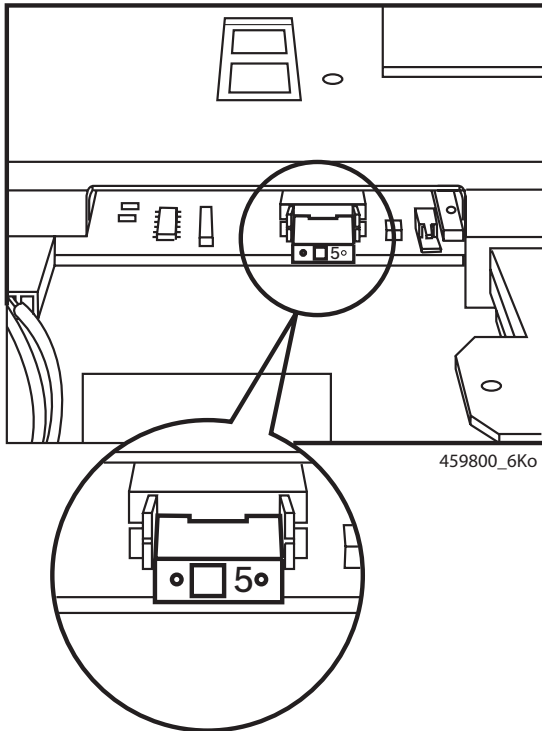
Procedure:

1. Switch off PIWIS Tester.
2. Remove ventilator plate (loosen two screws).



### 13.1 Fuse change on PCB

3. Pull out fuse F1 (see Fig.).
4. Insert new fuse (included in delivery).

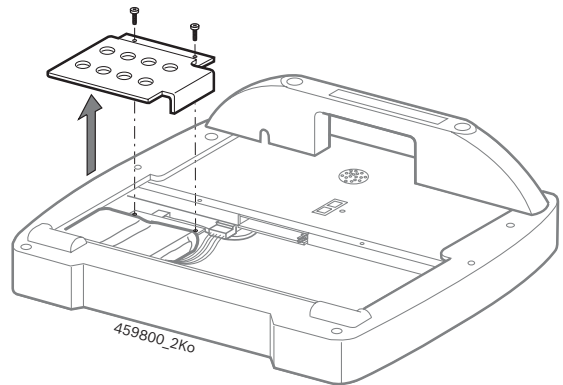


Position of fuse F1 (produced from 9/2005)

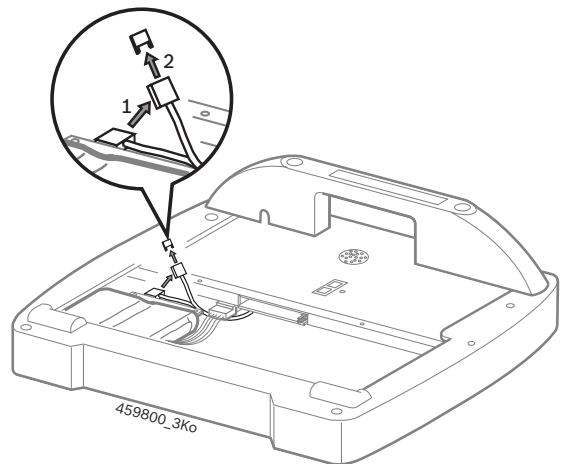
5. Replace ventilator plate and screw into place.

### 13.2 Fuse change in battery compartment

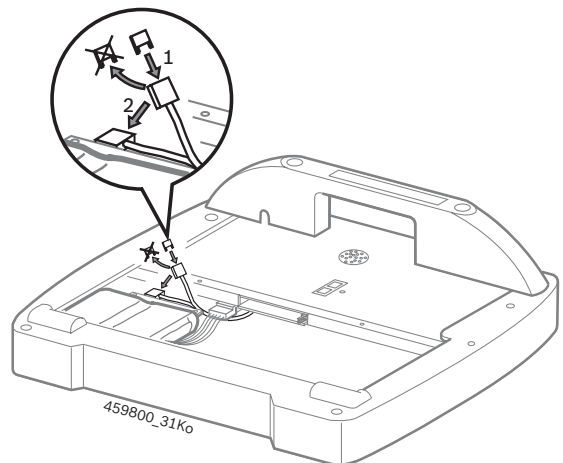
3. Remove battery holder (loosen two screws).



4. Pull out fuse F1.



5. Insert new fuse (included in delivery).
6. Replace fuse holder behind battery.



7. Insert battery holder and screw into place.
8. Insert ventilator plate and screw into place.

## 14. Changing the battery



### Caution!

Danger of damage to property if improperly handled!

Use only original rechargeable pack for PIWIS Tester!

The installation location for the rechargeable battery is on the rear side. Proceed as follows:

1. Switch off the PIWIS Tester
2. Open the cover panel (3) after loosening the screws (1)
3. If necessary, disconnect the fan plug connection (2)
4. Remove the battery cover panel (5) after loosening the screws (4)
5. Disconnect the battery plug connection (6)
6. Replace the rechargeable battery pack (7)

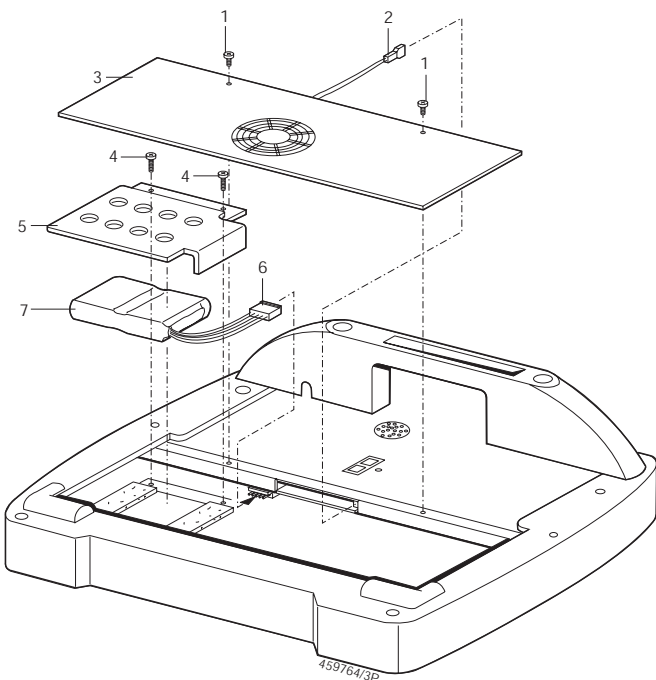


Figure 5: Changing the battery in the PIWIS Tester



### Caution!

Danger of ignition, bursting and burns!

- Do not heat or burn the rechargeable battery pack
- Do not short circuit the rechargeable battery pack
- Do not mechanically damage the rechargeable battery pack nor charge it at excessive current or connect the wrong way round!

Suitable solvent: water, CO<sub>2</sub>, sand.



Consumed battery packs are to be disposed off in accordance with valid guidelines.

## 15. Software Update

In the start screen of the PIWIS user interface you can start the update of the PIWIS Module via „Settings / Diagnosis Update CD/DVD“.

### 15.1 Working with the external DVD drive

The external CD/DVD drive is equipped with its a powersaving function. This means that the CD-DVD drive tray can only be opened and closed when the CD/DVD drive is connected to the PIWIS tester and the PIWIS tester is switched on.

#### 15.1.1 Front view

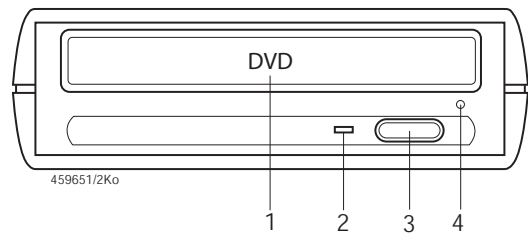


Figure 6: DVD drive

- 1 DVD compartment
- 2 Access display (lights when data is being read by the DVD/ROM)
- 3 DVD eject
- 4 Emergency eject



### Caution!

Danger of damage to property if improperly handled!

Never use force to press the compartment back into the DVD drive!

#### 15.1.2 Terminal strip

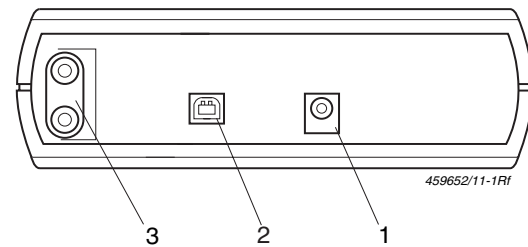



Figure 7: DVD terminal strip

- 1 DC input, power pack connection
- 2 USB Connection jack for cable to PIWIS Tester
- 3 Audio jacks



## 15.2 Connecting the DVD drive

 Do not use the DVD drive in dusty environments. The DVD drive does not have an on/off switch. The power supply is provided by the Y-cable to the plugged in power pack.

1. Connect the power pack via the included Y connector to the PIWIS Tester and the DVD drive.  
The connection jack is located on the terminal strip of the PIWIS Tester (Fig. 4, item 11).  
The connection jack is located on the rear of the unit on the DVD drive (Fig. 4, item 1).
2. Connect the PIWIS Tester to the DVD drive with the USB connecting cable.
3. Connect the power pack to the power supply.

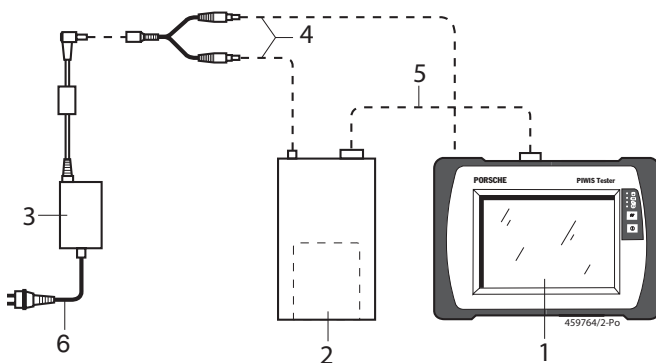


Figure 8: Connecting the DVD drive to the PIWIS Tester

- 1 PIWIS Tester
- 2 DVD drive 1 687 022 919
- 3 Power pack
- 4 Y connector
- 5 USB connecting cable
- 6 Country-specific power cord

## 16. Firmware Update

When starting the diagnostics software you will be notified by a displayed message if a firmware has to be performed for the SD module. The firmware can be started in the PIWIS user interface via „Settings / Firmware update“. Additional information hereto is available in Chapter 8.

## 17. Service parts and parts subject to wear

Designation	Porsche Order no.
– Power pack	000 721 971 83
– Y connector (<)	000 721 971 86
– OBD Porsche Diagnostics cable (<)	000 721 971 82
– Rechargeable battery pack (<)	000 721 971 84
– DVD drive	000 721 971 85
– Diagnostics adapter cable for diagnostics lines with round plug socket	000 721 971 81
– Adapter socket for connection of diagnostic cable	000 721 971 87
– Test connector for OBD Porsche diagnosis lines	000 043 400 07

(<) Parts subject to wear

## 18. Maintenance

The housing and the display of the PIWIS Tester must only be cleaned with a soft cloth and neutral cleaning agents. Do not use any abrasive cleaning detergent nor rough workshop cloths.

## 19. Disposal

Please dispose of electronic scraps using the provided return system.

### 19.1 LCD display disposal

Dispose of the LCD display in accordance with the local regulations concerning disposing of special-category waste.

### 19.2 Disposal of rechargeable battery

Dispose of the rechargeable battery pack in accordance with the local regulations concerning disposing of special-category waste.

## 20. Technical data

### 20.1 PIWIS Tester

- PC Board
- 512 MB RAM (main memory)
- 20 GB hard disk
- TFT 12" color display, 800 x 600 pixels
- Lithium-ion rechargeable battery; 7.2 V; 6 Ah

Operating voltage: 11 V ... 30 V DC  
(via vehicle battery or power pack)  
Fuse 5 AF

Power consumption: approx. 70 W  
Operating temperature: 5 °C to 35 °C

Control unit diagnosis via the interface protocols  
ISO 9141-2,  
SAE J1850VPW and SAE J1850PWM and  
CAN ISO 11898 ISO 15765-4 (OBD),  
OBD diagnosis in accordance with ISO 15031.

### 20.2 Power pack

Input voltage: 90 - 264 VAC  
Input frequency: 47 - 63 Hz


Output voltage: 15 V  
Operating temperature: 0 °C to 40 °C

### 20.3 Weights and dimensions

Dimensions (L x W x H) 300 x 400 x 125 mm  
Weight (without connecting lines) 4,2 kg

### 20.4 Electromagnetic compatibility (EMC)

This product is a Class A product in accordance with EN 55 022.

 This product can cause radio interference in the home; in this case the operator may be asked to implement appropriate measures.