A.E.B.®
ALTERNATIVE FUEL ELECTRONICS

OBD2 Diagnosis Hand-Held Tester
AEB214 PLUS
Cod. 616000191

Instruction manual

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The AEB214 PLUS Hand-Held Tester can be used with all vehicles that use OBD2 (American standard) and EOBD (European standard) diagnostic systems.
The following operations can be performed with the AEB214 PLUS Tester:

- display of vehicle operating parameters (engine RPM, engine temperature, etc.);
- readout and zeroing of errors stored by the original injection control unit;
- determination of the type of OBD2 µFIX Emulator required for the vehicle connected to the Tester.

The Tester is equipped with a reprogrammable memory that enables the unit to receive future updates and partially complies with ISO 15031-4.

1.1 Description of the Tester

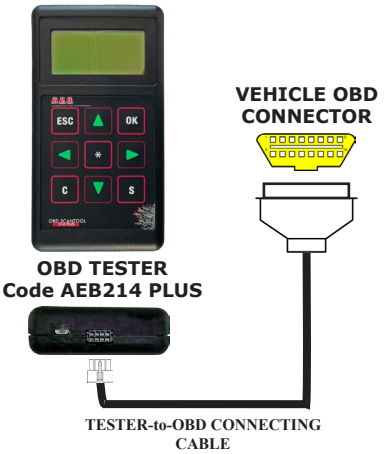
1) Micro USB port for connection to a PC.
2) Connector for connecting to the diagnostic port on the vehicle.
3) Backlit dot-matrix LCD display.
4) [**ESC**] key for exiting the page and returning to the previous menu.
5) [⇧] key for moving the cursor or scrolling the page upwards.
6) [**OK**] key for confirming data or entering a page.
7) [⇦] key for moving the cursor to the previous page.
8) [✳] key for accessing the help page.
9) [⇨] key for moving the cursor to the next page.
10) [**C**] key for deselecting parameters.
11) [⇩] key for moving the cursor or scrolling the page downwards.
12) [**S**] key for selecting parameters.

1.2 Pack contents

The Tester is supplied in a carrying case that contains:

1 OBD2 Diagnostic Tester.
1 cable for connecting to an OBD diagnostic port (type SAE J1962 / ISO15031-3).
1 USB/microUSB cable for connecting the tester to a PC.

1.3 Switching on the Tester



The AEB214 PLUS Tester switches on automatically when it is connected to the vehicle's diagnostic port using the cable provided. When it switches on, the A.E.B. logo and the version of the programme appear on the display (Fig. 1).
Press the ESC or OK key to access the main page (Fig .2). Press any other key to select the desired language.

1.4 Connecting to the control unit

Be sure the ignition is on. From the main page on the Tester (Fig. 2), the following commands can be run:
Press the [✳] key to display a help message.
Press the [**S**] key to display battery voltage.
Press the [**C**] key to adjust the brightness and contrast of the display.
Press the [⇦] [⇨] keys to select the language.
Press the [⇧] [⇩] keys to select the connection protocol manually.
Press the [**ESC**] key to return to the main/previous screen.
Press the [**OK**] key to connect to the control unit. The display will show, **"Finding Connection - Please Wait"** for a few seconds.
After communication has been established, **"Connection Type"** will appear on the display (Fig.3, see the types of connection in paragraph 1.5).
Press the [**OK**] key to move to the next page (Fig.4), where one of the following options can be selected:
Parameters, Diagnostic Trouble Codes (DTC), Freeze Frame, Latent Trouble Codes, Clear DTCs, Permanent Trouble Codes, Vehicle Data, Component Monitoring, Performance Tracking, O2 Sensor Monitoring.
To select one of these options, use the [⇧] [⇩] keys and press [**OK**].

Fig. 1

IMPORTANT: On some vehicles with a standard OBD2 or EOBD port, the diagnostic function may be disabled, or the connection standard may be different from a commonly used standard, so it will be impossible to connect to the injection control unit. In this case, *"Connection failed"* will appear on the display.
If this occurs, contact A.E.B. Technical Assistance.

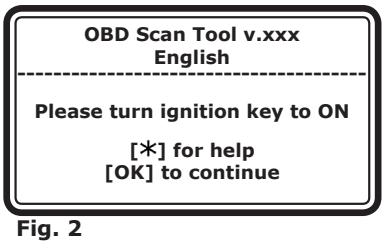


Fig. 2

1.5 Identifying the type of connection and the type of OBD2 µFIX Emulator

The possible connections and corresponding Emulators are:

- **Connection type 1 (ISO9141):** if the front oxygen sensor is a 4-wire type, use emulator AEB426; if the front oxygen sensor is a 5-wire type (e.g. Volkswagen) use emulator AEB425.
- **Connection type 2 (KWP-2000 Fast Init):** use emulator AEB426.
- **Connection type 3 (KWP-2000 Slow Init):** use emulator AEB426.
- **Connection type 4 (SAE J1850 PWM):** use emulator AEB424.
- **Connection type 5 (SAE J1850 VPW):** use emulator AEB424.
- **Connection type 6 (CAN Standard 250 kbps):** use emulator AEB428.
- **Connection type 7 (CAN Extended 250 kbps):** use emulator AEB428.
- **Connection type 8 (CAN Standard 500 kbps):** use emulator AEB428.
- **Connection type 9 (CAN Extended 500 kbps):** use emulator AEB428.

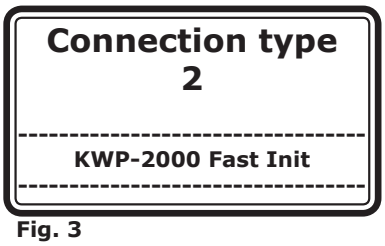


Fig. 3

IMPORTANT: the electrical connections to the emulator may vary with the type of vehicle being serviced. We recommend you follow the installation instructions provided with the emulator. Contact A.E.B. Technical Assistance, if necessary.

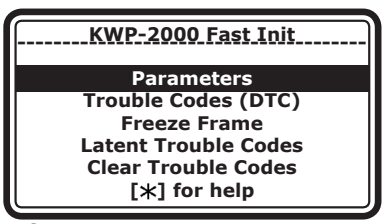


Fig. 4

2.1 Parameters

This option is used to display certain vehicle operation parameters (e.g. engine RPM, T.P.S., oxygen sensors etc.).
A list of available parameters is displayed when the option is first selected (Fig. 5). Use the [⇧] [⇩] keys to move the cursor [»] to the desired parameter (Fig. 5) and select it by pressing the [**S**] key. Selected parameters are shown in white against a black background (Fig. 6).
Press [**OK**] to display all the selected parameters in the order of their selection (Fig. 7).
To deselect a previously selected parameter, move the cursor [»] to the desired parameter and press [**C**].
The display window (Fig. 7) can show 3 parameters at any one time. If more parameters are selected, use the [⇧] [⇩] keys to scroll through the parameters one at a time and use the [⇦] [⇨] keys to move to the next 3 selected parameters.
Press [**S**] to display a list of codes for the control units in the vehicle.
Press [**C**] to display a map of the PIDs (Parameter Identification Codes) handled by the control units in MODE 1. If there are a number of control units, press ⇦] [⇨] to display them.
Press [✳] to display the help screen.

IMPORTANT: the list of available parameters may vary with the type of vehicle being serviced, so parameters previously displayed for other vehicles may not be available on certain vehicles.

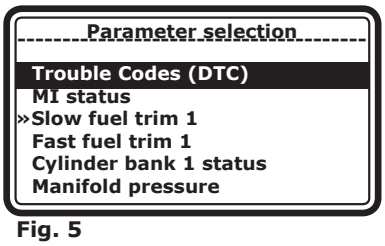


Fig. 5

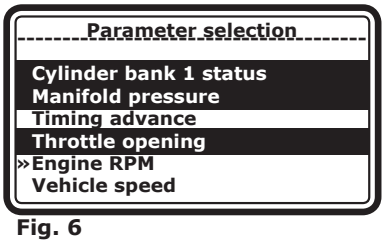


Fig. 6

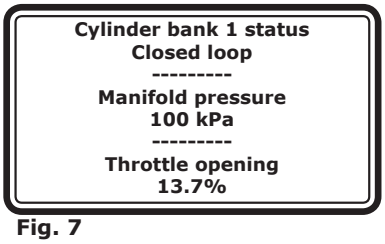


Fig. 7

2.2 Trouble codes (DTC)

This option is used to check whether the injection control unit has errors stored in memory, and is also used to clear them.
To select this option, use the [⇧] [⇩] keys **"Trouble Codes (DTC)"** (Fig. 8) and then press [**OK**]. If no errors are present, the display will show **"No trouble codes"**.
If errors are present in memory, they will be displayed one at a time (Fig. 9). The display will show the error code, the code of the ECU that has detected the error and a description of the error.
The index number of the current error out of the total number of errors appears next to **"Trouble code"** (e.g. the number 1/4 in fig. 9 indicates that there are 4 errors in memory and the one currently displayed is first on the error list).
Use the [⇦] [⇨] keys to move to the next errors on the list.
If the description is very long, press [⇧] [⇩] to scroll through the text on the display.
Press [**S**] to display the list of codes for the control units in the vehicle.
Press [✳] to display the help screen.
To clear the errors from memory, press [**C**], which will bring up the **"Clear Trouble Codes"** page (Fig. 10).
Press [**OK**] to clear the errors stored in the control unit (Fig. 11).
Pressing [**ESC**] the system will return to the previous page.

IMPORTANT: some vehicles do not allow errors to be cleared while the engine is running.
If the same errors are still present after they have been cleared, they must be cleared when the engine is not running and the ignition is on.

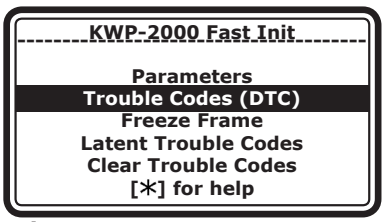


Fig. 8

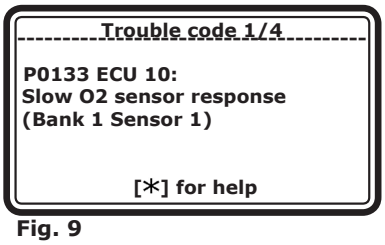


Fig. 9

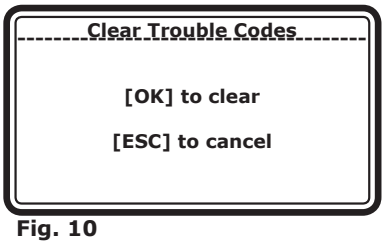


Fig. 10

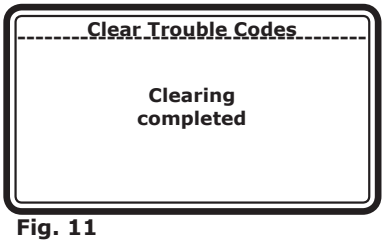


Fig. 11

2.3 Freeze frame

This option is used to display the vehicle operating parameters at the moment when the injection control unit stores an error in its memory.

To access this option, use the [⇧] [⇩] keys to select **"Freeze frame"** (Fig. 12) and press [**OK**]. If no errors are stored in memory, the display will show the following: **"No trouble code"**.
However, if one or more errors are stored in control unit memory, the system will display the vehicle operating parameters (Fig. 13) that were stored at the moment when the error occurred.
The frozen data provided by the injection control unit refer to the first error detected, only.
Three parameters at a time are displayed on the page. To scroll through the next parameters one at a time, use the [⇧] [⇩] keys.
To move to the next set of three parameters, use the [⇦] [⇨] keys.
Press [**ESC**] to return to the main menu.
Press [**C**] to display a description of the error.
Press [**S**] to display a map of PIDs in MODE 2.
Press [**OK**] to display any other errors found.
Press [✳] to display the help screen.

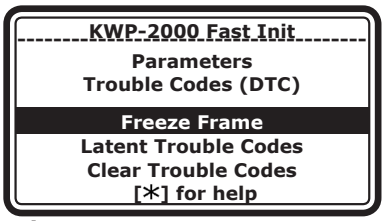


Fig. 12

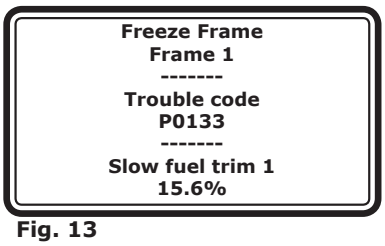


Fig. 13

2.4 Latent Trouble Codes

This option is used to check whether the injection control unit has stored any errors but has not yet lit up the diagnosis indicator light, and can also be used to clear the errors.

To access this option, use the [⇧] [⇩] keys to select **"Latent Trouble Codes"** (Fig. 14) and then press [**OK**]. If no errors are present, the display will show **"No trouble codes"**.
If errors are present in memory, they will be displayed one at a time (Fig. 15). The display will show the error code, the code of the ECU that has detected the error and a description of the error.
The index number of the current error out of the total number of errors appears next to **"Trouble code"** (e.g. the number 1/4 shown in fig. 15 indicates that there are 4 errors in memory and the one currently displayed is first on the error list).

Use the [⇦] [⇨] keys to move to the next errors on the list.

If the description is very long, press [⇧] [⇩] to scroll through the text on the display.
Press [**S**] to display the list of codes for the control units in the vehicle.

Press [✳] to display the help screen.
To clear the errors from the memory, press [**C**], which will bring up the "**Clear Trouble Codes**" page (Fig. 16).
Press [**OK**] to clear the errors stored in the control unit (Fig. 17).
Pressing [**ESC**] the system will return to the previous page.

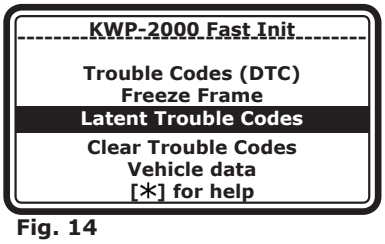


Fig. 14

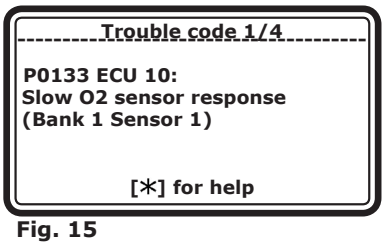


Fig. 15

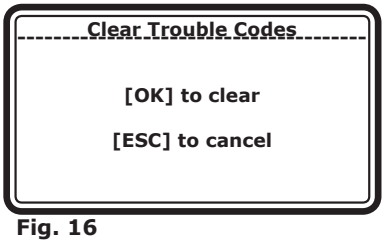


Fig. 16

IMPORTANT: some vehicles do not allow errors to be cleared while the engine is running. If the same errors are still present after they have been cleared, they must be cleared when the engine is not running and the ignition is on.

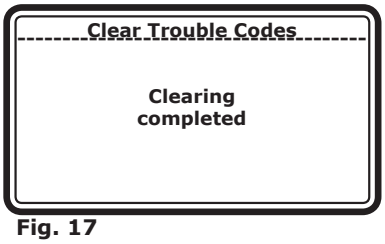


Fig. 17

2.5 Clear trouble codes

This option is used to clear the errors stored in the injection control unit.
Using the [⇧] [⇩] keys, select **"Clear trouble codes"** (Fig. 18) and press [**OK**] to bring up the **"Clear trouble codes"** page (Fig. 19).
Press [**OK**] to clear the errors stored in the control unit (Fig. 20).

IMPORTANT: all Trouble Codes will be cleared, except for permanent codes.

Press the [**ESC**] key to return to the previous page.
Press [✳] to display the help screen.

IMPORTANT: some vehicles do not allow errors to be cleared while the engine is running. If the same errors are still present after they have been cleared, they must be cleared when the engine is not running and the ignition is on.

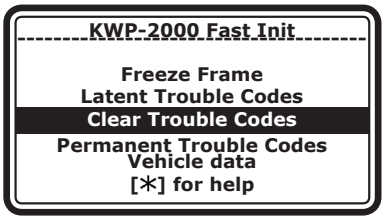


Fig. 18

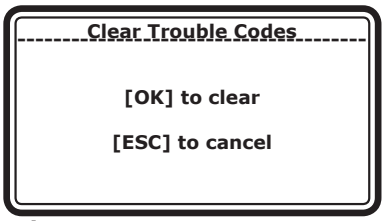


Fig. 19

2.6 Permanent Trouble Codes

This option is used to display trouble codes that cannot be cleared by the user. They are cleared automatically by the ECU (control unit) when the problem is corrected.
Using the [⇧] [⇩] keys, select **"Permanent Trouble Codes"** (Fig.21) and press [**OK**]. If this function is not available, **"Not managed"** will appear on the display.
To scroll through the parameters on the display, use the [⇧] [⇩] keys. Press [**ESC**] to return to the main menu.
Use the [⇦] [⇨] keys to move to the next errors on the list.
If the description is very long, press [⇧] [⇩] to scroll through the text on the display.
Press [**S**] to display the list of codes for the control units in the vehicle.
Press [✳] to display the help screen.

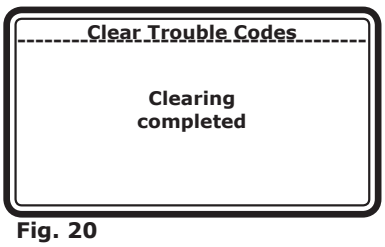


Fig. 20

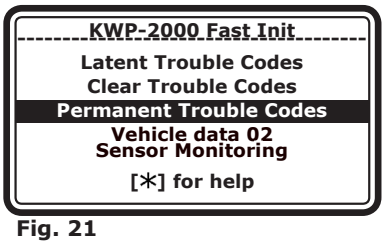


Fig. 21

2.7 Vehicle Data

This option is used to display identifying information for the vehicle.
Using the [⇧] [⇩] keys, select **"Vehicle Data"** (Fig. 22) and press [**OK**]. If this function is not available, **"Not managed"** will appear on the display. If it is available, the corresponding page will appear (Fig. 23).
To scroll through the parameters on the display, use the [⇦] [⇨] keys.
If the description is very long, press [⇧] [⇩] to scroll through the text on the display.
Press **[ESC**] to return to the main menu.
Press [✳] to display the help screen.

IMPORTANT: the list of available parameters may vary with the type of vehicle being serviced, so parameters previously displayed for other vehicles may not be available on certain vehicles.

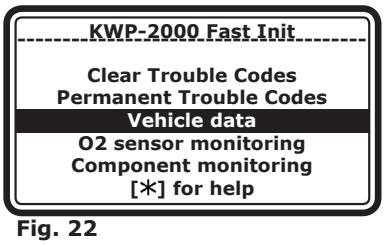


Fig. 22

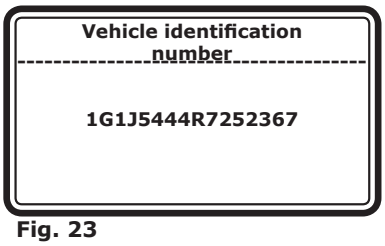


Fig. 23

2.8 O2 Sensor Monitoring

This option is used to display the operating parameters of the oxygen sensors on the vehicle.
Using the [⇧] [⇩] keys, select **"O2 Sensor monitoring"** (Fig. 24) and press [**OK**]. If this function is not available, **"Not managed"** will appear on the display. If it is available, the corresponding page will appear (Fig. 25). The display will show the value of the parameter and its limits. To scroll through the next parameters, use the [⇧] [⇩] keys. To move to the parameters of the next oxygen sensor (if present), use the [⇦] [⇨] keys.
Press [**S**] to display the list of codes for the control units in the vehicle.
Press [**C**] to display a map of the PIDs handled by the control units in MODE 5 (, if available). Press **[ESC**] to return to the main menu.
Press [✳] to display the help screen.

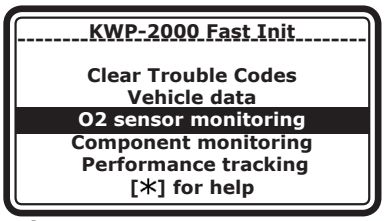


Fig. 24

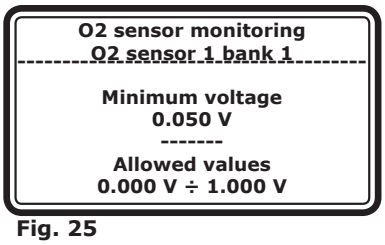


Fig. 25

2.9 Component Monitoring

This option is used to display certain operating parameters of the components on the vehicle.
Using the [⇧] [⇩] keys, select **"Component monitoring"** (Fig. 26) and press [**OK**].
If this function is not available, **"Not managed"** will appear on the display. If it is available, the corresponding page will appear (Fig. 27).
To scroll through the parameters displayed for a component, use the [⇧] [⇩] keys. To display other components, press the [⇦] [⇨] keys.
Press [**ESC**] to return to the main menu.
Press [**S**] to display the list of codes for the control units in the vehicle.
Press [**C**] to display a map of the PIDs handled by the control units in MODE 6 (if available).
Press [✳] to display the help screen.

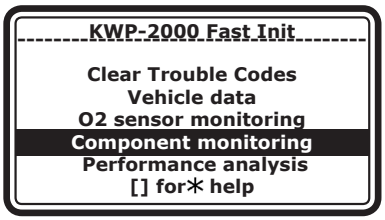


Fig. 26

NOTE: to identify the type of component and the meaning of the parameter displayed, see the manual supplied by the manufacturer of the vehicle.

IMPORTANT: the list of available parameters may vary with the type of vehicle being serviced, so parameters previously displayed for other vehicles may not be available on certain vehicles.

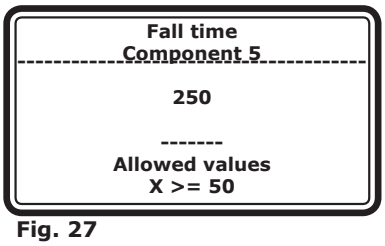


Fig. 27

2.10 Performance Tracking

This option is used to display certain parameters relating to vehicle performance.
Using the [⇧] [⇩] keys, select **"Performance Tracking"** (Fig. 28) and press [**OK**].
If this function is not available, **"Not managed"** will appear on the display. If it is available, the corresponding page will appear (Fig. 29).
To scroll through the parameters on the display, use the [⇧] [⇩] [⇦] [⇨] keys.
Press [**ESC**] to return to the main menu.
Press [**S**] or [**C**] to display the list of codes for the control units in the vehicle. Press [✳] to display the help screen.

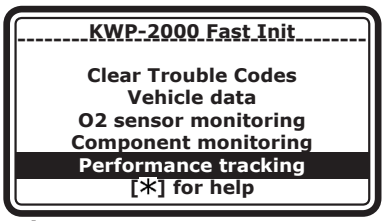


Fig. 28

IMPORTANT: the list of available parameters may vary with the type of vehicle being serviced, so parameters previously displayed for other vehicles may not be available on certain vehicles.

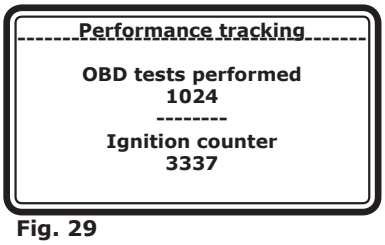


Fig. 29

3.1 CONNECTION FOR REPROGRAMMING/UPDATING

The Tester can be reprogrammed and updated with a PC and the USB cable supplied in the package, and with dedicated SW.

Switching on the Tester

The AEB214 PLUS Tester switches on automatically when it is connected to the USB port on the PC using the cable provided. When it switches on, the screen shown in Fig. 1 appears on the display.
If necessary, press any key to select the desired language.

IMPORTANT:
When the tester is connected for the first time, the display may take several seconds to light up, because the operating system on the PC must recognize the device and load the required drivers.

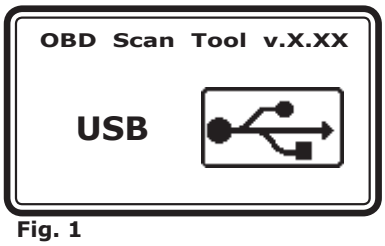
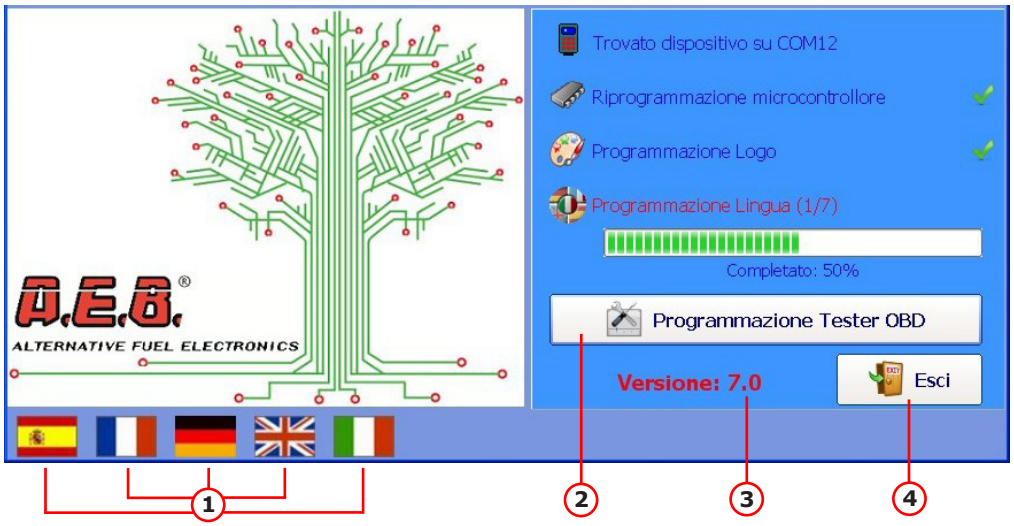


Fig. 1

3.2 UPDATING/REPROGRAMMING PROCEDURE

Download the software at http://www.aeb.it, "Products" menu, "Sundry Items" category, "Diagnostic tools", "AEB214PLUS", "download software".
After the "OBDScanTool" software has been installed on your PC, the icon shown to the side will appear on the display

. Double-click on the icon to run the software for programming the OBD Tester.



1) Click on a flag to change the language setting for the programming software.
2) "Start programming OBD tester" button. The computer does not have to be connected to the Internet while the tester is programmed.
3) Firmware version.
4) Program exit button.

3.3 FEATURES OF THE AEB214 PLUS TESTER

The following new features were added with firmware **"Version 7.00"**:

- Adjustment of display brightness and contrast.
- Selection of 7 languages on the tester: Italian, English, German, French, Spanish, Turkish and Czech.
- Readout of power supply voltage.
- Communication protocol selection menu.
- Increase in the number of PIDs handled (Parameter IDs: parameter identification codes).
- Increased capability of handling very long strings in help messages and DTC descriptions (scrolling).
- Improved response to abort command during connection.
- Extended times displayed in the h.mm'.ss" format.
- Modified DTC display in Mode 3.

Dear Customer,

Thank you for the trust you have placed in **A.E.B.** by purchasing this product.
A.E.B. subjects all its products to stringent quality tests. If the product malfunctions despite the tests, we recommend you immediately contact the installer for any checks or service calls that may be required.

- General conditions of warranty
A.E.B. guarantees that this product operates properly and is free from manufacturing defects.
If the product proves to be defective during the warranty period, **A.E.B.** will repair or replace it free of charge. The work will be done by an individual or company that is designated by mutual agreement. Defective parts will be replaced ex-works **A.E.B.**, and the recipient will be responsible for shipping costs. Accessories and components not made by **A.E.B.** are covered by their manufacturers' warranties only. This warranty is the only warranty offered by **A.E.B.** All others are excluded.
Except in case of malice or gross negligence, **A.E.B.** will not be held liable for any personal injury or property damage caused by product malfunction. This warranty is valid only if the purchaser is up to date with payments.

- Specific conditions
The warranty shall be valid for a period of **24 months starting from the date printed on the product with indelible paint.**
The warranty shall be valid only if the product is properly stored in its original **A.E.B.** packaging at the time of purchase. The original packaging provides the sole guarantee that the product is genuine and adequately protected.

- Exclusions
This warranty does not cover:
a) Periodic testing, maintenance, repairs, replacement of parts due to normal wear.
b) Malfunctions due to negligence, incorrect installation, improper use, failure to comply with technical instructions and, in general, any malfunction not attributable to manufacturing defects of the product and therefore not the responsibility of **A.E.B.**
c) Products that have been modified, repaired, replaced, installed or tampered with without the prior written authorization of **A.E.B.**
d) Accidents caused by Acts of God or other causes (e.g. water, fire, lightning, inadequate ventilation, etc.) not attributable to **A.E.B.**

Products with manufacturing defects that can be recognised with normal diligence may not be resold or installed.
Any disputes concerning the interpretation or execution of this warranty shall be settled exclusively before the Court of Reggio Emilia, Italy.

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