

Valeo Diagnostic Tool

Installation and Operating Instructions



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DOK50074

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2 Terminology

2.1 Terms and definitions

Failure An interruption of a required function because specified operational parameters are out of a specified range

2.2 Abbreviations

CAN	Controller Area Network
ECU	Electronic Control Unit
GND	Ground
HVIL	High Voltage Interlock
T_ihxA1	Sensor measuring the temperature of the air sucked from the passenger compartment before the IHX
T_ihxA2	Sensor measuring the temperature of the air blown inside the air duct / passenger compartment after the IHX
PTC-Compr.	Positive Temperature Coefficient (electric heat element) compressor
T_ohxR	Sensor measuring the refrigerant temperature near the OHX
T_ihxR	Sensor measuring the refrigerant temperature near the IHX
T_compR2	Sensor measuring the refrigerant temperature after the compressor
T_compR1	Sensor measuring the refrigerant temperature before the compressor
SV for Deicing	Solenoid Valve for Deicing
SU-EEV	Electronic Control Unit for Electronic Expansion Valve
PL_PS	Pressure Line Pressure Switch
PL_AC_RS	Suction Line HP Mode Recognition Switch
SL_HP_RS	Pressure Line AC Mode Recognition Switch
T_mceR2	Sensor measuring the refrigerant temperature after the main cycle EEV
FI	Frequency Inverter
P_compR1	Sensor measuring the refrigerant pressure level before the compressor
P_compR2	Sensor measuring the refrigerant pressure level after the compressor

3 Document Scope

This document describes the installation process and explains how to use the diagnostic tool.

4 System requirements

4.1 Software

Use a PC (or Laptop) equipped as follows:

Operating system: Windows 10 or later

USB port: one (1) free USB 2.0 or 3.0 port (when the standard version is used)
two (2) free USB 2.0 or 3.0 ports (when the extended version is used)

Free hard disc space: ca. 300 MB

4.2 Hardware

4.2.1 CAN to USB-Adapter

The connection between the CAN-Bus of the System and the PC, running the tool, shall be performed via a CAN-Bus to USB Adapter from PEAK-System Technik GmbH.



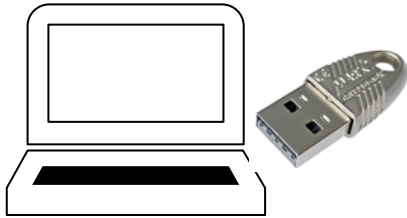
4.2.2 VDT cable harness adapter

The cable harness adapter shall establish the CAN-Bus connection between the PEAK-Adapter (see 4.2.1) and the HVAC unit. For further details on the cable harness, please refer to the delivery scope.

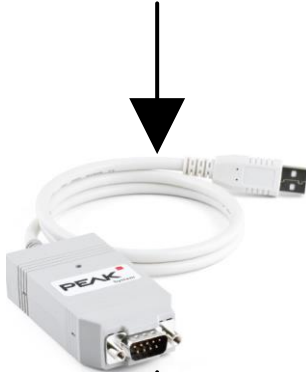


4.2.3 Connection setup

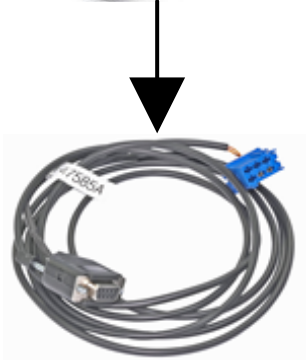
The HVAC unit is equipped with a blue diagnostic connector, placed on the distribution plate, near the fuses. The cable harness adapter (refer to 4.2.2) shall be connected to this connector in order to establish a connection to the internal CAN-Bus.



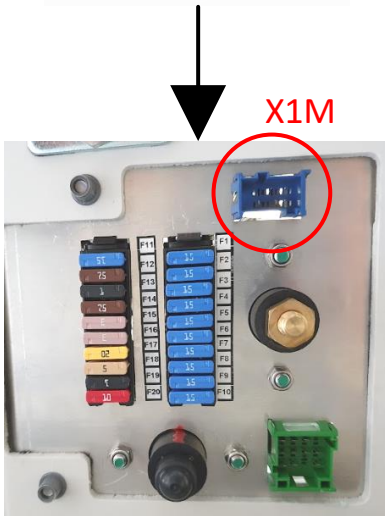
VDT Dongle
Supplier: Valeo TCV



CAN-Bus to USB adapter
Supplier: PEAK-System Technik GmbH



VDT Cable harness adapter
Supplier: Valeo TCV




Distribution plate on HVAC-unit
(view from below)

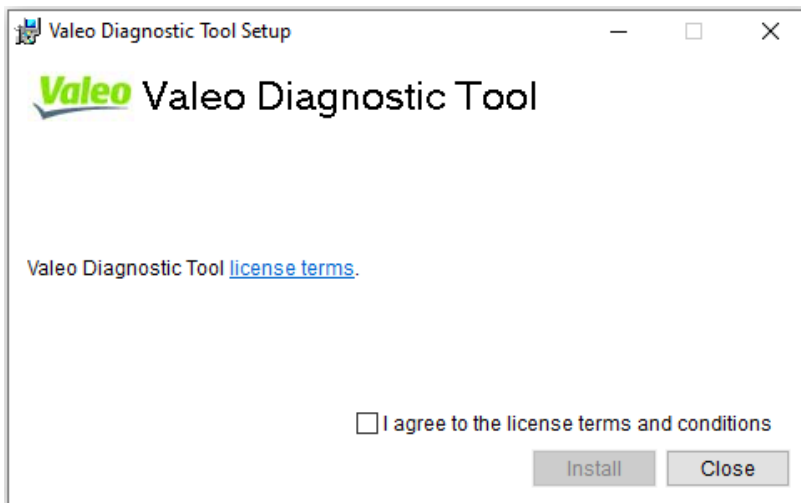
5 Installation instructions

Exit all running programs and applications.

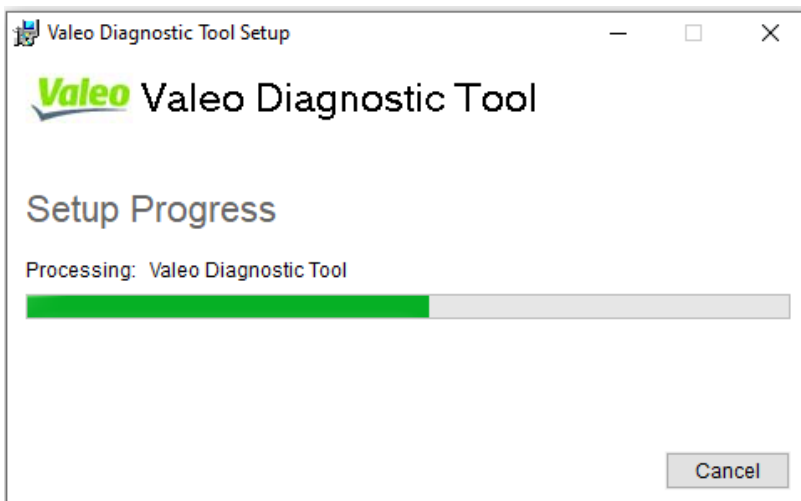
To install the diagnostic tool start the VDT_Setup.exe file

-  VDT_Setup.exe

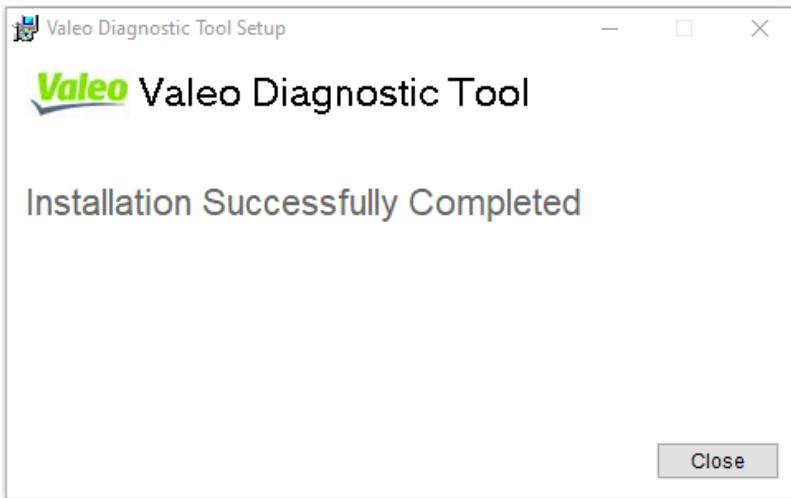
After the welcome window has been opened, read the general installation information, accept the license terms and conditions and click the INSTALL button



Please wait until the installation is completed.



When the installation is completed, the window "Installation Complete" appears. Click on the CLOSE button to finish the installation



6 Operating instructions

After the installation is completed, a shortcut is created on the desktop.

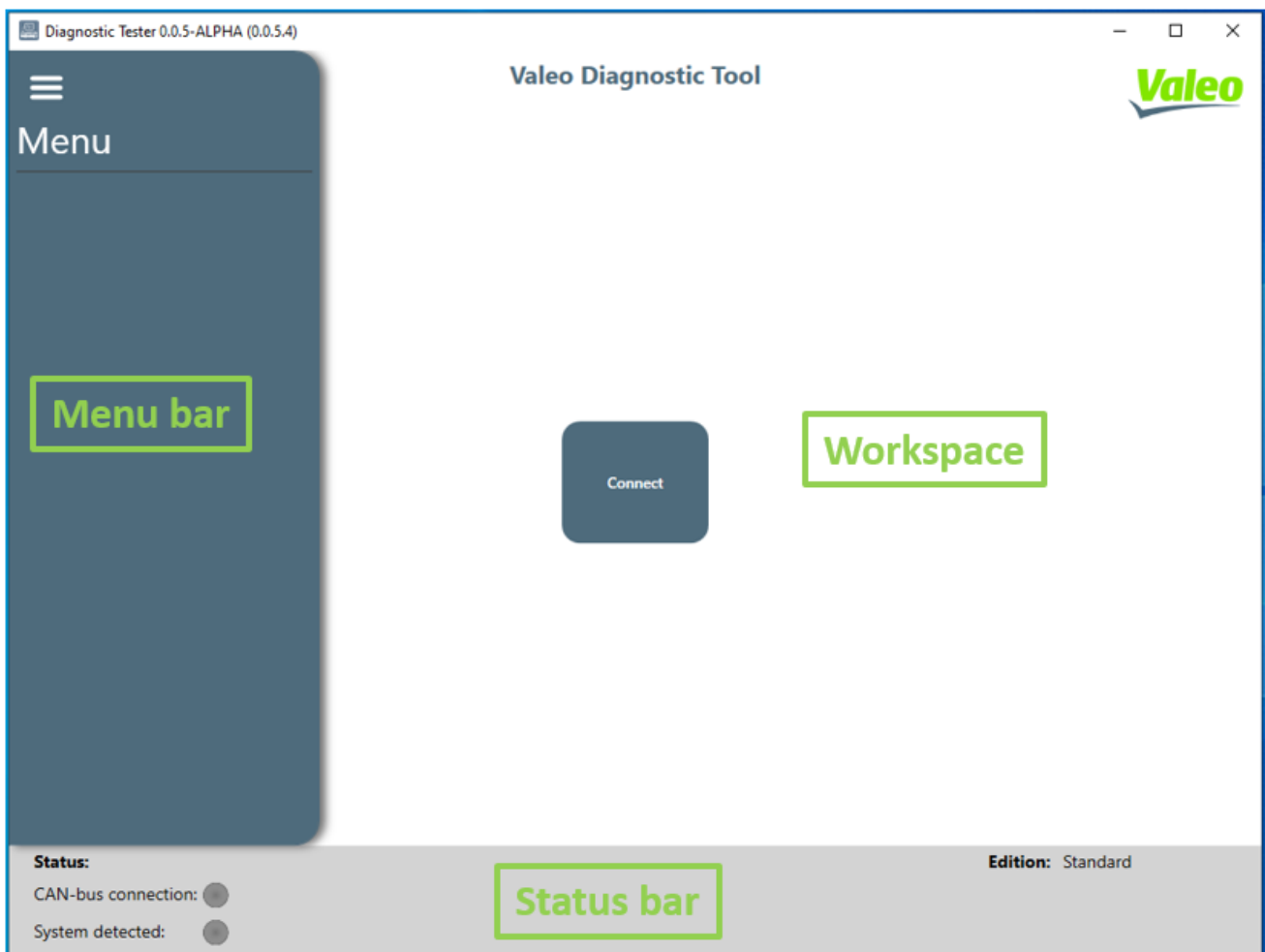


6.1 Program structure

Starting the program will launch the main window.

The window consists of three (3) areas:

- Workspace
- Menu bar
- Status bar

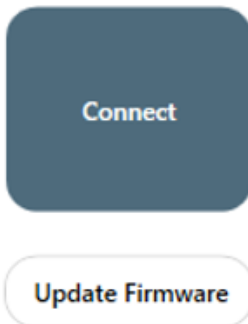


6.1.1 Workspace

In the workspace area, the user will be able to interact with the connected ECU as follows:

- To read ECU and system data
- To control system functionality
- To update ECU software

At program start-up, depended on the user access rights (refer to 6.3), only a **CONNECT** button and **UPDATE FIRMWARE** button will be accessible to the user.



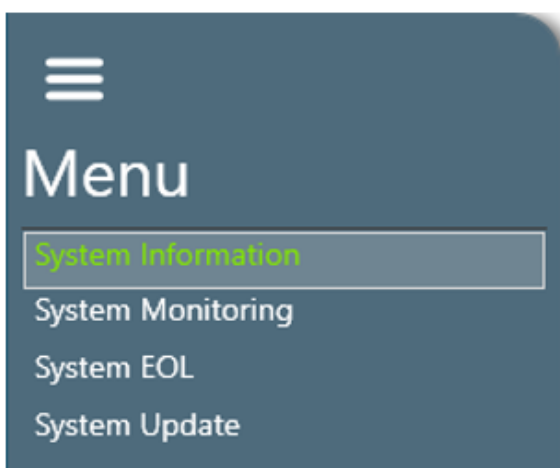
6.1.2 Menu bar

The Menu bar can be accessed through the “Triple Bar” icon (≡) placed in the top left corner.



Via the Menu bar, the user can access following features:

- **System Information** – for showing ECU ID numbers (SAP, etc.) → refer to Chapter 6.2.1
- **System Monitoring** – for reading component information from the CAN-Bus → refer to Chapter 6.2.2
- **System EOL** – for controlling of components and auxiliary modes → refer to Chapter 6.2.3
- **System Update** – for updating the ECU software → refer to Chapter 6.2.4




Based on the user access right (refer to 6.3), one or more features might not be accessible to the user

At program start-up, the menu bar will be empty. Only after evaluating the access rights and connecting to the ECU, the features, listed above, will appear and be accessible to the user

6.1.3 Status bar

In the status bar the user can see following information:

- CAN-Bus Connection → indicates if the PEAK-CAN dongle is connected and detected

CAN-bus connection: 

- System detected → indicates if a known ECU is detected

System detected: 

- Edition → shows the user access right
 - Standard

Edition: Standard

- Extended

Edition: Extended

6.2 Program operation

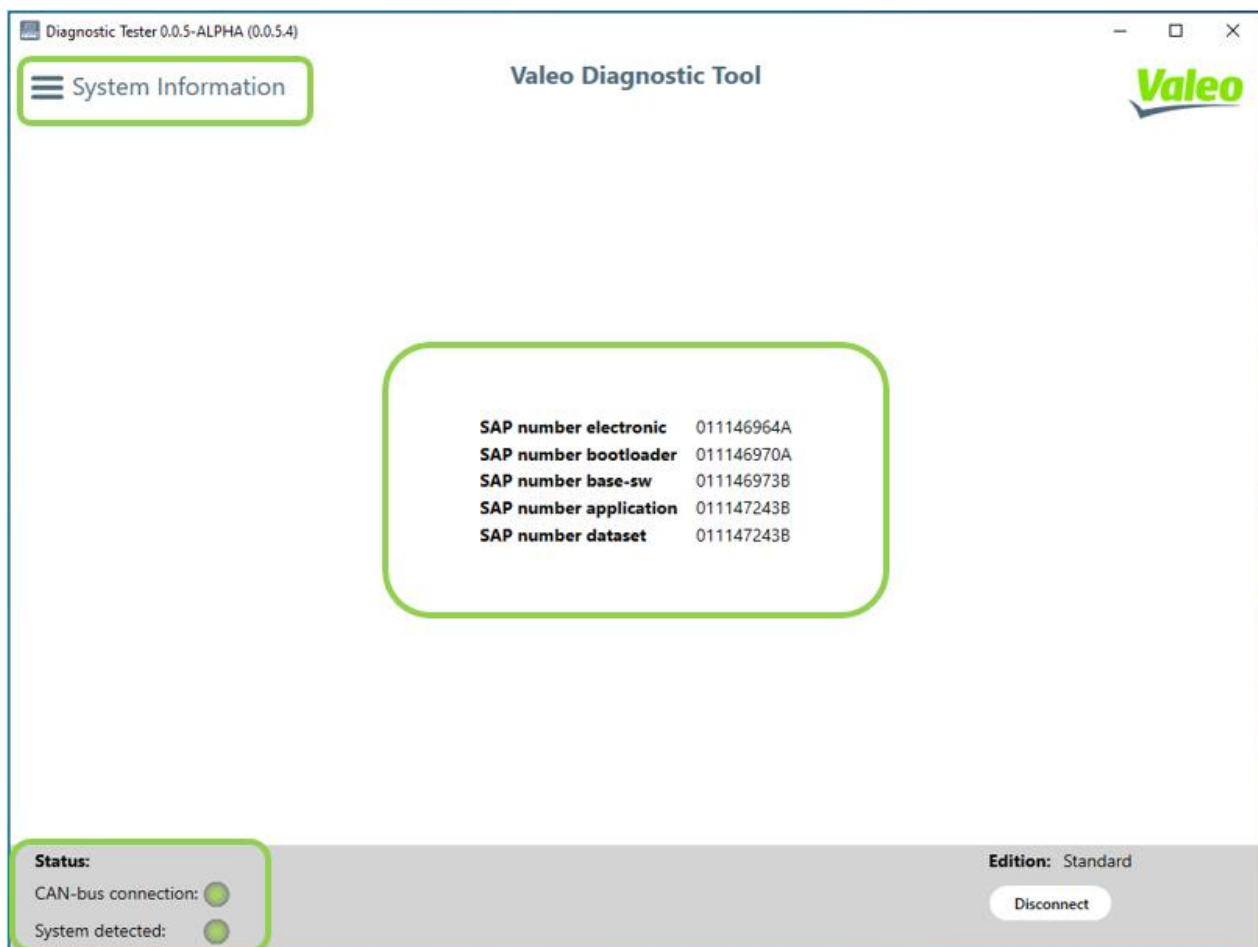
6.2.1 Connecting to system

By clicking the **CONNECT** button in the workspace area, the user will establish a connection to the ECU of the system.



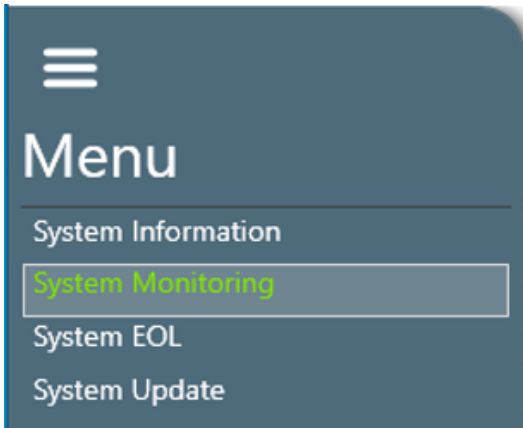
After a successful connection has been established:

- The **status of the connection** will be shown in the status bar
- The feature **“System Information”** will be selected automatically in the Menu bar
- All relevant **SAP-IDs** of the ECU will be shown in the workspace area

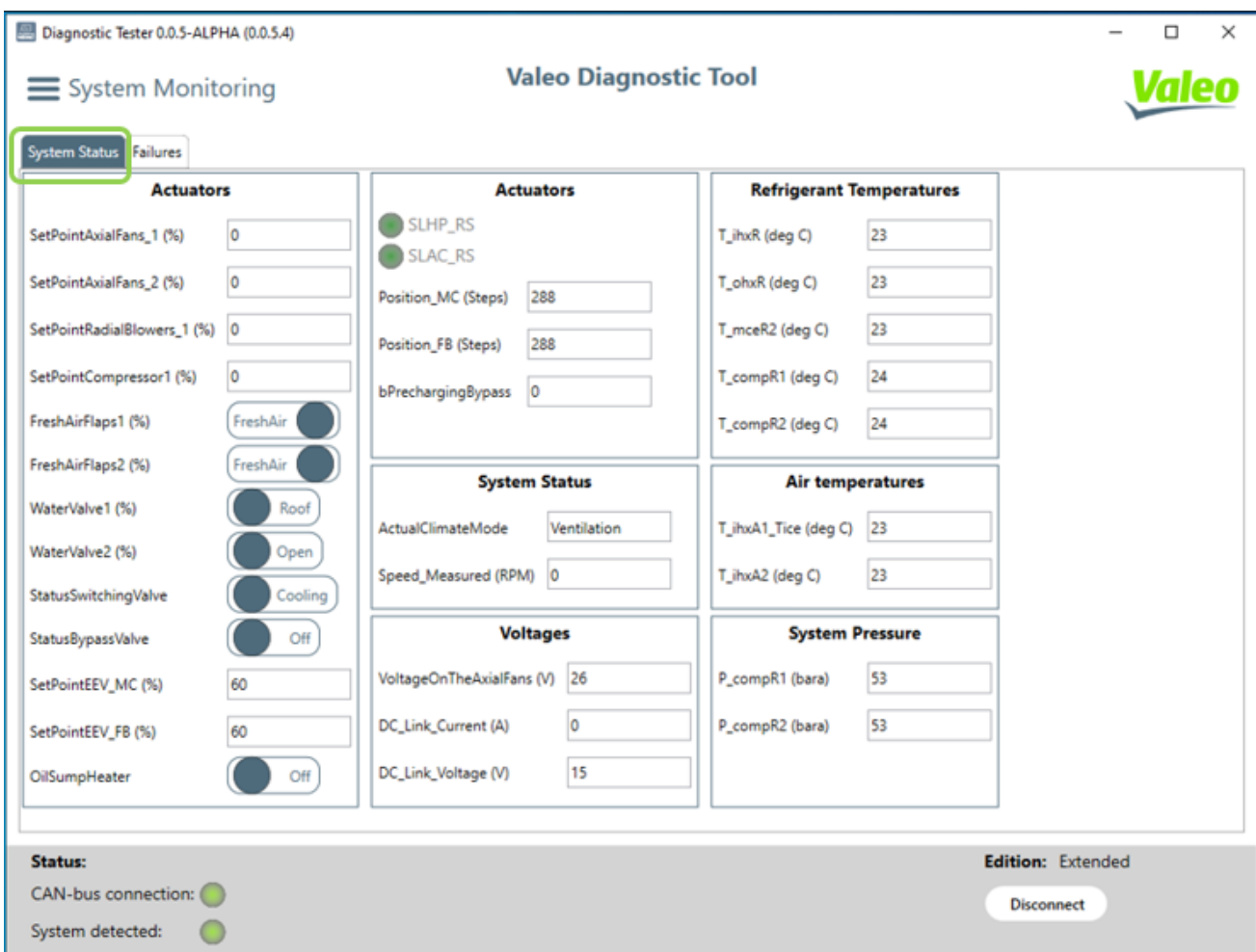


6.2.2 Reading system data

To read the system data, open the Menu bar and select the “**System Monitoring**” feature.



In the workspace area, the relevant system data will be shown under the TAB “**System Status**”

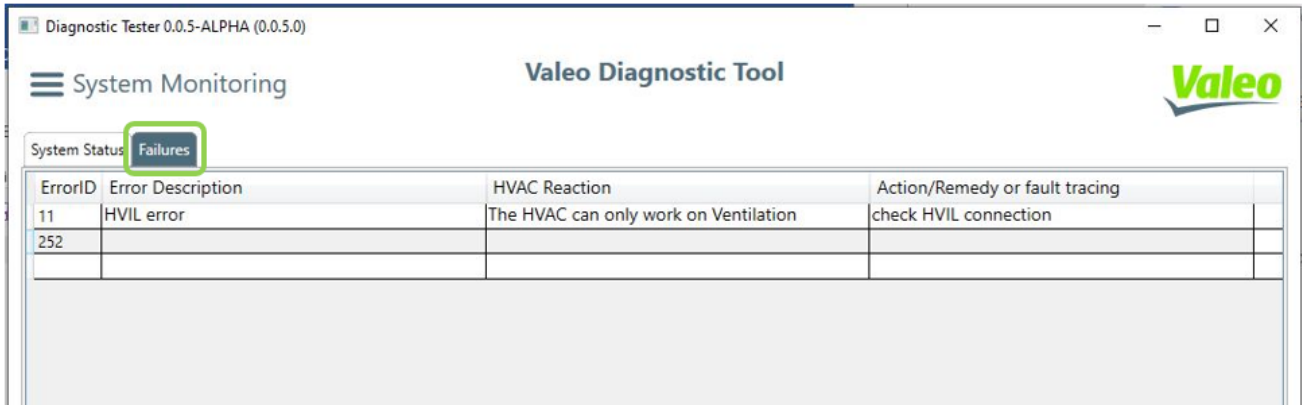


Similar values and components are pre-divided into groups:

- Actuators: Blowers, Fans, Valves
- Refrigerant temperatures: Sensors measuring the refrigerant temperature
- Air temperatures: Sensors measuring the air temperature

- Voltages
- System status
- System pressure

To access all active failures in the system click on the **TAB “Failures”**

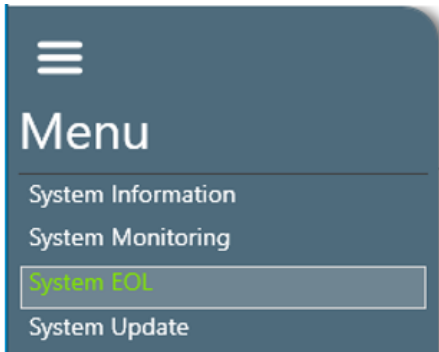


The failures are displayed in tabular form including information regarding the:

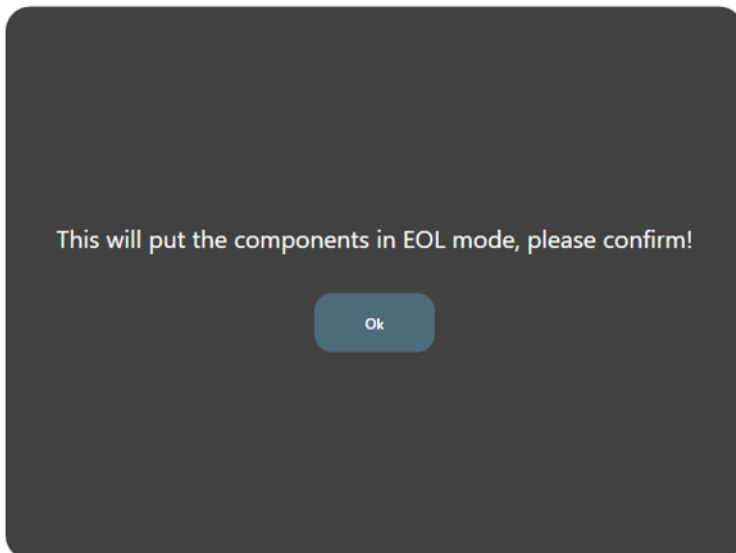
- Error ID
- Error Description
- HVAC Reaction
- Action / Remedy or fault tracing

6.2.3 Component and system control

To control the components in the system from the tool, open the Menu bar and select the “**System EOL**” feature

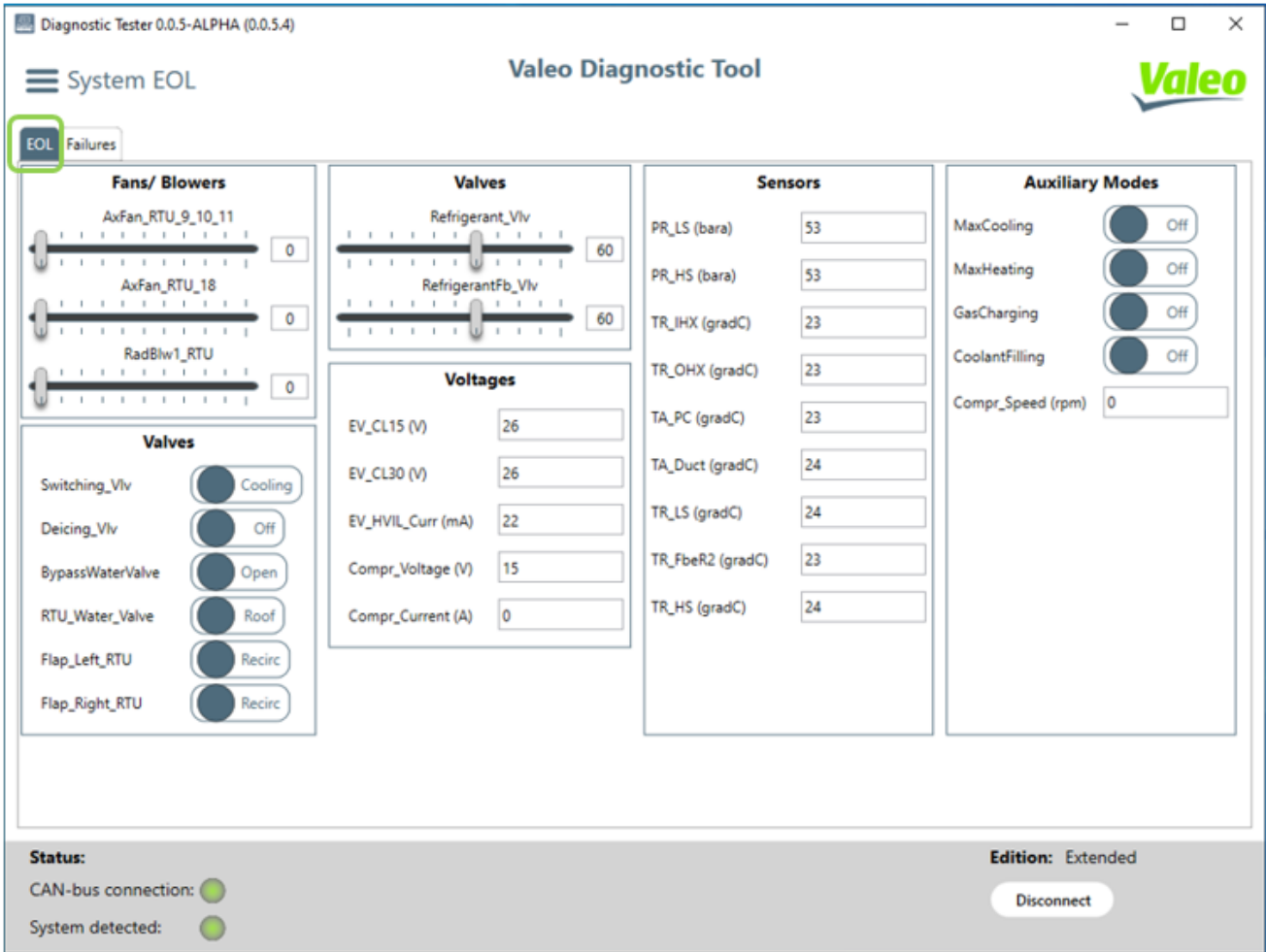


A dialog for confirmation will appear on the screen.



! After selecting the OK button, the complete system will go automatically into IDLE state and wait for commands from the tool.!

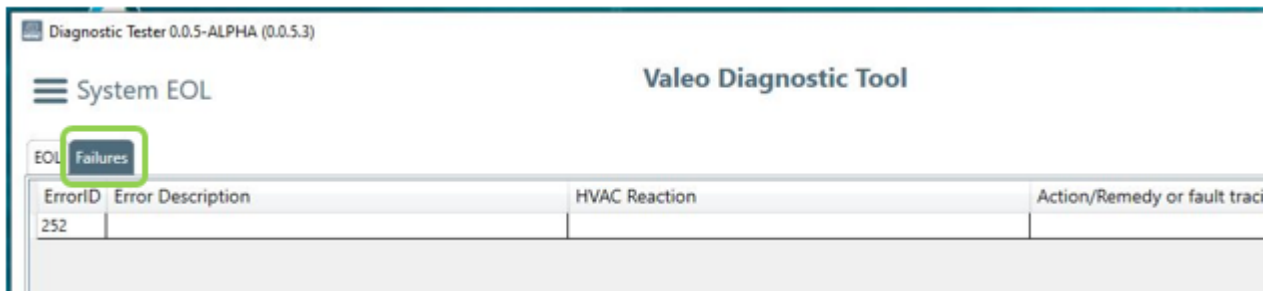
In the workspace area, the relevant controls will be shown under the **TAB “EOL”**



Similar components and system functions are pre-divided into groups:

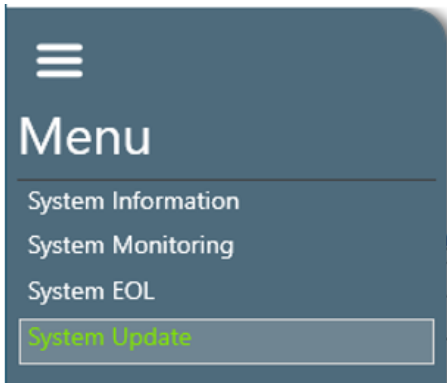
- Fans/Blower: Control the speed of the Blowers and Fans
- Valves: Control the position of the valves
- Sensors: Reading the sensor values
- Voltages: Reading the voltages
- Auxiliary Modes: Control the system mode

To access all active failures in the system click on the **TAB “Failures”**

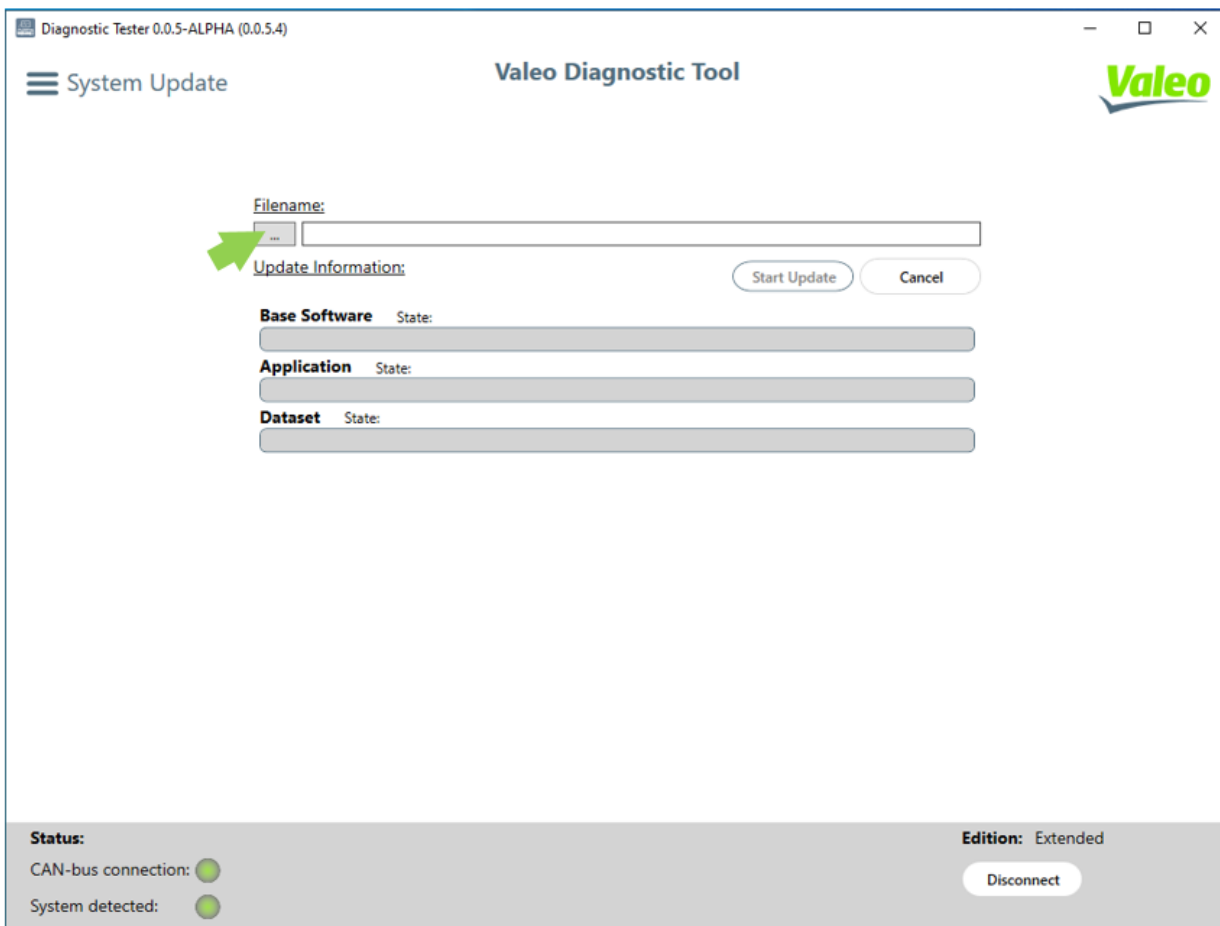


6.2.4 System Update

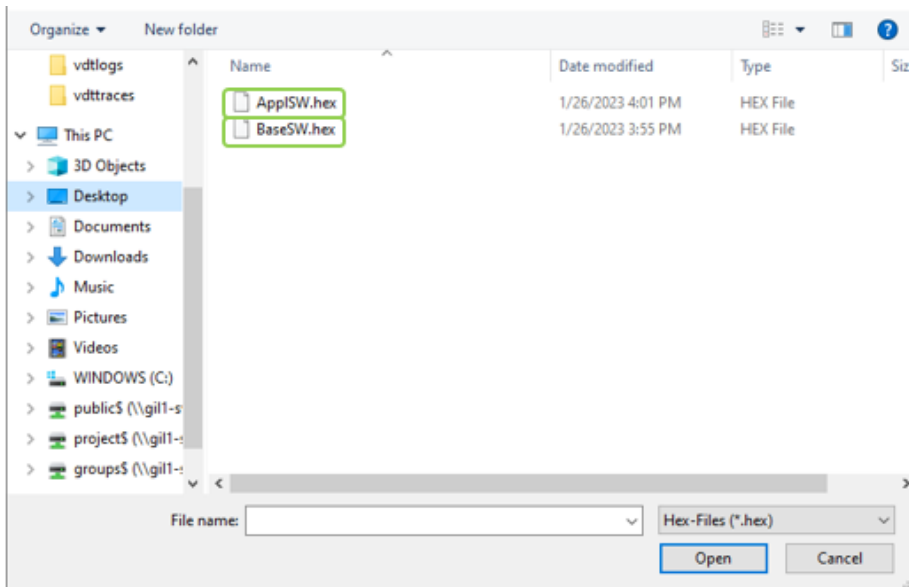
To update the ECU software, open the Menu bar and select the “**System Update**” feature.



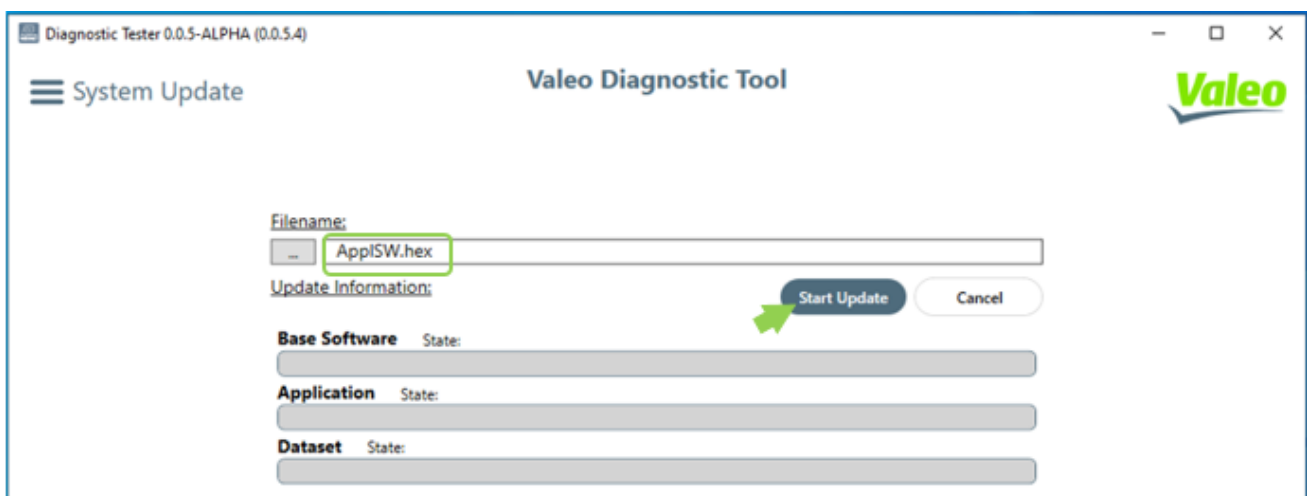
To update the software of the ECU, the user first has to select the button below “**File name**”



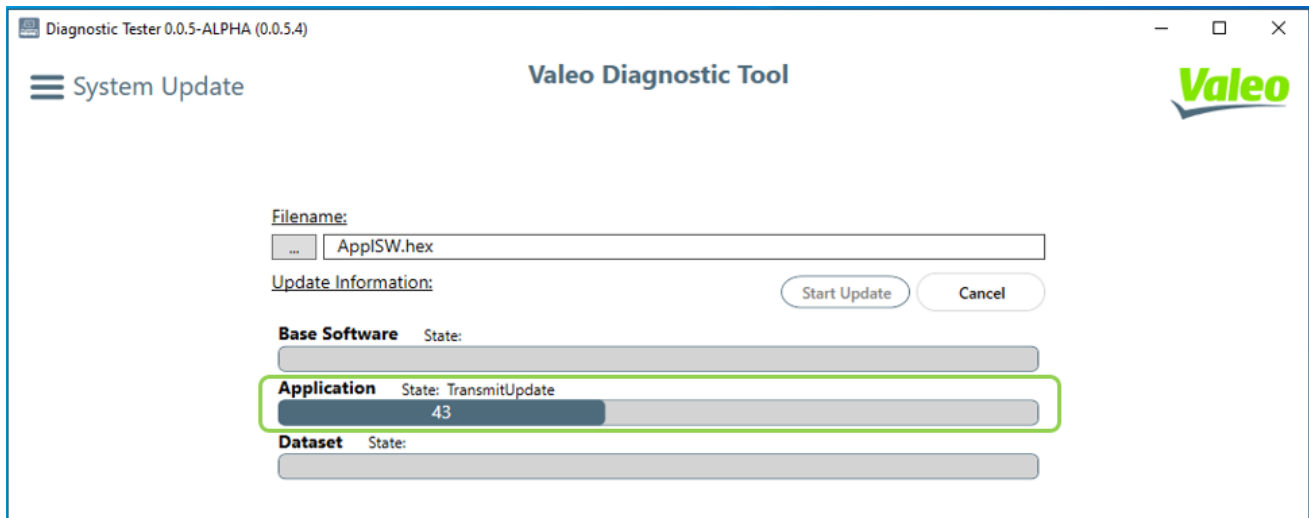
A windows menu will appear, allowing the user to navigate to the desired folder containing the necessary software files



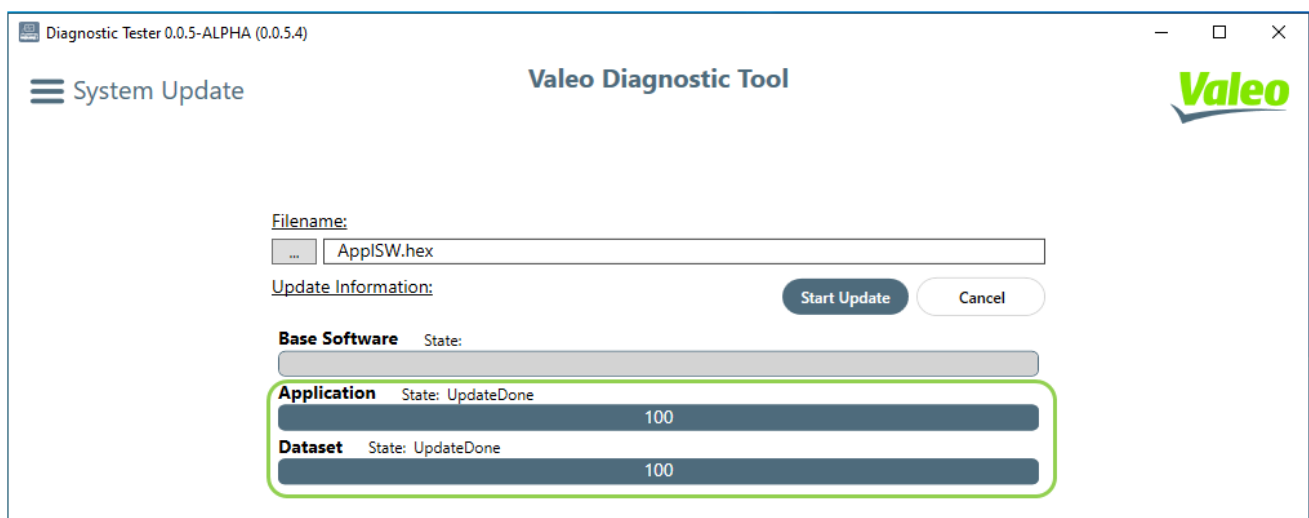
After selecting the desired file, the name of the file will appear inside the name bar and the **“Start Update”** button will become active, allowing the user to initiate the update process



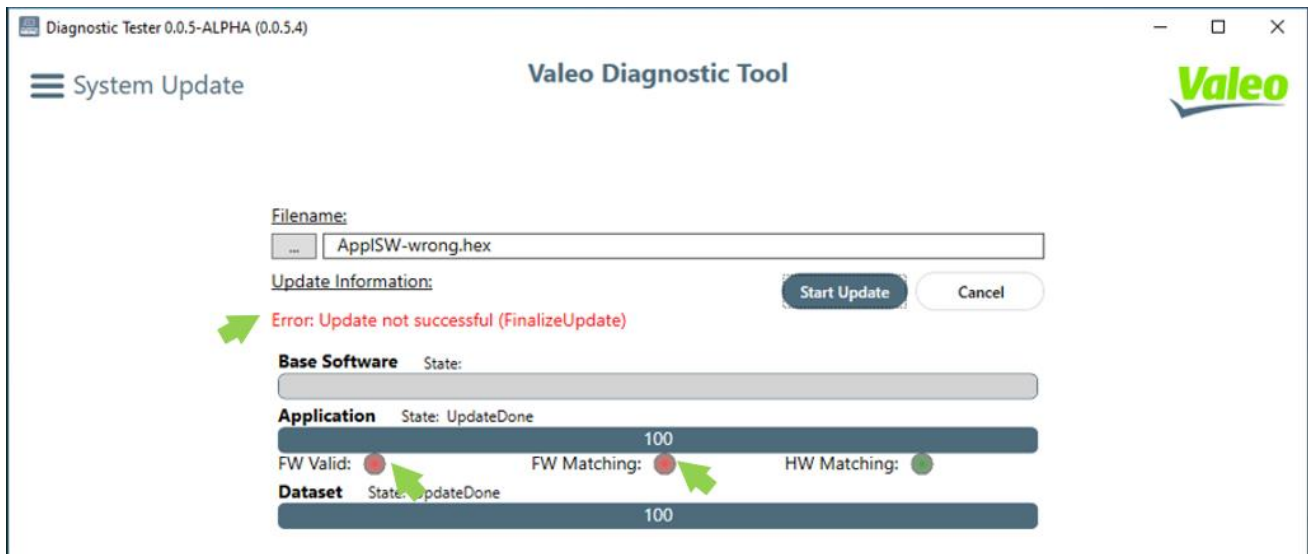
The progress of the update process will be indicated by the respective bar



After the update process is finished the progress bar should indicate 100% and no errors shall appear



In case that the software files, are not compatible to each other, an error will appear after the updating process, indicating that the **“Firmware is not valid and not matching”**



In this case, the update process has to be started again with the correct software file. The tool will disconnect from the ECU.

6.3 User access rights

There are currently two (2) different access levels of the tool, defined as:

- Standard Edition
 - The user shall get access to following features:
 - Read the general ECU information
 - Read the actual status of the component
 - Read all active failures
- Extended Edition
 - The functionality shall include the scope of Standard Edition
 - The user shall get also access to advanced features like:
 - Control the state of all low voltage components
 - Trigger auxiliary routines
 - Update ECU software version

In order to differentiate between the Editions, a physical Dongle shall be used.

The **Extended Edition** shall be only accessible when the physical dongle is connected.

