



# ABRITES DIAGNOSTICS FOR TESLA

**User manual**  
version 33.0



## Important notes

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The Abrites software and hardware products are developed, designed and manufactured by Abrites Ltd. During the production process we comply to all safety and quality regulations and standards, aiming at highest production quality. The Abrites hardware and software products are designed to build a coherent ecosystem, which effectively solves a wide range of vehicle-related tasks, such as:

- Diagnostic scanning;
- Key programming;
- Module replacement,
- ECU programming;
- Configuration and coding.

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There are certain conditions, upon which the warranty cannot be applied. The warranty shall not apply to damages and defects caused by natural disaster, misuse, improper use, unusual use, negligence, failure to observe the instructions for use issued by Abrites, modifications of the device, repair works performed by unauthorized persons. For example, when the damage of the hardware has occurred due to incompatible electricity supply, mechanical or water damage, as well as fire, flood or thunder storm, the warranty does not apply.

Each warranty claim is inspected individually by our team and the decision is based upon thorough case consideration.

Read the full hardware warranty terms on our [website](#).

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- Abrites assumes no responsibility for any damage resulting from the use, misuse, or negligent use of the hardware or any software application.

## Safety information

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The Abrites products are to be used by trained and experienced users in diagnostics and reprogramming of vehicles and equipment. The user is assumed to have a good understanding of vehicle electronic systems, as well as potential hazards while working around vehicles. There are numerous safety situations that cannot be foreseen, thus we recommend that the user read and follow all safety messages in the available manual, on all equipment they use, including vehicle manuals, as well as internal shop documents and operating procedures.

Some important points:

Block all wheels of the vehicle when testing. Be cautious when working around electricity.

- Do not ignore the risk of shock from vehicle and building-level voltages.
- Do not smoke, or allow sparks/flame near any part of the vehicle fuel system or batteries.
- Always work in an adequately ventilated area, vehicle exhaust fumes should be directed towards the exit of the shop.
- Do not use this product where fuel, fuel vapours, or other combustibles could ignite.

In case any technical difficulties occur, please contact the

**Abrites Support Team by email at [support@abrites.com](mailto:support@abrites.com).**

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## List of revisions

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Date	Chapter	Description	Revision
04.07.2021	ALL	Document created	1.0
04.07.2021	General Diagnostics	Document created	1.1
24.11.2021	Special Functions	Document updated	1.2
24.11.2021	Key Learning	Document updated	1.2
24.11.2021	Airbag Reset	Document updated	1.2

# 1. Introduction

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The Abrites Diagnostics for Tesla is an online server based diagnostic software. The current support list includes the “Model 3”, “Model S” and “Model X” vehicles.

In order to operate the software requires you to have an AVDI interface, a Windows based PC with Windows 7 or later version of the Windows OS and a stable Internet connection.

The tool’s purpose is to allow you to perform standard and advanced vehicle diagnostics starting with module identification, reading and clearing of diagnostic trouble codes (DTCs) and live data monitoring, as well as advanced operations such as service functionality and more.

The software is in constant development and its functionality is ever growing. The intention is for the Abrites Diagnostics for Tesla to be used by automotive specialists but it is simultaneously designed in such a way that is accessible to enthusiasts as well.

## 2. Installation

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The “ABRITES Diagnostics for Tesla” is installed together with the rest of the Abrites diagnostic software applications when the installation files are received.

You could easily identify it by the Internet connectivity symbol as shown here:



### 3. Using the Abrites diagnostics for Tesla

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The ZN072 ABRITES cable set for Tesla Model S/X and Model 3 is used when connecting to all Tesla models.



The ZN072 cable set consists of:

CB014 - a cable used for Tesla Model 3 - it has two connectors for the connection

ZN071 - a cable for Tesla Model S/X, used to connect using one connector under the central control panel

ZN072 - a set that consists of a CB014 and ZN071 cables.



When connecting to a Tesla vehicle it is extremely important to adhere to the following steps in order to avoid possible damage to the vehicle and your AVDI and PC.

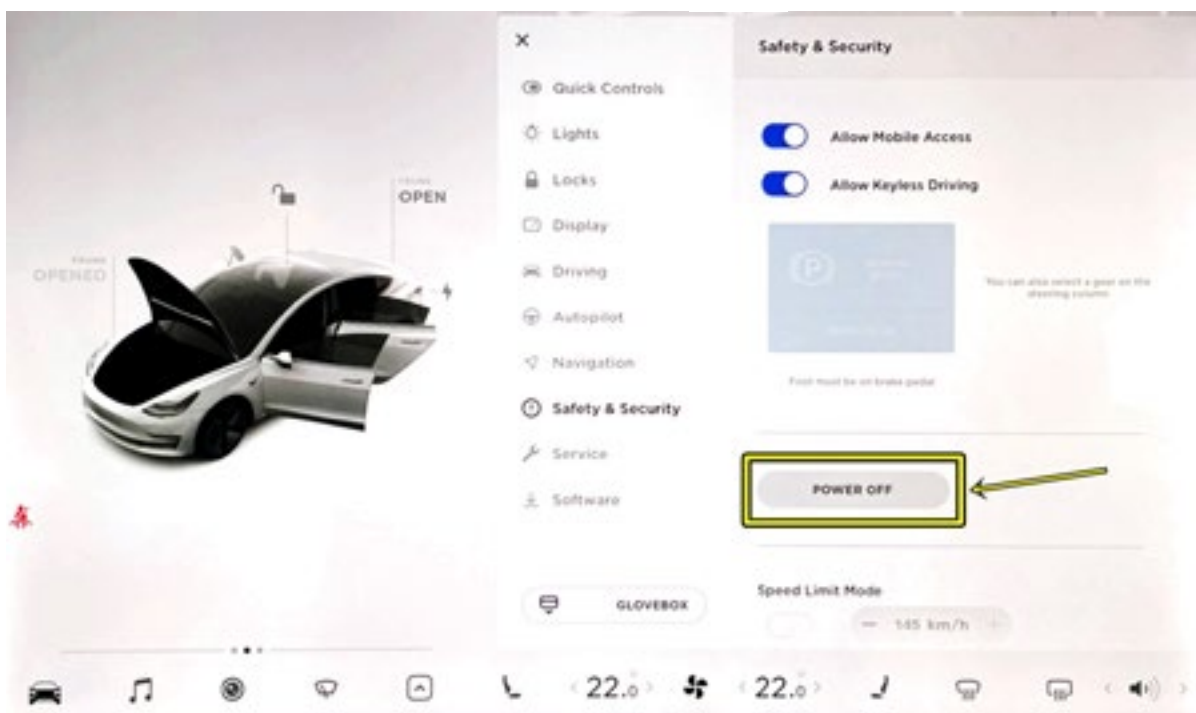
Here is a list with the steps you **MUST** take before beginning work on a **Tesla Model 3**.

These must be completed before you connect the CB014 cable (part of the required ZN072 cable set).

1. **Disconnect** any charging cable
2. On the touchscreen, **power off the climate control system, and wait at least 30 seconds** for the climate control system to completely shut down
3. Make sure the vehicle is in **Park**
4. Fully **lower all door windows** to avoid glass shatter and door lockout conditions
5. Open the LH and RH rear doors, and then pass a shop towel halfway through each door striker to prevent the latch from securing
6. Remove the 2nd row lower seat cushion. See Seat Cushion - Lower - 2nd Row (Remove and Replace)
7. Remove the rear underhood apron. See Underhood Apron - Rear (Remove and Replace)
8. On the touchscreen, touch Controls > Safety & Security > Vehicle Power > **Power Off**

Caution: Do not proceed until the climate control system has been powered off for at least 30 seconds.

**Do not disconnect 12V power while the climate control system is operational**



9. Loosen the nut that attaches the 12V battery negative cable to the battery, and then disconnect the cable from the battery



10. Remove the foam cover from the RH side of the penthouse (back seats)



11. Disconnect the electrical harness from the high voltage controller connector. Note: The HV battery positive connector and negative connector open with a clunking sound. This is normal.

**Once all of the safety measures are done** (shutting off vehicle, lowering the windows, disconnecting the battery, etc), you can proceed with removing the plastic covers under the steering wheel so that you can gain access to two connectors that we use to communicate with. The following is done on the Tesla Model 3. The photos below show the process on Tesla Model 3:



This is the main plastic cover that needs to be taken off so you can gain access to the connectors of the BCM module



This is the BCM connector that the CB014 adapter is connected to.



This is what the connection looks like after CB014 is connected and the original connector "bridged".

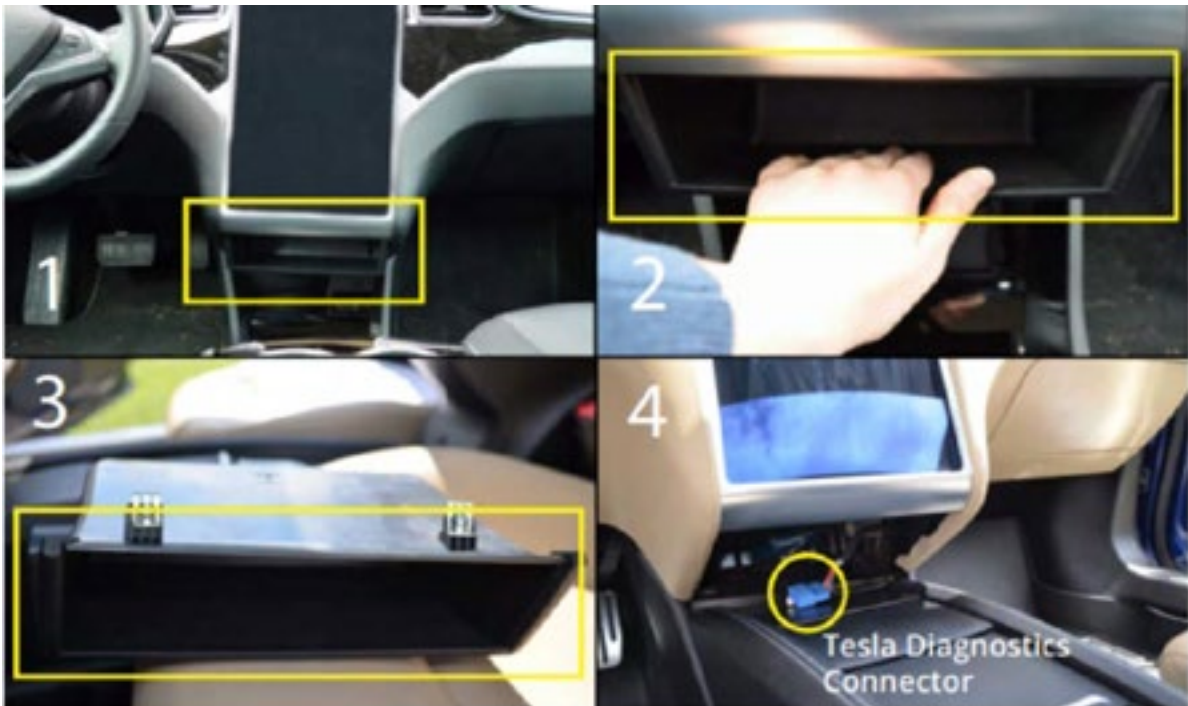


This is how CB014 is connected with the AVDI interface while the OBD connector is connected to the OBDII plug of the car. Once this is done, the Abrites Diagnostics for Tesla can be started:



The procedure for Model 3 does not apply to Model S/X vehicle.

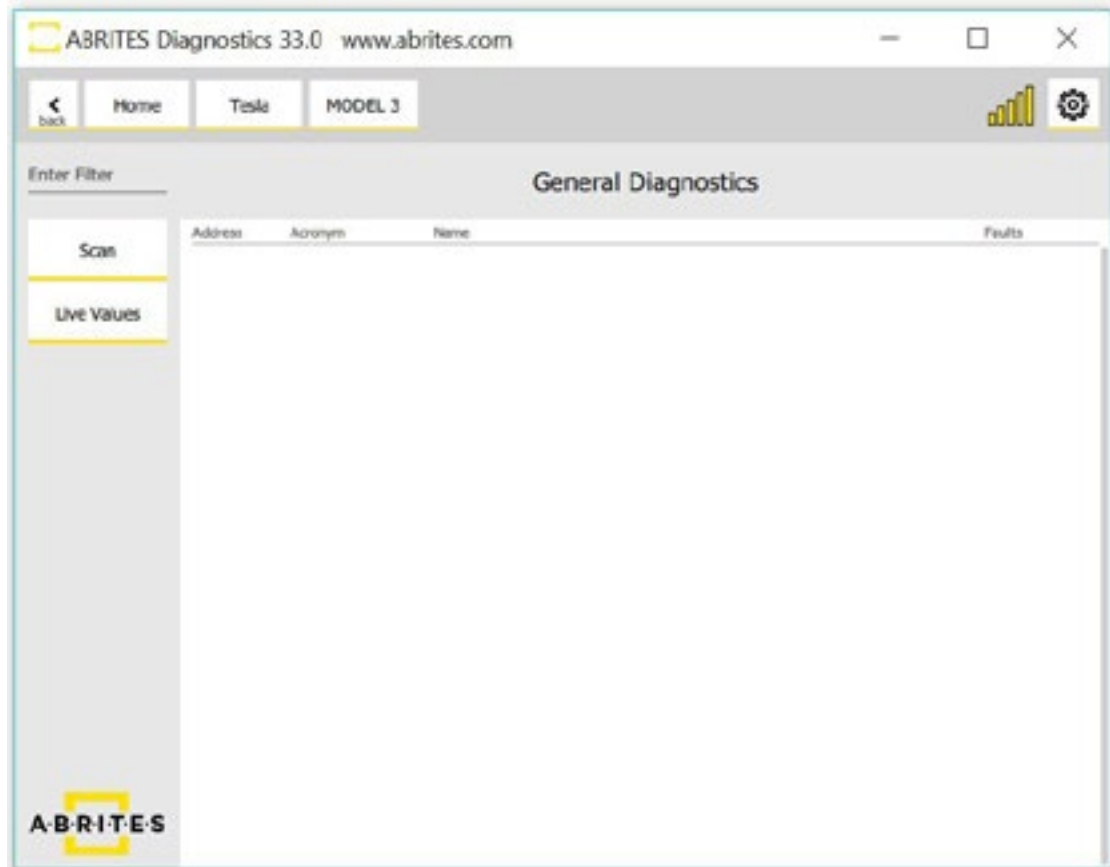
The below photo shows the diagnostic port on Tesla Model S/X. The ZN071 cable(part of the ZN072 cable set) is used to the connect to the diagnostic port.



### 3.1. General Diagnostics

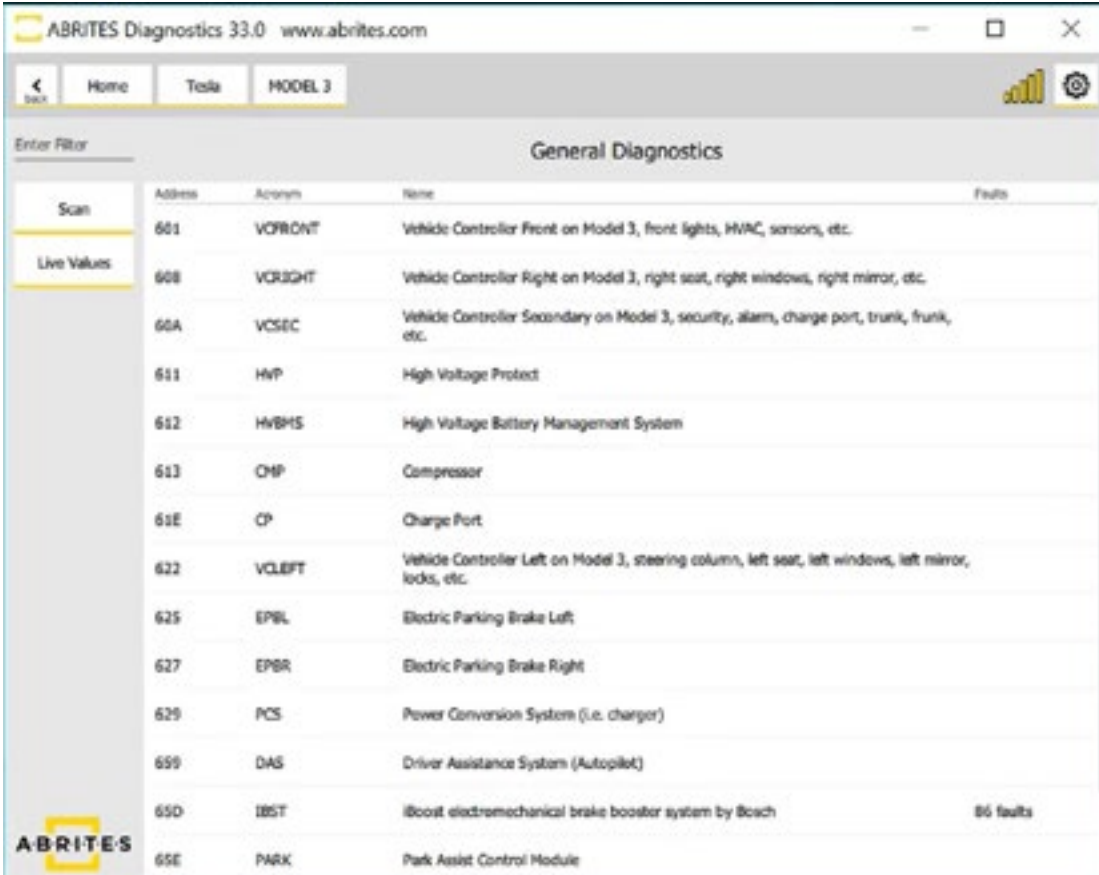
Once the software is started, the user will have the option to choose a brand and a model produced by this brand. After that the protocol of the vehicle will be automatically detected and General Diagnostics screen will be displayed.

This is what the General Diagnostics screen looks like before the list of modules is generated:



### 3.1.1 Scanning for diagnostic trouble codes (DTCs)

When pressing the Scan button the user will see the electronic modules installed in the vehicle they are currently working with. The number of faults within each will also be displayed. From there you can drill into each module and check it for fault codes. Reading the fault codes will give you a description of the fault. The details involved in each code may vary in detail due to the specifics of the vehicle.



Address	Acronym	Name	Faults
601	VCFRONT	Vehicle Controller Front on Model 3, front lights, HVAC, sensors, etc.	
608	VCRIGHT	Vehicle Controller Right on Model 3, right seat, right windows, right mirror, etc.	
60A	VCSEC	Vehicle Controller Secondary on Model 3, security, alarm, charge port, trunk, trunk, etc.	
611	HVP	High Voltage Protect	
612	HVBMS	High Voltage Battery Management System	
613	COMP	Compressor	
61E	CP	Charge Port	
622	VCLLEFT	Vehicle Controller Left on Model 3, steering column, left seat, left windows, left mirror, locks, etc.	
625	EPBL	Electric Parking Brake Left	
627	EPBR	Electric Parking Brake Right	
629	PCS	Power Conversion System (i.e. charger)	
659	DAS	Driver Assistance System (Autopilot)	
65D	IBST	iBoost electromechanical brake booster system by Bosch	86 faults
65E	PARK	Park Assist Control Module	

### 3.1.2 Clear faults

When selecting the **“Clear faults”** function once a module has been entered, all the diagnostic trouble codes will be deleted from the electronic modules available in the vehicle.

There may be fault codes that require additional user input (i.e component replacement and others) in order for the fault code to be cleared.

Please note that some fault codes may be indicative to special diagnostic procedures for the special functions of the Abrites Diagnostics for Tesla.

Tesla does not provide DTC descriptions when doing diagnostics but the fault code that can later be found in the Tesla fault codes database on their website.



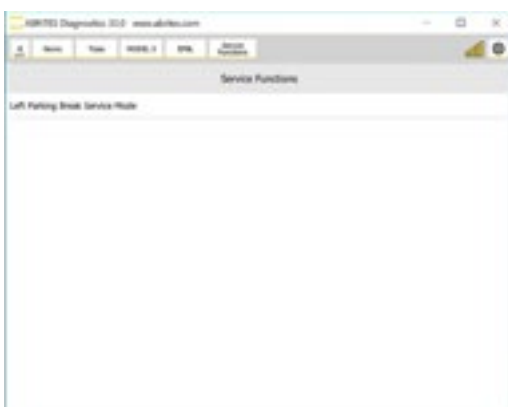
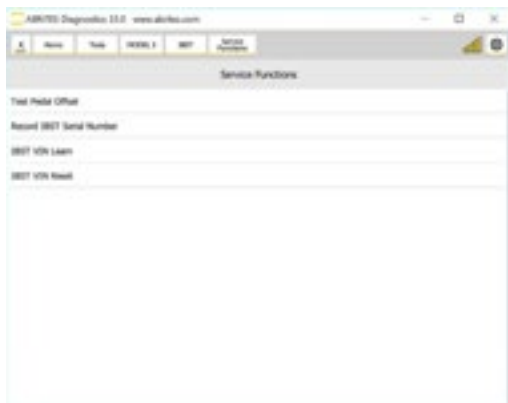
### 3.1.3 Live values

In order to display the live values of a module within a vehicle you should select the **“Live values”** button followed by the module you would like to view the values for.

## 3.2 Service Functions

The Service functions menu in the software allow different service functions to be performed. Some of them include entering the parking brake in service mode, IBST VIN learn and reset, test pedal offset, dim central mirror, left or right mirrors, Head Lamp communication test, HOMELINK communication test, window calibration on all doors, NFC amplitude reading, etc. Here are some of the recently added functions:

- Front left and Rear right brake bleed (start bleed from here)
- Front right and Rear left brake bleed
- Thermal Coolant Air Purge
- Thermal Fill Drain
- Steering Column Calibration
- “12V Reset” - E-Fuse reset done trough the software instead of disconnecting all the batteries.





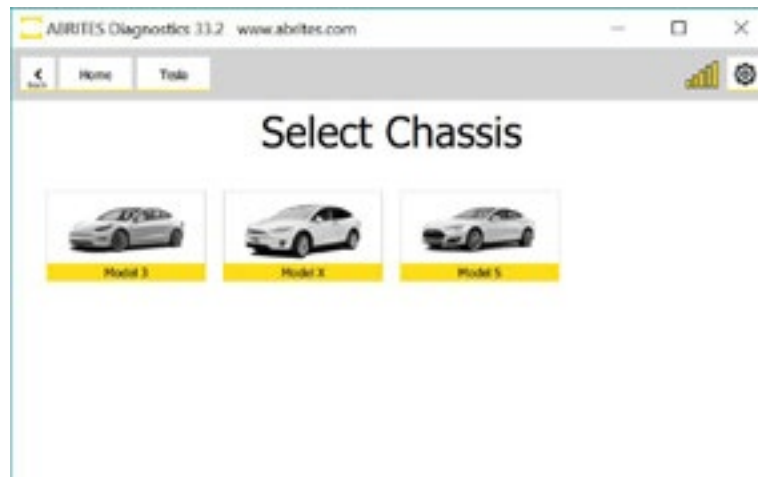
## 4. Special Functions

The Abrites Diagnostics For Tesla software offers special functions that allow different varieties of procedures that can be applied to either program keys, perform airbag reset or other adaptations.

### 4.1 Key Learning- adding a spare key

The key learning special function allows the addition of a spare key for Model S/X vehicles completely by OBD. To start the key learning procedure, you can follow the steps described in screenshots below after starting the Tesla software:

1. Select the Model



2. Select the Key Learning menu and follow the instructions in the software



**Note: Whenever doing the key learning, make sure to follow all the steps to make the proper connection as described in chapter 3 - “Using the Abrites diagnostics for Tesla”.**

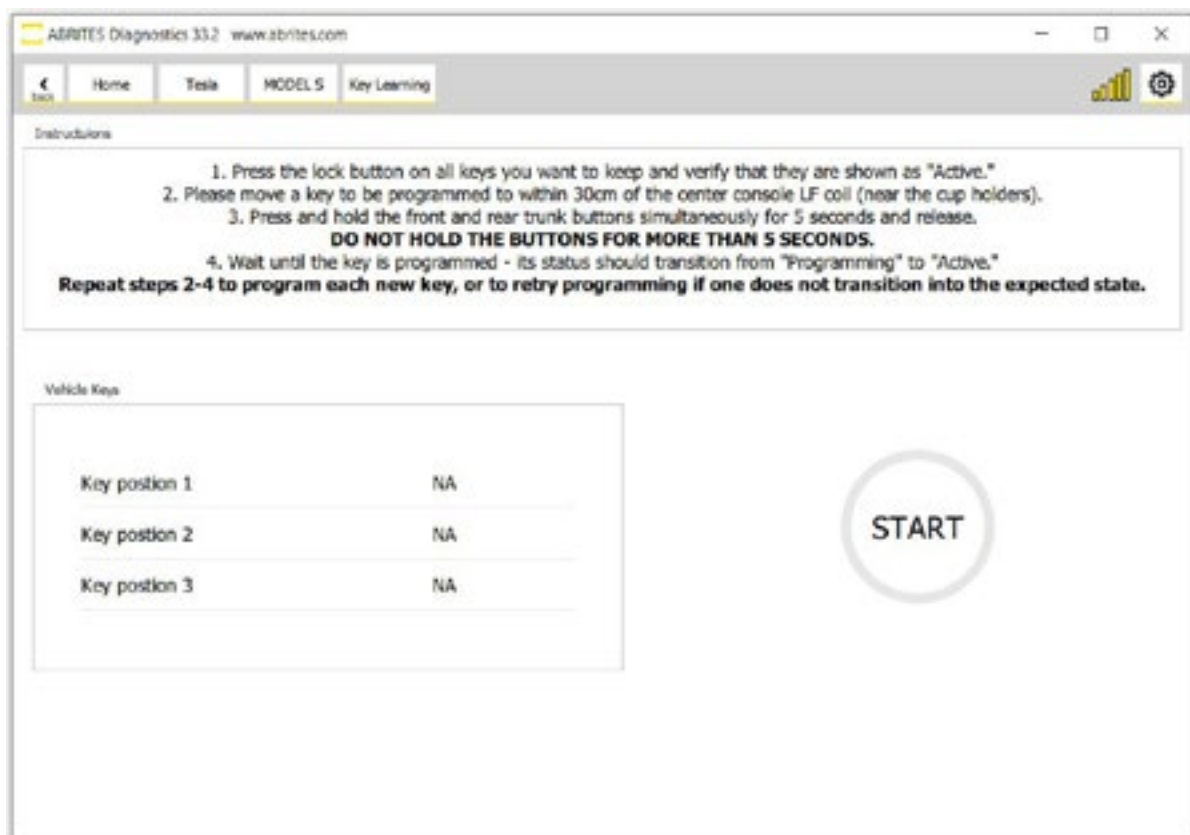
The software will open the next window which consists of 4-5 steps that are to be followed in order to program one or more spare keys:

1. Press the lock button on all keys you want to keep and verify that they are shown as “Active”
2. Move a key to be programmed to within 30cm of the center console LF coil (near the cup holders)
3. Press and hold the front and rear trunk buttons simultaneously for 5 seconds and then release them

**Important:** Do not hold the buttons for more than 5 seconds!

4. Wait until the key is programmed - its status should change from “Programming” to “Active”

Repeat steps 2-4 to program each new key or to retry programming if one of the keys does not change from “Programming” to “Active”.



## 4.2 Airbag Reset - clear crash data, read/write VIN

The TESLA Airbag Reset special function gives access to customers to perform various calibrations in the airbag module of all TESLA vehicles (Model S/X and Model 3).

It covers both **Bosch** and **Delphi** produced airbag modules completely by diagnostics.

Supported functions for Bosch airbag modules:

- Airbag exchange
- read/update data in the module (modify EEPROM)
- clear crash data
- change VIN

**Important:** All functions for Delphi airbag are performed by diagnostics(ZN072 cable set for Tesla is required).

Supported functions for Delphi airbag modules:

- read EEPROM (on bench)
- clear crash data (on bench)

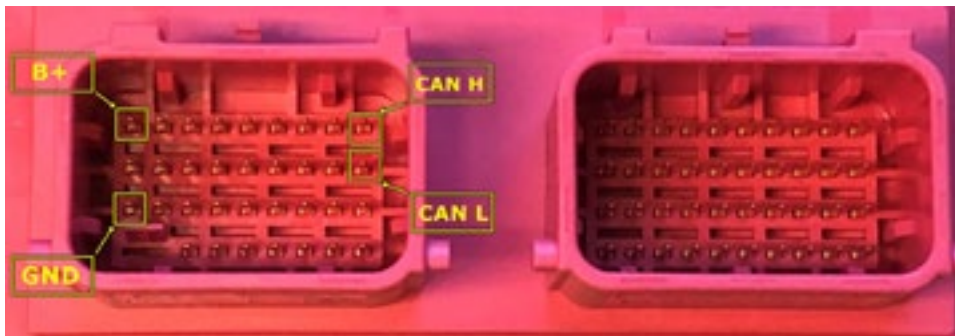
In order to read the EEPROM of the Delphi airbag module you will need the following connection to the Delphi airbag module through the CB100 cable of the AVDI:

B+(Delphi airbag) -> B+ (external power supply)

GND (Delphi airbag) -> GND (external power supply)

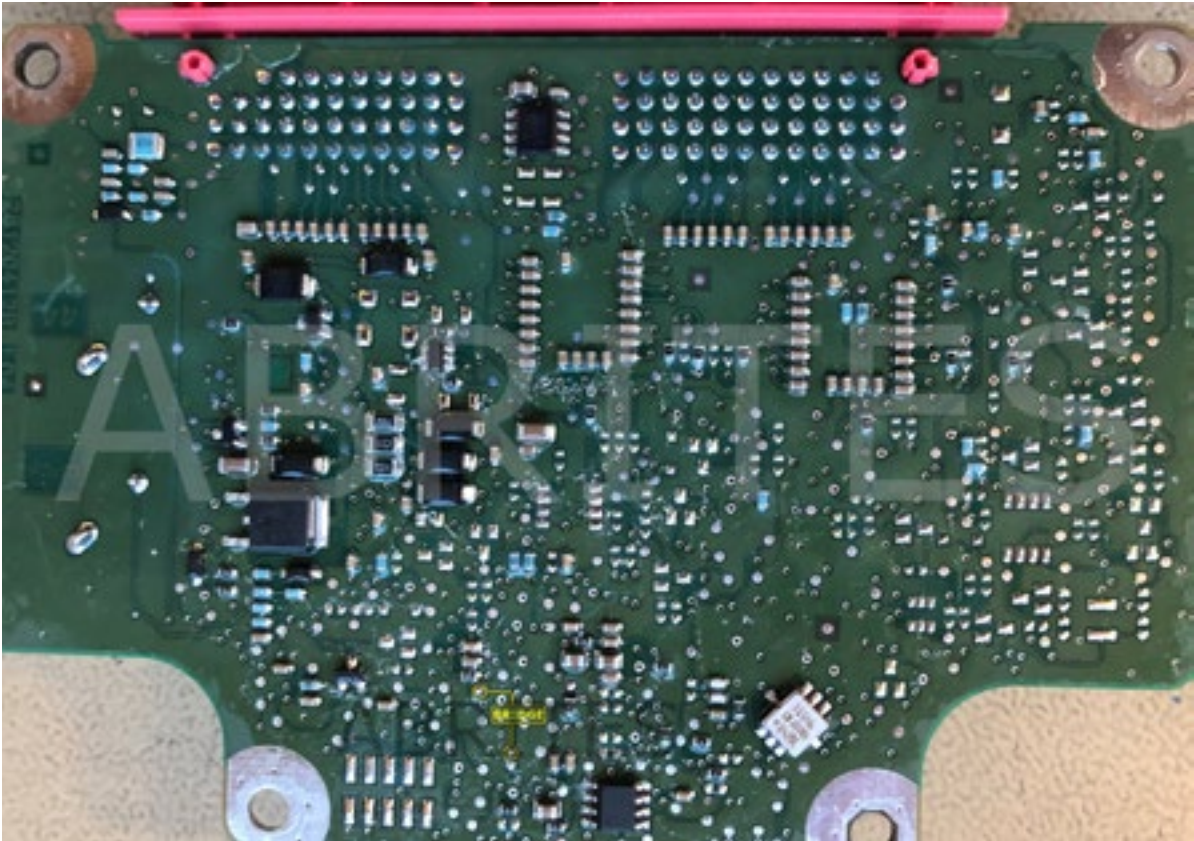
CAN H (Delphi airbag) -> pin 1 (CB100 Abrites OBDII cable)

CAN L (Delphi airbag) -> pin 9 (CB100 Abrites OBDII cable)



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In order to clear the crash data you will need to bridge these two point on the PCB of the airbag module and clear the DTCs:



Once you clear the DTCs , the crash data will be cleared and you can restore the PCB to its original form by removing the bridge and return the airbag module to the vehicle.