A·B·R·I·T·E·S
automotive solutions

ABRITES DIAGNOSTICS FOR JAGUAR/LAND ROVER

User manual
version 1.8

Important notes

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.

Warranty

You, as a purchaser of Abrites hardware products, are entitled of a two-year warranty. If the hardware product you have purchased has been properly connected, and used according to its respective instructions, it should function correctly. In case the product does not function as expected, you are able to claim warranty within the stated terms. Abrites Ltd. is entitled to require evidence of the defect or malfunction, upon which the decision to repair or substitute the product shall be made.

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.

Copyright information

Safety information

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.

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List of revisions

Date	Chapter	Description	Revision
01.10.2015	ALL	Document created	1.0
13.06.2017	8	Immo Advanced	1.1
12.11.2020	9	Key Learning Special	1.2
24.02.2021	9	Key Learning Special	1.3
11.03.2021	9	Key Learning Special	1.4
11.03.2021	10	Dump tool	1.4
22.11.2021	9.1	EM015 - UWB Emulator	1.5
02.08.2022	9.2	EM015- UWB Emul. Update	1.6
01.03.2023	11	KP002	1.7

List of revisions

Date	Chapter	Description	Revision
01.11.2023	12	Abrites Key Reset	1.8

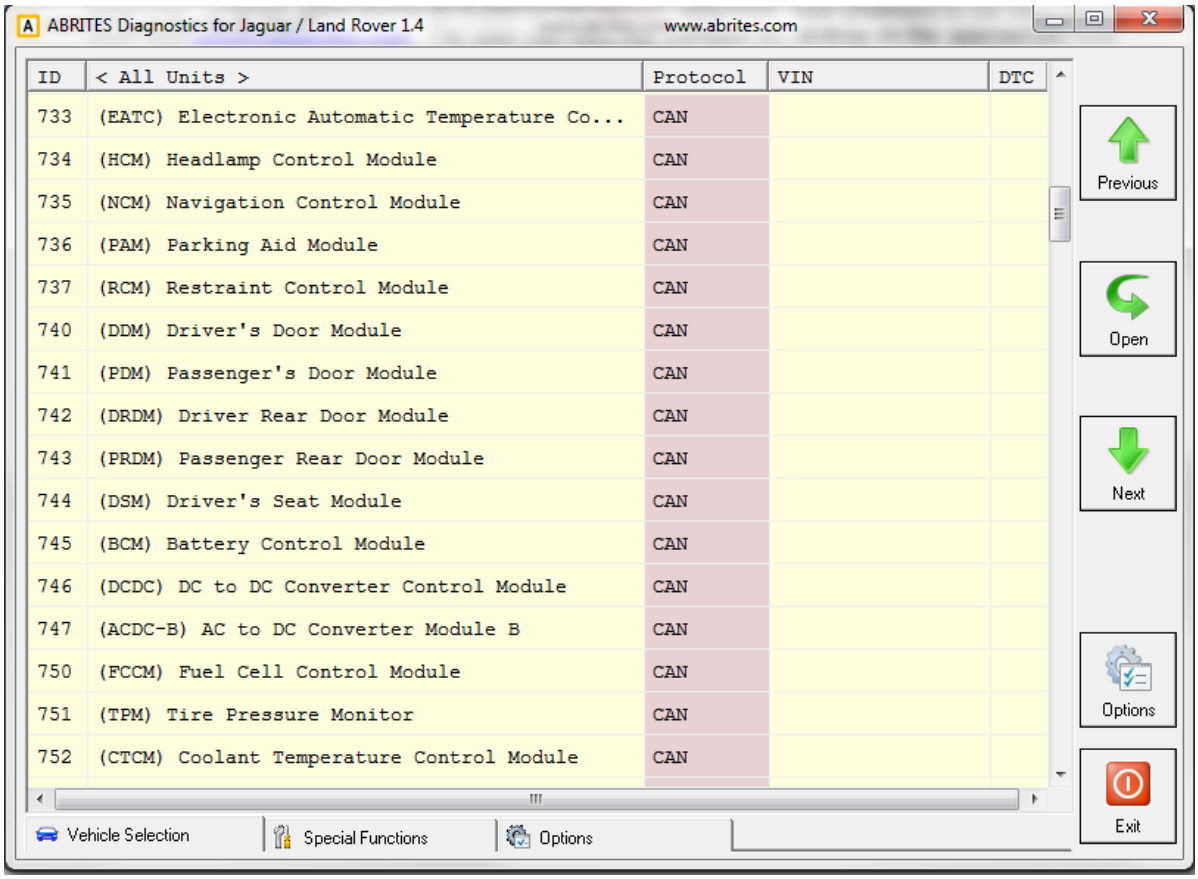
1. Introduction

“Abrites Diagnostics for Jaguar/ Land Rover” is a Windows PC based diagnostic software for Jaguar/ Land Rover vehicles. With the help of this software you canperform complete diagnostic operations of all vehicles. For proper operation of your diagnostic software you will need a corresponding interface for connection between your PC and vehicle named “AVDI”. AVDI is an interface produced by Abrites Ltd. intended to act as an interface between the PC and the electronic control units. AVDI should be used with ABRITES software produced by Abrites Ltd.

ABRITES is a trade mark of Abrites Ltd.
ABRITES Diagnostics for Jaguar and Land Rover provides the user with the ability to perform dealer-level diagnostic functions, such as module identification, both basic and detailed, reading of diagnostic trouble codes (DTCs), clearing of DTCs and many others.

2. Using the Abrites diagnostics for JLR

The Abrites diagnostics for Jaguar/ Land Rover is installed together with the rest of the Abrites diagnostic software applications as a part of the Abrites diagnostic suite provided to the user via e-mail. The user can start the software by clicking on the appropriate icon from the Abrites "Quick start" menu.
Once the Jaguar/ Land Rover icon is selected the software will start and the user will see the following screen:

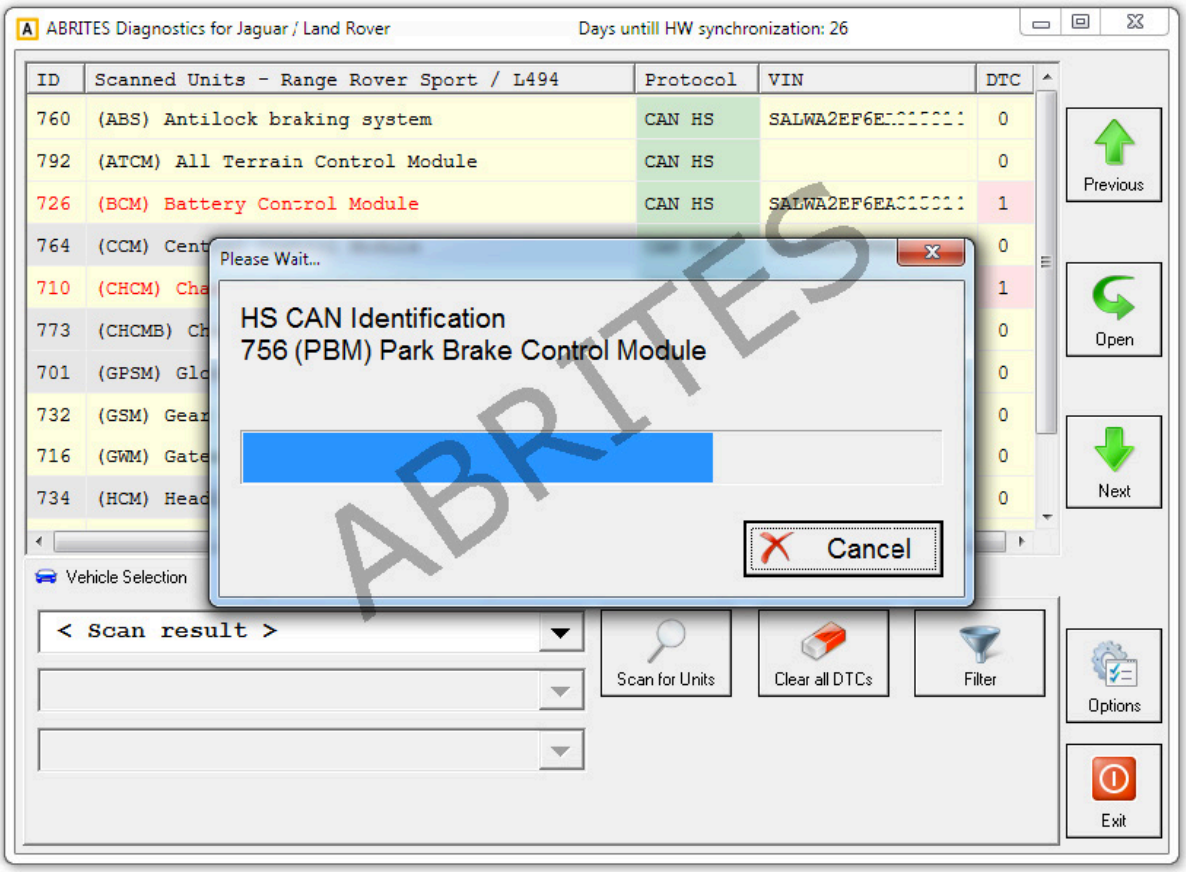


This is the main screen of the software and it shows all the navigation buttons as well as the ones for vehicle selection, scanning and general diagnostic.

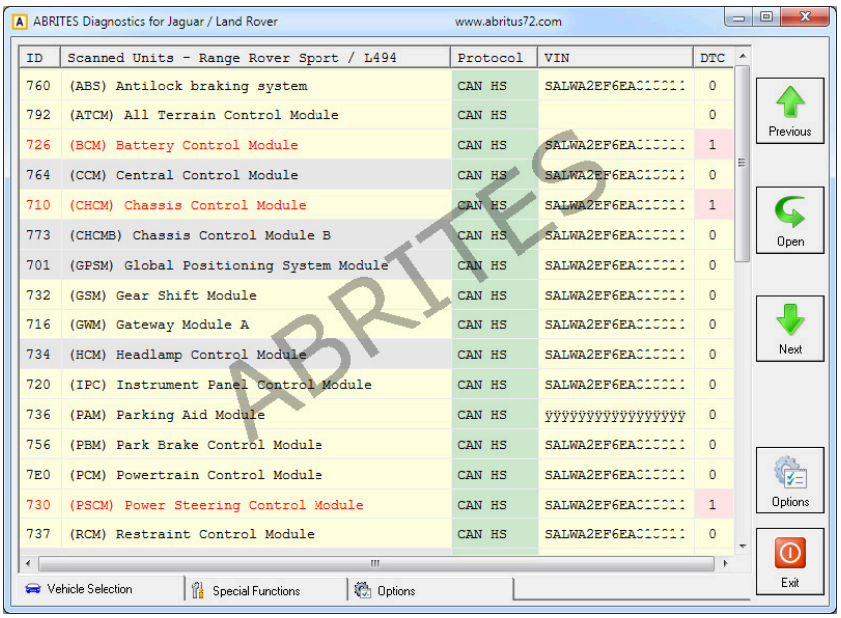
3. Standard Diagnostics

Standard diagnostics within the context of the Abrites diagnostics for Jaguar and Land Rover refers to functions such as device scanning for all the electronic control modules incorporated in the supported vehicles, reading of the identification data for all the modules, reading and clearing diagnostic trouble codes as well as service functions.

Device scanning allows the user to connect to the electronic modules of the vehicle and see the identifications for the them, the amount of diagnostic trouble codes for each one as well as the VIN numbers assigned to the separate units.

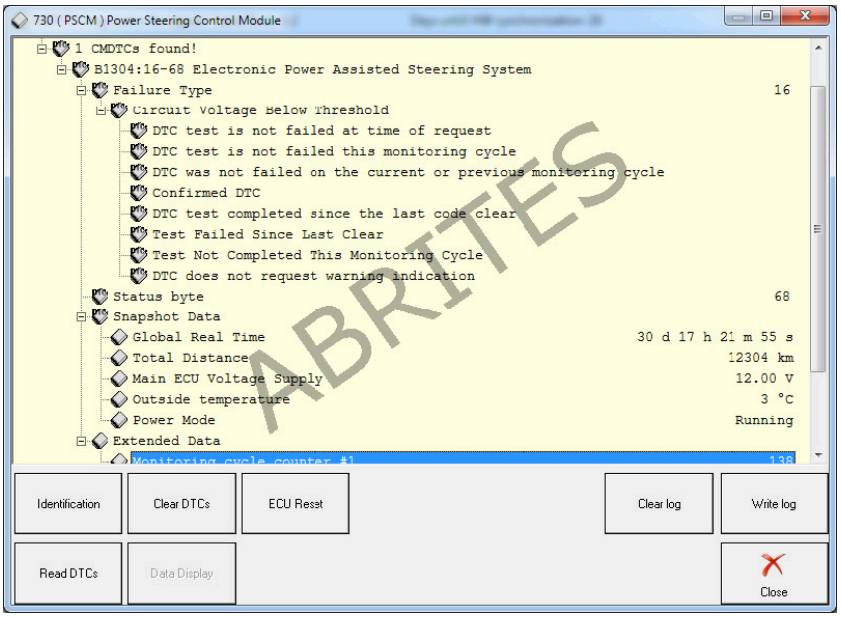


Once the scan is completed the details are displayed in the main window:



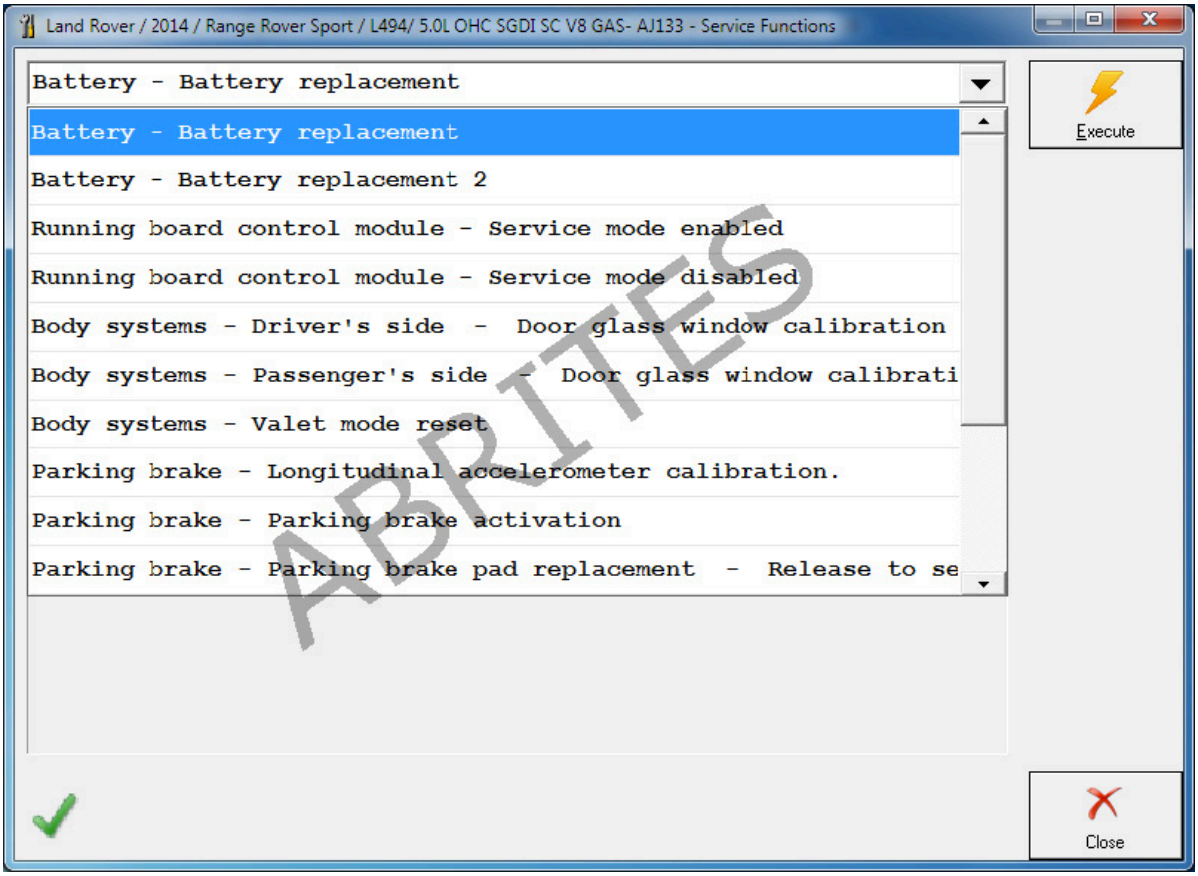
Diagnostic trouble codes and live data monitoring

When the initial connection with the vehicle is established the user can select an electronic module and enter by clicking over it. In the following screen the full identification of the module can be displayed. Also the DTCs will be shown together with the live data from the vehicle.



Performing service functions for the Jaguar/ Land Rover vehicles

This function allows the user to complete the process of the vehicle service or maintenance by registering their modification into the vehicle's ECUs. This functionality also allows the calibration of modules, and testing on them.



4. Special Function Key learning

"Key learning" is a function dedicated to the learning of keys to Jaguar/ Land Rover vehicles by the On Board Diagnostics port (OBD).

The vehicles currently supported by this function are described below:

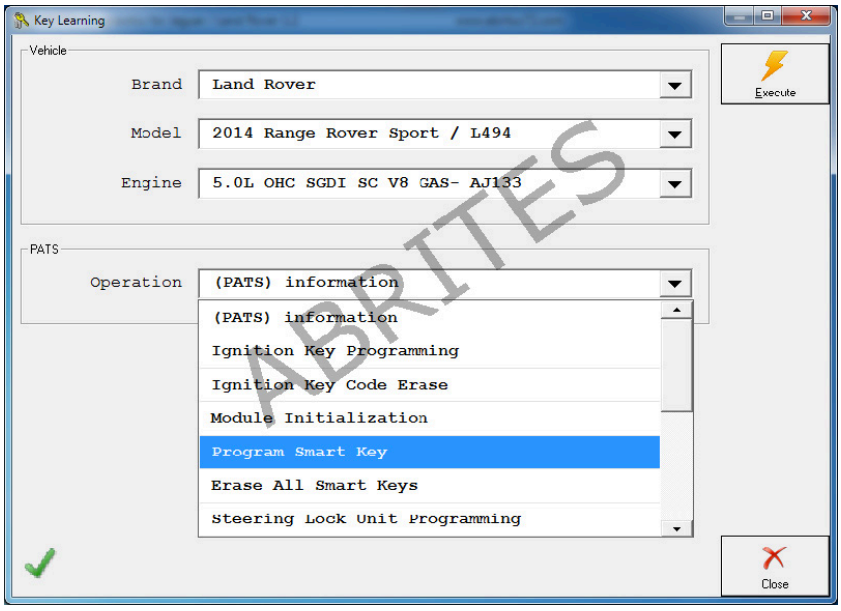
Land Rover:

Evoque (L538) - 2011- 2014
Range Rover Sport (L494) - 2013- 2014
Range Rover (L405) - 2012 – 2014 (incl.long wheel base)
Discovery LR4 – 2010-2014
Freelander 2 (L359) - 2006–2014

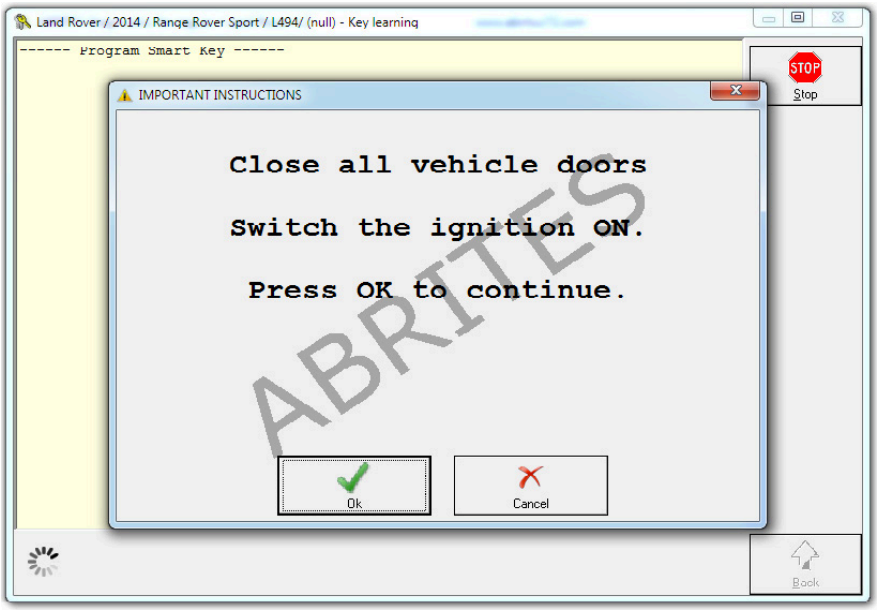
Jaguar:

F-Type Convertible and Coupe 2013-2014
XF (X250) - 2007 –
2014 XJ (X351) -
2010 – 2014 XK
(X150) - 2010 – 2014

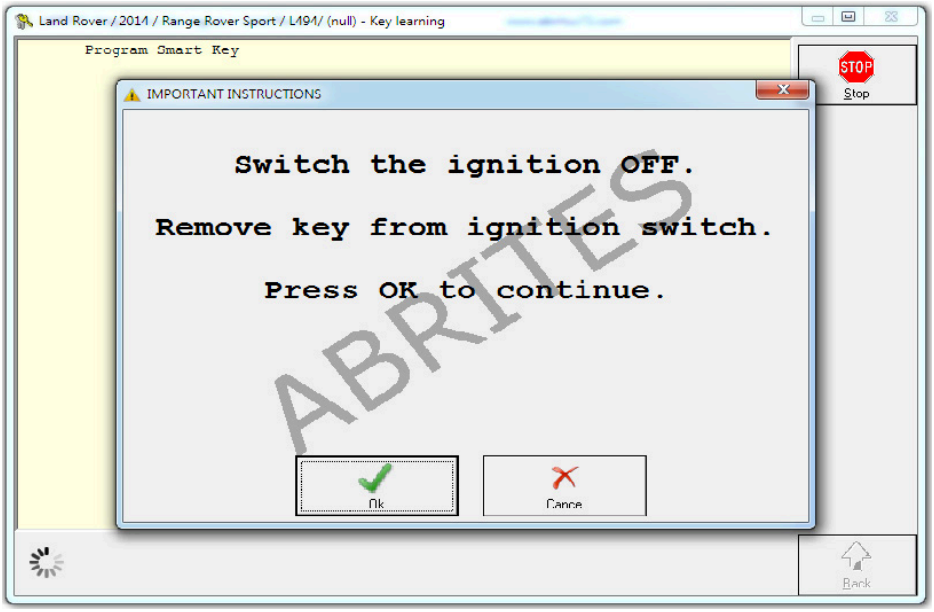
The procedure for key learning should start after a diagnostic connection to the vehicle is established and the icon for it is clicked.
The first step is to select the vehicle and the requested operation:



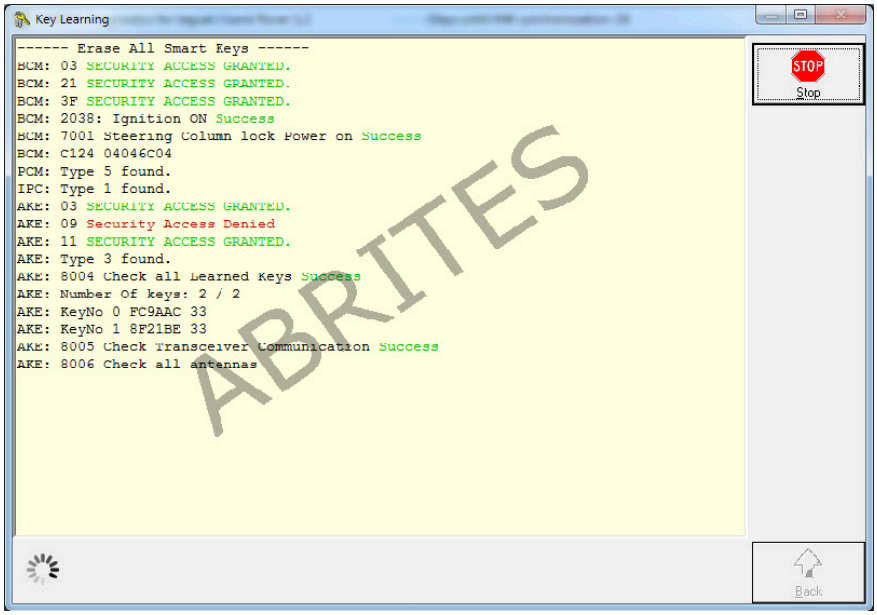
After that the software will start the on screen guidance. Please follow the steps and place the key in the ignition and set it to the ON position:



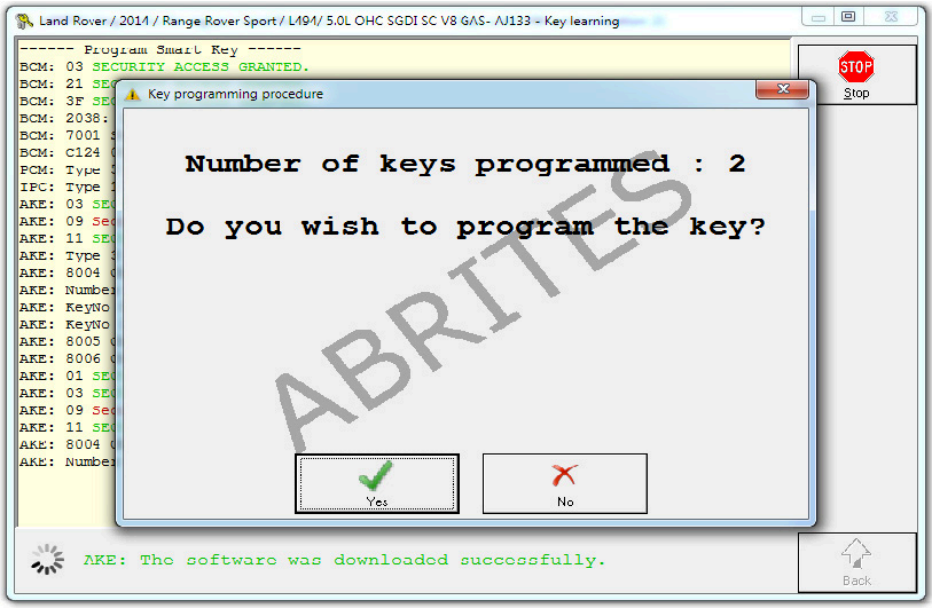
Again, the steps are shown in the message boxes on the screen.



The software will perform the key calculation and provide detailed information about all the steps taken:



Once the calculation is completed the software will inform you about that and will ask you if you would like to program the key.



5. Special Function Cluster calibration

Cluster calibration is a function dedicated to the calibration of electronic units after an exchange with a used unit. Please note that the calibration needs to be done in coordination with local laws.

Vehicles supported for cluster calibration include but are not limited to:

Land Rover:

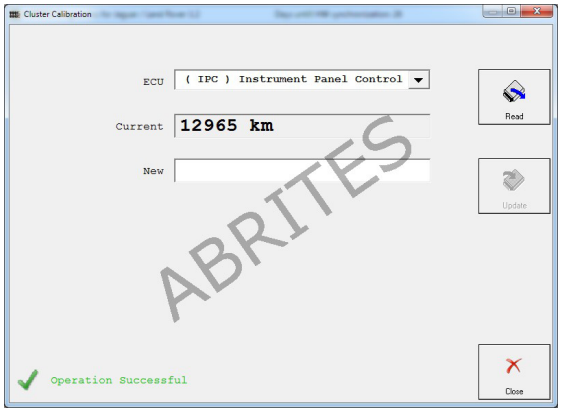
Evoque (L538) - LL and HL July 2011- 2014 (2dr and 4dr)
Range Rover Sport (L494) - 2013- 2014
Range Rover (L405) -2012 – 2014 (including long wheel base models)

Jaguar:

F-Type Convertible and Coupé 2013-2014
XF (X250) - 2007 –
2014 XJ (X351) -
2010 – 2014 XK
(X150) - 2010 – 2014

The procedure for cluster calibration should start after a diagnostic connection to the vehicle is established and the icon for it is clicked.

1. Select the Electronic Control Unit that needs to be calibrated and click “read”:

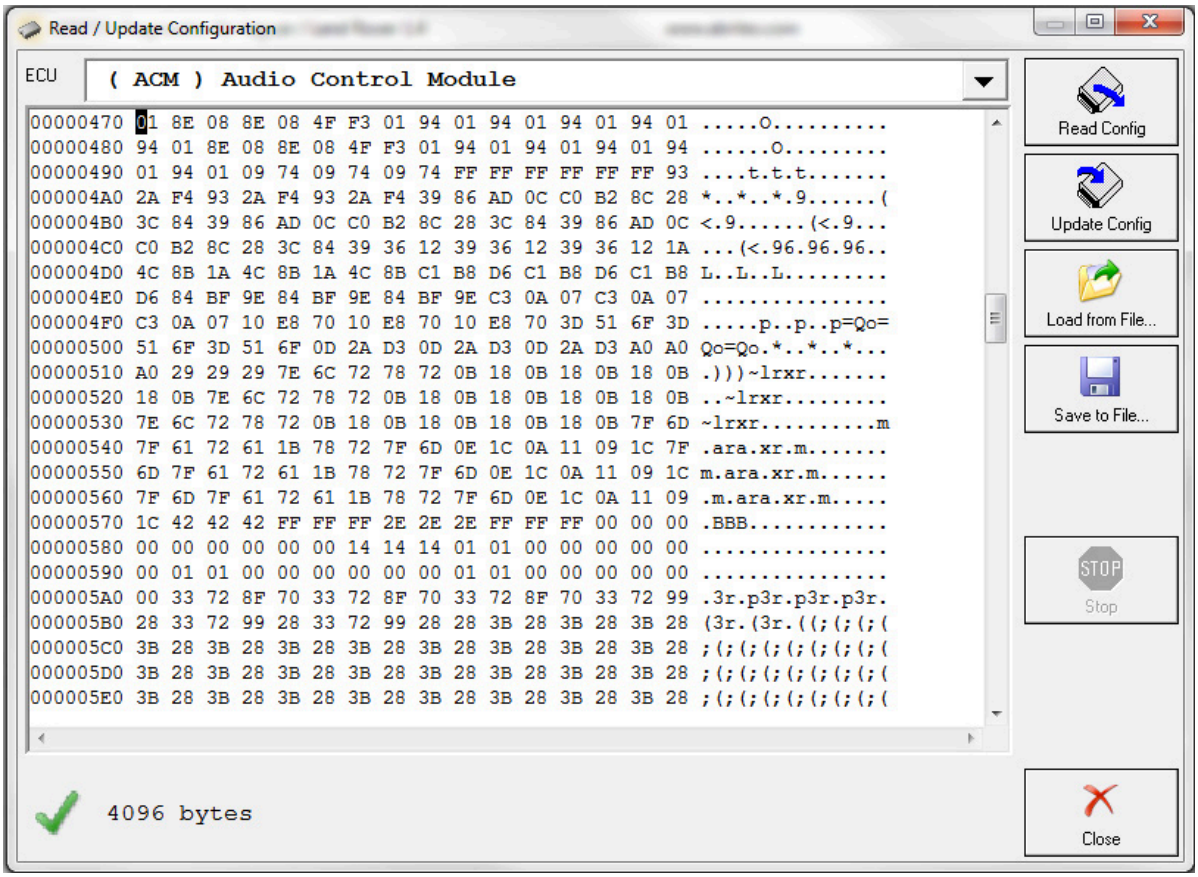


2. Input the appropriate value in the “new” window and press update:

3. Confirm that the correct value is set and close the window:

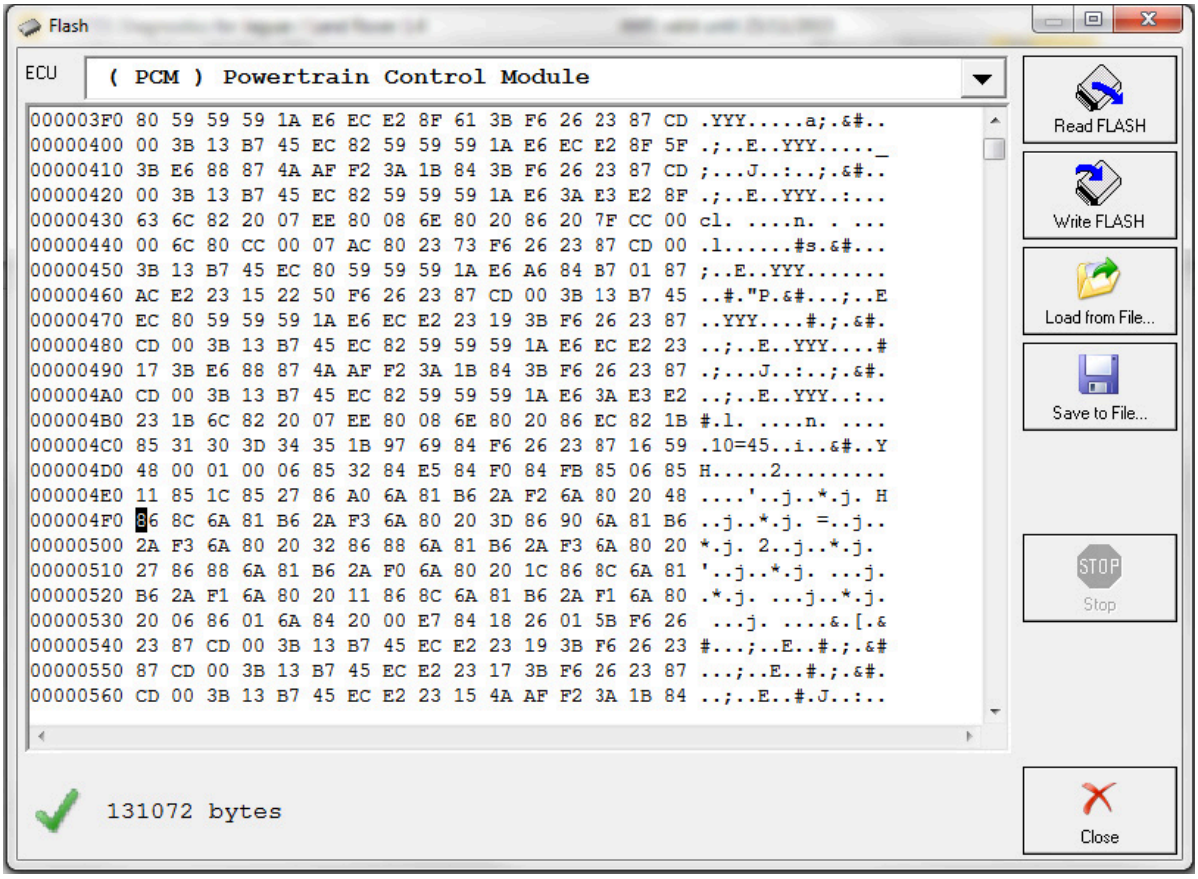
6. Special Function NV DATA

This function is used for reading, saving and updating of the Configuration data of the modules within Jaguar and Land Rover vehicles. It is particularly useful for cases where module exchange is required.



7. Special Function Flash

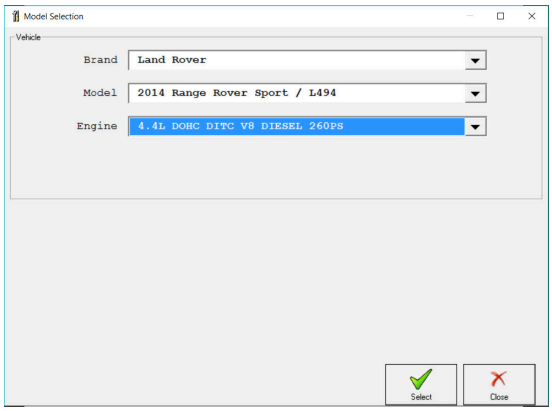
Special Function Flash is used in the cases where the flash file of a module within the vehicle needs to be read, saved or updated. It is used for module replacement as well as flash tuning.



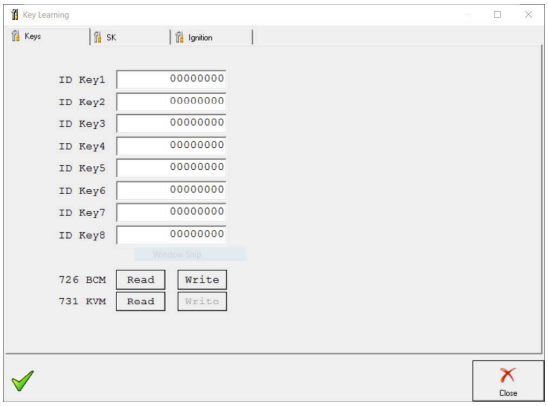
8. Special Function “Immo Advanced”

The “Immo Advanced” special function allows the user to write the transponder ID and the secret key ID in the car’s BCM.
After that you the engine can be started with a key and moved to an emergency slot. The keyless start of the engine won’t be possible. Writing in the KVM (Keyless Start Module) is also not possible. If the KVM is locked, writing by OBD won’t be possible as well.

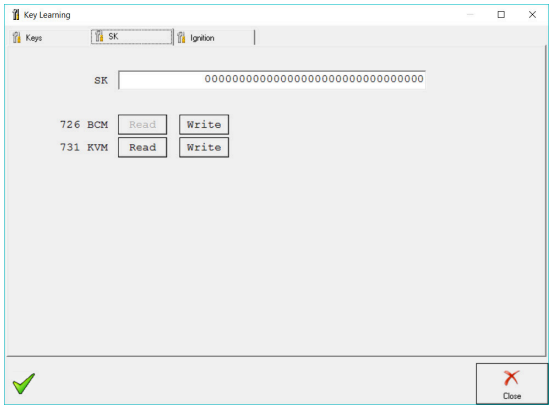
1. Select the mod



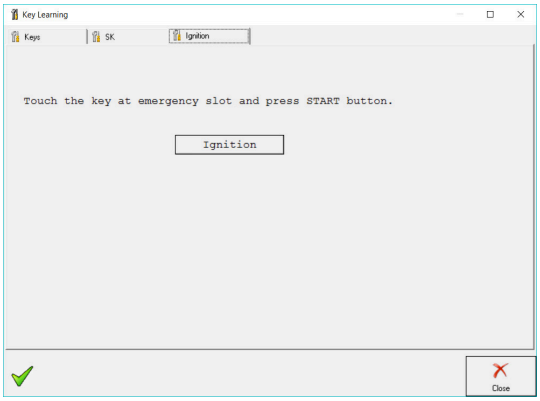
2. Keys scre



3. SK Scre



4. Ignition Scre



9 . Special Function “Key Learning Special”

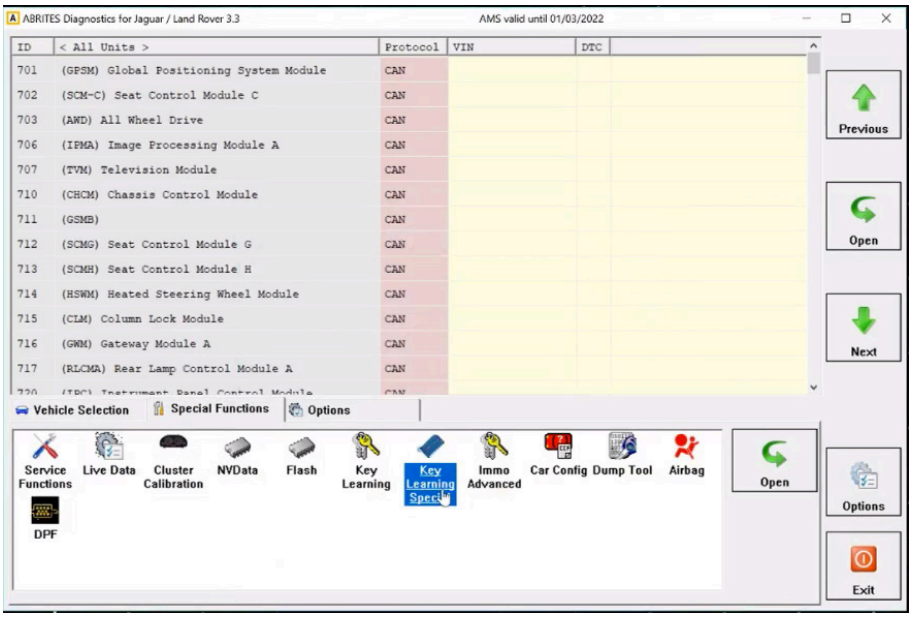
The “Key Learning Special” special function is dedicated to all 2012-2021 JLR vehicles equipped with a KVM and allows you to program keys, even if the KVM is locked.

The function requires a PROTAG programmer to be connected to the PC as well as an AVDI interface and a **TA54/TA56/TA57(2018+ vehicles)** Abrites key for JLR. **TA54/TA56/TA57** is the only key supported by the “Key Learning Special” function.

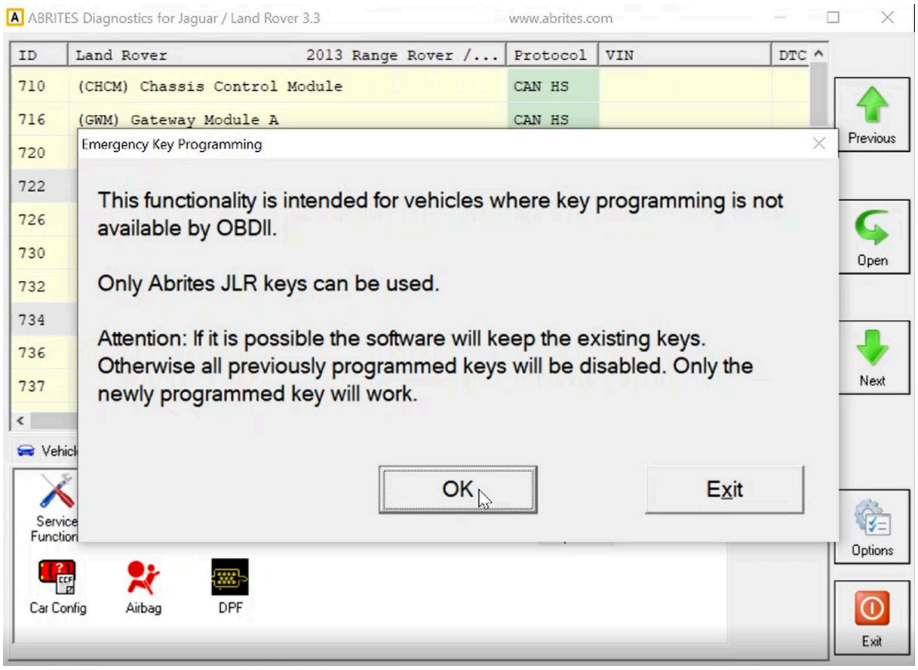
IMPORTANT: If the vehicle is ARMED you will probably need to connect to the internal CAN-H and CAN-L of the vehicle using the either the CB012 Abrites cable set or a Distribution box(the software will let you know if a direct connection is required). The internal CAN-H and CAN-L can be found under the front seats or inside all 4 doors.

CAN-H --> yellow/red
CAN-L --> yellow/brown(yellow/purple)

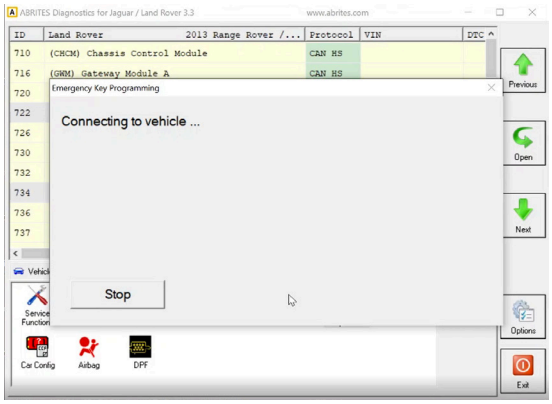
1. Open the JLR software and select “Key Learning Special” special function

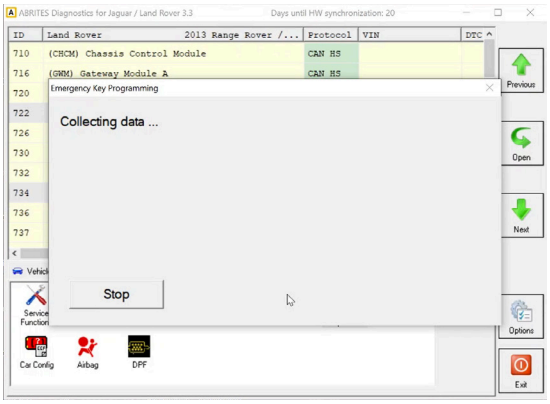


2. Follow the on-screen instructions and press “OK”. At this step all existing keys will be disabled and you have to program new Abrites TA54/TA56/TA57 key(s).

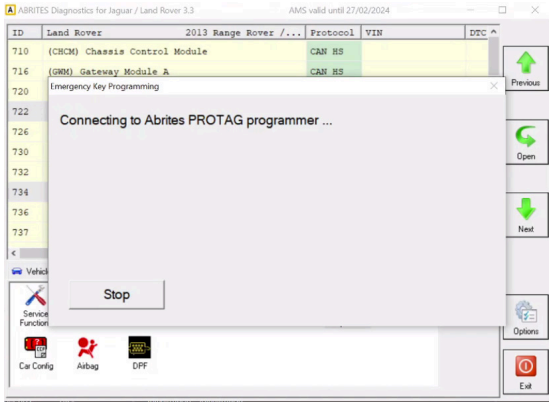


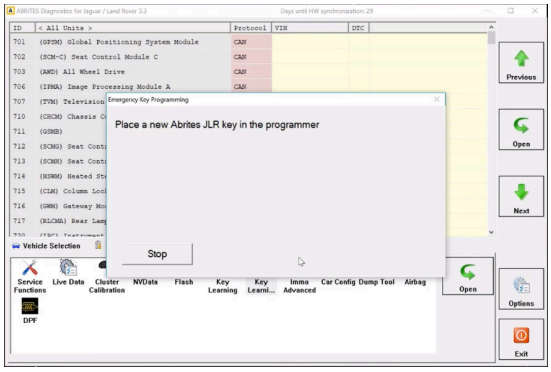
3. At this step the software will connect to the vehicle





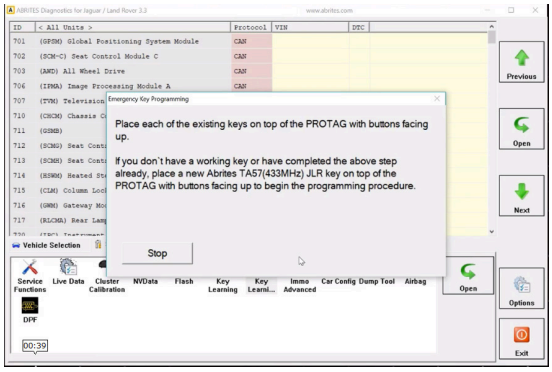
4. Connect your PROTAG programmer and place an Abrites TA54/TA57 key:



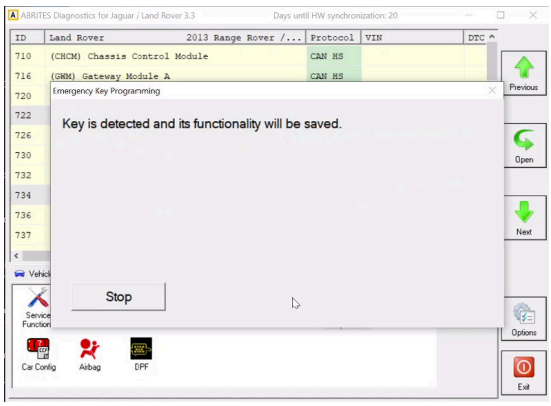


5. At this step you have to place each of the existing car keys(if available) in your PROTAG programmer prior to key programming of the new keys, or place directly a new Abrites TA54/TA56/TA57 JLR key if it is an All Keys Lost situation.

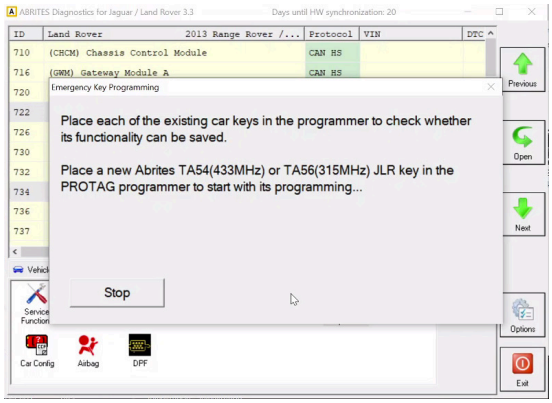
IMPORTANT: Place the keys on top of PROTAG programmer with the buttons facing up as shown in the photo below.

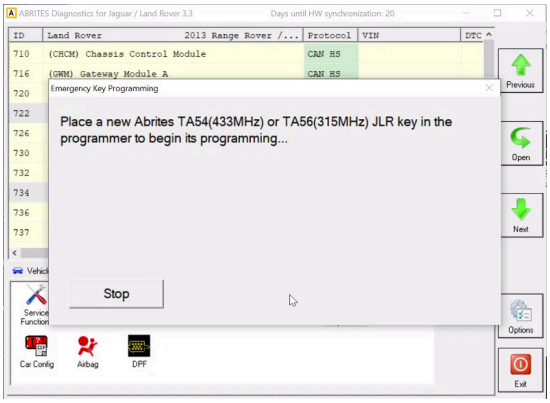


*If there are existing keys and they could be saved, you will see this message:

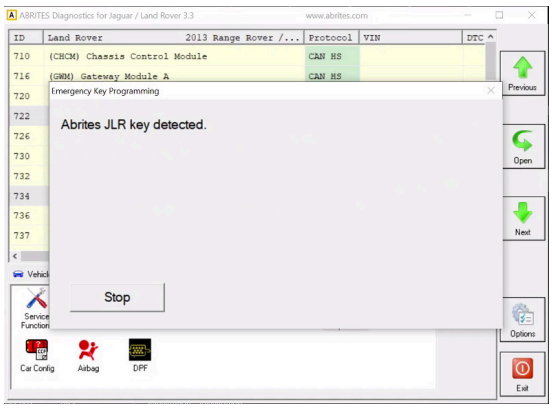


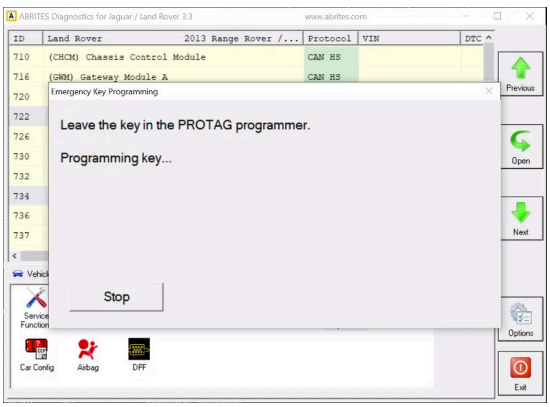
6. Place a new TA54/TA56/TA57 Abrites key for JLR.



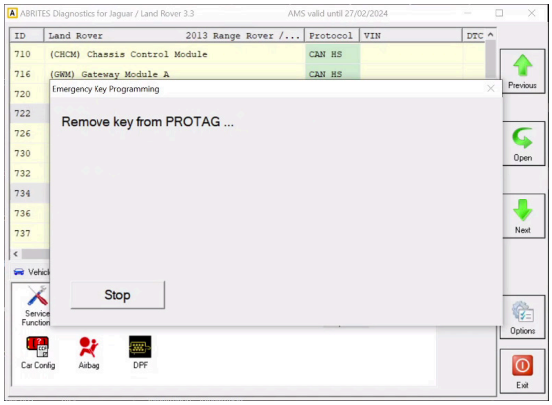


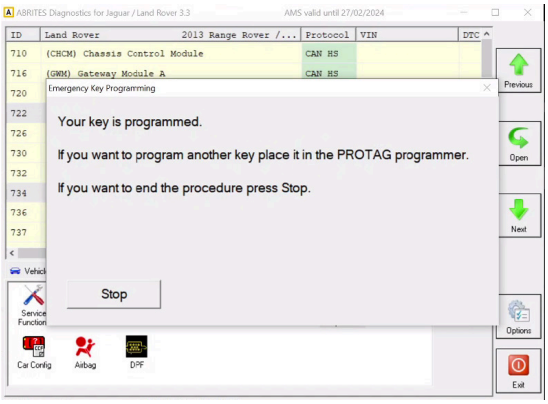
7. Each key will be checked. Keep the key in the PROTAG programmer

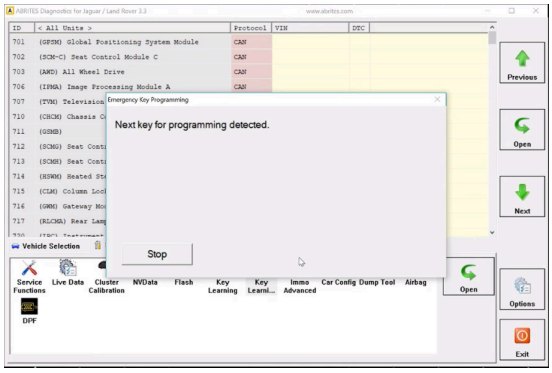


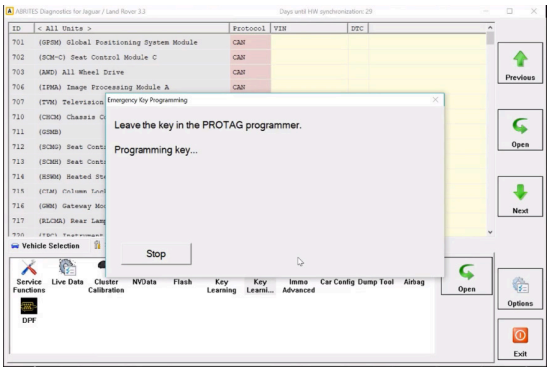


8. Remove the key from the PROTAG programmer and press “Stop” to finish the procedure

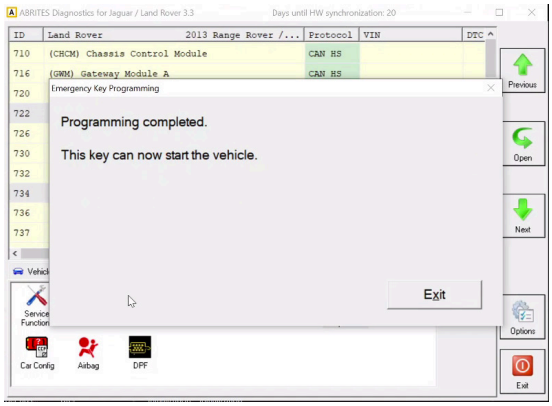




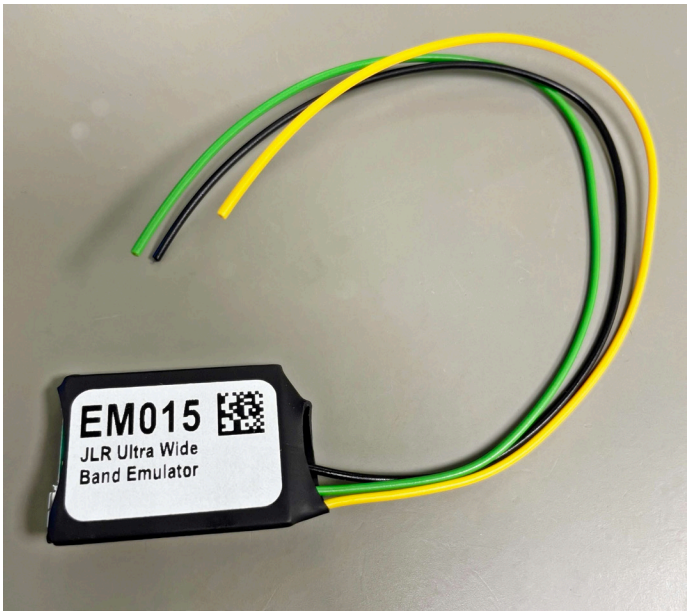




9. The new TA54/TA56/TA57 key(s) is(are) successfully programmed and ready to start the car. Try to lock and unlock the doors using the remote and start the car.



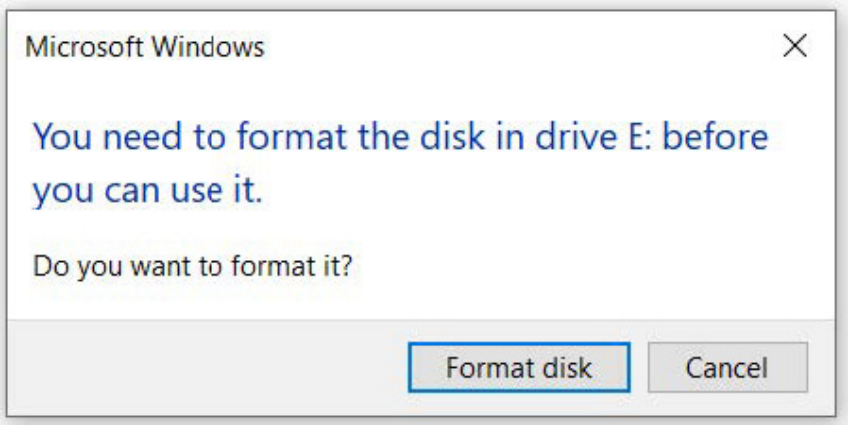
9 .1 EM015 - JLR Ultra-Wide Band Emulator



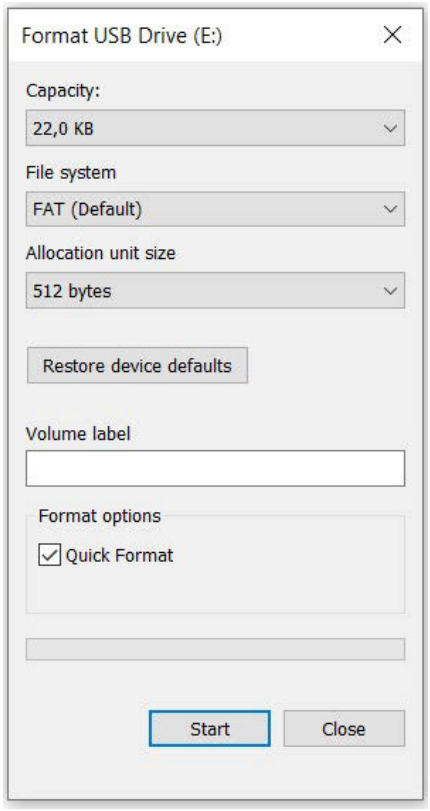
Abrites UWB Emulator connection
If you ever encounter a car which has a UWB module installed the key learning procedure will end successfully but you will only have a working remote for the car. This is when the UWB emulator will be of use to you. The software will lead you through the procedure. Here is what you need to do in order to complete the task.

1. Connect the emulator to your PC using a random old USB cable which fits the emulator(Micro-USB), format the emulator once you connect it, the format box should pop up immediately after being connected.

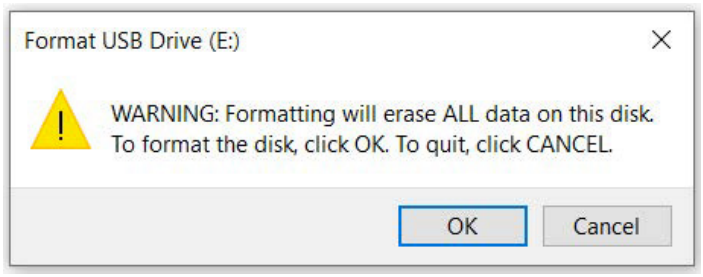
1.1 Formatting the emulator prompt



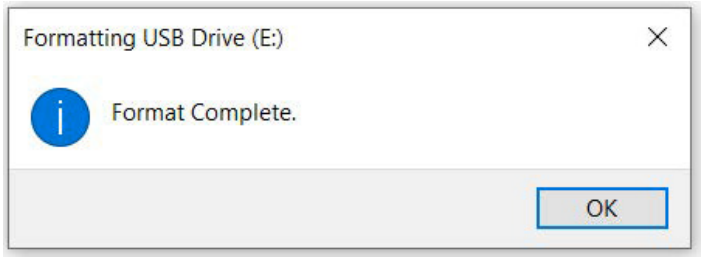
1.2 Quick Format settings



1.3 The warning can be ignored

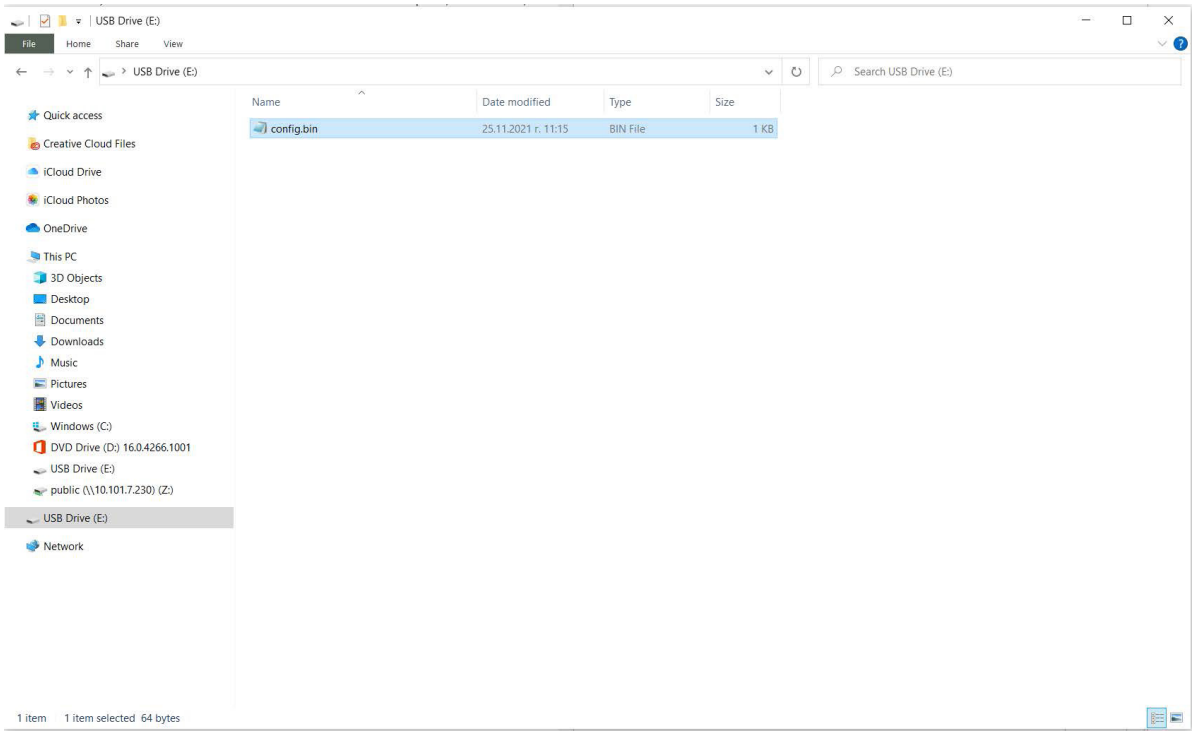


1.4 The format is complete



2. Go to the log folder of JLR where you have the config file. Copy and paste this file onto the emulator by accessing it just like accessing any regular USB-flash drive. After pasting the config file, the emulator will be automatically disconnected and re-connected to the PC, asking to be formatted. No further formatting is required and the EM015 can be installed in the car.

2.1 The config file pasted onto the emulator



3. Connect the B+(yellow) and GND(black) of the EM015 emulator to the B+(red) and GND(black) cables of the KVM connector, the LED on the EM015 lights up in RED:
Yellow (EM015) -> Red (KVM)
Black (EM015) -> Black (KVM)

4. Cut **any one** of the blue cables(UWB antennas cables) and connect the green cable of the EM015 emulator to **the blue cable end which goes to the UWB antenna**
Green(EM015) -> Blue (UWB antenna side)

5. The LED of the EMULATOR goes from RED to GREEN.

6. Once the LED turns GREEN, disconnect the green cable of the EM015 from **the blue cable end which goes to the UWB antenna.**

7. Connect the green cable of the EM015 emulator to **the blue cable end which goes to the KVM module** (switch from UWB antenna side to KVM side).
Green(EM015) -> Blue (KVM side)

In this case the emulator replaces one of the UWB antennas as one of the original antennas remains disconnected (one of the blue cables remains cut and can be isolated on the UWB side).

9.2 EM015 - Ultra-Wide Band Emulator update procedure

In order to update the EM015 UWB Emulator the Abrites Diagnositcs for JLR must be opened and the "EMUL update" icon selected. This option automatically saves two files in the LOGS folder (you can find it in the last page of the Abrites Quick Start menu).

Then perform the following steps:

1. Connect the emulator via micro USB to PC > Format > OK > Close > Drag and drop the 1st file "config-gotoboot.bin" from logs folder to the emulator's memory folder.

2. Disconnect the emulator > reconnect it > Format > OK > Close > Drag and drop the 2nd file "Application_2.X.bin" from the logs folder to the emulator's memory folder.

3. Disconnect the emulator > reconnect it > Format > OK > Close > Drag and drop the configuration file "UWB_Emulator_XXXXXXXX-XXXXXX.bin" which is saved automatically during the key programming procedure from logs folder to the emulator's memory folder.

10. Dump tool

Since our November 2021 update we implemented the use of the dump tool where key programming is possible by dump. You can use the Dump Tool in cases where you need (or want) to program OEM keys and:

The car you have is equipped with one of the following KVM types: FK72, DPLA, HPLA
The Program flash of the KVM module can be read with a programmer and a dump can be generated

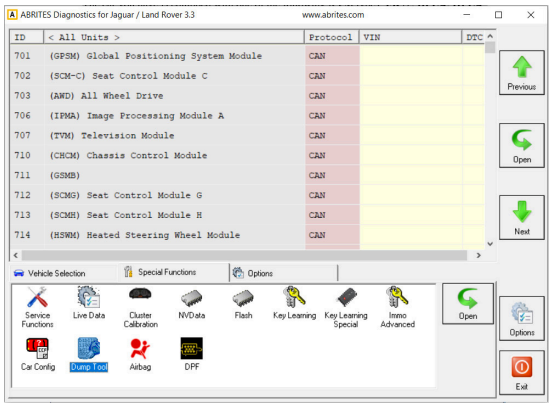
Here are the steps you need to follow in order to operate the Abrites Diagnostics for JLR dump tool:

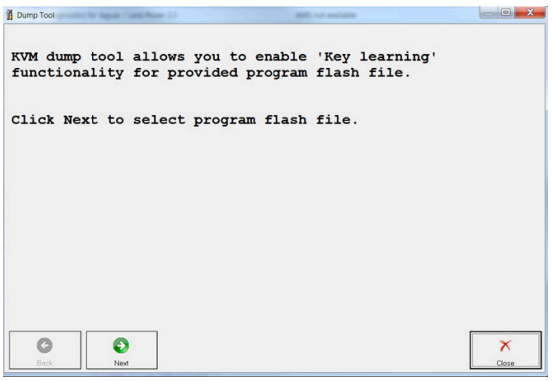
1. Read the KVM Program flash using a capable programmer and save the dump file (e.g. dump.bin)
2. Modify e.g. dump.bin using “dump tool” and save it (e.g. dump_modified.bin).
3. Write e.g. dump_modified.bin into the KVM using a programmer.
4. Program and delete keys using the standard procedure.

The modifications will be done automatically and all you need to do is load the dump, instruct the dump tool to prepare the file and save it when ready.

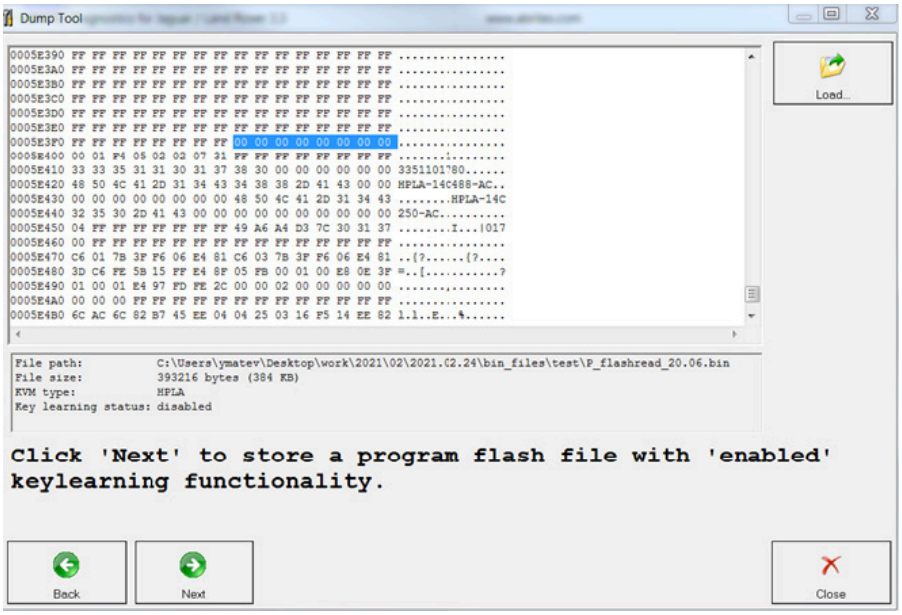
Here is what it looks like:

1. Open the Dump tool and load the flash file

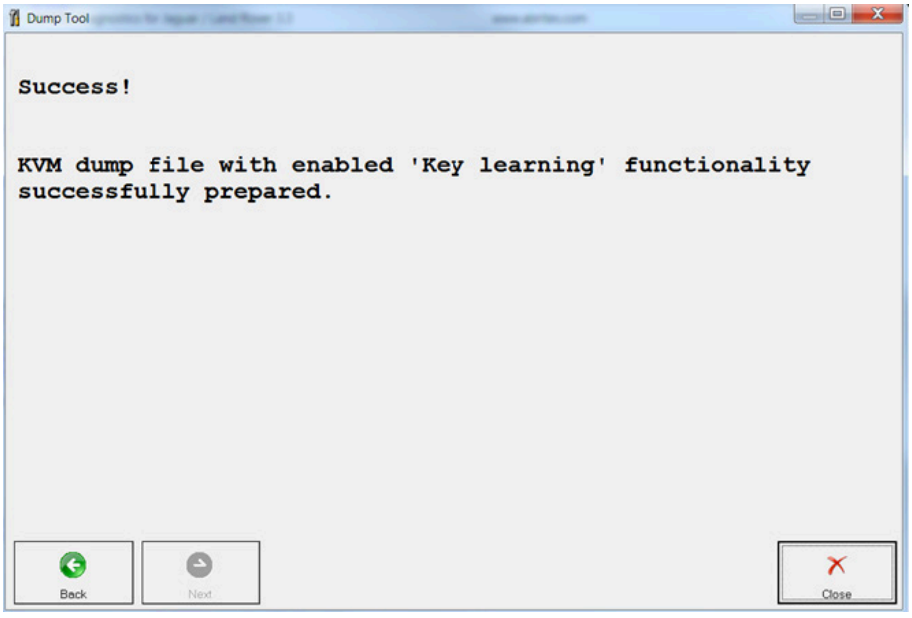




2. Once the file is selected and loaded we can click “next”



3. Then we can save the generated dump file:



11. KP002 JLR Alarm Unblock Device

KP002 is a tool used to help in key programming procedures, when all keys are lost, for JLR vehicles 2020+

It can be used by OBDII or on bench to unlock the vehicle's BCM module, making the learning of new keys possible .

Main functionalities:
Unlocking the BCM module

Supported vehicles:
JLR models 2020+

Supported BCM modules (include, but are not limited to):
L8B2-14F041-AF (Defender 2020)
JPLA-14F041-BG (Evoque 2019)

In order to perform these procedures, you will need the JL006 license.

The procedure may take up to 72 hours.

An AVDI and active AMS are required to complete the process.

The set includes a device with 2 CAN wires, and additional bench connection cable set

11.1 KP002 by OBDII in the vehicle

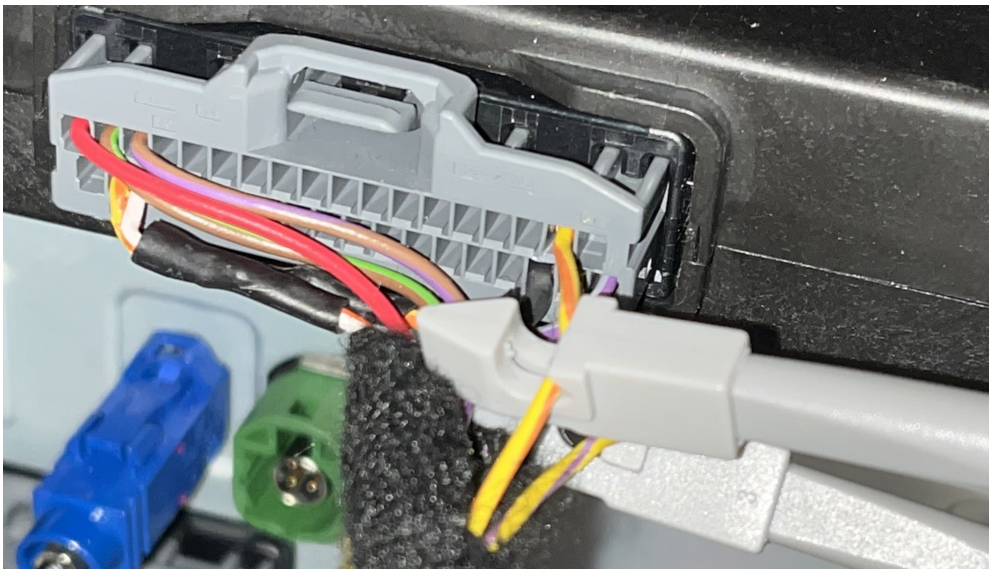
When working in the vehicle, you need to plug the device into the OBDII port and use the needle clips to connect to the RFA CAN wires of the vehicle. Vehicle will need power supply.
Steps:

- Connect the CAN clips coming out of the device to the internal CAN (RFA) wires (under the driver's seat)
- Plug the device into the OBDII port
- At this point the LED indicator will blick in orange 1 time and it will start fast green light blicking. If all the connections are alright, the LED indicator will start blicking in green slowly, meaning the device is now in operation.
- At the end of the procedure, the device should have solid green light on the LED indicator.
- Now the vehicle's alarm is deactivated and it is ready for the key programming procedure.

*Procedure may take up to 72 hours.

Below you can see an example of connection to the RFA CAN wires under the driver's seat of a Defender 2021

CAN HI (Red wire from device) - connected to the yellow/orange wire
CAN LO (Blue wire from device) - connected to the yellow/purple wire



11.2 KP002 on bench

When working on bench, you need to connect to the pins of the BCM unit, using the additional cable for bench work from the KP002 set as follwos:

- Connect the OBD connectior of the cable to the OBD connector of the device
- Connect the 2 wires (CAN) coming out of the device into the extendor cables that would allow connection to the pins.
- Connect all pins to the BCM unit
- Power up the whole set (ZN063 power adapter can be used)

Bench Connector Legend:

- Male OBDII Port
- Black power cable with a socker (can be used with ZN036)
- Yellow wire (with a split) - 12V+
- Black - GND
- Blue - CAN H
- Red - CAN L
- additionally, the 2 wires coming out of device are also Red for CAN H and Blue for CAN L and are used to connect to the RFA CAN pin connectors.

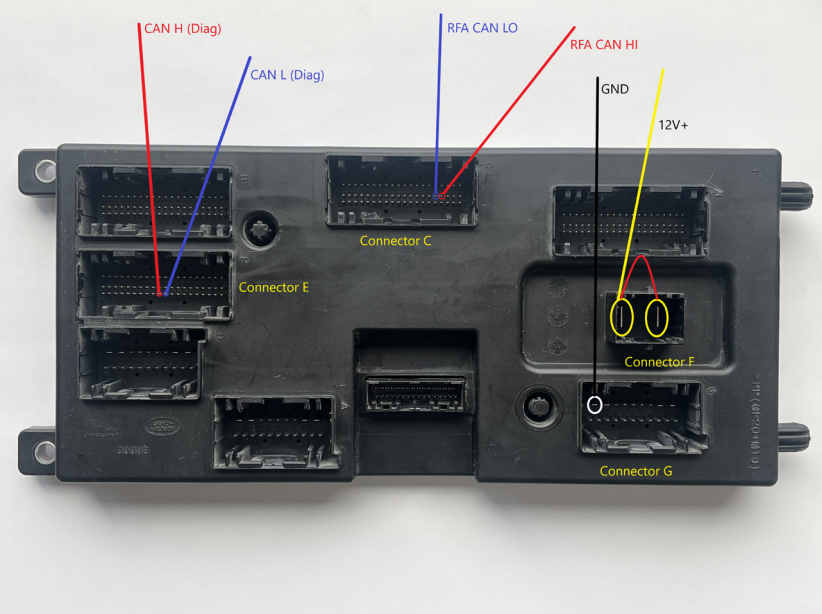
Once everything is connected properly the procedure goes as follows:

- Power up the whole set
- At this point the LED indicator will blick in orange 1 time and it will start fast green light blicking. If all the connections are alright, the LED indicator will start blicking in green slowly, meaning the device is now in operation.
- At the end of the procedure, the device should have solid green light on the LED indicator.
- Now the vehicle's alarm is deactivated and it is ready for the key programming procedure.

*Procedure may take uo to 72 hours

KP002 bench connections:

1. L8B2 BCM



Legend:

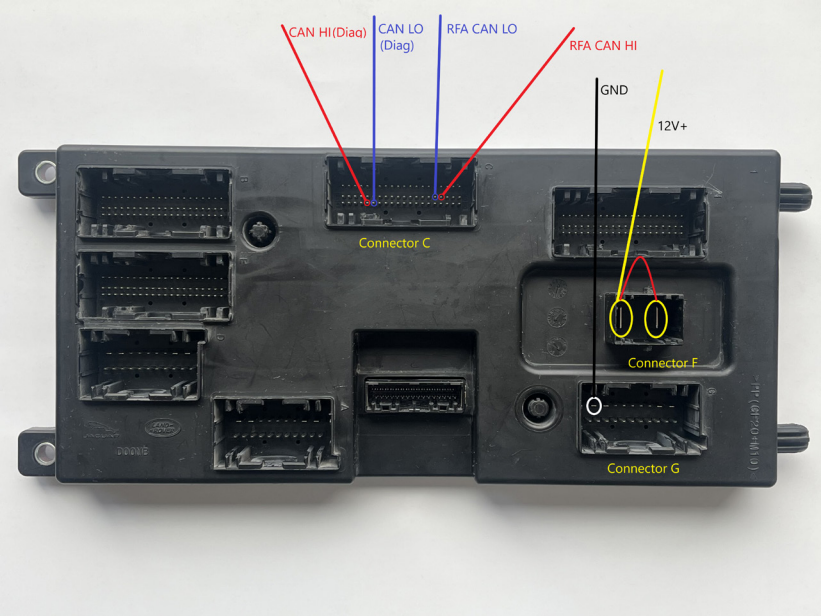
Connector F:
PIN 2 - 12V+
PIN 1 - additional 12V+ cabl

Connector G
PIN 1 - GND

Connector C: RFA CAN
PIN 36 - CAN L - Blue Wire (comming out of the device)
PIN 37 - CAN H - Red Wire (comming out of the device)

Connector E: Diag CAN
PIN 51 - CAN L - Blue Wire
PIN 50 - CAN H - Red Wire

2. JPLA BCM



Legend:

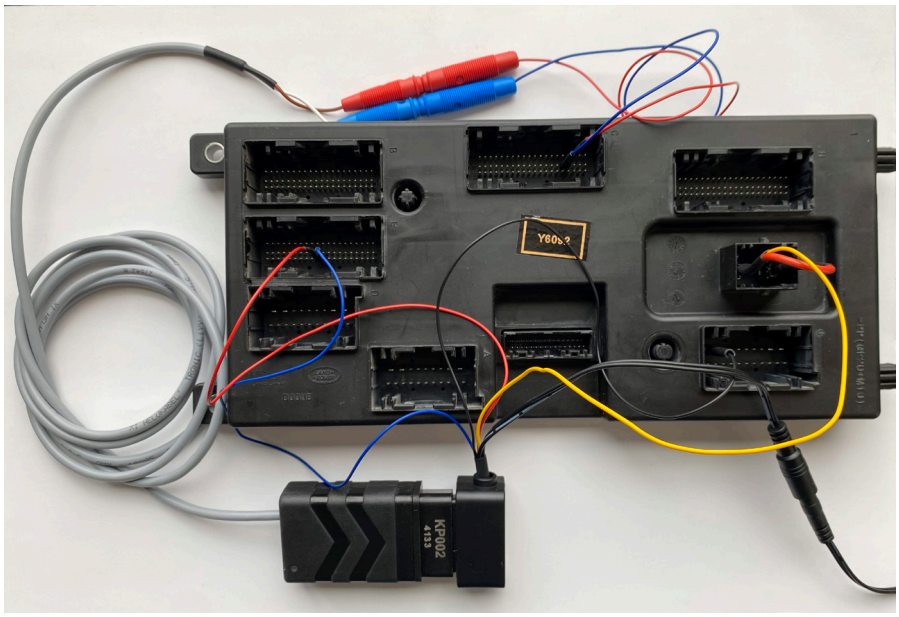
Connector F:
PIN 2 - 12V+
PIN 1 - additional 12V+ cable

Connector G
PIN 1 - GND

Connector C: RFA CAN
PIN 36 - CAN L - Blue Wire (comming out of the device)
PIN 37 - CAN H - Red Wire (comming out of the device)

PIN 50 - CAN H - Red Wire
PIN 51 - CAN L - Blue Wire Legend

Below you can see an example of a **L8B2** BCM connected on bench.



Operation of the device:

There is a LED indicator on the device, which provides information of the state of the device/procedur:

- Fast Green blinking - testing the connections
- Alternating Green and Red blinking - wrong connection of the CAN wires.
- Slow Green blinking - work in progress
- Solid Green light - process finished
- Solid Red light - does not operate - this would most probably mean you have not made the correct connections

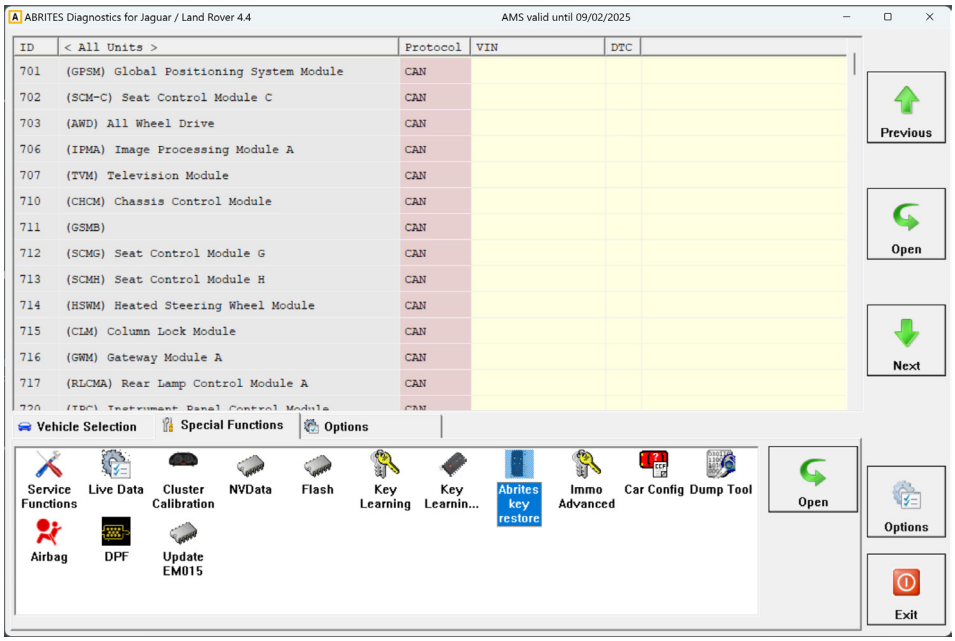
12. Special Function “Abrites Key Restore”

This special function lets you reset an Abrites JLR key that has been programmed to a vehicle (locked)so that you can use the key as a again.

Here are the very important prerequisites for the procedure:
The key has to be reset with the same AVDI and laptop that have been used for the key learning procedure.

Supported keys:
TA54, TA56, TA66, TA67

ProTag programmer is required for the procedure as well.



Once you select the Abrites Key Reset from the special function menu, a screen with information will appear. The procedure is guided, you need to follow the instructions and the key will easily be reset.

In case you put a key that has not been programmed with your AVDI and laptop, or the key is not programmed at all, you will see the message on the second screenshot of this page.