Abrites Diagnostics for BMW/MINI
<u>**User Manual**</u>

Version: ... 6

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List of revisions			
Date	Chapter	Description	Revision
01.10.2015	ALL	Document created	1.0
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15.08.2018	3.2.4.1 FEM/BDC diagrams	Added eeprom reading/ writing diagrams	31.6
08.05.2019	3.2.5.3 ECU Wiring diagrams	Added MSD80/MSD81, MSD85/MSD87,MSV90 wiring diagrams	31.8
30.05.2019	3.2.5.3 ECU Wiring diagrams	Added MEVD17.2.9 boot mode wiring diagram	31.8

1. Introduction

"ABRITES Diagnostics for BMW/ Mini generation 2" is a personal device and online server based diagnostic software for BMW vehicles from the "E" and "F" series as well as Mini vehicles from the R50, R53 and R56 series. It requires the user to have connection to the internet during the usage of the software.

With the help of this tool you can perform reading and clearing of diagnostic trouble codes as well as operations unsupported by other diagnostic tools with the electronic modules inside the vehicle such as replacement and coding of control units, programming vehicle order, reprogramming flash memory of the units, applications assisting tuning of your engine control unit, programming keys, coding of the vehicle as well as mileage calibration.

Functionality of your software depends on ordered functions for your interface. Please check the "license viewer" installed on your computer for your unique interface ID number.

2. Installation

The "ABRITES Diagnostics for BMW/ Mini generation 2" 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 BMW/ Mini generation 2

When starting the software the user should have the vehicle connected to an external power source in order to be sure that the vehicle does not lose power during the time spent working with it. When 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.

3.1. General Diagnostics

3.0.1 Reset FRM Short Circuit Counter

The Abrites Diagnostics for BMW/Mini has added an option to r**eset the FRM short circuit counter.** The function can be accessed when opening the **"Guided functions"** menu:
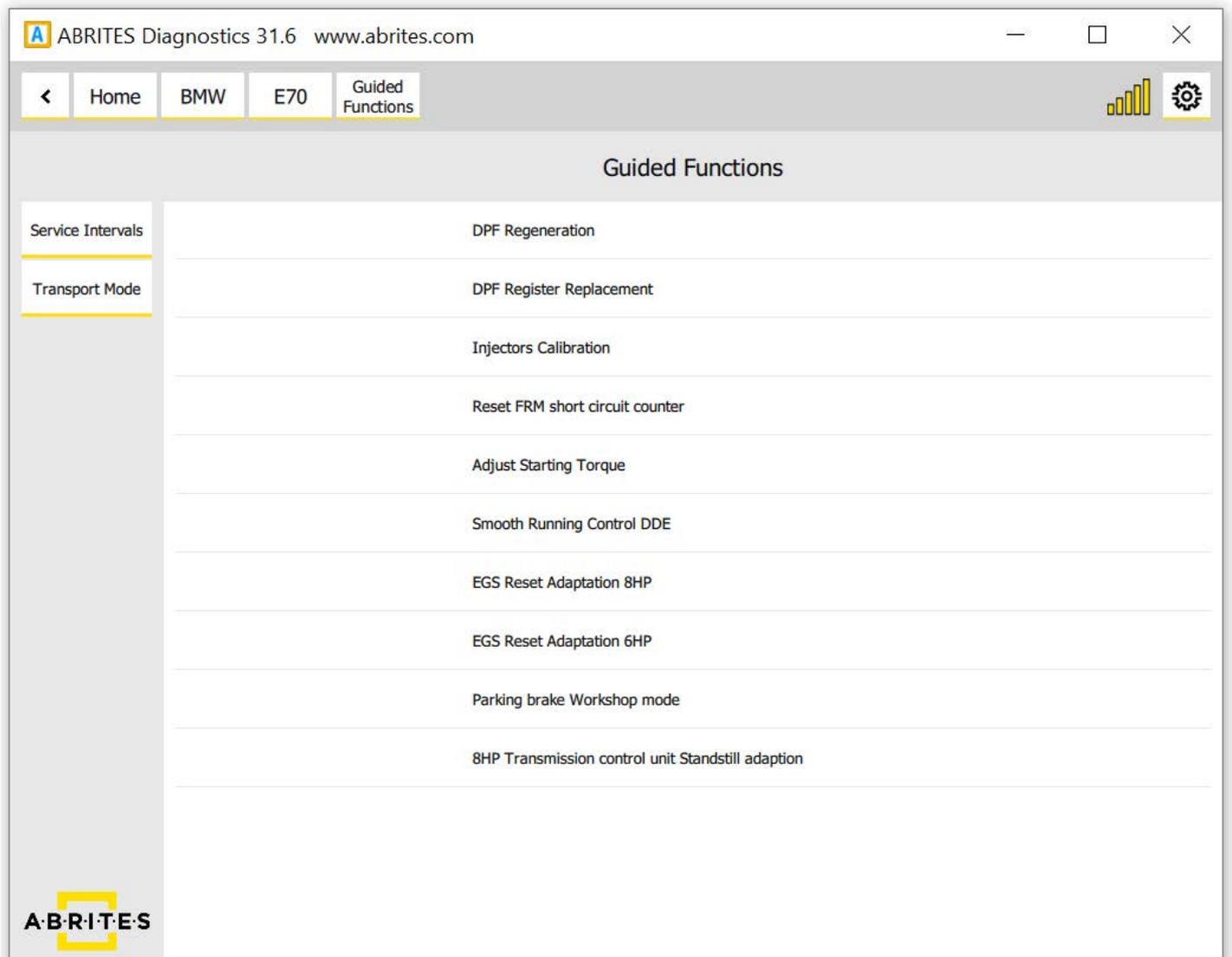
Once the **"Reset FRM short circuit counter"** button is clicked, a procedure will start, checking all of the modules for short circuit faults. As soon as the faults are cleared, only the ones that need to be repaired will be left.

3.1.1 Scan

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.

Address	Acronym	Name	Faults
[00]	ZGM/SGM/JBBF	Central Gateway/Safety Gateway Module	
[12]	DME/DDE	Digital Motor/Diesel Electronic	20 faults
[18]	EGS/SMG	Electronic Gear System/Transmission Contol	16 faults
[40]	CAS	Car Access System	3 faults
[64]	PDC	Park Distance Control	1 fault

3.1.2 Clear faults

When selecting the **"Clear faults"** function 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 BMW/ Mini generation 2.

3.1.3 Live values

In order to display the live values of a module within a vehicle the user should select the module they would like to view the values for, open it and select **"Live values"**.
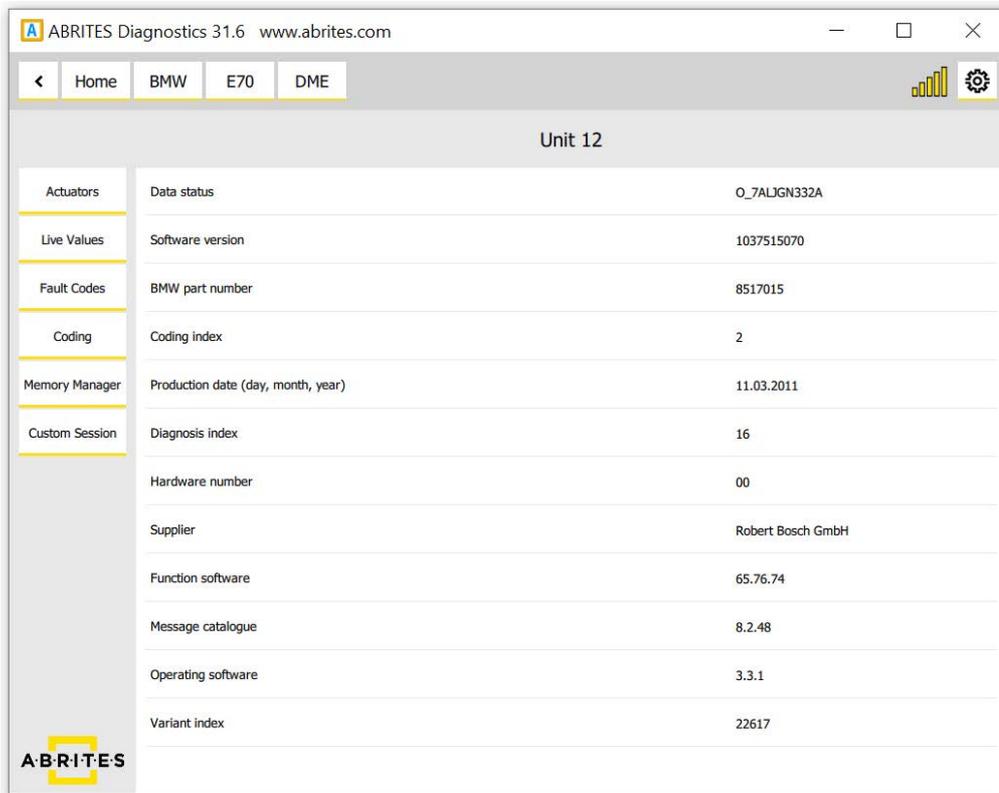

A list of all available values for the unit will be displayed.
From here the user can select the sensors needed to be observed. Once that is done the user can select whether they would observe the values in a **query form** or a **graphic form**. This can be done for multiple sensors simultaneously.
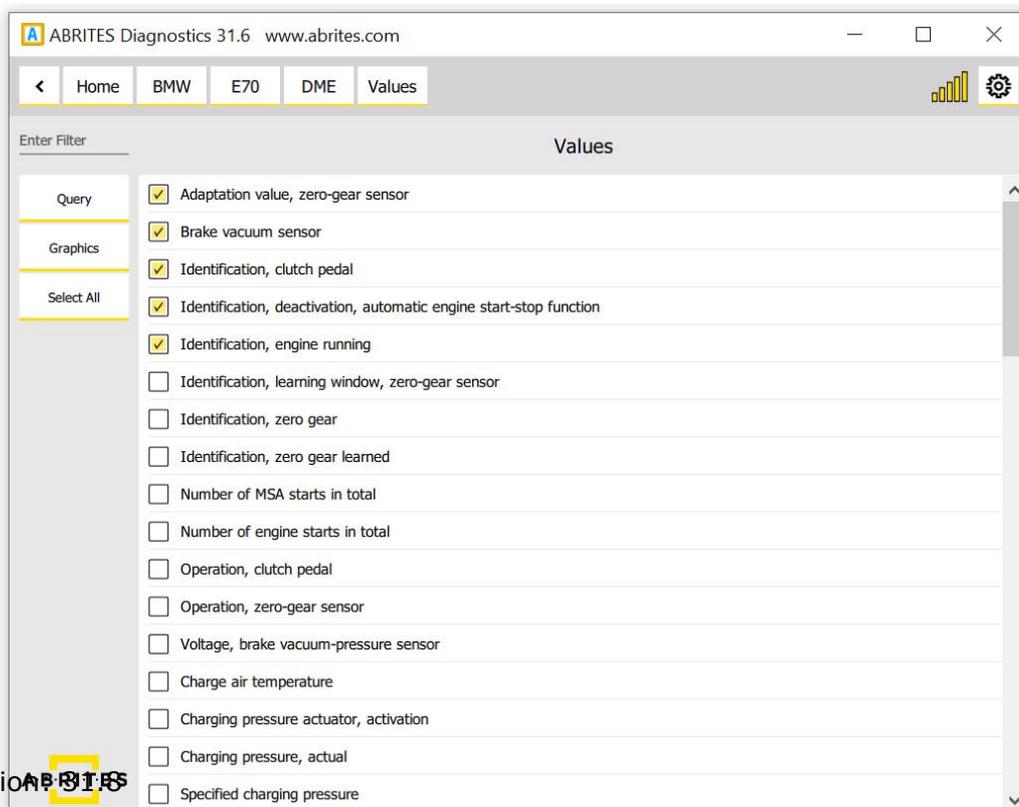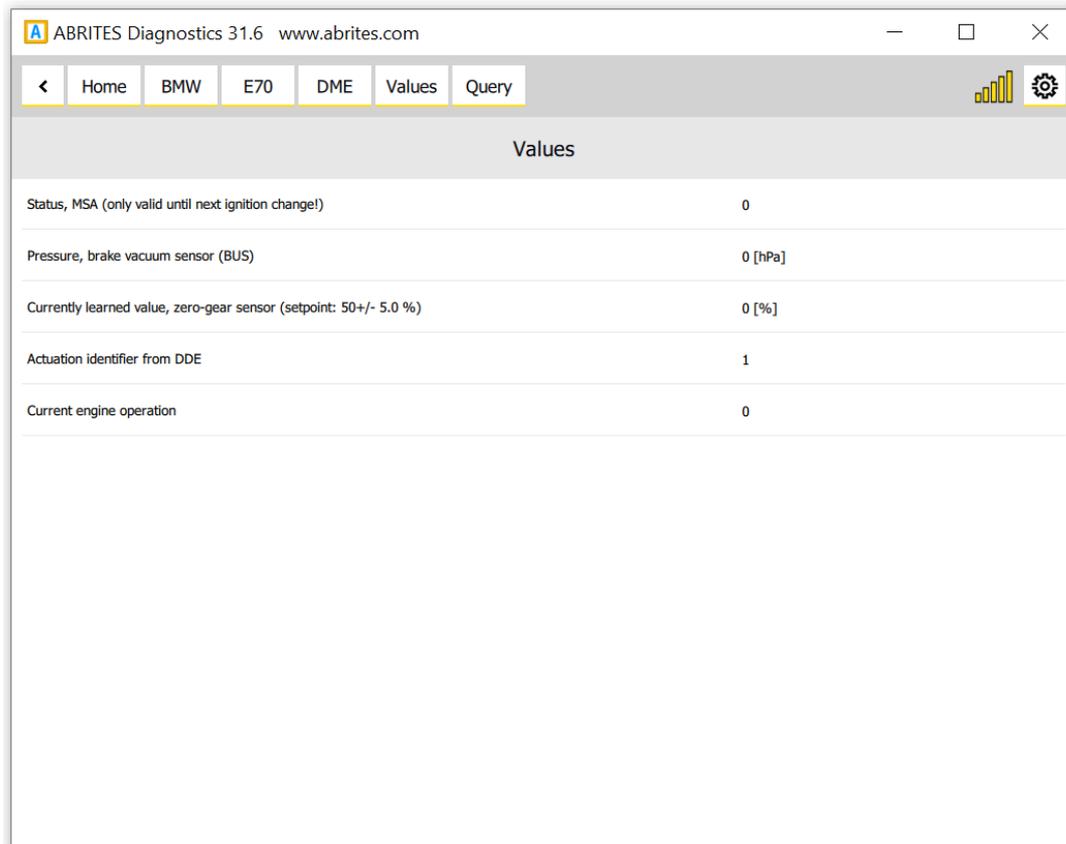
In case the user selects the option to view the measured values in a graphic form they will be able to see the screen below for all of the selected sensors.

The simultaneous display of multiple values allows for easier and more detailed fault diagnostics.
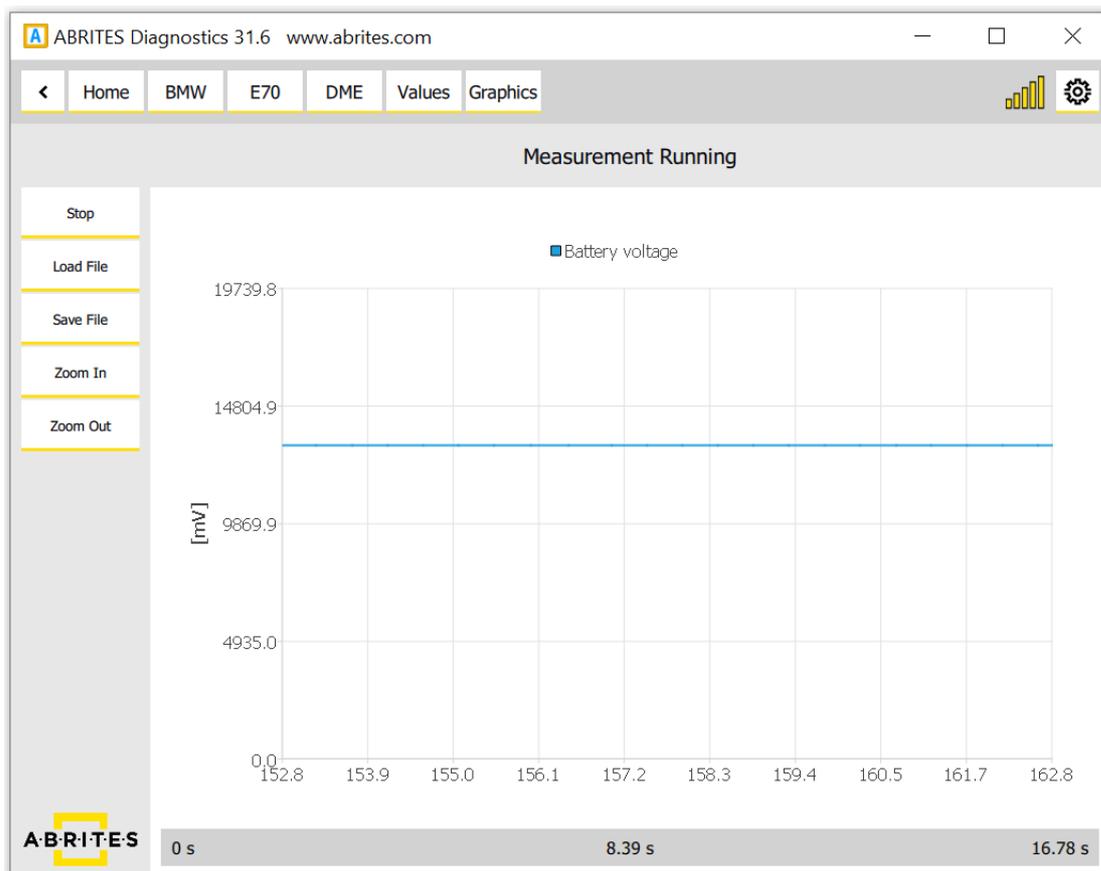
The measured values can be monitored, saved to a file on the user's computer, zoomed in for more detailed view or zoomed out for a more general view using the buttons on the side of the window. The user also has the ability to load a previously saved file for direct comparison.
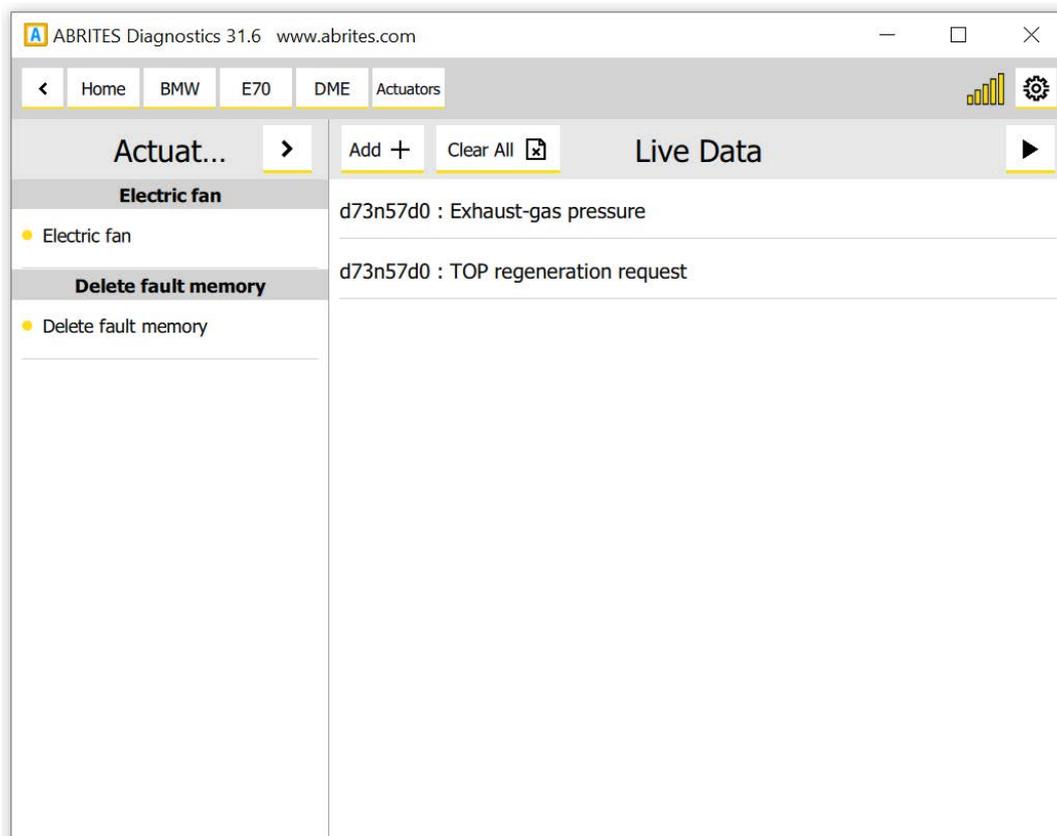
3.1.4 Actuator tests

Actuator testing is one of the most important functions used by automotive workshops. It provides the user with the opportunity to test various actuators within the vehicles. By performing actuator tests the user can easily determine where a fault in the vehicle lies. Some very important modifications and service procedures with vehicles require the usage of actuator tests.
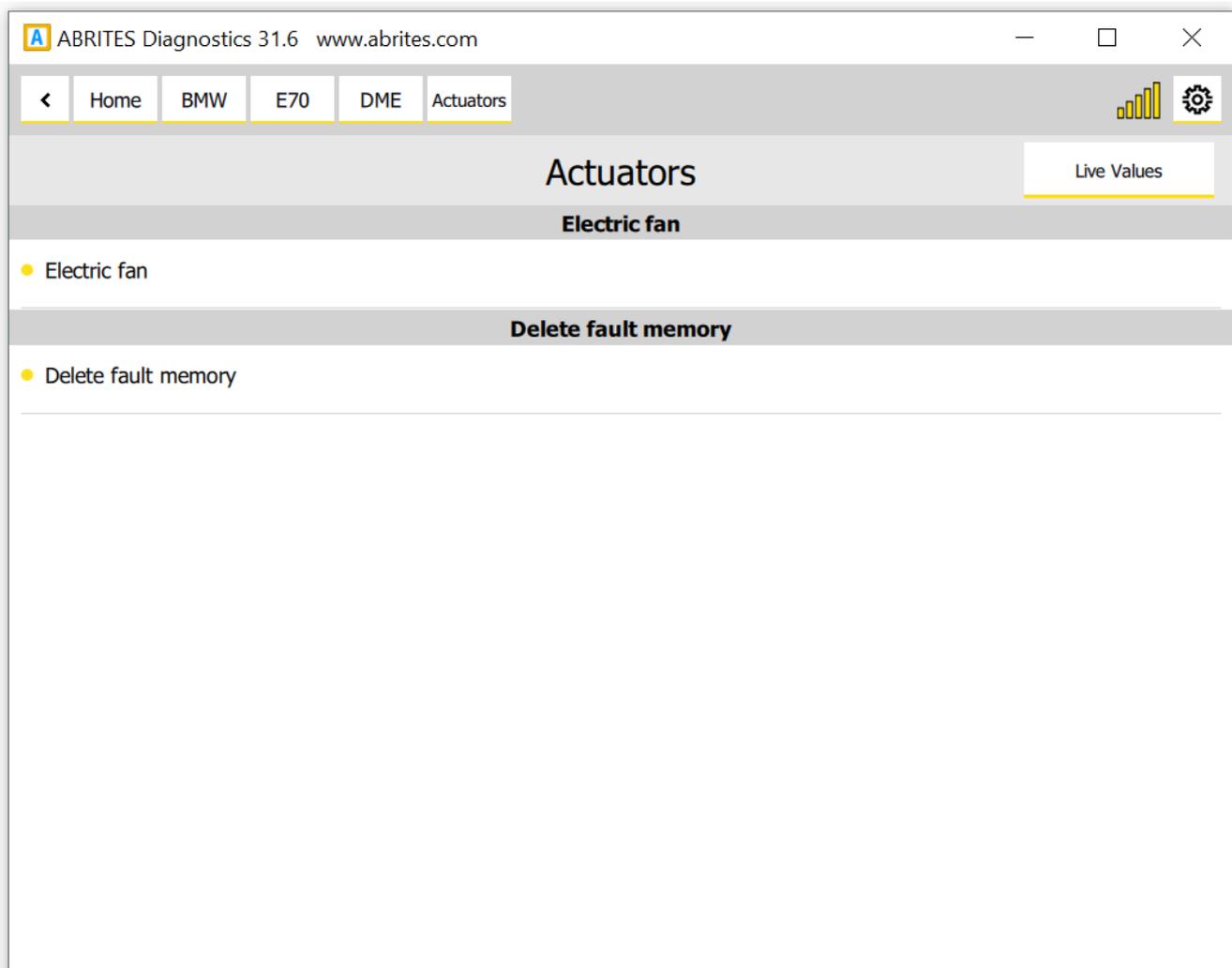
One of the features unique to the Abrites diagnostics for BMW/ Mini generation 2 is the feature to perform actuator tests while observing live data measured values from sensors related to the actuator or module being tested.
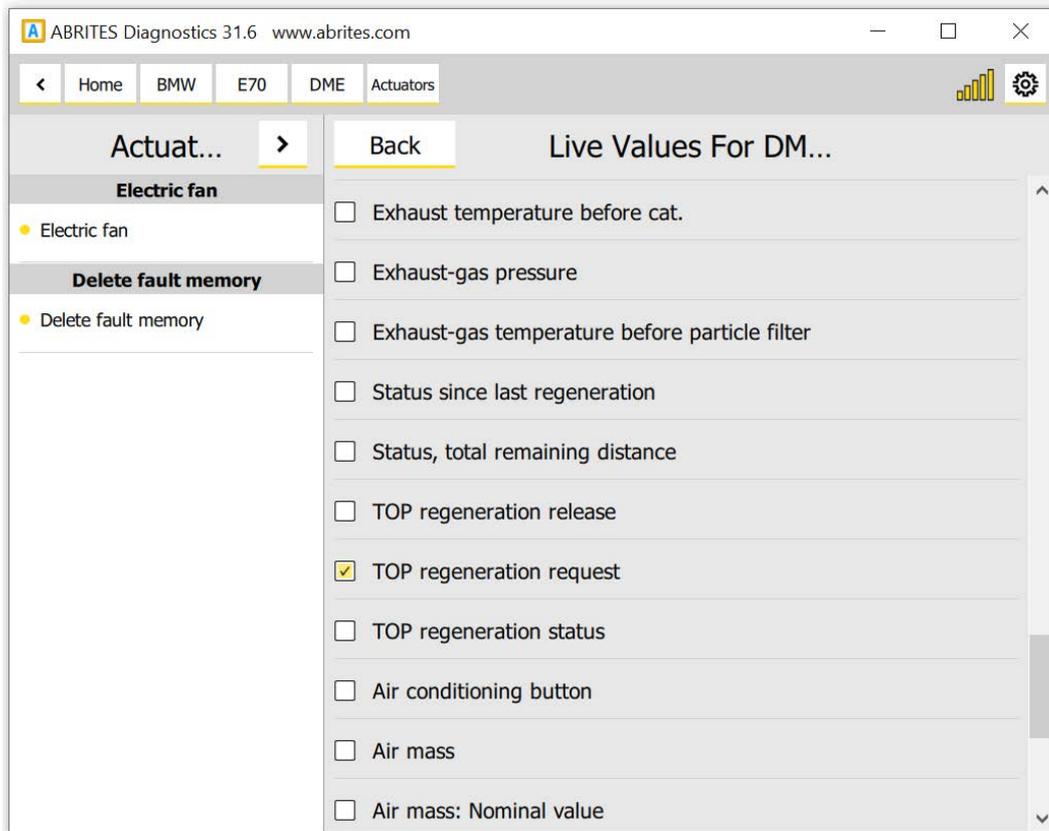
All the user needs to do in this situation is to press the "▶" button.

Once the Actuator test is started please make sure that you let it finish before closing the window.

3.1.5 Service intervals

When performing services on a vehicle these services need to be checked in the vehicle's history.

In order to do so the customer can use the Abrites diagnostics for BMW/Mini generation 2 and the service interval option:

3.2 Specific diagnostic procedures.

Apart from the basic diagnostic functions the Abrites diagnostics for BMW/ Mini generation 2 allows the user to perform various diagnostic functions at an extremely high diagnostic level. Such functions include **vehicle coding**, **dpf regeneration**, **key programming**, **module replacement**, **module reflashing**, etc.

3.2.1 Program IDs (Vehicle Identification Numbers)

When checking a vehicle and replacing modules often times the user will need to be able to view the **IDs (VIN)** of the separate electronic modules within the car. This is done via the **"Program IDs"** button

Some IDs may be programmed according to local regulations.

Observe the vehicle identification numbers (VIN) from all modules in one place. Ability to modify them which is a necessary tool for module replacement. VIN writing is also a useful instrument even for routine operations like flashing the firmware of DME (some modules require resetting the VIN at the end of the update). Observe the history of the module – the UIF (user info fields)

3.2.2 Central Coding (Vehicle Order)

Allows reading and modification of the vehicle order in many different languages. Encoding of every unit of the vehicle with data from the vehicle order. The user is also allowed to tweak custom options in different modules to unlock behavior that is not allowed by the official software (like video in motion, different light options, etc.)

Once this function is selected the software will automatically start reading the integration level of the vehicle.
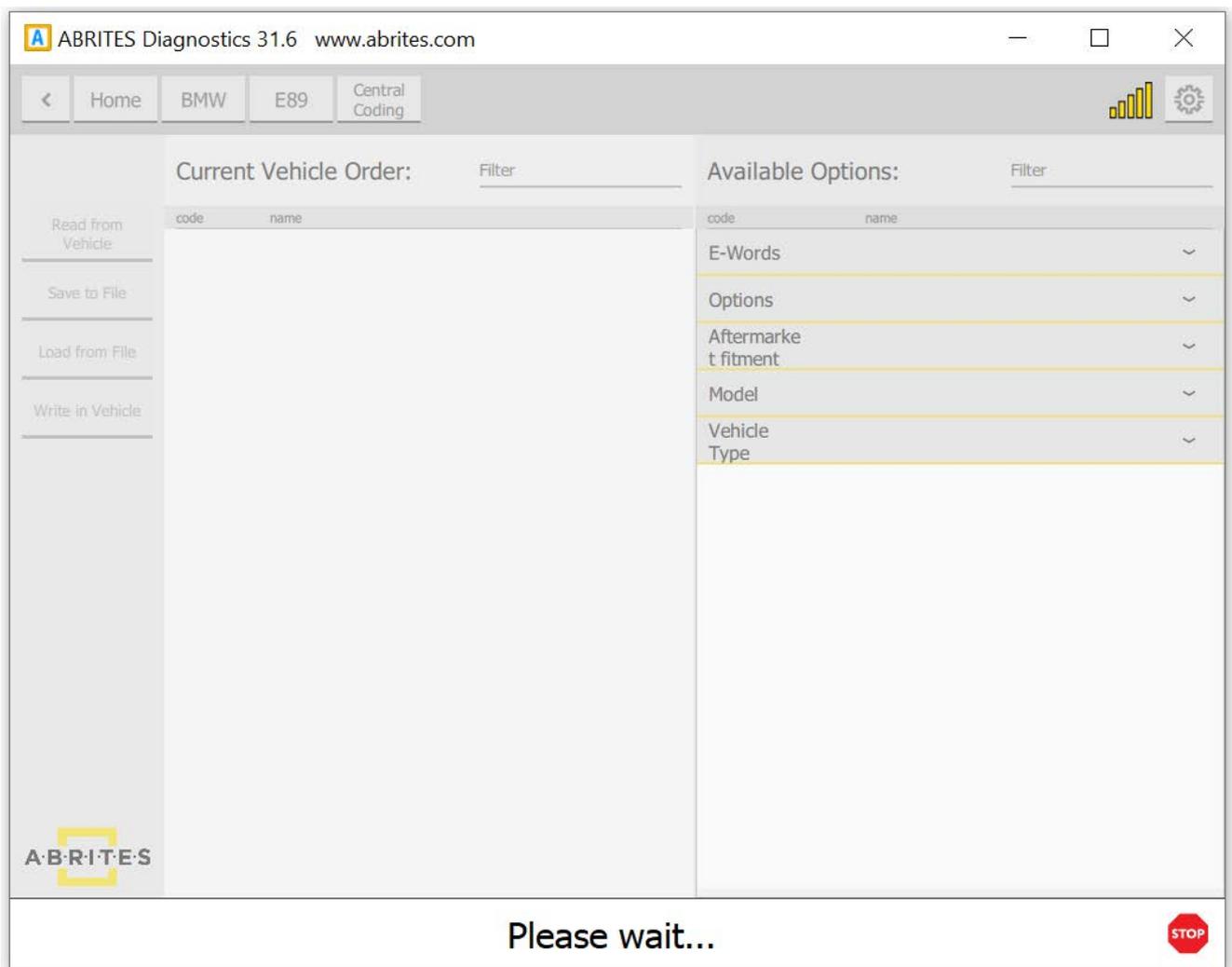
As soon as the reading is finished all the details about the **central coding** will be displayed.

Using the buttons on the side the user can save the coding to a file on their computer, load previously saved coding, as well as updating changes to the vehicle.
It is strongly recommended to save the Current vehicle order data before applying any changes to the vehicle by using the option **"Save to File"**.

These functions are irreplaceable during modifications and tuning often asked for by the customers.

You will be able to easily remove options from the **"Current vehicle order"** the button **"remove"** and add new ones from the **"Available Options"** using the button **"Add"** .
You will be able to add/remove options, retrofit different modules etc.

You will be also able to filter your search by entering the name of the desired option in the **"Filter"** field.

3.2.3. Programming

Reflashing of the firmware of the modules with newer (or older if required) software versions. The user is presented with the firmware versions of each module and is given suggestions of what is the most proper version of each module. What distinguishes that function from what the original software tool provides is the ability to choose arbitrary flash version. The user can either accept or ignore the flash version suggestions and apply whatever operation they think is necessary to the module. This gives great flexibility and can solve problems that even the dealer tool could not tackle. For example finding the best data flash of motor computers – Abrites programming function allows experimenting to flash every data flash that the user chooses to try, instead of firmly limiting the user to one specific option.

One of the unique features is the predictive selection of the most compatible flash file as a suggestion in the second field. It is absolutely obligatory to have the vehicle connected to an external power source for programming. Alternatively the consequences may be irreversible.

Once the desired flash version is selected you will see the following window appear.
All you need to do is to make sure that the supplied voltage does not drop below 13.6V and press and hold the **"START"** button to begin.
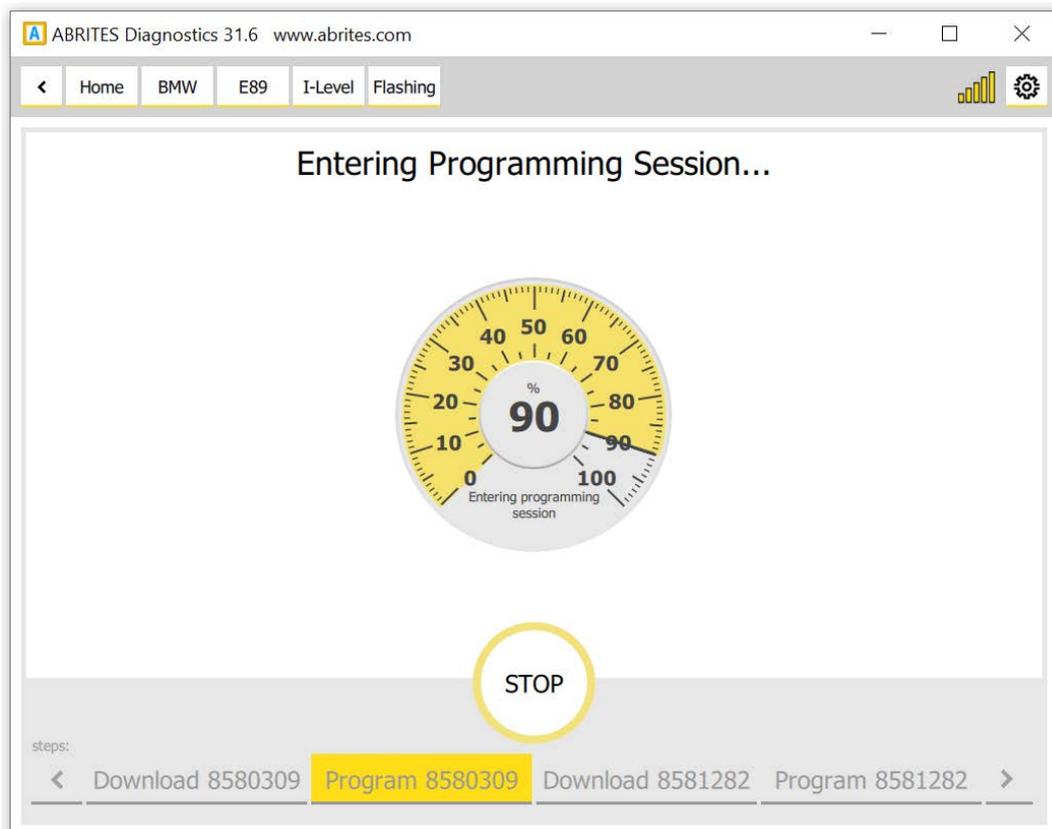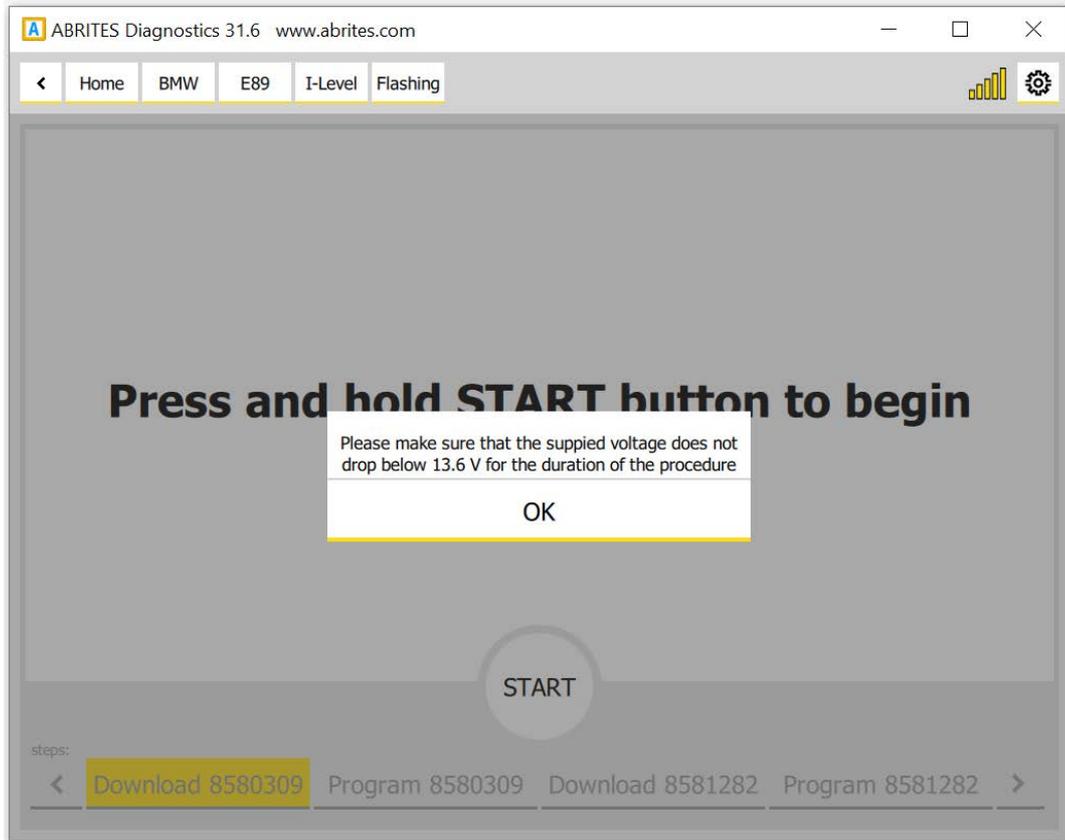
3.2.4 Keys and start synchronization (Key programming)

Key learning is one of the key features of the Abrites diagnostics for BMW/ Mini generation 2.

Using it the users can perform key learning for all CAS 1, CAS 2, CAS3, CAS3+ vehicles via OBD including those with latest ISTA-P updates. If the user has working key for the car and wants to make a spare one, the key learning is a fast and easy process.

If all keys are lost and a new one has to be made then the process is more complicated, but all the necessary tools are included in the package.

To begin with the user has the ability to observe and modify the key data in the CAS module. They can enable or disable key positions etc.
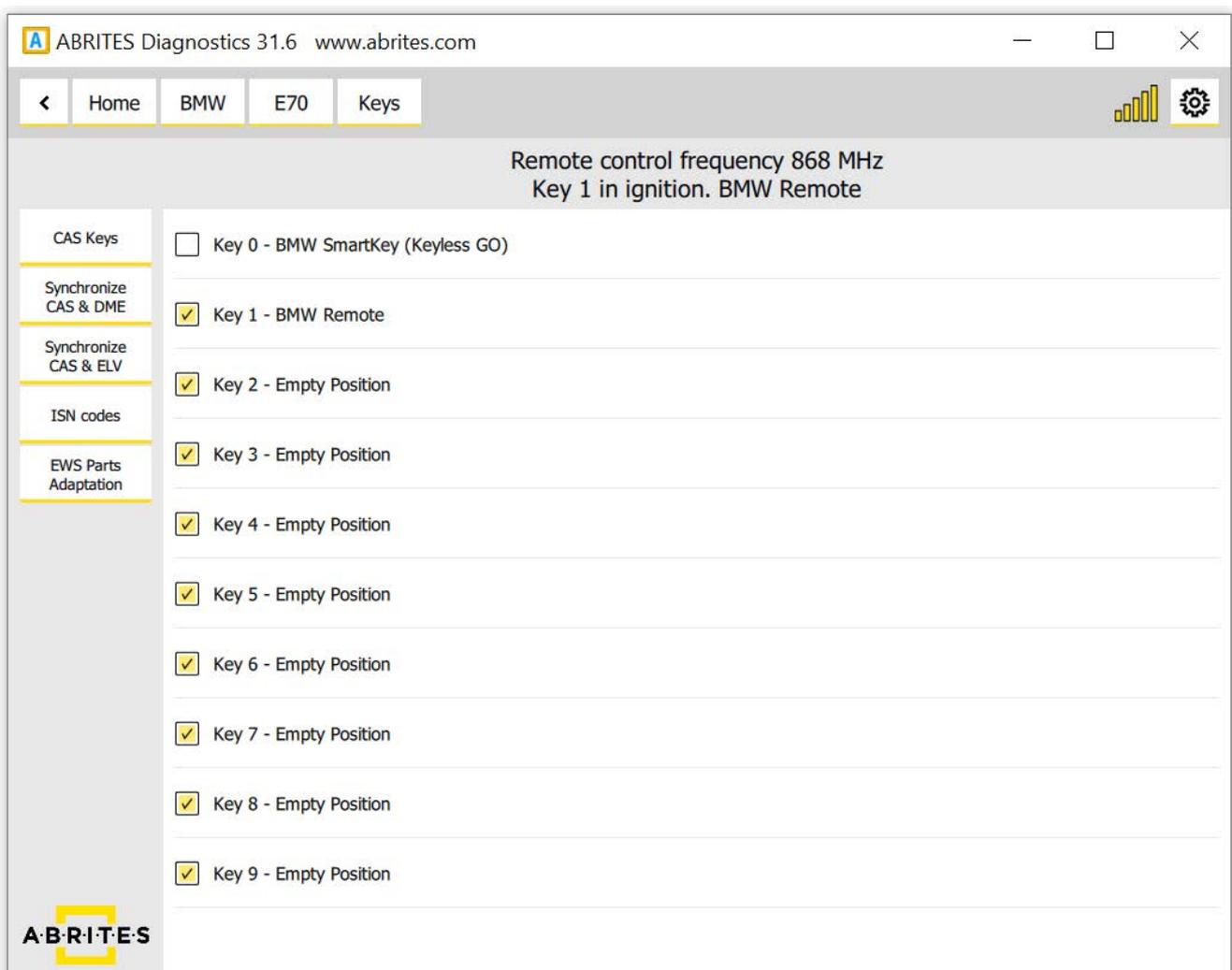
When adding keys to a vehicle the user will need to us the TAG or the PROTAG programmer. It will need to be connected to the user's AVDI if it's Tag Prog and to the PC via USB connection if it is a PROTAG.
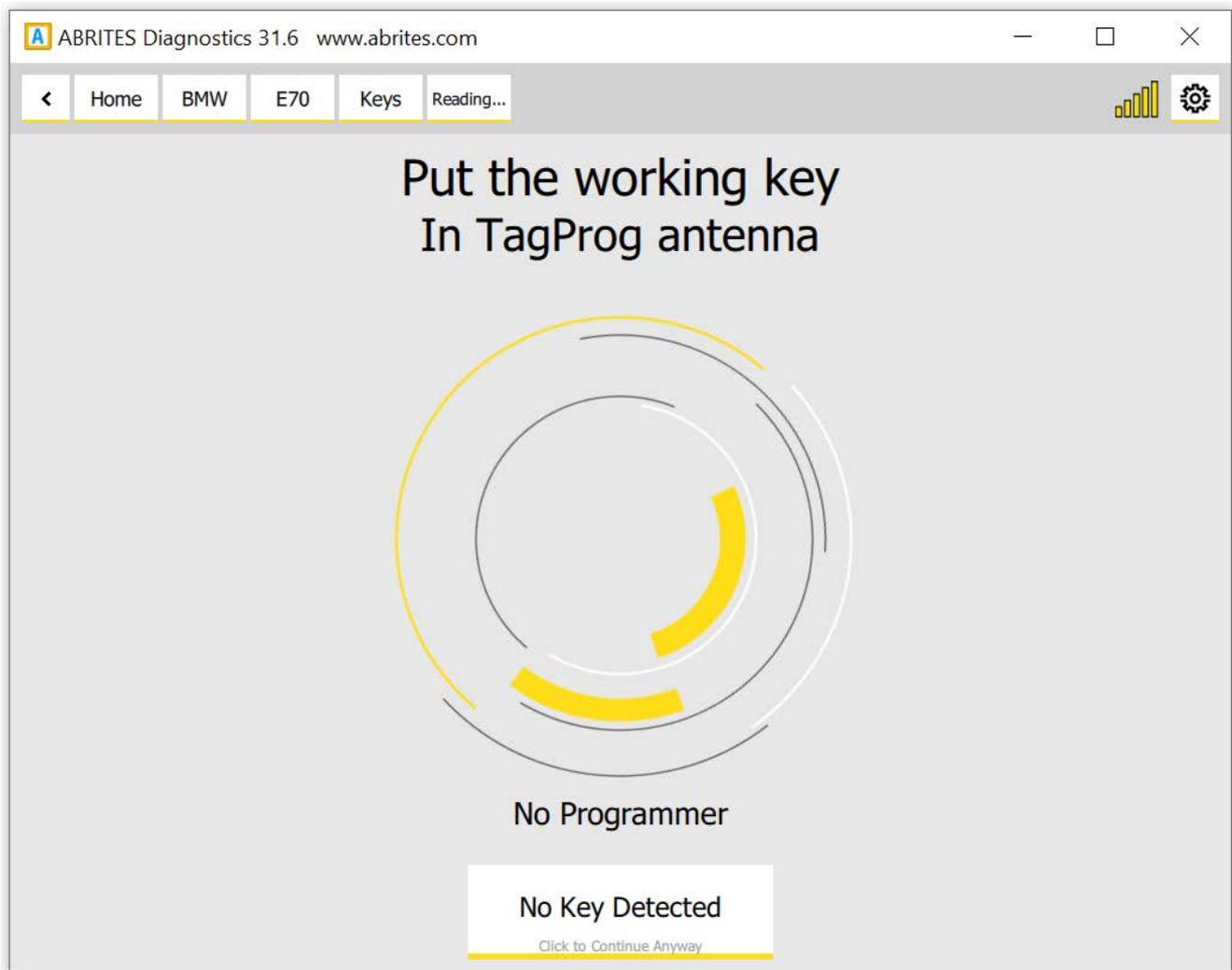
In the cases when a key is added to the existing set the working key needs to be placed in the TAG programmer. Tag Programmer. Allows the user to observe, check and modify HiTag2 key data. The user is given hints for the key contents whether the data is consistent and options to correct it(very useful tool when the key is not an original BMW key).

From the "CAS keys" menu the user can choose to **Save** the data to a file on their computer and use it as a backup file, **Load** previously saved data, **program** a key, **clear** the current positions, clear the CAS and keys and write the CAS EEPROM/CONF DATA.

IMPORTANT: It is strongly recommended to **Save** the current key data to a file before applying any changes.

In the cases where there are no keys available in order for one to be added and the car is in an all keys lost situation the Individual Serial Number (ISN) from the DME must be read. This situation will need you to keep the car awake and the bbest practice is to either shorten pins 1 and 16 on the OBD or to make e temporary transponder.

3.2.4.1 FEM key programming

FEM Key Programming is made by dump, the procedure requires around 20+ steps that need to be strictly followed. The Key programming requires you to have active AMS, PROTAG programmer and ABPROG or a 3rd party programmer. Once the software is started, please go to the "Keys And Start Synchronization Menu" and open the "EWS Parts Adaptation". You will find the "Key Programming" Menu. It is highly IMPORTANT to supply 13.6 Volts or more so that the procedures can run smoothly and finish successfully. An external power supply is a must. Below you can find all the steps and menus in screenshots that need to be followed:

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A connection diagram is also available in case you want to read the EEPROM using the ZN057 adapter :

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Important: You have to strictly follow the steps from 1 to 3!!!

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1. Solder modified EEPROM in FEM/BDC
2. Install FEM/BDC into the Car
3. Connect Battery and AVDI to OBD port
4. Connect External Supply and press Next
5. Press Start/Stop Engine
6. Turn the light switch to parking lights

cancel   next

Important: You have to strictly follow the steps from 1 to 6!!!

13

Uploading data ...

14

FEM/BDC EEPROM has to be restored
1. Disconnect AVDI from OBD port.
2. Disconnect battery and external power supply
3. Remove FEM/BDC EEPROM4. Plug EEPROM into ABPROG

cancel   next

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16

17

1. Solder modified EEPROM in FEM/BDC
2. Install FEM/BDC into the Car
3. Connect Battery and AVDI to OBD port
4. Connect External Supply and press Next
5. Press Start/Stop Engine
6. Turn the light switch to parking lights

cancel   next

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*Note: If you have a working key, it can be used instead of entering the DME ISN on step 22. Its position will be announced by the software.**

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Hold new key against the ring aerial
Status : **Key learned completely**

Key ID showd be : **A3 5C 16 34**
Key ID : **A3 5C 16 34**
Frequency **868 MHz**
Key Part Number : **09 25 48 90**

cancel
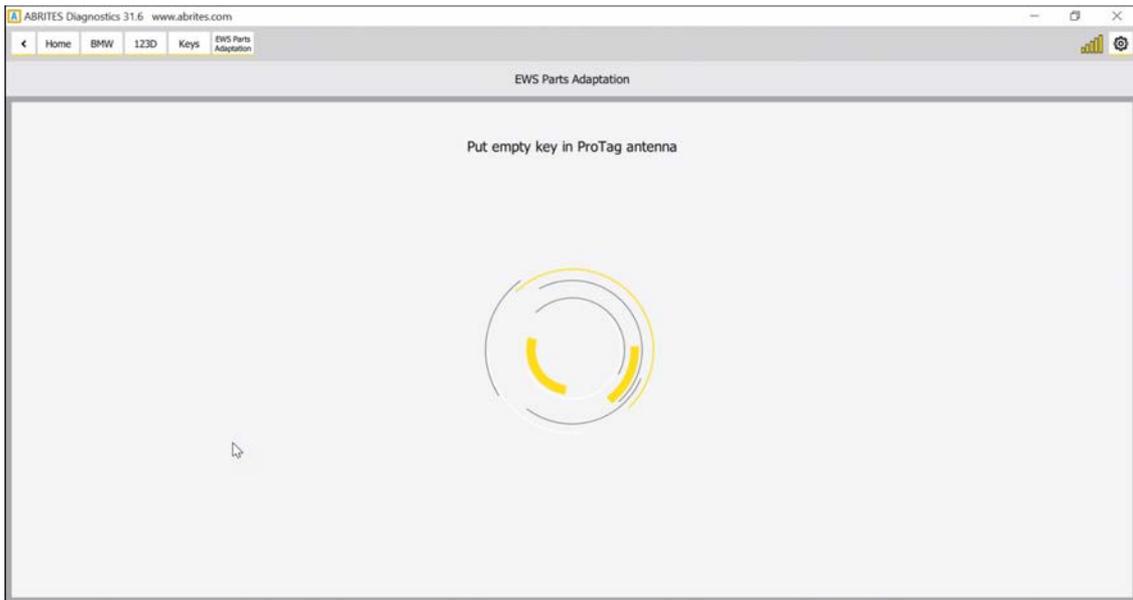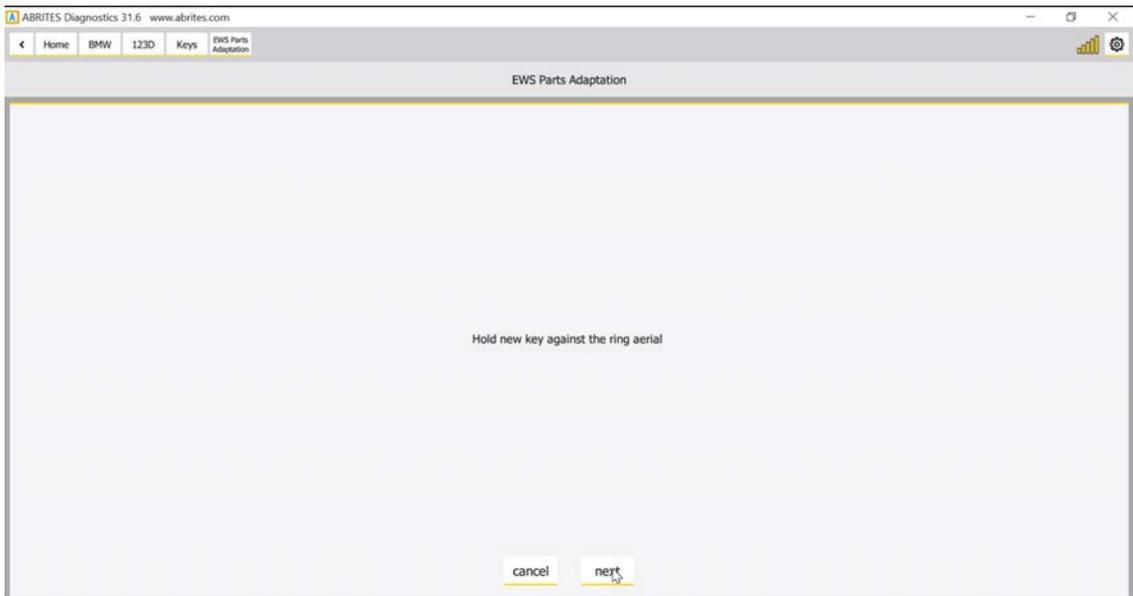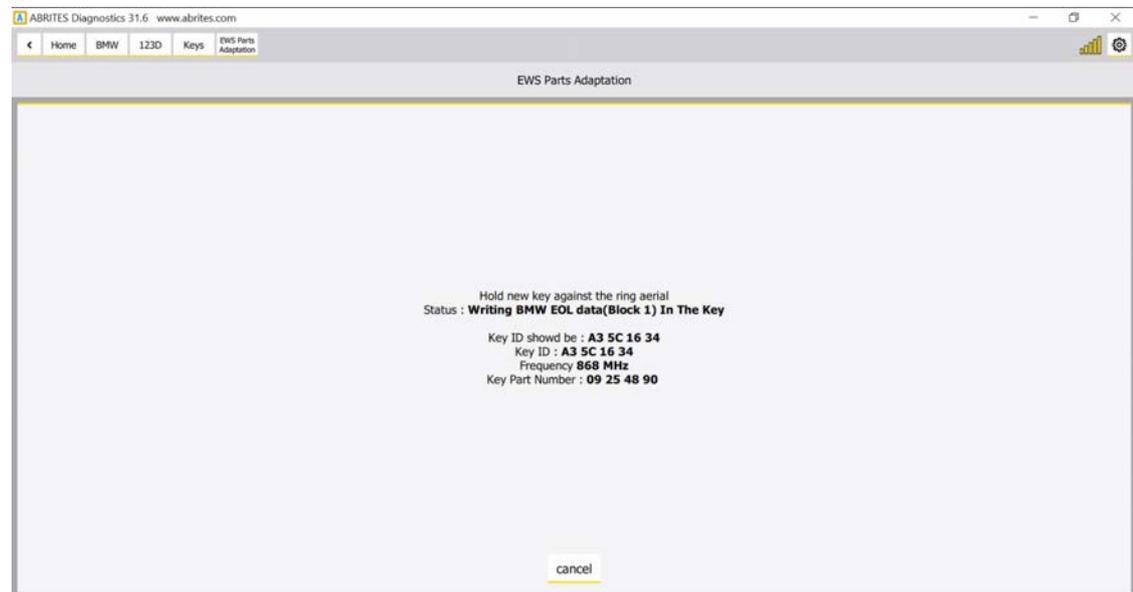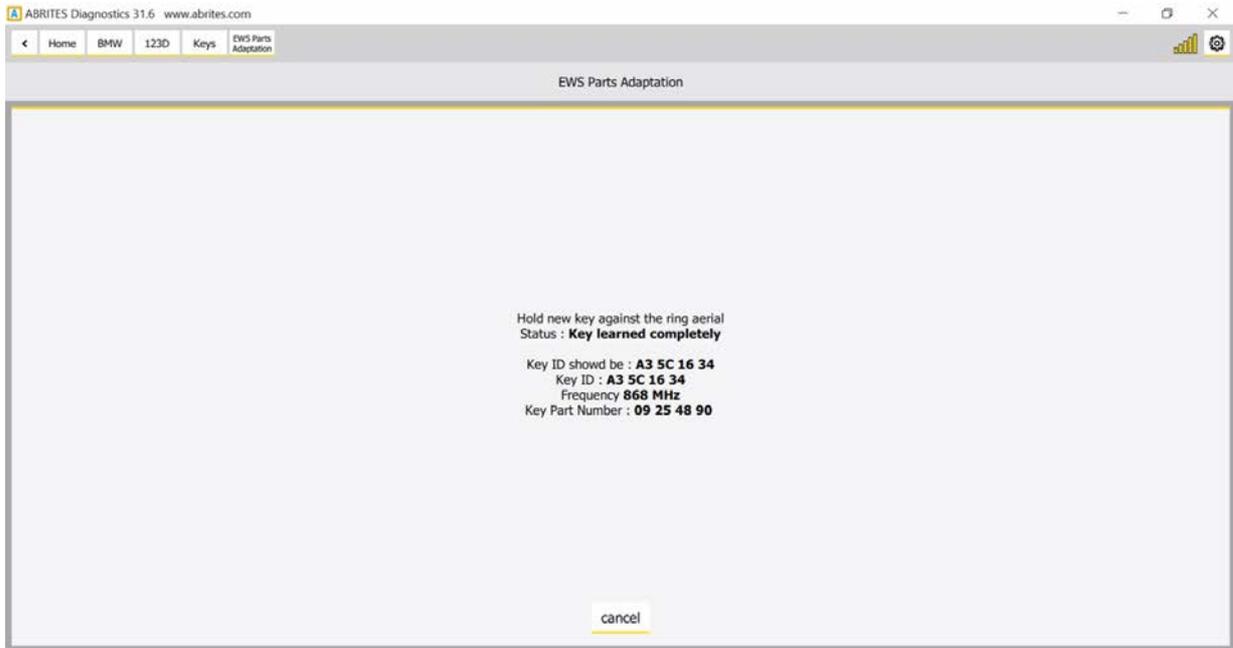
25 Once the key is programmed, you will see a message, saying it is successful and the next screen
with the positions will be loaded(we have previously erased all positions):

CAS KEYS

- Key 0. **A3 5C 16 34** : status **BMW SmartKey(Keyless GO)** : **Enabled**
- Key 1. **FF FF FF FF** : status : **Enabled**
- Key 2. **FF FF FF FF** : status : **Enabled**
- Key 3. **FF FF FF FF** : status : **Enabled**
- Key 4. **FF FF FF FF** : status : **Enabled**
- Key 5. **FF FF FF FF** : status : **Enabled**
- Key 6. **FF FF FF FF** : status : **Enabled**
- Key 7. **FF FF FF FF** : status : **Enabled**
- Key 8. **FF FF FF FF** : status : **Enabled**

cancel   erase   write
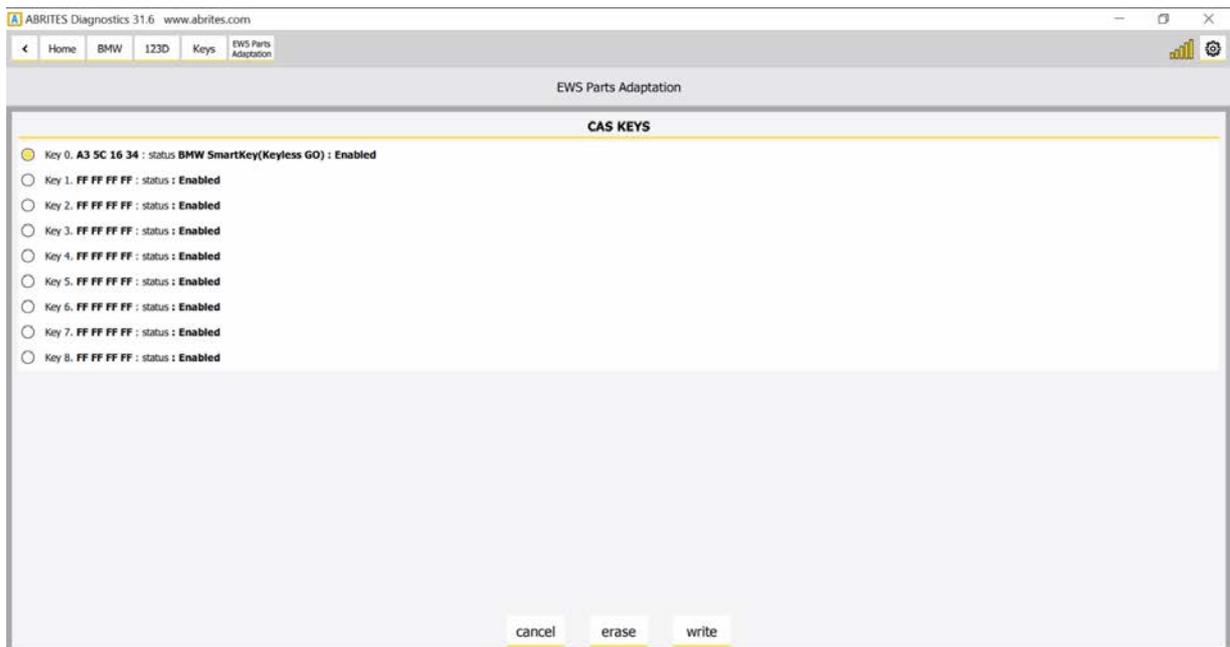
This is what the FEM unit looks like once it is opened. PIN 1 on the EEPROM is marked:
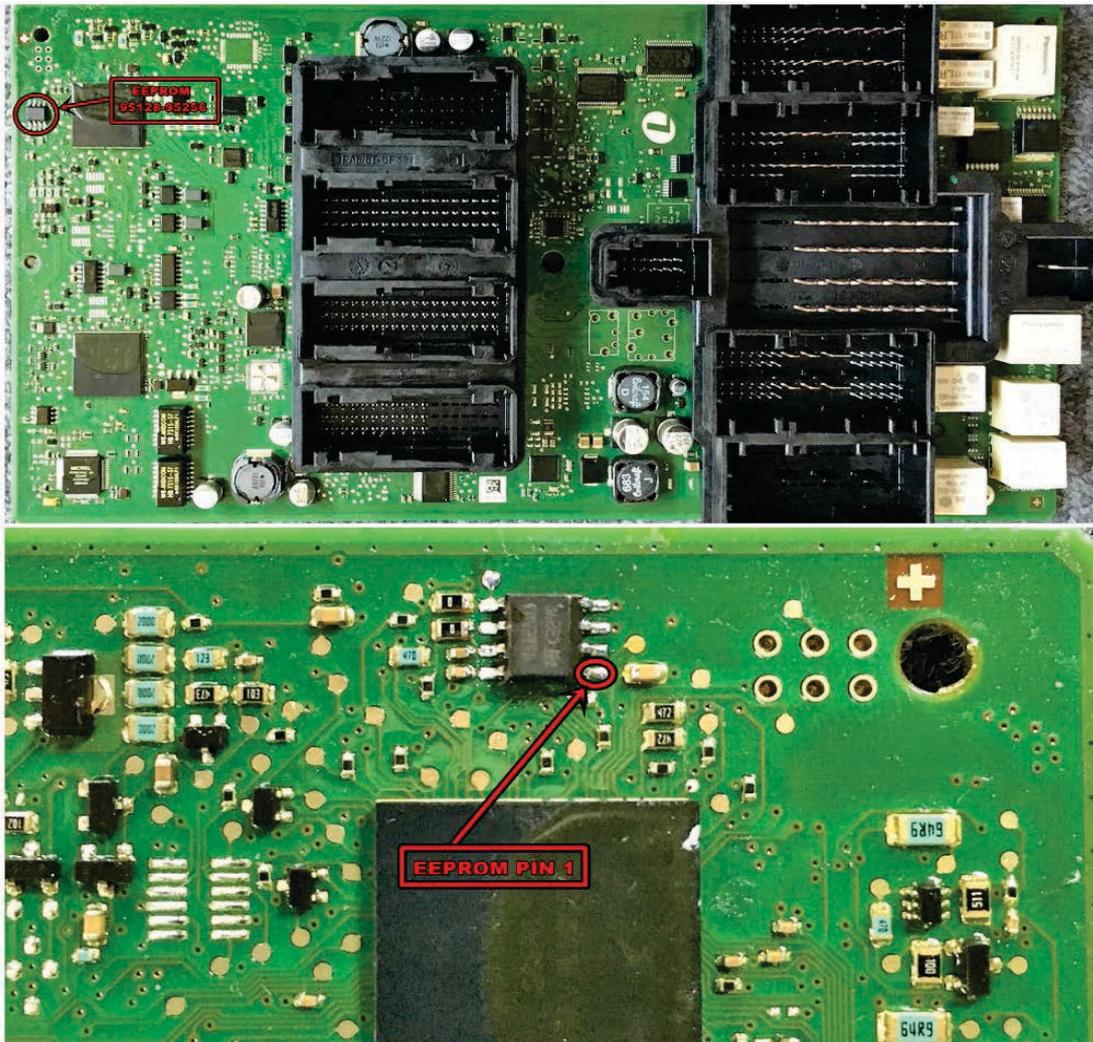
*Note: If additional keys need to be added in the future, the software won't need to reflash the FEM, so the procedure will be a few steps shorter.
If you reflash/update it you will have to repeat the procedure.

*Note: Another option when working with FEM or BDC is to use the ZN057 adapter to make reading/writing of information easier with just soldering the adapter cables directly to the PCB and the eeprom chip. The photos below illustrate how this is done:

1. FEM PCB connection:

2. FEM PCB diagram:
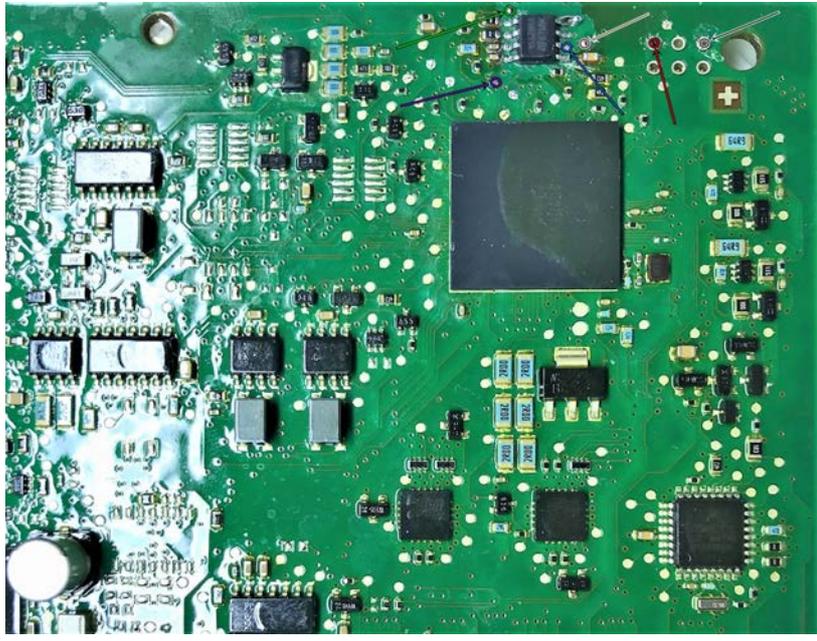
3. BDC PCB connection:

4. BDC PCB diagram:

*Note: The software has the diagrams integrated and they can be easily opened with the push of a button.

3.2.4.2 FEM/BDC Adaptation and reset

FEM Adaptation and Reset is made by dump, the procedure requires around 20+ steps that need to be strictly followed. The Key programming requires you to have active AMS, PROTAG programmer and ABPROG or a 3rd party programmer. Once the software is started, please go to the "Keys And Start Synchronization Menu" and open the "EWS Parts Adaptation". You will find the "FEM Reset" and "FEM Adaptation" Menu. It is highly IMPORTANT to supply 13.6 Volts or more so that the procedures can run smoothly and finish successfully. An external power supply is a must. Below you can find all the steps and menus in screenshots that need to be followed.

You have to start with the **FEM Reset(Virginize) procedure**:
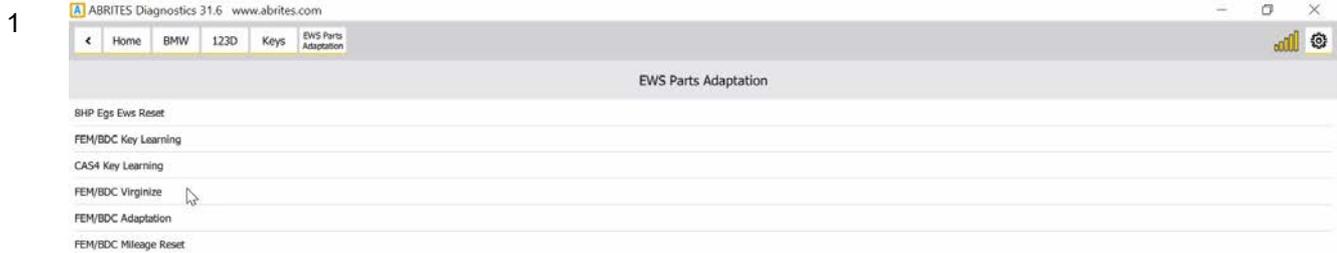
1

2

..The other steps of procedure are exactly the same as of the Key programming procedure so please refer to chapter 3.2.4.1.

The only difference will be in the last on-screen message:

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Now when the FEM/BDC is in a virgin state you have to select **FEM/BDC Adaptation** to adapt it to the car:

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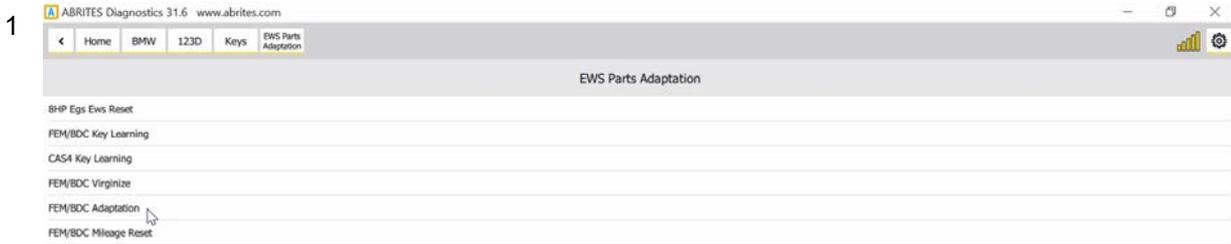
Important: The ISN of the DDE/DME must be known. You could read it via boot mode using the Abrites software for BMW2.

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IMPORTANT: All you need to do now is to program new keys using the FEM/BDC Key-learning option and select on of the positions(all of them will be empty).
As the FEM/BDC is now **unlocked** you will be able program new keys **via OBDII**. Please refer to chapter 3.2.4.1.
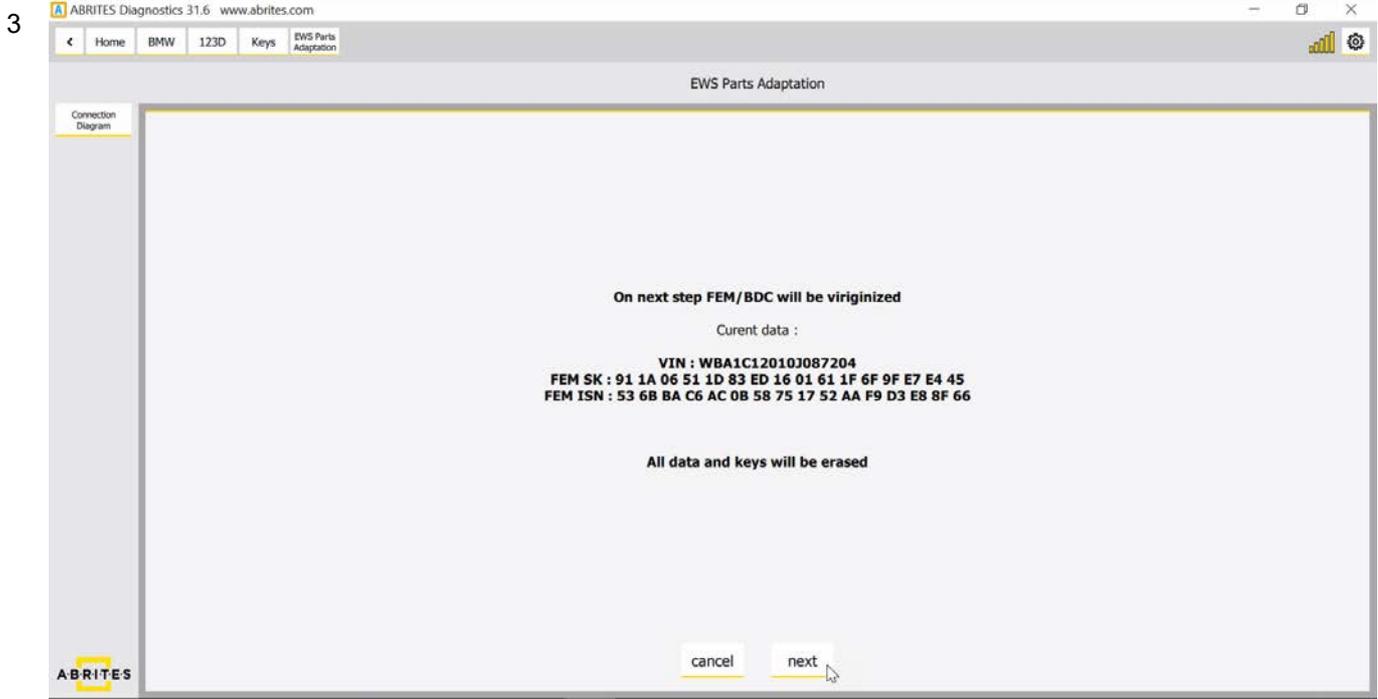
3.2.4.3 FEM/BDC Mileage reset

FEM/BDC Mileage reset is made by dump, the procedure requires around 20+ steps that need to be strictly followed. The Key programming requires you to have active AMS, PROTAG programmer and ABPROG or a 3rd party programmer. Once the software is started, please go to the "Keys And Start Synchronization Menu" and open the "EWS Parts Adaptation". You will find the "FEM Mileage reset" Menu. It is highly IMPORTANT to supply 13.6 Volts or more so that the procedures can run smoothly and finish successfully. An external power supply is a must. Below you can find all the steps and menus in screenshots that need to be followed:

1

2
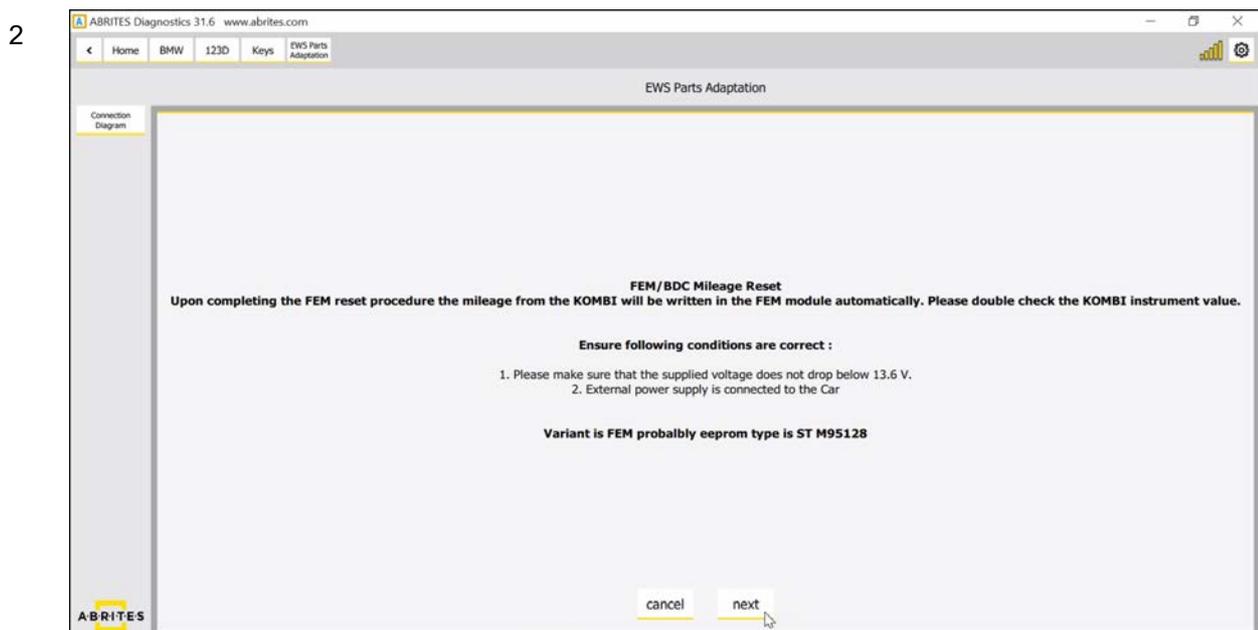
3

..The other steps of procedure are exactly the same as of the Key programming procedure so please refer to chapter 3.2.4.1.

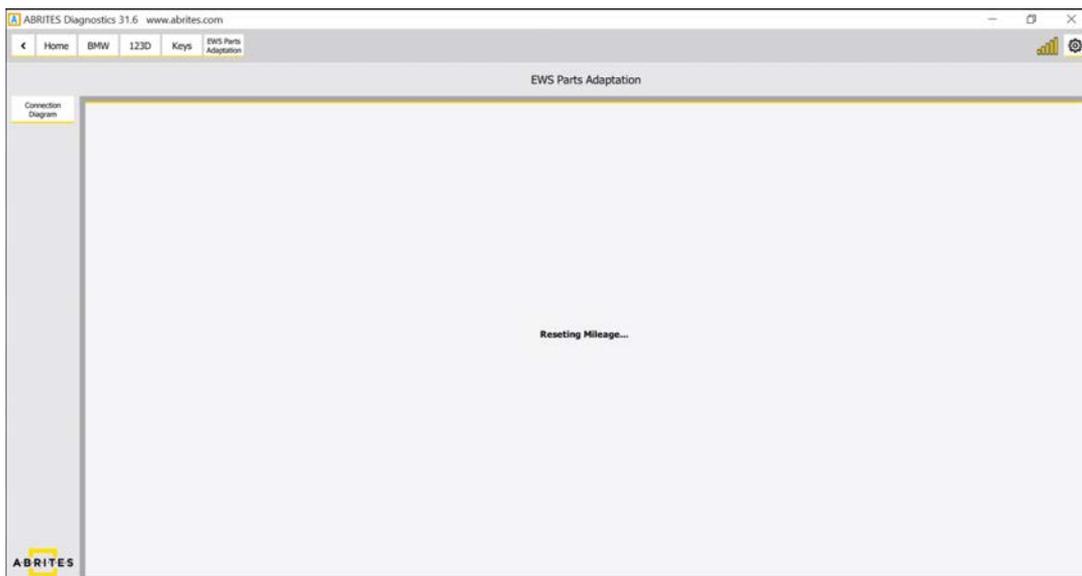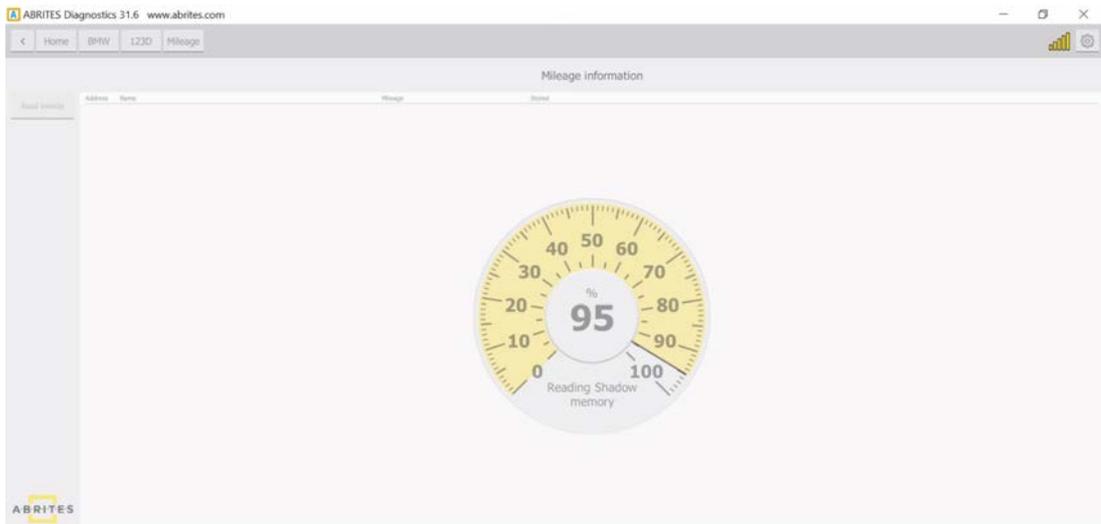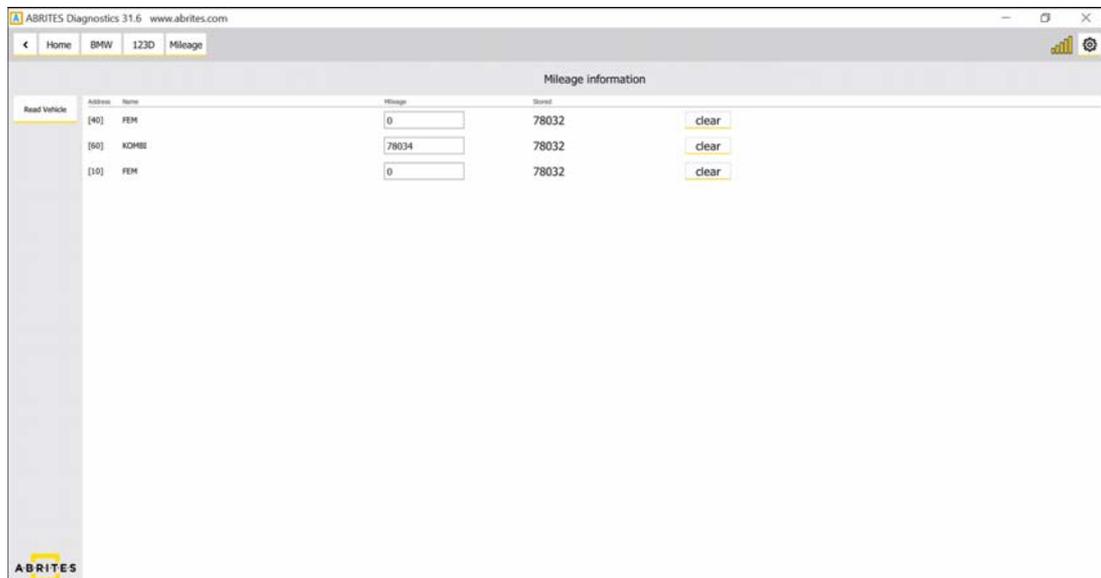The only difference will be in the last two on-screen messages:

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The current value of the mileage in the FEM/BDC could be verified from the **"Mileage:** menu:

3.2.4.4 FEM/BDC Troubleshooting + Coding

Should you receive an error message during one of the FEM/BDC procedure you should restore the FEM to its original state.

The procedure will fail only when the conditions are not met and the unit will remain in a boot loader state and the FEM/BDC will disappear from the main diagnostic menu.

It is very important to strictly follow all steps from the on-screen messages step by step and supply the car with a constant 13.6 Volts or more so that the procedures can run smoothly and finish successfully.
When the software tells you to disconnect the AVDI from the OBDII and then remove the car battery it is very important to do that in that order.

It is also very important to NOT disconnect the AVDI from the USB port of your PC during the procedure.

FEM/BDC Restore procedure:
All you need to do is reflash the FEM/BDC (Module 40 FEM Body) from the "**Programming**" menu and then write its **coding** from the diagnostics menu(Module 40 FEM) which is being saved automatically during one the FEM/BDC procedures in the following folder:
C:\Users\YOURUSERNAME\Documents\ABRITES software for ID 17XXXX\BMW \VINofYourCar.ncd

1. Program/Reflash the FEM/BDC unit
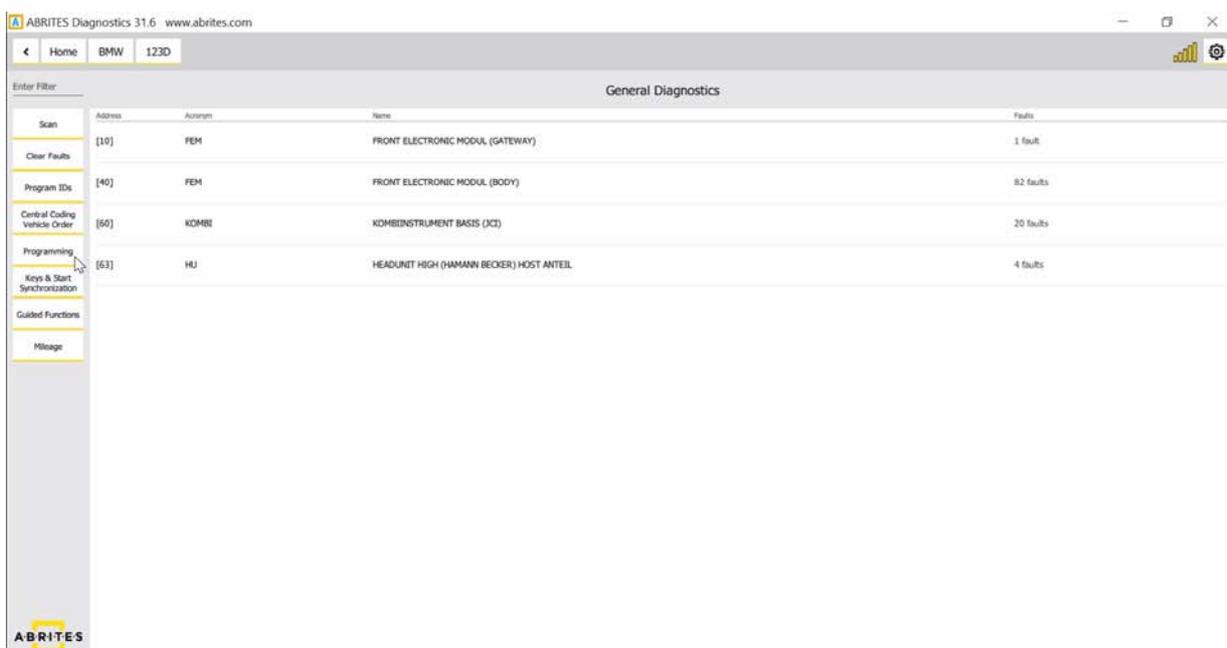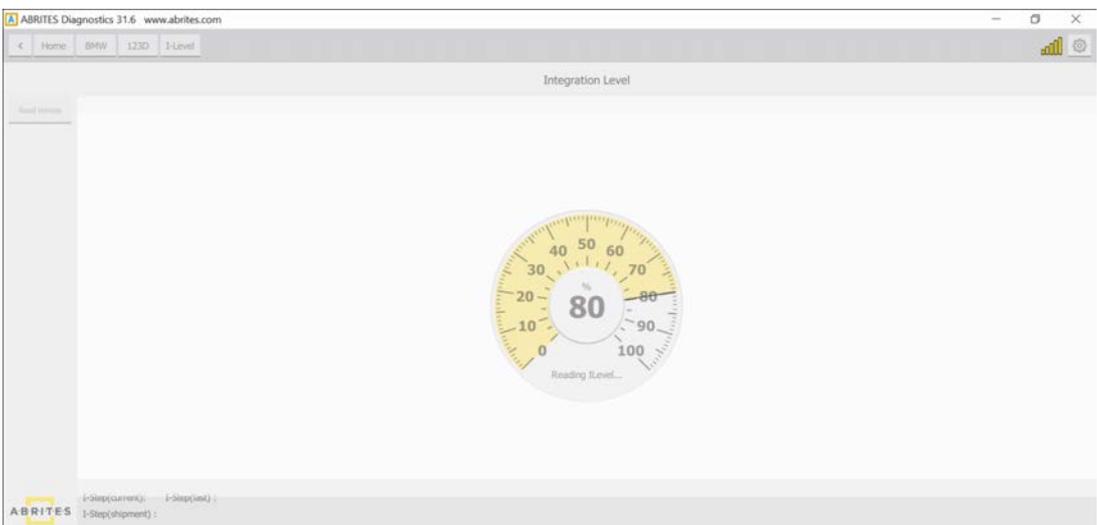
Select [40] FEM FRONT ELECTRIC MODULE (BODY):

There are two flashes/applications that have to be written to the unit.

The software will automatically select the correct flash/application versions for the unit + coding(if available).

It is also possible to select a different version by clicking on the second flash.

Click on "Update" to start the flashing procedure:
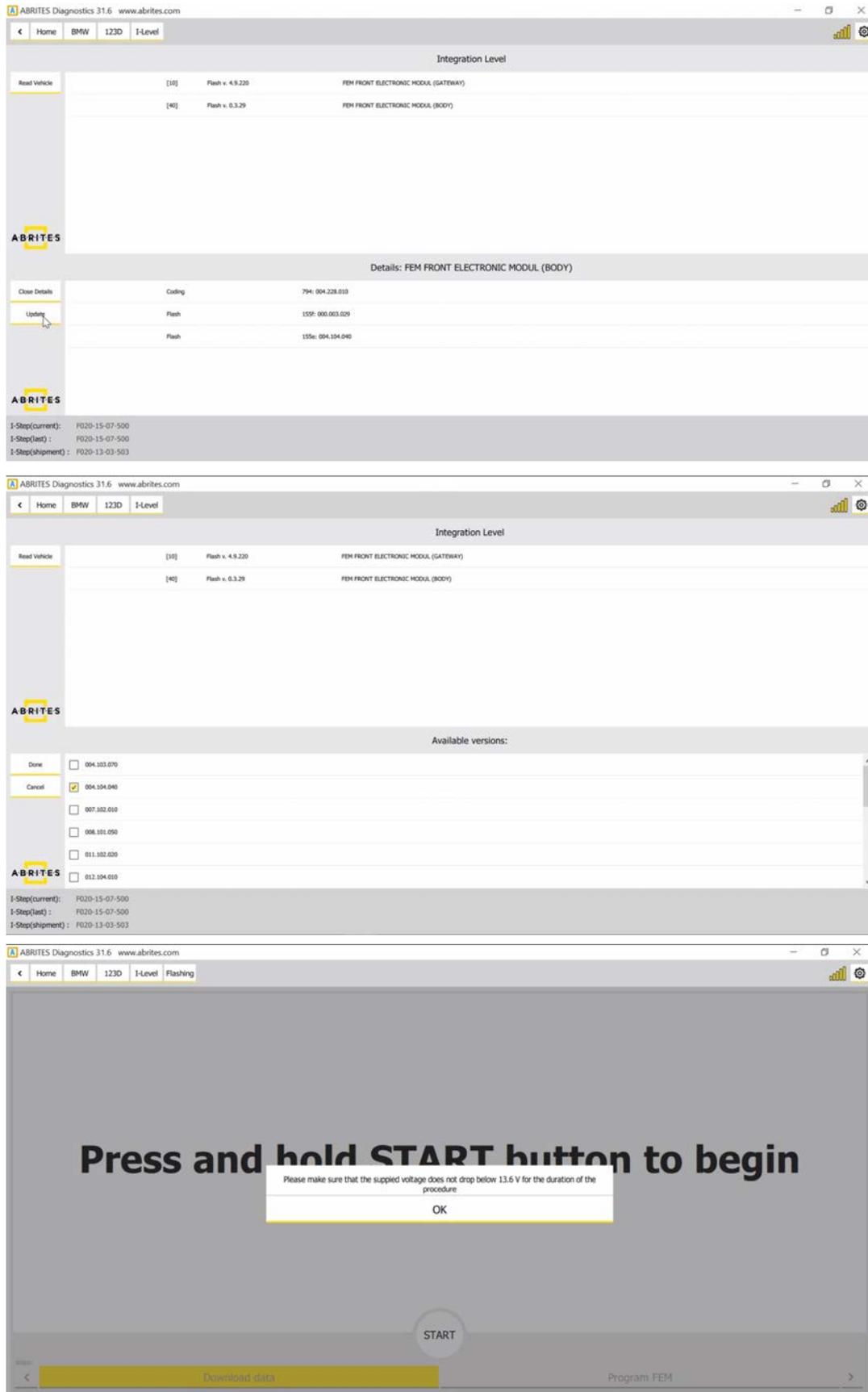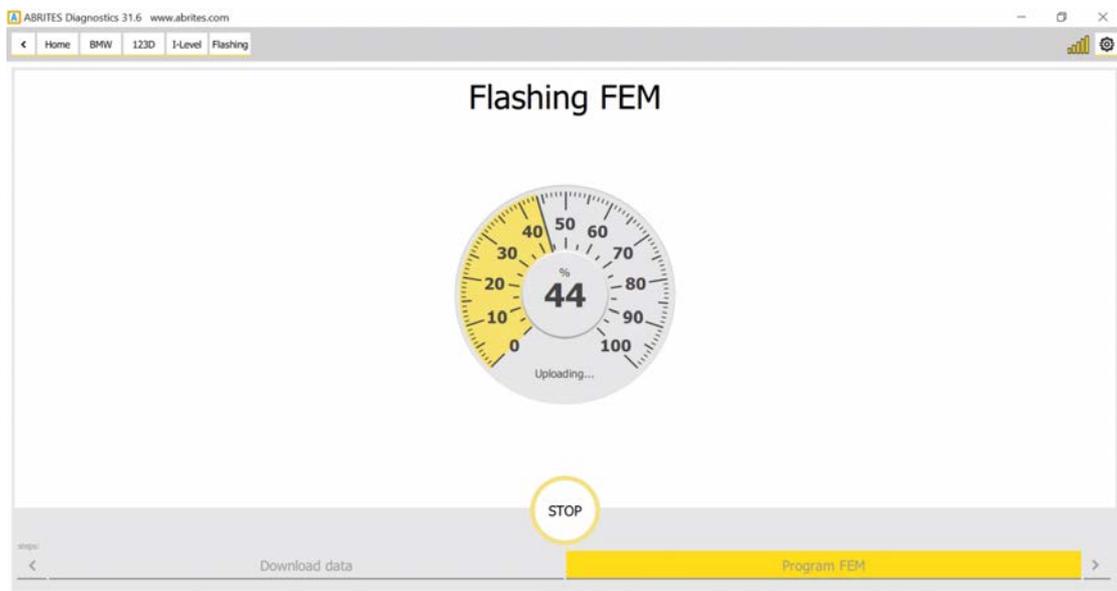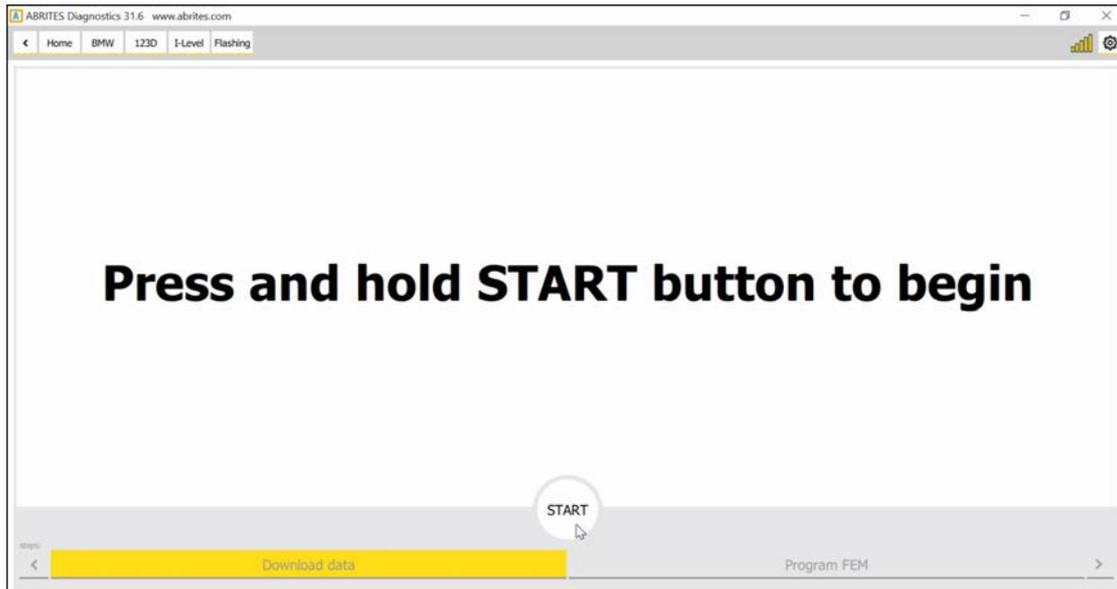
If a coding for the unit is available it will be also written to the unit:
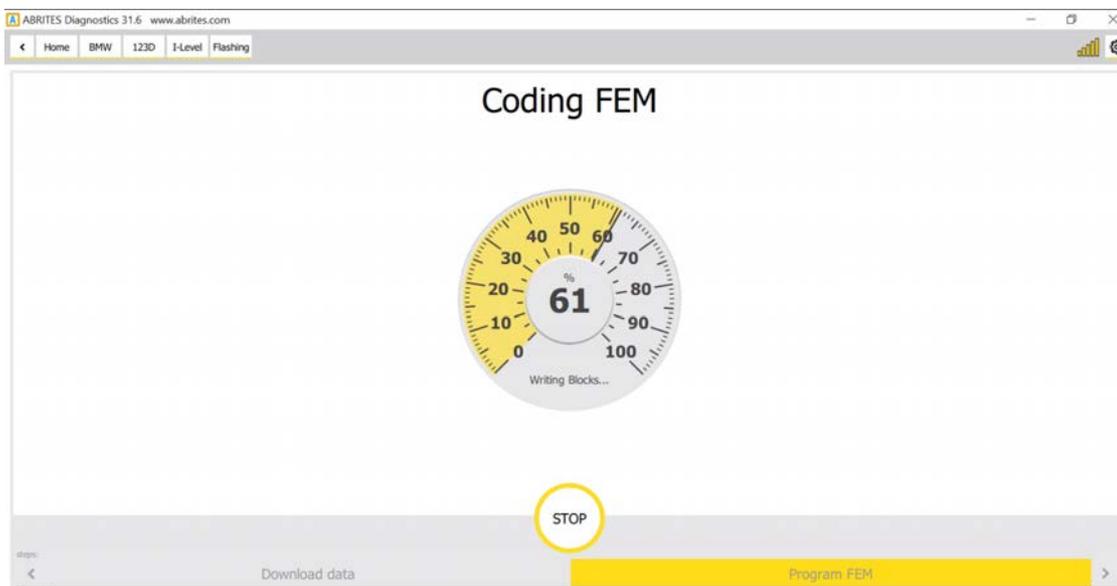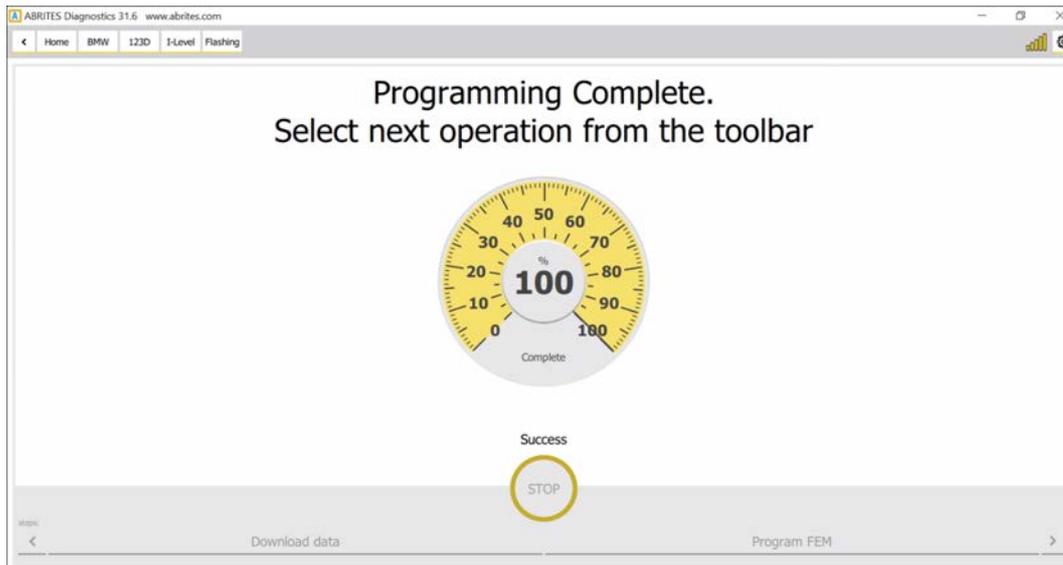
Now the FEM is reflashed and it will appear in the diagnostic menu. You could write its original coding from this menu or write a Default coding if you do not have the original one:
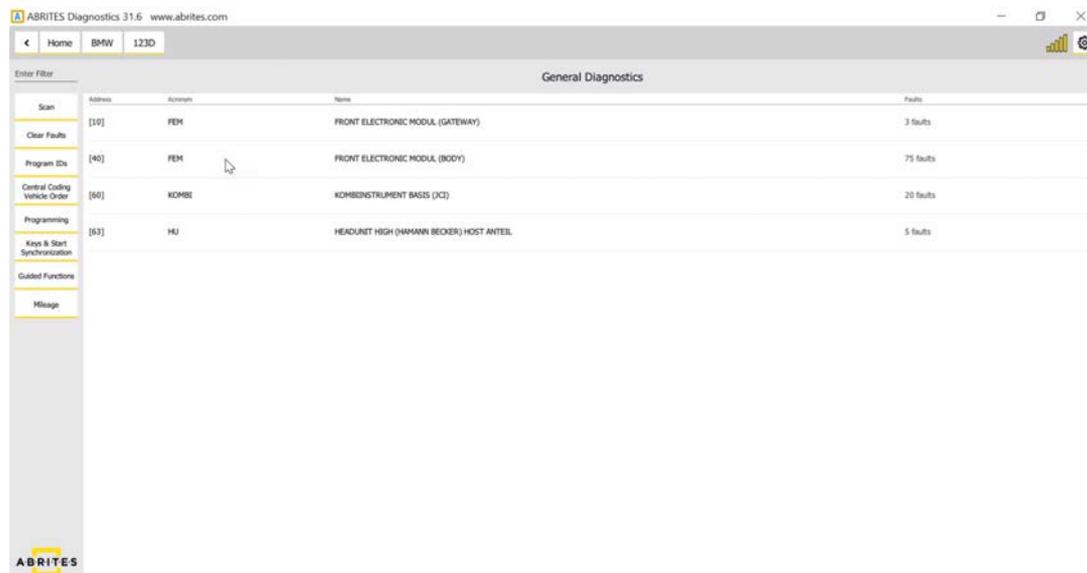
You have the option either to reset it to defaults or load if from a file: (The original first coding of the unit is saved in **C:\Users \YOURUSERNAME\Documents\ABRITES software for ID 17XXXX\BMW \VINofYourCar.ncd .**
Once the coding file is loaded click on "**Wrire ECU**":
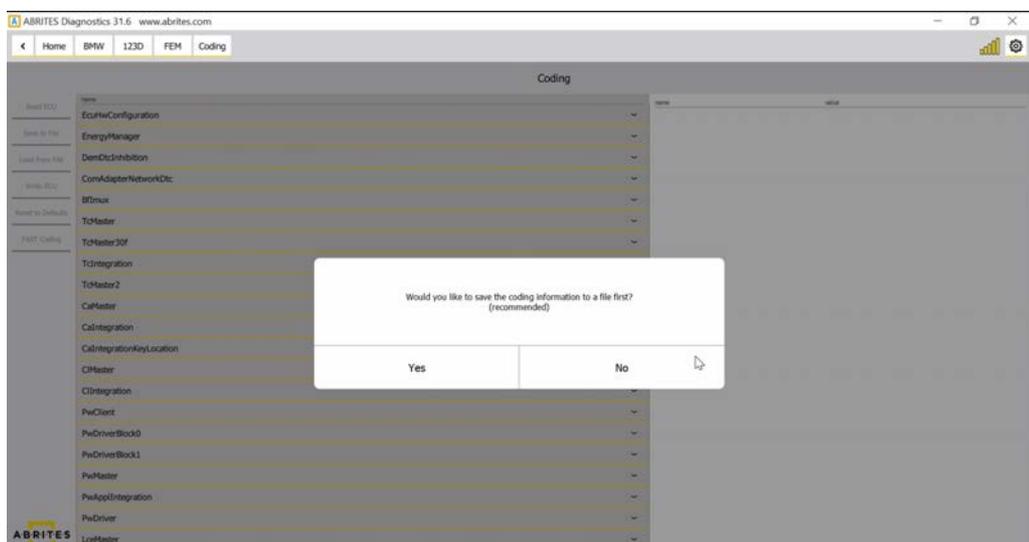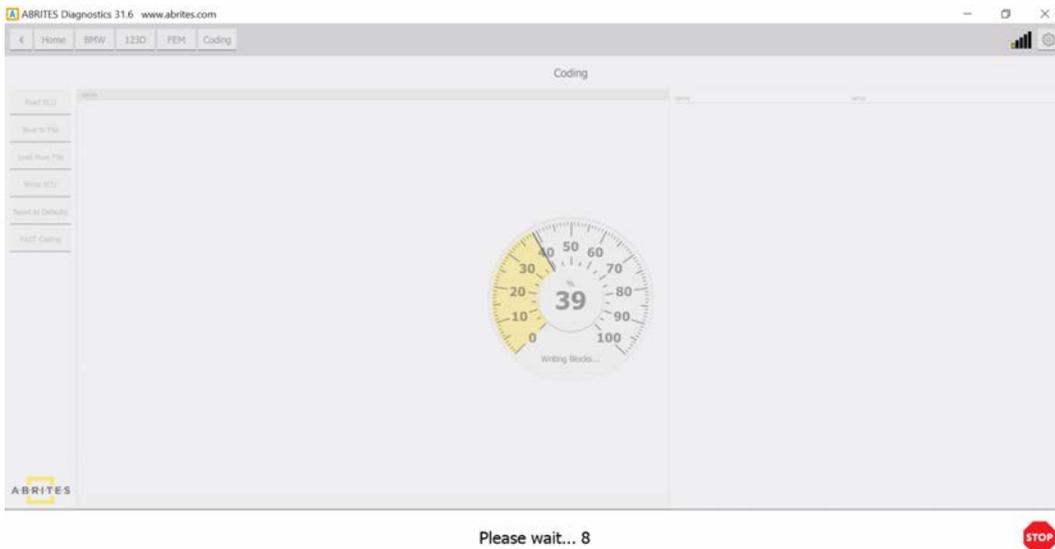
The unit is now coded:

Once the unit is reflashed and coded you could repeat the FEM/BDC procedure.

*You can find simplified coding procedures in the FAST Coding menu:

3.2.4.5 8HP EGS Reset and Adaptation

8 HP ZF gearbox EGS can be reset to a virgin state and can be easily adapted to BMW F-Series. The procedure requires that the supplied voltage does not drop below 13.6V and that external power supply is connected to the car. The replacement EGS needs to be connected to the car and the IGN turned on. Below are the screenshots of the procedure that will allow the replacement gearbox to be made virgin and then adapted. Please make sure to follow all steps without skipping any of them as the preconditions need to be fully met:

1 Go to Keys and Start Synchronization and open the 2nd menu.

2 Make sure to have all preconditions met
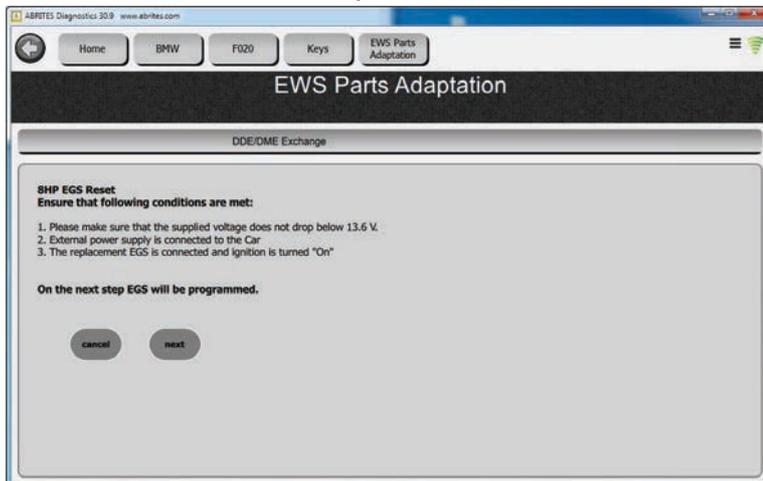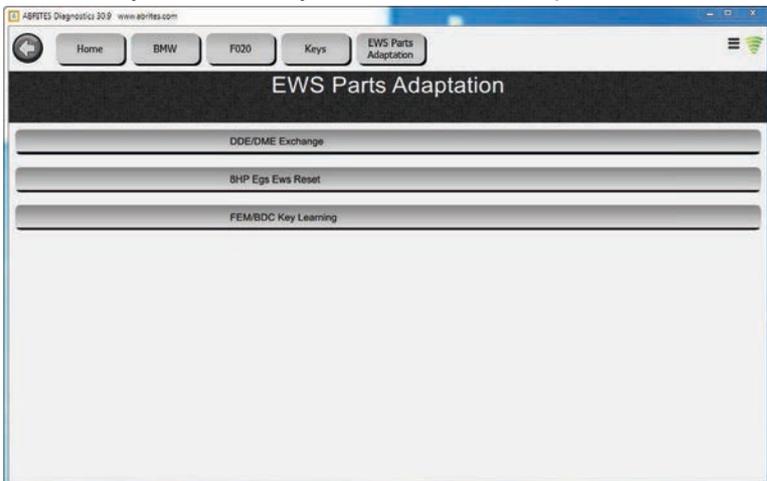
3 Please wait until the process is finished
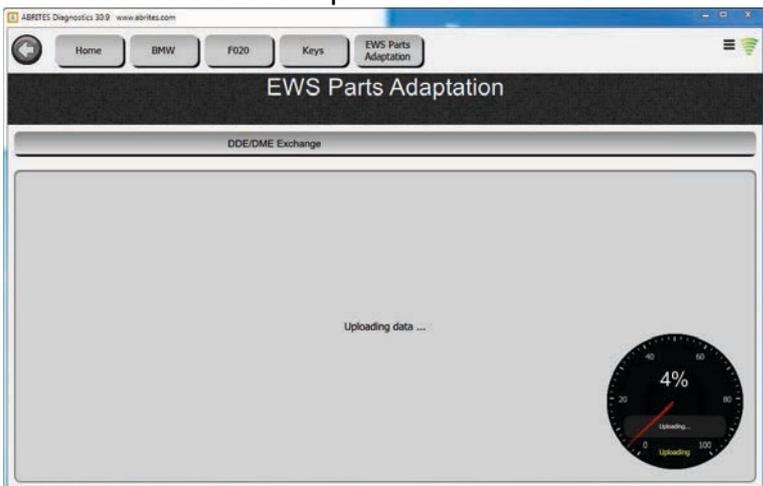
4 ...
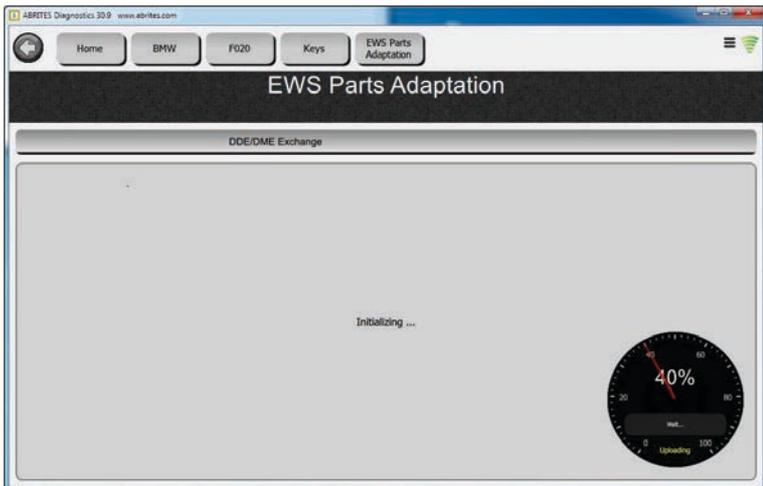
5 ...
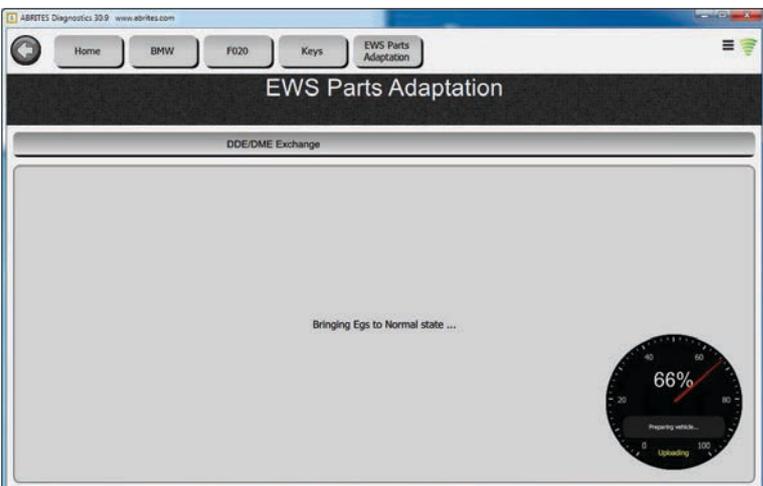
6 ...
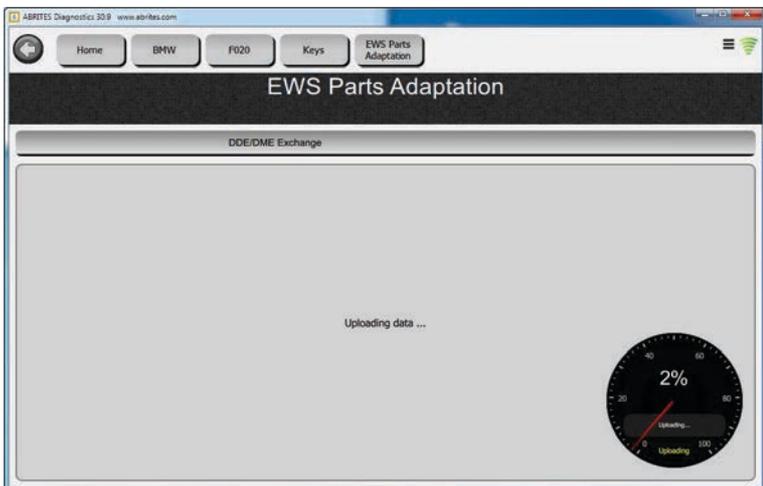
7 Turn the IGN OFF
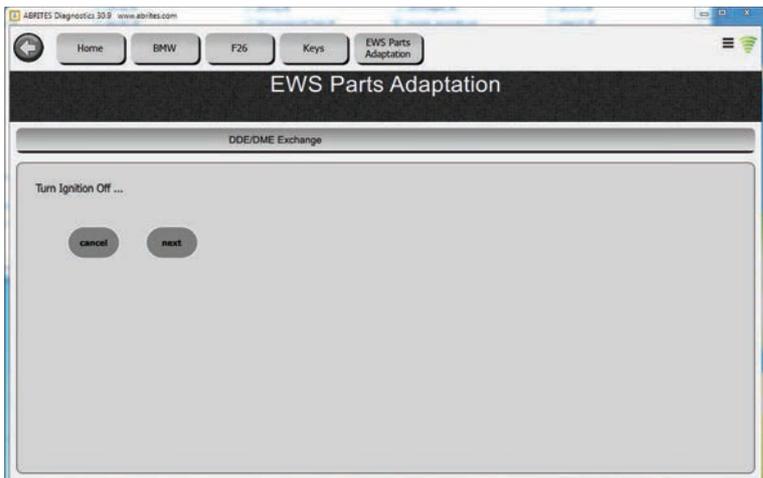
8 The EGS is entering sleep mode
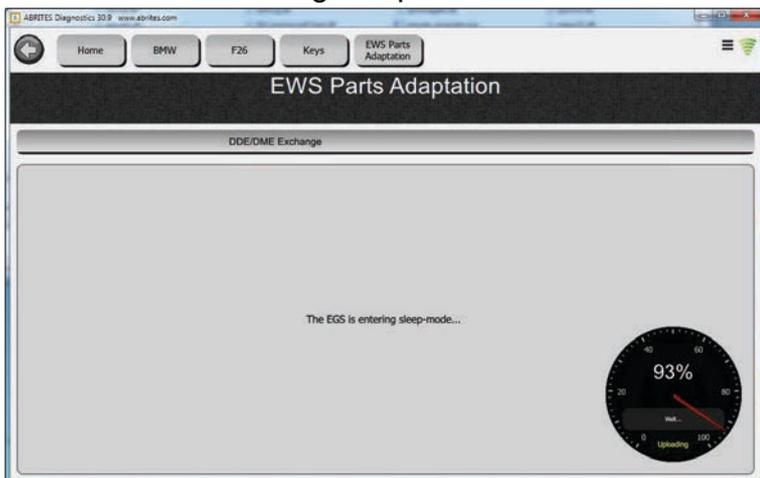
9 Turn the IGN ON
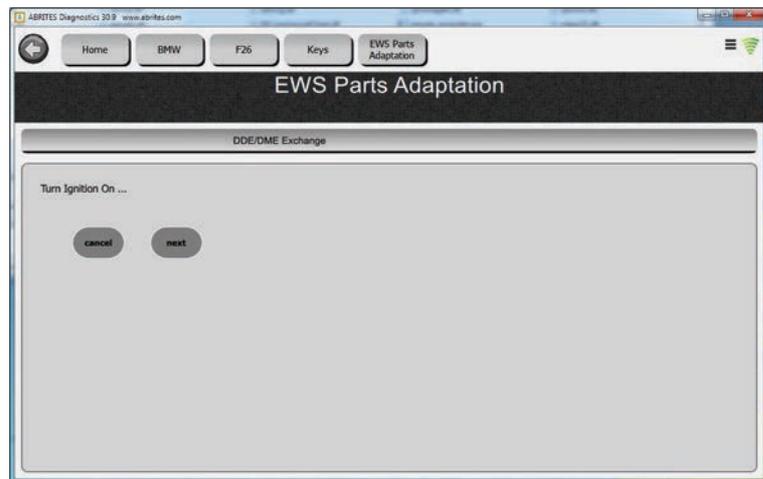
10 The EGS is being initialized
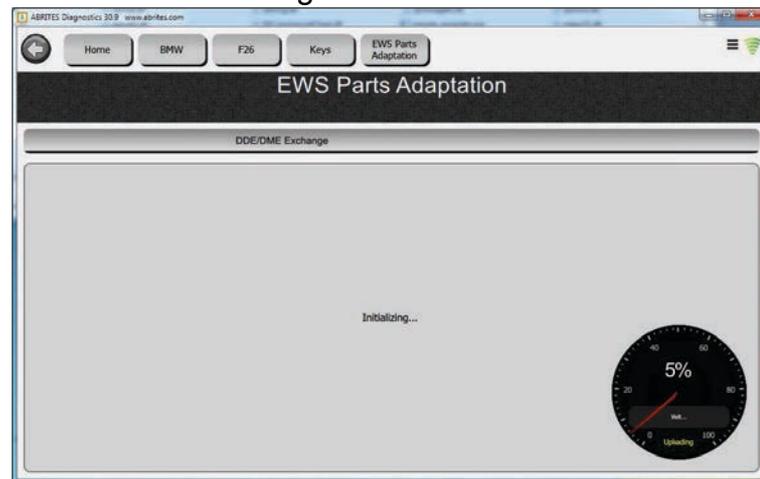
11 Turn the IGN OFF
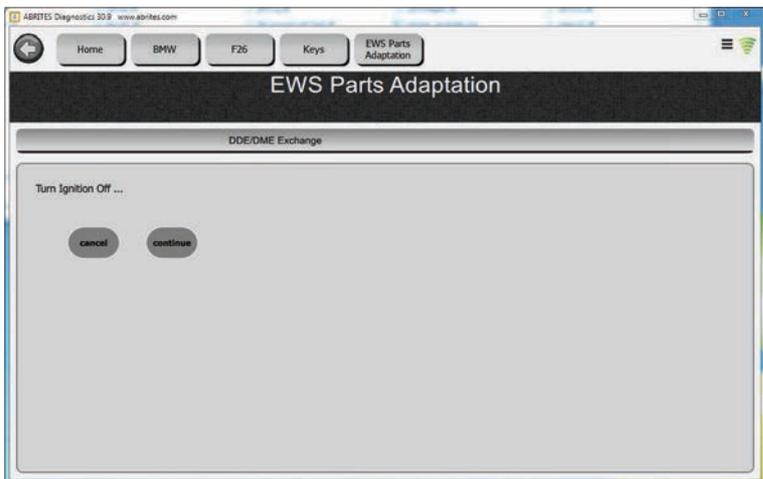
12 The EGS is Authorized now
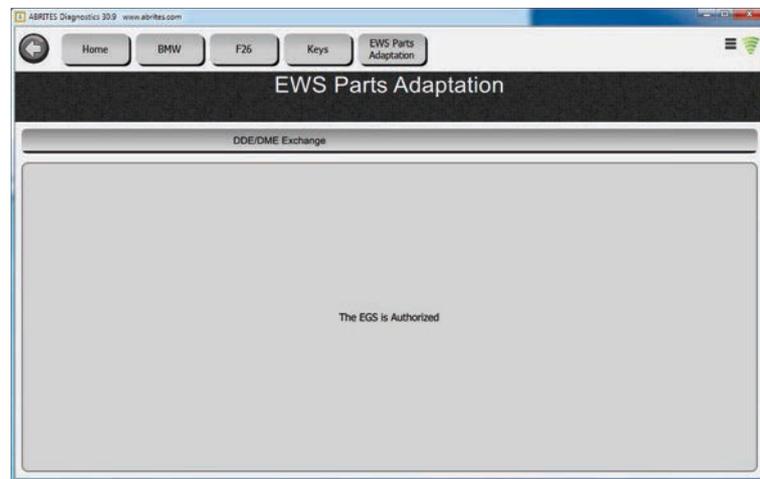
13 The EGS is being coded

14 The process has successfully finished
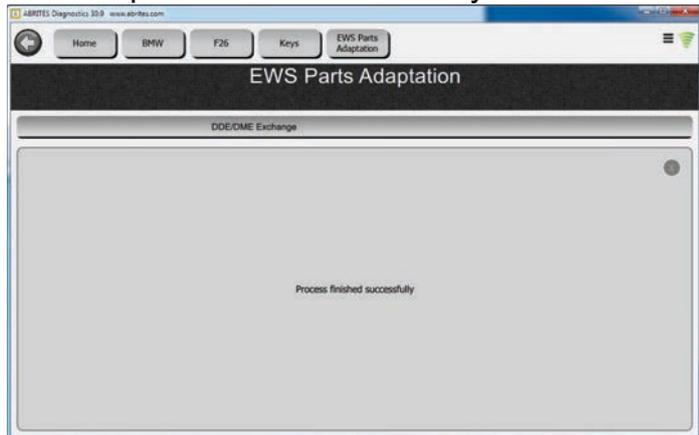
*Note: If you want to adapt the EGS to another car or leave it in a virgin state, click "CANCEL" on step 7.

3.2.5 ISN reading

The individual serial number is a mechanism to bind the modules to one specific car and prevent reusing modules from another car. The ISN of the DME is also needed data for key learning when all keys are lost.

•ISN reading from DME. We currently support DMEs for diesel and gasoline E series vehicles as well as DMEs for gasoline F series vehicles. In case of a problem with a specific DME, our team analyzes the problem at hand from the online logs and may add support to that motor computer

dynamically on our server. The customer just has to repeat the operation without reinstalling anything. Some specific motor computers like MSV80/MSD80 are more complicated for ISN reading and require flash preprocessing to retrieve its data.

•ISN reading from CAS - supported are both the short 4B ISN (that is used by older motor computers and some automatic gear shaft) as well as the 16byte ISN that is used for authentication with most up to date motor computers.

•Recent CAS3 versions keep the ISNs encrypted in their EEPROM and decrypt it before authentication of the DME. The Abrites software for BMW generation 2 allows the user to encrypt the ISN for these CAS3 versions.

•ISN reading from EGS - reading of the ISN from the Electronic Gear Shaft allows replacement and adaptation of used EGS from one vehicle to another.

•Synchronization status - quick view of the synchronization status between DME and CAS which allows quick troubleshooting of starting problems.

In this view the user can see the details in regards to the ISN codes after the reading is completed.
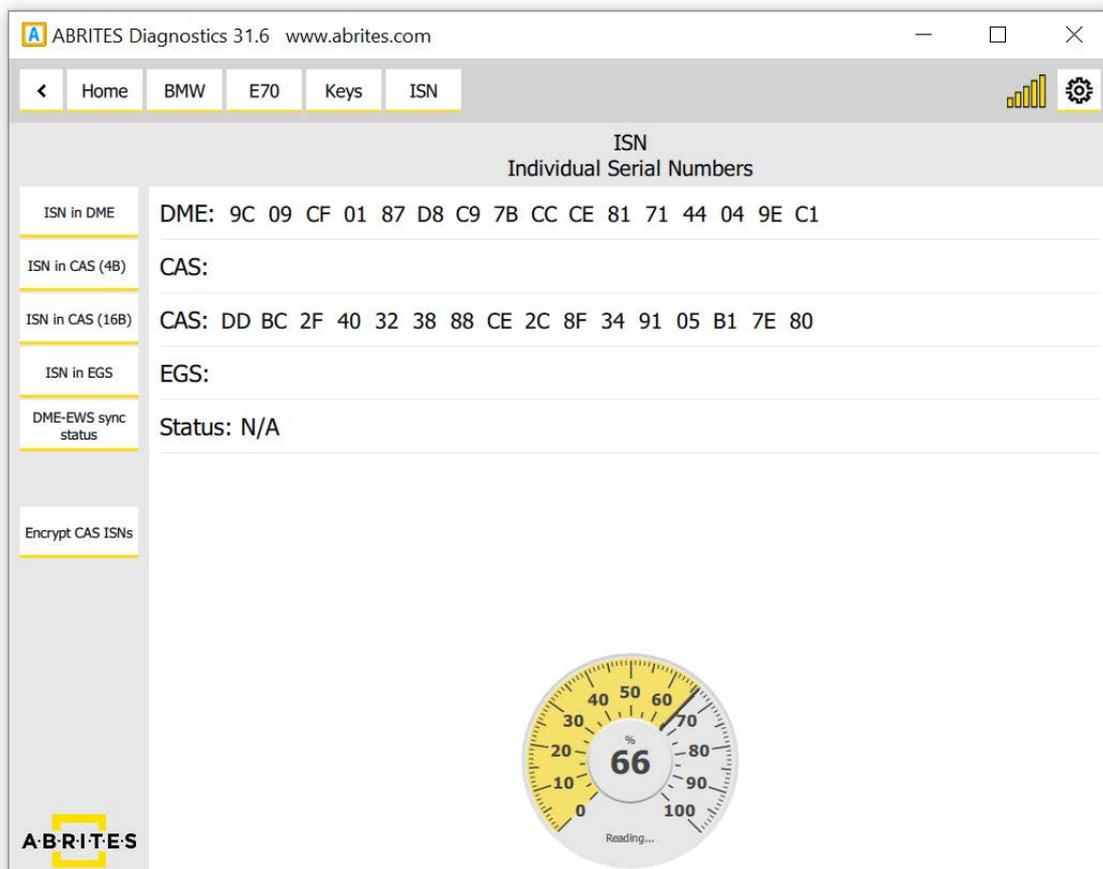
Once again the software will ask you to ensure that the external power supply is connected when a DME/ DDE programming is required for the ISN reading:
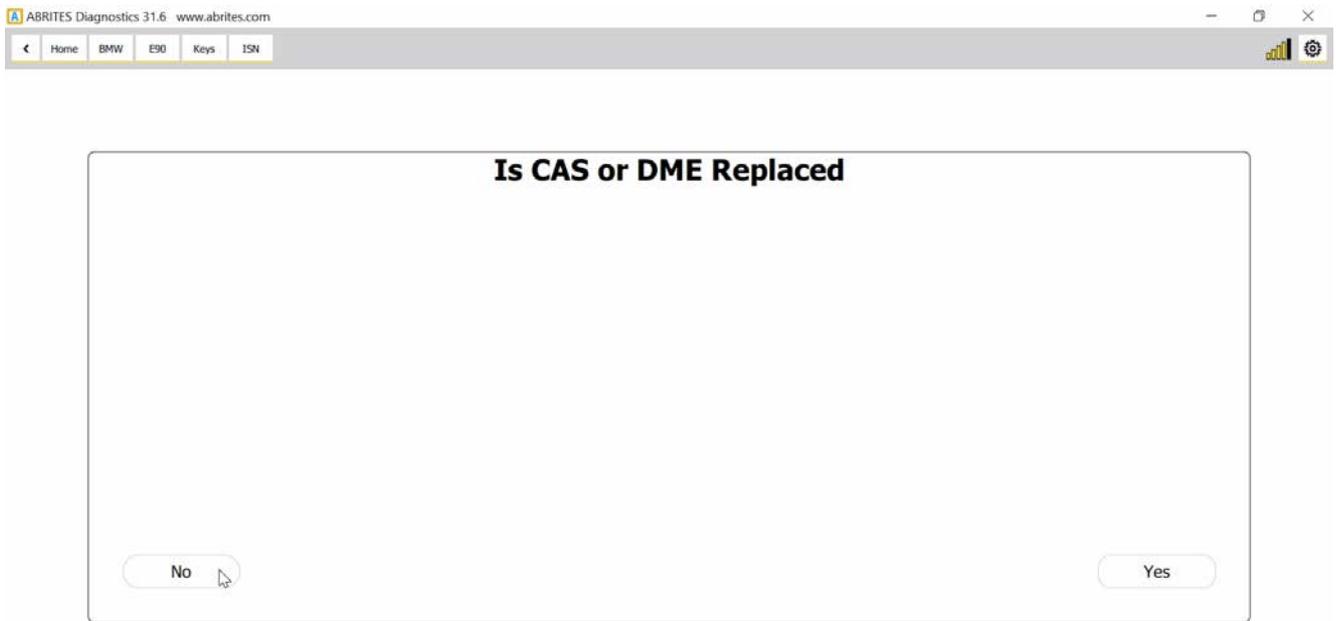
The Start button needs to be pressed and held down as an additional safety precaution.

The other buttons in the keys menu will allow for the synchronization of the CAS, DME and other modules where it is needed during and after key learning.

3.2.5.1 ISN READING COMPATIBILITY LIST:

Depending on the vehicle models the user can read the ISN from many different DME modules.

Please make sure to check the ISN matrix compatibility on our website – abrites.com

http://abrites.com/products/abrites-diagnostics/for-bmw-mini-2

3.2.5.2 Boot mode reading

The Abrites software for BMW2 allows you to read the following DME/DDEs in boot mode:

EDC17C41, EDC17CP45-E, EDC17CP45-F, EDC17CP49, EDC17C50, EDC17C56, MEVD17.2.4, MEVD17.2.5, MEVD17.2.6, MEVD17.2.8, MEVD17.2.G, MEVD17.2.9. You have to select the "Boot mode" option from the main menu, select the DME/DDE type, connect according to the connection diagram, read the TPROT/TPROT12 password, read the DFLASH and find the ISN from the "Advanced info" option.

1
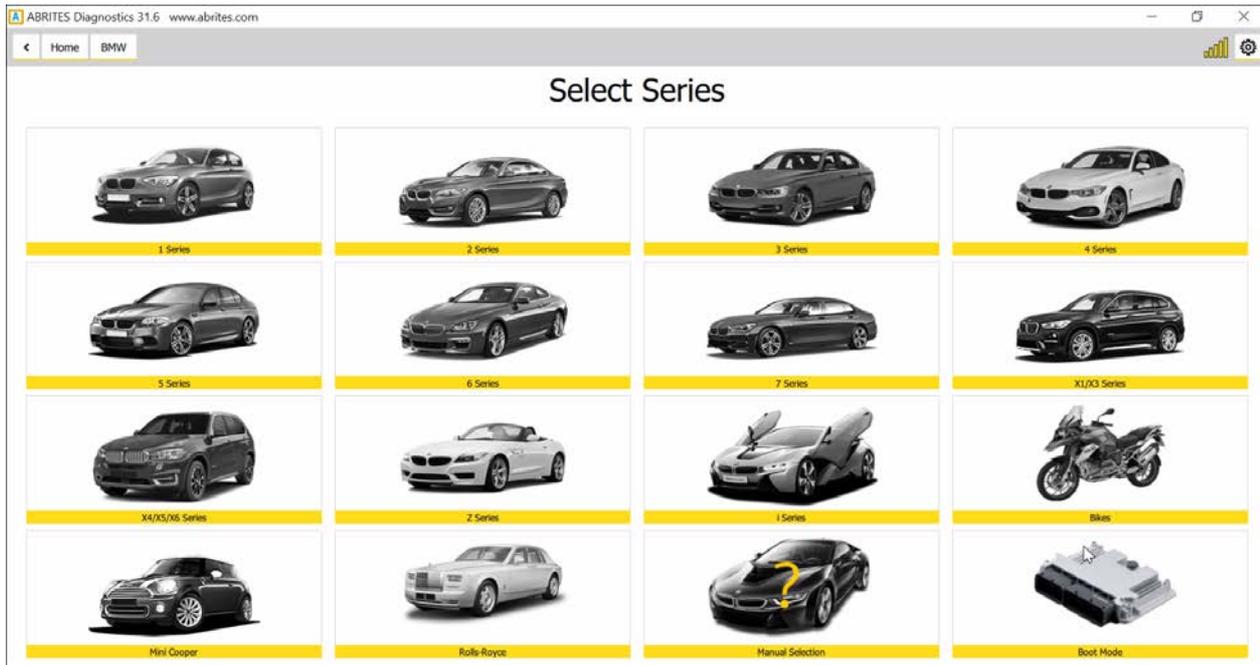
When the DME/DDE is selected, you could click on **"Open Image"** and a connection diagram will be displayed:

2

3

Please proceed with reading the TPROT/TPROT12 password:

4
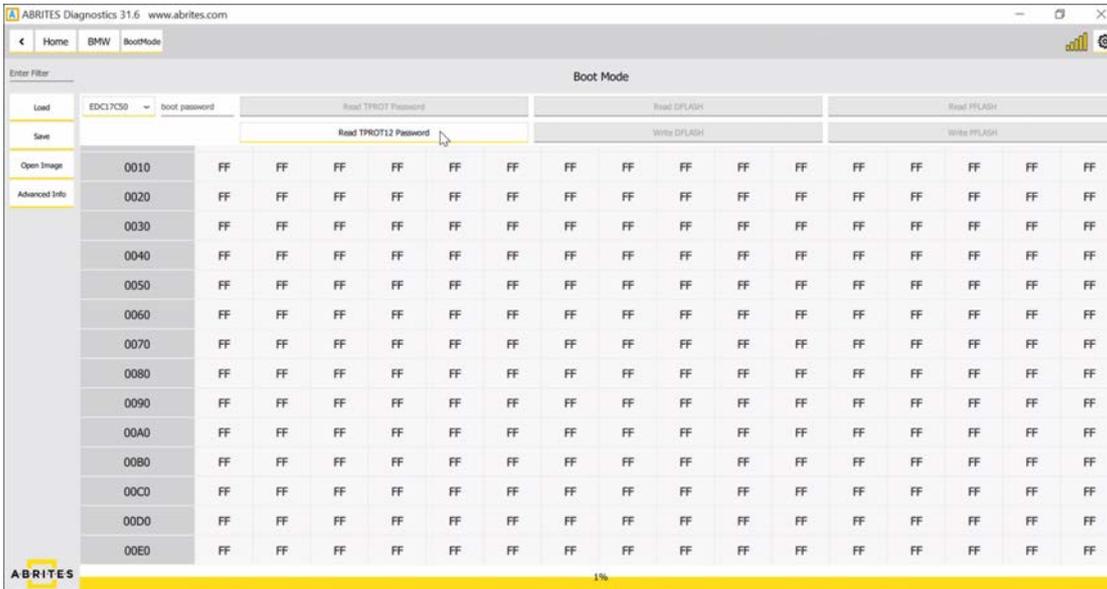
5
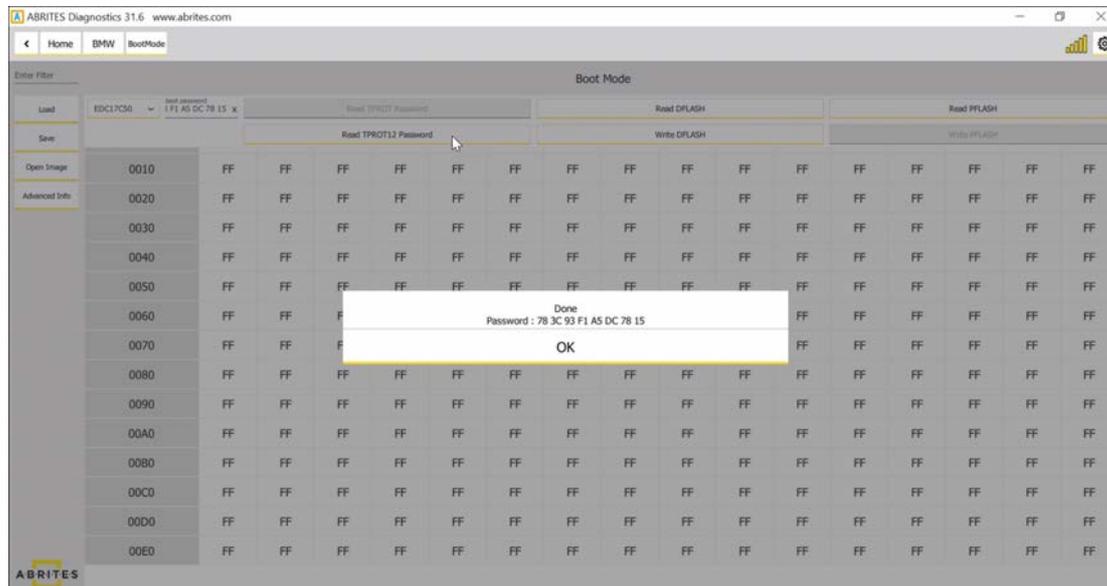
Once the TPROT/TPROT12 password is read you will have to read the DFLASH of the ECU:

6

7
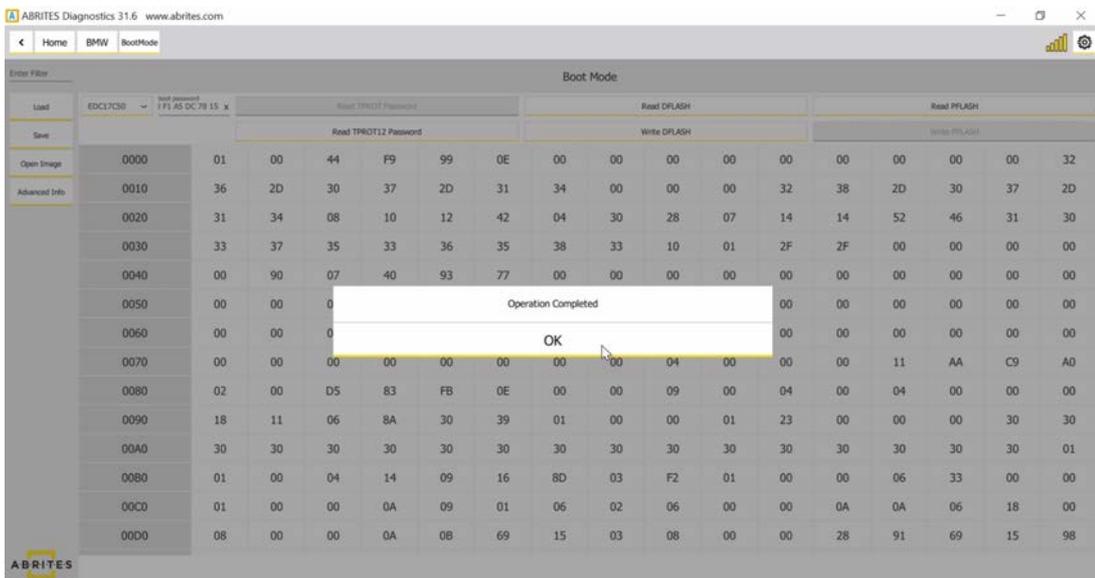
Once the DFLASH is read you have to click on the "Advanced info" option and you will find the ISN of the DME/DDE, the ISN of the EGS and the operating hours of the DME/DDE.
You have the options to copy the ISNs, change them and reset the operating hours of the DME/DDE(once a certain value is reached you won't be able to write any coidng to the ECU and this counter has to be reset.)
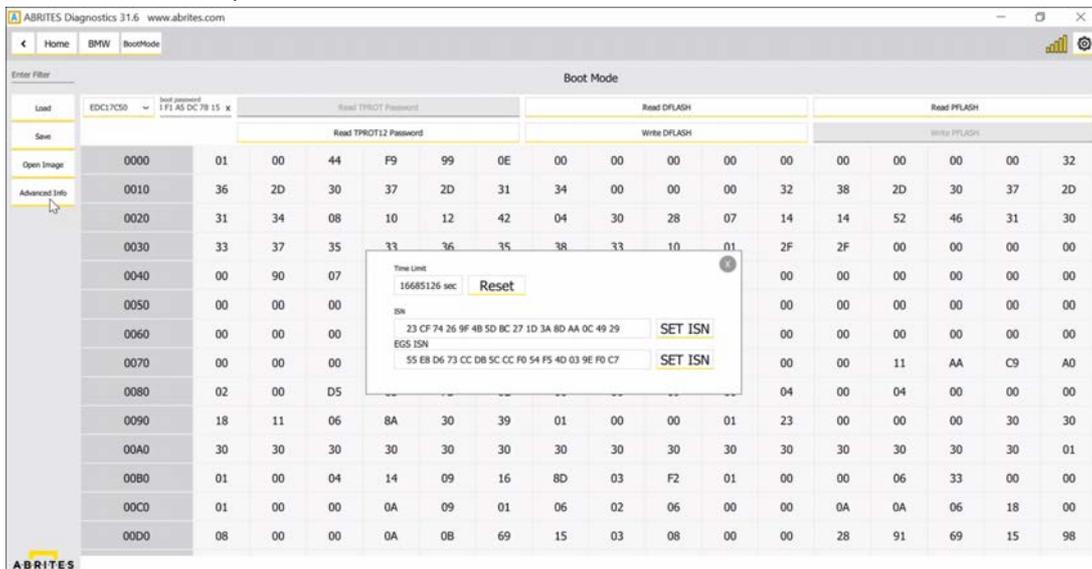
3.2.5.3 ECU Wiring diagrams

Some BMW ECUs need to be read on bench in boot mode which requires the units to be opened. Others do not require boot mode reading and can be easily wired on bench using the ZN051 Distribution Box. Below are displayed some of the ECU types with their wiring diagrams.

1. MSD80/MSD81
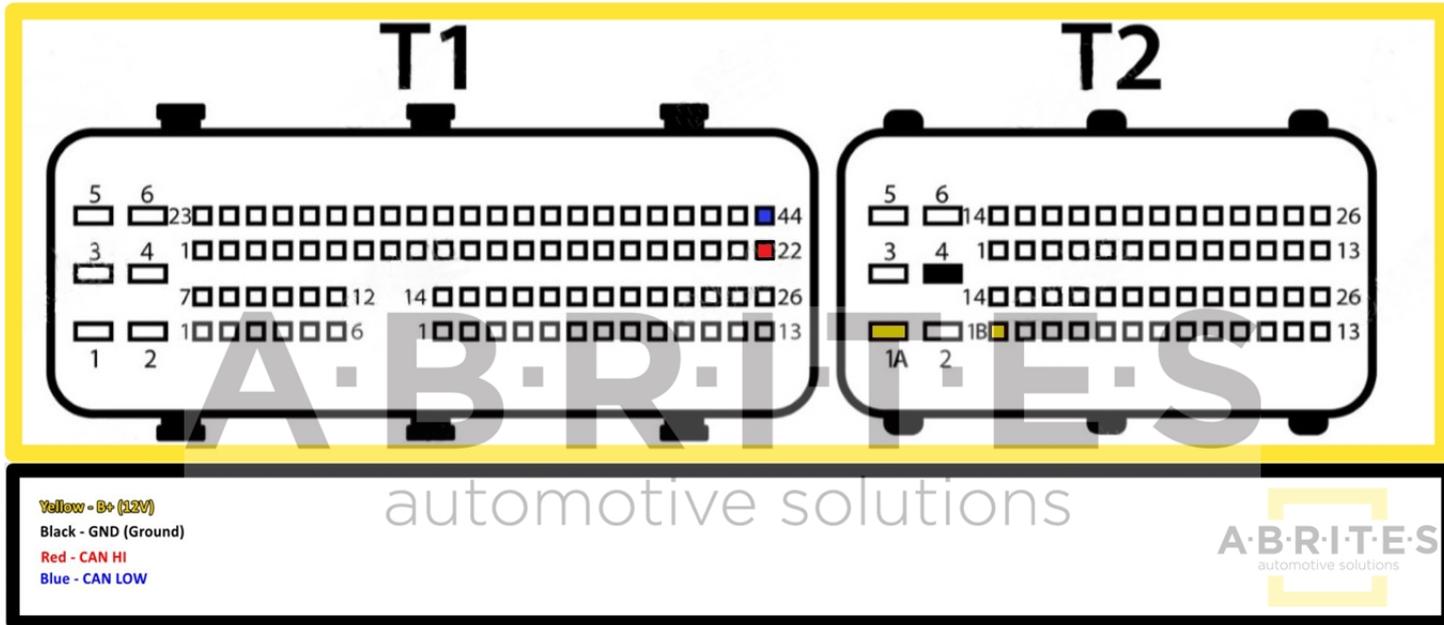
2. MSD85/MSD87
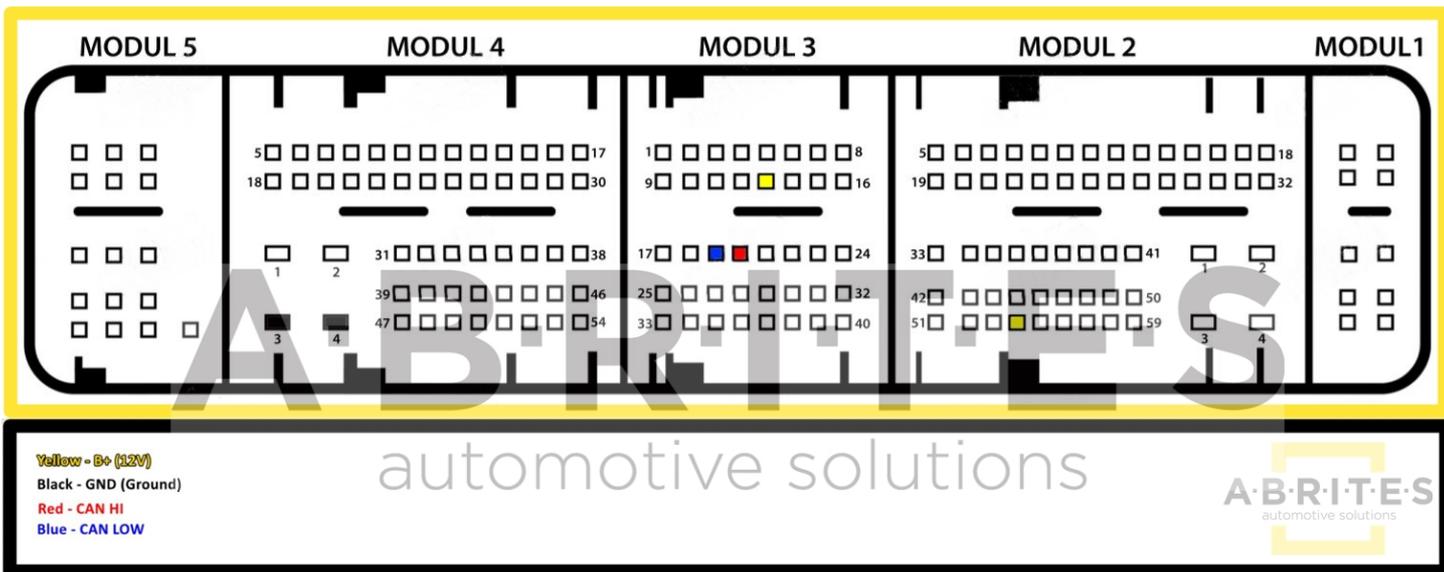
3. MSV90
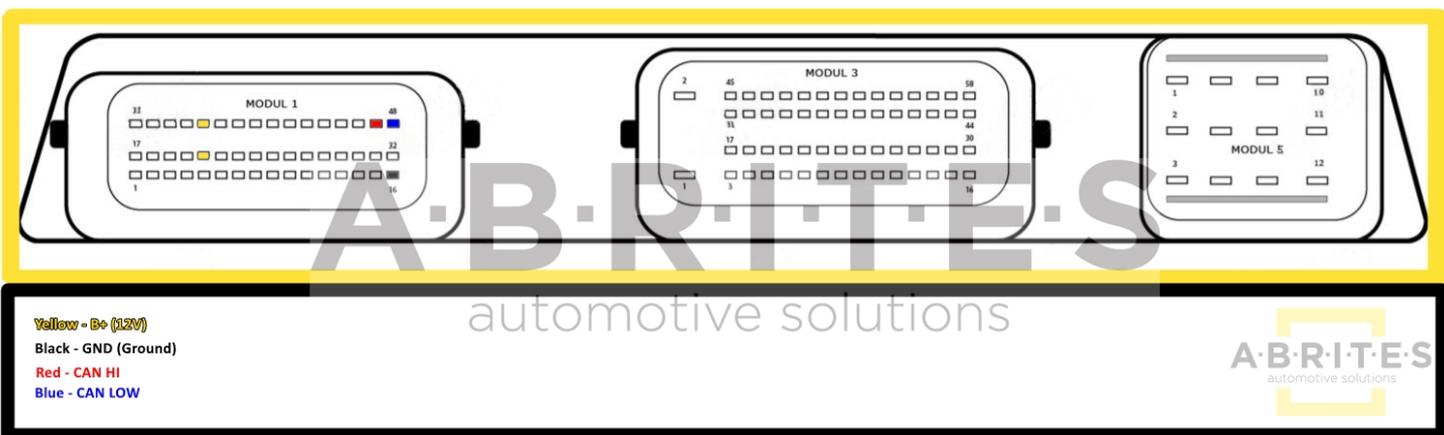
3. MEVD 17.2.9

Working with MEVD17.2.9 requires the ECU to be wired differently when reading the TPROT password and DFlash. Reading the TPROT password can be done with connecting T1,T2, CH and CL using the diagram below:
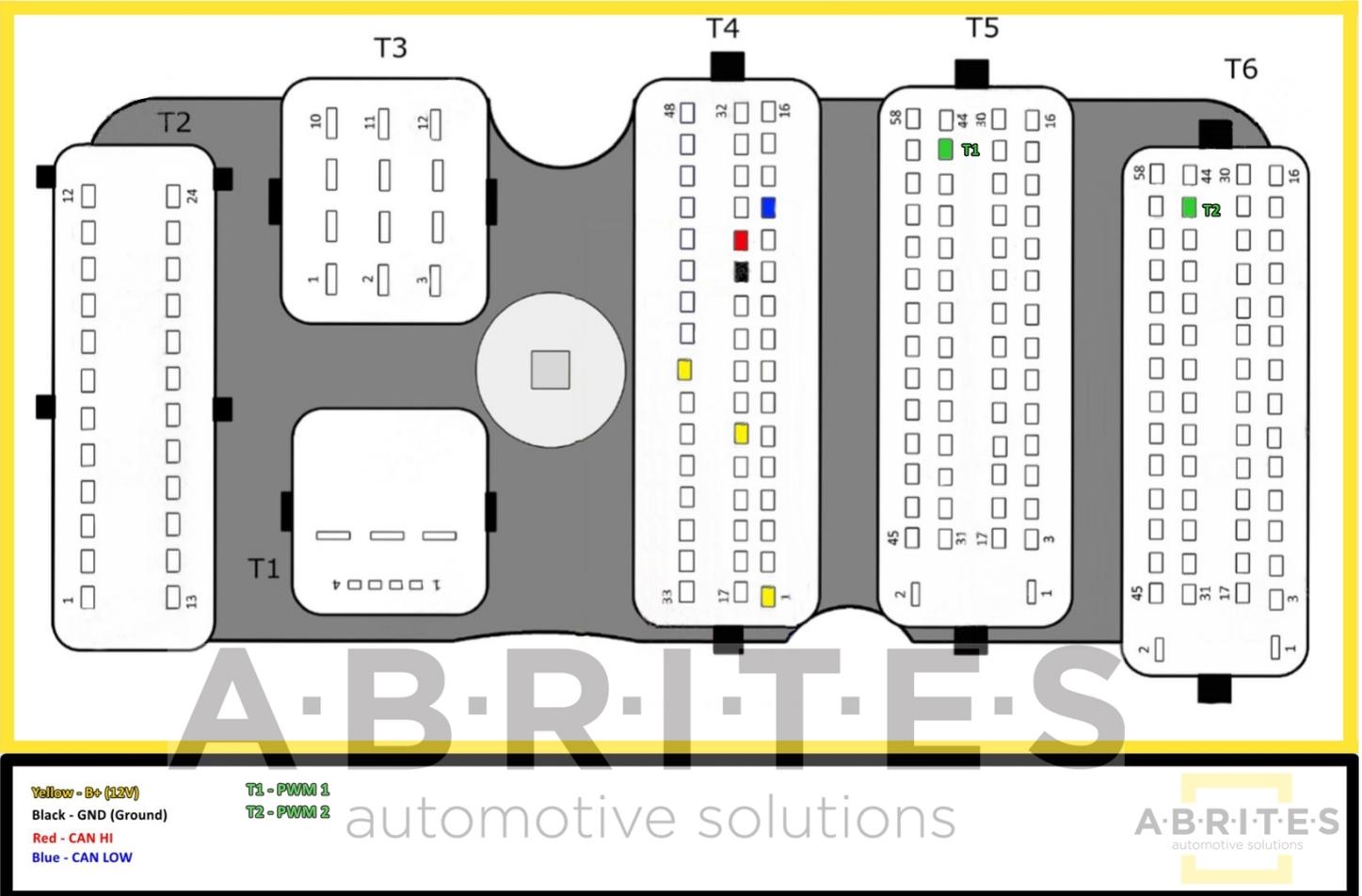
DFlash can be read while connecting the BOOT PIN:
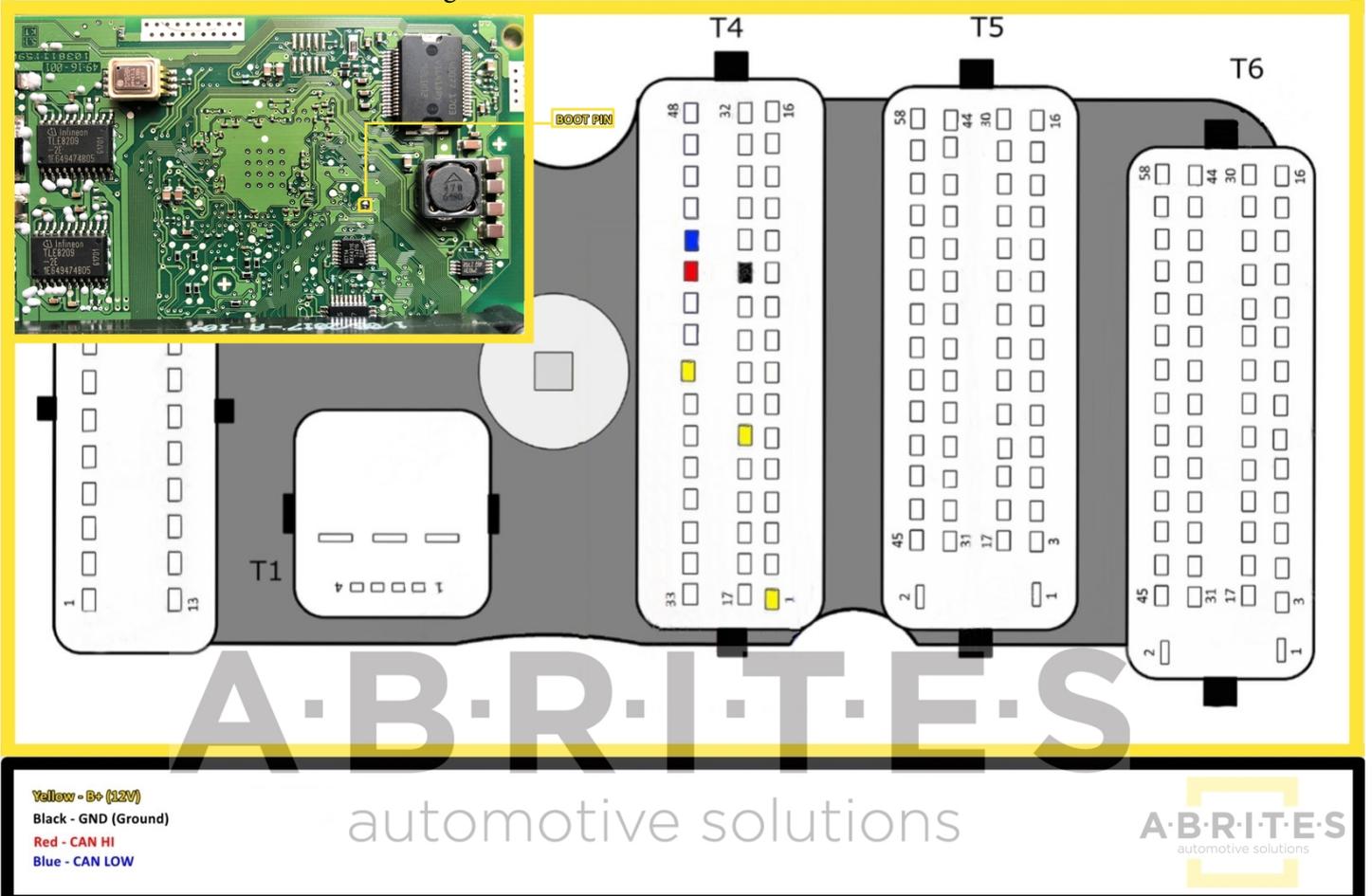
3.2.6. Mileage Information

The ability to view the mileage data is available for viewing using the mileage function of the software. In some cases the counters can be calibrated via the Abrites diagnostics for BMW/ Mini generation 2 but only for module replacement purposes and only according to local regulations. Some BMW models may have an incremental EEPROM that won't allow the user to change the odometer values by OBD. In such cases it is needed to take out the cluster, read its EEPROM with a programmer and reset it (delete the first two rows of the EEPROM). Once the mileage in the cluster is reset, the cluster will take the odometer values from the unit that holds the highest value.
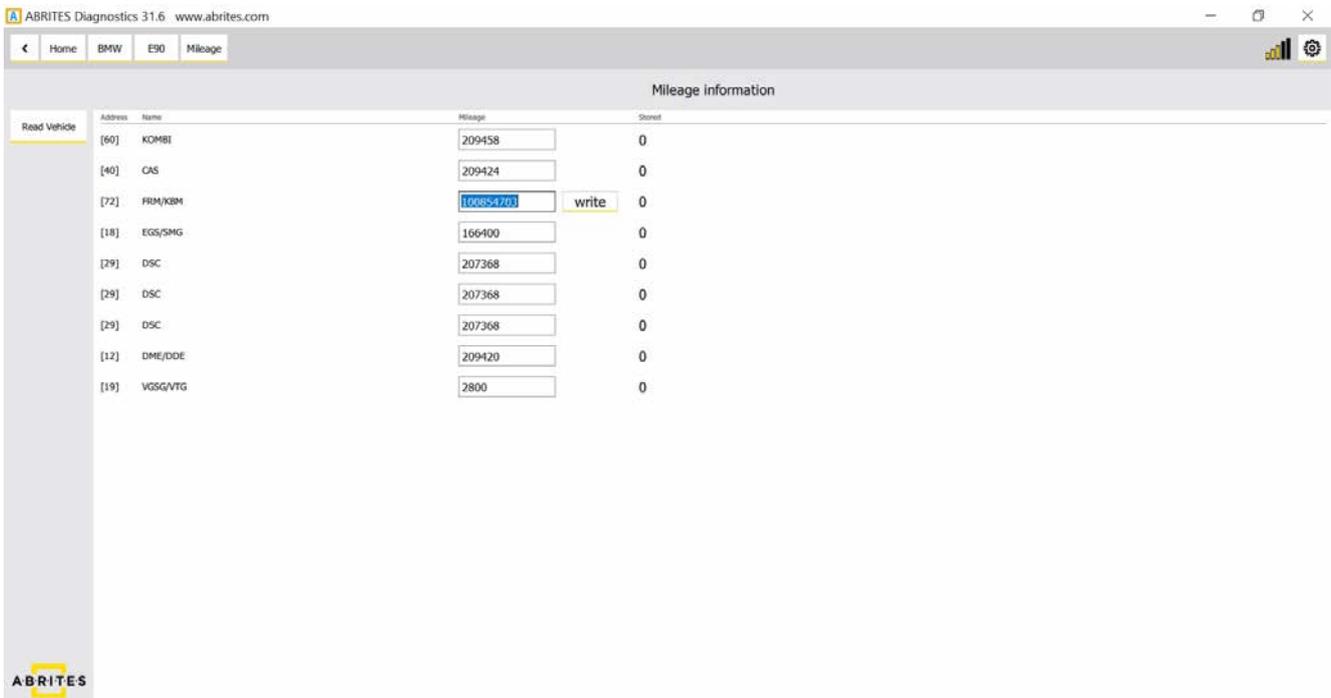
3.2.7. FSC Codes Reading

Abrites diagnostics for BMW generation 2 provides you the ability to extract and update FSC codes and maps for both E series and F-Series vehicles.

Using this function you can update the maps on the navigational units. This includes the CIC modules as well as the so called NBT navigational units.
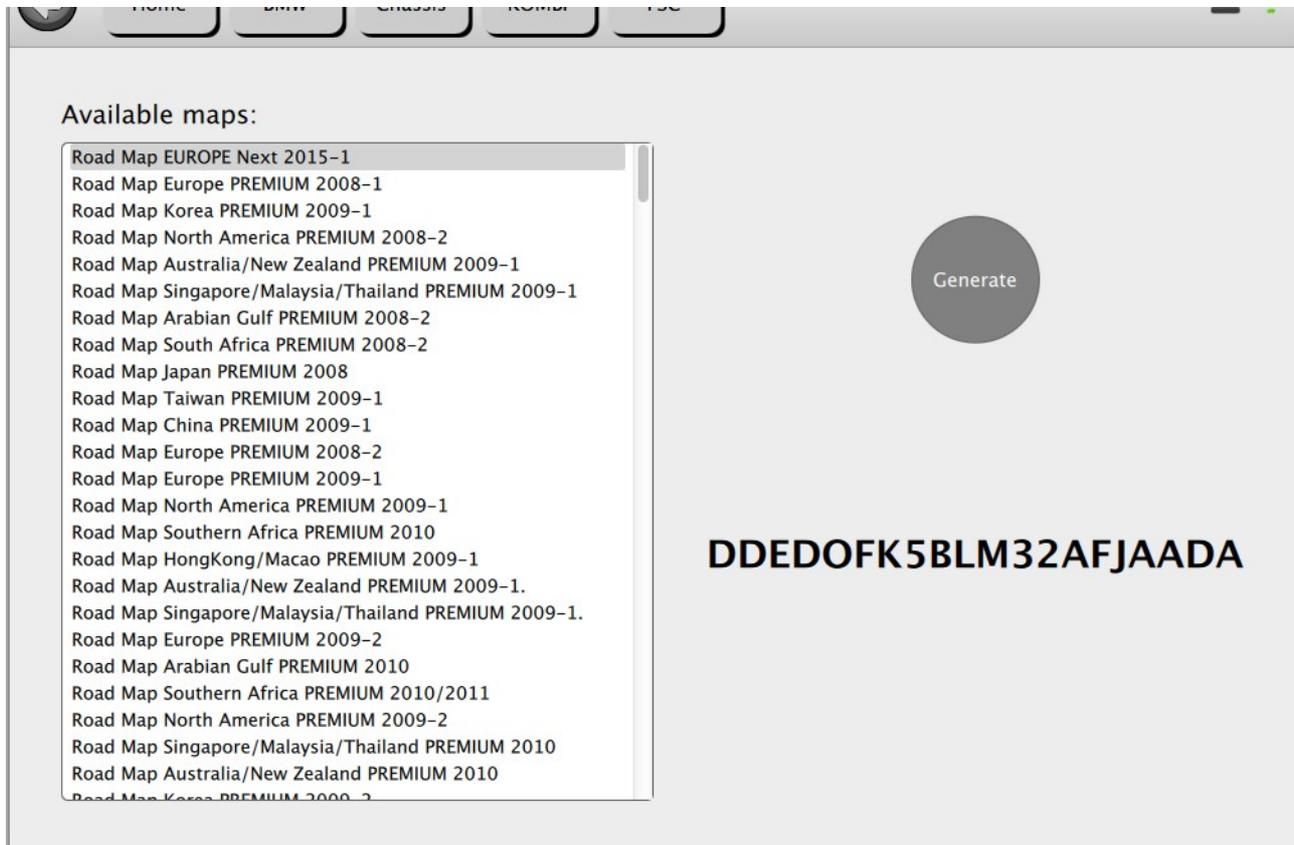
3.3. Best Practice Advice

3.3.1. ISN reading from DME.

Often times BMW vehicles are harder to work with than other makes. For example in the cases where the car has no working key or the DME needs to be replaced with a second hand unit the Individual Serial Number (ISN) needs to be read. This task is made harder by the vehicles because they have the tendency to "fall asleep" constantly. This causes the Abrites diagnostics for BMW to appear "stuck" in one place – seemingly nothing happens. What needs to happen is to make sure that the car does not fall asleep during our work with it. There are two ways of doing this.

The first option is to constantly turn the lights on and off, click the locking and other buttons. In most cases this, combined with having a constant feed of 14V external power supply to the vehicle should be sufficient for us to read the ISN.

The next step, in case the above does not help is to make a temporary transponder in order to keep the car awake. To do this you need to read the ISN from the CAS module and program it to a blank transponder, place this blank transponder in an empty BMW key box. When you try to start the car with this transponder – it will not start, it will only crank. This is not important because the car will be awake, as if the ignition is ON. This will allow you to read the ISN easily.

An alternative is to shorten pins 1 and 16 on the OBD II connector, but unfortunately not all cars can have this method applied to keep it awake.

Below you can see a sample of what a DIY DB25 ignition shortener looks like. It basically shortens PINs 1 and 16 on the OBD, where the DB25 shorts PINs 2 and 17.

To proceed with making the temporary transponder, you can follow these steps:

1. Read the **ISN from the CAS and write it down**.

2. When you enter the "**Cas Keys**", please **save the keys in a file as a backup**.

3. In "**Cas Keys**" on **position 9** (last position), write the **last byte** from the config as "**00**" (zero zero) and **write it into the CAS** - (using the "**Write CAS EEPROM**" button)

4. Please proceed with programming a transponder on any free position and when asked for an ISN, please **enter the one from the CAS**.

5. After this is done, as soon as you **turn the IGN** on with this transponder, the car should wake up and the dash will light on.

6. Read the **ISN from the ECU** and the reflashing procedure will continue and you will be able to read the ISN - **write it down somewhere**.

7. **Delete the temporary transponder** with clicking " **Clear Key and CAS**", while having the transponder **placed into the programmer**.

8. After you obtain the ISN from the ECU, **revert the last byte of the config to position 9** (how it was before) and write the CAS (using the "**Write CAS EEPROM**" button), or it is easier to click on "**Load from File**" and choose the file you wrote earlier. Then, click on "**Write CAS EEPROM**"

9 Once this is done, you can program a new key and when asked for ISN, please **enter the one you read from the ECU**.

 *Note: If the CAS has 4 bytes ISN you will need to write the last two bytes at step 4.
 *Note: If the PCF is either 7942 or 7944 it is not necessary to renew it before programming.

3.3.2 ISN Encrypting

Whenever you exchange a broken ECU or handle an all keys lost situation you need to read the ISN from the DME.

When you exchange the DME/DDE – you have to write this DME ISN to the CAS.

There are two CAS types :
1. CAS unit without encryption - in this case you need to read the ISN of the DME/DDE and write it in the CAS ISN field by copy-paste it followed by click on the pencil icon on the right hand side.

2. CAS unit with encryption - in this case you need to read the ISN if the DME/DDE, write it in the CAS ISN field by copy-paste it followed by click on the pencil icon on the right hand side and click on Encrypt CAS ISNs.
It is recommended to Synchronize the CAS with the DME from "Keys and start synchronization > Synchronize CAS&DME " and disconnect the car battery for 1 minute.

3.3.3 EWS Tampering DTC.

Often times during key learning the CAS receives the EWS tampering error. This error causes the car to become immobile. The way to fix this issue is to take the keys out of the car (2 meters or 6ft is a preferable). Disconnect the battery for about 20 minutes and re-connect it without bringing the keys back into the car. Try to communicate and clear the DTC. You can turn the lights on and off, lock and unlock the car, the DTC will get cleared. Then try to sync CAS EGS and then bring the car and sync again. The tampering error should disappear and the car should start. This may need to be repeated many times but this is the only way to work with the vehicles.

3.3.4 Using Abrites diagnostics for BMW 2 with PROTAG.

The Abrites PROTAG programmer can now be used together with the Abrites diagnostics for BMW generation 2.

3.3.5. Downgrading or ISN reading stops at 10%.

When you encounter this issue this means only one of two things – DME is not supported (check ISN support matrix on the **abrites.com** website) or alternatively the car is "falling asleep" in which case you should keep it awake as per one of the ways above.