A·B·R·I·T·E·S
automotive solutions

ABRITES DIAGNOSTICS FOR SUBARU



User manual
version 1.5

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.

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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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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	First version of the document	1.0
19.02.2016	6	Added new diagnostic and service features	1.1
20.01.2019	6	Key learning for Smart keys and ECM registration	1.2
24.11.2019	6	Key learning for mechanical H type	1.3
27.03.2020	6	Key learning for Mechanical H keys improved	1.4
18.09.2023	3, 4, 5, 6, 7	Key Learning procedures general update	1.5

1. Introduction

The “Abrites Diagnostics for Subaru” is a personal electronic device and Online server based diagnostic software for Subaru vehicles. With the help of this software you can perform complete diagnostic operations of all vehicles produced by the brand.

For proper operation of your diagnostic software you will need a corresponding interface for connection between your PC and vehicle named “AVDI”. The usage of the software requires the device it is installed on (i.e. personal computer) to be connected to the Internet.

AVDI is an interface produced by Abrites Ltd. intended to act as an interface between the PC and the electronic control units within the vehicles.

Your AVDI should be used with ABRITES software produced by Abrites Ltd. ABRITES is a trade mark of Abrites Ltd.

2. Getting Started

The Abrites diagnostics for Subaru is installed together with the software applications as a part of the installation provided to the user with the e-mails sent.

In order to operate, the software requires you to have an AVDI interface, a Windows based PC with a minimum of 1024MB RAM, 64GB of free hard drive space and at least Windows 7 64bit Service Pack 1 or later version to operate. For optimal operation, it is always recommended to have the latest software version installed, active AMS, and a stable Internet connection.

With the help of this software you can perform basic and advanced software functionalities such as vehicle scan, read/clear DTCs, monitor live values, Key Learning, etc.

For proper operation of your diagnostic software you will need a corresponding interface for connection between your PC and vehicle named "AVDI". "AVDI" stands for "Abrites Vehicle Diagnostic Interface." It is produced by Abrites Ltd. and intended to act as an interface between the PC and the electronic control units.

Please check the "license viewer" installed on your computer for your unique interface ID number.

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

AVDI should be used with ABRITES software produced by Abrites Ltd.

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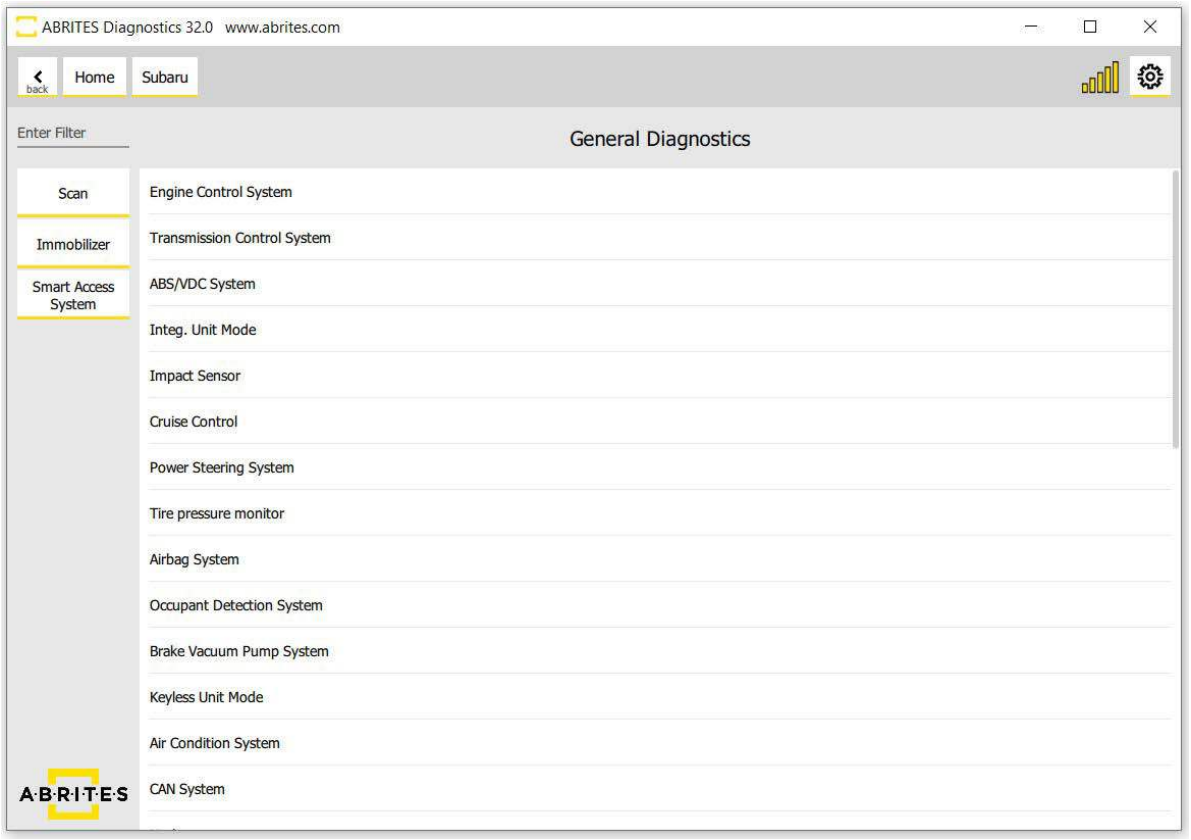
You can start the Abrites diagnostics for Subaru from the Quick start icon, installed on your desktop upon installation of the Abrites diagnostic suite. You will be able to start it by clicking on the brand logo.



3. Using the Abrites diagnostics for Subaru

Once the Abrites diagnostics for Subaru software is selected the user will see the following screen:



In this screen the user will be able to scan all the modules available for the vehicle that is being tested. Once the modules are tested the user will see the installed electronic modules.

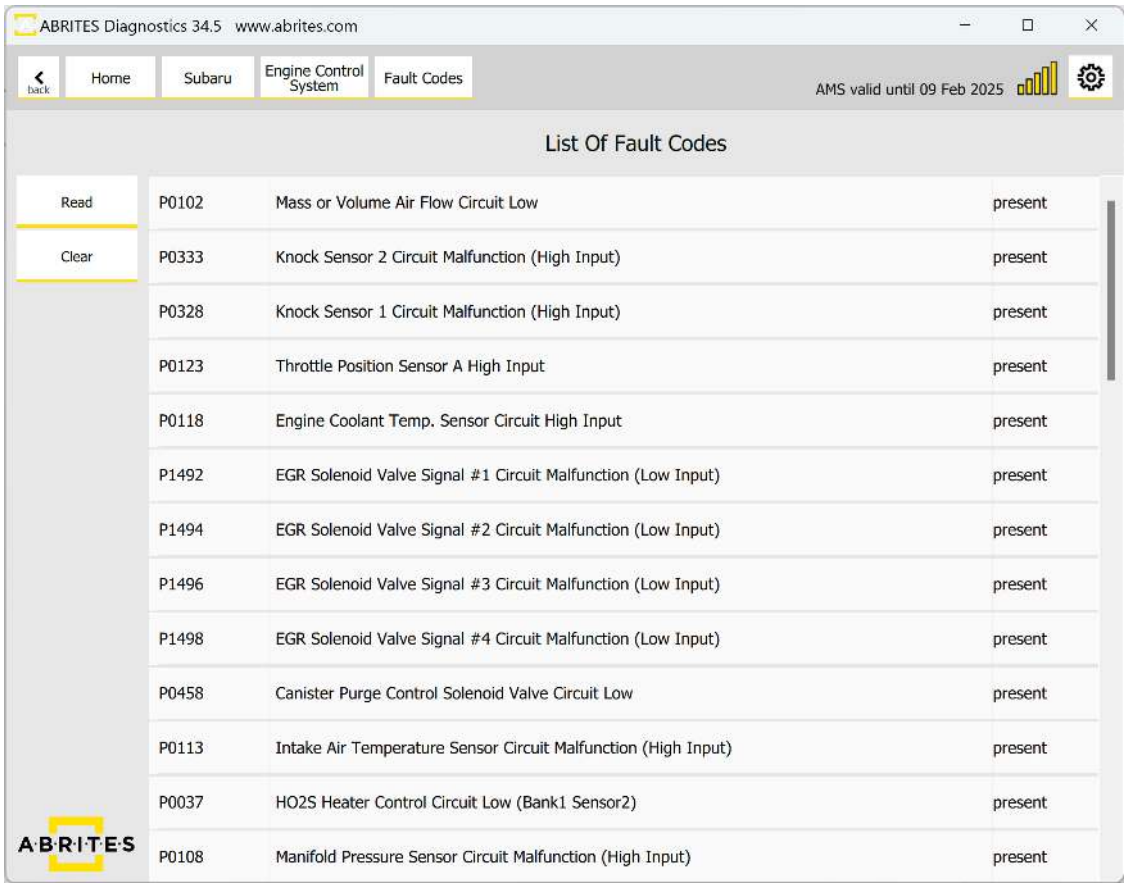
3.1 Reading and clearing diagnostic trouble codes

When clicking the scan button the software will begin scanning the vehicle.

Once the scan is complete the electronic control modules in the vehicle will be displayed together with the diagnostic trouble codes, then you can enter each module for detailed information about the unit and the DTCs.

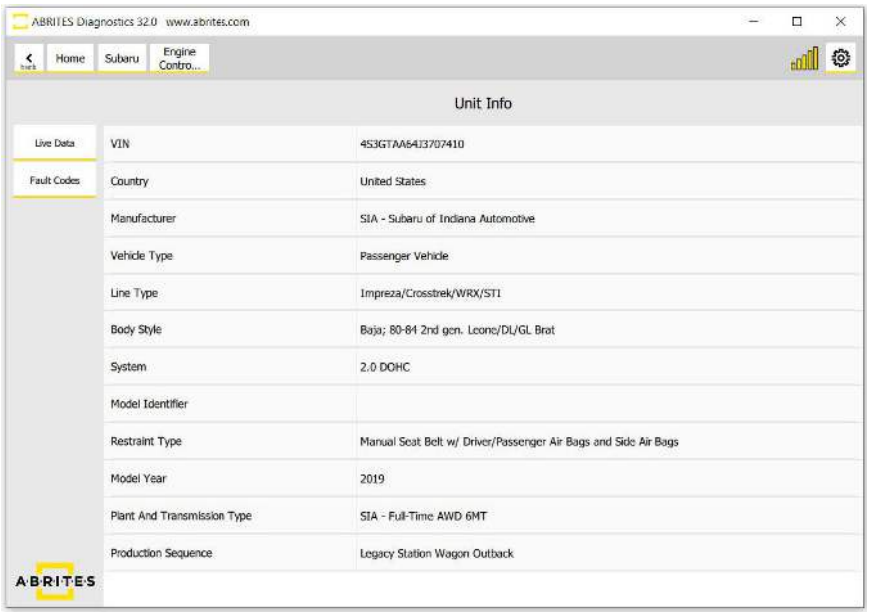
By clicking the "Fault codes" button you will be able to see the present fault codes for the vehicle and the details related to them.

By clicking on "Clear" the fault codes will be deleted:

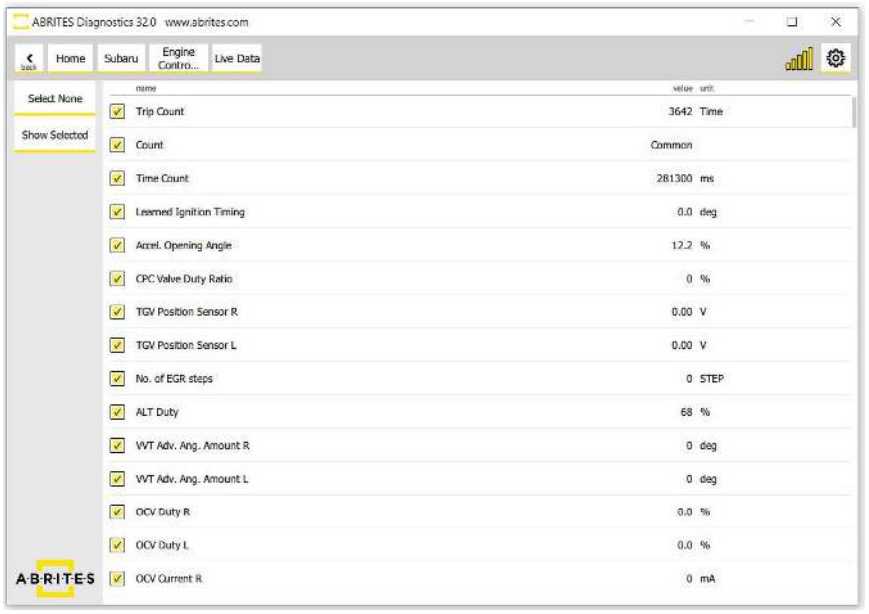


3.2 Live data display

Live data from all the available modules can be viewed and analyzed from all the sensors within the available modules for the vehicle.
When you select the electronic unit you want to view the live data for you can select it and press the “Live data button”:



The live data values will be displayed:



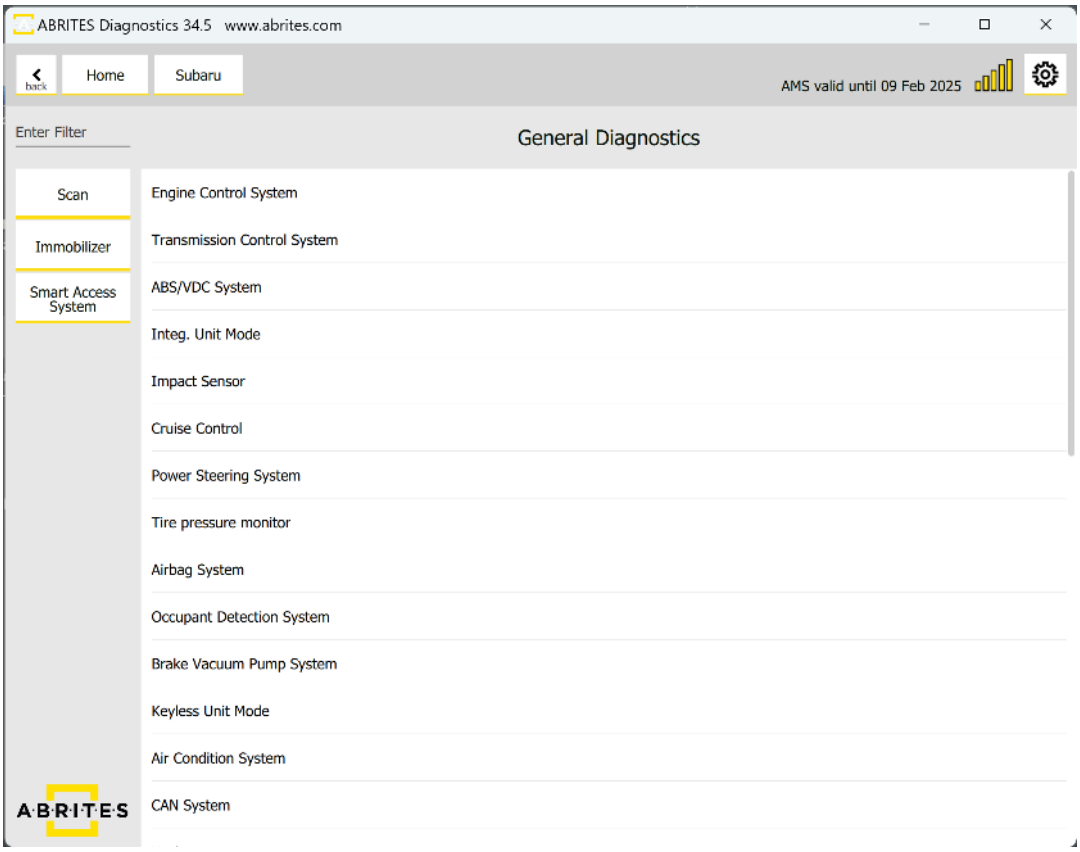
4. Key learning

The Abrites software for Subaru covers both mechanical and smart keys. There are 2 general groups:

- Vehicles equipped with a mechanical key and an immobilizer or a BCM unit
- Vehicles equipped with a smart key and a smart system

There are 2 special functions found on the main screen on the software, dedicated to these 2 major platforms which are described in dedicated sections below:

- Immobilizer
- Smart Access System



Following are the general guidelines for executing key learning procedures in Subaru vehicles. Each procedure is described in details in a dedicated section of this user manual

Here are the 3 scenarios for key learning divided by platforms:

4.1 Mechanical key and immobilizer

Additional Key programming is executed trough the "Immobilizer" menu of the main screen > "Key Registration" > the procedure is guided and you need to follow the instructions.

All Keys Lost requires you to first do an immobilizer reset and then do the Key Registration procedure. Main menu > Immobilizer button > Immobilizer Reset > follow the instructions on the screen. Once the procedure of reset is complete > open the "Key Registration" menu and follow the instructions for key learning.

4.2 Mechanical key and BCM

Additional Key programming is executed trough the "Immobilizer" menu of the main screen > "Key Registration" > the procedure is guided and you need to follow the instructions.

All Keys Lost requires you to first execute the "All Keys Lost" procedure and then perform key registration procedure either with TA41 or ZN066.
All keys lost procedure is started from "Immobilizer" special function > All Keys Lost and will ask for either a TA41 and a Protag programmer or a ZN066 and will prepare a key emulator.
After the emulator is prepared you will have to perform Key Registration procedure.

4.3 Smart key and smart system

Additional Key programming is done trough the Smart Access System special function> Key Registration. Procedure is guided, you need to follow the on-screen instructions.

All Keys Lost requires you to perform a Smart Access System reset, once the procedure is complete, you need to do the Key Registration procedure.

5. Immobilizer Special Function

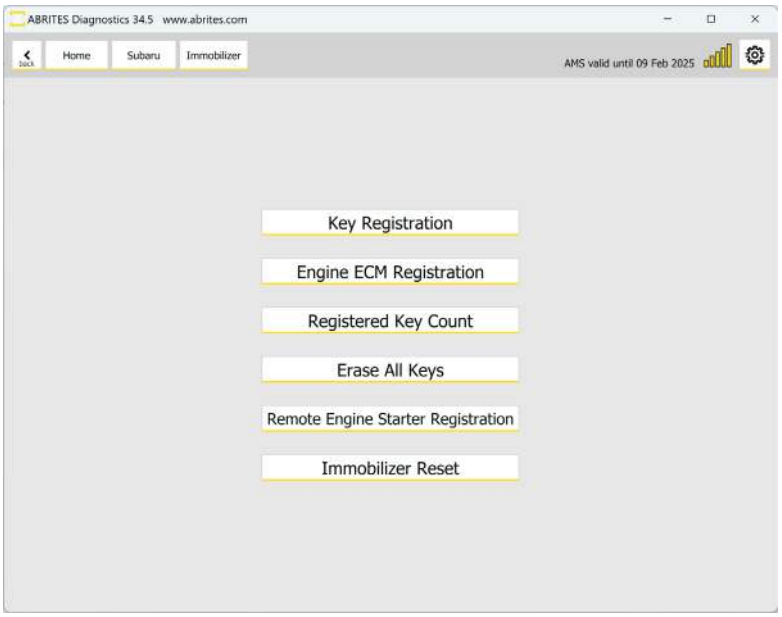
Immobilizer Special function is dedicated to vehicles equipped with a mechanical key (H-type key DST-AES transponder) and either an **Immobilizer** or a **BCM** unit, and has the following functionalities:

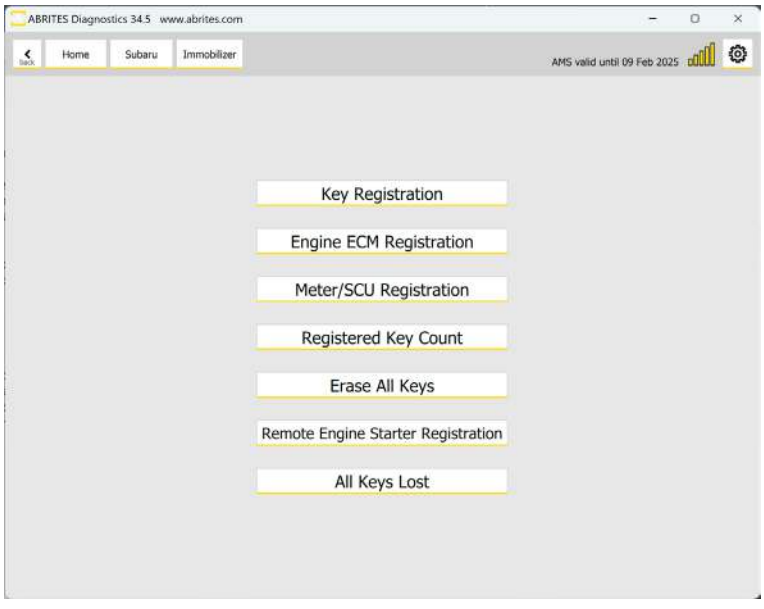
- Program additional key
- Perform All Keys Lost,
- Perform Immobilizer reset,
- Register ECM (required after key programming),
- Read the number of the access keys registered to the vehicle
- Erase All Keys

The procedures are guided with all necessary steps described with on-screen messages, and is executed via OBDII. For all keys lost procedure you will need additional tools for key emulation and the ProTag key programmer. More details in the dedicated section of this user manual.

The following 2 pictures will show you the screen with available functions as follows:

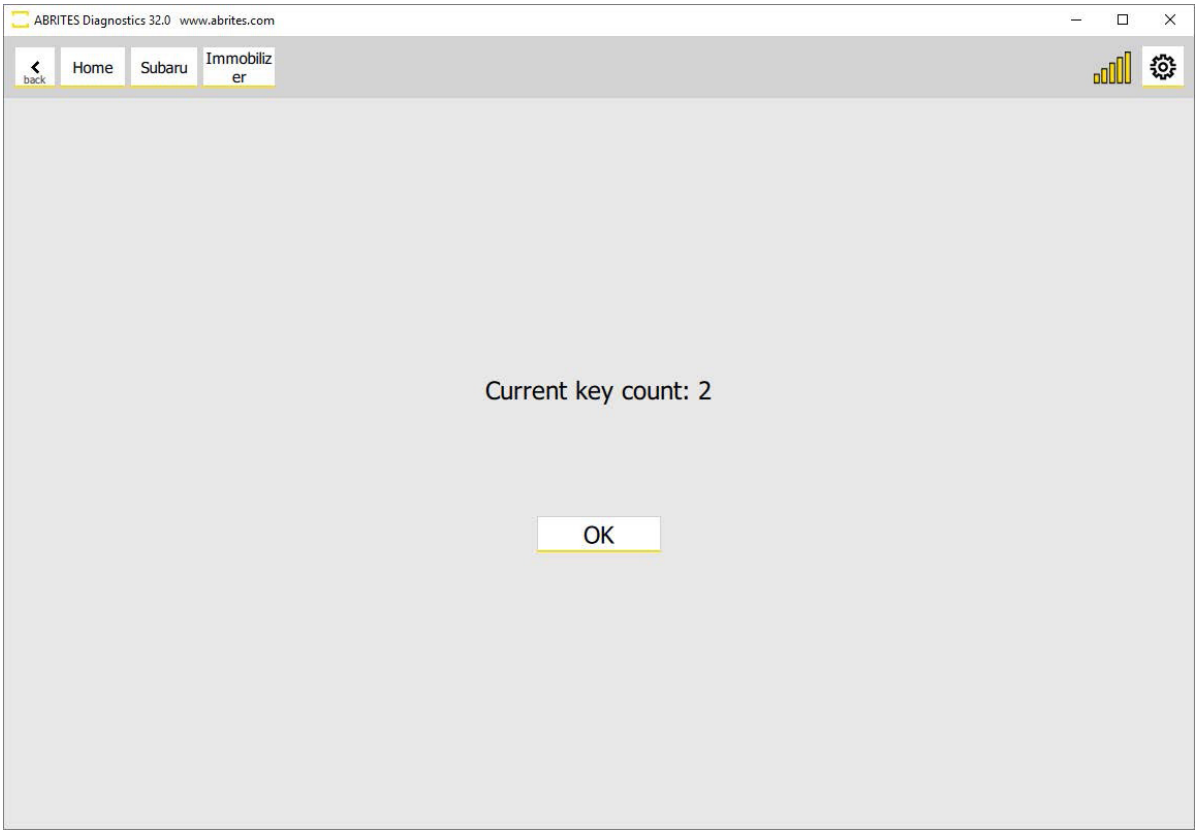
1. Immobilizer Unit
2. BCM unit





5.1 Current key count

A very useful option which tells you how many keys are currently programmed in the vehicle you are working on. Once you select it you will see this window which will tell you the current key count. This is a very important step to be performed before any key learning is done because the vehicle may have reached the maximum number of keys that it accepts - which is 4 keys for vehicles with a mechanical key and immobilizer or a BCM unit, and 8 keys for smart systems. If the number of maximum keys is reached you will have to erase keys first, the procedure is described in a dedicated section.

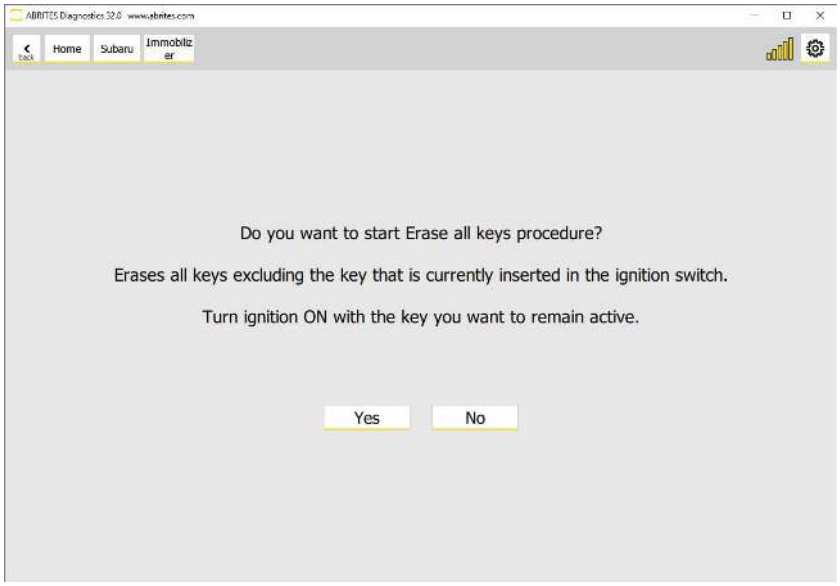


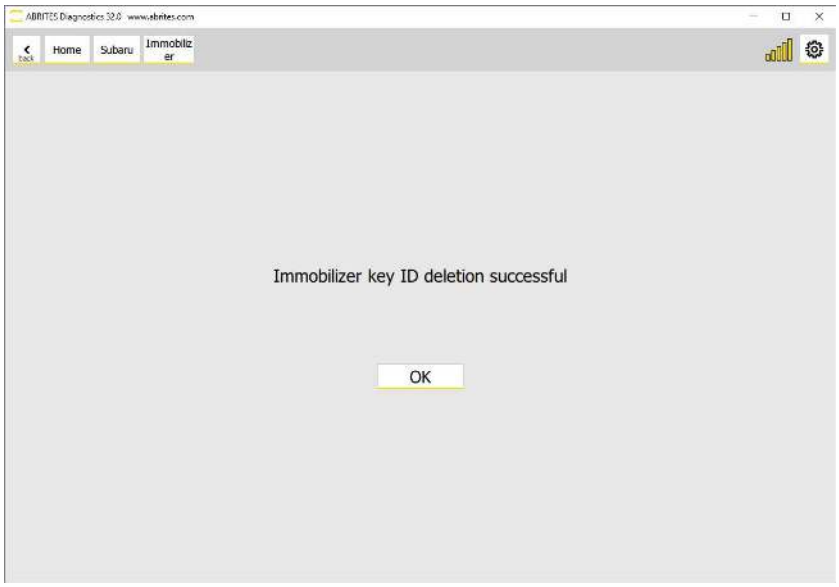
5.2 Erase all keys

Using the "Erase all keys" option is very helpful if the customer has lost one or more of their keys but still has one working key. This function will allow you to remove all registered keys apart from the one that is currently in the ignition. This means that the rest of the keys will not function with this vehicle but you can program one or more additional keys.

If the vehicle has no working key, you will have to first program a key and then use the Erase function, as it **requires a working key in order to be executed**.

Here is how the procedure goes:

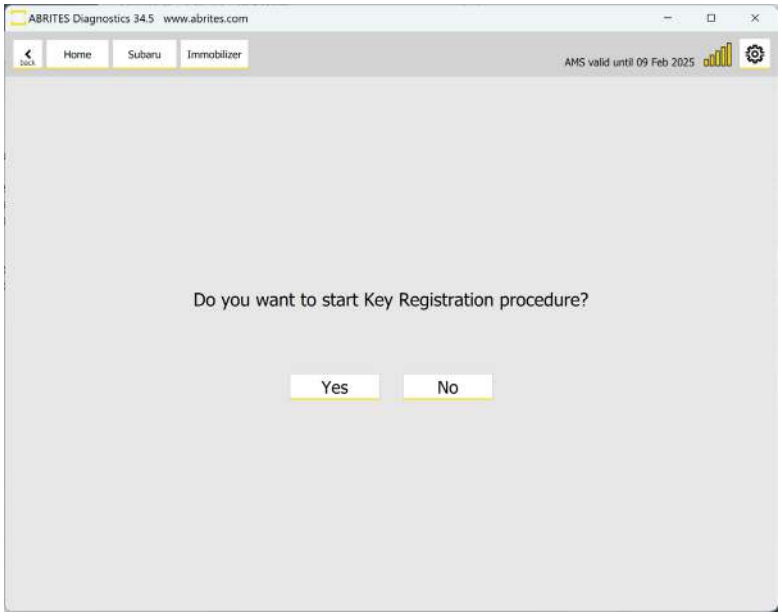


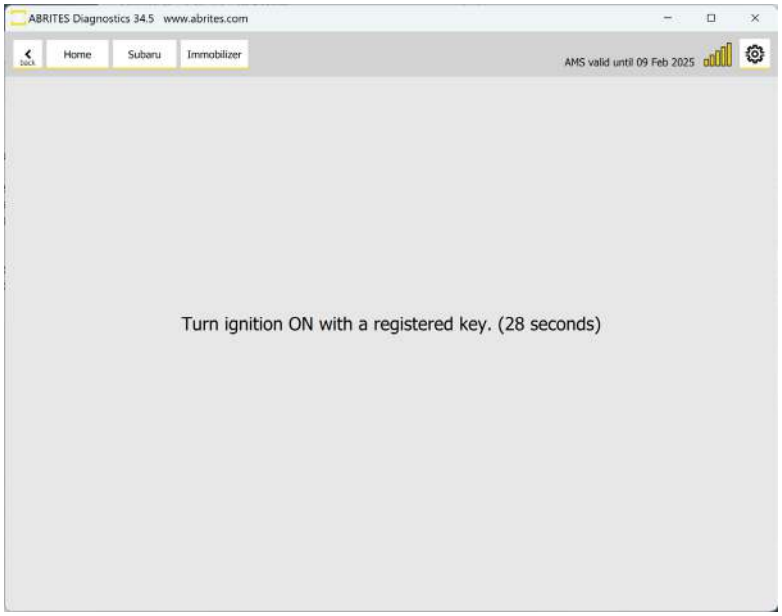


5.3 Add keys - Key Registration

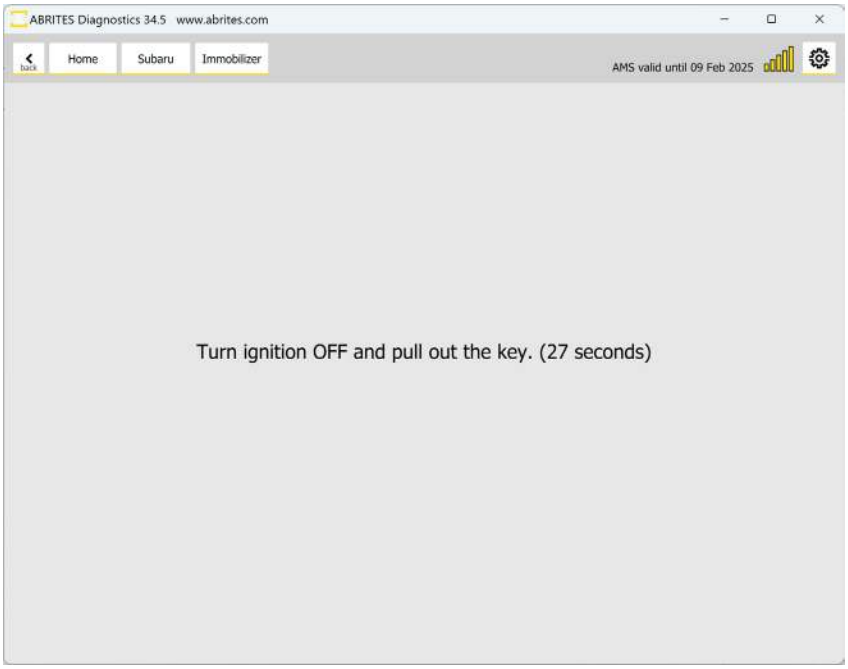
This procedure is dedicated to vehicles with a mechanical key and an immobilizer unit. This function is used when you have a working key and you would like to add another one to the existing key count. You can start this procedure from the "Immobilizer" button on the main screen and by selecting "Key Registration". The procedure is guided instructions will guide you throughout the key programming process.

It is **very important** that you follow the on-screen messages are there is certain period of time (30 seconds) for executing actions like ignition ON and ignition OFF with the working key and with the new key that is being programmed.





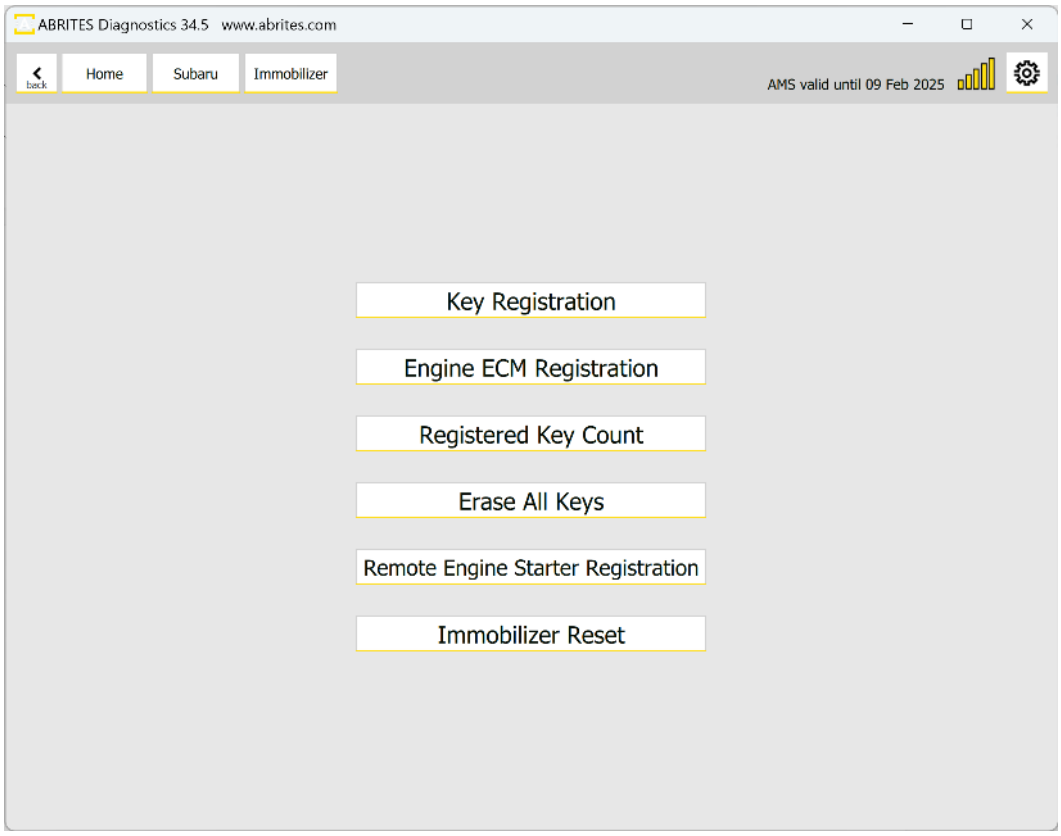
The time frame you have is 30 seconds and the count down timer will notify you as you program the keys.



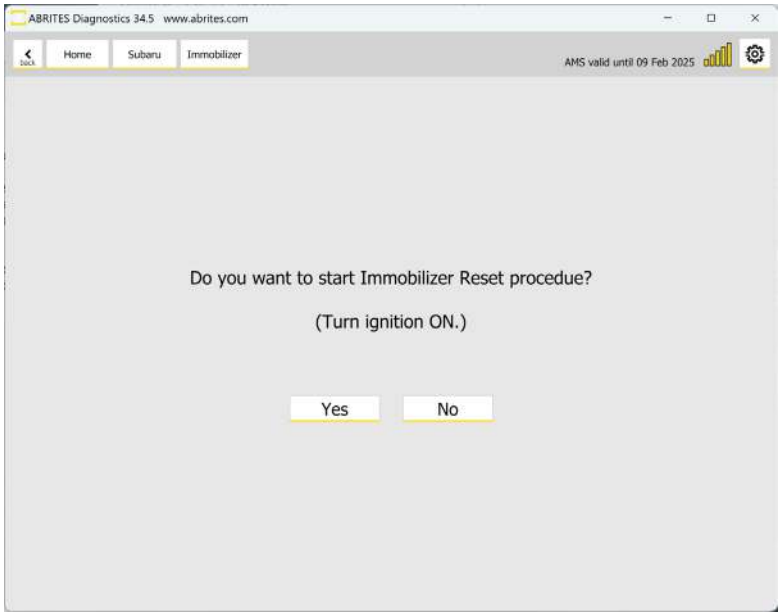


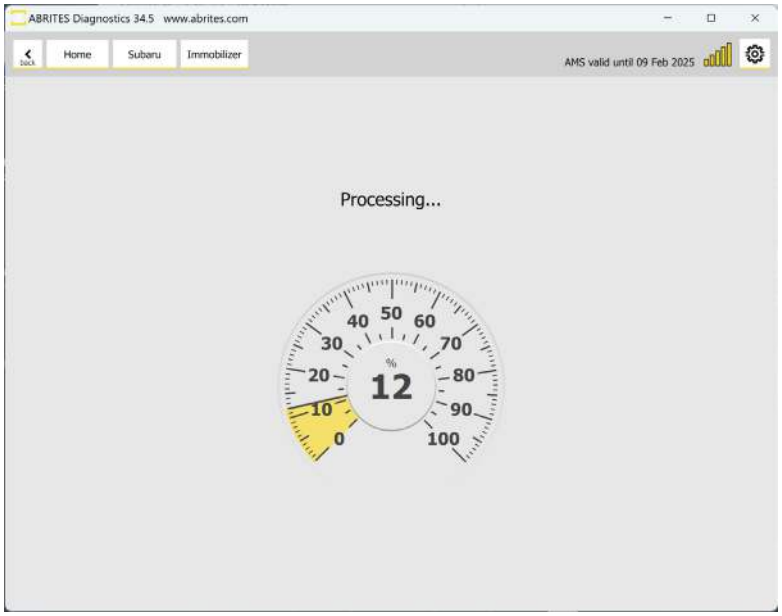
5.4 Immobilizer Reset

This procedure is dedicated to vehicles with a mechanical key and an immobilizer unit. When all keys are lost you will need to perform an Immobilizer reset first, before you can continue with the key programming. There is a dedicated button in the Immobilizer menu for that.



Once you start the Immobilizer Reset procedure it will take about 15 minutes, you will see the progress and once the unit is reset you can continue. It is again a guided procedure and all instructions are provided with on-screen messages, which you need to follow strictly.

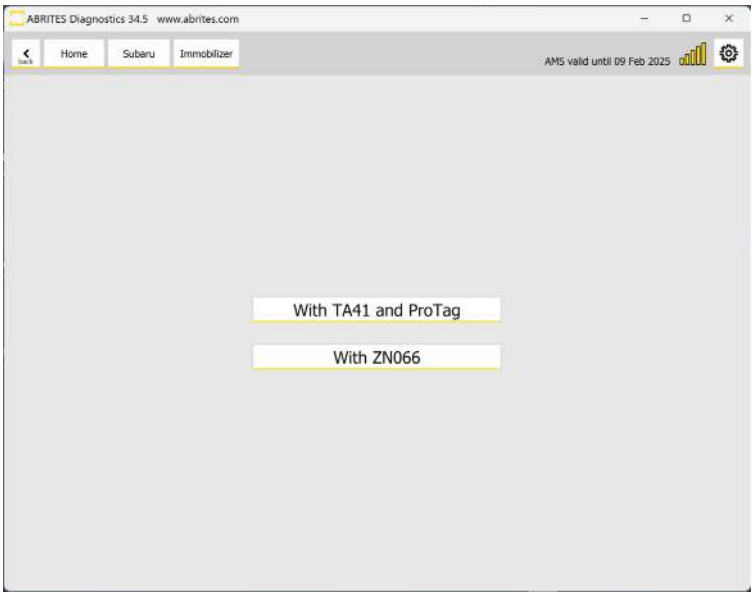




Once the immobilizer reset procedure is complete you can proceed to the key learning. You need to select “Key Registration” and proceed with the key learning procedure described in the “Key Registration” section of this manual. The software is guided and you need to strictly follow the instructions. You will be asked to turn ignition ON with the key you wish to program.

5.5 All Keys Lost special function for vehicles with a mechanical key and BCM unit

All Keys Lost special function is used when you have a vehicle with no working keys, that is equipped with a BCM unit and a mechanical key. It gives you 2 options to continue - with TA41 and a Protag programmer, or with a ZN066 adapter. Procedure is started from the Immobilizer special function > All Keys Lost. Once you start it you will see the 2 options as in the screen below.

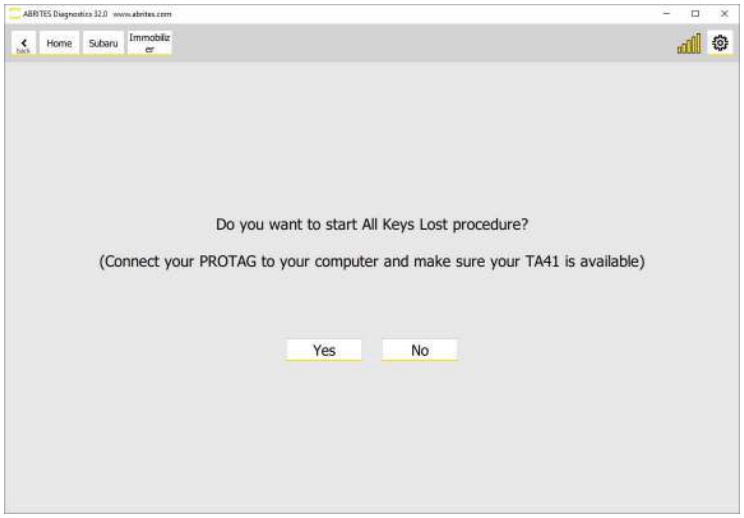


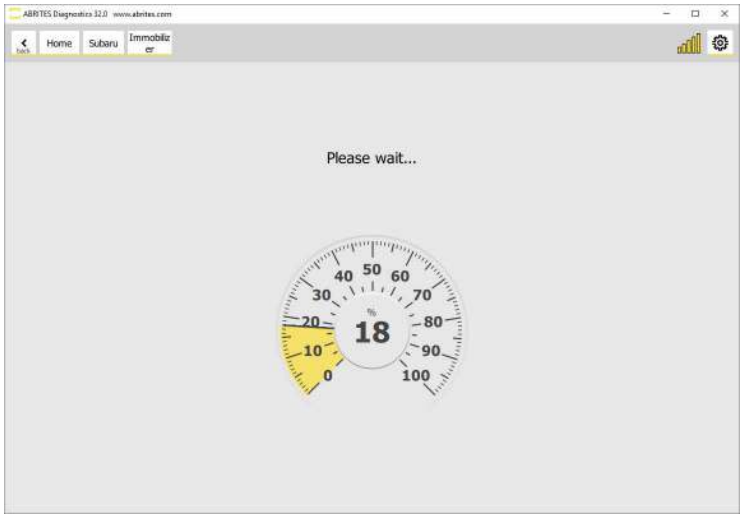
5.5.1 All keys lost using TA41 and PROTAG

In this case the TA41 option is selected and we use the ta 41 to emulate a working key for the vehicle with the help of the PROTAG programmer and the Abrites diagnostics for Subaru.

Once the All keys lost procedure is started and the option for TA41 is selected you can connect your PROTAG to the PC and make sure your TA41 is nearby.

The Software will start reading the information from the vehicle and then it will prepare it for key programming.



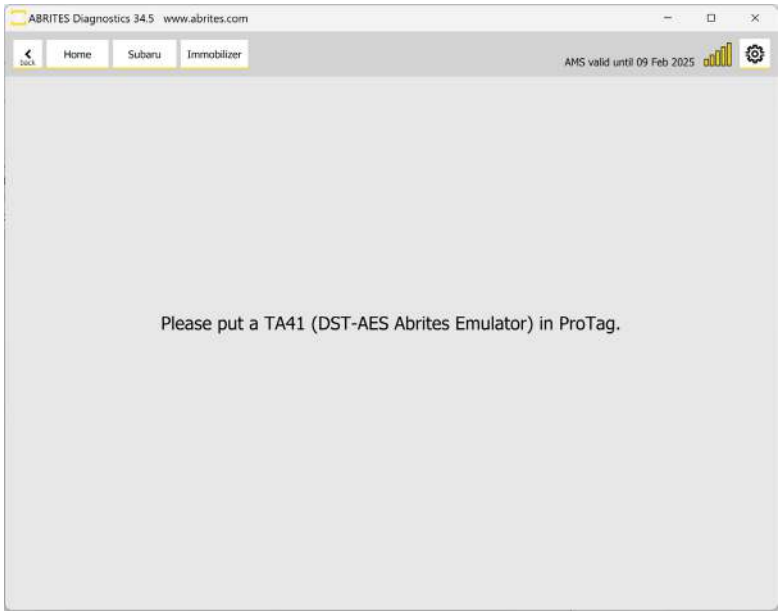


At some point the software will ask you to put TA41 in the Protag programmer and the software will prepare the key emulator. Then the software will prompt you to turn the ignition ON using the TA41 which has been prepared and the car will be able to start.

You can then go to the procedure for adding a key (Key Registration) if you would like to program more keys to this vehicle.

The specific thing to mention here is that the TA41 remains locked to the vehicle and is very convenient for situations where access to blank Subaru keys is limited and the TA41 usually remains with the customer as a spare or emergency key. It has a key blade position and as a locksmith you can prepare a blade and install it conveniently in the TA41.

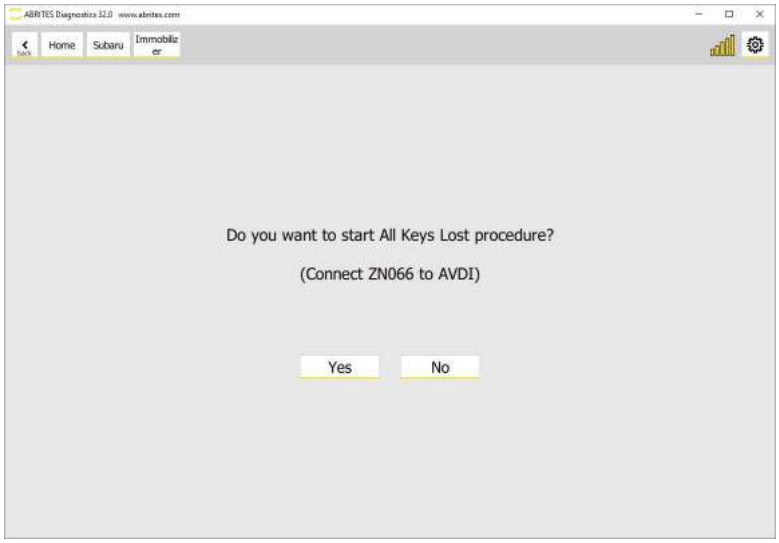
NB! For key registration procedure with ZN066 please make sure you turn ignition ON only with a blade key with no transponder and together with the ZN066, otherwise the procedure will fail You can either use a blade only, or if you have a whole key please make sure you remove the transponder at this step.



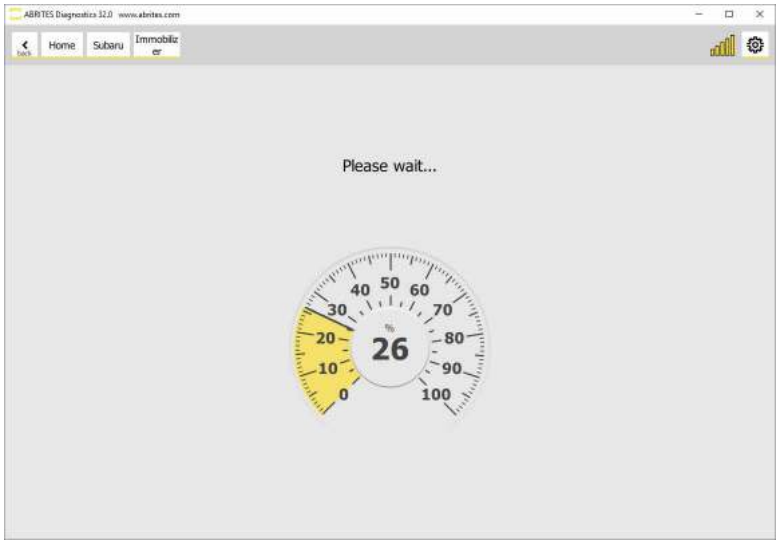
5.5.2 All keys lost using the ZN066

The procedure with ZN066 does not require a PROTAG programmer. It connects directly to your AVDI's DB15 slot. ZN066 does not stay programmed to the vehicle so you need to have a BLANK Subaru key, a TA41 or any DST AES transponder which you should program to the car.
Here is what you need to do:

Make sure you confirm by clicking "yes" after you have connected your ZN066.



Abrites Diagnostics for Subaru will read all the needed information and prepare the ZN066 emulator and the car for key programming.



Once the ZN066 is prepared you can proceed to key registration procedure.

The software will prompt you to turn the ignition ON using the ZN066 emulator and you will be able to program keys. ZN066 is reusable and can be used to program many vehicles.

NB! For key registration procedure with ZN066 please make sure you turn ignition ON only with a blade key with no transponder and together with the ZN066, otherwise the procedure will fail You can either use a blade only, or if you have a whole key please make sure you remove the transponder at this step.

5.6 Engine ECM registration

This procedure happens automatically after key registration for some vehicles, in other cases you will need to perform it manually after key registration for vehicles with mechanical key. It is required in order to synchronize the information of the new key with the ECM.

5.7 Meter SCU registration

(Coming soon)

5.8 Remote engine starter registration

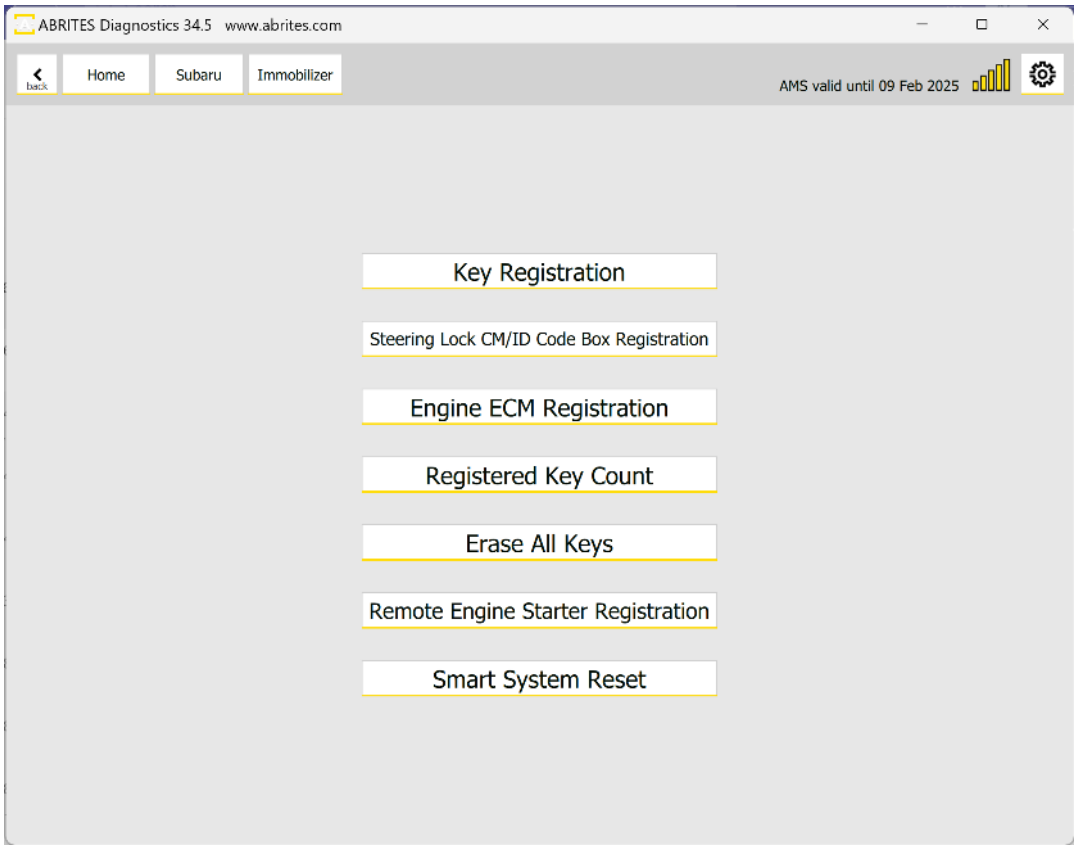
(Coming soon)

6. Smart Access System Special Function

Smart Access System Special function is dedicated to vehicles equipped with a smart key and a Smart Access System, and has the following functionalities:

- Program additional key
- Perform All Keys Lost,
- Perform Smart System reset
- Register ECM (required after key programming),
- Read the number of the access keys registered to the vehicle
- Erase All Keys

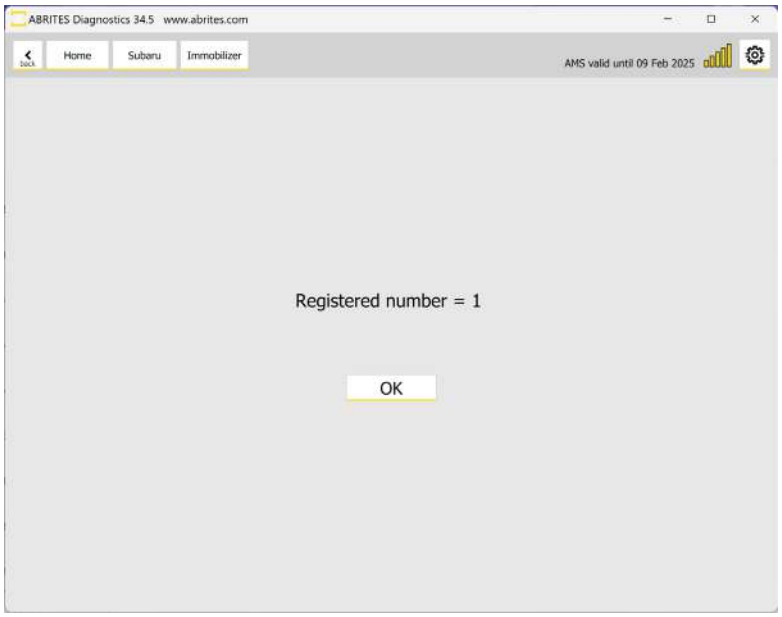
The procedures are guided with all necessary steps described with on-screen messages, and is executed via OBDII port of the vehicle.



6.1 Registered Key Count

Similar to vehicles with mechanical key, smart systems can hold a certain count of keys and would not accept more then 8 key programmed to the smart system. Whit this functionality you are able to check the number of registered keys to the smart system in the vehicle you are working on.

Once you select the “registered key count“ you will see this window which will tell you the current key count. This is a very important step to be performed before any key learning is done because the vehicle may have reached the maximum number of keys that it accepts If the number of maximum keys is reached you will have to erase keys first, the procedure is described in a dedicated section.



6.2 Erase All Keys

Using the "Erase all keys" option is very helpful if the customer has lost one or more of their keys but still has one working key. This function will allow you to remove all registered keys apart from the one that is currently in the ignition. This means that the rest of the keys will not function with this vehicle but you can program one or more additional keys.

If the vehicle has no working key, you will have to first program a key and then use the Erase function, as it **requires a working key in order to be executed**.

Upon starting the procedure you will be asked to confirm by clicking yes, once the procedure is started you will be asked to hold the existing key of the vehicle by the start button. Do not turn ignition or just hold the key by the button and the procedure will erase all other keys from the smart system.

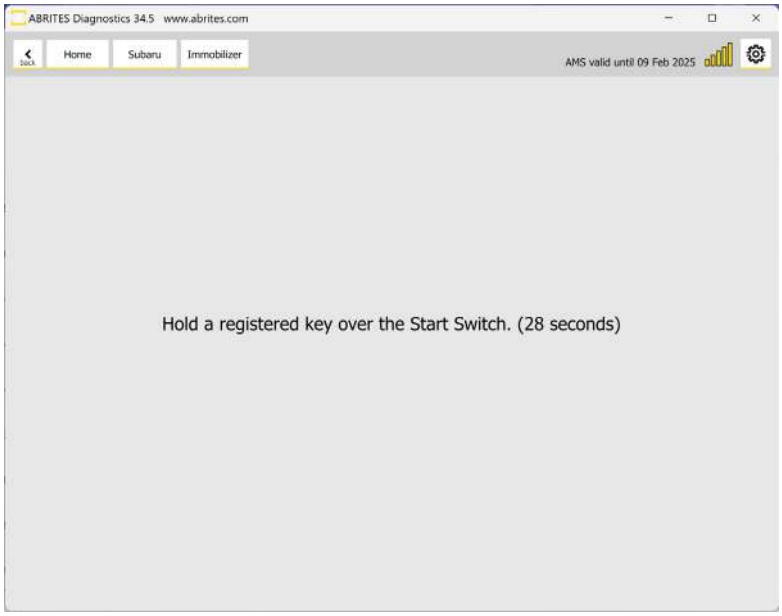


6.3 Add keys - Key Registration

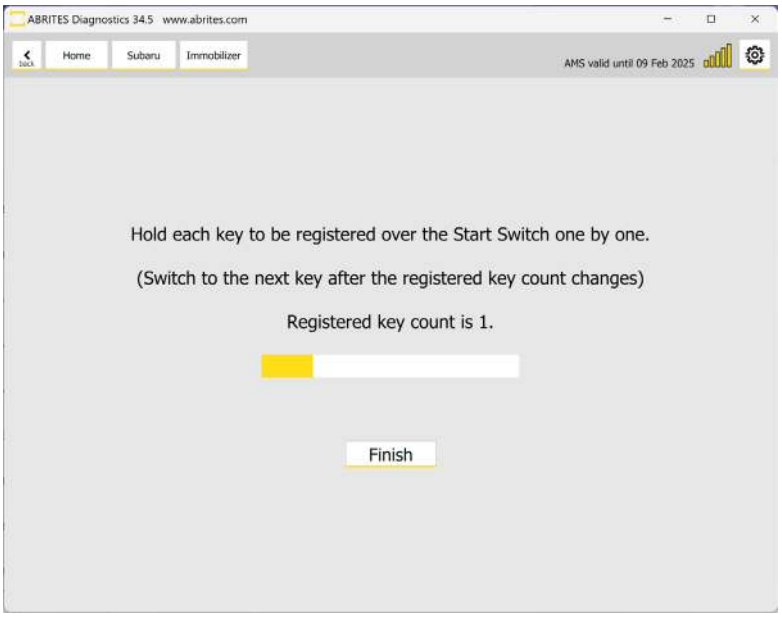
This procedure is dedicated to vehicles with a smart key and a smart access system. This function is used when you have a working key and you would like to add another one to the existing key count. You can start this procedure from the "Smart Access System" button on the main screen and by selecting "Key Registration". The procedure is guided instructions will guide you throughout the key programming process.

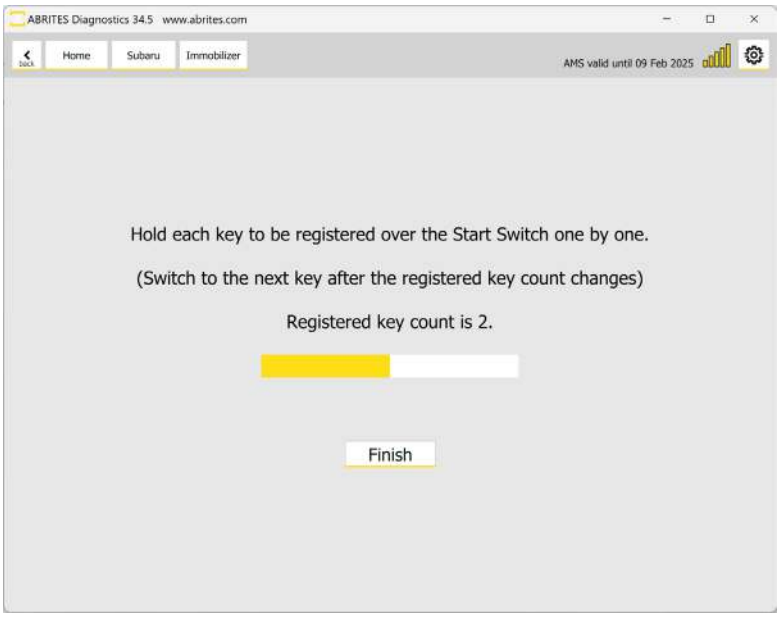
It is **very important** that you follow the on-screen messages are there is certain period of time (30 seconds) for executing actions like touching the key to the start button.

Once "Key Registration" is selected you will be prompted to select if you wish to start the procedure and you have to confirm by clocking "yes". Then you will be asked to hold the existing key of the vehicle over the start button, which means you will have to hold the key by the start button of the vehicle, do not turn ignition on, just hold the key. Make sure you follow the instructions on the screen and keep in mind the time limit.



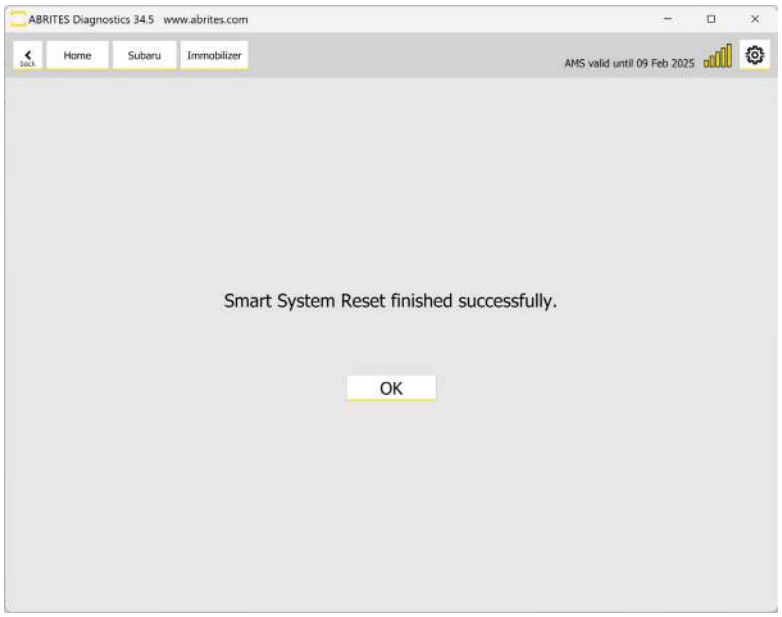
After the registered key is recognized the software will ask you to hold each new key you want to program over the start button. It takes a few seconds and the count will change as in the pictures below - from 1 to 2. At that point you can hold another key or finish the procedure.

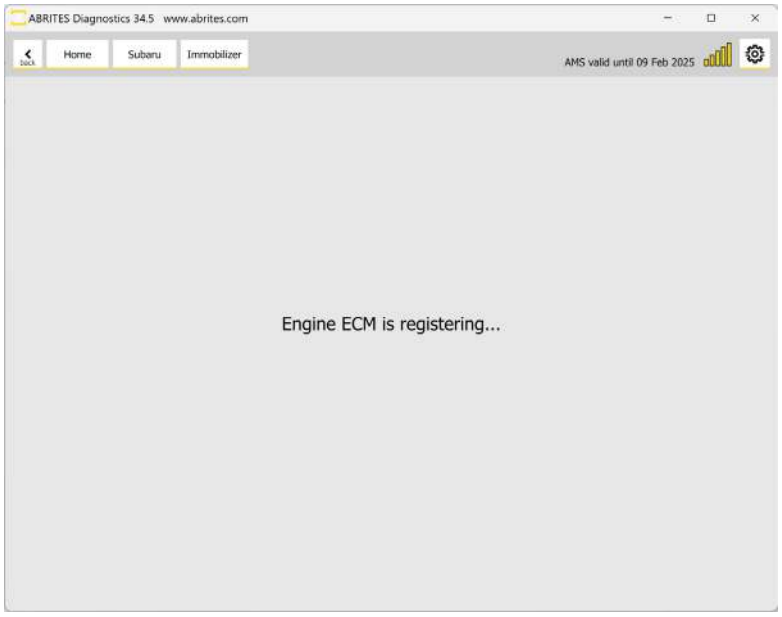




6.4 All Keys Lost - Smart System Reset

If you are in an All Keys Lost situation, you can perform the “Smart System Reset” special function under the Smart Access System Menu. Resetting the Smart System will prepare the vehicle with key learning. After the procedure is complete you need to proceed to the “Key Registration” procedure, described in the dedicated section. 6.3 of this manual. After the key is programmed you will be asked to turn ignition ON with each key, and after that a ECM registration procedure should start automatically. With this, the All keys lost situation should be solved and the car will have a working key.





6.5 Engine ECM registration

This procedure happens automatically after key registration for some vehicles, in other cases you will need to perform it manually after key registration for vehicles with mechanical key. It is required in order to synchronize the information of the new key with the ECM.

6.6 Meter SCU registration

(Coming soon)

6.7 Remote engine starter registration

(Coming soon)

7. Service Functionalities

The Abrites diagnostics for Subaru supports useful service functions for workshops specializing in Subaru vehicles, such as DPF regeneration, injector coding, etc. The Abrites diagnostics for Subaru is available to perform at an OEM level with significantly better speeds.

7.1 DPF regeneration

Many diesel vehicles produced by Subaru had no access to what is referred to as Forced regeneration after a DPF cleaning. Now this is done by OBDII with a simple click. The process takes between 10 and 20 minutes, depending on the temperature of the DPF and the amount of soot residue.

7.2 Injector codes

Reading and registering Injector codes is very important when the user is faced with the needs to replace the Subaru diesel injectors. This is done by entering the Engine control unit's menu

Once that is done the user should select "INJECTORS" and read the injector codes. Then they should be saved. The injectors should be registered and the vehicle will start.