ISTA User Guide

ISTA version	4.05
Date	March 2017

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1 Introduction

Operation, display masks and the ISTA workshop system functions are described in this document. The user manual is addressed primarily to service technicians working in the workshop environment.

1.1 The workshop system ISTA (Integrated Service Technical Application)

ISTA is the diagnosis and programming application for BMW Group vehicles in the worldwide Retailer Organisation

1.1.1 Diagnosis

- Vehicle identification for specific vehicle management
- Information research for repair and maintenance
- Guided troubleshooting
- Software repair

1.1.2 Programming

- Software update
- Control unit replacement
- Retrofit/conversion

1.1.3 Interfaces

1.1.3.1 IMIB (Integrated Measurement Interface Box)

The IMIB is a powerful measuring device. It contains several measuring devices, which can adopt the behaviour of an oscilloscope and a digital multimeter. The IMIB contains controlled current and voltage sources for output of voltages and signals.

It can be used without a connection to ISTA as a Standalone measuring device or also in connection with ISTA. Possible connection types are LAN or WLAN.

The IMIB can be operated in two ways in connection with ISTA:

- free measuring technique
- embedded in test sequences as guided troubleshooting

In the free measuring technique you can make manual adjustments in the corresponding input screens after establishing the connection with the IMIB, in order to influence the display of current measuring results.

In the guided measuring technique, the measurement system is automatically set using program instructions in the test module. Results are shown in specific masks and evaluated by the program.

1.1.3.2 ICOM (Integrated Communication Optical Module)

ICOM is a communication device (VCI, Vehicle Communication Interface) and represents the diagnostic interface of the vehicle. It is connected to the vehicle and can then be connected via the ISTA connection manager. ISTA can communicate with the vehicle, for instance for automatic vehicle identification or carrying out test sequences.

1.2 Data exchange between ISTA and other systems via IPS

The IPS (ISPI Process Services) are a Windows service offering interfaces for the ISPI Next applications AIR, ISTA, ISPA Next, and ISPA Mobile so that shared data can be accessed across devices and applications. The service ensures that the exchange of data between applications is allowed. If the service on the internal network of the outlet is not active, the use of data, depending on the application, is severely limited. Only one service per data storage can be active at a time.

1.3 Marque separation

The user interface for the BMW, BMWi, BMW Motorrad, MINI and Rolls-Royce marques is identical. Marque separation – depending on the authorisation of the dealer – is identified by different colours of the highlighting for active objects. The allocation of the colours to the marques is shown in the following table.

Brand	Colour
BMW Group multi-marque dealer	Turquoise
BMW / BMWi / BMW Motorrad	Blue
MINI	orange
Rolls-Royce	Chamois

Table 1 Marques and colours

1.4 General operation of the application

The graphic displays on the monitor are referred to as "screens". They contain information and control functions for operating the ISTA workshop system.

The screens normally have a standard structure. They are divided into the following sections:

1. Operations bar
2. Toolbar
3. header
4. Navigation area

5. Working range
6. Hint Line
7. Action line

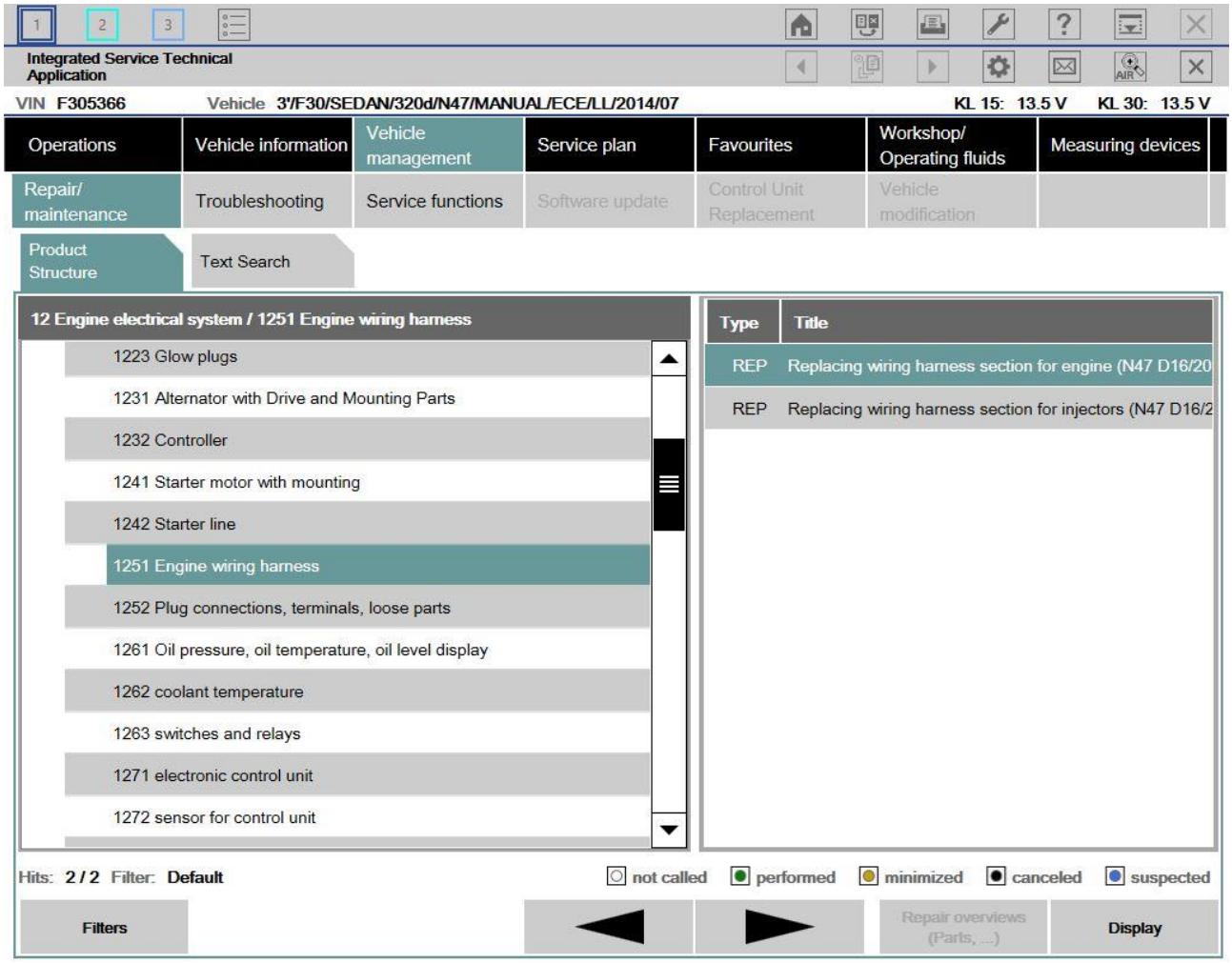

Figure 1 Control and indication ranges

1.4.1 Operations bar

The operations bar itself is only active during an active operation. All the functions in this bar only affect the current operation.

1.4.2 Toolbar

The symbol bar is shown in all screen masks. The functions that can be called up via the individual icons are described in chapter Symbols.

1.4.3 header

The vehicle identification number and the basic features of the identified vehicle are shown in the header. The vehicle identification number is only displayed if the vehicle has been identified by entering or reading out its vehicle identification number.

1.4.4 Navigation area

You can navigate to the individual functions of the workshop system via

- main menu (first line),
- submenu (second line) and the
- tabs.

The tabs selected are highlighted in the respective marque colour.

1.4.5 Working range

Further options and information can be found here. A white arrow pointing up or down identifies the column that is used for sorting a selection list.

1.4.6 Hint Line

The bottom part of the working area may also contain a comment line in which you will receive additional information.

1.4.7 Action line

Buttons are shown here depending on the workspace.

1.4.8 Options for text entry (on-screen keyboard)

In various masks, it can be necessary to enter text or characters. In general, this can be done using a keyboard. Click the "keyboard" button to show the display keyboard. Only keys that are necessary to make valid entries at the respective function step are enabled on the on-screen keyboard. Impermissible characters cannot be selected on the display keyboard.

A second click on the "Keyboard" button hides the on-screen keyboard.

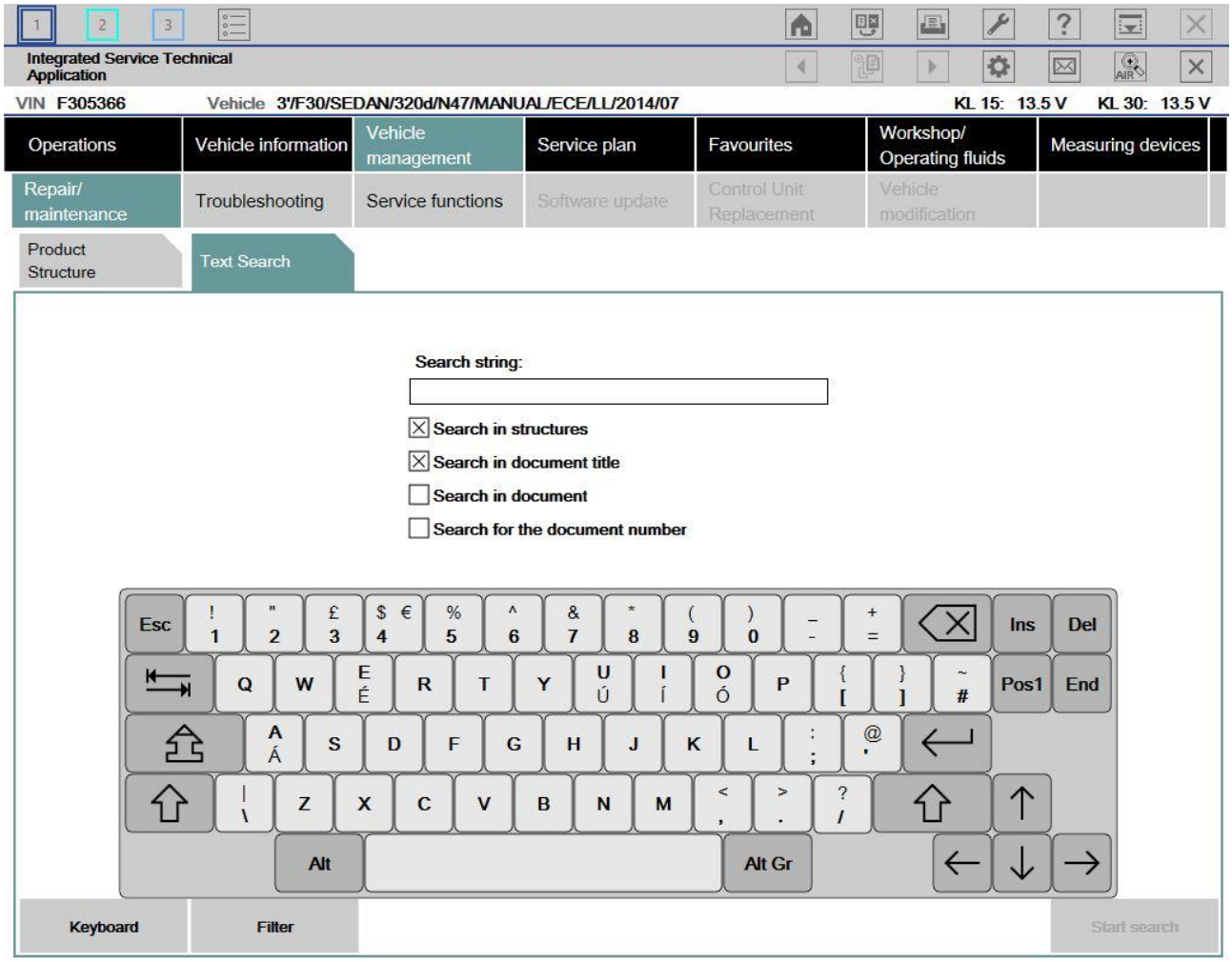

Figure 2 Example of a display keyboard: Entering search terms

1.5 Meaning of the symbols used in the document

The symbols below used in this User Manual have the following meanings:

	The symbol indicates “Note” and “Warning”. It represents important text passages to avoid unexpected results when dealing with ISTA and notes on actions that may lead to personal injury or property damage.

	The "INFORMATION" symbol refers to further documentation.

1.6 Important safety information

Before using the ISTA workshop system, you should familiarise yourself with the relevant safety regulations and then read and comply with the notes contained in these instructions.

	Certain functions in ISTA can trigger off activations of components in the connected vehicle. Before activating components, make sure that there are no persons in the danger area. Read and comply with the general safety provisions.

1.7 Referenced documents

NAME	Description
ISPI Administrator guide	Contains information intended primarily for the ISPI administrator.
ISPI Planning Guide	Required infrastructure and hardware requirements

Table 2 Referenced documents

2 Installation and software updates

Installation prerequisites (infrastructure and hardware)	ISPI Planning Guide
Installation and software updates	ISPI Administrator Manual

3 Operation

3.1 Starting the application

ISTA is started by

- double clicking the ISTA symbol  on the Windows desktop
  or
- selecting the ISTA shortcut in the Windows main menu under "Start - All Programs - BMW Group ISPI Next - BMW Group ISTA"

New technical features are displayed at start-up. The display period can be adjusted in administration.

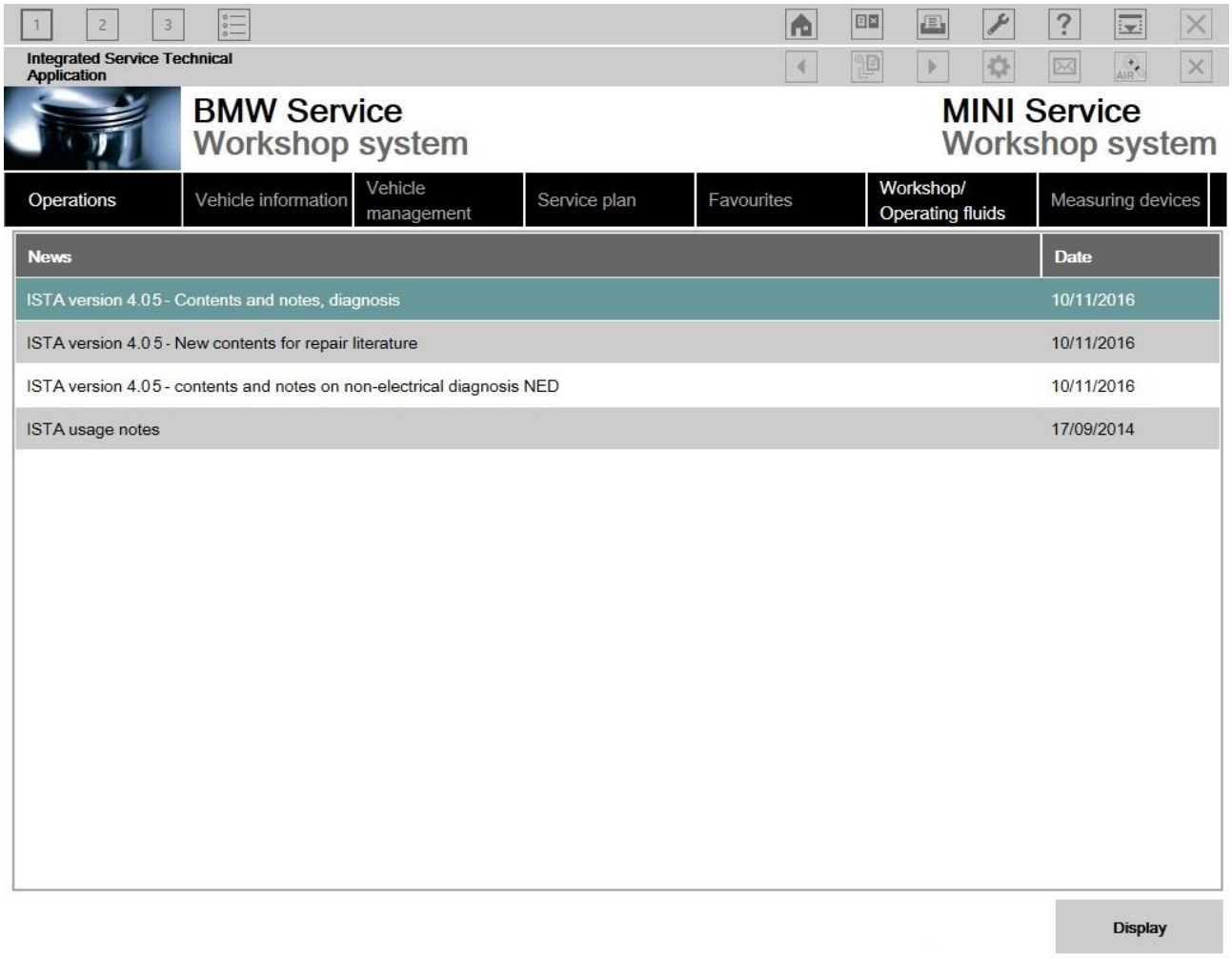

Figure 3 New technical features

Once you have read the "Note on using ISTA", close the dialog by pressing the "Continue" button.

Select the "Operations" tab to open an operation.

3.2 Starting the application (motorcycles)

ISTA is started by

- double clicking the ISTA symbol  on the Windows desktop
  or by
- selecting the ISTA shortcut in the Windows main menu under "Start - All Programs - BMW Group ISPI Next - BMW Group ISTA"

New technical features are displayed at start-up. The display period can be adjusted in administration.

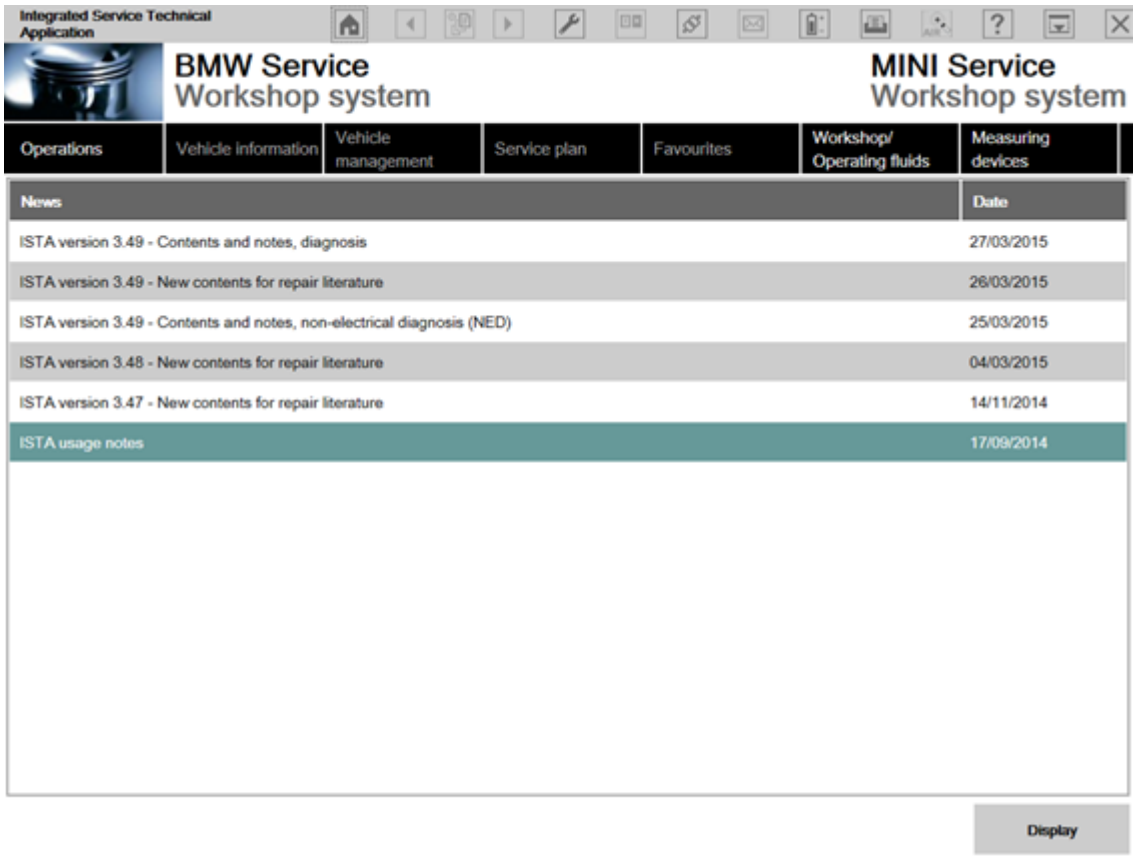

Figure 4 New technical features

Once you have read the “Note on using ISTA”, close the dialog by pressing the "Continue" button.

An operation can be opened from the start screen: Select the "Operations" tab.

3.3 Identifying a vehicle

In general a vehicle can only be processed in ISTA as part of an operation.

ISTA offers three vehicle identification options:

- Identification by entering the vehicle identification number
- Identification by reading out the vehicle data with and without vehicle test (see chapter "Selecting a vehicle using "Read out vehicle data"
- Identification by basic features

For identification via Selecting a vehicle via "Read out vehicle data" the vehicle and ISTA must be connected by an ICOM.

3.3.1 Editing several operations at the same time

ISTA supports the editing of up to three fully parallel diagnosis and programming procedures. All operation-specific functions are arranged in the operations bar.

Figure 5 Operations bar buttons

For further information on the operation-specific symbols see .Symbole v4.05.

3.3.1.1 Operation details

The details of an operation are displayed once the mouse pointer is placed on an operation:

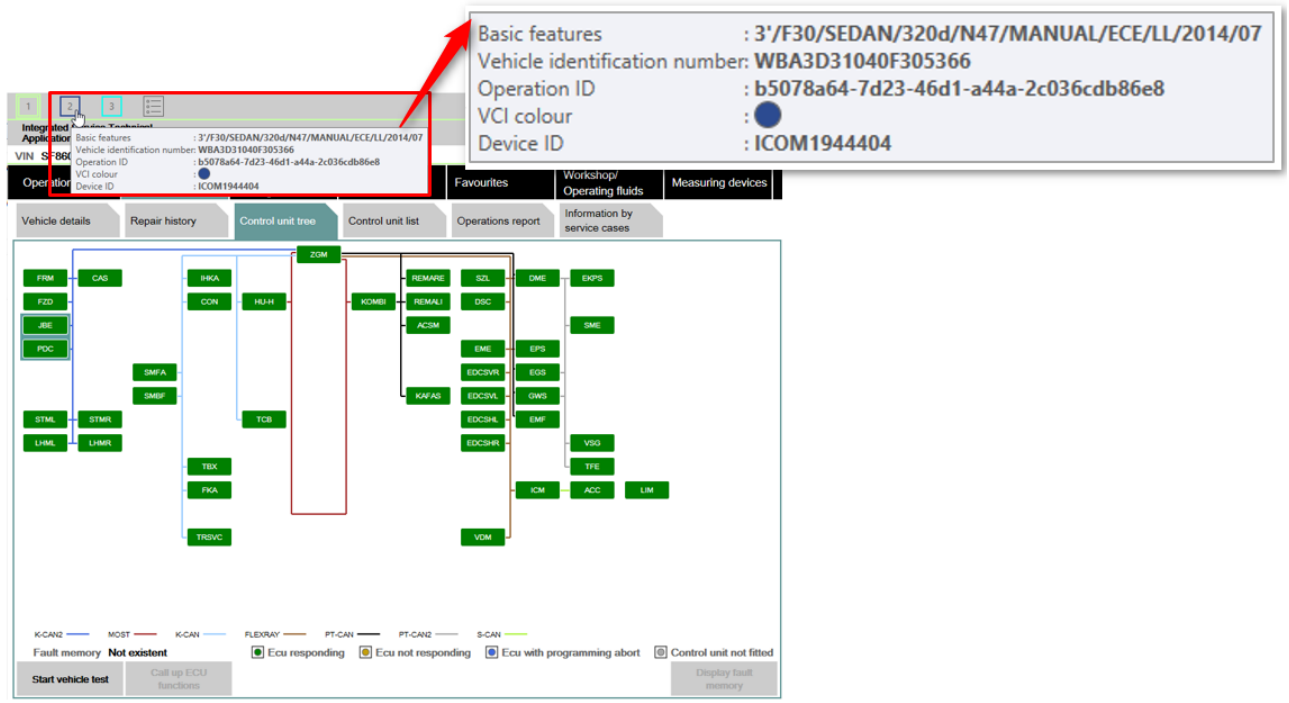

Figure 6 Operation details

If an ICOM is connected, "InfoSession" instead of the ICOM ID is displayed.

Using the OperationID all files of an operation can be located in the directory of the same name on the computer in use.

3.3.1.2 Colours and states

Operations can be opened regardless of the numbering. Each active operation is distinguished by a different colour:

Symbol	Colour	Definition
	Grey	operation inactive
	White	operation started
	Other	Every operation has the same colour as the ICOM used. If two or more ICOMs are allocated the same colour, ISTA creates another random colour. Preferred colours can be selected using the ICOM configuration.

Table 3 Colour options for operations

Possible operation states are also visualised:

Symbol	Condition	Definition
	No animation	Operation active and idle
	Rotating animation	Operation busy, for example communicating with the vehicle or querying the database
	Flashing	Interaction required, for example warning message

Table 4 Possible operation states

3.3.1.3 Overview of active operations

All active operations can be displayed and edited in an overview:

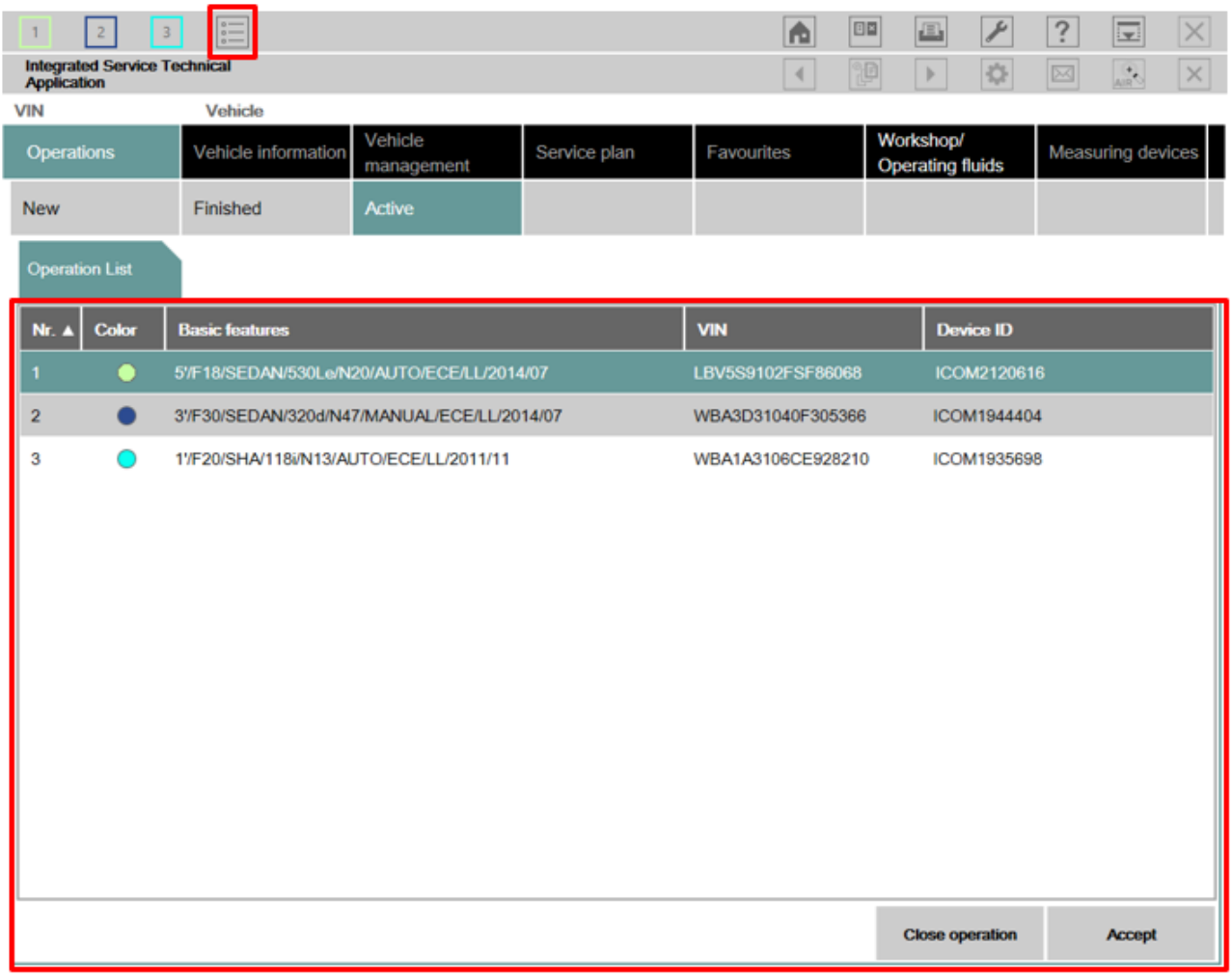

Figure 7 Active operations

3.3.2 Selecting a vehicle via "Read out vehicle data"

Select the "Operations" tab to create a new operation. The "Read Out Vehicle Data" tab is then shown under the "New" tab.

The vehicle is identified by

- "Identification without vehicle test": Identification without subsequent vehicle test or
- "Complete identification": Identification with subsequent vehicle test

⚠	A vehicle test must be carried out via Complete identification before programming can be conducted!

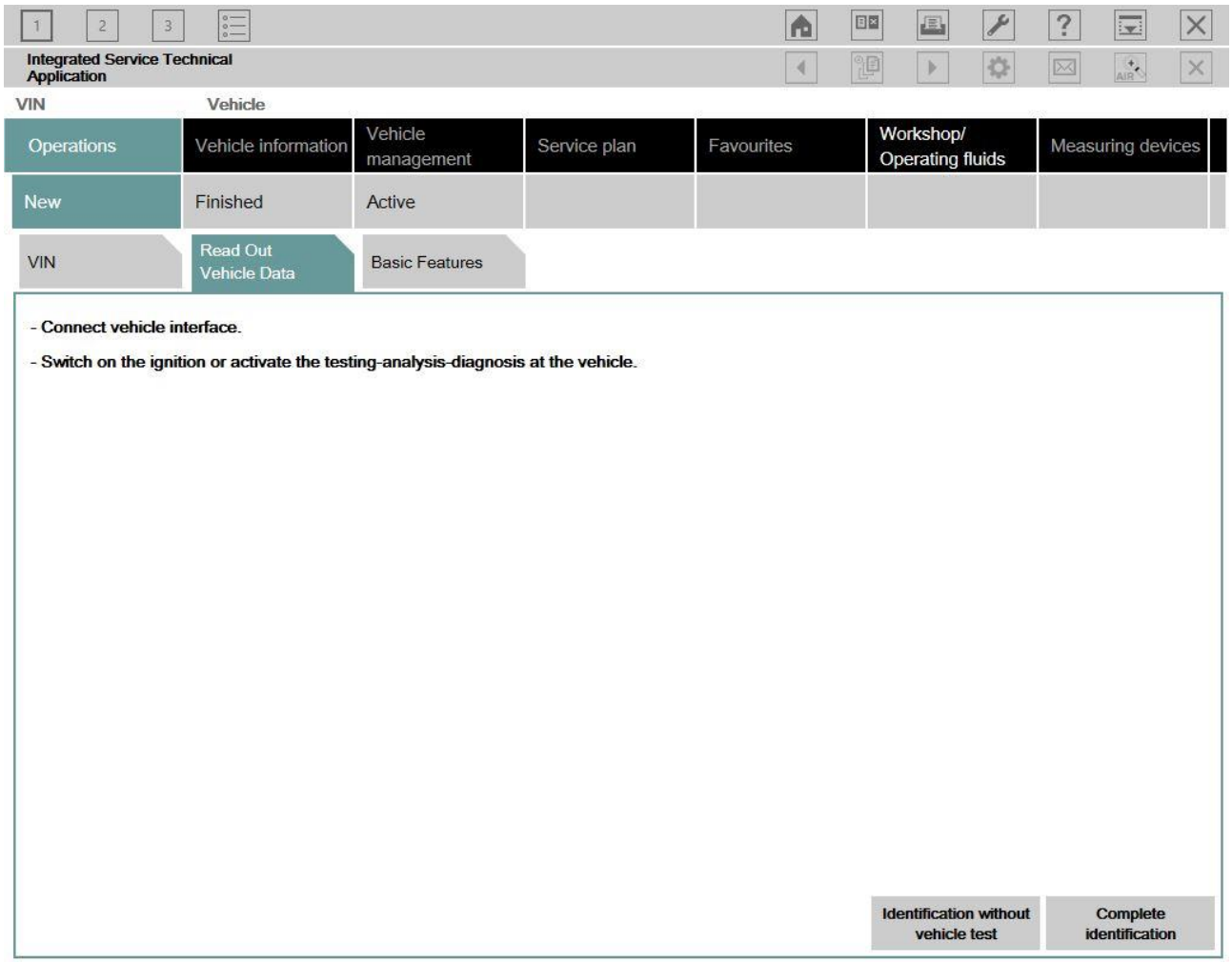

Figure 8 Preparations for reading out vehicle data

The connection manager is opened. The vehicle interfaces (ICOM) from the workshop are entered in the working area of the connection manager.

You can select a device from the list of communication devices and then press the "Set up connection" button.

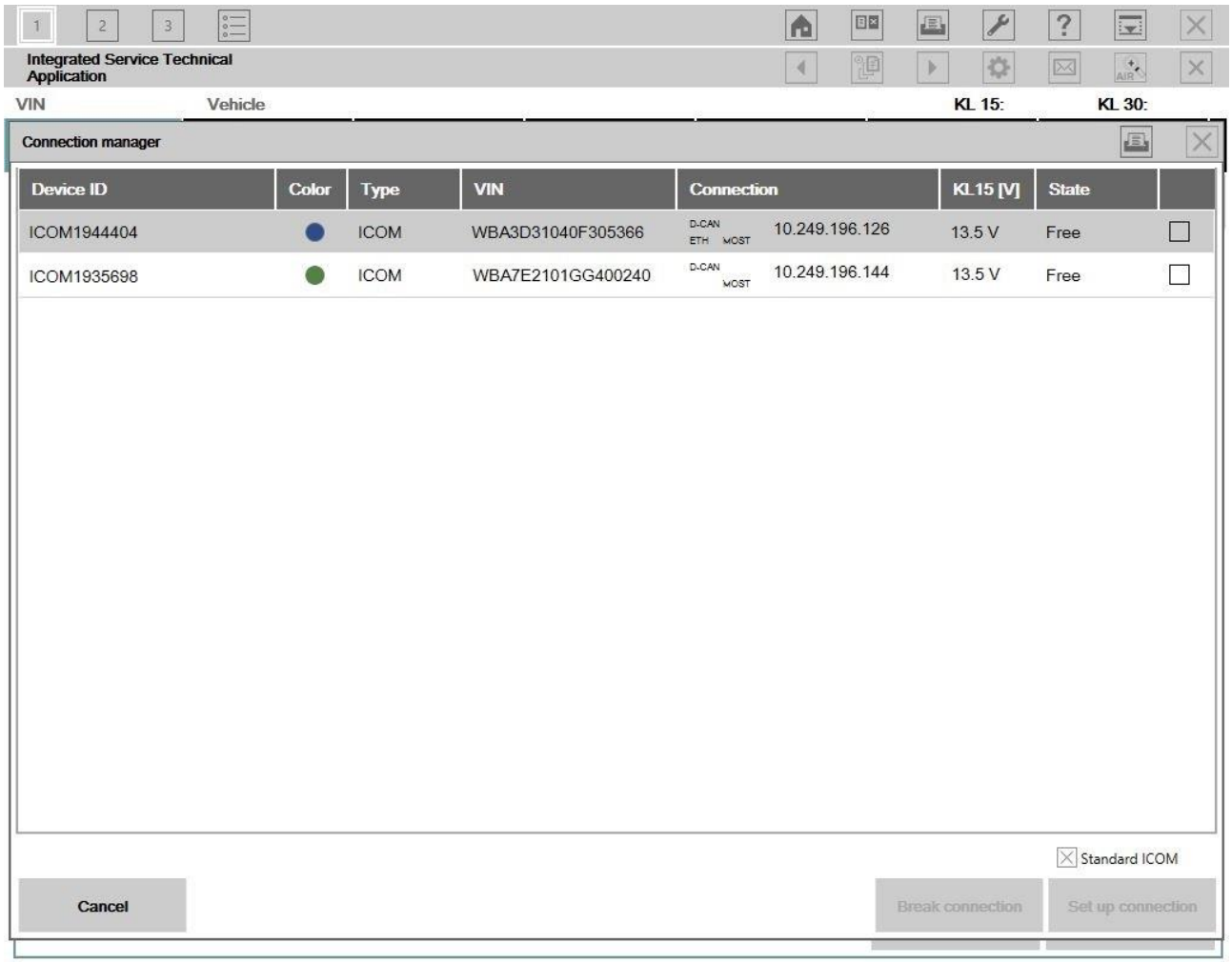

Figure 9 Connection manager / Connection manager

The connection to the vehicle is now established and vehicle identification is carried out. To do this, ISTA reads out the vehicle identification number and additional data from the vehicle.

If an ICOM has the status "Firmware" and cannot be selected, then you must carry out an ICOM firmware update first!

3.4 Testing vehicle

If vehicle identification was called up via "Read Out Vehicle Data" and "Complete Identification", the vehicle test starts automatically following vehicle identification, followed by the FASTA data transfer and analysis. During the vehicle test, the control unit trees displayed on the "Control unit tree" tab.

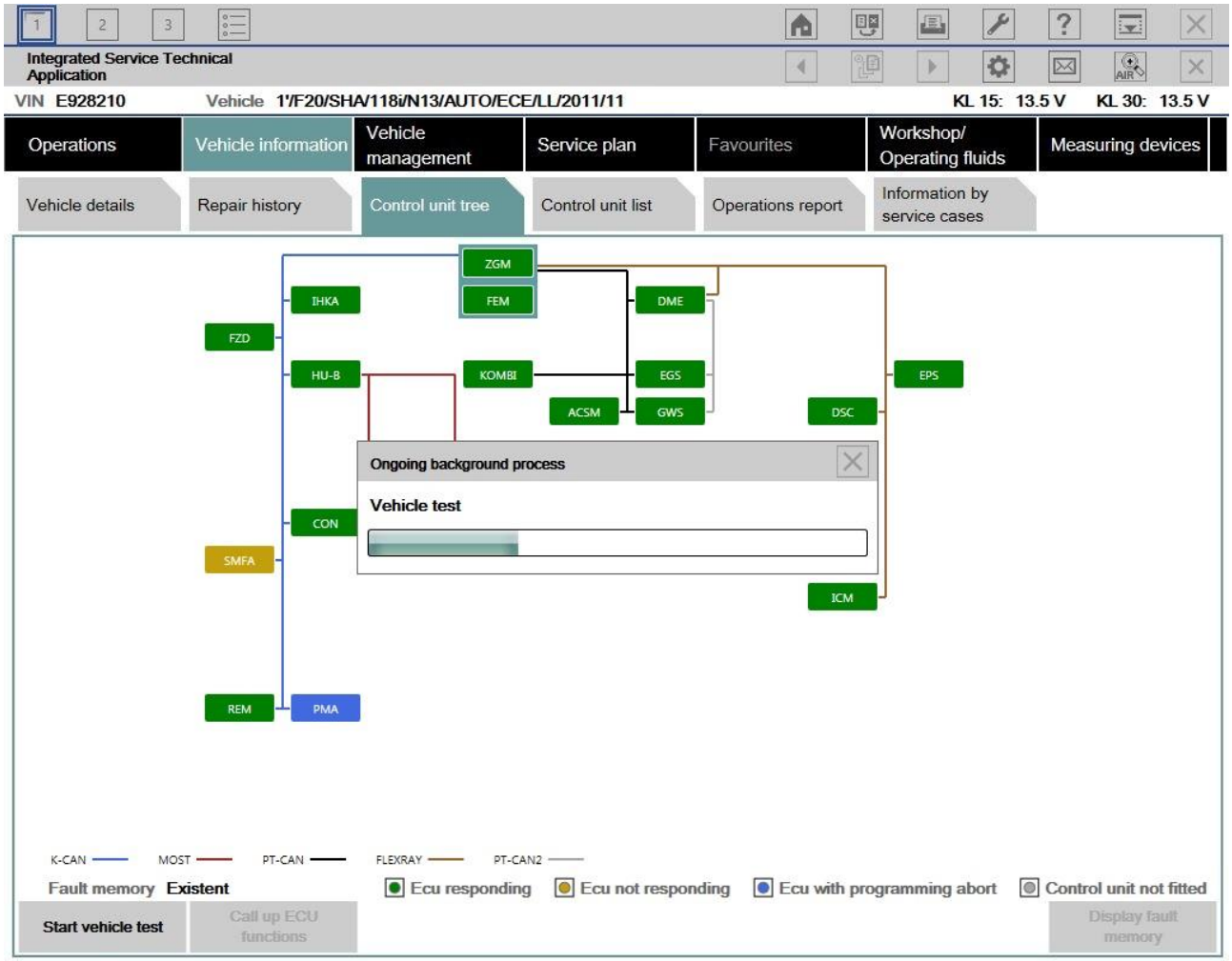

Figure 10 Carrying out the vehicle test

Here you can observe the ongoing determination of the control units that are fitted. If no control unit tree is available, the control unit list is displayed automatically on the "Control unit list" tab.

The control unit tree contains all the control units installed in the identified vehicle and displays their bus system allocations. The control units are identified in succession and their fault memories are read out. The colour then changes to display of the detected state. A key is displayed under the control unit tree. On this tab, you can restart the vehicle test if necessary or call up the control unit functions of the selected control units.

The "Display fault memory" button can be used to display the fault memory entries.

3.5 Show fault memory

After a vehicle test you can click on the "Display Fault memory" button to access the "Fault memory" mask. The fault codes that are read out are listed here together with their descriptions.

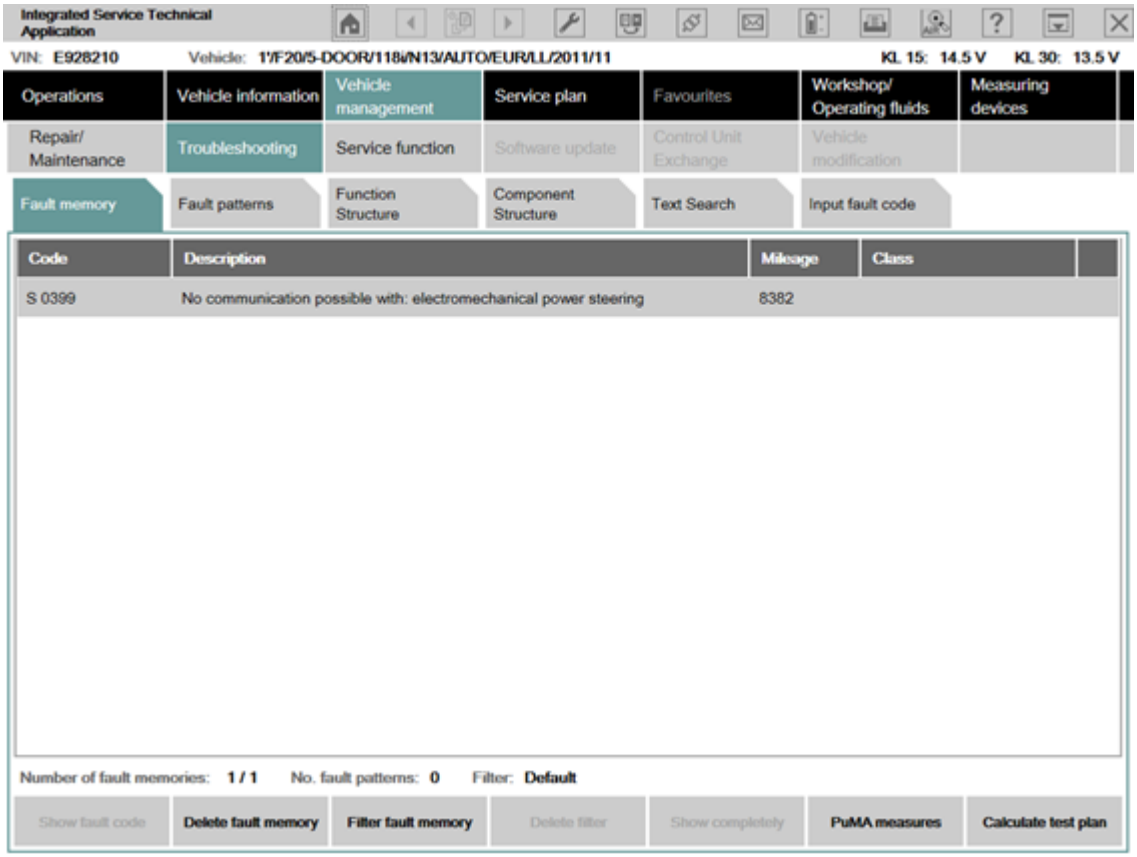

Figure 11 Show fault memory

The function Delete fault memory" can be carried out at the end of the guided troubleshooting.

In order to start the guided troubleshooting, first calculate a test plan.

How to calculate a test plan:

- Click on the Calculate test plan button.

3.6 Displaying fault memory (motorcycles)

After the vehicle test, click the "Display fault memory" button to access the "Fault memory" screen. The fault codes that are read out are listed here together with their descriptions.

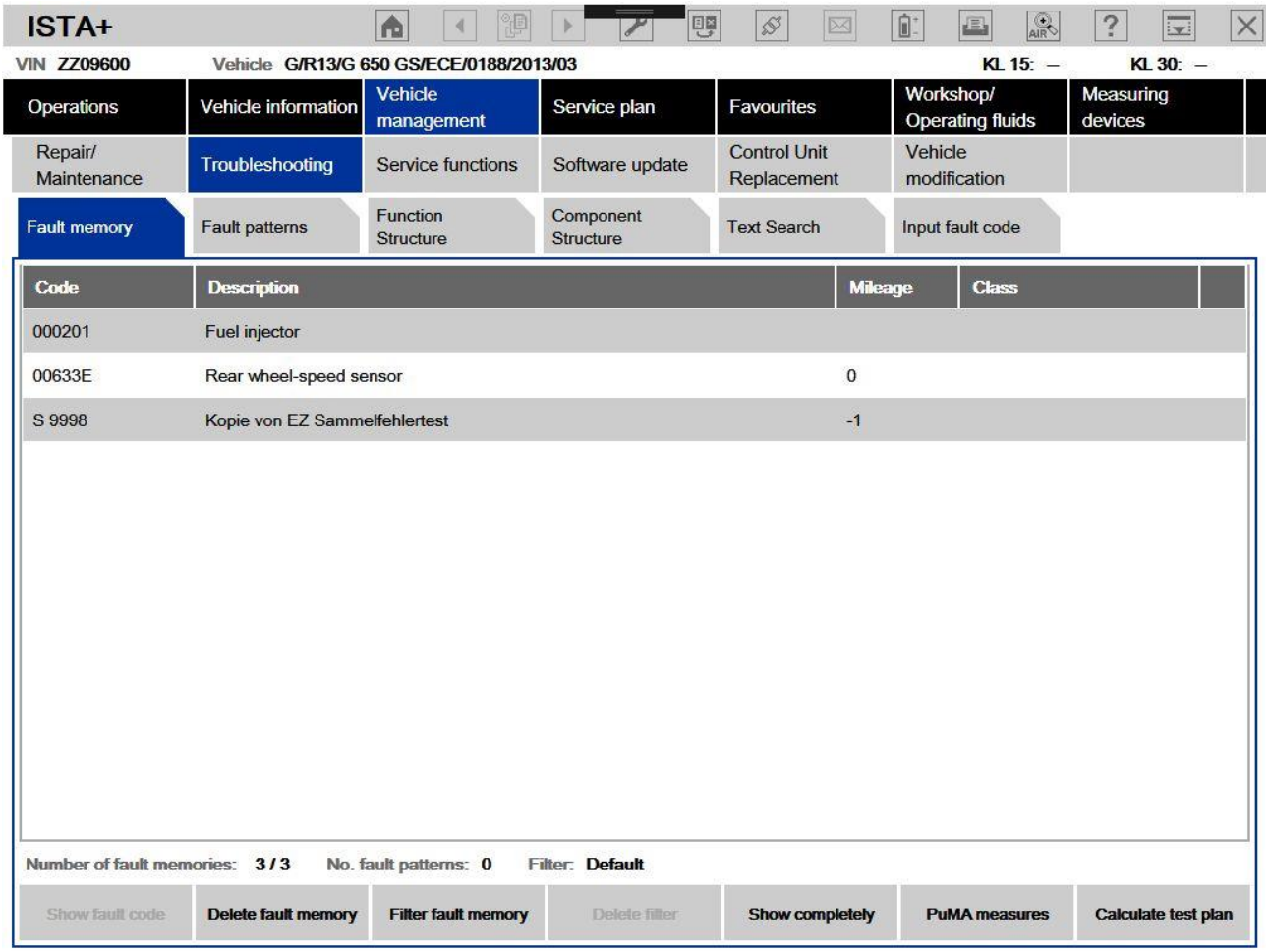

Figure 12 Show fault memory

The function "Delete fault memory" can be carried out at the end of the guided troubleshooting.

In order to start the guided troubleshooting, first calculate a test plan.

How to calculate a test plan:

- Click the "Calculate test plan" button.

3.7 Processing the test plan

The test plan lists the components and functions that might have caused the fault. The corresponding documents and test modules for the components and functions are indicated by "ABL" in the "Type" column. The documents and test modules are indicated by an abbreviation in the "Type" column.

Procedures localise a fault and give advice on rectifying it.

A test module is started as follows:

- Select the desired test module from the test plan.
- Click on the "Display" button.

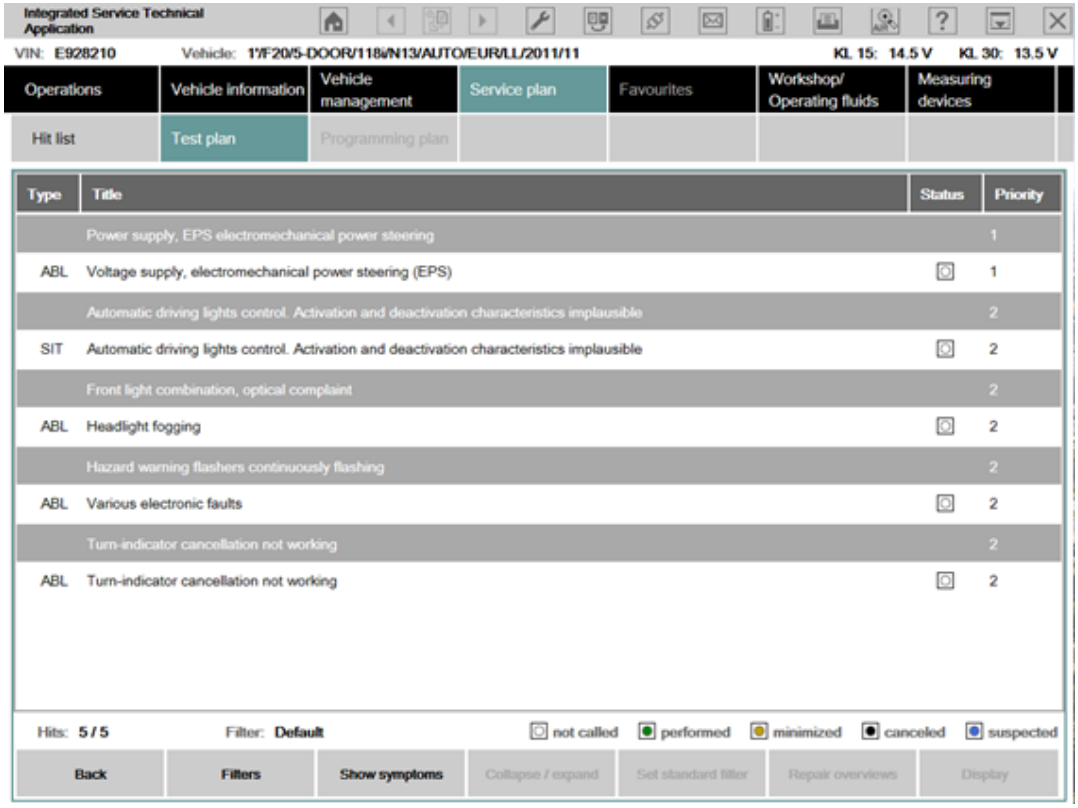

Figure 13 Test plan

	The priority in the test plan does not necessarily specify the call-up of the processes. The prioritisation represents the recommended processing order.

Test modules are used primarily to find fault causes. Furthermore, service functions can be performed via procedures. Information can be displayed within a test module, as well as measurements read out or entered. Furthermore, queries can be made available in procedures via selection screens.

After a test module has been carried out, additional information is added to the test plan if this is necessary for further troubleshooting or fault elimination.

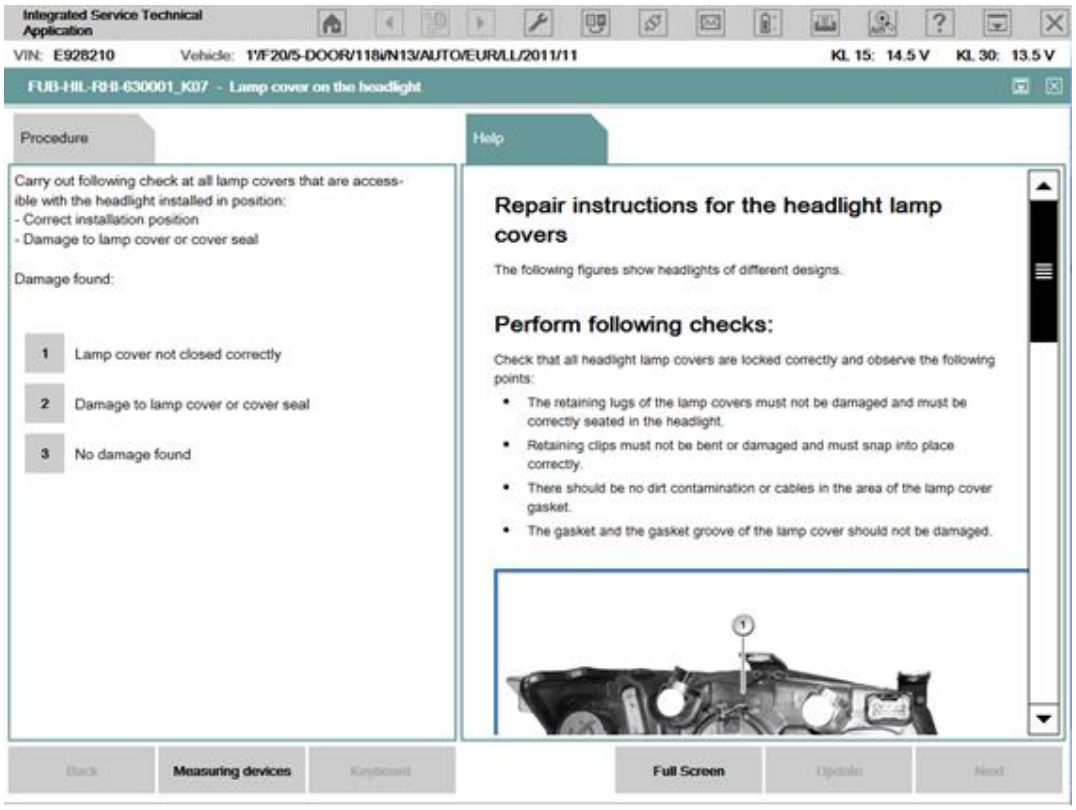

Figure 14 Test module, example

Once the test plan has been processed, the fault memory of the vehicle should be deleted using the corresponding service function.

3.8 Programming the vehicle

ISTA contains all the functions required for programming vehicles of the F, G and I series and for Motorrad models with vehicle electrical system 2020 (BN2020). Switching systems is no longer required, thus eliminating the need to carry out the same steps more than once, such as repeating the identification of the installed control units.

Programming will be functional as long as the service is installed. You can check this under "Administration" (spanner symbol) on the "Version" tab or in the ISTA Launcher. If there is no service data installed, the tabs for vehicle programming will not be activated. The service data form part of the service data package (SDP).

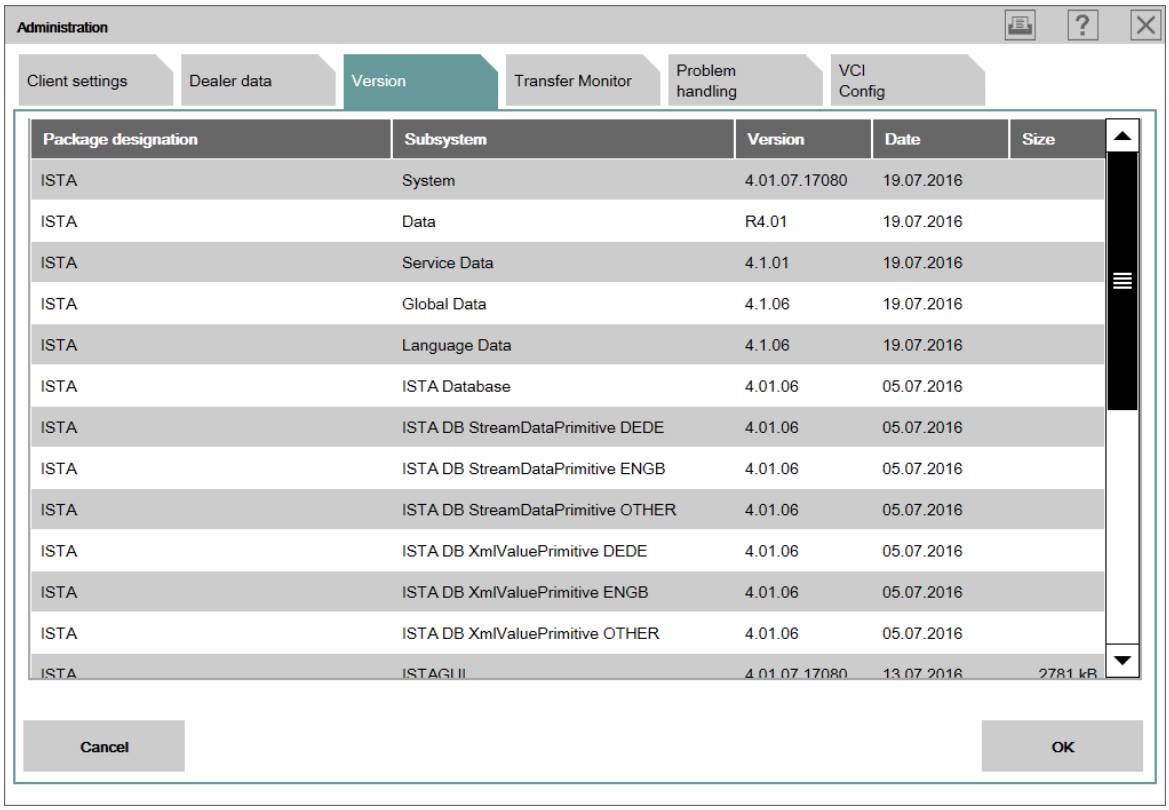

Figure 15 Administration: Installed versions

	Vehicles of the E series and motorcycles with the classic vehicle electrical system and vehicle electrical system 2000 must continue to be programmed using ISTA/P.

The functions relevant for programming can be accessed via the following tabs:

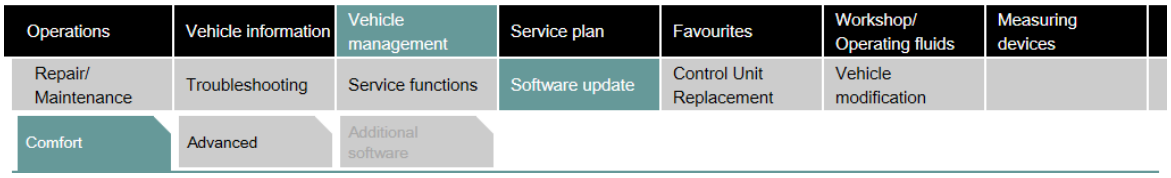

Figure 16 Vehicle management / Software update

Vehicle management

- Software update
  - Comfort - in accordance with the proposed measures plan
  - Advanced - for expansion of the measures plan
  - Additional software - for instance Updating or activating navigation maps
- Control Unit Replacement
  - Before Replacement (preparation) - preparation of the control unit for the exchange

- After Replacement (subsequent evaluation) - configuration of the control unit after the exchange

- Vehicle modification
  - Retrofit
  - Conversion
  - Conversion (coding only)
  - Removal of Retrofit/Conversion
  - Immediate actions

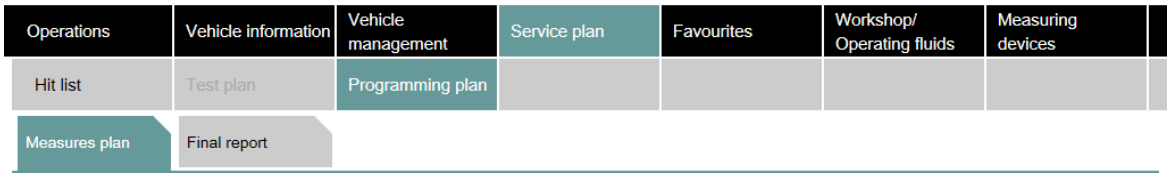

Figure 17 Service plan / Programming plan

Service plan

- Programming plan
  - Measures plan
  - Final report

3.8.1 Preparation for the programming

The correct preparation and subsequent evaluation of the vehicle are essential prerequisites for trouble-free programming.

When the implementation of the measures plan is started, a pop-up window will appear showing the requirements that must be fulfilled during programming. This window appears once per operation.

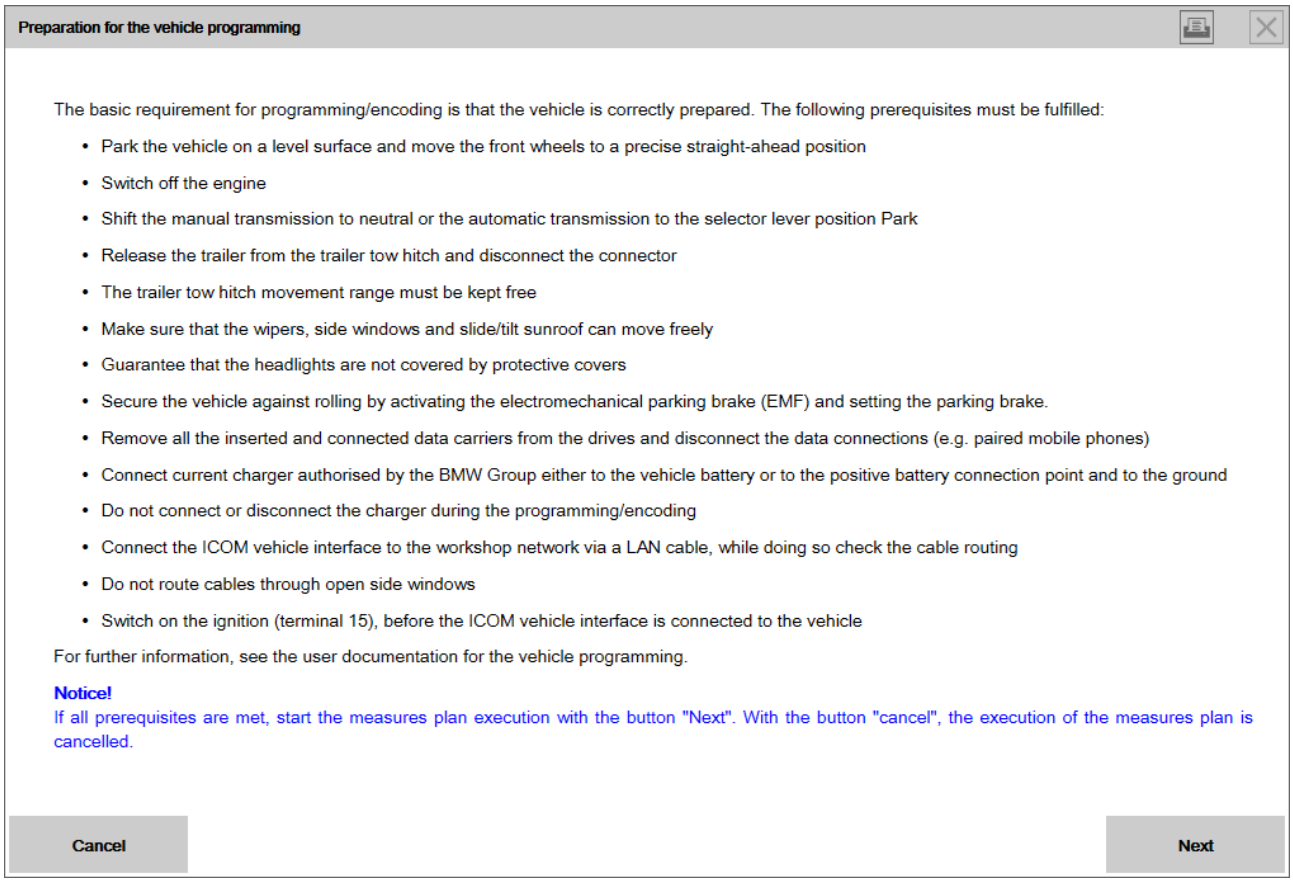

Figure 18 Preparation for the programming

In addition to the notes in the display, the following points are to be observed:

- If possible, protect the vehicle from direct exposure to sunlight.
- Allow the engine, transmission and brake system to cool down to ambient temperature.
- If it is a hybrid or electric vehicle, observe the following safety information:
    - Repair work must only be performed by specially trained experts for work on intrinsically safe high-voltage systems. The relevant repair manuals are to be observed.
    - In the case of F, G and I-series electric and hybrid vehicles, and subsequent series, high-voltage deactivation is not required for programming.
- Switch off all electrical consumers and lights, as well as turn indicators.
- Switch off wash/wipe system.
- Connect latest charger approved by BMW Group.
- Activate ignition (terminal 15) before ICOM vehicle interface is connected to the vehicle. For this to happen, the ID transmitter must be in the vehicle interior. For G-series vehicles, the ignition can be activated manually by pressing the START-STOP button quickly three times.
- Do not open or close the driver’s door during the programming routine so as not to switch off terminal 15.

- Switch off all mobile phones coupled with the vehicle to prevent programming from being aborted due to calls.
- Shut tailgate before starting programming.
- Updating the I level may lead to mobile phones or their software levels that were previously coupled no longer being compatible. For a compatibility check, please refer to: www.bmw.de/bluetooth, www.mini.com/bluetooth.
- F, G, I and subsequent series: Select Personal Profile (guest) and export or secure all created user profiles via the USB port in the glove box.

The following points are to be observed during programming:

- Observe requests and instructions in ISTA.
- Leave ignition switched on.
- Do not disconnect the connections between workshop network, ICOM and vehicle.
- Do not perform any activities on or in the vehicle during programming which have not been instructed by the ISTA system.

3.8.2 Software update

Programming can be accessed via the tabs "Vehicle management" / "Software update". The planned actions are initially compiled in the measures plan. The measures plan determined after the vehicle test can be carried out directly on the "Comfort" tab, or supplemented manually beforehand on the "Advanced" tab, then calculated and carried out.

The vehicle test must be carried out before programming (see chapter Testing vehicle).
In the case of vehicle identification via "Read Out Vehicle Data" and "Complete identification", the vehicle test starts automatically.

3.8.2.1 Comfort

With "Software update" / "Comfort", the vehicle can be programmed to the latest I level using the measures plan already determined without any further user action. It is not possible to manually select additional actions on this tab. Initialisations and follow-up operations that might be required are automatically added during the measures plan calculation.

The comfort software update is started by pressing the "Execute measures plan" button.

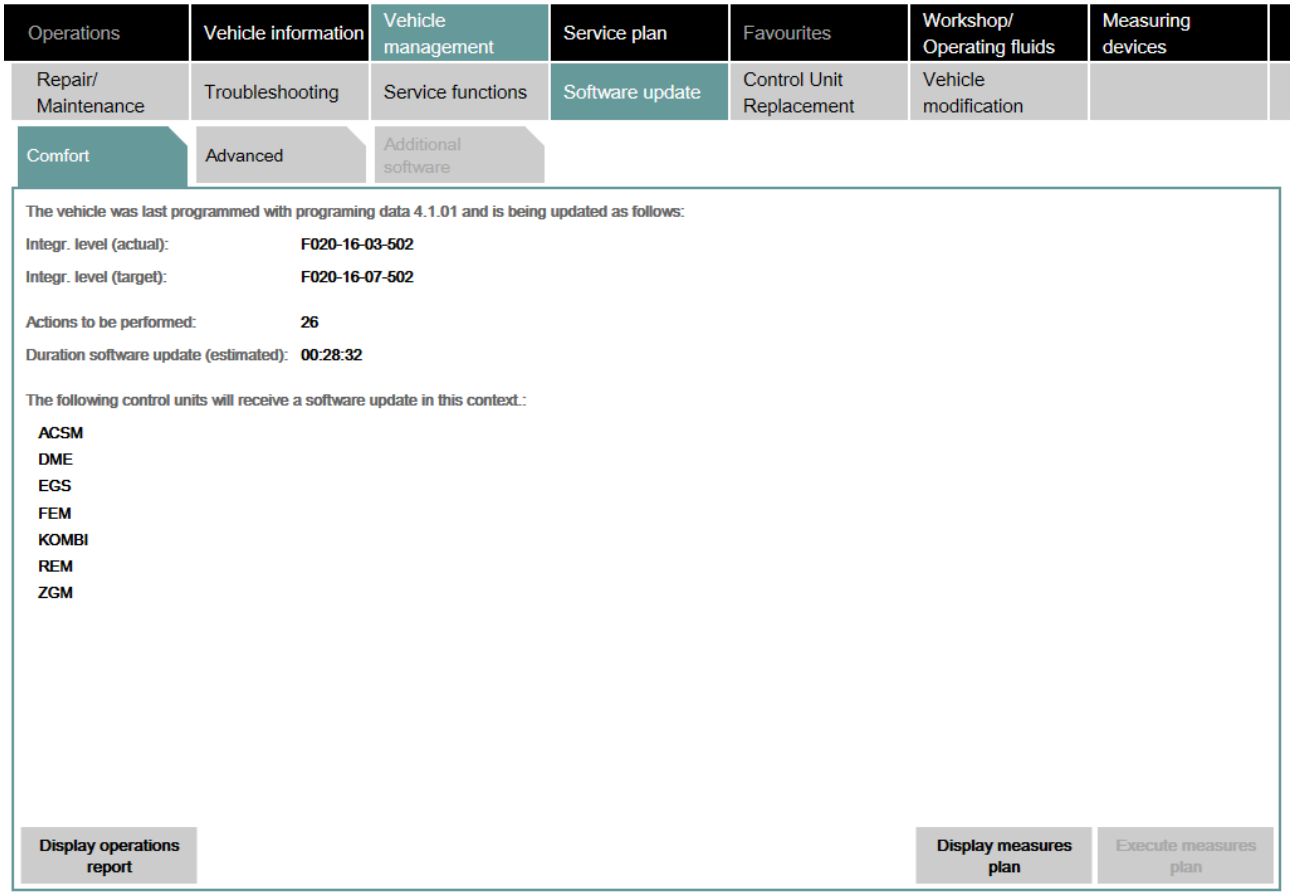

Figure 19 Comfort / Comfort

At the start of executing the measures plan, the prerequisites for programming are displayed. These have to be obeyed and confirmed. The specifications in chapter "Preparation for the programming" are also to be heeded in this regard.

The end of the software update is indicated with a message and must be acknowledged. If there are still open actions, the measures plan is automatically displayed after acknowledging the message.

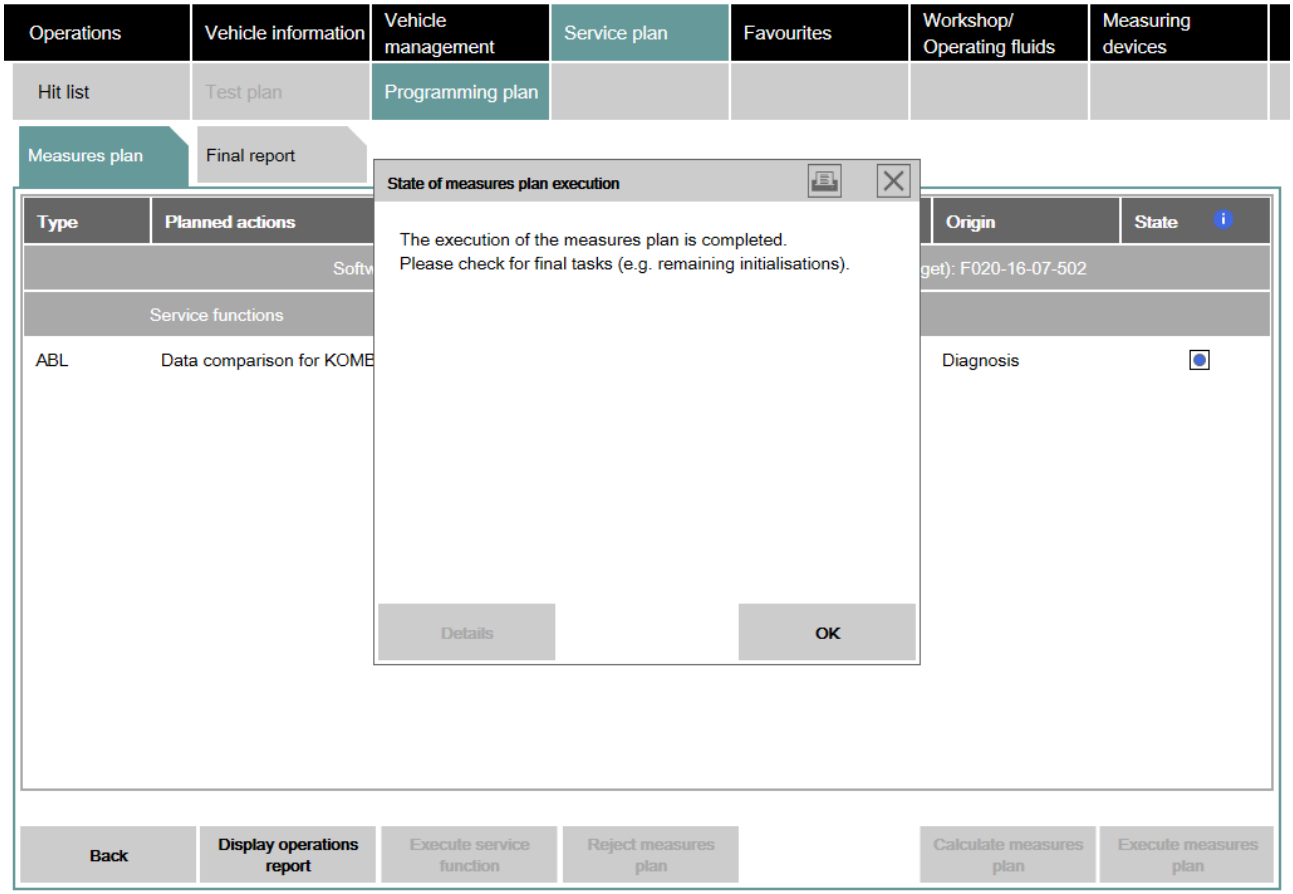

Figure 20 End of measures plan execution

In order to guarantee start-up of the programmed vehicle, the final service functions from the measures plan must be implemented, see section “Subsequent evaluation and final service functions”.

Once the measures plan and service functions have been completed, the "Final report" is displayed which documents the work performed.

3.8.2.2 Advanced

With "Software update" / "Advanced", you can manually select control units for programming or encoding in addition to a previously calculated measures plan.

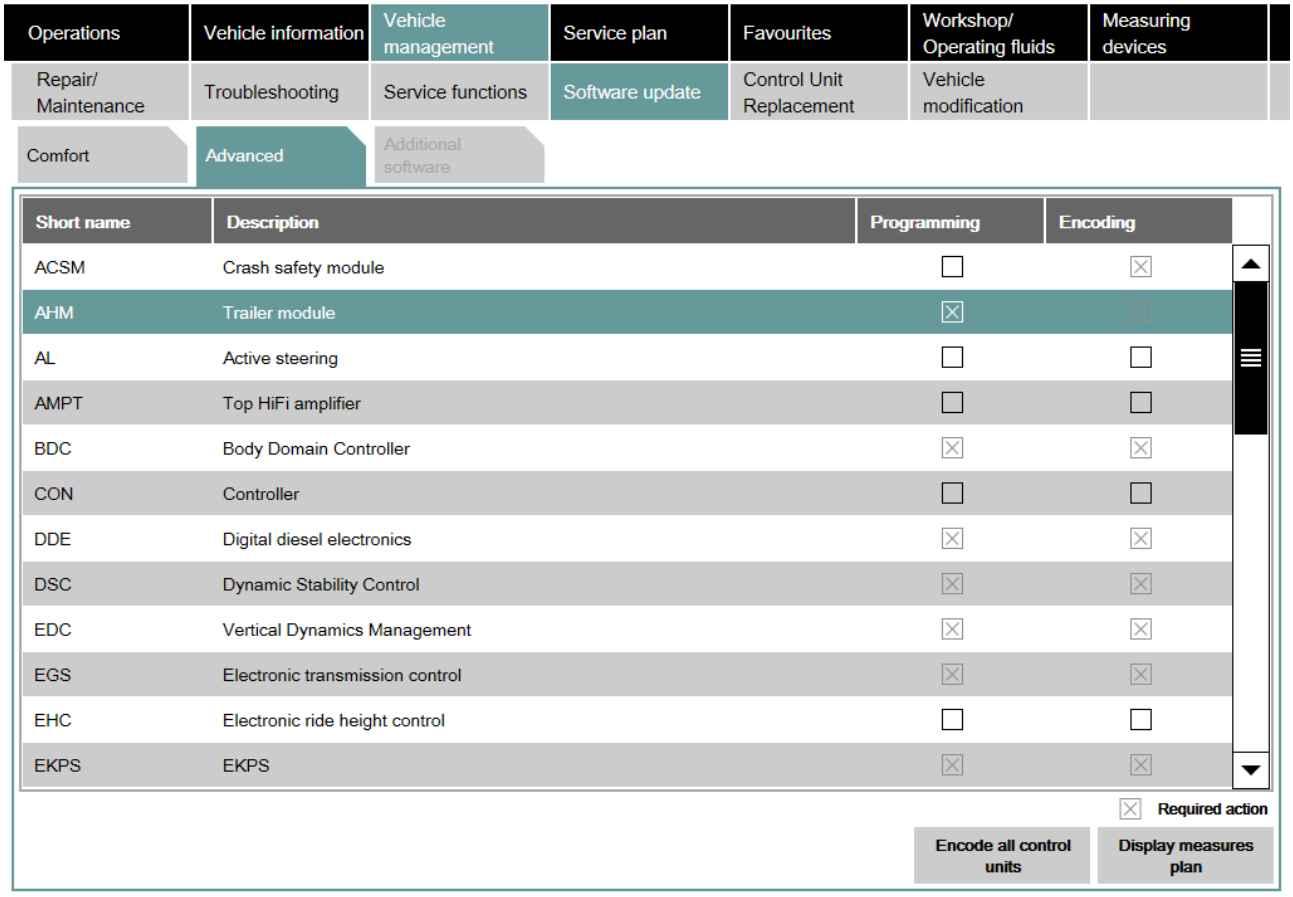

Figure 21 Advanced / Advanced

The measures plan is supplemented accordingly. Press the "Display measures plan" button to open the "Measures plan" tab.

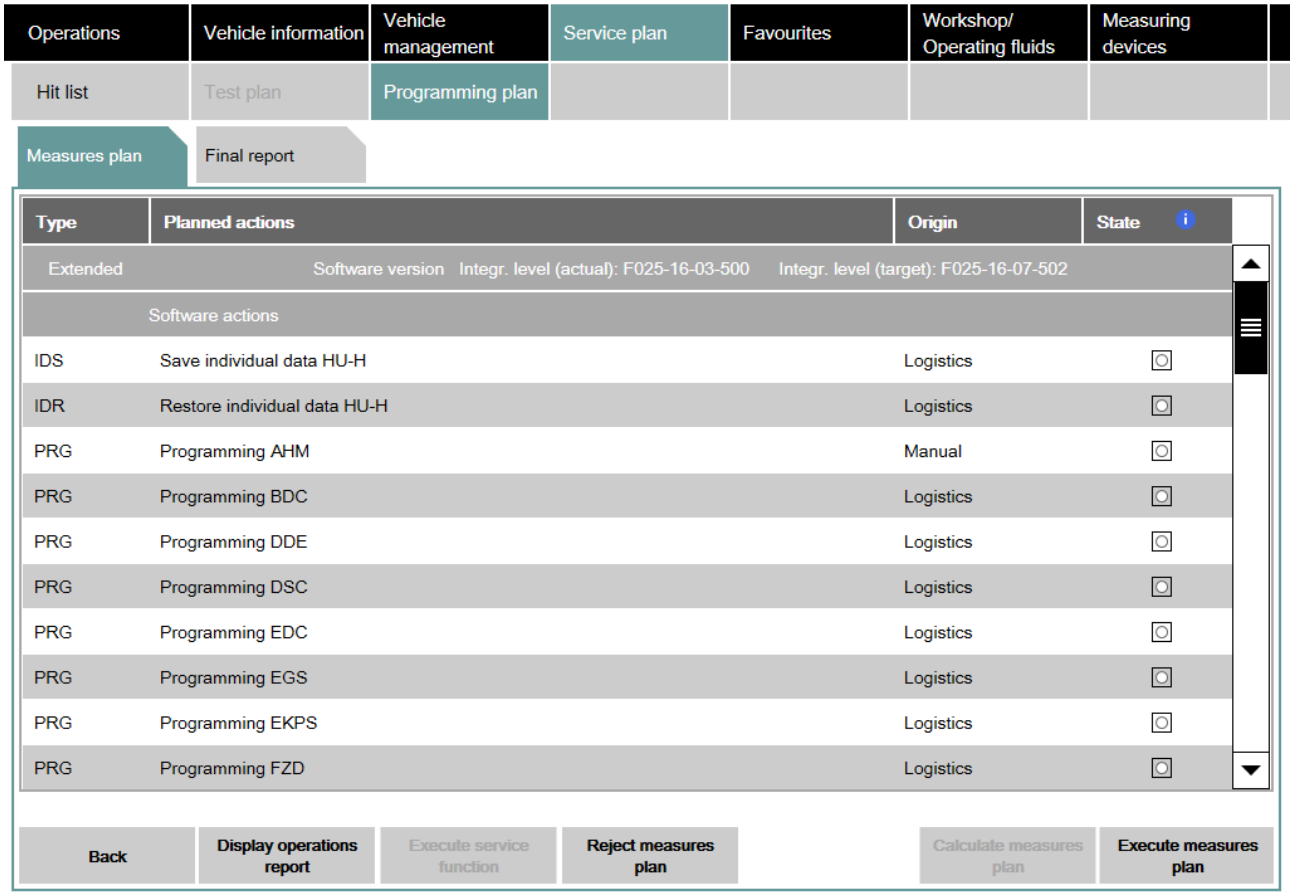

Figure 22 Manually expanded measures plan

Pressing the "Calculate measures plan" button updates the measures plan to include the manually added actions; pressing the "Execute measures plan" button then executes it.

At the start of executing the measures plan, the prerequisites for programming are displayed. These have to be obeyed and confirmed. The information in the section “Specifications in preparation for the programming” are also to be heeded in this regard.

The end of the software update is indicated with a message and must be acknowledged, see figure End of measures plan execution.

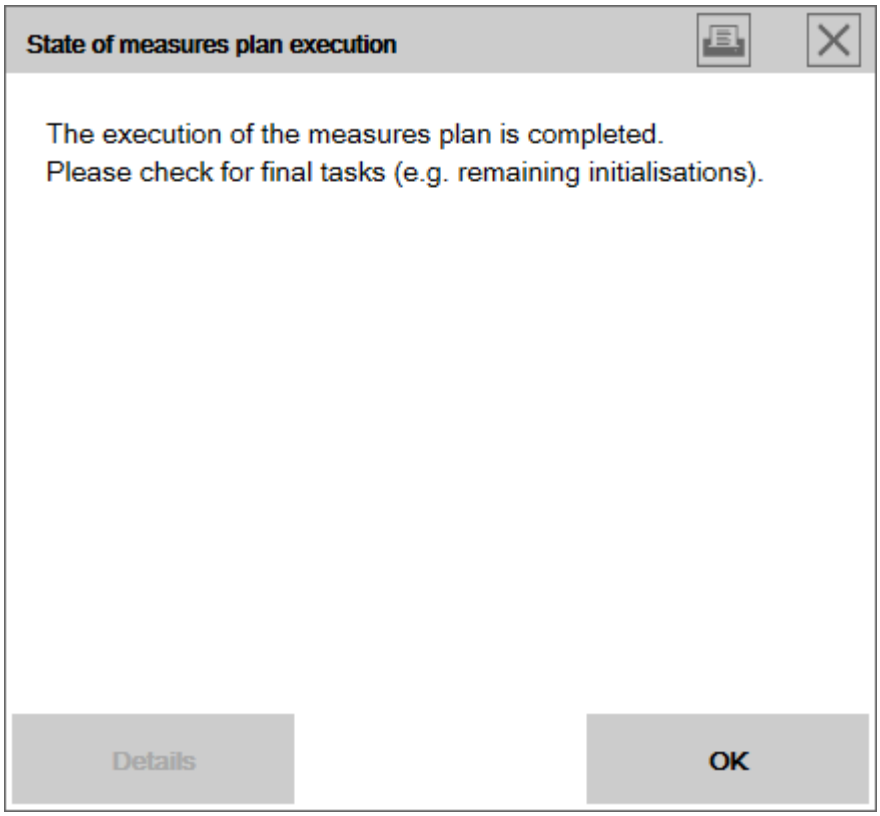

Figure 23 End of measures plan execution

In order to guarantee start-up of the programmed vehicle, the final service functions from the measures plan must be implemented, see section “Subsequent evaluation and final service functions”.

Once the measures plan and service functions have been completed, the "Final report" is displayed which documents the work performed.

3.8.3 Control unit replacement

In order to guarantee the operability of new control units, it is necessary to set the control units, via software, encoding and, where necessary, enabling, to a compatible version in the vehicle. In addition, control unit-specific data, e.g. individual data, must be read out from the control unit to be exchanged and transferred to the new control unit. This is carried out as part of the guided exchange.

The control unit can be exchanged in two ways:

1. Guided exchange (standard)
2. Unguided exchange

The detailed procedure can be found in "After exchange" section.

Before exchange

Before exchange, the control unit is selected in the corresponding tab, and thus noted for exchange when the measures plan is being calculated. In control units with individual data a safeguard is automatically added to the measures plan.

The procedure for the guided exchange is as follows:

1. Select the control unit on the "Before Replacement" tab.
2. Calculate and execute measures plan.
3. Check final report for any notes or instructions and take them into account.
4. End operation and carry out control unit exchange at the vehicle.

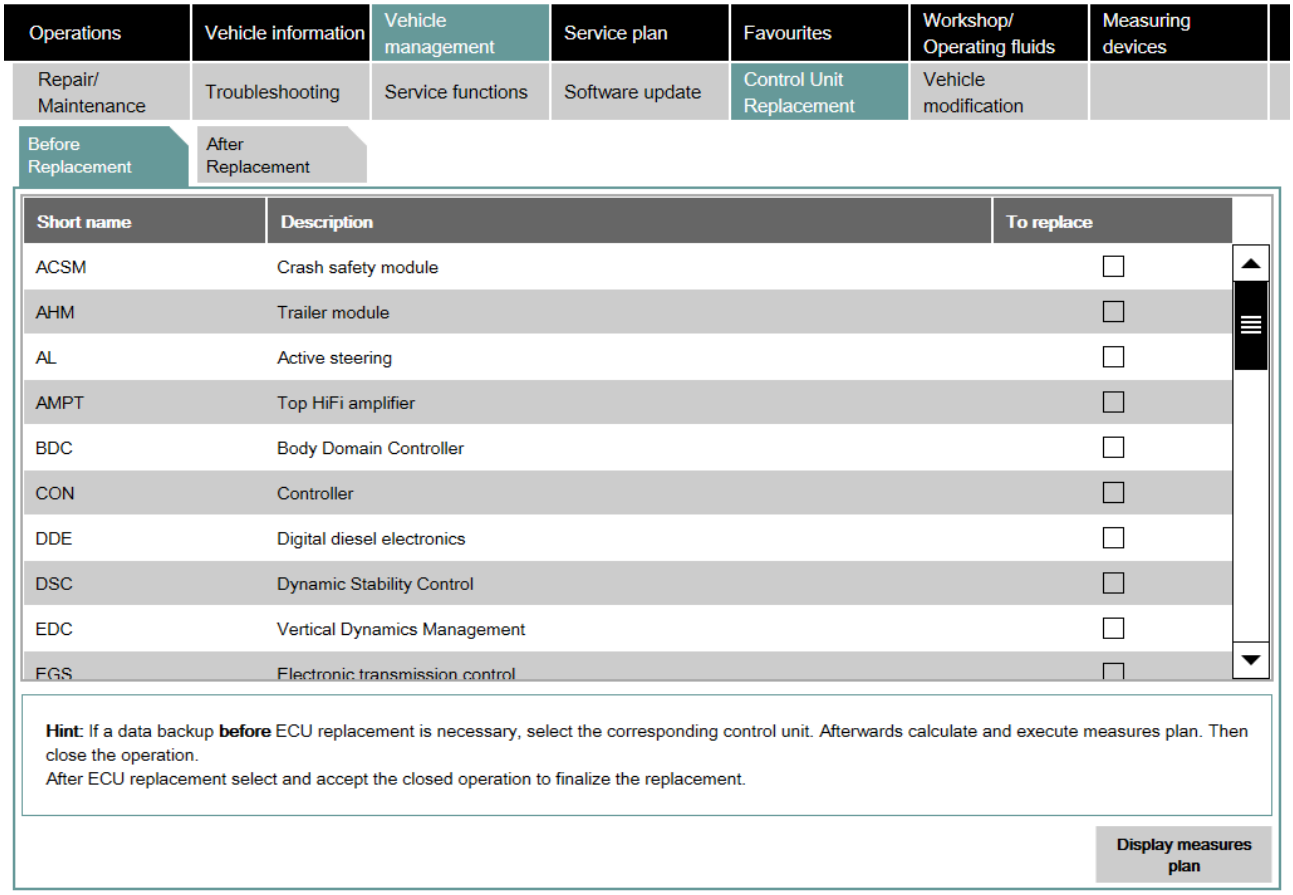

Figure 24 Before exchange / Before Replacement

After exchange

After the exchange it is necessary to distinguish whether it involves a guided or unguided control unit exchange.

- Guided exchange (all steps from the "Before exchange" section have been carried out): If the vehicle is connected to the ISTA workshop system again after control unit exchange and the previous operation is resumed (see chapter Continuing an operation), the exchange can be completed by carrying out the calculated measures plan. The exchanged control unit is already in the measures plan.
- Unguided exchange (steps in "Before exchange" section have not been carried out):

In the case of an unguided exchange, the exchanged control unit must always be selected on the "After Replacement" tab, so that the control unit exchange that has already been performed is taken into account in the measures plan calculation. The procedure in this case is as follows:

1. Select the control unit on the "After Replacement" tab.
2. Calculate and execute measures plan.
3. Check final report for any notes or instructions and take them into account.

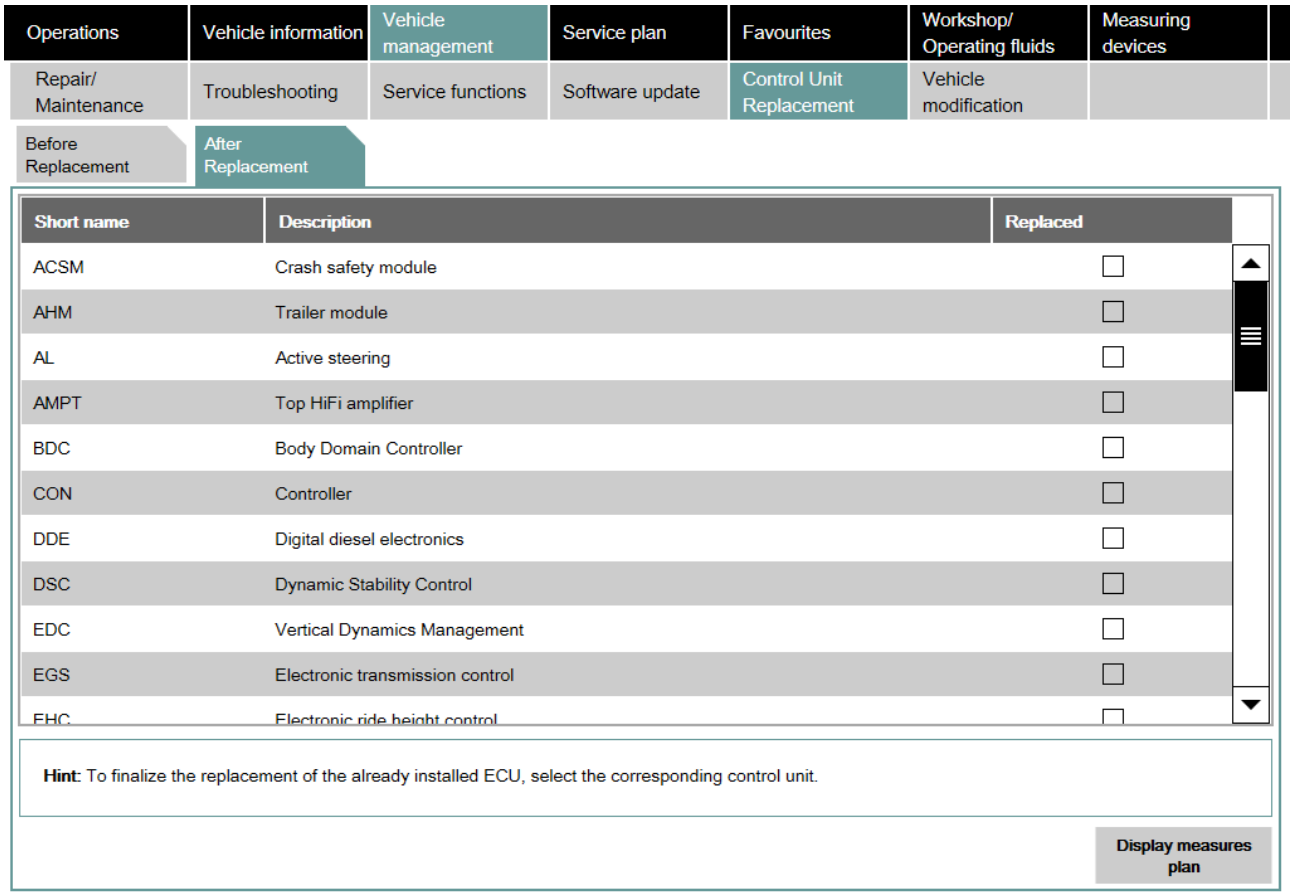

Figure 25 After exchange / After Replacement

	If a control unit exchange is carried out without the steps on the "Before Replacement" tab, the control unit must always be selected on the "After Replacement" tab. The necessary test modules for subsequent evaluation of the exchange are therefore taken into consideration in the measures plan.

3.8.4 Vehicle modification

The "Vehicle modification" tab provides access to the following functions:

- Retrofit
- Conversion
- Conversion (encoding only)
- Removal of retrofit/conversion
- Immediate measures

SWT/IBAC enabling code-protected retrofittings/conversions

Protection via SWT (Sweeping Technology) enabling code

Some retrofittings and conversions are protected by inputting enabling codes. When selecting such retrofittings/conversions the user is informed of the requirement to purchase an enabling code.

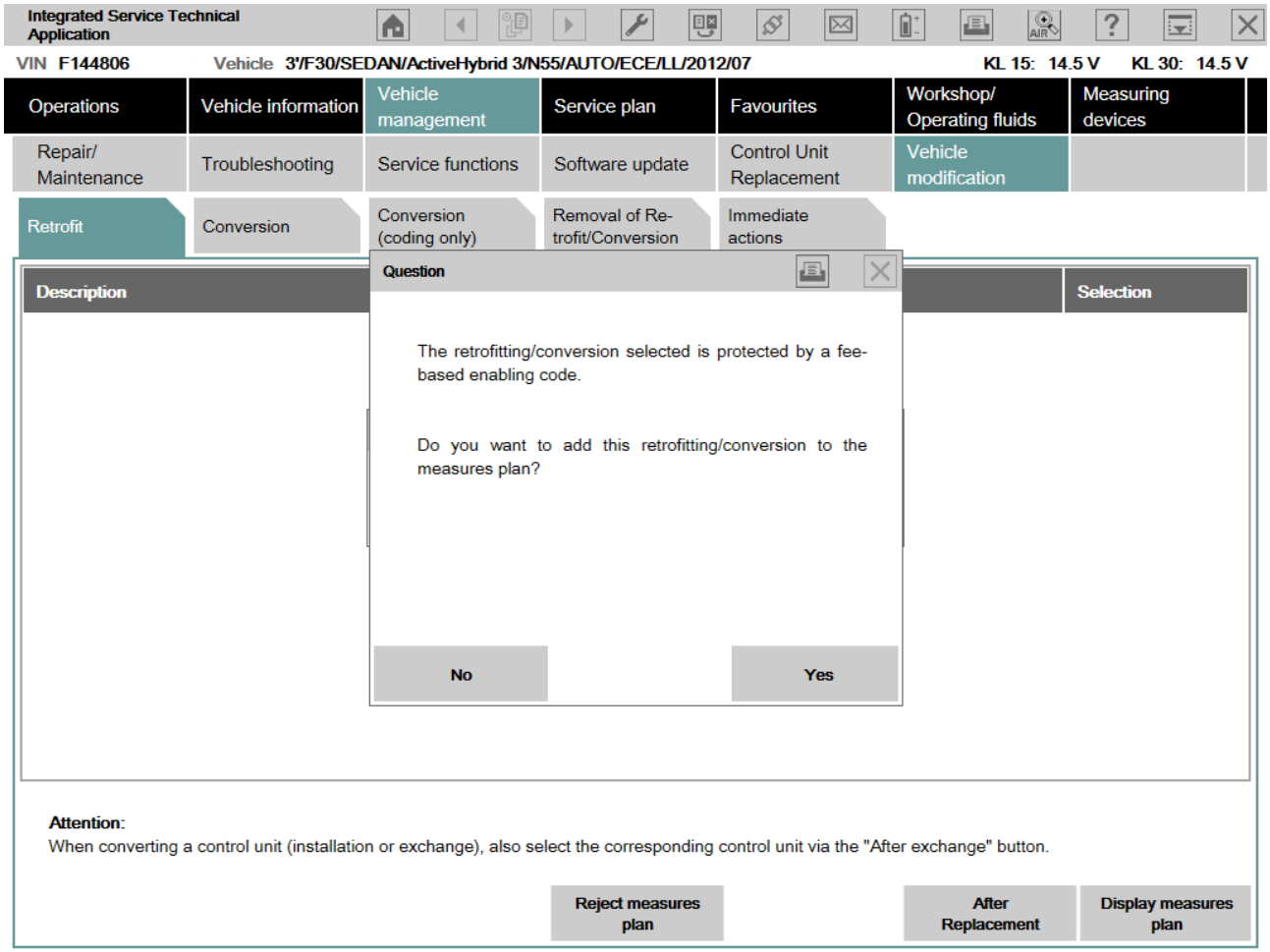

Figure 26 Note when selecting an enabling code-protected retrofitting

The enabling code is queried at the start of the measures plan execution. In this case the enabling code is only checked by ISTA and is not written in the control unit.

Protection via IBAC enabling code

Execution stops and a few conversions and retrofits are protected by entering IBAC enabling codes (Internet based calculation of enabling codes).

The IBAC enabling code can be requested from the relevant technical market support body. The IBAC enabling code is valid for 30 days.

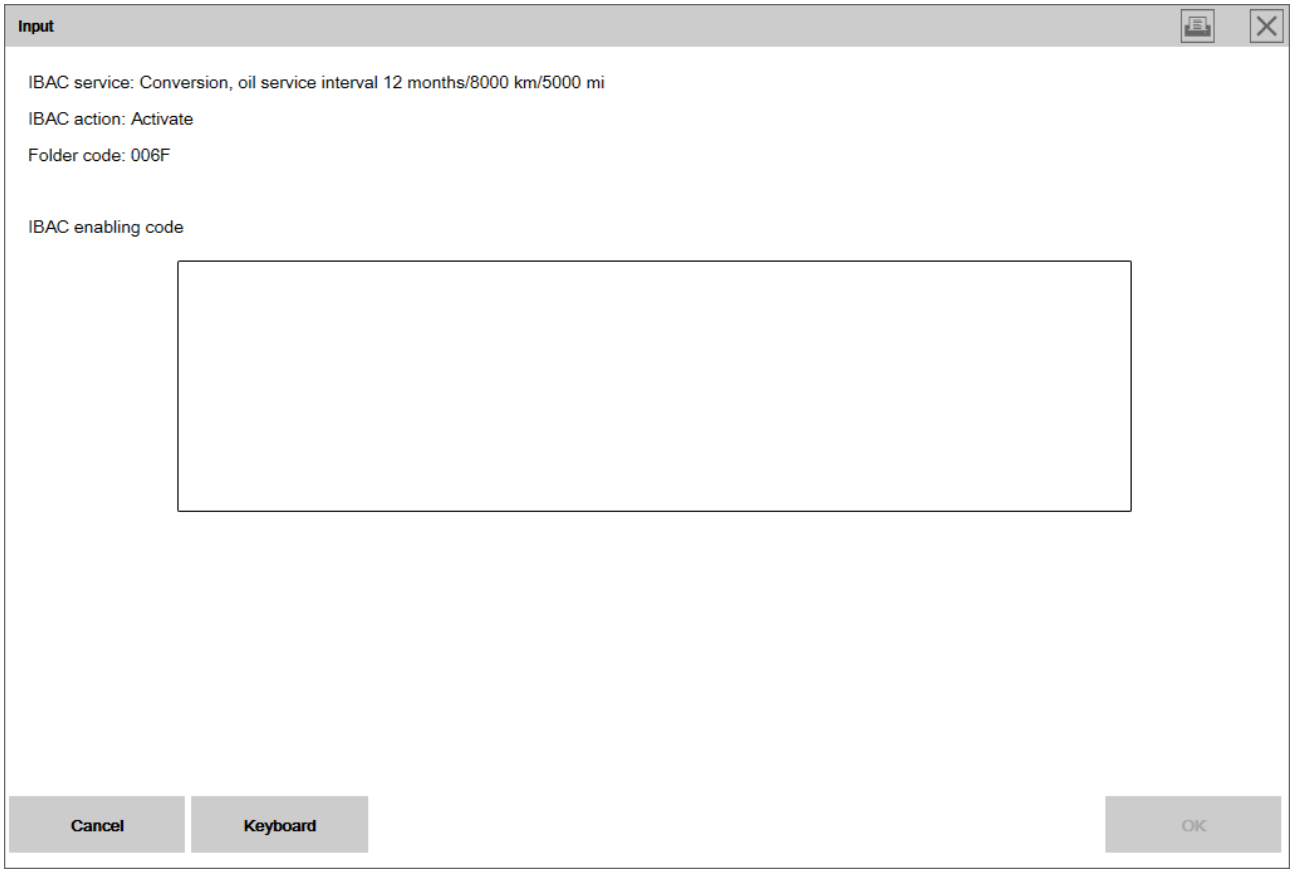

Figure 27 IBAC enabling code

The following data are necessary to generate IBAC enabling codes:

- IBAC order code (or selected conversion) is displayed after selecting the conversion or retrofit.
- Seven digit vehicle identification number
- Retailer number

3.8.4.1 Retrofit

The "Retrofit" tab presents all the retrofits available for the vehicle in alphabetical order. For retrofitting, remounting on the vehicle as well as programming is necessary.

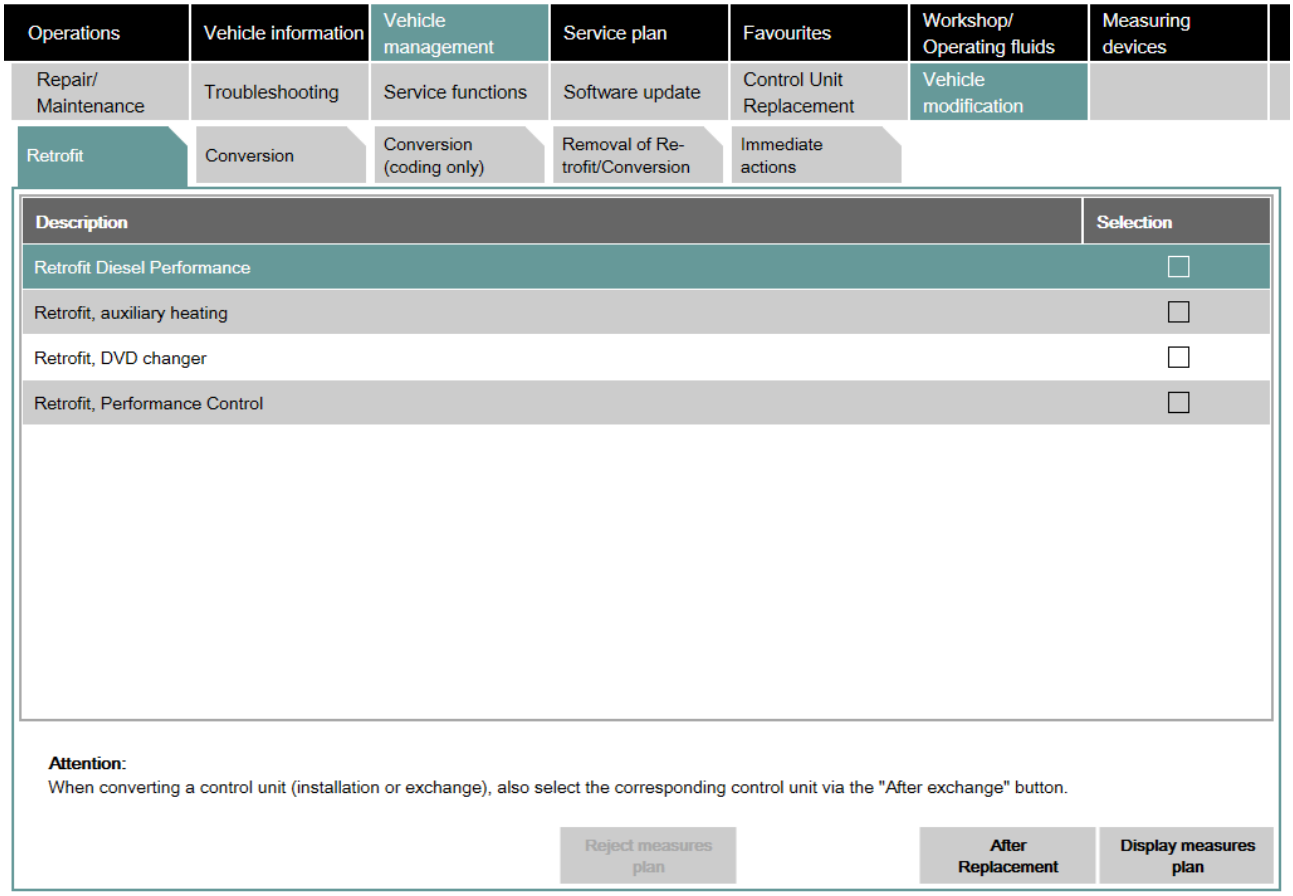

Figure 28 Retrofitting / Retrofit

Detailed product information on every retrofitting is available in the Aftersales Assistance Portal (ASAP).

3.8.4.2 Conversion

The "Conversion" tab presents all the conversions available for the vehicle in alphabetical order. For conversions, remounting on the vehicle as well as programming may be necessary.

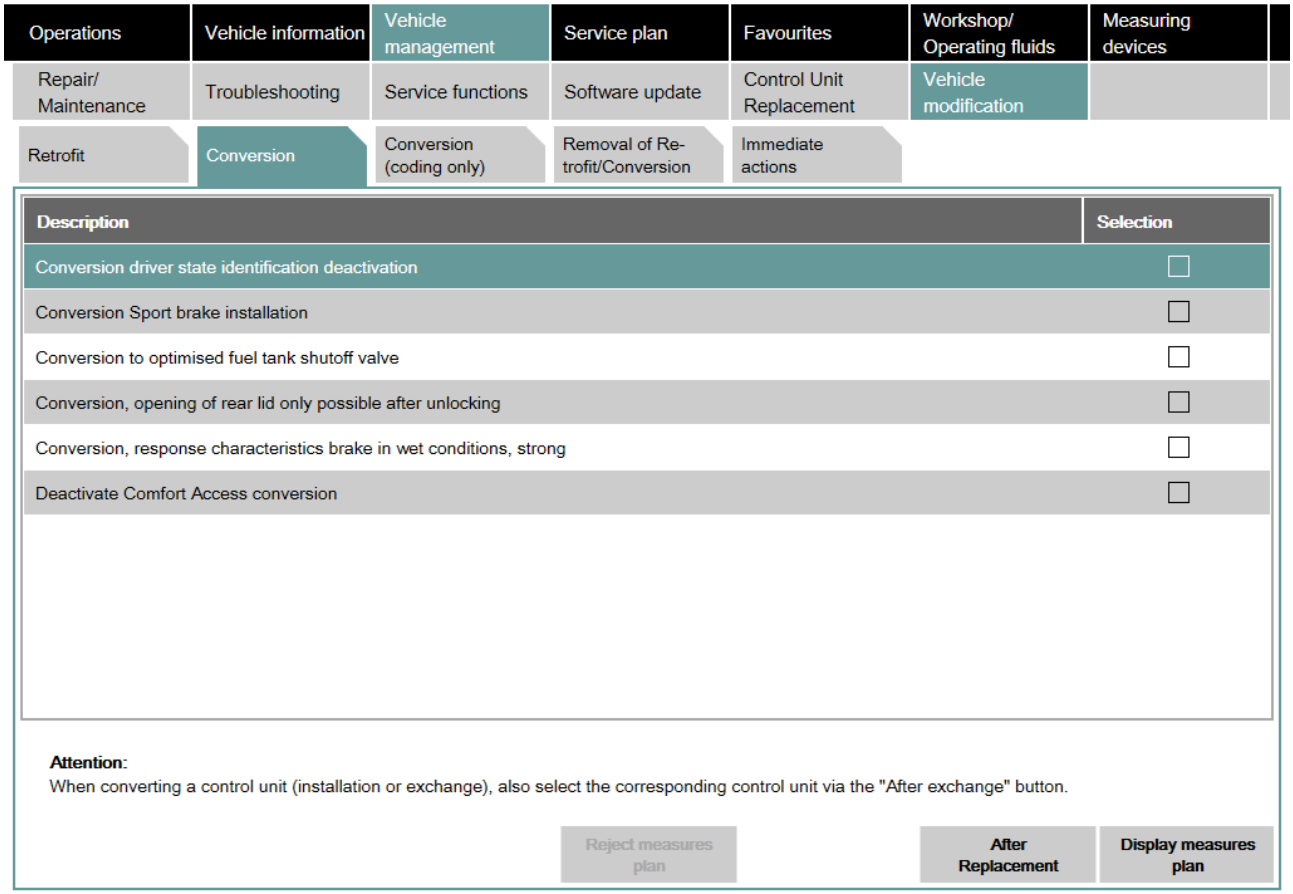

Figure 29 Conversion / Conversion

More detailed information on the conversions is documented in PuMA, or in the Service Information Bulletin in the USA.

3.8.4.3 Conversion (only coding)

The "Conversion (coding only)" tab presents all the conversions available for the vehicle that can be performed without programming (with encoding only). In this process, the vehicle stays at the same I level, and new functions are activated by means of encoding.

If an encoding conversion is selected, any measures plan which is present is discarded and the system switches to the "coding conversion mode"; see figure Switching to the coding conversion mode . No other actions can be added to the measures plan, except further encoding conversions. The measures plan must be recalculated and executed. In order to exit "coding conversion mode" without executing the measures plan, the measures plan must be discarded.

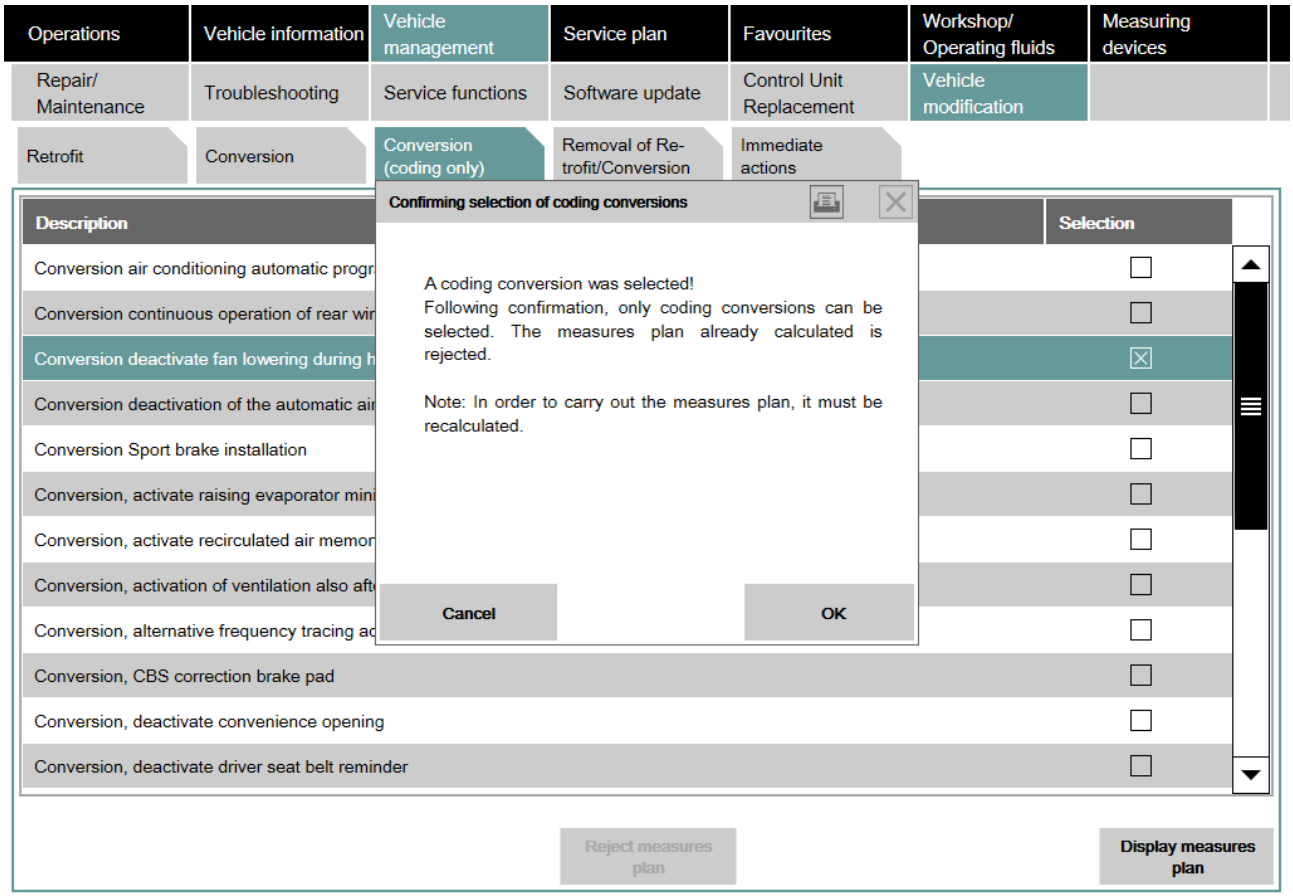

Figure 30 Switching to the coding conversion mode

If a control unit was marked on the "After Replacement" tab as exchanged or if a retrofit or conversion was selected before an encoding conversion, the encoding conversion is handled as a normal retrofit/conversion.

3.8.4.4 Backfitting

The "Removal of Retrofit/Conversion" tab presents all the removals of retrofits/conversions available for the vehicle in alphabetical order. For removals of retrofitting/conversion, remounting on the vehicle as well as programming may be necessary.

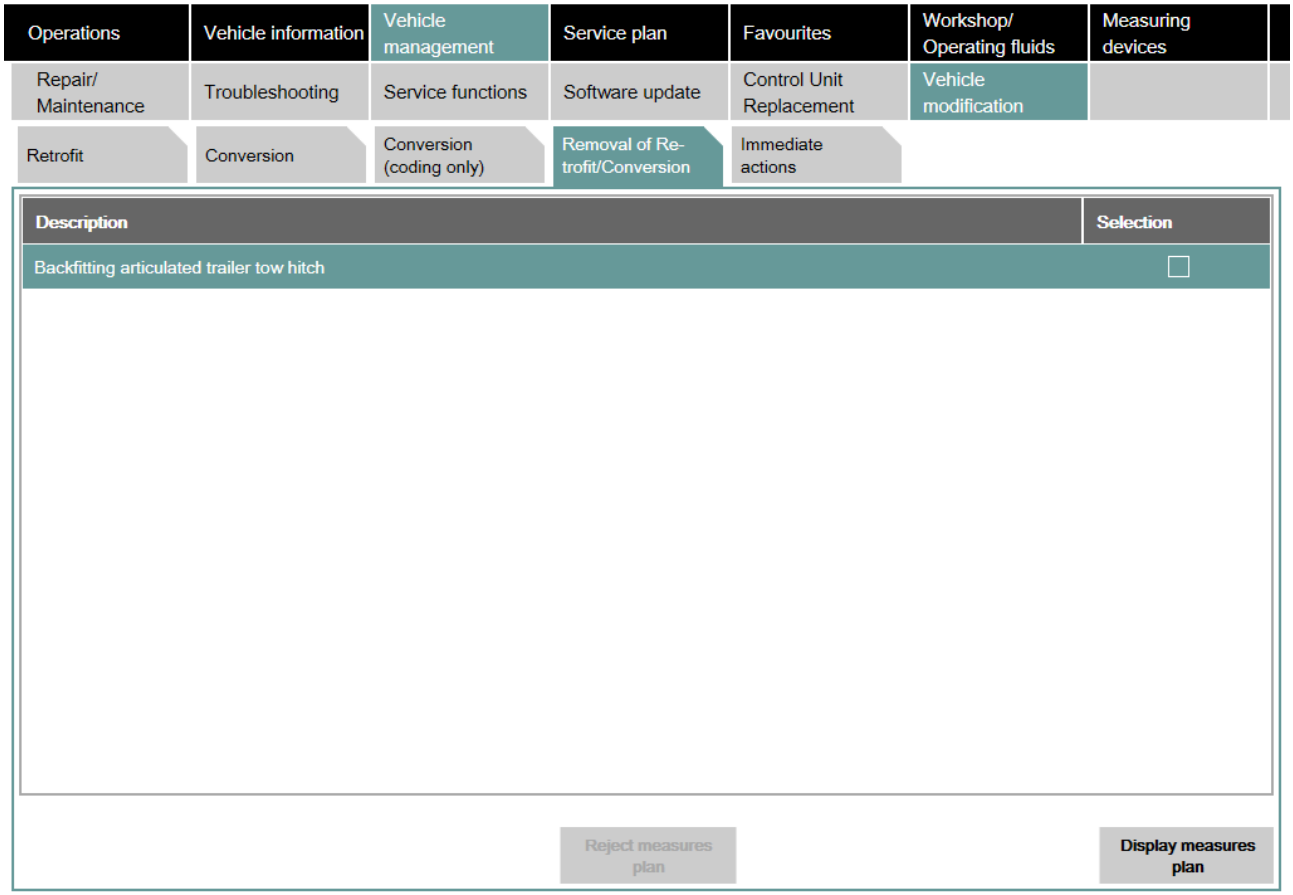

Figure 31 Removal of retrofit/conversion / Removal of Retrofit/Conversion

3.8.4.5 Immediate measures

The "Immediate actions" tab provides the option of importing a vehicle order.

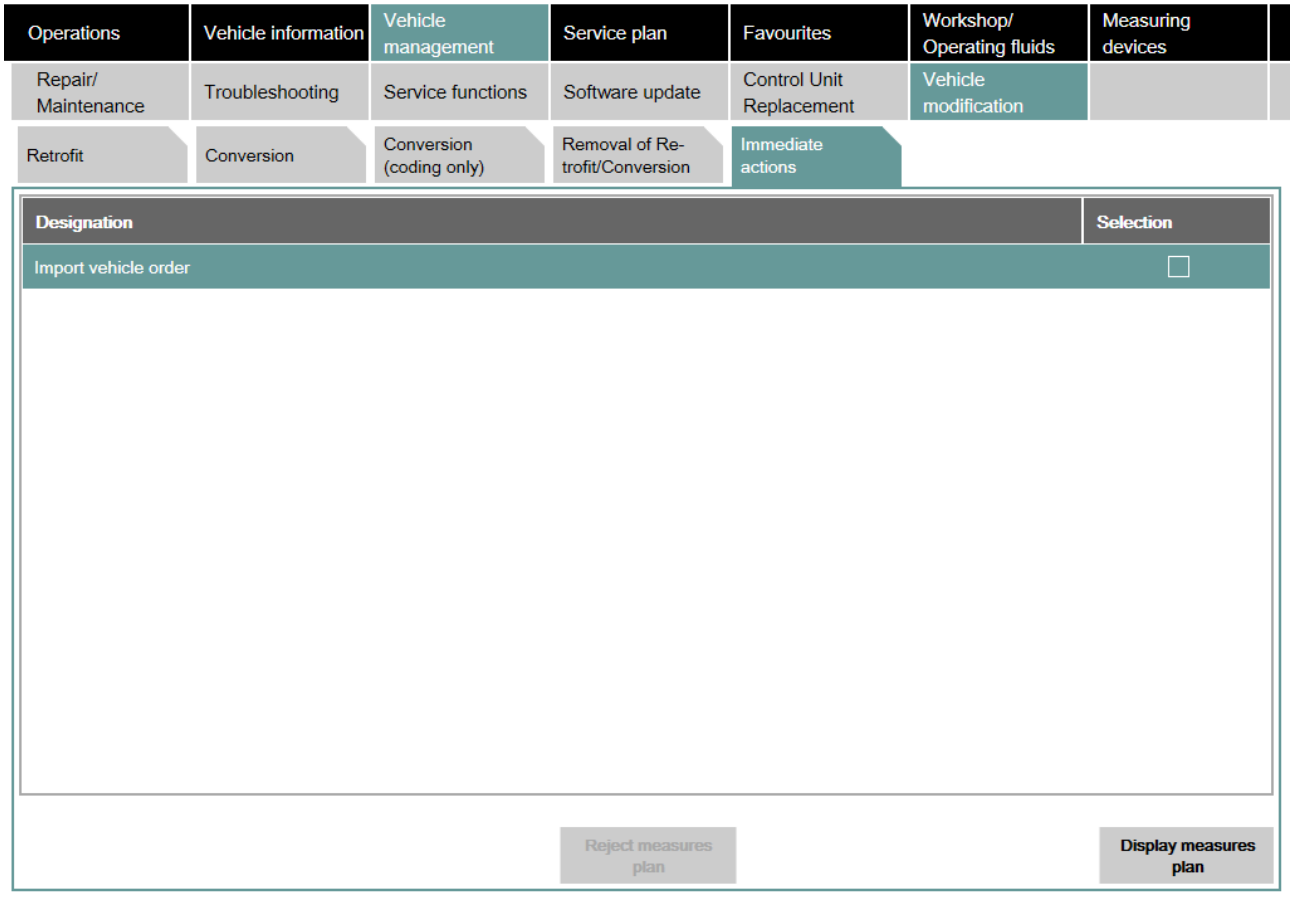

Figure 32 Immediate measures / Immediate actions

Import of vehicle order

Activating the selection field in the "Selection" column starts the import of the vehicle order; see "Start of vehicle order import".

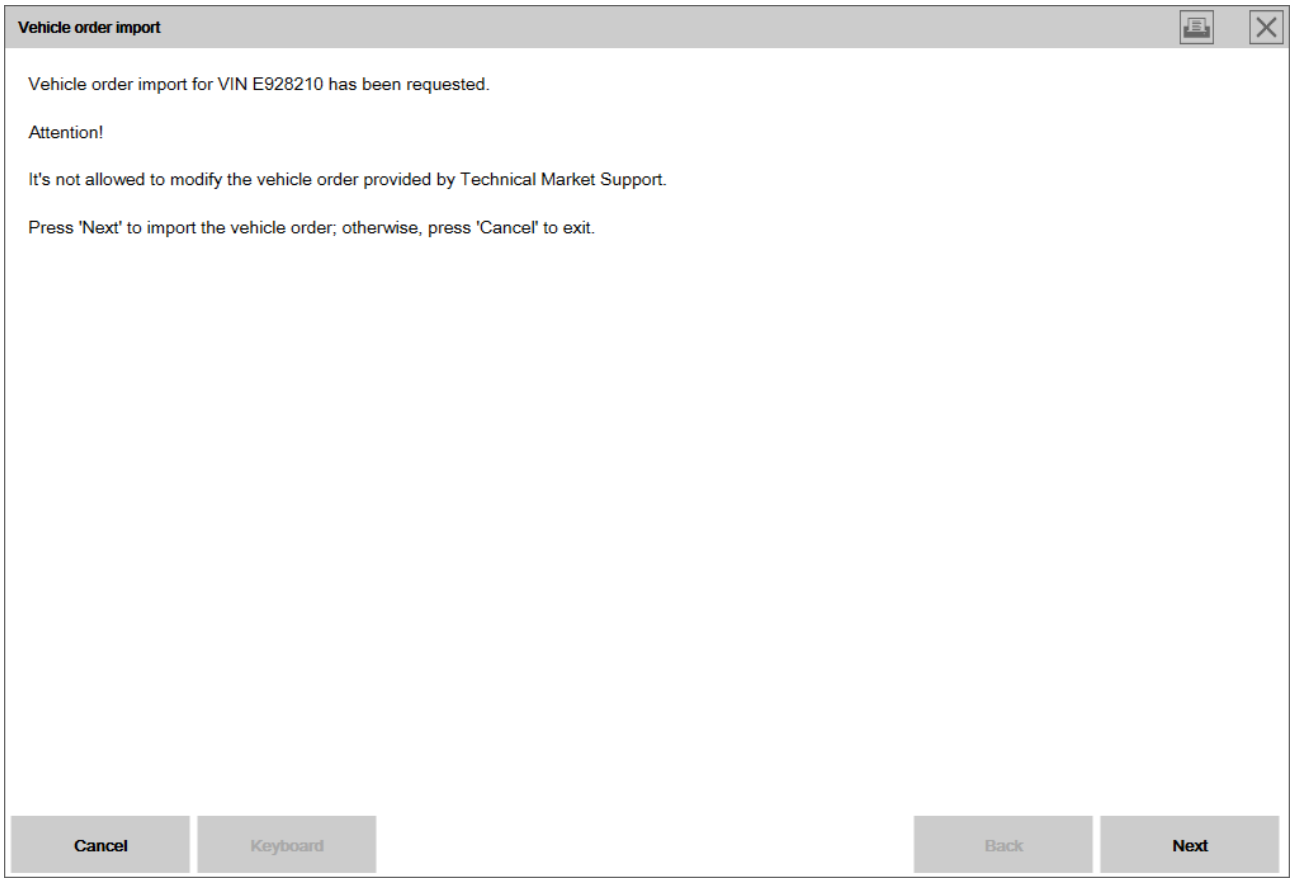

Figure 33 Start of vehicle order import

Two different data sources can be accessed for importing the vehicle order to the vehicle:

- Online import: During the operation the vehicle order can be imported as an online download in ISTA independently of Technical Support. For the online import a distinction can be made between the vehicle status or the version of the vehicle order.
- Import from local directory: The vehicle order is made available by Technical Support and can be imported during the operation via a removable medium or from the local directory in ISTA.

After selecting the vehicle order to be imported, the differences between it and the existing vehicle order in the vehicle are displayed; see "Differences in the vehicle orders".

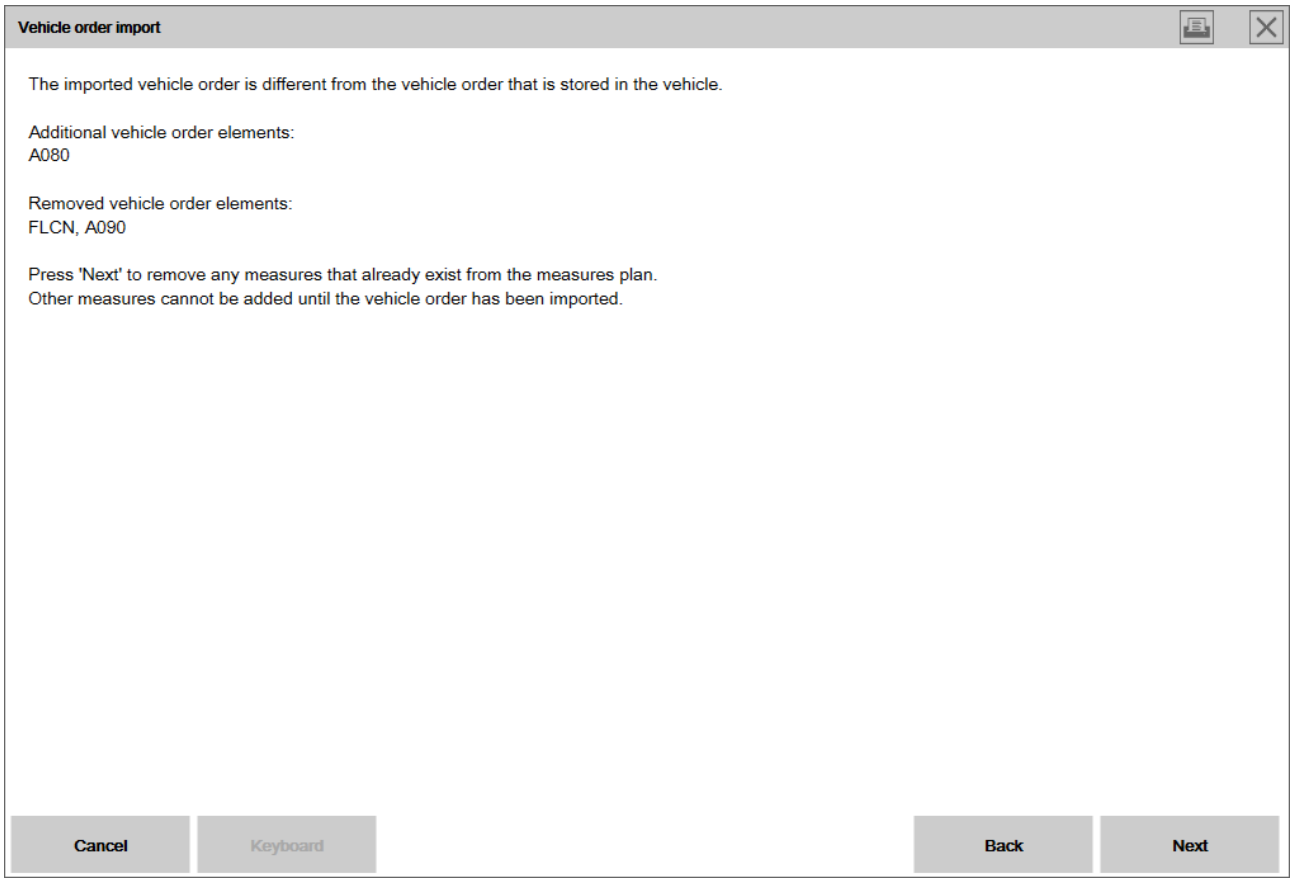

Figure 34 Differences in the vehicle orders

Finally the measures plan must be calculated and carried out by clicking the corresponding button, otherwise no further actions can be added to the measures plan.

3.8.5 Measures plan

Programming is always performed via a measures plan. After the vehicle test, the target context is calculated in the background. The measures plan calculation starts automatically by selecting any programming tab. The contents of the measures plan are shown on the "Measures plan" tab.

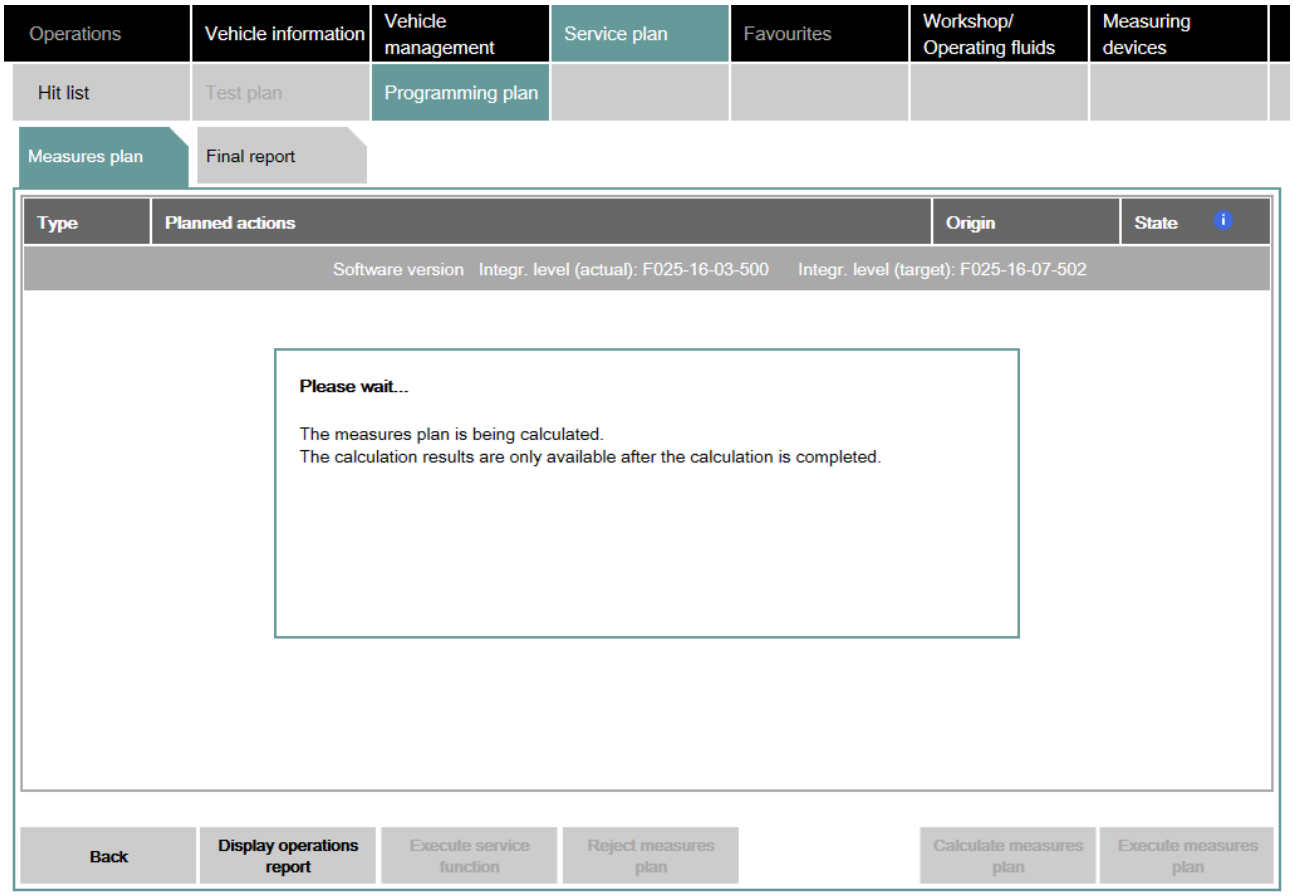

Figure 35 Measures plan calculation

During this time diagnostic ranges can be performed without restriction using the ISTA. The calculated measures plan can be executed via "Software update" / "Comfort"; see section "Comfort".

For information on the vehicle test, see chapter "Testing vehicle".

Depending on necessary work – such as control unit exchange, vehicle modification, etc. – the measures plan must be manually supplemented prior to execution via the relevant programming tabs and recalculated before execution.

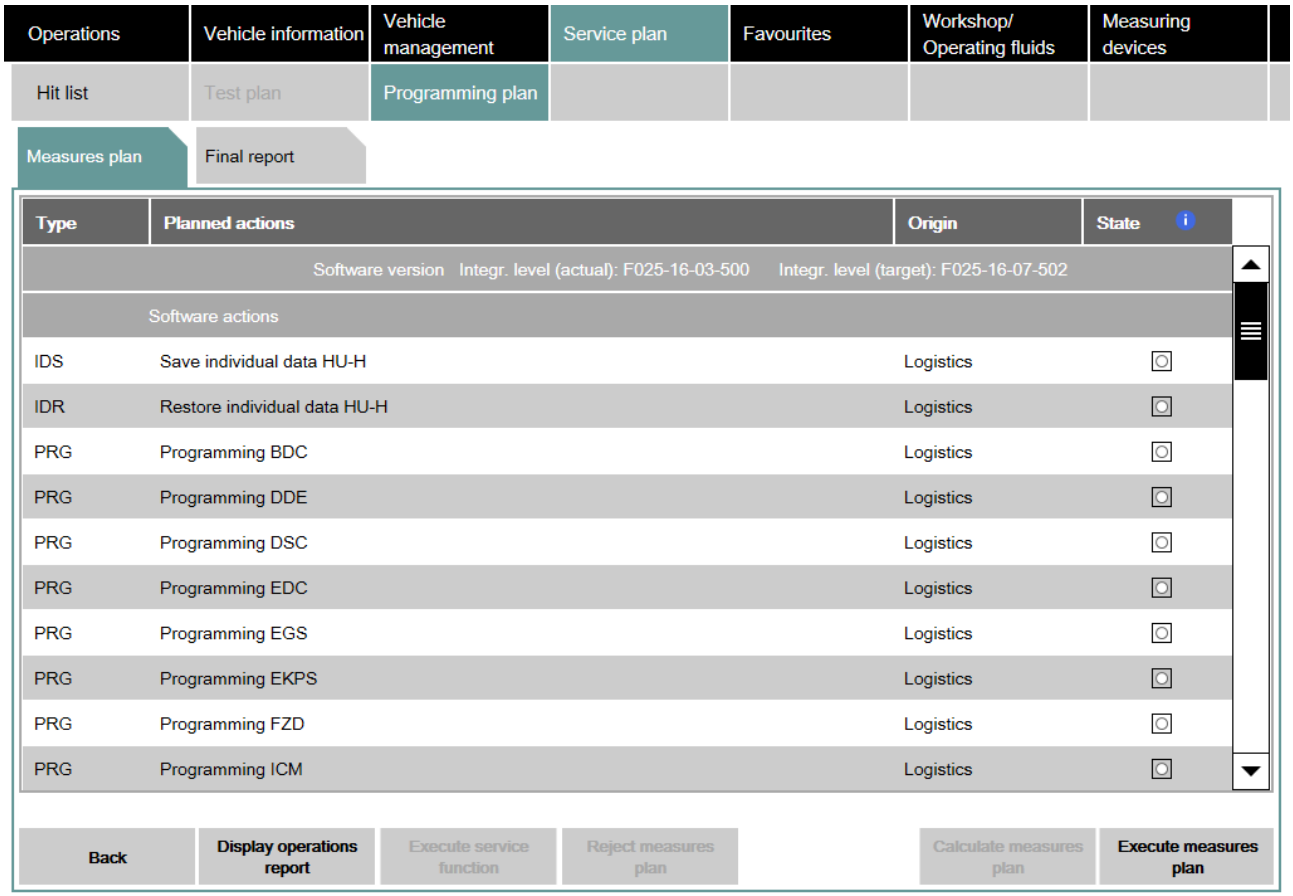

Figure 36 Measures plan / Measures plan

The measures plan contains necessary programming, encoding and test modules for programming/encoding/exchange preparation and subsequent evaluation, as well as service functions to be performed manually.

Power economy mode

When power economy mode is started, the target context is not calculated in the background. The user is informed of this on the tabs for programming. When "Calculate measures plan" is activated, first the power economy mode is reset and then the measures plan is calculated.

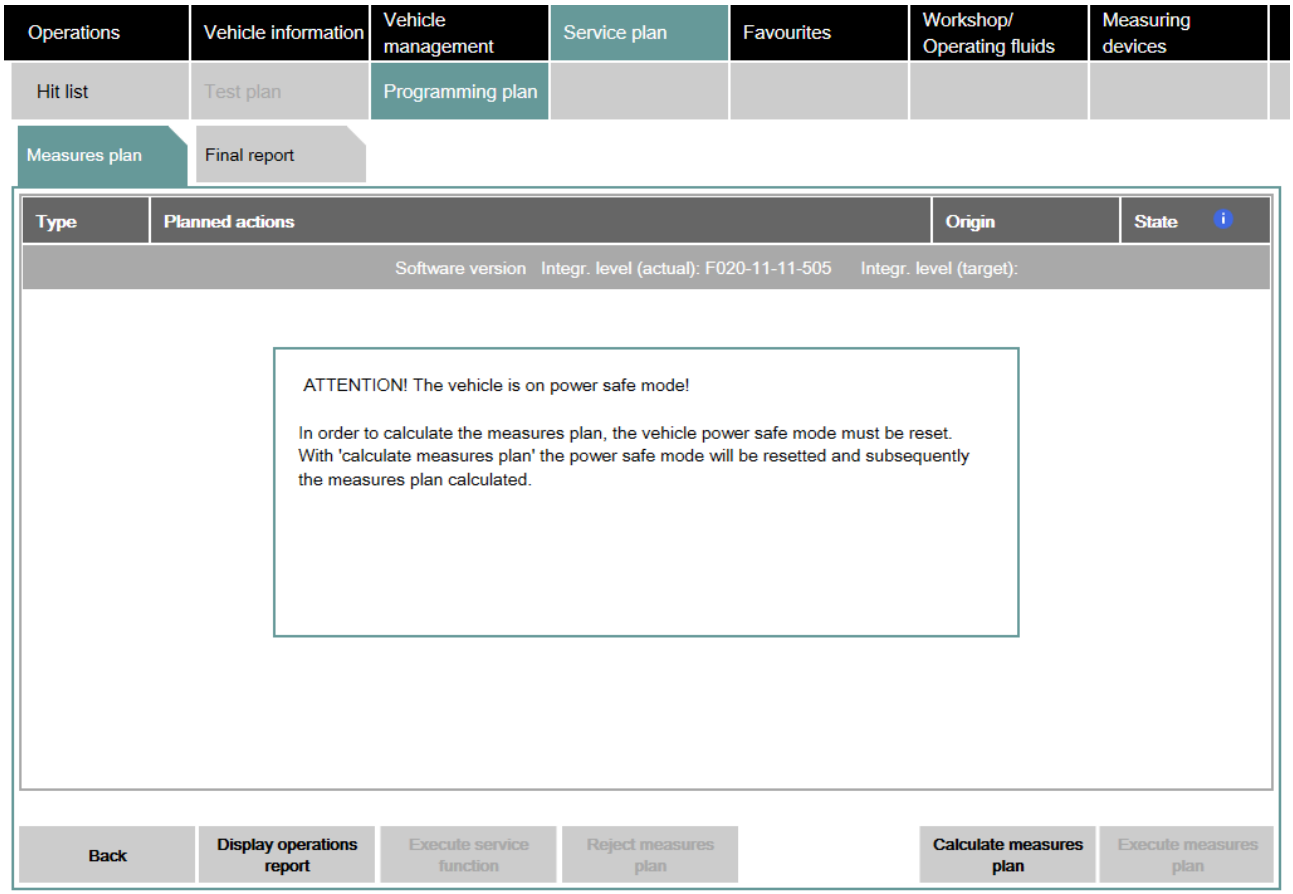

Figure 37 Note on activated power economy mode

3.8.6 Subsequent evaluation and final service functions

After programming, subsequent evaluations like adjustments, initialisations are automatically carried out under "Pre-/post-programming follow-up operations". Only the service functions from the measures plan should be carried out manually.

	If automatic follow-up operations fail, they will be scheduled for manual execution in the measures plan under "Service functions".

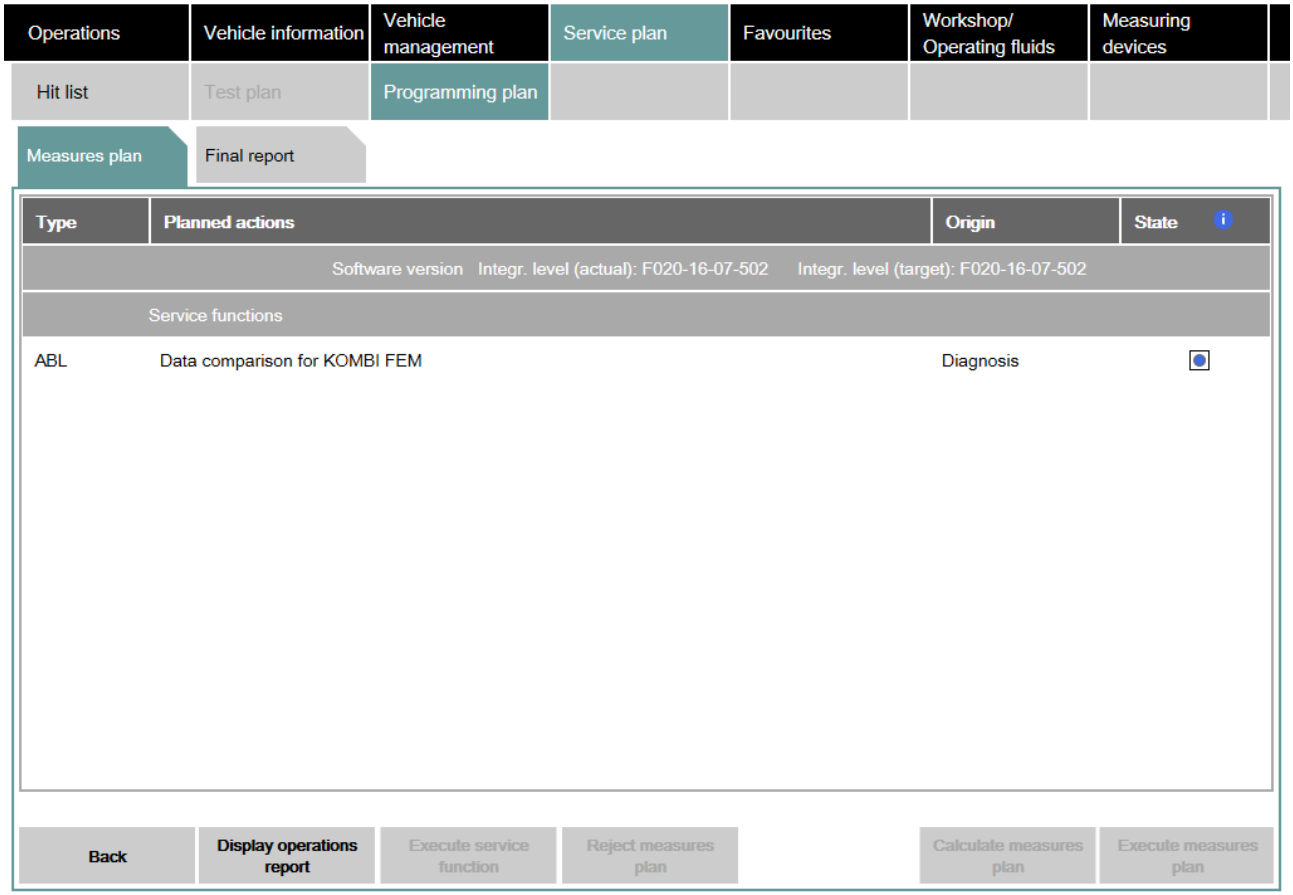

Figure 38 Necessary final service functions

It is imperative to carry out the service functions in order that the vehicle can be handed over trouble-free to the customer. To do this, separately select each service function to be carried out and press the "Execute service function" button. After the service function starts, follow the additional instructions.

Once the measures plan is complete, please check the following points:

- After programming, re-insert or re-connect al removed and disconnected data carriers (CD, DVD, USB, iPod®, etc.) and check them.
- Check the Bluetooth pairing of mobile phones in the vehicle, and couple if necessary.
- F, G, I and subsequent series: Import user profiles via the USB port in the glove box.
- Allow vehicle to go to sleep for safety (allow standstill for at least five minutes with terminal R OFF).
- Finally check that the vehicle has no faults.

3.8.7 Final report

Once a measures plan with the necessary service functions has been completely executed, the system switches automatically to the "Final report" tab. The processing of the measures plan is completed here.

The final report lists the actions that have been executed in the measures plan and their execution status.

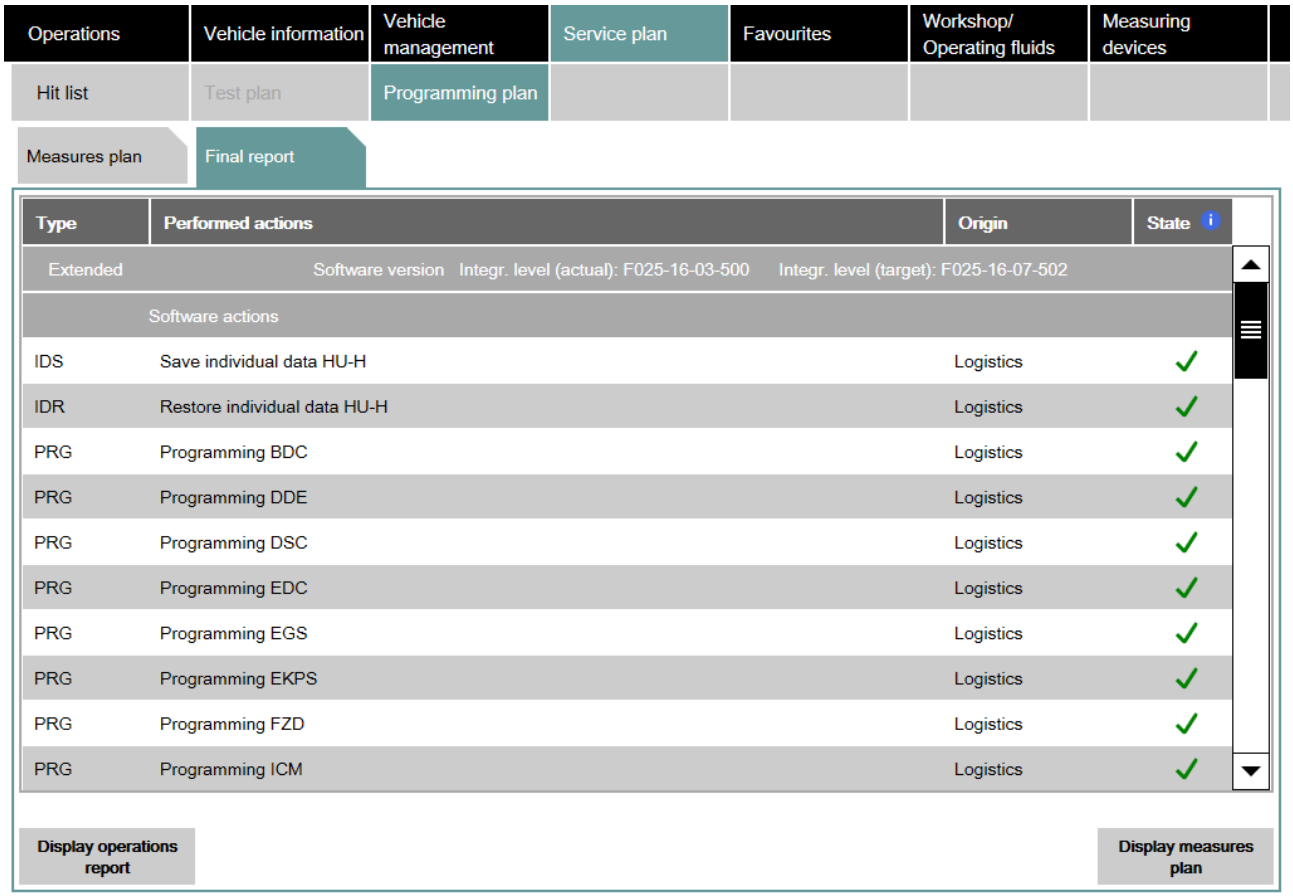

Figure 39 Final report / Final report

To display and print the operations report, press the "Display operations report" button.

3.8.8 Execution stop

The execution stop prevents defective software being transferred via programming to customer vehicles.

There are two types of execution stops:

- General execution stop
- Execution stop with override option using an IBAC enabling code

If a general execution stop exists, the vehicle cannot be programmed with the current ISTA version. The remaining applications supported by ISTA like diagnosis and repair are not affected by the execution stop and can always be carried out.

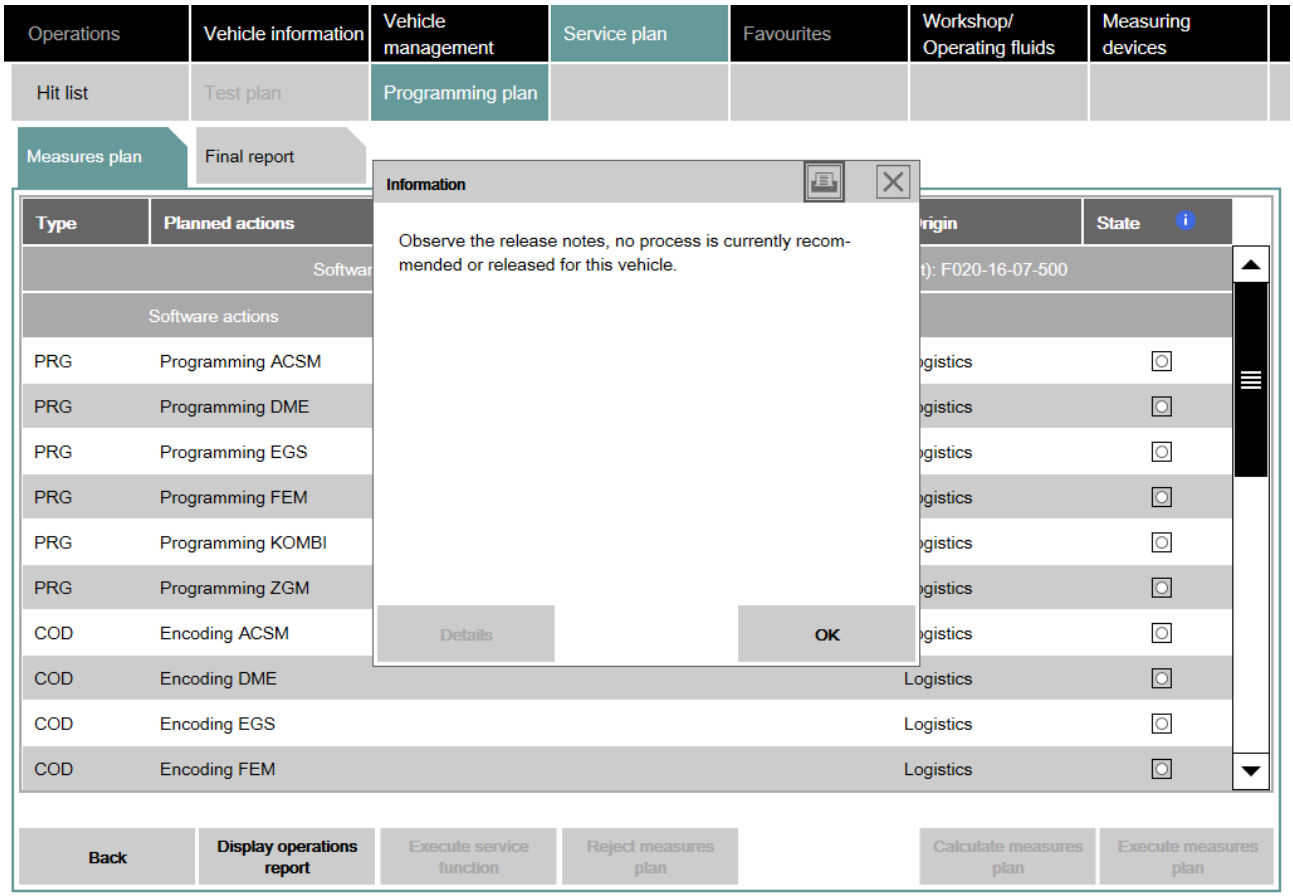

Figure 40 General execution stop

The execution stop with override option only permits the execution of the measures plan after the IBAC enabling code has been entered.

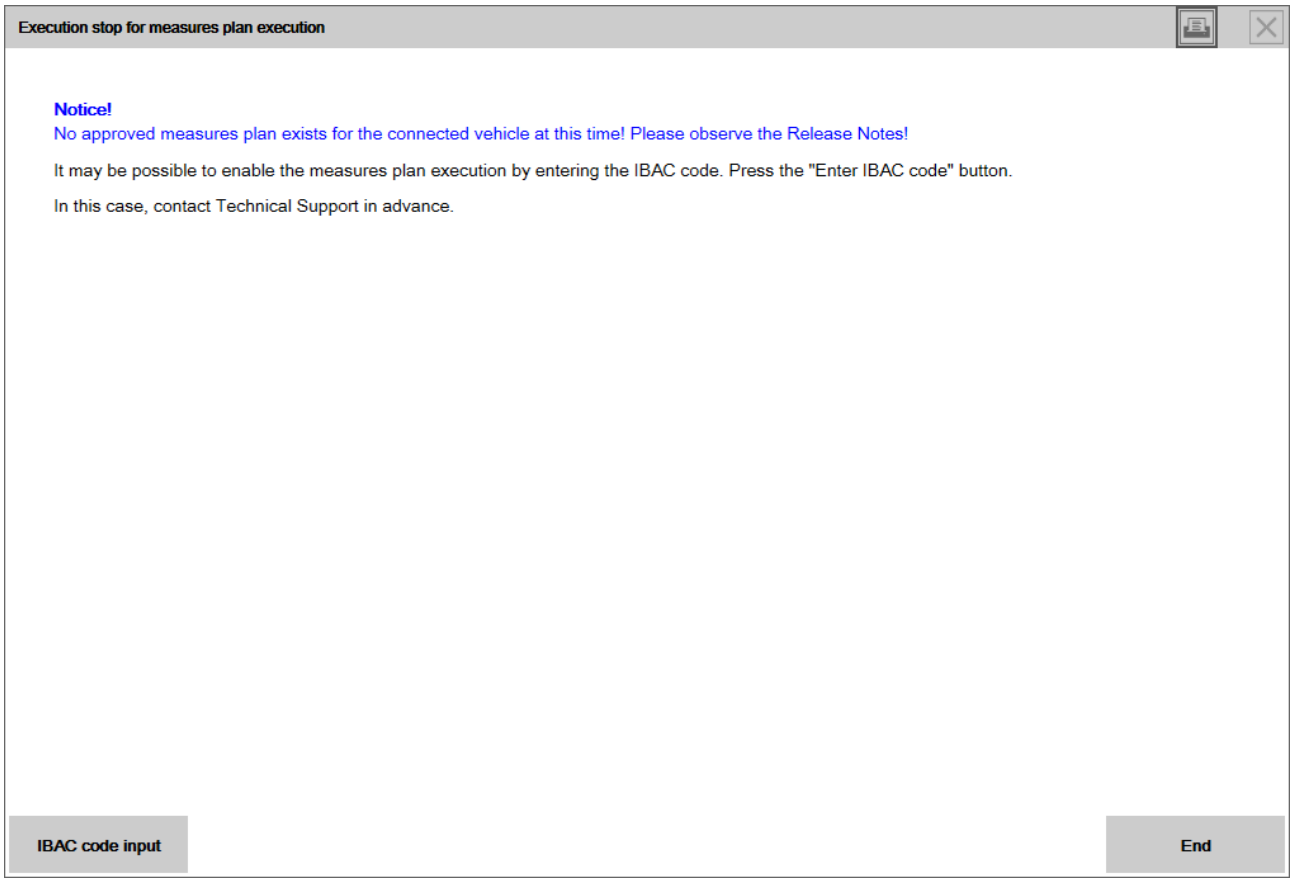

Figure 41 Execution stop with override option

Execution stops are usually presented in the Release Notes. If necessary, however, the execution stops can also be set on a daily basis in ISTA and may not be described. Please consult with the relevant technical support body when dealing with an execution stop.

3.8.9 Enabling codes

Some functions (additional functions in the vehicle) and the execution of some retrofits/conversions are protected by enabling codes.

If the enabling codes required are subject to a charge, a user executing a measures plan must explicitly agree to this import by activating the selection field.

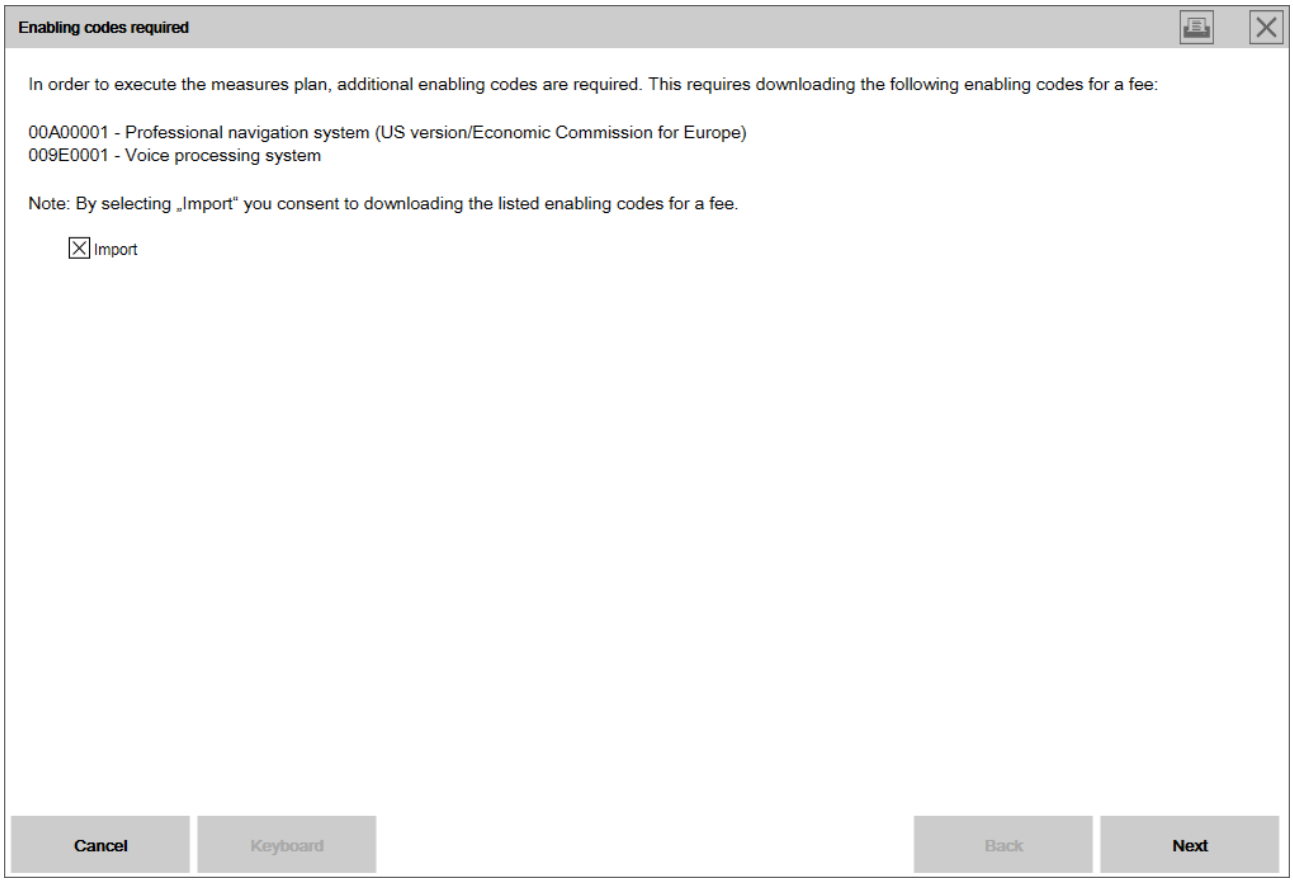

Figure 42 Importing the enabling codes

If the enabling codes cannot be downloaded from the online server, the user has the option of importing the enabling codes manually. A manual import likewise requires confirmation by activating the selection field. In this case, the enabling codes can be imported from any data carrier.

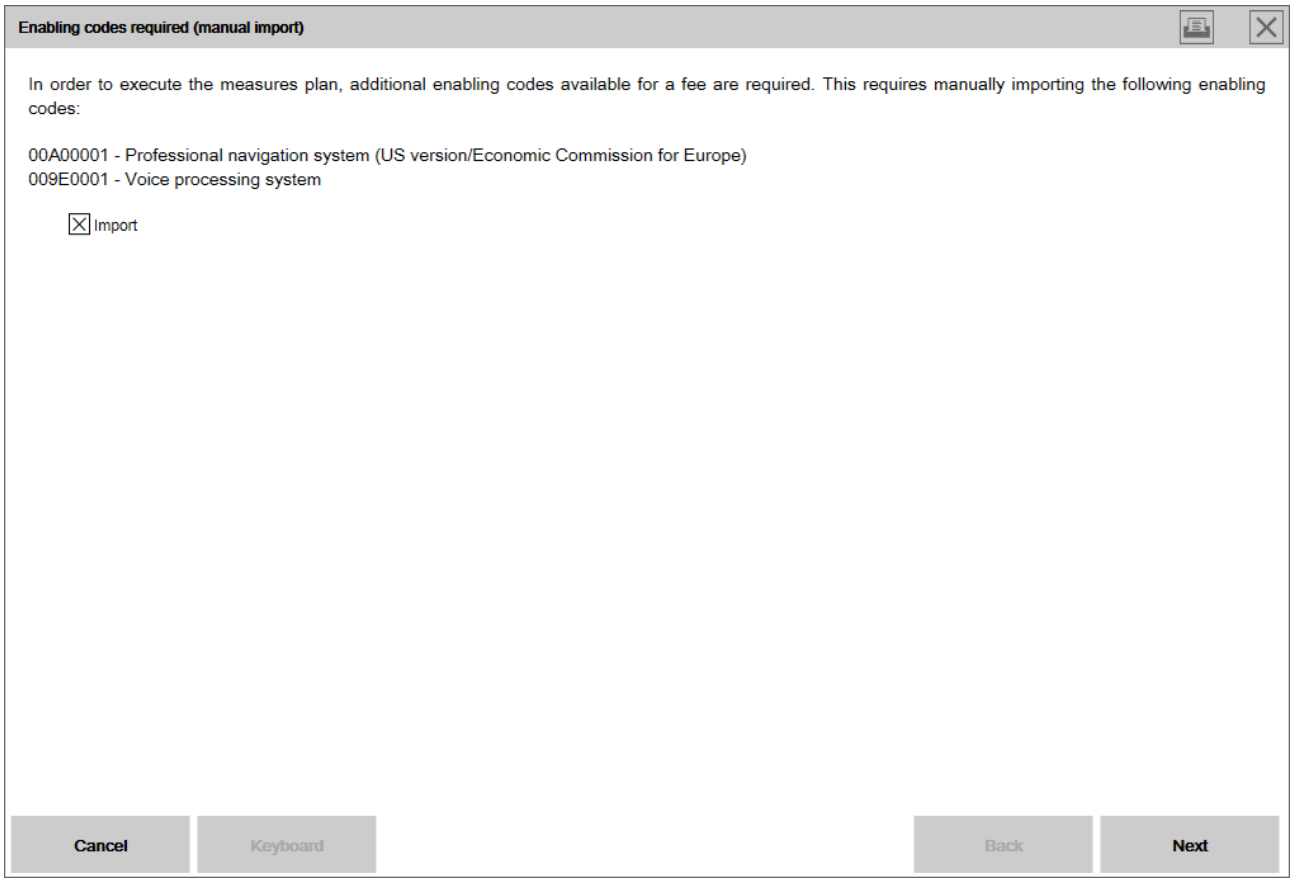

Figure 43 Manual import of the enabling codes

3.8.9.1 Deactivating the enabling codes

Upon removal of some functions whose functionality is allowed by an enabling code, the corresponding enabling code will be deactivated.

In such cases, the user is directed to the deactivation actions by a pop-up window. The enabling codes to be deactivated must be selected by the user by activating the corresponding selection field. Only enabling codes selected there will be deactivated in the subsequent execution of the measures plan.

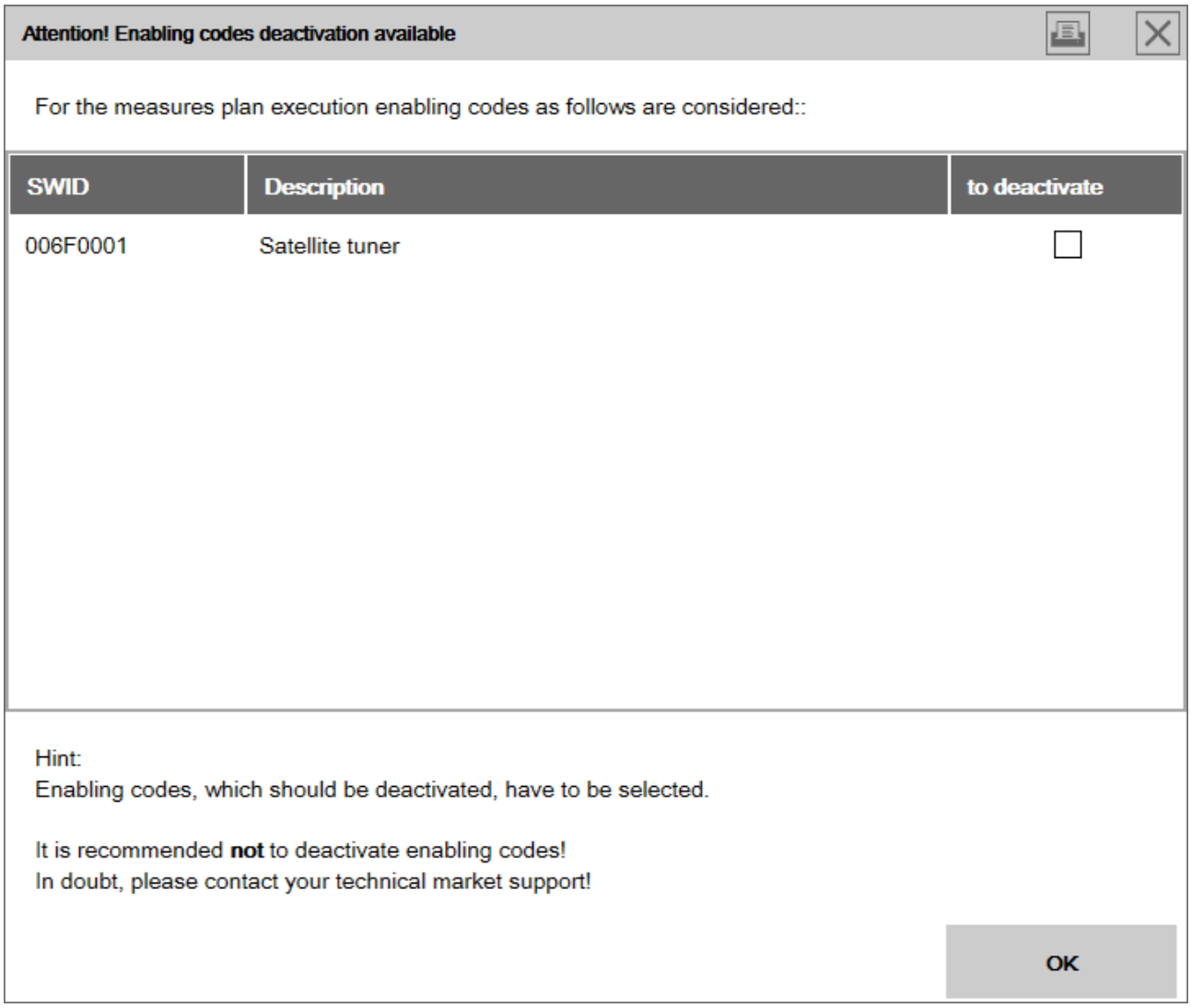

Figure 44 Note on enabling codes to be deactivated

ISTA normally suppresses all deactivations of enabling codes.

A selection window for an enabling code to be deactivated is displayed only when the user selects a removal of retrofit/conversion which involves a deactivation.

3.8.10 Control unit repair measures

Repair of the central gateway module

Vehicle management is not possible without a functioning central gateway module (ZGM). During the vehicle test, the system will therefore check for any programming aborts in the control units, especially the ZGM.

If the system detects a programming abort in the ZGM, the user will be notified and the repair process will be carried out. A special measures plan must always be executed for the ZGM repair, otherwise vehicle management in ISTA will not be possible.

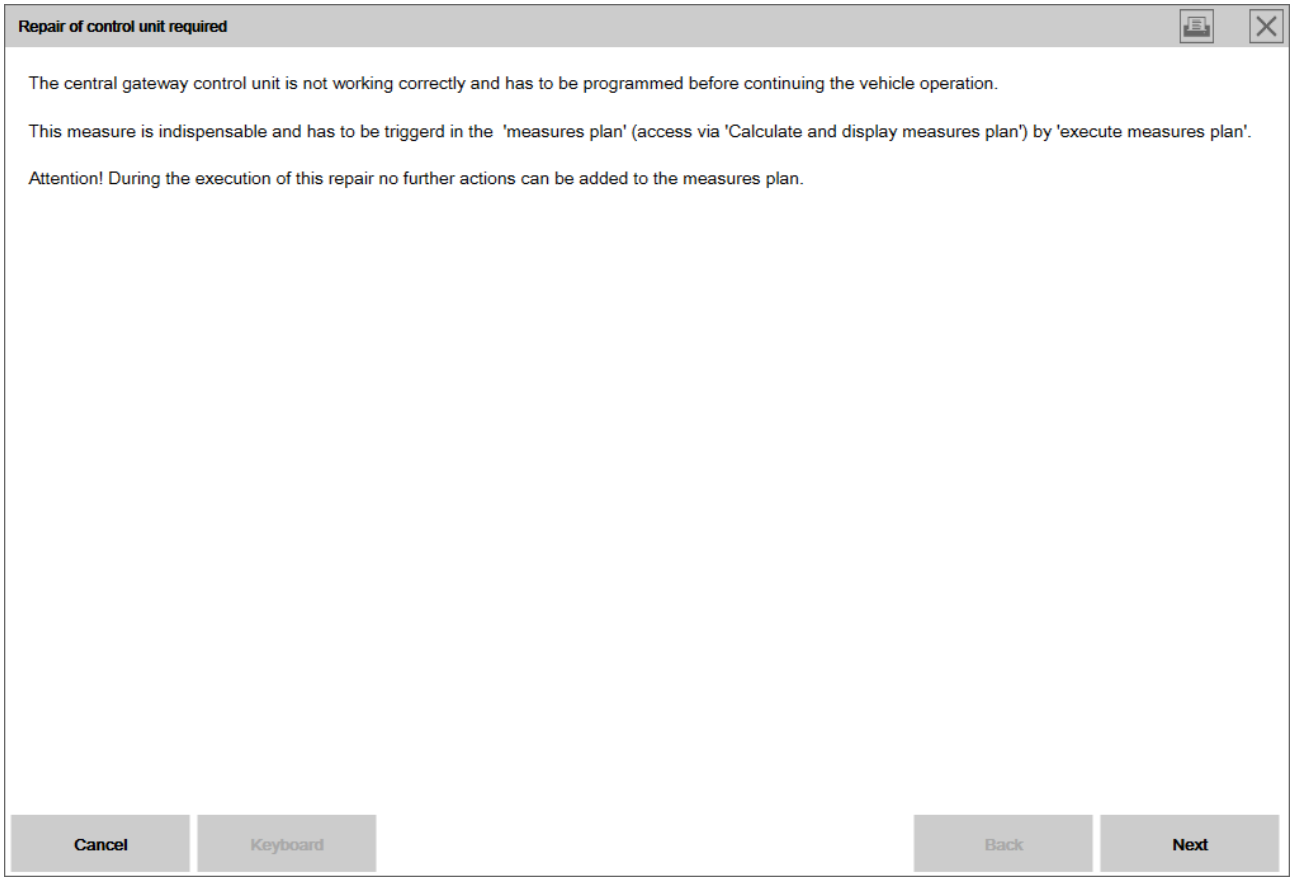

Figure 45 Repair of the central gateway

After execution of the measures plan that includes ZGM repair measures, the measures plan calculated in the subsequent context calculation should be executed as well.

	The repair of the central gateway module (ZGM) can only be executed when ISTA is in online mode.

Repair of other control units

The repair of other control units can be carried out either by automatic scheduling by logistics or by the diagnosis codes.

- If programming aborts are detected in other control units other than the ZGM, the control units in question are scheduled automatically by logistics for programming/encoding.
- A different case relates to the results from the test modules carried out from the test plan. If programming is required as a result of these, programming/encoding is indicated for the control unit in question by means of diagnosis codes. Provided this control unit has not already been scheduled by logistics, this action will appear in the measures plan with the source specified as "diagnosis".

3.8.11 Problem handling

Ignition switches itself off during vehicle management

The ignition switches itself off sporadically during programming. To prevent this do the following:

1. Insert driver's seat belt in seat belt buckle
2. Switch terminal 15
3. Attach ICOM
4. Start ISTA operation

Invalid IP address for Ethernet control units

At the start of the operation a note appears in ISTA, indicating an invalid IP address. The programming of Ethernet control units can fail if the following steps are not adhered to:

1. Terminate ISTA operation
2. Carry out vehicle battery reset
3. Restart operation
4. If the fault message continues to appear: Check that the Ethernet wiring in the vehicle corresponds to the wiring diagram in ISTA
5. If the fault message continues to appear: Contact Technical Support

Programming abort due to external software

Installed security software (antivirus software or firewall) can lead sporadically to programming aborts in various Ethernet control units like e.g. NBT, ATM, FRR, SAS, ICAM, KAFAS, RSE, KOMBI. Details on problem elimination are available in ISPI Dealer Self Support.

3.9 Updating or activating navigation maps

Navigation maps can be updated and activated irrespective of this.

	An existing measures plan is discarded when using this function!

3.9.1 Function selection

In general, updating or activation are only possible as part of an operation, see Identifying a vehicle. Subsequently a vehicle test must be carried out as described in "Testing vehicle".

The "Vehicle management/Software update/Additional software" tab contains the following functions:

- Updating navigation maps with or without activation / HDD-Update (update of navigation maps / entertainment data)
- Activating existing navigation maps / Enabling navigation maps

After carrying out the vehicle test the required function can be selected as follows:

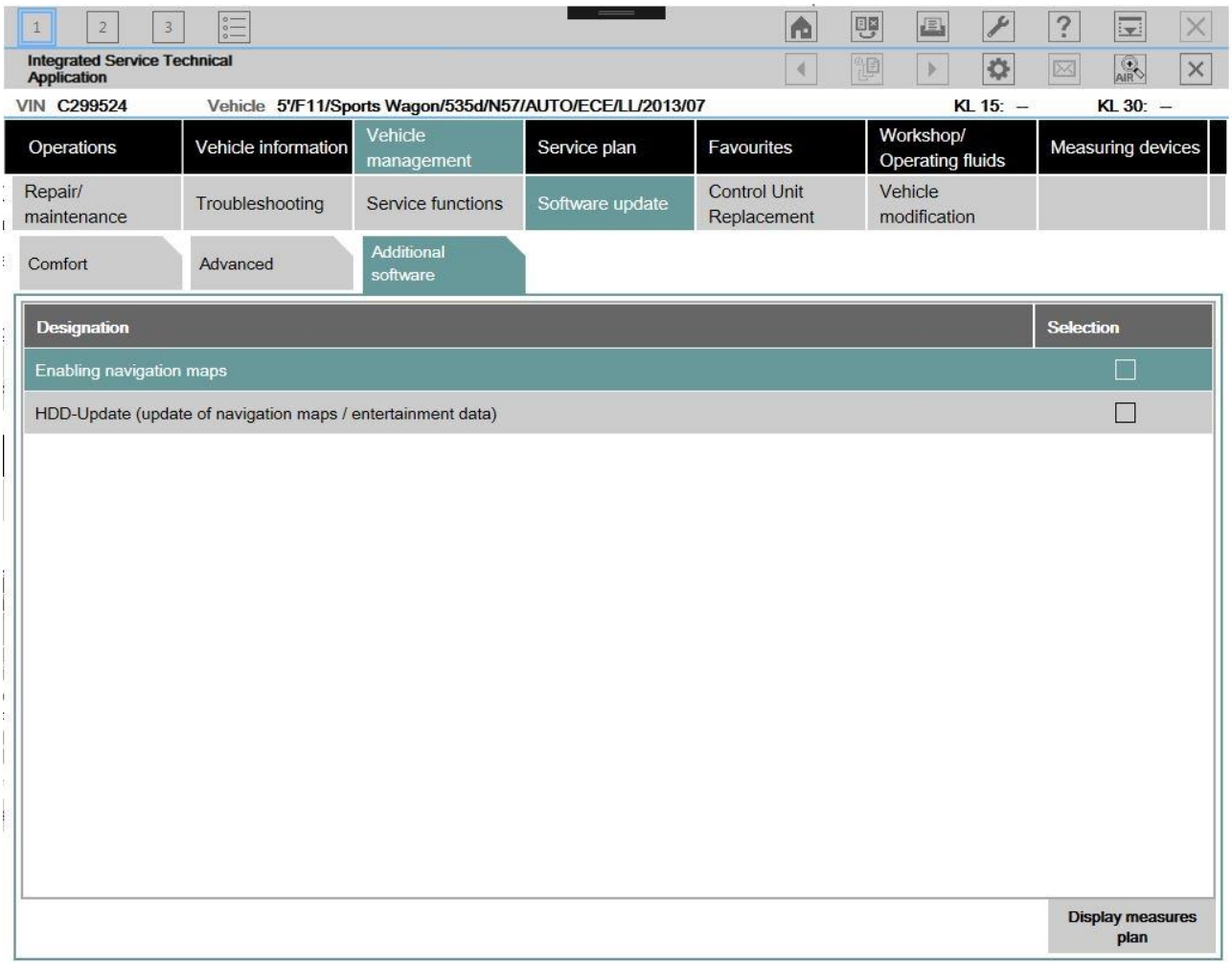

Figure 46 Function selection

3.9.2 Updating navigation maps (with or without activation)

The navigation maps that are available on the Shared Storage and compatible with the head unit are displayed:

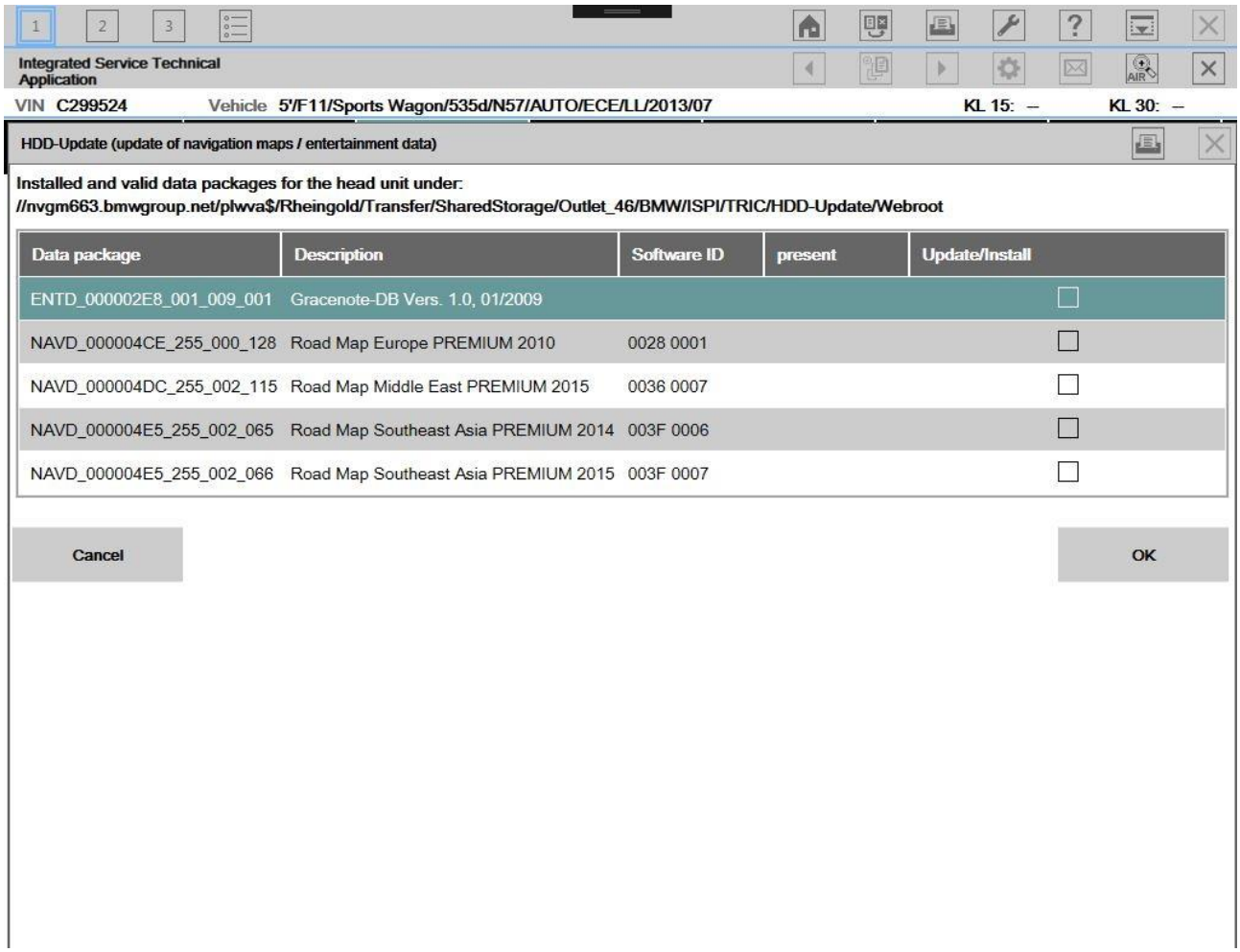

Figure 47 Selection of available navigation maps

After selecting one or more navigation maps, these can be activated directly via enabling code on request:

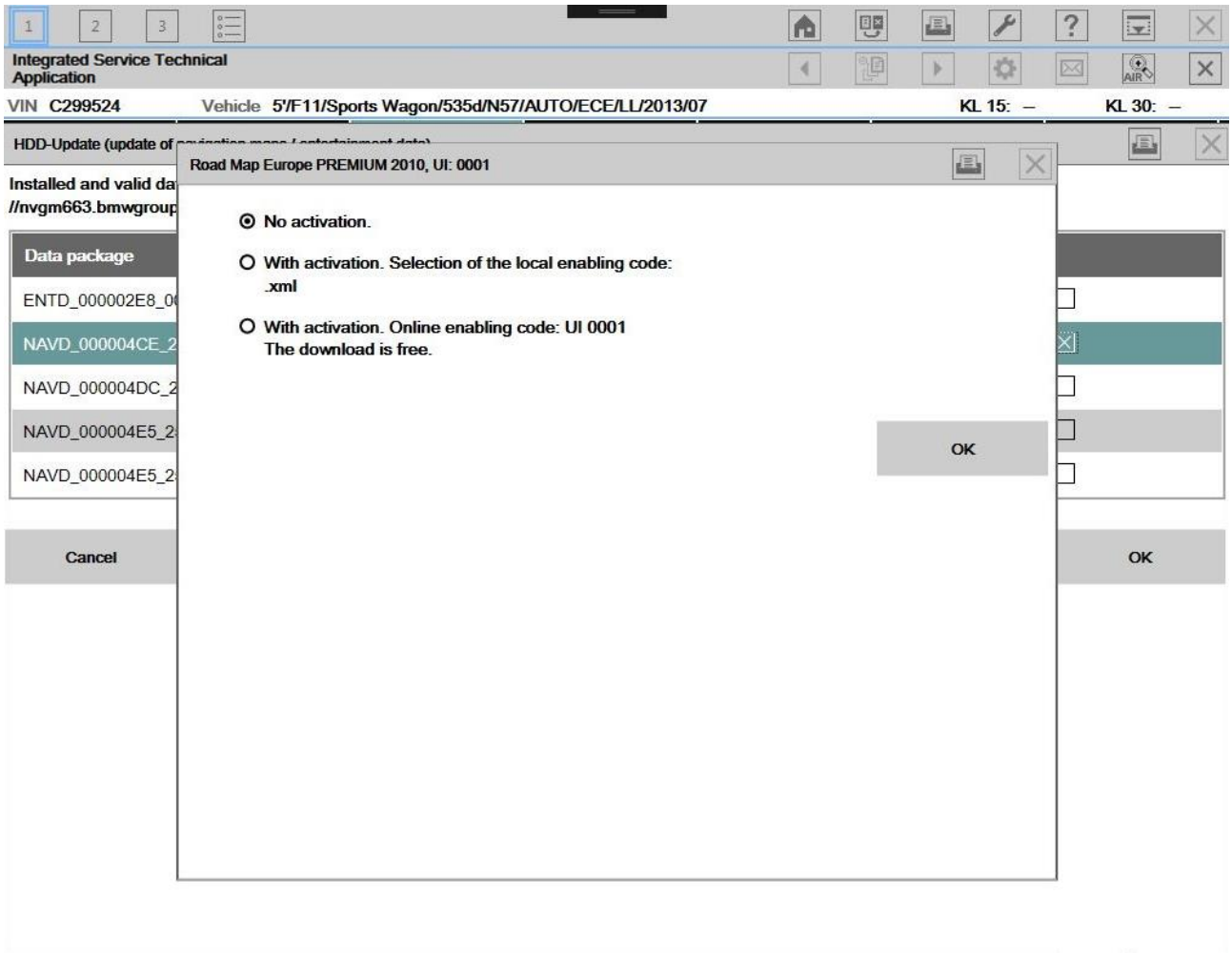

Figure 48 Provision of enabling code

After clicking the "OK" button the existing measures plan is discarded and recalculated:

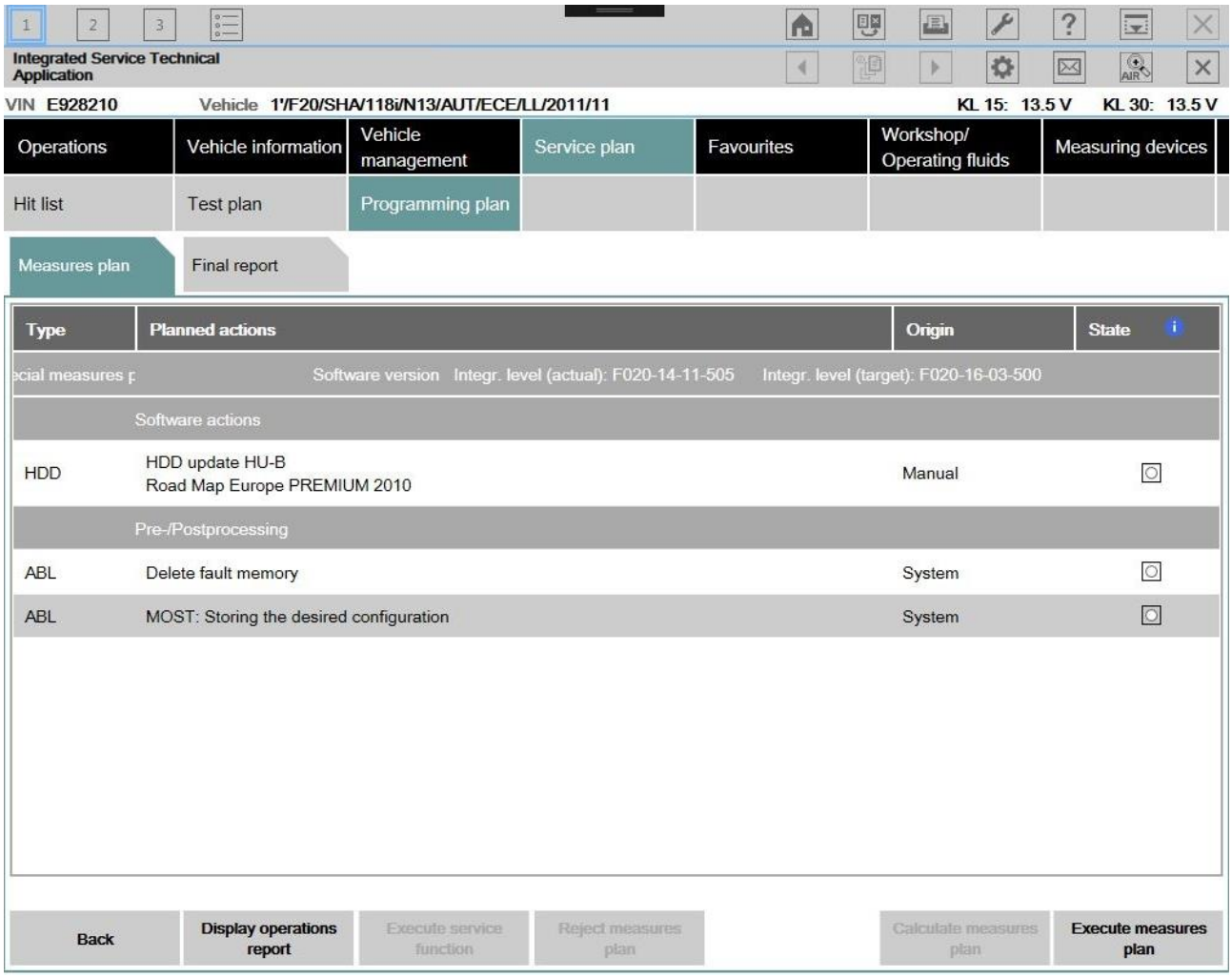

Figure 49 Updating navigation maps

While the measures plan is being carried out, the selected navigation maps are updated and activated if necessary.

3.9.3 Activation of an existing navigation map

After selecting the navigation map to be activated, the enabling code for the activation can be provided as follows:

- No activation
- Activation with local activation code (e.g E608033_0030002A.xml)
- Online activation

3.10 Printing process report

How to print an operations report:

1. Click the Vehicle information tab and select the Operations report tab
2. On the symbol bar, click the printer symbol

3. Select the desired print options and confirm

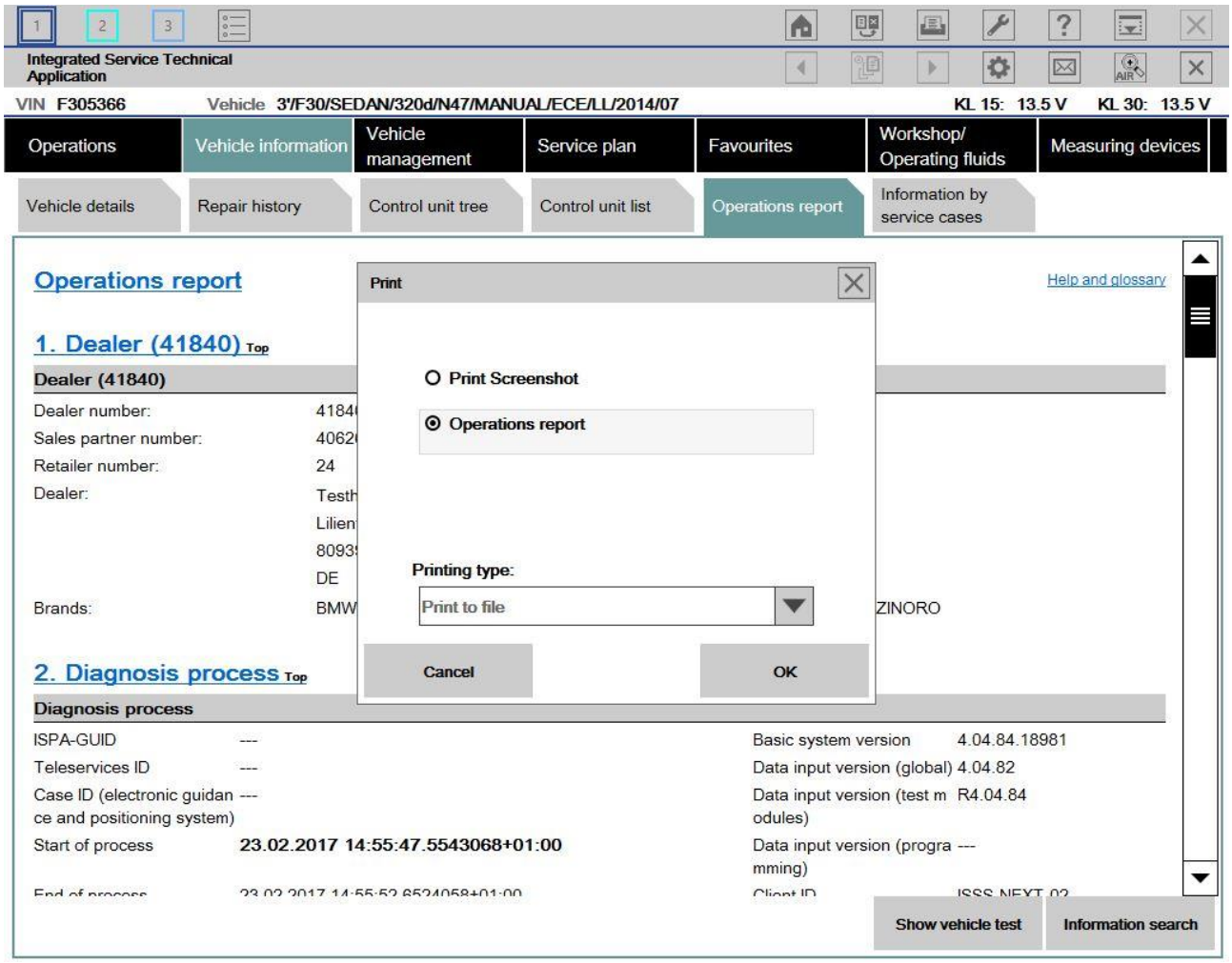

Figure 50 Printing process report

3.11 Terminate operation

An operation is ended by the following actions:

- Selecting the "Close" symbol at the top right of the operation (1)
- Confirming the query with OK (2)

After ending an operation the operations list is displayed. The operation is now included in the operations list. It can be reopened there if necessary.

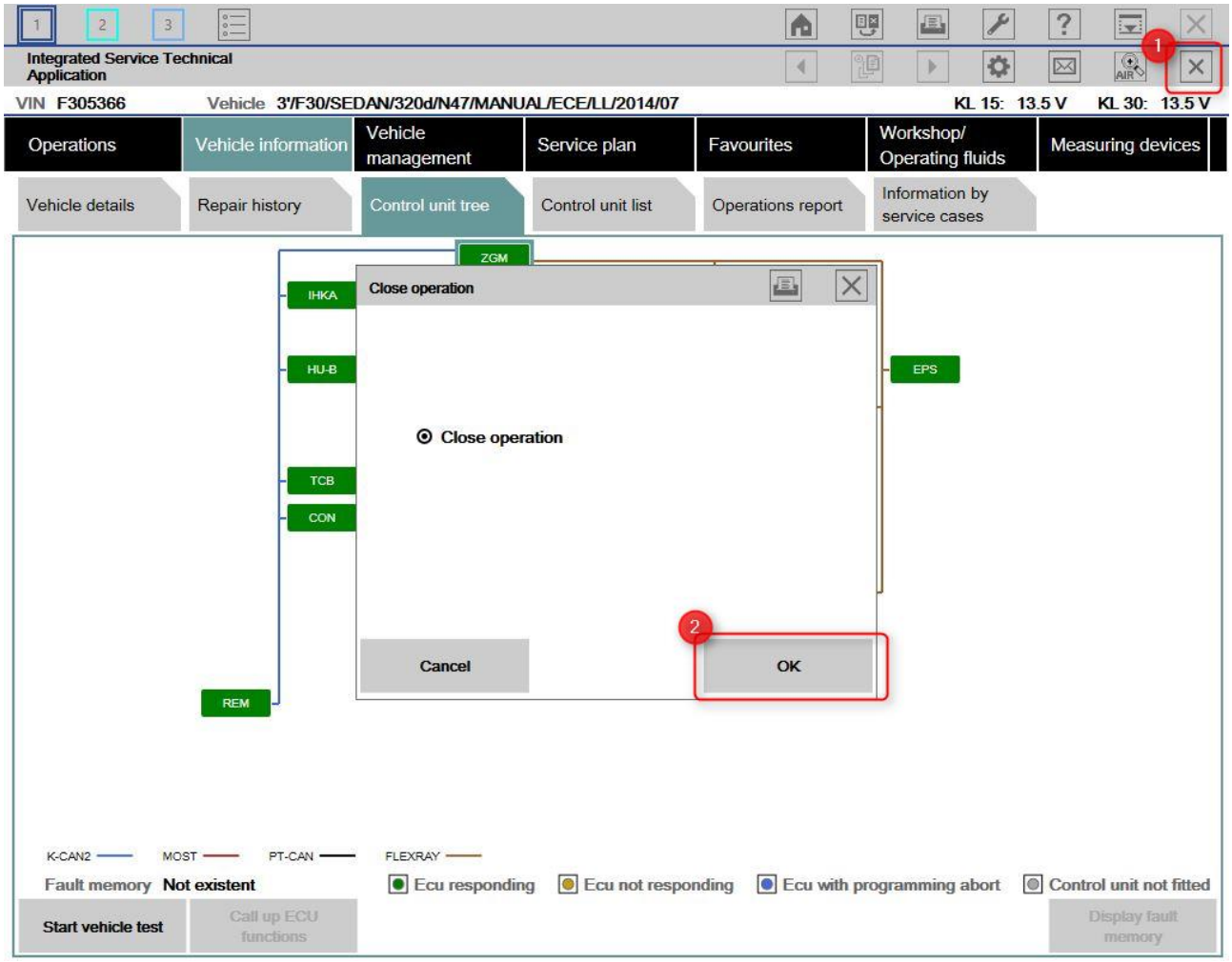

Figure 51 Message “Terminate operation”

	ISTA cannot be closed until all operations have been closed.

3.12 Continuing an operation

A new operation can be created and terminated in ISTA. When an operation is terminated, the operations reports are saved (local and IPS) and can be displayed again later. A new operation can also be created based on a terminated operation. In this process, the vehicle data and service case data of the terminated case are adopted.

On the "Finished" tab, the "Operation List" lists all the terminated operations. These operations can be reopened from this list if necessary.

With integration of the programming function in ISTA, terminated operations also obtain the property “Open actions”, which indicates whether there are more activities which must be performed by the user. Such operations are shown in bold in the operation list.

All operations can be reopened using the "Accept" button.

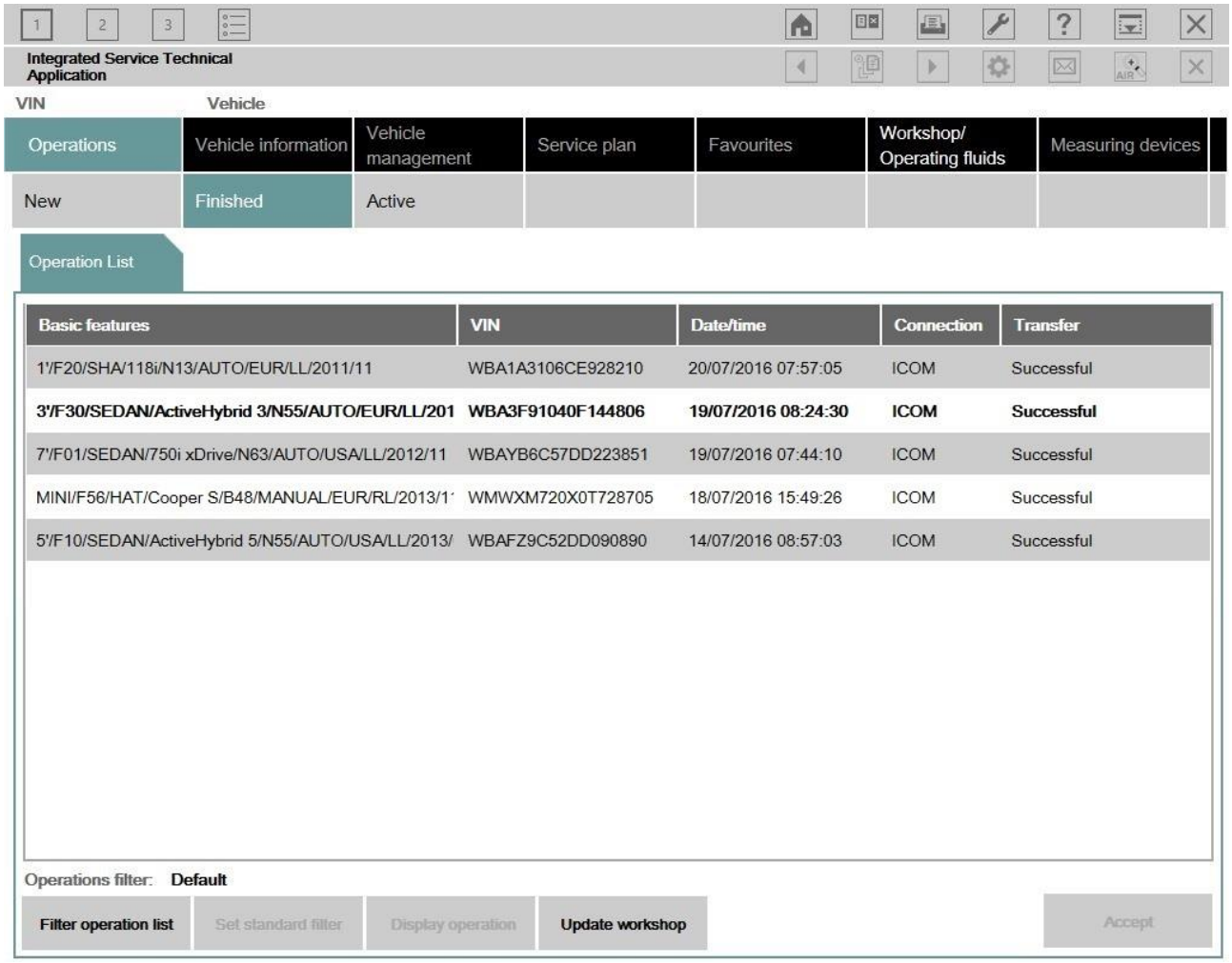

Figure 52 Operation list / Operation List

When a new operation is started with "Read Out Vehicle Data", a scan of existing operations for the PUK is carried out to check whether an operation with "open actions" exists for the vehicle. If this is the case, a check is then made to see whether this operation can be continued with the current vehicle condition, by adopting the operation and carrying out a vehicle test. Calculated and not-as-yet-conducted measure plans are retained and can be continued without interruption.

If the vehicle condition has not altered with respect to its condition at the end of the operation, the user can decide if they want to resume this operation. Then the process, including the programming data, is taken on. If the vehicle condition has changed, or the user decides against resuming, the adopted operation is discarded and the process is continued as if there had been no operation with open actions.

4 Feedback

4.1 Support

You can receive support in the event of software or hardware problems related to ISTA via a ticket with ISPI Next Support.

4.2 Content feedback

In ISTA, content and vehicle-specific feedback can be transmitted to BMW AG. These feedback messages are then forwarded directly to the authors in their respective departments, who then incorporate them in their work. Selecting the "Feedback" symbol (envelope symbol) in the header of the current ISTA screen mask (symbol bar) opens the feedback screen mask with input boxes.

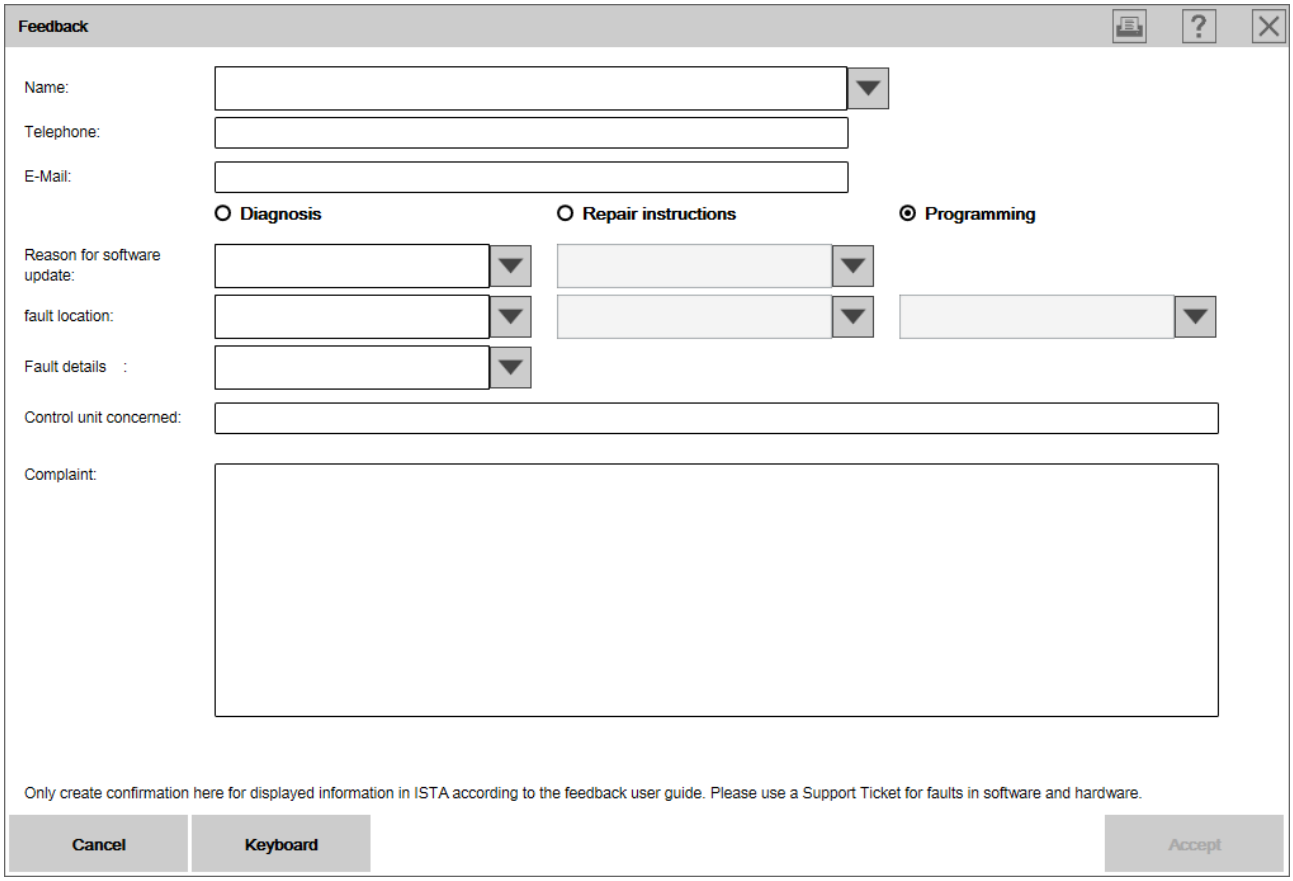

Figure 53 Feedback using the example of programming

If required, a keyboard for text input can be called up via the "Keyboard" button.

i	Request short-term support from Technical Support for software or hardware problems in the programming system via a ticket and not in the feedback on diagnosis or programming.

The evaluation and analysis of the feedback is time consuming. The high number of messages which do not contain any useful information greatly hinders the efficient processing of the feedback which is actually important. For this reason, please submit constructive feedback with all the relevant content entered.

Before creating feedback, note the following:

1. **Only** submit feedback if the test modules or contents of the diagnosis, programming or repair are visibly and verifiably faulty.
2. Describe the fault in the diagnosis, programming or repair clearly, comprehensibly and in simple language. Please note that the information has to be translated.
3. Only submit feedback for the vehicle operation that contains the current vehicle data, diagnosis data or programming data. When a fault is reported, the feedback must always be submitted at the time in the operation when the fault occurs. This guarantees that all the required information is entered in the feedback form.
4. **Do not submit feedback** simply to safeguard the warranty. If the decision is made in favour of a repair that deviates from the diagnosis result, this must be documented in the warranty claim and not in the feedback about diagnosis or programming.
5. **Do not submit feedback** that only concerns the absence of diagnosis codes.
6. **Do not submit feedback** about missing contents in the test modules for non-electrical diagnosis. The non-electrical diagnosis test modules only contain the fault patterns, which occur frequently and cannot always be clearly attributed to a fault cause. There are no test modules or checks available for clearly identifiable faults.
7. In order to decide whether there is a fault in the test module or if it is a temporary fault, follow this procedure:
    a. If a test module fails, check if other test modules in the test plan are working.
    b. If no test module is working or there is only one test module in the test plan, restart the diagnosis completely.
    c. If the problem subsequently no longer exists, it was most probably a temporary system fault.

In general: It is assumed that the users of diagnosis, repair and programming are adequately qualified to handle the diagnosis systems and measuring devices and have sufficient automotive knowledge. The "Diagnosis target process" document, which can be found in the "Diagnosis contents and notes" in ISTA, must also be observed.

5 Symbols

5.1 Toolbar

Symbol	NAME	Function
	Service Cases	Selects one of three possible, simultaneous operations.
	Service Case overview	Displays all active operations.
	Start screen	Calls up the start screen for the ISTA workshop systems. The ISTA workshop system then terminates the ongoing process (after confirmation). The start screen is in the home screen for the ISTA workshop system.
	Administration	Calls up ISTA administration. Settings in administration always affect all operations. Changes to the settings can therefore only be made when no operations are active.
	Connection manager	Calls up the Connection manager. Here you can create or remove connections to the vehicle interface (ICOM) or the measuring technique (IMIB). The symbol is shown as "connected" (left symbol) when at least one device is connected to, or reserved for, the system. If no connection or reservation is available, it is shown as "disconnected" (symbol on right).
	Printing	Calls up the “Printing” function.
	Help	Calls up the “Help” function.
	Minimise	Minimises the application window.
	Terminate application	Terminates the application and all open operations after a security query and corresponding confirmation.

Table 5 Symbol bar elements

5.2 Operations bar

The operations bar is only active for an active operation. The following functions only affect the operation that is currently active:

Symbol	NAME	Function
	Document display back	Scrolls to the previous entry of the history list and displays the corresponding document. The icon is only available if the history list contains a document which has previously been selected.
	History	Displays the history.
	Document display forwards	Scrolls to the next entry in the history list and the displays the corresponding document. The icon is only available if the history list contains a document which has previously been selected.
	Application log	Starts the internal logging of the application. This function should only be activated at the request of ISPI Next Support.
	Feedback signal	Calls up the mask for feedback. Here, for example, you can write a problem notification to Bayerische Motoren Werke Aktiengesellschaft regarding a test module or document.
	AIR	Calls up the "AIR" application.
	Terminate operation	Closes the operation after a security query and corresponding confirmation.

Table 6 Elements of the operations bar

6 Appendix

6.1 Information types in ISTA documents

Abbreviation	Information type	Abbreviation	Information type
ABL	Procedure (service program)	REP	Repair instructions
AZD	Tightening torque	SBS	Operating fluids
EBO	Installation location	SIT	Service Information Engineering
FEB	Fault elimination	SPI	Vehicle software information
FTD	Vehicle engineering diagnosis	SSP	Wiring diagram
FUB	Functional description	STA	Connector view
IBAC	Internet Based Calculation of Enabling Codes	SWS	Special tool / device
KFA	Function changes to vehicle	Special tools	Special tool
MSM	BMW Group Mobile Service	TED	Technical data
PIB	Pin assignment		

Table 7 Information types in ISTA

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