

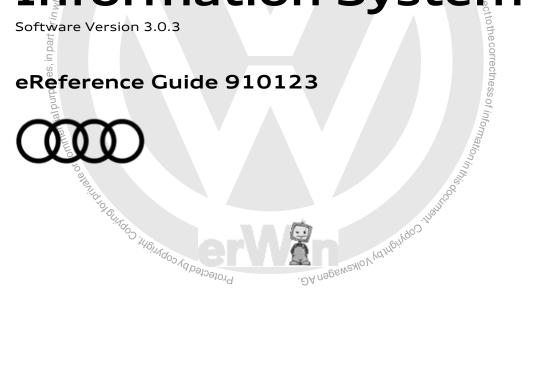


**SERVICE** 

# in Nessauthorised by Vo Offboard Diagnostic Information System

Software Version 3.0.3

eReference Guide 910123



Audi of America, LLC Service Training Produced in U.S.A. Created 03/2013 Revised 8/2016 Course Number 910123 Based on ODIS Service software version 3.0.3 ©2016 Audi of America, LLC

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Always check Technical Bulletins and the latest electronic repair literature for information that may supersede any information included in this booklet.

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This eReference Guide provides information regarding the new application "Offboard Diagnostic Information System."

This eReference Guide is not a Repair Manual.

This is eReference Guide is not meant to replace the ODIS Service manual.

This information will only be updated electronically.





The Offboard Diagnostic Information System (ODIS Service) authorized by Volkswagen AG. Volkswage VAS Scan Tools. It adds many features to help with vehicle diagnosis and repair. ODIS Service does not replace Guided Fault Finding (GFF). Guided Fault Finding is still an integral component of ODIS Service.

ODIS Service can be used on VAS 5051b, VAS 5052A, VAS 6150 and VAS 6160 diagnostic tools, as long as they are correctly updated. It cannot be used on the VAS 5051A or VAS 5052.

This eReference guide contains job aids that are designed to help you quickly move through the ODIS Service application. As with any computer program, practicing is the best way to learn.

The ODIS Service application has its own User Guide The job aids in this eReference Guide are not intended to replace it. These job aids are designed to neap an quickly. For more detailed information, consult the User Quickly.

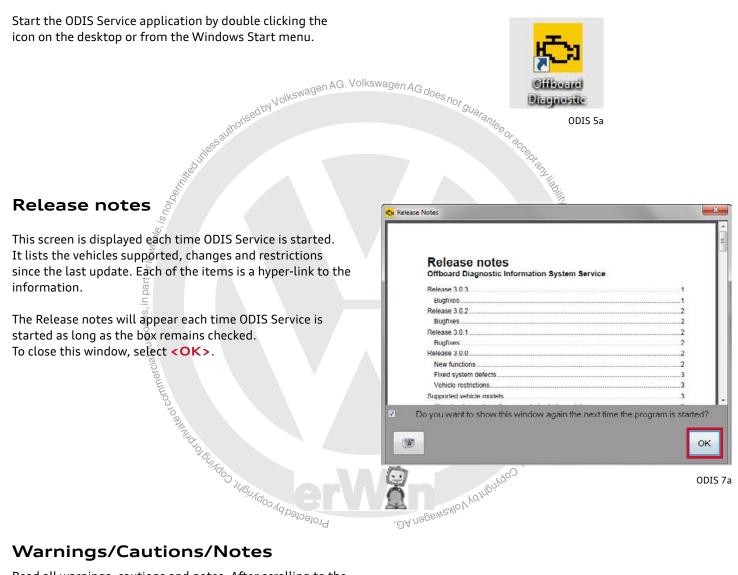
- This eReference Guide only applies to the software version shown on the cover and at the bottom of each page. Always check the Certification Resources Center (CRC) for the latest electronic Reference Guide version.
  - Button pushes will be indicated by the use of carets langle brackets). For example, if you are asked to push the Enter button, it will be shown as: Select (or Push) **Enter>**





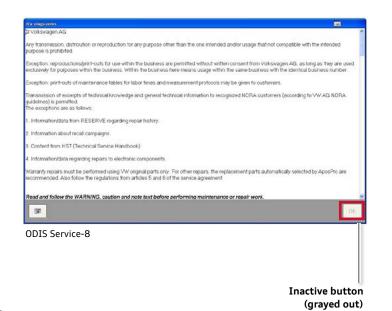


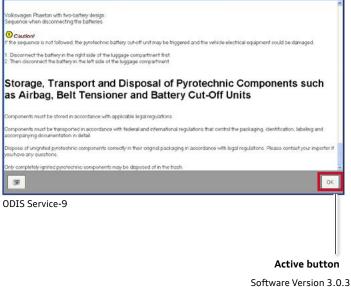
### Starting ODIS Service



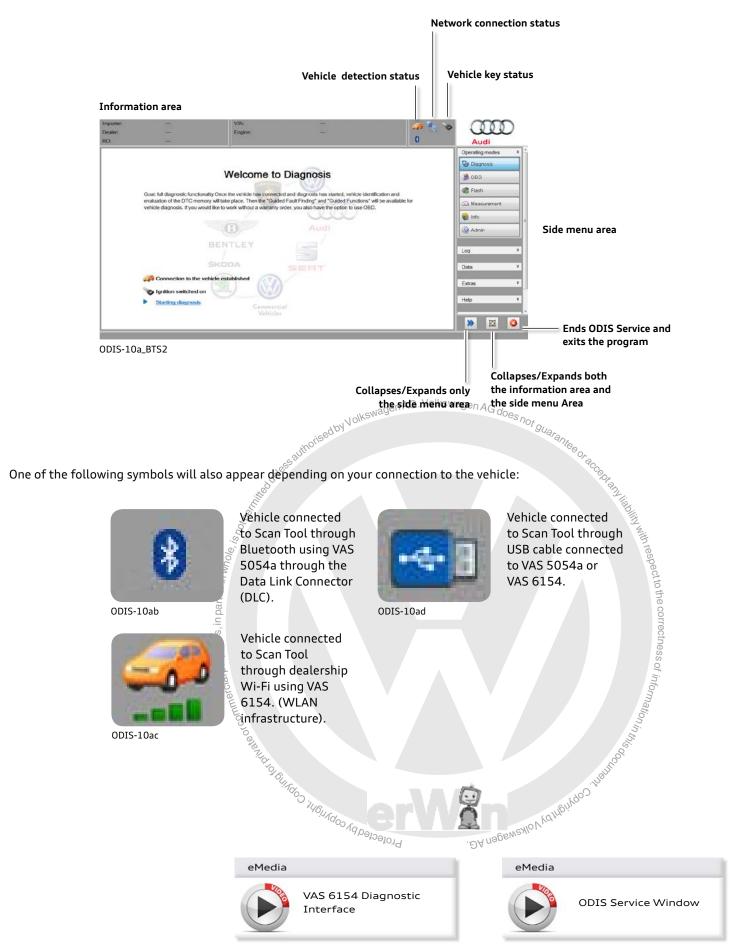
### Warnings/Cautions/Notes

Read all warnings, cautions and notes. After scrolling to the bottom of this list, the OK button turns from gray to black. Select **<OK>** to continue.





### **ODIS Service Start Page**



### Starting Guided Fault Finding (GFF)

Before starting GFF, the Data Link Connector (DLC) must be connected and the vehicle key recognized. The display will indicate the connection is established and the ignition is switched on.

From the ODIS Service main screen, select **Starting diagnosis>**.



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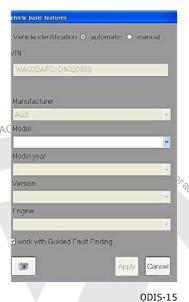
#### Vehicle Identification

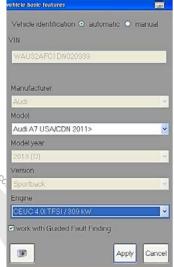
The Vehicle Identification window appears with the Vehicle Identification Number (VIN) already populated. The top of this window has Automatic or Manual Vehicle Identification selections. If you choose Automatic, CAREFULLY review the information that is automatically populated to make sure the vehicle and equipment are identified correctly.

If using Manual, use the drop down menus to identify the vehicle type. This is very similar to ElsaPro vehicle volkswagen AC identification menus.

When complete, make sure the box for Work with Guided Fault Finding is checked then press < Apply>.

If the Work with Guided Fault Finding box is not checked, the diagnostic capabilities are very limited.





odis-16

odis-16

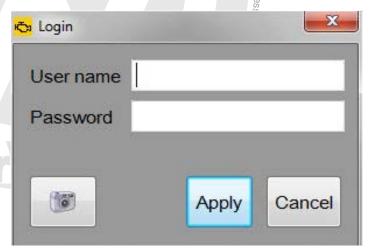
ct to the correctnes

#### Infomedia

A pop up will appear to login. If you want to access the Infomedia (for example, ElsaPro) using the Scan Tool, enter your iAudi account User name and Password.

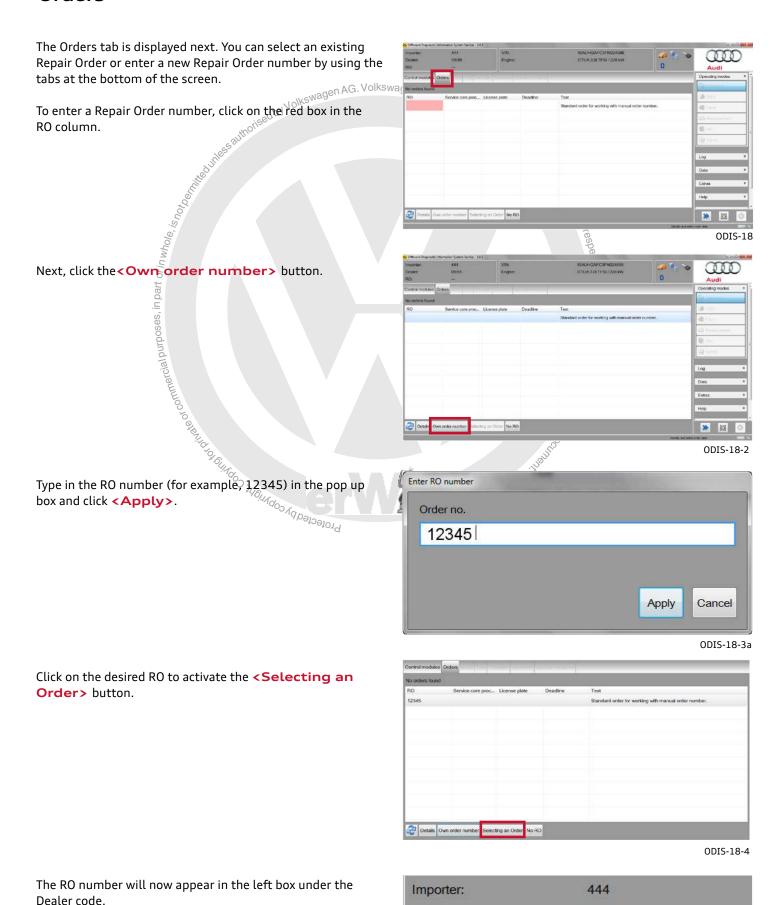
"If you do not want to use Infomedia at this time, click <Cancel>.

After clicking **Apply** or **Cancel**, GFF continues.



ODIS-16a

#### **Orders**



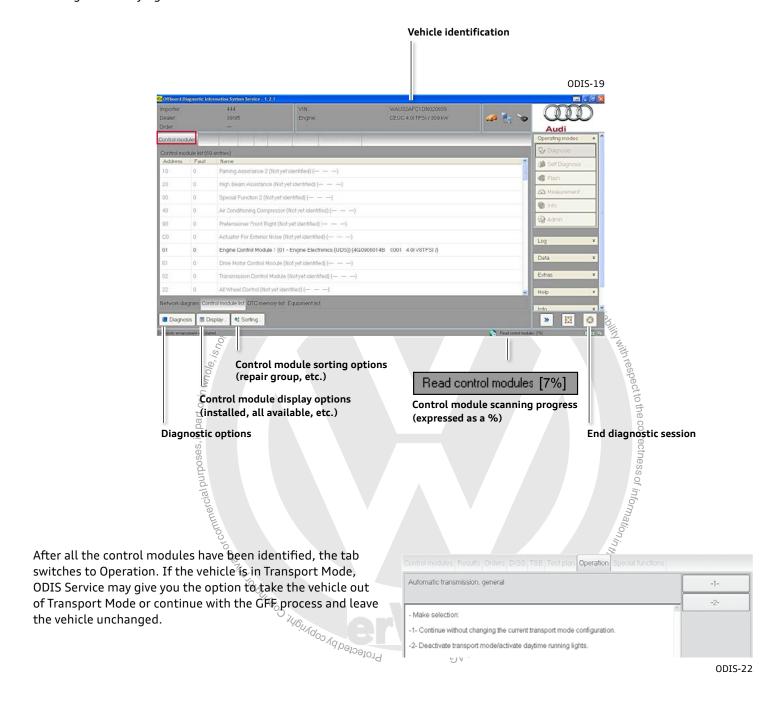
Software Version 3.0.3 ODIS-18-5

Dealer: RO: 09195

12345

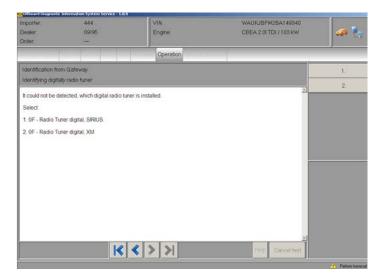
### Control modules

After selecting or entering a Repair Order number, the active tab switches automatically to Control modules and the Scan Tool begins identifying installed control modules.

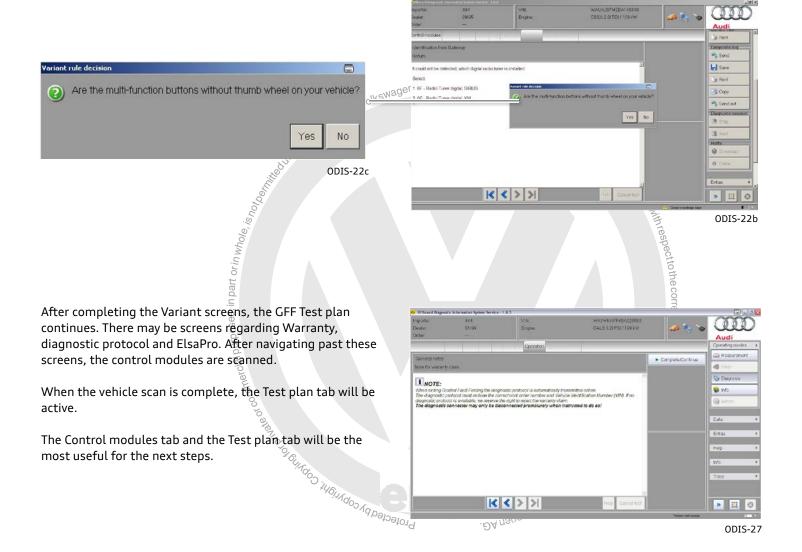


If ODIS Service detects that there is more than one variant of a control module, the Variant Selection screen will appear. This screen asks you to specifically identify a system on the vehicle, such as what type of radio or climate control system.

Follow the steps presented in the Test plan to identify the correct variant.

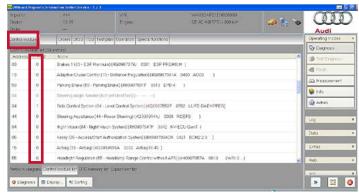


ODIS-22a



### Control module tab

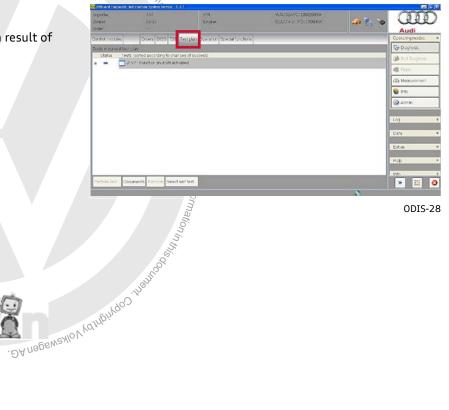
This tab displays which control modules have DTCs. Control modules that have recorded DTCs are displayed in red. The number of DTCs are displayed in the Fault column.



ODIS-29



This tab displays the Test plans loaded by GFF as a result of in part or in whole the state of the state o DTCs in the control modules.



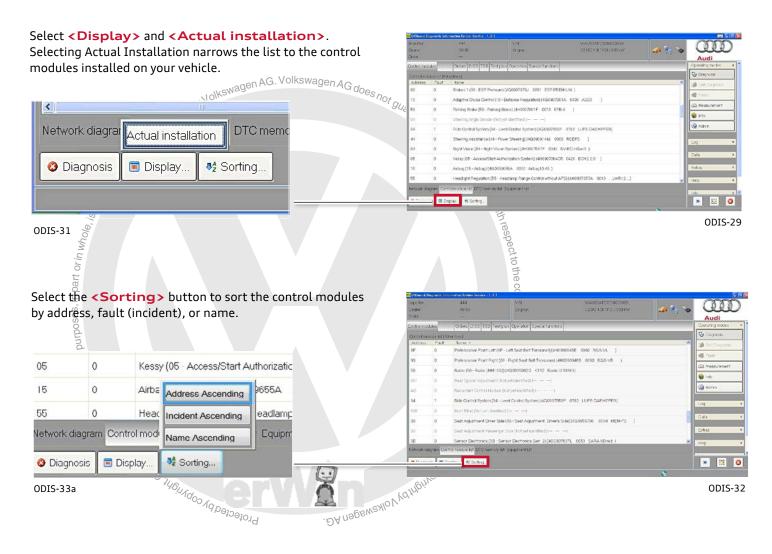
ODIS-28

### Control module tips

When you select the Control Modules tab, the default screen shows the Control Module List. Grayed-out modules, are control modules that may not be on your vehicle, depending on options.

**Note**: If an installed control module is not communicating with the Gateway due to a fault, it is grayed-out in the Control Module screens.







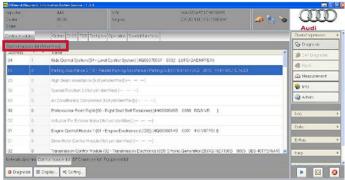
and Name Columns headers above the control module list.

Name

Incident

Address

When the columns are selected, an arrow pointing up will indicate ascending, and an arrow pointing down will indicate descending. If there is no arrow the column will be unsorted.

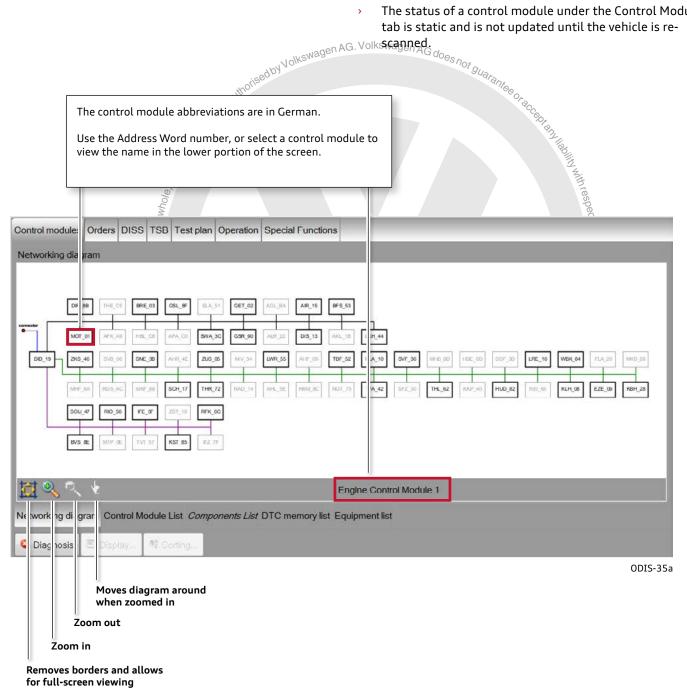


ODIS-34

### Control modules

Choosing the lower < Networking Diagram > tab displays a "topology" view of the control modules on the vehicle. This screen may not represent the exact topology of the vehicle. Always refer to the Repair Information for the latest topology.

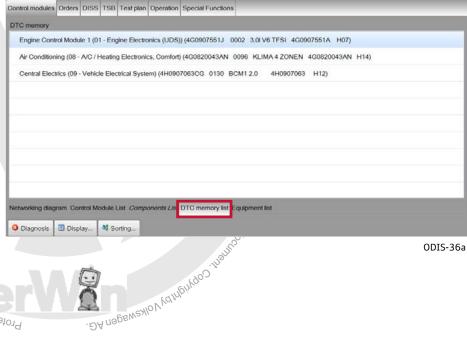
- Control modules in a light black border are not identified because of options or communication DTCs.
- Control Modules surrounded by a bold black border are identified and have no DTC events in memory.
- Red colored control modules have one or more DTCs.
- Control modules that are not communicating are grayedout - the same as control modules that are not installed.
- The status of a control module under the Control Modules tab is static and is not updated until the vehicle is re-



# , authorised by vuinz was Viewing DTCs in GFF

After starting Guided Fault Finding. Select < DTC memory list>.

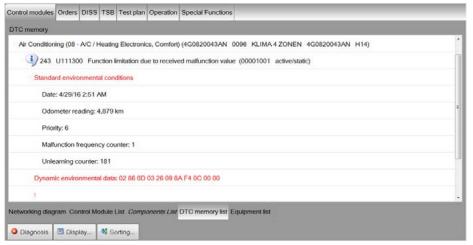




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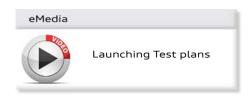
Click on the arrow next to the control module information to show its DTCs.

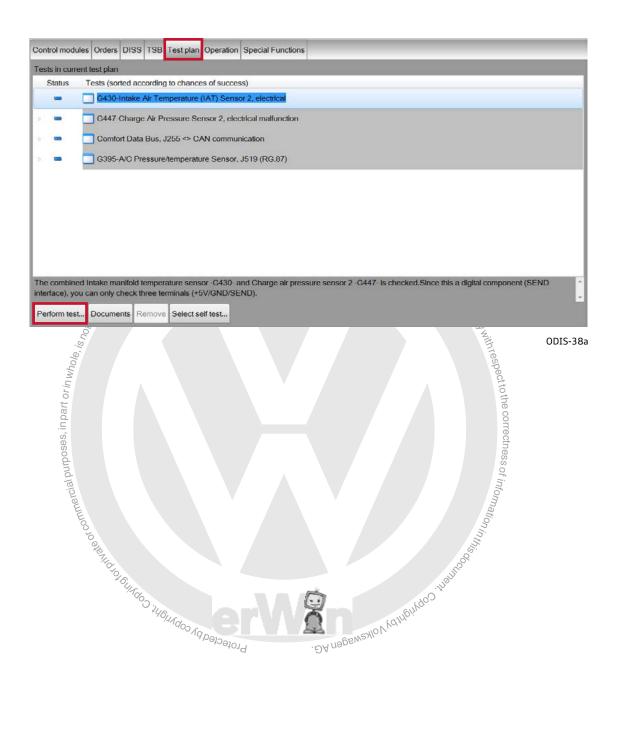


ODIS-37a

## **Starting Test plans**

Select the <Test plan>tab.
Select a Test plan (appears highlighted), then select <Perform test>.





### Selecting Test plans

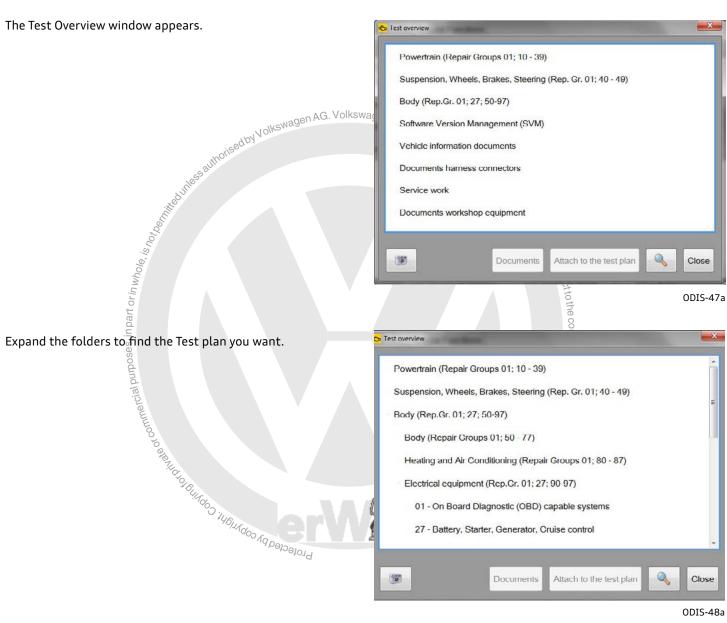
Select the **Test plan** tab. This tab displays the Test plans that have been loaded by GFF. However, you can also attach your own Test plans.

To select a Test plan of your own choice, press <Select self test> from the lower tabs.



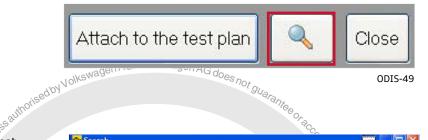


ODIS-38a

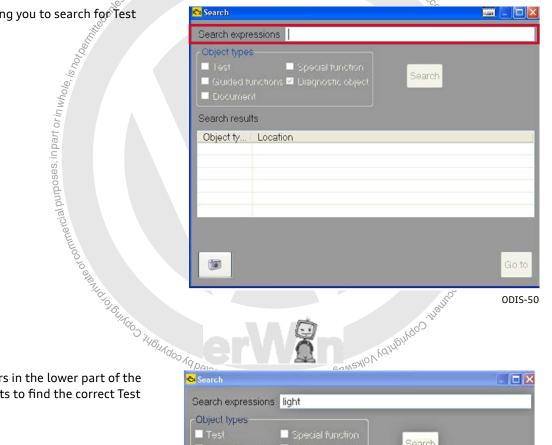


ODIS-48a

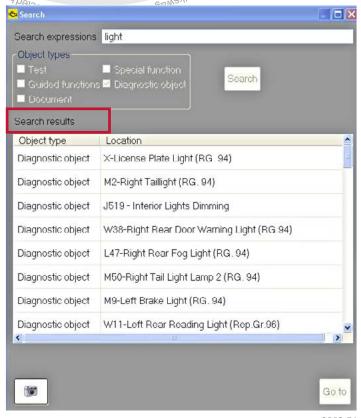
You can search for Test plans by using the search icon (magnifying glass) at the bottom of the Test Overview window.



A search window appears, allowing you to search for Test plans using specific words.

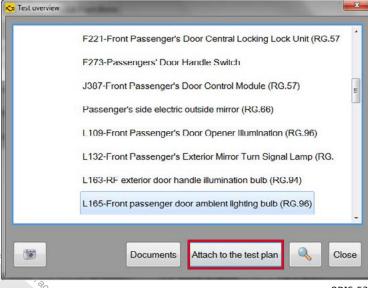


The results of your search appears in the lower part of the window. Scroll through the results to find the correct Test plan.



ODIS-51

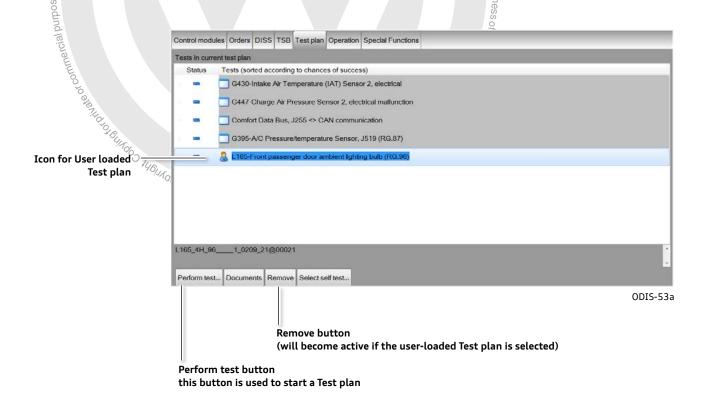
When you select a Test plan from the search feature, you are directed to that Test plan in the Test Overview menu structure. This Test plan can now be attached using the Attach to Test plan button.



ODIS-52a

When you return to the Test plan tab, you can see the new Test plan has been attached. There is an icon of a person next to it. All user-based Test plans can be removed using the Remove

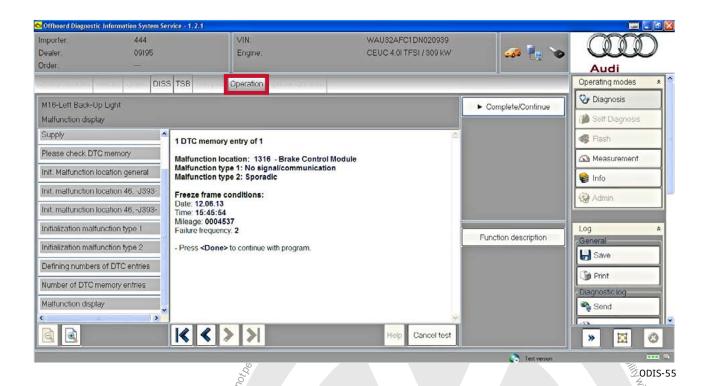
button at the bottom of the screen before the Test plan has been performed. QDIS Service-attached Test plans cannot be removed.



## **GFF Test plan tips**

After you have selected a Test plan to run, the upper tab changes to Operation. This Test plan window displays the GFF test that is currently running.





Any Documents or Connector Views are available by using the buttons on the right side of the screen. The steps of the Test plan that have already been performed are listed in order on the left side of the page. This helps you to track what has been done so far.

The buttons on the center bottom of the Test plan allow you to go back and review steps. Selecting the back arrow does not restart the Test plan at an earlier step. The Test plan can only be continued at the farthest step of progress.

When an earlier test step is selected, the **Complete/Continue>** button will become greyed out. To activate it again, the last test step must be selected, and the two forward buttons below the Test Plan main window will become greyed out.

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If the test steps are not displayed, do the following:

Click on **<ADMIN>** under Operating modes.

Click on **<GFF Process>**.

Put a check mark in the Always display test steps box.

Click <Save>.

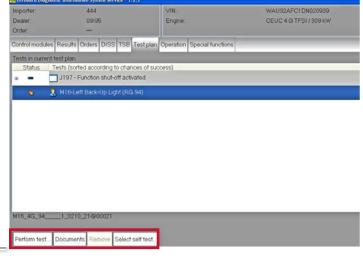
Click < Yes> to confirm the changes.



#### **Documents**

GFF contains Documents with additional information about a particular system or operation. These documents may be as simple as a connector view or more complex, such as the complete outline of the Test plan including expected system operation.

Documents are available in the Test plans, but can also be accessed under the Test plan upper tab.



Perform test... Documents Remove Select self test...

ODIS-57 ODIS-56

gauthorised by Volkswagen AG. Volkswagen AG does not guarantee of

Either Documents for the Test plan or Documents test program can be selected.

#### Documents for the Test plan:

 Displays documents for ALL automatic and attached Test plans.

### Documents for the test program:

> Displays documents for the highlighted Test plan.

Documents for the test plan

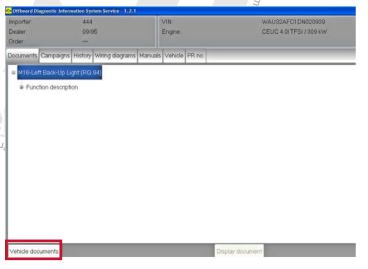
Documents for the test program

ODIS-58

Depending on your choice, a list of documents may or may not appear. If the documents you are looking for do not appear, select **Vehicle documents** at the bottom left of the screen.

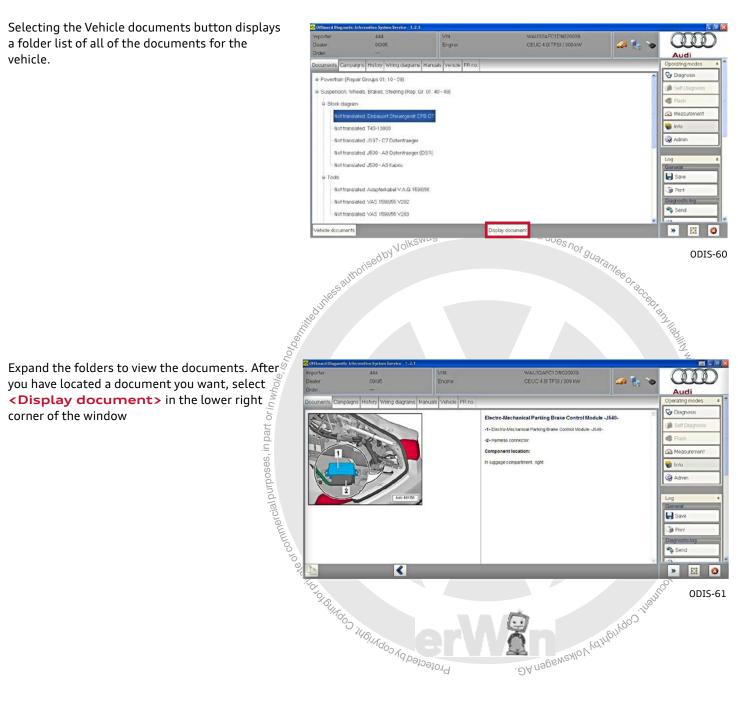
eMedia

Documents



ODIS-59

Selecting the Vehicle documents button displays a folder list of all of the documents for the vehicle.



After selecting Documents, you are now in

<Info> Operating mode.

To return to any Test plans or other diagnosis features, select < Diagnosis > under Operating modes on the right side of the screen.



ODIS-62

### Searching in ODIS Service

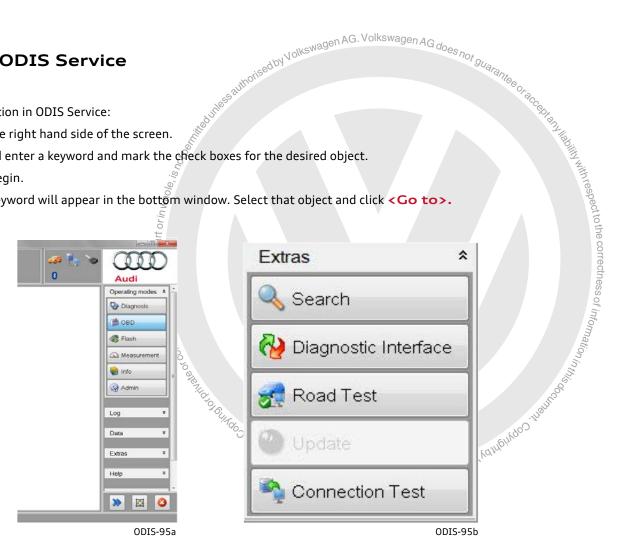
To use the Search function in ODIS Service:

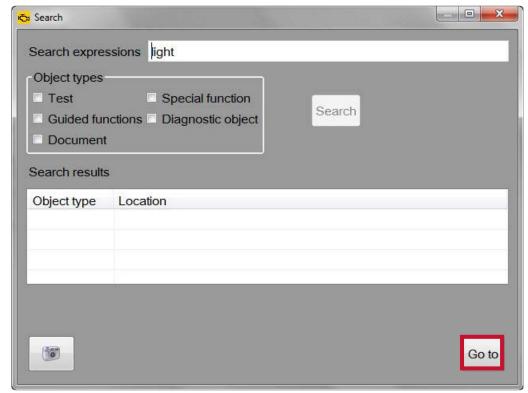
Click **Extras** on the right hand side of the screen.

Select **Search** and enter a keyword and mark the check boxes for the desired object.

Click **<Search>** to begin.

Any object with your keyword will appear in the bottom window. Select that object and click <Go to>.





ODIS-95c

### Saving/Interrupting GFF Test plans

To save or interrupt a job in GFF, use the menus on the right side of the screen.

Expand the Data section by selecting the arrows next to the word Data in the side menu area. Select **Stop**> under Diagnostic Session.



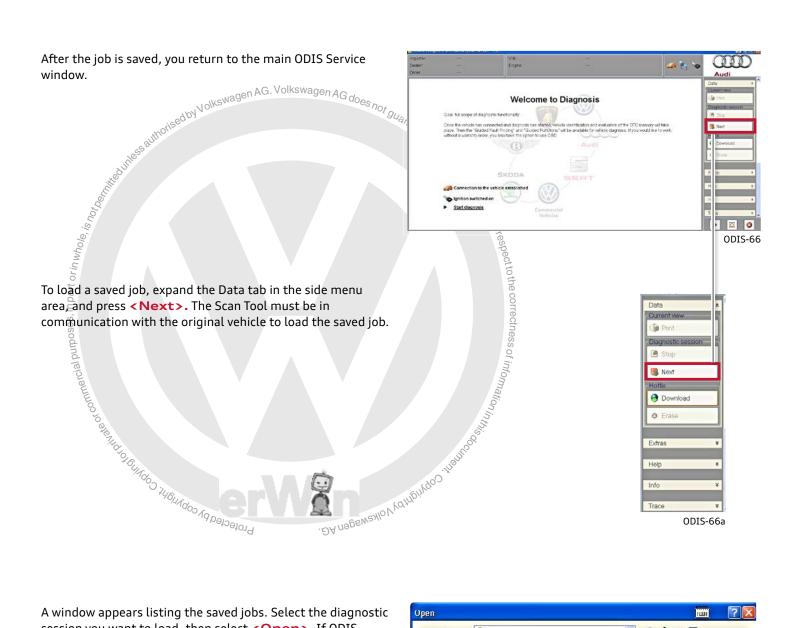


ODIS-63

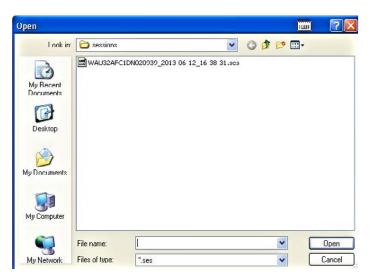
A "Save As" window appears. This window already has the save location and filename in place. You can either accept these or change them. Click <Save> to end the current session and return to the ODIS home page.

If the job is saved to the default location (pictured), it can be reastarted on this Scan Tool later. If the job is saved to a USB memory stick, the job can be restarted on any Scan Tool loaded with ODIS Service.





A window appears listing the saved jobs. Select the diagnostic session you want to load, then select **<Open>**. If ODIS Service detects a different VIN, the diagnostic session will not be loaded.



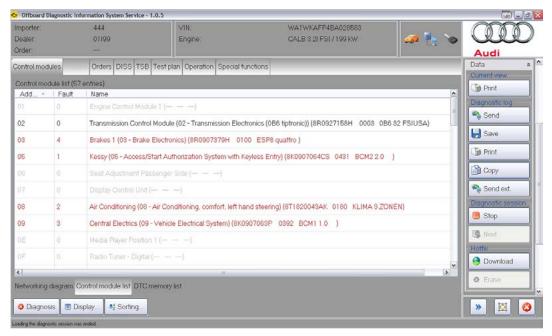
ODIS-67



vote

If the diagnostic session is not from the current version of ODIS Service on the Scan Tool, it will not be loaded.

The vehicle information and diagnosis log are now loaded. Any DTCs that have occurred since the Test plan was saved do not appear until the vehicle is scanned again.



ODIS-68

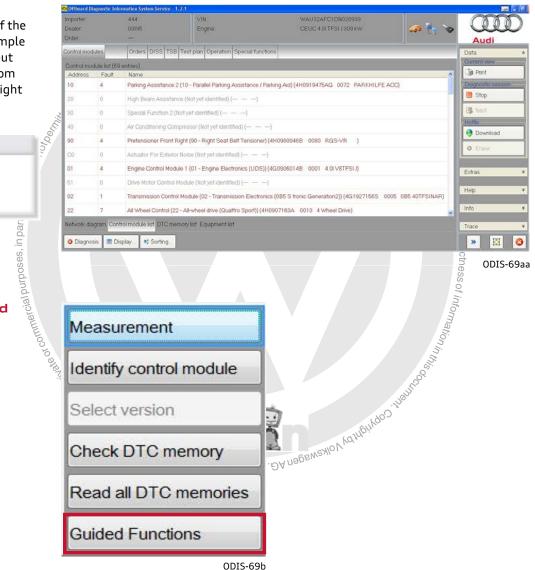


### **Guided Functions**

To access Guided Functions, right click on a control module in any of the Control Module screens. This example shows the Control Modules tab, but the menu can also be accessed from the Network Topology screen by right clicking on a control module.

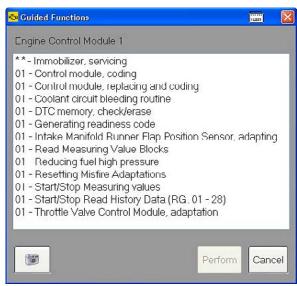


Scroll down and select **< Guided Functions >**.



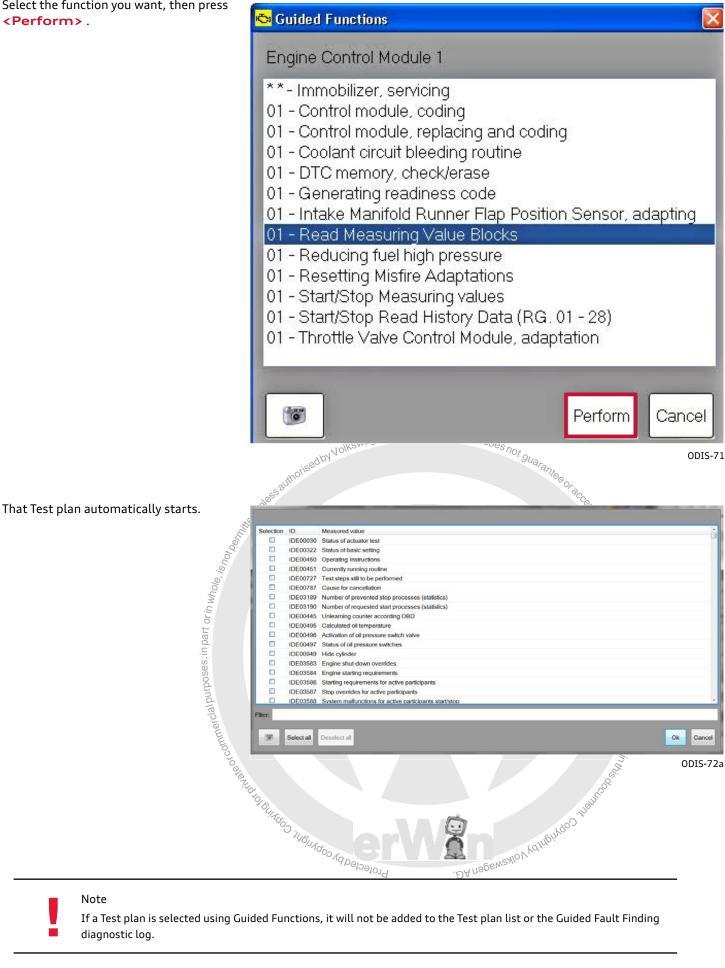
A list of functions will appear.

These functions are specific to the selected control module. Not all items listed in Guided Functions are available for all control modules.



ODIS-70

Select the function you want, then press





If a Test plan is selected using Guided Functions, it will not be added to the Test plan list or the Guided Fault Finding diagnostic log.

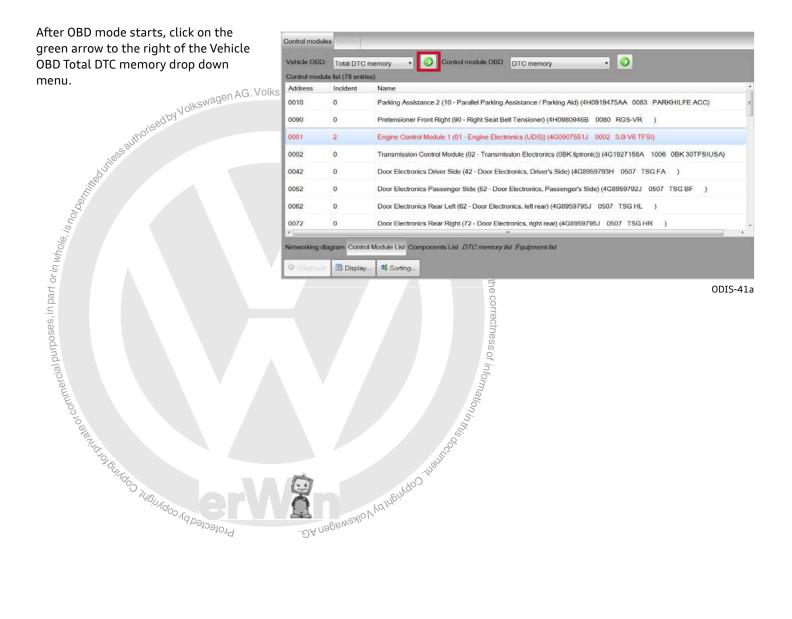
### Erasing DTCs in OBD operating mode

This procedure describes how to erase DTCs without exiting Guided Fault Finding. (DTCs are automatically erased whenever GFF is exited).

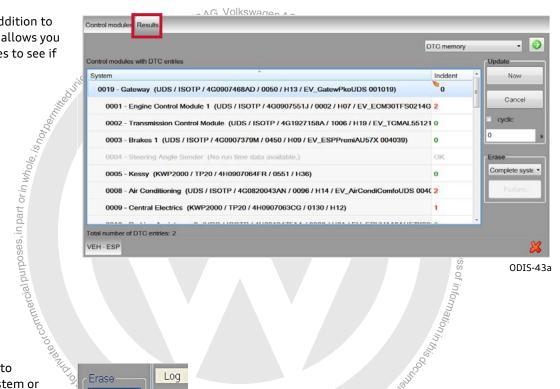
To erase DTCs outside of GFF, click on the **OBD**> Operating mode.



ODIS-39a

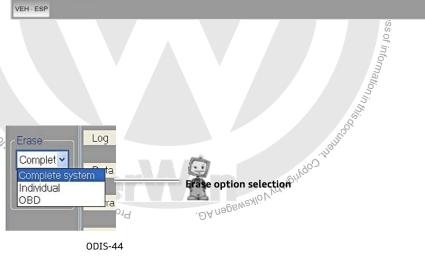


The Results tab appears. In addition to erasing DTCs, the Results tab allows you to re-check all control modules to see if DTCs have been cleared.



Select **<Erase>** then select to erase either the Complete System or Individual. Both choices will erase DTCs in all control modules, but will do so in different methods.

The individual option will access each module individually to clear the codes, then re-scan to update the DTC list. The OBD option will only erase DTCs in Federal emissions related modules such as the engine and transmission.



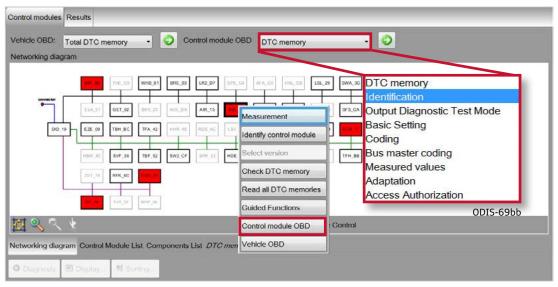
ODIS-44

#### **CAUTION**

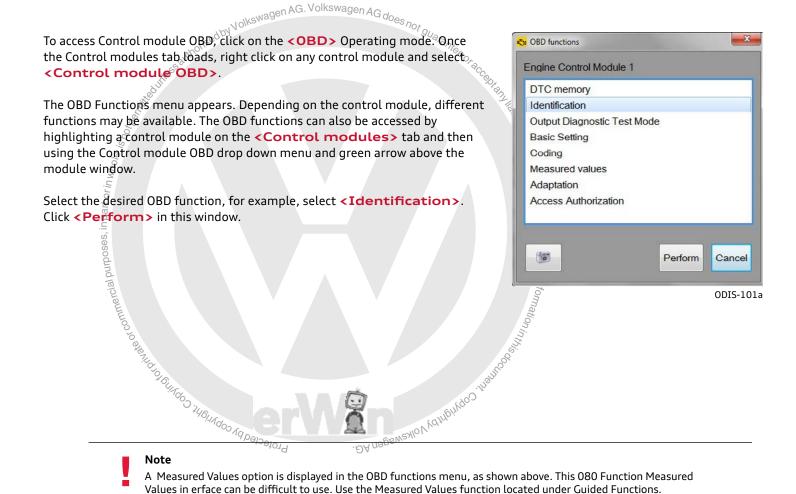
NEVER erase DTCs when an airbag concern is present and not yet repaired. Erasing the DTCs allows the system to re-enable certain components that it may have deactivated because of the DTC.

### Control Module OBD

Under Control module OBD is a list of functions that can be performed to that control module. This mode is also referred to as Vehicle Self-Diagnosis.



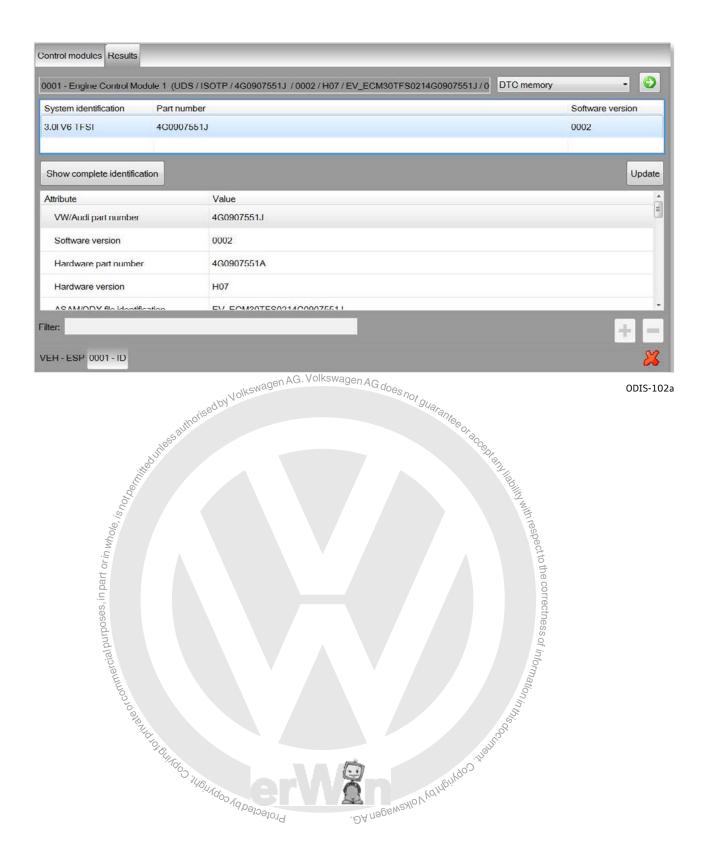
ODIS-69ab



A Measured Values option is displayed in the OBD functions menu, as shown above. This 080 Function Measured Values in erface can be difficult to use. Use the Measured Values function located under Guided Functions.

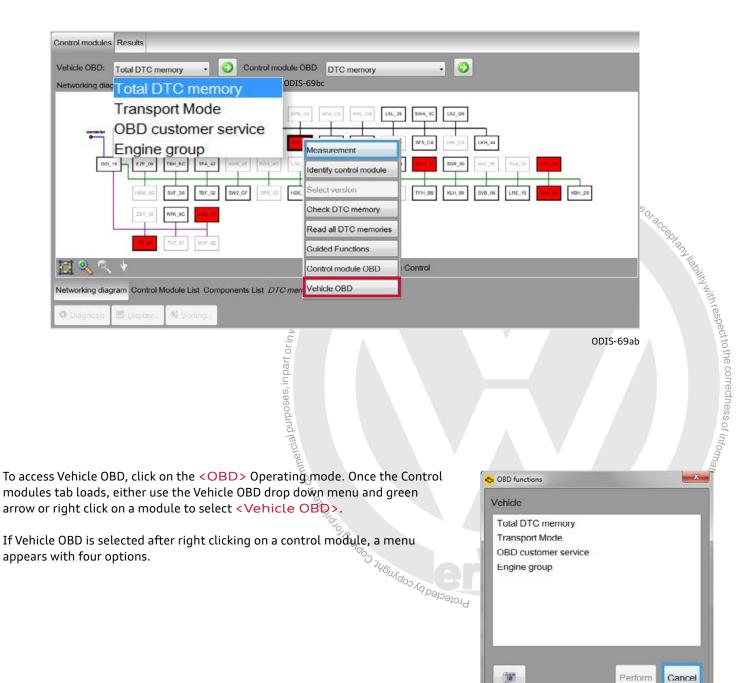
The screen switches to the Results tab showing the control module part number, coding and software versions.

Select the **Control Modules**> tab to return to the previous screen.



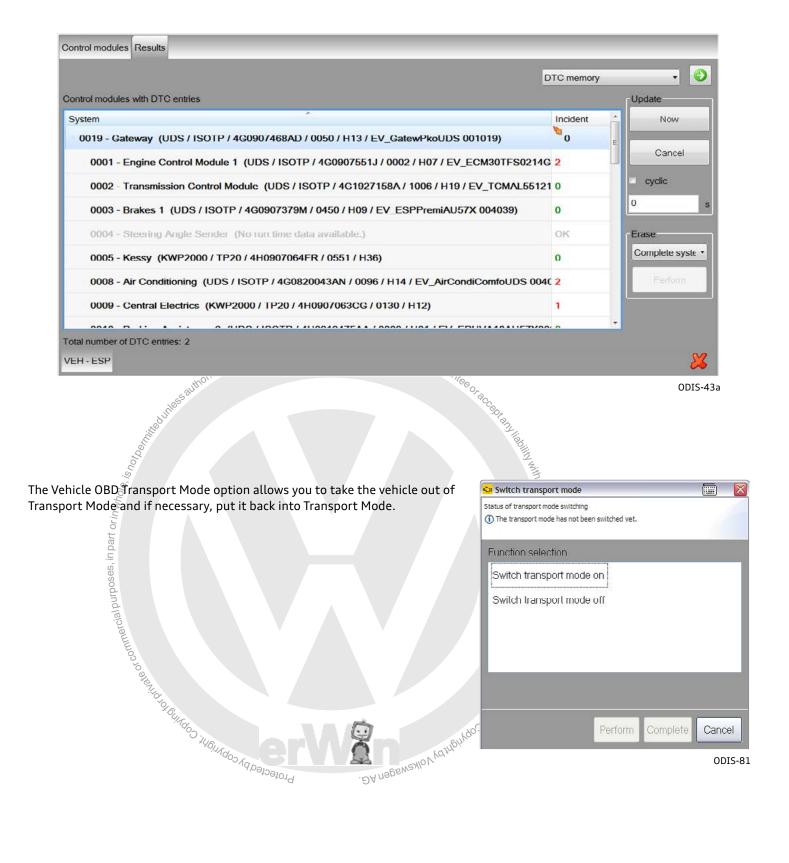
### Vehicle OBD

Under Vehicle OBD functions is a list of functions that can be performed to all control modules in the vehicle in one function, such as clearing all DTCs.



ODIS-79a

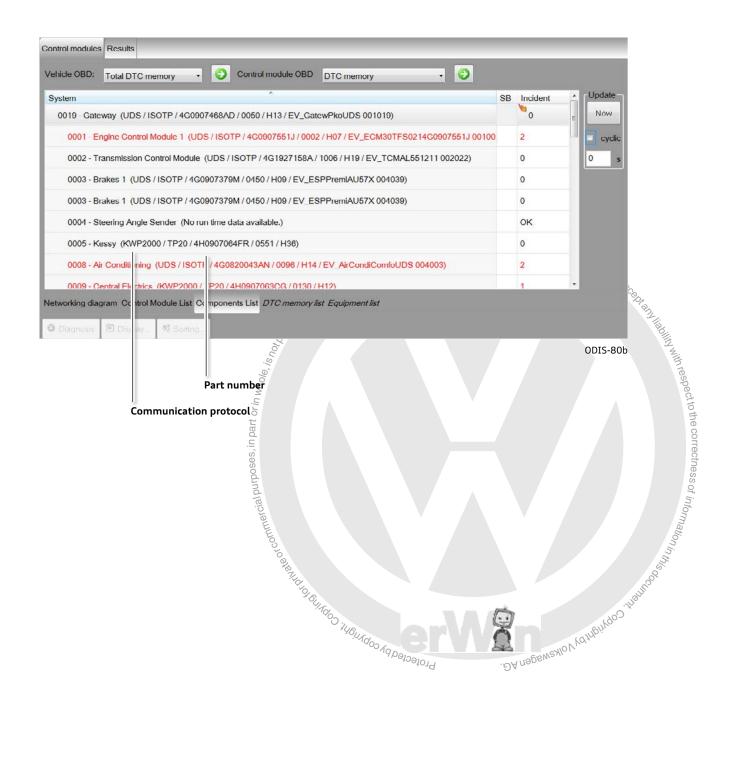
The Vehicle OBD Total DTC Memory option checks the DTC memory of the vehicle. This can be helpful to validate that the DTC has been eliminated after a repair.



### **OBD Components list**

### Component list

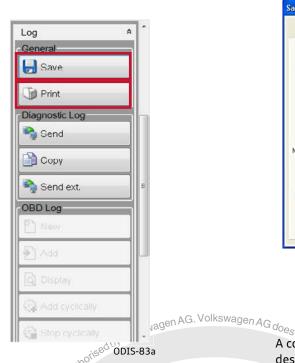
This option lists all control module part numbers and their communication protocol.

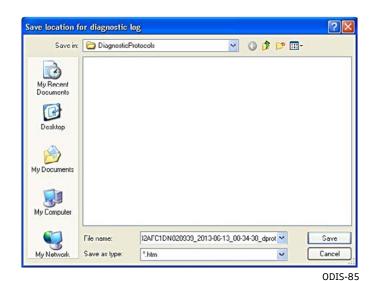


#### **Diagnostic Logs**

Diagnostic logs can be printed or saved in multiple formats. To begin the process, expand the CData section in the Side
Menu Area. Select Save or Print. Both GFF and OBD
logs can be printed or saved.

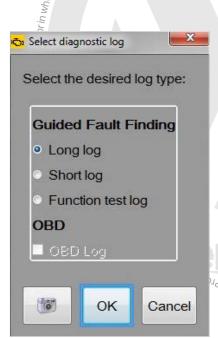
If saving to a file, select the correct destination and change the file name (if necessary).

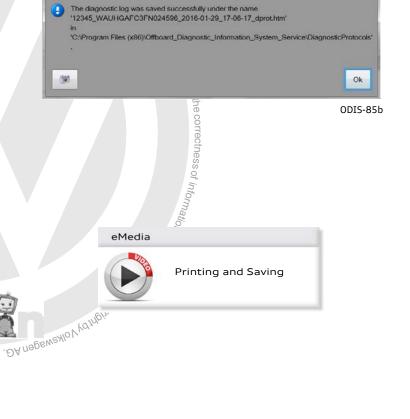




A confirmation window appears with the filename and the destination where the file was saved.

The menu that appears after selecting either Print or Save provides several options. Choose your desired option and select **OK**>.





ODIS-84a

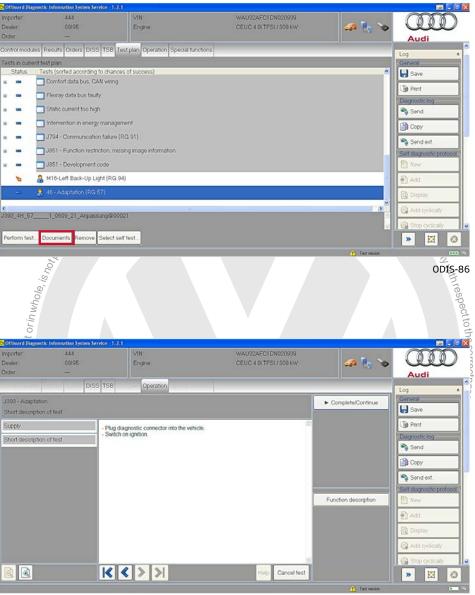
#### Adaptation



This section assumes you know how to load Test plans and that the Adaptation Test plan has already been loaded.

Select your desired Test plan then select **Perform Test>** in the lower left of the screen. This Test plan is for adapting the heating time of the rear window.

The Test plan for running the rear window adaptation will load and run. Follow the Test plan to perform the adaptation.

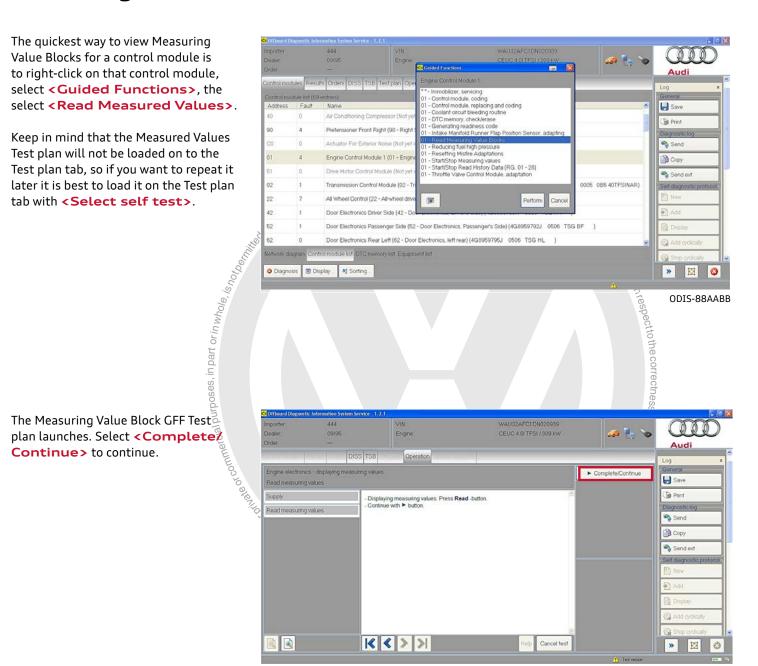


ODIS-87

### Measuring Value Blocks

The quickest way to view Measuring Value Blocks for a control module is to right-click on that control module, select < Guided Functions >, the select < Read Measured Values>.

Keep in mind that the Measured Values Test plan will not be loaded on to the Test plan tab, so if you want to repeat it later it is best to load it on the Test plan tab with <Select self test>.



ODIS-89

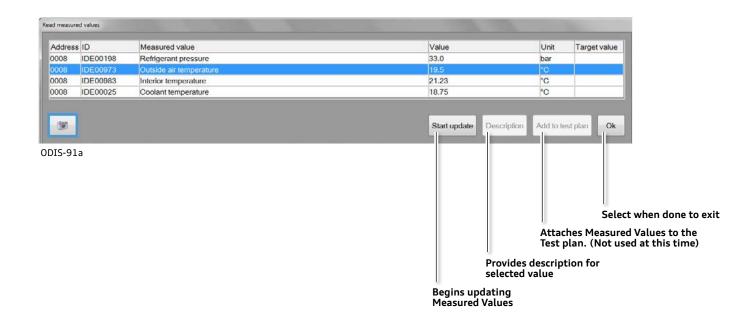
A window appears that lists all of the available measured values for that control module. If you would like to search for specific Measured values, use the Filter area and type in

a term. In the example shown here, "ACC" is used to find Accelerator values. Place a check mark in all values you would like to read, then select **<OK>**.



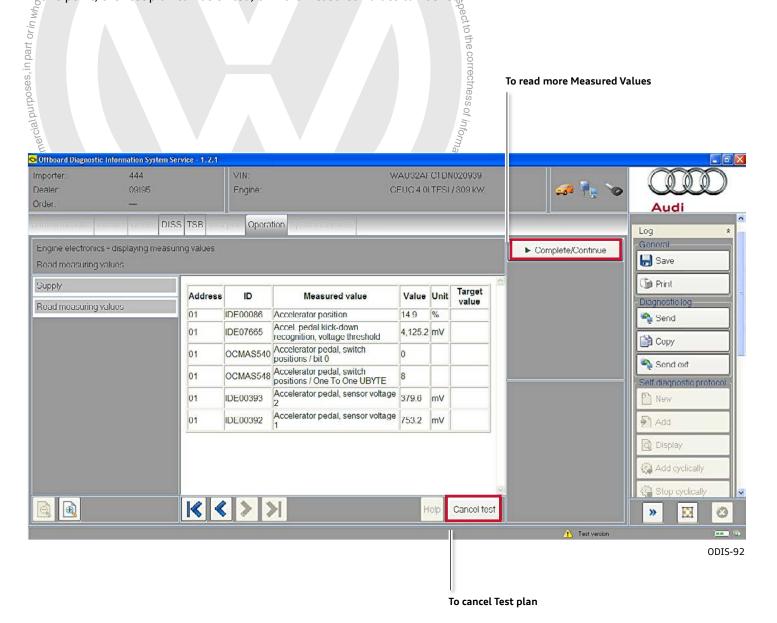
The selected Measured Values appear in a new window. Press <Start update> to begin a cyclic update of the measured values. The Description button provides a description if a single measured value is selected. The OK button exits the Read Measured Values window.

of the columns can also be resized to display more or less information.



After the Read Measured Values window has been closed, the GFF Test plan displays a table of the Measured Values that were read.

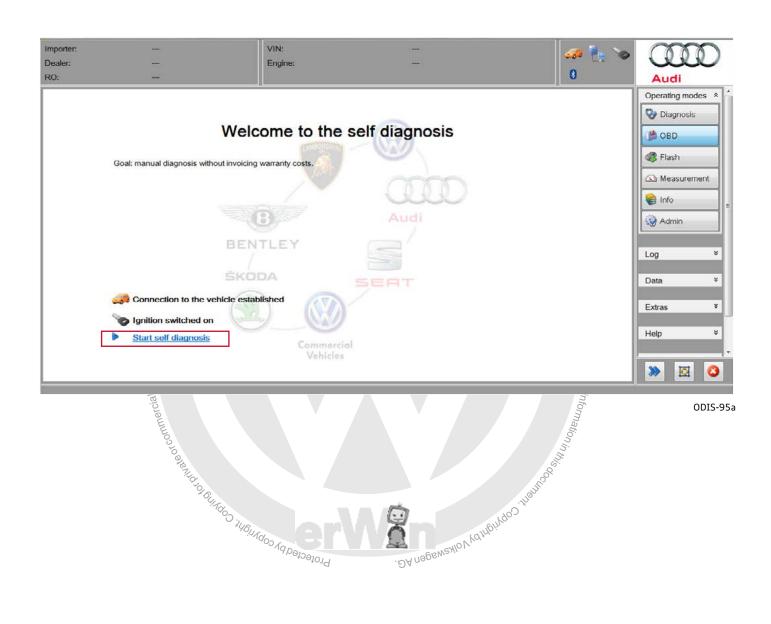
At this point, the Test plan can be exited, or more Measured Values can be read.

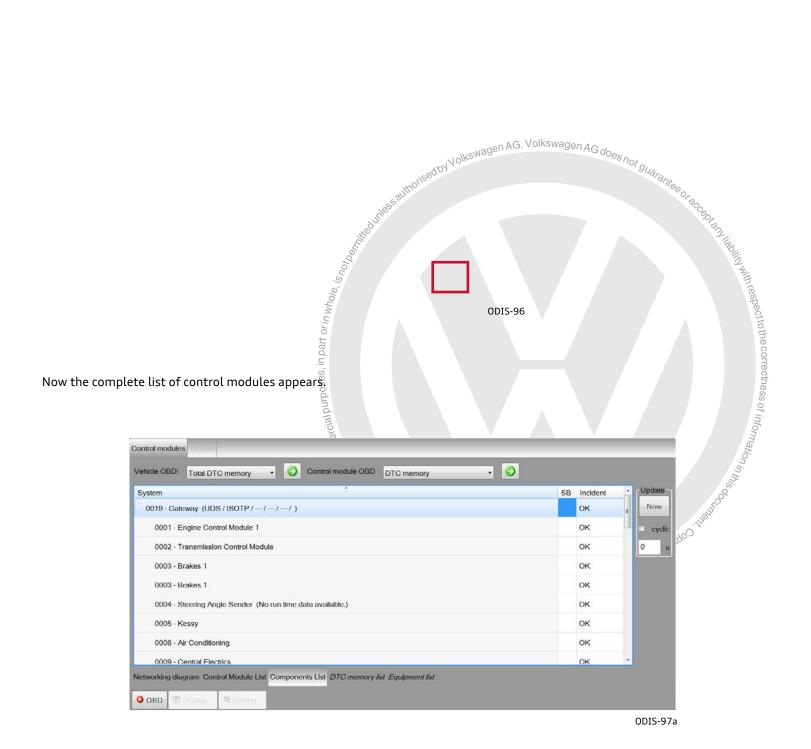


## Vehicle Self Diagnosis

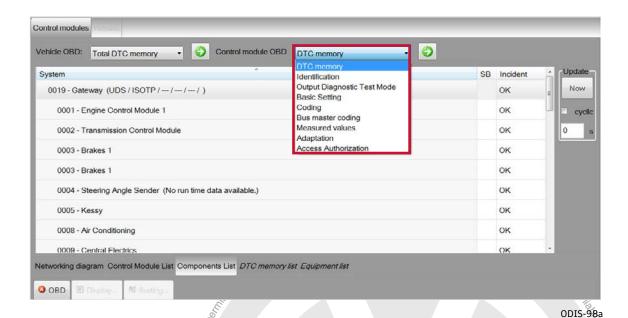
To access Self Diagnosis without starting a GFF session, click the **<OBD>** Operating mode.

Then select < Start self diagnosis >.

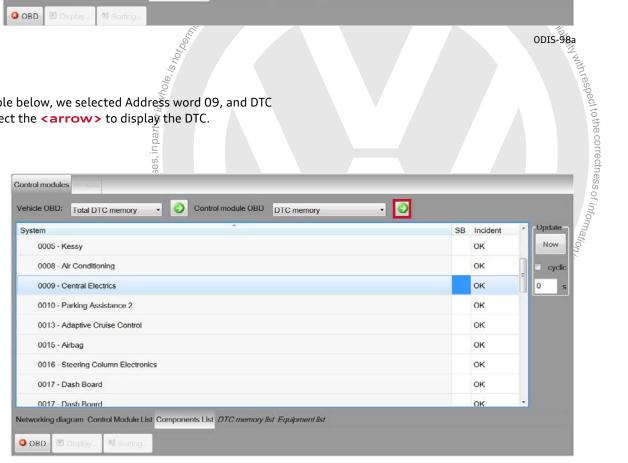




Once a control module has been selected, select the drop down menus to see a list of functions.



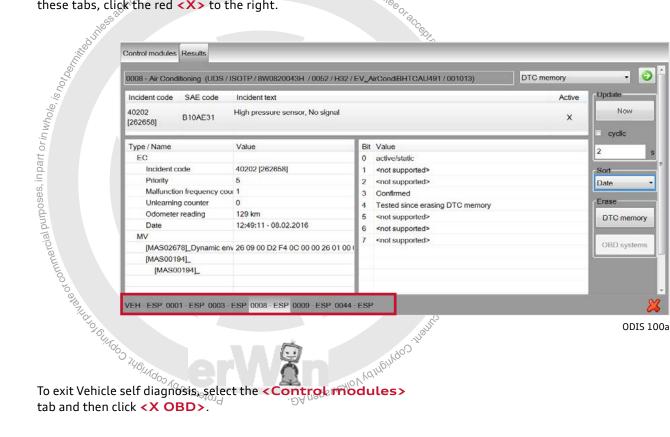
In the example below, we selected Address word 09, and DTC Memory. Select the **<arrow>** to display the DTC.



ODIS-99a

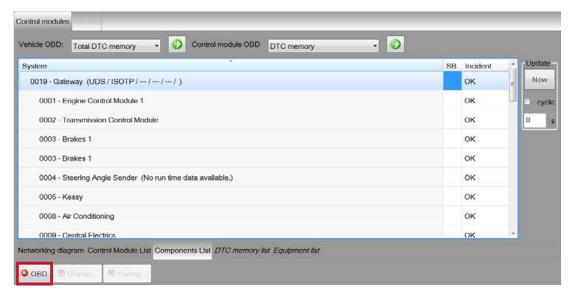
Now the DTC information appears.

What you find on the Results tab is similar to what was shown previously on page 14. In this case, the Erase function will only clear DTCs in the selected control module. The Update function can be used to re-scan for faults at a set time. The tabs on the bottom of an accessory of the control module that has been accessory through the Control module OBD functions. To close any of the click the red <X> to the right.



**ODIS** 100a

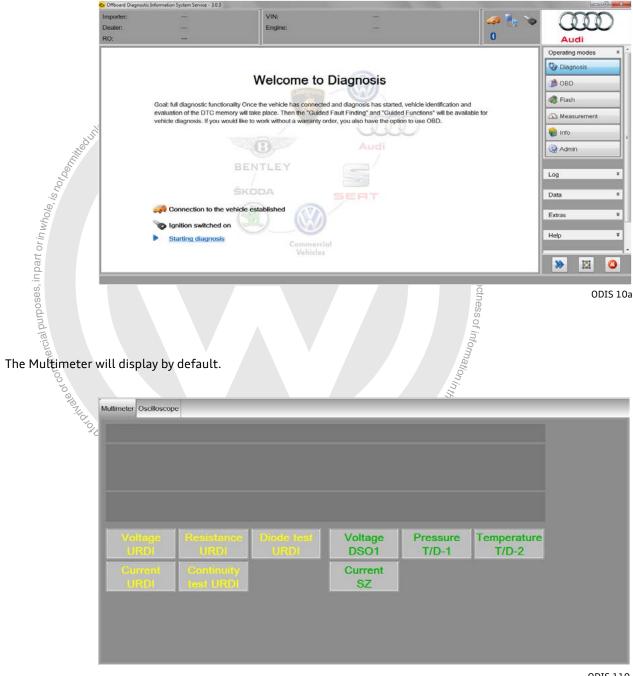
To exit Vehicle self diagnosis, select the **Control modules**> tab and then click <X OBD>.



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#### Test instruments

To access the Test Instruments function of the Scan Tool: Select < Measurement > from the Operating modes column.

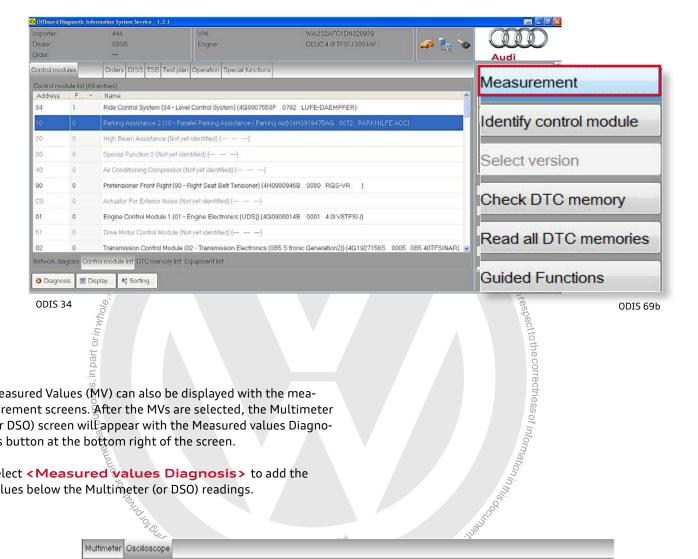


**ODIS 110** 

To switch to the DSO; Select **<Oscilloscope>**.

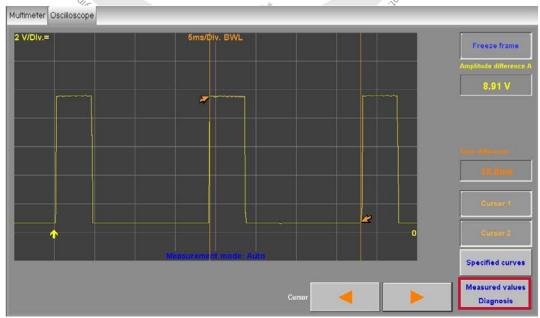
For more information, please refer to the ODIS user manual. For more information on the DSO, please refer to 970193, Digital Storage Oscilloscope (DSO) Reference Guide.

Test instruments can also be accessed directly from GFF. Right click on a module from the Control modules list, then select <Measurement>



Measured Values (MV) can also be displayed with the measurement screens. After the MVs are selected, the Multimeter (or DSO) screen will appear with the Measured values Diagnosis button at the bottom right of the screen.

Select < Measured values Diagnosis > to add the values below the Multimeter (or DSO) readings.



**ODIS 111** 

### Support and Online web help

Support for the ODIS Service application or its Test plans is available.

Select **Support** on the right side menu under Help.

The **Online help**> button can be used to access the ODIS user manual for more information on any of the functions in ODIS."



ODIS-93

When the support window appears, type in your personal information and vehicle brand.

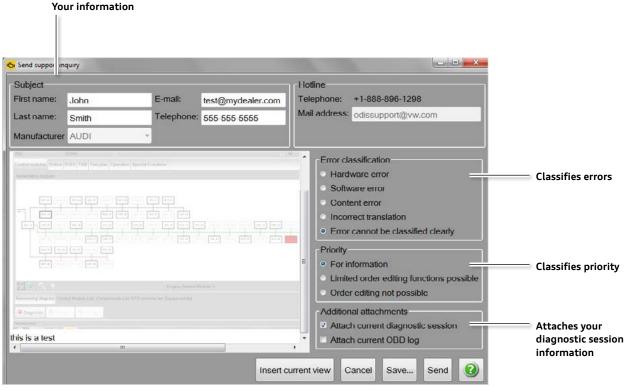
Classify your concern. The priority can be left at "For information."

or commercial purposes, in part or in

To be helpful, you can attach your diagnostic log, and the "Insert current view" button can be used to place a screenshot into the support window.

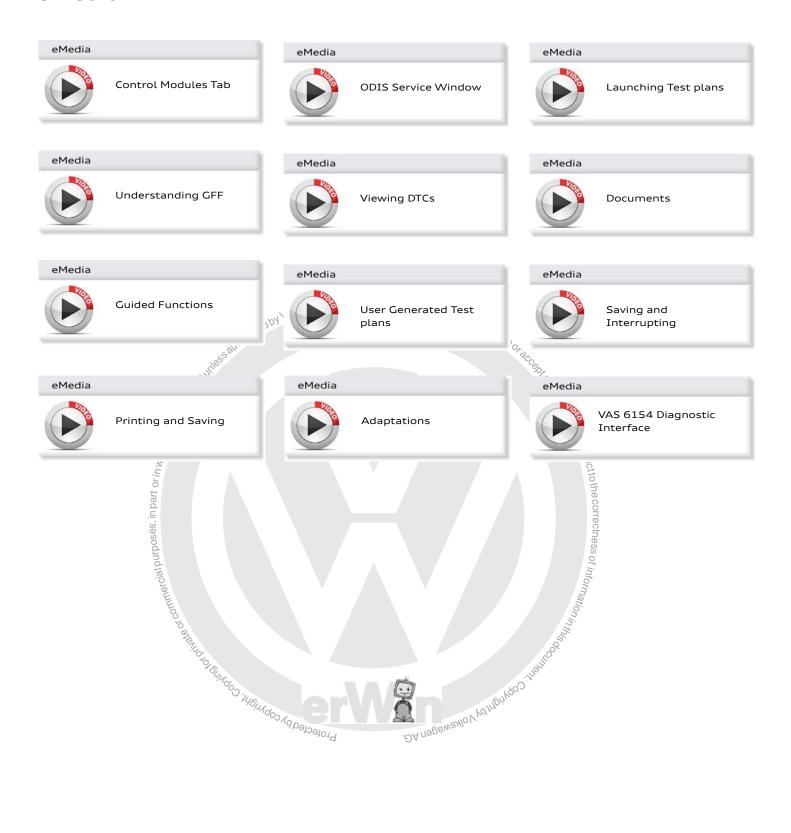
When done, select **Send>** and your support information will be sent to the ODIS Service support group in Auburn Hills, Michigan.

For more information on Support inquiry, use the <?> button to access the ODIS user manual."



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#### eMedia



# Knowledge Assessment

This eReference Guide does not have a Knowledge Assessment. It is designed to be used as a reference, or in conjunction with the ODIS Service Workbook 910123.

The ODIS Service Workbook 910123 has an assessment of its own that can be found at www.accessaudi.com.

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demy CRC port" Please submit any questions or inquiries via the Academy CRC Online Support Form which is located under the "Support" tab or the "Contact Us" tab of the Academy CRC. Probeded by Copyright of Durpoloring Purply of Durpoloring Durpolo





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Audi of America, LLC 2200 Ferdinand Porsche Drive Herndon, VA 20171

### **Cautions & Warnings**

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the VAG 1551 Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support
  a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a
  vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the
  battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and
  become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it.
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose cothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

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## **Cautions & Warnings**

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

## **Cautions & Warnings**

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the VAG 1551 Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

