Technical Service Bulletin

00 Software Version Management (SVM), operating instructions

00 19 25 2011732/11 September 17, 2019. Supersedes Technical Service Bulletin Group 00 number 14-65 dated July 15, 2014 for reasons listed below.

Model(s)	Year	VIN Range	Vehicle-Specific Equipment
All	2002 – 2025	All	Not Applicable

Condition

REVISION HISTORY		
Revision	**Date**	**Purpose**
11	-	Revised header (Added model years) Revised bulletin to include the latest information
10	07/15/2014	Revised entire bulletin to include ODIS information
9	02/07/2012	Revised header (Added model years) Revised *Technical Background* Revised *Service* (Added image)

This Technical Service Bulletin (TSB) details the general process for carrying out a Software Version Management (SVM) software update for any TSB or Update.

Troubleshooting information is included at the end of the *Service* section.

Technical Background

Glossary of Terms & Acronyms used in this service bulletin

SVM: Software Version Management.

ECU: Electronic Control Unit (i.e. ECM, TCM, BCM, gateway, cluster, etc.)

TCM: Transmission Control Module.

XCHG: Abbreviation for "exchange" or replacement (i.e. SVM Code XCHG15A005).

ODIS: Offboard Diagnostic Information System.

ECM: Engine Control Module.

CARPORT: The database that stores the last known good configuration for each VIN.

ASAM-MCD: ASAM - Measurement, Calibration, and Diagnostics.

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ETKA:	ET = Ersatzteil (Spare Parts) & KA = Katalog (Catalog).	**MMI:**	Multi-Media Interface.
ASAM:	Association for Standardization of Automation and Measuring Systems.	**MIB:**	Modular Infotainment System (ENG). Modularer Infotainment Baukasten (GER).
MOST:	Media-Oriented System Transport.	**Service42:**	Server hosting the SVM application.
VAS:	Volkswagen Automotive Service Equipment.	**Version42:**	Engineering database hosting the ECU data and configuration files.
ZUG:	Refers to the software package, or train, of an ECU. "Zug" is a German word for the train.	**FoD:**	Function on Demand (after-sales features or functions that are activated over the air or SVM).
FPK:	Free-Programmable Cluster (AKA Virtual Cockpit).		

SVM Basics

SVM was developed to ensure that the hardware and software of each ECU is correct before the vehicle leaves the dealership repair facility.

A VAS 5051B, VAS 5052A, VAS 6150(A/B/C) or VAS 6160 diagnostic tool is required for reading the vehicle control module data and sending it to the SVM server (also called an "SVM communication"). The SVM communication data flow is illustrated below (Figure 1).

Note:

- ODIS should be updated to the latest software level before beginning diagnosis or coding.

- Diagnostic head 6154 is required on all 2019 and newer vehicles.

- Starting with 2019 and newer vehicles the hood is required to be open when programming, this is due to security architecture in the vehicle.

- Windows 10 does not support the 5054x diagnostic head.
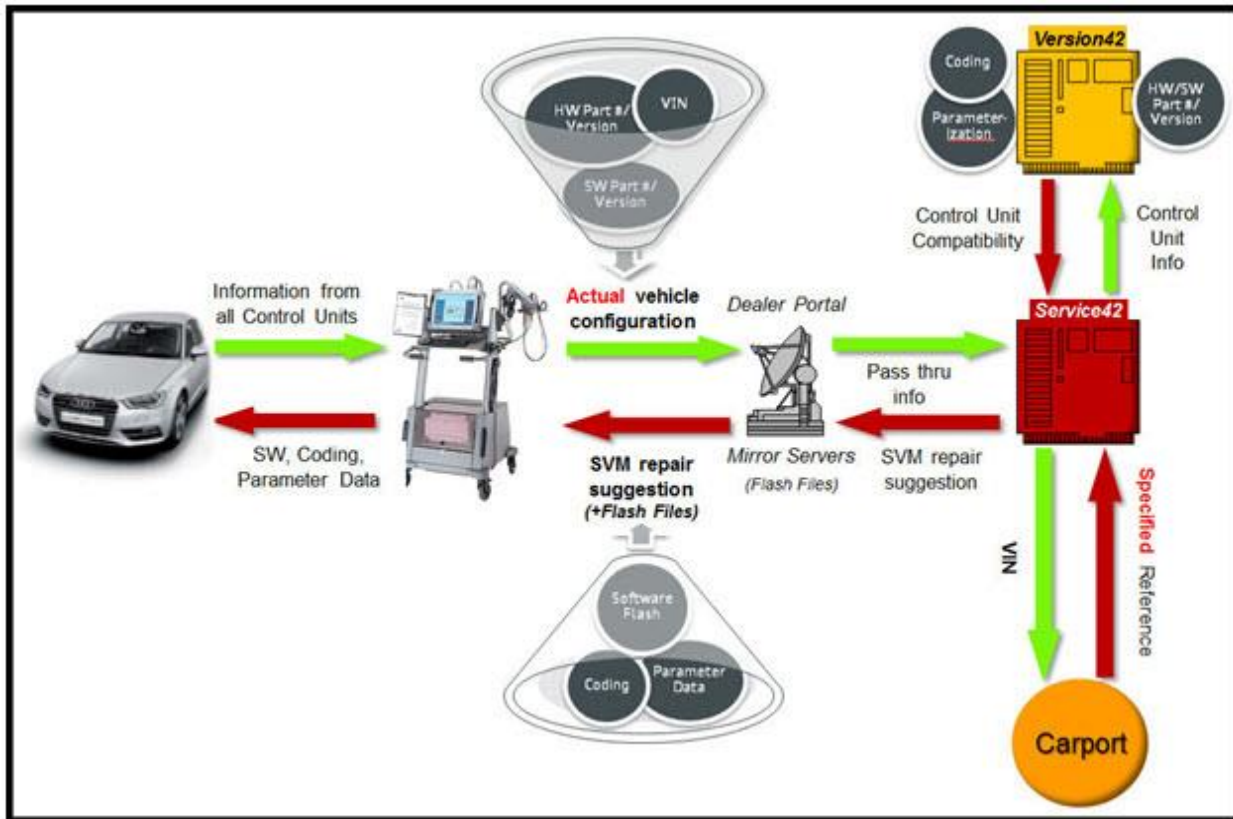
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Figure 1. *SVM communication data flow.*

SVM Menu Options

The displayed items (Figure 2) may vary based on the vehicle connected:

1. **Erasing DTC memory**
2. **SVM – Activations**
3. **SVM – Activations (FoD)**
4. **SVM – Code input**
5. **SVM – Erase Activations**
6. **SVM – Function on Demand**
7. **SVM – communication, checking**
8. **SVM – Specified/actual comparison** (Only used on models up to 2017 A4 B9. Function has

Figure 2. *SVM main menu options.*

been moved to the "Check module configuration"
under the guided function for each module).

See the corresponding section below for an explanation of the functions.

SVM - Activations

Purpose: Used to recover existing activations or to activate new features/functions in an installed control
              module:

- When used to recover an existing activation, no activation code is required because the
  license authorization is already on the server.

- When used to activate a new function/feature, a new activation code (and possibly a PIN or
  customer code) may be required.

How it works: New SVM activation codes are used to add features or functions to a vehicle that were not
              previously there. Trailer hitch installations and navigation database updates are examples of
              when an activation code is used to add functions or features to a vehicle.

              Instead of purchasing navigation map data, the customer must purchase an "activation packet"
              to unlock the map update installed in the MMI system. The activation packet consists of an
              activation code, activation number, and PIN. Once the activation packet information is used on a
              vehicle, it is permanently connected to that vehicle in the SVM database and cannot be used on
              any other vehicle. This is entered via **SVM – Activations.**

              Map update SD cards can be used on multiple vehicles however an activation document is
              needed for every car the software is installed on. See ETKA for the corresponding map update
              software to be used with the activation document. For more information regarding map updates,
              see TSB 2037809 91: *How to update MMI MIB navigation map - potential customer concerns.*

              Recovery activation is used in service if a module is replaced. When a control module is
              replaced that requires activation codes, these are pulled from the SVM server. This occurs
              during the ODIS replacement test plan which avoids the need to re-purchase the same
              activation documents in the future.

Additional
Information: Starting with the Audi e-tron quattro and MY 2020 and newer vehicles, all activations are now
              stored within the Gateway. Previously, activations were split between the MMI (005F) and the
              Gateway (0019). This is important to understand when diagnosing concerns related to missing
              or inactive functions. Activated functions will change the available items displayed on the MMI
              screen.

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SVM – Erase Activations

Purpose: To erase the activations inside the control module. This would be done in an attempt to repair activations that have become corrupt causing functionality issues in the vehicle. Some control modules have a maximum number of allowed activations that can be stored at one time. If there are incorrect or illegal activations stored they count towards the maximum number of allowed activations. In this scenario using the erase activations function can be helpful.

SVM – Function on Demand (FoD)

Purpose: Function on demand is a new feature starting with the 2019 Audi e-tron quattro. This function allows for new features to be activated or deactivated based on customer purchase or subscription.

SVM - Code input

Purpose: Code input is used to update the software in the vehicle. It is used for any updates that cannot be performed with SVM - Specified/actual comparison (or SVM - Check Module Configuration, depending on model).

How it works: When an SVM code is entered, a "Quick Test" is automatically performed. This test immediately verifies whether or not the SVM code is valid (before the update is attempted) by sending the VIN and SVM code for rough verification before other information is read out of the car and sent to SVM.

- If a hardware change is necessary, the software update will not be performed and the message "the SVM code is not valid for the vehicle" or "check hardware against ETKA" appears.

- If SVM determines that it will not be able to code and/or parameterize the control module after the update, it will indicate that the SVM code is valid for the vehicle, but the update cannot be completed. (In such cases, contact TAC for assistance).

- If no issue is found, SVM will perform the update.

- Some newer MMI and FPK software updates require the software to be downloaded from the SD creator ahead of time to complete the SVM update. For more information about the SD Creator process, see TSB 2047812: *00 SD Creator: how to set up and use the SD Creator for obtaining vehicle software updates via the MirrorServer.*

- After the update is complete, a specified/actual comparison is performed for the updated diagnostic addresses in order to calculate the new coding and parameter data[1] set for the control module and to set a new reference in the CARPORT database.

Additional Information:
- Before an SVM code input is attempted, it is important that the condition is correctly diagnosed and that only a valid code from an applicable TSB is used. Incorrect SVM codes can cause conflicts in the SVM database.

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- SVM codes can be used to document manual software updates (which are performed with a CD, DVD, or SD card), such as MMI software package (ZUG) updates. An SVM code for an MMI update will document changes in the SVM database and provide coding and/or parameterization suggestions, but it does not perform software updates.
SVM codes for MMI software package (ZUG) updates will only be successful if all control modules are already updated to the correct level (including those that were recently replaced).

- SVM exchange codes (XCHG) may be used to aid in the installation of new service parts when a specified/actual comparison cannot code or parameterize the replacement control module (such as with all Audi airbag control modules). XCHG codes can be found with the parts bulletin listed in ETKA, or in an applicable TSB. See Figure 3 for the location of SVM codes found in ETKA.

Figure 3. *Location of SVM code in ETKA.*

- It is critical that the XCHG code is run *immediately* after a new control module is installed in the vehicle. If a specified/actual comparison is performed instead of the XCHG code, an invalid vehicle reference can be created in the SVM database which can prevent the XCHG code from functioning. (In such cases, contact TAC for assistance). Typically, GFF runs the XCHG code in the control module replacement routine automatically, or it will ask if an XCHG code was provided.

SVM - Specified/actual comparison

Purpose: (Note that this option is not available on model year 2015 and newer A3 vehicles and 2017 models forward -- see *SVM - Check module configuration,* below, for A3 information).

- By comparing the current vehicle data with the stored server data, a specified/actual comparison ensures that all control modules that are installed in the vehicle have the same part numbers, software versions, coding, and parameter data that were last recorded. If any discrepancies are found, SVM displays a notification.

- Specified/actual comparison does not suggest software updates; it only looks for the last recorded hardware/software part numbers and last recorded software versions.

How it works:
- When a specified/actual comparison is performed, the actual part numbers and actual software versions in the vehicle (the "actual" data) are sent to the servers. This "actual" data is compared to the "specified" data stored for the vehicle in the CARPORT database.

- The specified/actual comparison will document any changes that have been made to a control module's hardware part numbers and software versions if they are valid supersessions. It will also inform the user if the changes are accepted or rejected.

- When a new control module is installed, the specified/actual comparison calculates the coding and new parameter data set. If a "hardware change suggestion" is given, a conflict exists within the vehicle reference for the control module (SVM expects a different part number or software version).

Additional Information:
- SVM will not allow a new control module to be installed if it has an older version of the software, even if the control module has the same hardware/software part numbers. In this case, the new control module will need to be updated with the latest software if available on SD/SVM code card OR the correct module installed. If this is not possible contact TAC for assistance.

- If any hardware changes are suggested as a result of an SVM code being executed, a new vehicle reference will *not* be set in the CARPORT database (in order to prevent any bad data from being documented). As a result, repeat coding and/or parameterization suggestions may be given with all subsequent SVM communications. It is recommended that all hardware change suggestions be resolved *before* any SVM codes are entered. Once the hardware change issue is resolved, the SVM code must be run again in order to set the reference. This process is complete when a message appears explaining that no further actions are needed.

SVM - Check module configuration

Purpose:
(Note that this option is only available on model year 2015 and newer A3 and 2017 B9 and newer models -- see *SVM - Specified/actual comparison,* above, for other vehicles). It is found when right-clicking on the module from the control module list display in GFF.

- This function ensures that a control module that is installed in the vehicle has the correct part numbers, software versions, coding, parameter data, and adaptation values by comparing the current vehicle data with the stored server data.

- Check module configuration does not suggest software updates; it only looks for the last recorded hardware/software part numbers, last recorded software versions, and performs all necessary adaptations.

How it works: The functionality is the same as that of a specified/actual comparison (see above), but there are separate communications from each control module, rather than one communication from the entire vehicle.

Additional Information:

- When a new control module is installed, this function calculates the coding, the new parameter data set, and any applicable adaptations required for the control module. (Not all control modules will support the setting of adaptations in SVM; ensure that the proper GFF replacement test plan is followed).

- If a control module is being replaced, it is necessary to perform the replacement test plan which can be found under the Control Modules tab in ODIS. This ensures all functions of the module are properly checked and activated.

Tip: When SVM is used during the diagnosis of a customer concern it is helpful to look at the coding suggestions provided in the test plan. Based on the SVM action being performed, some modules are always re-coded, adapted or parameterized even if no changes are actually made. This can be misinterpreted that a coding change was made which could lead to a misdiagnosis of a customer concern. For this reason, it is helpful to compare the actual coding changes to the suggested coding changes made at the end of the test plan. Here you will see if a change was actually made, or if it remained the same.

SVM – communication checking

Purpose: This function tests the communication of the VAS tester to the SVM server in Germany.

How it works: The VAS tester performs a quick check to see if the SVM server can be reached.

Additional Information: If an issue is found, check all connections to ensure that the tester has a sufficient internet connection. Check with IT to make sure that the tester can reach the internet. If the issue appears to be unrelated to the dealer IT infrastructure, call tester support.

[1] Parameterization (or parameter data) is data that is written into the control module by SVM that configures the software functionality for the specific vehicle or country of operation. To ensure proper function of the control module, it is critical that parameterization is executed when it is suggested by SVM. Not all control modules support parameterization by SVM. Parameter data may be referred to as "calibration data".

Production Solution

Not applicable.

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Service

1. Before beginning the SVM code update, check the system for DTCs that are not related to the update. If there is a DTC in the system relating to "**Checking Software Version Management**" the control module is not properly configured and could be related to the concern. An example would be a module that was replaced without successfully coding and adapting the module. This could lead to customer complaints related to missing functions or incorrect vehicle behavior.

   If unrelated DTCs are found, these may need to be resolved first before proceeding. If that is not possible, write down the DTCs (to investigate later) because they may be erased during the update. It is possible that unrelated fault DTCs can prevent the execution of the SVM update.

   Tip: Sporadic communication DTCs will be created during SVM coding or updates. These DTCs will be automatically erased when using the FLASH function in ODIS. For this reason, any needed diag should be done before performing SVM actions. If using GFF, it is a best practice to ensure all DTCs created during SVM programming are cleared before exiting ODIS.

2. Check the vehicle for evidence of a tuned ECM or TCM (A tuned control module has been modified to perform outside of the normal parameters and specifications approved by Audi of America). See TSB 2028842: *01 Automatic detection of unauthorized chip tuning (TD1 warranty key)*. If evidence of tuning is found, do not proceed with any procedure that updates ECM or TCM programming until the following are completed:

   - The vehicle owner must be notified that the vehicle was found to have been tuned.

   - The vehicle owner must be notified that any damage caused by the tuning (including adverse emissions consequences) will not be covered by Audi of America warranties. If tuned control modules are updated, they may become unusable and require replacement.

   - The vehicle owner must provide written consent (see attached Control Module Tuning Form) for any requested repair (whether or not it is under warranty) that requires flashing that will automatically overwrite the tuned program.

   Tip: Any programming update could overwrite any tuned ECM or TCM programming.

3. Confirm that the TSB being used for the update applies to the customer complaint, and perform only those operations explicitly stated in the TSB.

4. Ensure that the person operating the VAS tester has a valid GeKo user ID and password and that no more than one active tester session with this user ID is in progress.

5. Verify that all of the following requirements are met:

   - The tester is VAS 5051B, VAS 5052A, VAS 6150(A/B/C), or VAS 6160 with the latest ODIS base and brand updates installed.

   - The tester must be plugged into a 110V AC power supply at all times.

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- The tester must be plugged into the local network via a LAN Ethernet cable. (It is possible to connect via Wi-Fi with the VAS 6150 and 6160 testers, but a Wi-Fi connection is not recommended due to the possibility of signal drop-outs).

- The VAS 5054A or 6154 transmitter *must be connected* with a USB cable to the tester. The Bluetooth connection *must be disabled* in the Windows system tray. If the Bluetooth connection is not disabled, Windows will default to using Bluetooth even though the cable is connected.

- Ensure that the Windows power-saving settings are all disabled on the VAS tester (including Bluetooth power-saving). This requirement is especially important during an SVM software update in which the 110V AC power supply is interrupted. If power-saving settings are on, the VAS tester may shut down during the SVM software update. (Refer to service circular *AVT-12-02 VAS Diagnostic Devices - Recommended Windows® Settings* for more information.)

  ⚠️ **Note:**
  If the Windows screensaver activates during a control module software update and the hard drive shuts down as a result of the power settings, a control module failure may result. (Refer to service circular *AVT-12-02 VAS Diagnostic Devices - Recommended Windows® Settings* for more information.)

  ⚠️ **Note:**
  Do *not* use a VAS 6017B K-line adapter while using SVM. Doing so may result in complete control module failure if an SVM code for software update is being performed.

- Ensure that the battery has a minimum no-load charge of 12.5V.

- Ensure that the vehicle is connected to an approved battery charger. Do not use a battery maintainer and do not use a trickle charger, as they might not supply enough current.

- The vehicle infotainment system and all other accessories should be switched off. If necessary, turn off the LED daytime running lights (by using the MMI menu or, on older models, by applying the parking brake).

6. Ensure that communication can be established with the control module. If communication cannot be established, make the appropriate repairs before attempting SVM. If the tester cannot communicate with a module, the tester cannot flash software onto the module.

7. If the vehicle does not have a physical ignition switch for the key, turn on the hazard lights in order to keep the vehicle CAN bus system awake (to prevent the vehicle from automatically shutting down after 30 minutes).

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8. If no previous diagnosis was performed, select **Flash** from the homepage of ODIS. (unless otherwise directed by the bulletin or by TAC) (Figure 4). This is the quickest way to execute an SVM code.

    If GFF was already started for diagnosis of other concerns, all SVM functions can be access via the special functions tab in GFF.

Figure 4. *Selecting the Flash option in ODIS.*

9. Follow the SVM update procedure, and enter the SVM code when prompted.

    Tip: If the latest ODIS update is not installed on the tester, the SVM code may fail and return the following error message: "ASAM-MCD base system error".

10. When prompted, Enter a valid GeKo ID. Data will be transmitted to the SVM server, and the server will respond with instructions to continue (see detailed descriptions in the *Response Codes* table below). The response may include one or more of the following instructions, and the instructions may apply to one or more control modules (as specified in the bulletin):

    *   Update a control module (flash).

    *   Code a control module.

    *   Parameterize a control module.

    *   Check hardware of a control module.

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i **Tip:** A hardware change suggestion occurs when SVM does not recognize the control module as being valid for the vehicle (there is a conflict between the specified and actual hardware part numbers or software versions). If there is no DTC stored for the control module:

- First, ensure that the correct part number is installed.

- Next, check for an applicable bulletin or ETKA note (to the right of the part number column) for an SVM XCHG code.

- Finally, if the part number is correct and an applicable SVM XCHG code bulletin cannot be found, contact TAC (before contacting TAC, read the Technical Assistance Center Contact Requirements listed in the *Additional Information* section of this bulletin).

i **Tip:** With MMI control modules, it is possible that the SVM code for feedback documentation was not performed after an update CD/SD card was used. Report all MMI issues to TAC before attempting repairs.

11. Continue until the following text is displayed: "Vehicle conversion/update has been successfully performed. The changes have been stored in the system. Thank you."

i **Tip:** The SVM process must be completed in its entirety in order for the database to receive the update confirmation response. If this step does not complete, there will be a fault stored showing "Checking Software Version Management". Warranty claims might not be reimbursed if there is no confirmation response to support the claim or if the action was taken outside of what was stated in the TSB.

12. Verify that all steps in the TSB have been completed, then finish the test plan and exit GFF. Answer the Warranty questions and print or save the diagnostic log when prompted.

i **Tip:** During the flash procedure, an estimated time is shown. This value is not used for actual SRT calculation.

Basic SVM Response Codes

SVM can provide a response code with a repair suggestion or after a successful repair. The response code will appear in the diagnostic log.

Code	Description	Action to be taken
ERP0031I*	The SVM Code for MMI was successfully processed but a coding or parameterization of a control module may still need to be performed.	Perform an SVM Specified/Actual comparison and carry out the coding or parameterization suggestion, if not already prompted. If the parameterization fails, check to ensure that the part is correct for the vehicle. If the part is correct for the vehicle, contact TAC.

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ERP0032I*	The control module(s) to be updated does not match the requirements for the SVM code for MMI.	The control module installed in the vehicle is not part of the SVM code for MMI, the control module installed on the vehicle is not talking on the CAN bus, or a replacement part is older than the original part. Ensure that the correct SVM Code was entered, ensure that the TSB applies to the vehicle, and check the hardware to ensure it is correct for the vehicle. Perform a hard reset on the module and retry the SVM code. If the hardware/software levels of the replacement part are older than the original part, contact TAC. A new CARPORT reference may need to be created in the SVM system.
ERP0033I* ERP0042I ERP0044I ERP0046I	Additional coding, parameterization, or software update may need to be carried out as a result of the SVM code.	Follow the software update, new coding, or parameterization suggestion.
ERP0034I* ERP0045I ERP0048I	A hardware change suggestion from an SVM Code or SVM Specified/Actual comparison.	A control module installed on the vehicle is not correct for the vehicle for one of the following reasons: the control module is incorrect for the vehicle (compare results of ETKA FI Search versus Part Number search) or the control module is older than the original part installed on the vehicle (old stock service part). Additionally, it is possible that a software update from a CD was performed on the MMI system without the proper SVM Code being executed after the update. If the part is confirmed to be newer than the original part, it is possible that the part being installed can be missing from the SVM system. If this is the case, then a hardware change will be suggested since the part is not known to the system. If this occurs, please contact TAC so the SVM system can be updated.
ERP0038I	The updates to the target control module(s) were completed but additional actions are necessary for other control modules not featured in the SVM code for MMI.	Carry out the SVM suggested actions for the other control modules that were not featured in the SVM code for MMI.
ERP0039I* ERP0040I ERP0050I	The SVM Code performed successfully.	All necessary actions taken by the SVM code were performed successfully. Nothing additional is required.
ERP0041I	The SVM Code performed successfully but there are still repair suggestions to other	Perform an SVM Specified/Actual comparison and carry out the coding or parameterization suggestion, if not already prompted. If the parameterization fails, check to ensure that the

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	Control Modules not featured in the SVM Code update.	part is correct for the vehicle. If the part is correct for the vehicle, then contact TAC.
ERP0043I	Additional coding and/or parameterization needs to be performed.	Follow the new coding or parameterization suggestion.

* The response code is specific to an SVM code that affects the MMI system (i.e., when an SVM code is performed after an MMI CD update, these response codes are returned).

Troubleshooting:

Checking for Internet Connectivity

To carry out an SVM communication test, first, go to the main ODIS start screen and navigate to (Figure 5): *Extras >> Connection test >> AUDI >>SVMService >> Start.*
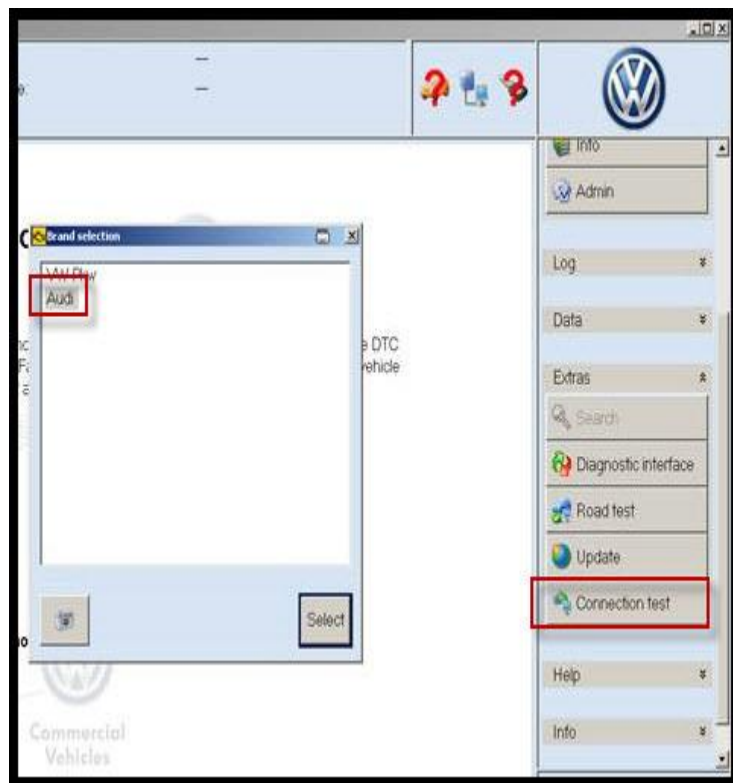
Figure 5. *ODIS Connection test.*

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Next, input a GeKo ID and verify the response:

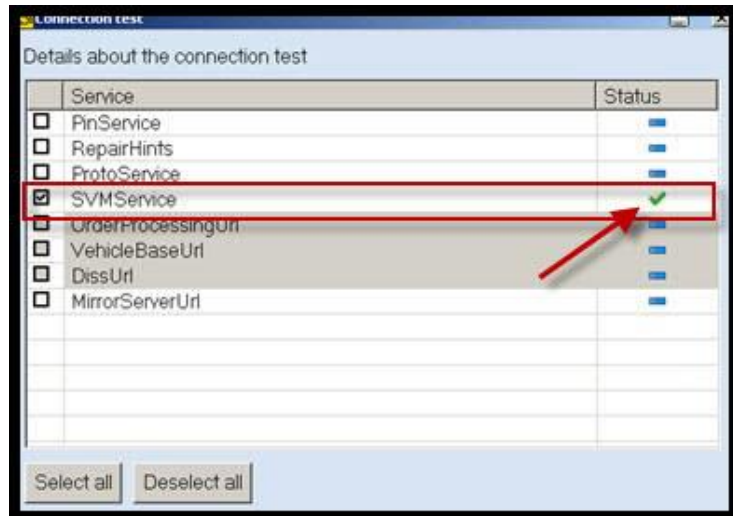- Green Checkmark = Good Connection
- Red X = Bad Connection

Figure 6. *SVM Service Check.*

GeKo Registration and ID Check

To obtain a GeKo user ID and password:

Follow the instructions in the GeKo ID Request form found at: GeKo ID request form:

- *>> accessaudi.com >> Library >> Service >> GeKo ID Form.*

- The form is also searchable from the Accessaudi main page using keyword GEKO.

To check your GeKo ID:

- Perform the following test from the tester startup screen with the tester connected to the internet: *Administration >> Network Settings >> GeKo Test.*

Testing the SVM Connection

SVM Communication checking:

- Enter a user ID and password. If the test fails, change the port, cord, and/or tester and run the test again.

Additional Tester Assistance

If any of the listed troubleshooting procedures and/or checks result in errors or if further assistance is required, follow these steps:

1. Review the information contained in the *Function Description* button in the tester at the point of the error.

2. Report the problem to the shop network administrator for further investigation.

3. Contact the responsible support team for further assistance:

    - **Service Department Applications** (GeKo, ElsaPro, and ServiceNet): 866-892-3375.

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- **VAS Tester Software Subscriptions:** Orders need to be placed via → www.audi.techliterature.com

- **VAS Tester Software Support:** 888-896-1298.

Technical Assistance Center Contact Requirements

Contact TAC (via the Technical Assistance Contact system in ElsaPro) for cases in which a technical issue with the vehicle or with the response from the SVM system exists. Include the following information in the ticket:

- SVM Action Code attempted.

- Control module(s) and address word(s) that are in question.

- The *complete* diagnostic log from the GFF session.

Warranty

This TSB is informational only and not applicable to any Audi Warranty.

Additional Information

The following Technical Service Bulletin(s) will be necessary to complete this procedure:

- TSB 2047812, *00 SD Creator: how to set up and use the SD Creator for obtaining vehicle software updates via the MirrorServer.*

- TSB 2037809, *91 How to update MMI MIB navigation map - potential customer concerns.*

- TSB 2028842, *01 Automatic detection of unauthorized chip tuning (TD1 warranty key.*

All part and service references provided in this TSB (2011732) are subject to change and/or removal. Always check with your Parts Department and/or ETKA for the latest information and parts bulletins. Please check the Repair Manual for fasteners, bolts, nuts, and screws that require replacement during the repair.