Service Action Code: 91FN

Subject

Software Update for High Voltage Battery Control Module - Version 3.2.1

Document History

Date	Summary
01/19/2024	Original publication

Affected Vehicles

Country	Beginning Model Year	Ending Model Year	Vehicle	Vehicle Count
USA	2022	2023	Q4 E-TRON SPORTBACK	914
USA	2022	2023	Q4 E-TRON SUV	4,321
CAN	2022	2023	Q4 E-TRON SPORTBACK	133
CAN	2022	2023	Q4 E-TRON SUV	892

Check Campaigns/Actions screen in Elsa on the day of repair to verify that a VIN qualifies for repair under this action. Elsa is the only valid campaign inquiry & verification source.

- ✓ *Campaign status must show "open."*
- ✓ *If Elsa shows other open action(s), inform your customer so that the work can also be completed at the same time the vehicle is in the workshop for this campaign.*

About This Service Action

Affected vehicles will receive the latest software version via a software update. This software contains an optimized self-diagnosis function for the high-voltage battery.

In addition to the software update, the high-voltage battery cells may experience an increased self-discharge. The high-voltage battery will be evaluated, and any affected high-voltage cell modules will be replaced.

Code Visibility

On or about January 19, 2024, the campaign code will be applied to affected vehicles.

Owner Notification

Owner notification will take place in January 2024. Owner letter examples are included in this bulletin for your reference.

Campaign Expiration Date

This campaign expires on ***January 31, 2029.*** Work must be performed on or before this date to be eligible for payment. Keep this expiration date in mind when scheduling customers for this action. If a customer wishes to have this work performed after the expiration date, your normal costs associated with this work will apply.

Additional Information

Please alert everyone in your dealership about this action, including Sales, Service, Parts and Accounting personnel. Contact Warranty if you have any questions.

Dealers must ensure that every affected inventory vehicle has this campaign completed before delivery to consumers.

Parts Information (if required)

Criteria	Quantity	Part Number	P.O.C. Part Description	Ordering Method (see description below)
ALL	As needed	0Z1-915-599-J	CELL MOD.	Free Order
	IMPORTANT INFORMATION FOR PART NUMBER 0Z1-915-599-J (Cell module): 0Z1-915-599-J (Cell Module) will be return blocked. In the chance that a cell module needs returning, this return will need to be scheduled with your Dealer Support Specialist (DSS). For batteries not actively part of the repair process, either new or spent, dealers should ensure compliance with local fire code battery storage requirements. Dealers who have the appropriate storage capabilities/facilities that meet local fire code requirements, are encouraged to order/ stock parts to complete the 91FN Repair.			
	4 per cell module	N -912-809-01	SCREW	
	1 per cell module	D -G00-018-M3	PASTE	
	1 per cell module	0Z1-998-474	SEP. FILM	
	1	1HV-915-754-A	VALVE	
	2	0Z1-915-433-C	GASKET	
	24	N -909-428-04	BOLT	
	4	N -912-832-01	BOLT	
	82	WHT-009-218	BOLT	
	22	WHT-008-738-A	BOLT	
	1	D -316-000-A1	UNDER COAT	
	2	1EA-802-131-A	CONNECTION	
	2	1EA-802-132-A	CONNECTION	
	1	D -454-300-H2	SEALANT	
	1	1EA-998-103	SEP. FILM	
	4	N -102-252-02	BOLT	
	1	G -12E-100-1G CON	G12 EVO Coolant Concentrate **(US Dealers)**	
	1	G -12E-100-2G CON	G12 EVO Coolant Concentrate **(Canadian Dealers)**	
	The following underbody trim clips are needed ONLY in the event of breakage. They may not be required for every repair.			
	Up to 14	WHT-003-491	NUT	

Parts Control Type: **Free Order**	Parts will be managed by Free Order

Initial Allocation: **NO**	There will be no parts allocation. Please reference the Repair Projection Tool (below) to view your potential VIN population.

Repair Projection Tool: **(right click to open)**	

NOTE

Campaign parts should always be ordered as per the parts information in this circular. The ordering system will supersede the part, if applicable.

Claim Entry Instructions

The labor times listed here may differ from the labor operations and labor times listed in ELSA.

After campaign has been completed, enter claim as soon as possible to help prevent work from being duplicated elsewhere. Attach the Elsa screen print showing action *open on the day of repair* to the repair order.

If customer refused campaign work:

- ✓ U.S. dealers: Submit the request through Audi Warranty Online under the Campaigns/Update option.
- ✓ Canada dealers: Upload the repair order [signed by customer] to Audi WIN/Operations/Campaign Closure.

Service Number	91FN
Damage Code	0099
Parts Vendor Code	002
Claim Type	Sold vehicle: 7 10 Unsold vehicle: 7 90
Causal Indicator	Mark labor as causal if cell module(s) are not replaced Mark CELL MOD* as causal part if a cell module(s) is replaced
Vehicle Wash	Do not claim wash under this action
Vehicle Loaner	See special claiming instructions for rental/loaner claiming. ***NOTE: A 2nd claim must be entered for rental/loaner claiming***

Vehicles have more than one criteria.
Complete and claim all applicable criteria on one claim.

Criteria I.D.	01, 02 and 03
	Perform check cell equalization test plan and perform software update

LABOR

Labor Op	Time Units	Description
2706 89 50	SEE ELSA	Connect battery charger
0150 98 99	20	Perform cell equalization check via ODIS
0151 00 00	Time stated on diagnostic protocol	Perform software update
0150 00 99	20	Bus sleep and adaptation test drive
0150 99 99	Time stated on diagnostic protocol	Additional work if there is evidence that the flash routine was interrupted

Continued on next page

	NOTE: The software update and related GFF work is performed on more than one diagnostic session. The multiple GFF logs can be added together. *Ensure the GFF logs are added together correctly. For example, two logs from the same diagnostic session are not allowed.* *Claims and GFF logs may be audited to ensure that the actual GFF log time is being claimed.* *The technician is instructed to indicate which SVM code correlates with the specific GFF log to aid in determining which GFF logs are used to calculate the total GFF time claimed.* *EXAMPLE:*

Sr.No	VIN	Diagnosis ID	Diagnosis Date	Transfer Date	Importer/Dealer	DTE (TU)	DTC	Tester ID	Repair Order	Log Status	Log Type
1	[redacted]	[redacted]	2023-09-12 00:00:00	2023-09-12 09:58:39	[redacted]	73	U10F400	67b73d31dad958345af4359dd3e506e8	ME32DOIP	Final	Guided Fault Finding
2	[redacted]	[redacted]	2023-09-12 00:00:00	2023-09-12 11:37:48	[redacted]	125		67b73d31dad958345af4359dd3e506e8	ME32CANBL	Final	Flash log
6	[redacted]	[redacted]	2023-09-12 00:00:00	2023-09-12 12:58:45	[redacted]	71		67b73d31dad958345af4359dd3e506e8	ME32MIB	Final	Flash log
7	[redacted]	[redacted]	2022-11-18 00:00:00	2022-11-18 11:53:33	[redacted]	27	U10F400	2e3618f000cd7bbbd884e1f84446e356	---	Final	Guided Fault Finding

Continued on next page

AND (only if necessary)	Remove high-voltage battery and replace one or more cell modules.

LABOR

Labor Op	Time Units	Description
9301 19 50	SEE ELSA	Battery module remove+reinstall
9301 19 53 (up to 11)	SEE ELSA	Battery module remove+reinstall (each *additional* module)
9302 19 82	SEE ELSA	Battery housing remove+reinstall
9303 19 60	SEE ELSA	High voltage battery remove+reinstall
1938 17 50	SEE ELSA	Coolant drain & fill
9303 01 50	SEE ELSA	High voltage battery check
9310 83 50	SEE ELSA	Disable HV system voltage deactivate and activate
0150 00 00	Time stated on diagnostic protocol	GFF Operations
9301 01 50	SEE ELSA	Battery module check *(classification)*
9302 29 82	SEE ELSA	Battery housing clean *(if upper cover is reused)*
9301 00 50	SEE ELSA	Package module *(only needed if removed module requires special packaging based on classification results)*
9301 89 50	SEE ELSA	Battery module charge
9301 89 53 (up to 11)	SEE ELSA	Battery module charge (each *additional* module)
9303 01 52	SEE ELSA	High voltage battery check *(classification)*

PARTS

Quantity	Part Number	Description
As needed (up to 12)	0Z1915599J	CELL MOD*
2.00	0Z1915433C	GASKET
1.00/cell module	0Z1998474	SEP. FILM
2.00	1EA802131A	CONNECTION
2.00	1EA802132A	CONNECTION
1.00	1EA998103	SEP. FILM
1.00	1HV915754A	VALVE
1.00	D 316000A1	WAX UNDERCOAT
1.00	D 454300H2	SEALANT

Continued on next page

	PARTS (continued)			
	Quantity	**Quantity**	**Quantity**	
	1.00/cell module	D G00018M3	Paste	
	Up to 40.00 or Up to 2.00	G 12E100S1 or G 12E050S0	COOLANT (concentrate) or COOLANT (pre-mix)	**USA ONLY**
	Up to 40.00 or Up to 80.00	G 12E100S1 or G 12E050S0	COOLANT (concentrate) or COOLANT (pre-mix)	**CANADA ONLY**
	4.00	N 10225202	BOLT, HEX. HD. (COMBI.) *(only needed if HV battery is being removed for the first time)*	
	24.00	N 90942804	BOLT, HEX. HD. WITH SHOULDER	
	4.00/cell module	N 91280901	Screw	
	4.00	N 91283201	BOLT	
	22.00	WHT008738A	BOLT	
	82.00	WHT009218	BOLT	

	The following can be added if the HV battery cover required replacement		
	PARTS		
	Quantity	**Part Number**	**Description**
	1.00	1EA804841AC	HOUSING
	8.00	1EA804973	HOLDER
	1.00	1EA010505	WARN. SIGN
	1.00	12E010006AA	STICKER

	The following can be added as needed in the event of breakage during the repair.		
	PARTS		
	Quantity	**Part Number**	**Description**
	As required	WHT003491	NUT
	As required	WHT009733	BOLT
	As required	N 0385494	RIVET

Vehicle Loaner (if required)	**Enter vehicle loaner claim as a separate (2nd) claim**		
	Claim Type	7 MO	(letter O, not number 0)
	Service Number	91FN	
	Damage Code	0010	
	Parts Vendor Code	002	
	Outside Labor Operation	LOAN1600	Enter dollar amount on rental/loaner invoice ($50 max per day) **(2 day maximum)**

Customer Letter Example (USA)

<MONTH YEAR>

<CUSTOMER NAME>
<CUSTOMER ADDRESS>
<CUSTOMER CITY STATE ZIPCODE>

This notice applies to your vehicle: <MODEL YEAR> <BRAND> <CARLINE>, <VIN>

Subject: Service Action 91FN - Software Update for High Voltage Battery Control Module - Version 3.2.1

Dear Audi Owner,

As part of Audi's ongoing commitment to customer satisfaction, we are informing you of our decision to conduct a service action on certain 2022-2023 model year Audi vehicles. Our records show that you are the owner of a vehicle affected by this action.

About this Service Action:	Affected vehicles will receive the latest software version via a software update. This software contains an optimized self-diagnosis function for the high-voltage battery. In addition to the software update, the high-voltage battery cells may experience an increased self-discharge. The high-voltage battery will be evaluated, and any affected high-voltage cell modules will be replaced.
What will we do?	Your authorized Audi dealer will perform a software update and evaluate your vehicle to determine if any battery cell module(s) needs replacement. This work will take about three (3) hours to complete and will be performed for you free of charge. If the evaluation shows a battery cell module(s) needs replacement, the work to do the replacement will take at least one day to complete once your dealer has the necessary parts and equipment on hand, and will be performed for you free of charge. Please keep in mind that your dealer will need additional time for the preparation of the work, as well as to accommodate their daily workshop schedule.
What should you do?	In order to limit any possible inconvenience, please contact your authorized Audi dealer as soon as possible to schedule this work. For your convenience, you can also visit www.audiusa.com and click on the "Find a Dealer" link to locate a dealer near you and schedule this service. This service action will be available for you free of charge **only until January 31, 2029.** If you wish to have this service performed after that date, your dealer's normal costs associated with this repair will apply.
Lease vehicles and address changes	If you are the lessor and registered owner of the vehicle identified in this action, please forward this letter immediately via first-class mail to the lessee within ten (10) days of receipt. If you have changed your address or sold the vehicle, please fill out the enclosed prepaid Owner Reply card and mail it to us so we can update our records.
Can we assist you further?	If your authorized Audi dealer fails or is unable to complete this work free of charge within a reasonable time, please contact Audi Customer Experience at 1-800-253-2834 or via our "Contact Us" page at www.audiusa.com.
Checking your vehicle for open Recalls and Service Campaigns	To check your vehicle's eligibility for repair under this or any other recall/service campaign, please visit the ***Recall/Service Campaign Lookup*** tool at www.audiusa.com and enter your Vehicle Identification Number (VIN).

We apologize for any inconvenience this matter may cause; however we are taking this action to help ensure your vehicle continues to meet and exceed your expectations.

Sincerely,

Audi Customer Protection

Customer Letter Example (Canada)

<MONTH YEAR>

<CUSTOMER NAME>
<CUSTOMER ADDRESS>
<CUSTOMER CITY STATE ZIPCODE>

This notice applies to your vehicle: <MODEL YEAR> <BRAND> <CARLINE>, <VIN>

Subject: Service Action 91FN - Software Update for High Voltage Battery Control Module - Version 3.2.1

Dear Audi Owner,

As part of Audi's ongoing commitment to customer satisfaction, we are informing you of our decision to conduct a service action on certain 2022-2023 model year Audi vehicles. Our records show that you are the owner of a vehicle affected by this action.

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What should you do?	In order to limit any possible inconvenience, please contact your authorized Audi dealer as soon as possible to schedule this work. Please keep in mind that your dealer may need additional time for the preparation of the work, as well as to accommodate their daily workshop schedule. This service action will be available for you free of charge **only until January 31, 2029.** If you wish to have this service performed after that date, your dealer's normal costs associated with this repair will apply.
Lease vehicles and address changes	If you are the lessor and registered owner of the vehicle identified in this action, please forward this letter immediately via first-class mail to the lessee within ten (10) days of receipt. If you have changed your address or sold the vehicle, please fill out the enclosed prepaid Owner Reply card and mail it to us so we can update our records.
Can we assist you further?	If your authorized Audi dealer fails or is unable to complete this work free of charge within a reasonable time, please contact Audi Customer Relations Monday through Friday from 8AM to 8PM EST at 1-800-822-2834 or via our "Contact Audi Canada" page at www.audi.ca.

We apologize for any inconvenience this matter may cause; however we are taking this action to help ensure your vehicle continues to meet and exceed your expectations.

Sincerely,

Audi Customer Protection

Safety Precautions When Working ON the High-voltage System
(additional information is also available in the ELSA Repair Manual)

DANGER

Extremely dangerous due to high voltage.

- The high-voltage system is under heavy voltage. Severe bodily injury or death by electrocution or electric arcs is possible.
- When working on the high-voltage system the high-voltage system must be de-energized.
- When performing procedures that do not directly affect the high-voltage system, in some cases it is still necessary to de-energize the high-voltage system.
- Pay attention when the high-voltage system must be de-energized. Refer to the Repair Manual
- Have a High-Voltage Technician or a High-Voltage Expert de-energize the high-voltage system.

The electric and magnetic fields are extremely dangerous.

- There are electric and magnetic fields on the high-voltage system. Death or serious injury are possible due to malfunction of active implants (for example cardiac pacemakers, insulin pumps).
- Persons with active implants may not perform procedures on the high-voltage system.

WARNING

Risk of injury - motor may start unexpectedly

It is difficult to determine whether the drive system of an electric vehicle or hybrid vehicle is active. Moving parts can trap or draw in parts of the body.

CAUTION

Risk of damage to high-voltage wiring

- Incorrect handling may result in damage to the insulation of high-voltage wires or high-voltage connectors.
- Do not support yourself on high-voltage cables or connectors.
- Never prop tools against high-voltage wiring or high-voltage connectors.
- Never bend or kink high-voltage wiring.
- Observe the coding of the high-voltage connectors when joining them up.

Safety Precautions When Working NEAR the High-voltage System
(additional information is also available in the ELSA Repair Manual)

DANGER

Extremely dangerous due to high voltage.

- The voltage levels in the high-voltage system constitute a safety hazard. Danger of severe or fatal injuries from electric shock if high-voltage components or high-voltage wiring are damaged.
- Carry out a visual check of high-voltage components and high-voltage wiring.
- Never use cutting/forming tools or other sharp-edged implements.
- Never perform work using welding, brazing, thermal bonding or hot air in the area of high-voltage components and high-voltage cables.

DANGER

High voltage increases the risk of fatal injury

Electrocution can cause severe bodily or fatal injury.

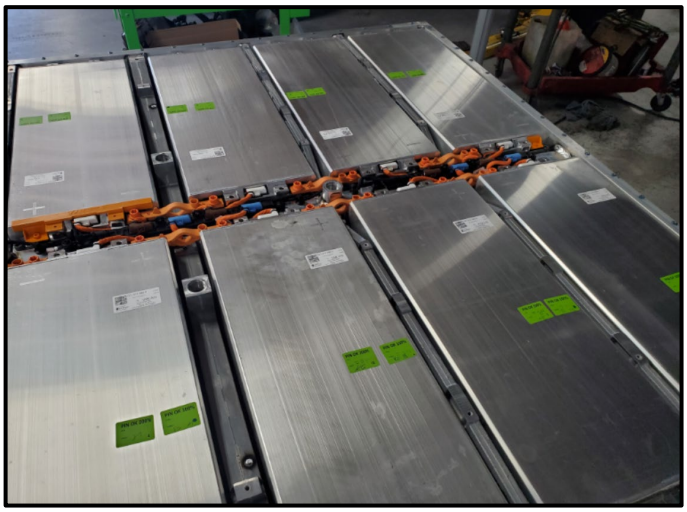
- For the following procedures suitable personal protective equipment must be worn.
- For the following steps two correspondingly qualified technicians must be present for the supervision.
- If necessary, a second technician can help the high-voltage expert outside of the hazardous area within their qualification.
- The personal protective equipment (PPE) must be dry and undamaged.

Repair Overview

IMPORTANT

If the vehicle being worked on also has the 91EV campaign assigned, the 91EV flash must be completed before attempting the 91FN.

If the 91EV is performed before the 91FN, a bus sleep MUST be performed after the 91EV was completed and before the 91FN is started.



- Check HV battery cell modules via a test plan.
- Update vehicle software using a multi-step software update process.
- Replace HV battery cell module(s) based on test plan results, if necessary.

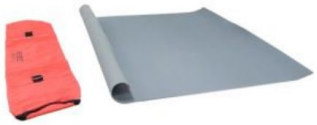
NOTE

- These repair instructions may differ from the labor operations and labor times listed in ELSA.
- Damages resulting from improper repair or failure to follow these work instructions are the dealer's responsibility and are not eligible for reimbursement under this action.
- This procedure must be read in its entirety prior to performing the repair.
- Due to variations in vehicle equipment and options, the steps/illustrations in this work procedure may not identically match all affected vehicles.
- Diagnosis and repair of pre-existing conditions in the vehicle are not covered under this action.
- When working during extreme temperatures, it is recommended that the vehicle be allowed to acclimate inside the shop to avoid temperature-related component damage/breakage.

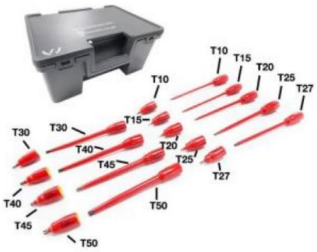
Required Tools (for software flash)

	Battery Tester/Charger -VAS5908-		Diagnostics Interface W-LAN -VAS6154A- *(or newer equivalent)*
	Diagnostic Tester -VAS6150D- (or higher)		USB Module -VAS6154/4A- (included with -VAS6154A-) *(or newer equivalent)*

Required Tools (if HV battery cell module requires replacement)

	Engine Support Set -10-222B-		Adapter -10-222A/14- Qty. = 2
	Module Lifting Aid -T10619-		Lifting Tackle -3033-
	Shock-Proof Protection (30 Pcs) -T10608-		Shock-Proof Protection -T10628- Qty. = 3
	Removal Wedge Set -VAS895015-		Engine Support - Bracket w/Spindle and hook -10-222A/10-
	Shop Crane -VAS6100- (or equivalent)		Insulating Mat -VAS6762/44-

	Scissor Lift Table -VAS6131B- (or equivalent)		Engine Bung Set -VAS6122- (or equivalent)
	Leak-tight Connector -T10607-		Pressure and Vacuum Pump -VAS671005-
	Digital Pressure Sensor -VAG1397B-		High Voltage Tool Set – Screwdriver -VAS6762/34-
	Cooling System Tester - Directional Valve -VAS691005/1- (component of -VAS691005-)		High Voltage Tool Set - Torque Wrench -VAS6883/1A-
	High Voltage Tool Set - Voltage Tester -VAS6762/45-		Cooling System Tester - Directional Valve -VAS691005/5- (component of -VAS691005-)
	Template -T10606-		Cooling System Charge Kit -VAS6096-

	Cooling System Tester -VAG1274B-		Hose Clamps - Up To 25mm -3094- (or equivalent)
	Module Balancer -VAS6910-		MEB Modules Expansion Set -VAS6910/21-
	Padlock -T40262/1- (from Service Disconnect Lock -T40262-)		Vehicle Diagnosis System - Connection Lead -VAS5051/66- (MRT)
	Pressure Sensor -VAS611013-		Insulated Torx Wrench Set - 3/8 -VAS691003A-
	*Extension Cables for High-Voltage Battery -VAS671007-		*High Voltage Diagnostics Box -VAS5581A-
NOTE: Either -VAS671007- or -VAS5581A- may be used for this repair.			

	Cooling System Service Machine – TEXA -VAS531011KIT-		High Voltage Tool Set – Reversible Ratchet 3/8" -VAS6762/29-
	High Voltage Tool Set – Extension 140mm -VAS6762/31-		Shackle (Equivalent to VAS691009A) -VAS691009US- Qty. = 8
	Diagnostic Tester -VAS6150X/6160X- (or equivalent)		Battery Tester/Charger capable of **minimum 90 Amp** continuous supply
	Double Cartridge Adhesive Gun -VAS5237-		Female adapter for the -VAS5237- (based on shops preferred adapter style) (locally sourced)
	Pipe Brush -VAS294029- (or equivalent)		Test Adapter - Hybrid Module -VAS6558A-
	Double Suction Lifter Qty. = 2 -VAG1344-		High Voltage Tool Set – Screwdriver Insert XZN M10 -VAS6762/27-

Required Shop Materials (if necessary)

Cleaner D -009-401-04

(shop supply)

-OR-

91% Isopropyl Alcohol

(locally sourced)

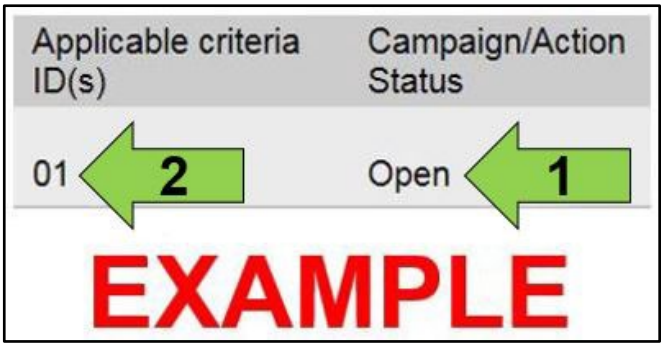
NOTE: Use only 91% Isopropyl alcohol as a cleaner (9% water). Do not use Isopropyl with any additional surfactants (cleaners) or additives (scents).

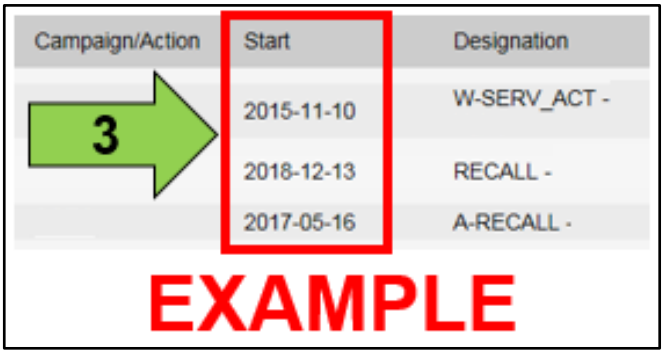
Lint Free Towels

(locally sourced)

Repair Instruction

Section A - Check for Previous Repair





- Enter the VIN in Elsa and proceed to the "Campaign/Action" screen.

TIP

On the date of repair, print this screen and keep a copy with the repair order.

- Confirm the Campaign/Action is open <arrow 1>. If the status is closed, no further work is required.
- Note the Applicable Criteria ID <arrow 2> for use in determining the correct work to be done and corresponding parts associated.

CRITICAL REPAIR STEP

STOP!

If multiple software update Campaign/Actions are open, they must be performed in order of the Start date <arrow 3>. The oldest should be performed first.

- **All Safety Recalls must be completed prior to completing this campaign.**
- **Proceed to Section B.**

Section B – SVM Instructions

NOTE

Prior to launching the VAS Diagnostic Tester and starting an update, ensure the following conditions are met;

- ✓ **The ODIS software is completely up to date.**
    - Refer to the “Current ODIS Service Version” circular found in Elsa2Go Service References.
- ✓ **The battery charger is connected to the vehicle battery and remains connected for the duration of the software update.**
    - Battery voltage must remain above 12.5 volts for the duration of the software update. Failure to do so may cause the update to fail, which could result in damage to the control module. Control modules damaged by insufficient voltage will not be covered.
- ✓ **The screen saver and power saving settings are off.**
    - Failure to do so may result in the tester entering power save mode during the software update, which could result in damage to the control module.
- ✓ **The VAS Diagnostic Tester is plugged in using the supplied power adapters.**
    - Under no circumstances should the tester be used on battery power alone during the software update. Failure to do so may result in the tester powering off during the update, which could result in damage to the control module.
- ✓ **The VAS Diagnostics Interface MUST ONLY be connected to the tester with a USB cable.**
    - Performing a software update using a Bluetooth or WiFi connection increases the risk of losing connection during the update, which could result in damage to the control module.
      It also greatly increases the time required to perform the update. Requests for additional time or parts will be denied if the GFF log shows the update was performed using Bluetooth or WiFi.

⚠ CRITICAL REPAIR STEP

STOP! STOP!

- Check for pre-existing faults.
- If any of the modules being updated are offline and cannot be identified, the communication issue must be addressed prior to starting this procedure.
- Any module with a “Faulty Control Module” fault *that cannot be cleared*, must be addressed prior to starting the flash. The flash may fail for the affected control module.
- Diagnosis and repair of pre-existing conditions are not covered under this action.
- No additional/other work may be performed on the vehicle for the entire duration of the update.
- The firewall settings which are listed in the latest release notes of the current ODIS version always apply.
- It is essential to follow the correct sequence when performing the individual steps, otherwise the flash routine will be interrupted.

⚠ CRITICAL REPAIR STEP

STOP! STOP!

Before starting programming, it is essential to perform the following actions for the -VAS5908- battery charger.

The battery charger’s default setting will switch the charger off automatically after a period of time. To prevent this, the following must be carried out.

Switch it OFF and then ON again each time the charger is connected.

The battery charger’s display must have switched off before it’s restarted.

The charging time can be changed in the charger’s settings menu (access code = 6161). Refer to the owner’s manual for further information. DO NOT change any settings that will damage the charger or the vehicle.

⚠ CRITICAL REPAIR STEP

STOP! STOP!

- The software update is performed in multiple steps, using a different SVM code for each step.
- Pay very close attention to the instructions outlined in each repair step.

CRITICAL REPAIR STEP

STOP!

Perform the following before beginning the software update procedure:

- Switch off all consumers, air conditioning, heater blower motor, lights, heated seats, etc.
- Ensure the latest version of ODIS is downloaded.
- Ensure diagnostic head is connected to ODIS tester via USB cable.
- Move selector lever to P.

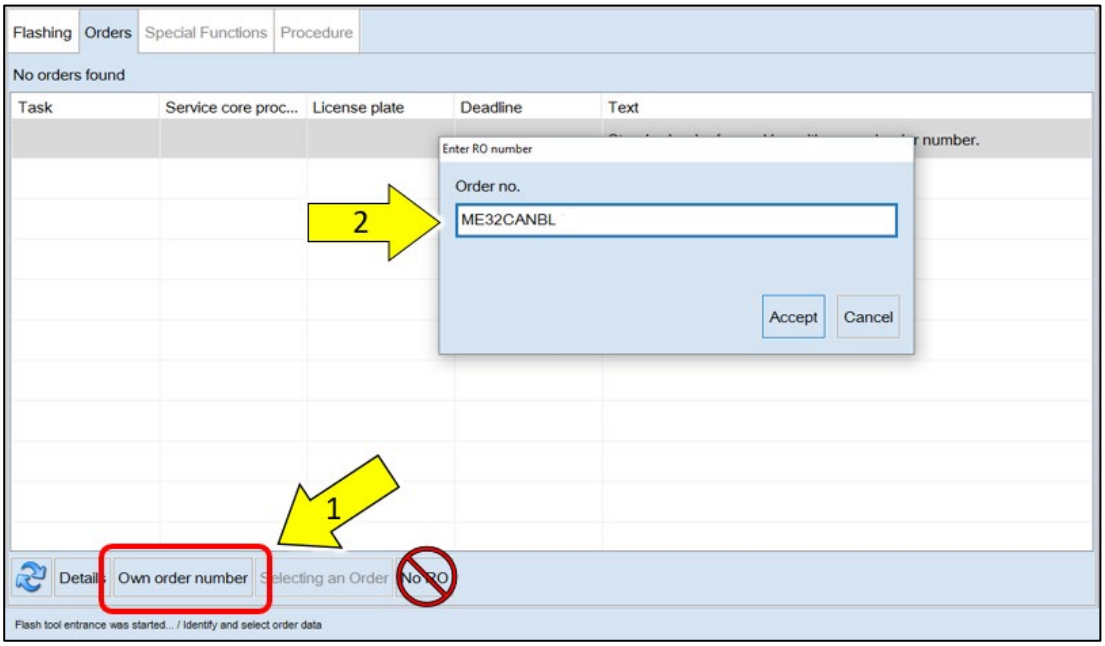
NOTE

Flashing times will vary. The time it takes to complete the software updates is dependent on several factors, including the workshops internet download speed.

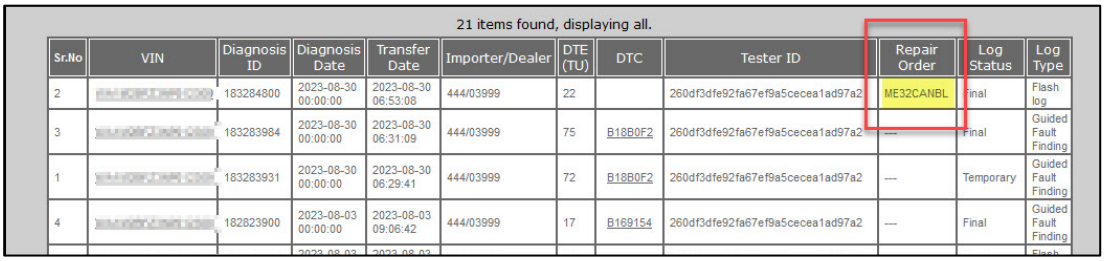
NOTE

In an effort to keep track of the time units from the multiple SVM codes, the SVM code can be entered in the RO field in ODIS. This will then be populated in the RO field in GFF Paperless.

- Instead of selecting “No RO” during the vehicle scan, select “Own order number” <arrow 1>.
- Then enter in the SVM code(s) (or step) that is being used during that session <arrow 2>.



- Once the log is sent to GFF Paperless, the Diagnosis ID from the specific SVM performed can then be easily identified:

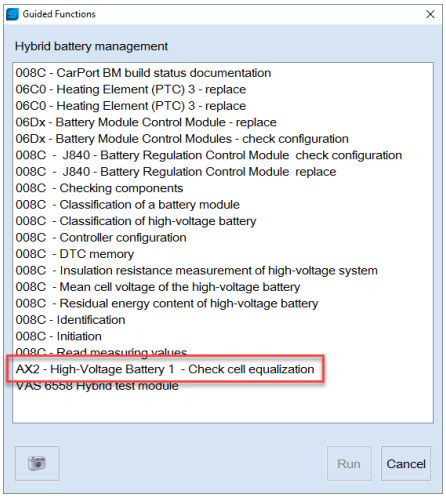


21 items found, displaying all.

Sr.No	VIN	Diagnosis ID	Diagnosis Date	Transfer Date	Importer/Dealer	DTE (TU)	DTC	Tester ID	Repair Order	Log Status	Log Type
2	[redacted]	183284800	2023-08-30 00:00:00	2023-08-30 06:53:08	444/03999	22		260df3dfe92fa67ef9a5cecea1ad97a2	ME32CANBL	Final	Flash log
3	[redacted]	183283984	2023-08-30 00:00:00	2023-08-30 06:31:09	444/03999	75	B18B0F2	260df3dfe92fa67ef9a5cecea1ad97a2	---	Final	Guided Fault Finding
1	[redacted]	183283931	2023-08-30 00:00:00	2023-08-30 06:29:41	444/03999	72	B18B0F2	260df3dfe92fa67ef9a5cecea1ad97a2	---	Temporary	Guided Fault Finding
4	[redacted]	182823900	2023-08-03 00:00:00	2023-08-03 09:06:42	444/03999	17	B169154	260df3dfe92fa67ef9a5cecea1ad97a2	---	Final	Guided Fault Finding

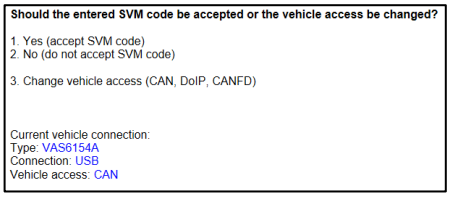
Step 1 - Perform “Check Cell Equalization” Test Plan

- Use operating mode, **DIAGNOSIS**.
- Select the Guided Functions test plan list for address 008C.
- Perform test plan, “AX2 – High-Voltage Battery 1 – Check cell equalization” and follow the on-screen prompts.
- If the test plan results indicate the HV battery is OK:
  - Proceed to Step 2
- If the test plan results indicate a cell module requires replacement:
  - **The cell module(s) must be replaced before performing any additional software updates.**
  - Proceed to Section C.
  - After the cell module(s) have been replaced, proceed to Step 2 of the SVM instructions to begin the software update process.



Step 2 - Perform SVM via DIAGNOSIS + CAN

- This SVM code will erase some historical data for the HV battery.
- Use operating mode, **DIAGNOSIS**.
- Select “SVM – Code Input”.
- Enter SVM code **ME321ZDC** and follow the on screen prompts.
- Select communication path **CAN** when prompted.



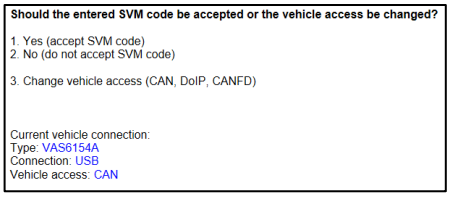
IMPORTANT

The vehicle can no longer be driven once the SVM code has been run.

- **Exit Diagnosis completely and send log to GFF Paperless.**
- Proceed to Step 3 once the SVM is complete.

Step 3 - Perform SVM via FLASH + CAN

- Use operating mode, **FLASH**.
- Select “SVM – Code Input”.
- Enter SVM code **ME321CAN** and follow the on screen prompts.
- Select communication path **CAN** when prompted.
- Proceed to Step 4 once the SVM is complete.



Step 4 – Perform Bus Sleep

- Perform a five minute bus sleep.
- See Appendix A for specific bus sleep instructions.
- Proceed to Step 5 once the five minute bus sleep is complete.

Step 5 – Road Test + Clear Fault Memory + Perform Calibration Drive

- Perform a road test/calibration drive at a speed above 25 mph (40 km/h).
- Erase the entire event memory.
- Send the diagnostic log to GFF Paperless.
- Perform a calibration drive at a speed above 25 mph (40 km/h).
- Proceed to Section D once the road test is complete.

⚠ CAUTION

When performing this road test, the vehicle will momentarily lose acceleration when the three-phase drive -VX54- calibrates. Ensure the road test is performed in a safe manner.

Section C – Cell Module Replacement (if necessary)

NOTE

If a module requires replacement due to increased self-discharge, the “Check cell equalization” test plan may prompt some additional steps that need to be performed. Ensure that the additional steps and test plans are performed before closing the HV battery since data from both the new and old cell modules is required.

Example:

After replacing the component, further steps are necessary.

The following software version was determined:

- Make sure that the individual steps are in the correct sequence.

1) - Execute build status documentation.
2) - Software version management/control modules software configuration -> 2. SWK via action code ->
3) - Software version management/control modules software configuration -> 1. SWC via diagnostic address -> 8C

All programs are listed in the suspect list.

- Press the Complete/Continue button to end.

⚠ CRITICAL REPAIR STEP

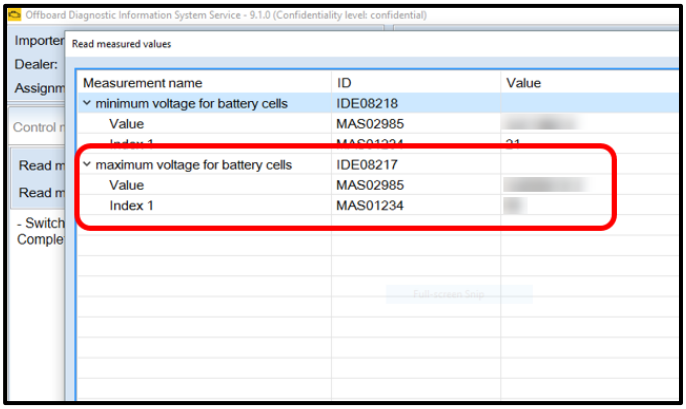
STOP!

Before balancing the new cell module, be sure that the vehicle is ready for the repair to be performed.

If possible, the high voltage battery should be de-energized right after recording the voltage reading to avoid possible voltage variations.

Charging the vehicle, driving the vehicle, leaving the ignition on, or running the HVAC can change the high voltage battery voltage.

After reading out the maximum cell module voltage from the MVBs, avoid moving the vehicle if possible. The vehicle must not be charged or have any electrical consumers used. If this step is not followed, there is a risk that the new cell module will not be balanced correctly resulting in possible faults and having to remove and re-balance the cell module again.



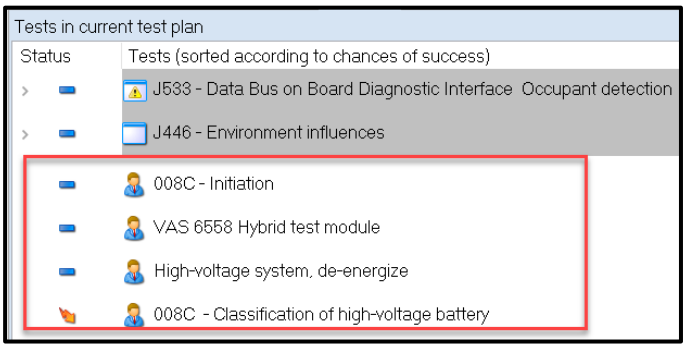
Perform cell balancing on new cell module:

- Check Measured Value Block (MVB) “maximum voltage for battery cells, IDE08217.
- The voltage reading listed will be entered in the DSS Manager program when balancing the new cell module.

- Follow the VAS6910 operating instructions in conjunction with the DSS Manager program to perform the cell balancing on the new cell module.

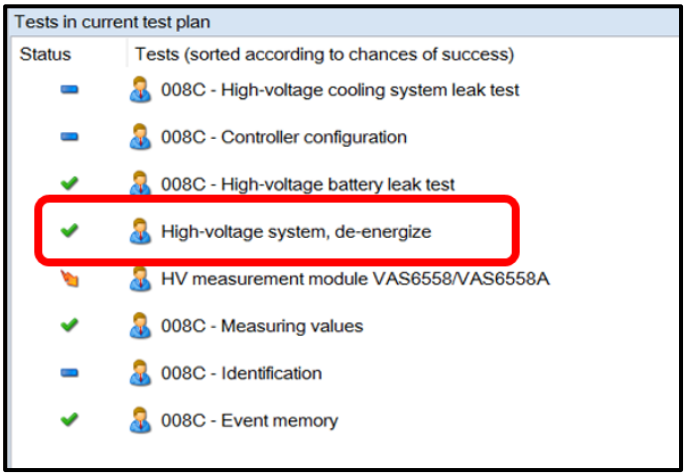
TIP

Operating instructions for the VAS6910 and DSS Manager program can be found on the Audi Special Tools and Equipment website.



Populate Guided Functions test plans:

- Perform a diagnostic scan of the vehicle.
- Select “Self Test” and populate the following Guided Function test plans:
    - 008C - Classification of high-voltage battery
    - High-voltage system, de-energize
    - 008C - Initiation
    - VAS 6558 Hybrid test module



De-energize the high-voltage system:

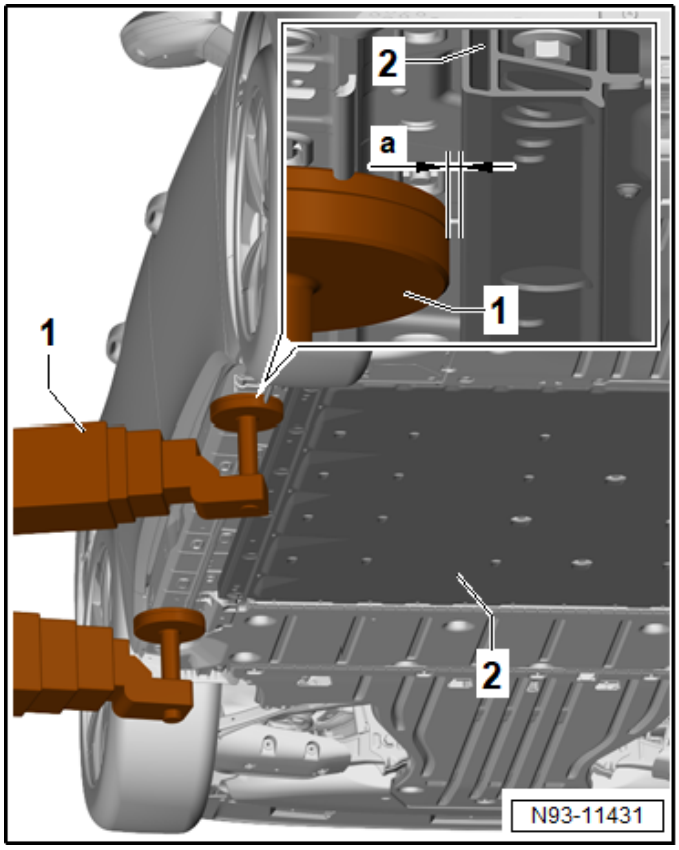
DANGER

High voltage increases the risk of fatal injury

Electrocution can cause severe bodily or fatal injury

Have a high-voltage technician or a high-voltage expert de-energize the high-voltage system.

- Follow the Guided Functions test plan steps.
- Pay close attention to all of the test plan steps.

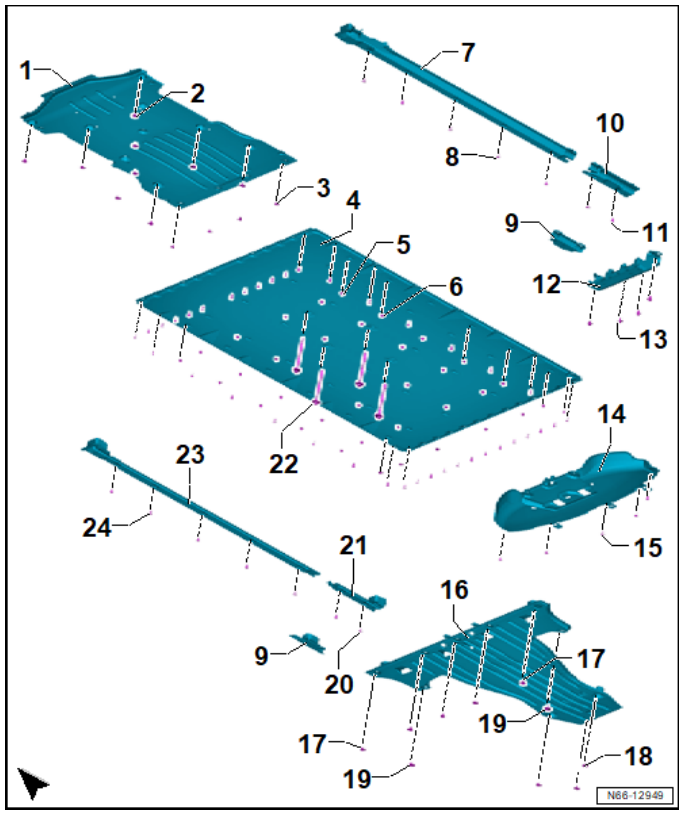


Raise the vehicle:

TIP

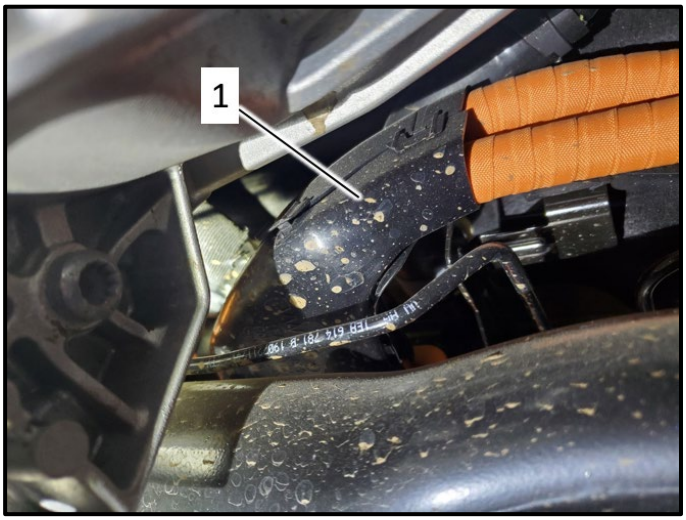
Removal of the high-voltage battery is not possible on all hoists. Make sure that there is enough clearance. Pay attention that the high-voltage battery has enough clearance <a> during the lifting process so that the Scissor Lift Table -VAS6131B- can be set down.

- Pivot in the hoist with the vehicle support plate <1> on the frame of the high-voltage battery <2>. Then pivot back the hoist arm with the vehicle support plate <1> <a> so that the high-voltage battery <2> can be lowered in the next steps.



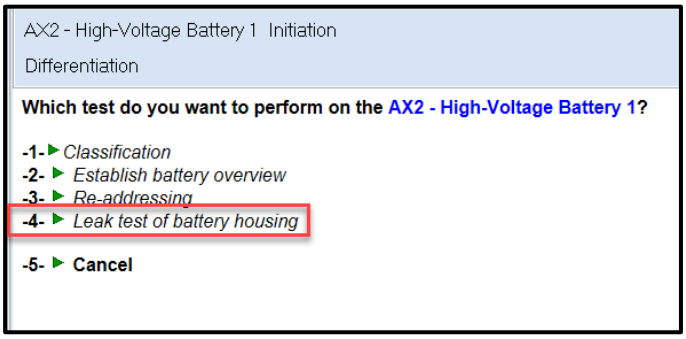
Remove lower covers:

- Reference ELSA Repair Manual.
- Remove the front underbody trim panel <1>. *Refer to → Body Exterior; Rep. Gr.66; Underbody Trim Panel; Front Underbody Trim Panel, Removing and Installing.*
- Front wheel housing liner, loosening in the area of the high-voltage battery threaded connection.
  Refer to → Body Exterior; Rep. Gr.66; Wheel Housing Liner; Front Wheel Housing Liner, Removing and Installing.
- Remove the side underbody trim panels. *Refer to → Body Exterior; Rep. Gr.66; Underbody Trim Panel; Side Underbody Trim Panel, Removing and Installing.*
- Remove the rear center underbody trim panel <16>.
  Refer to → Body Exterior; Rep. Gr.66; Underbody Trim Panel; Rear Center Underbody Trim Panel, Removing and Installing.
- Remove the rear underbody trim panel <14>. *Refer to → Body Exterior; Rep. Gr.66; Underbody Trim Panel; Rear Underbody Trim Panel, Removing and Installing*

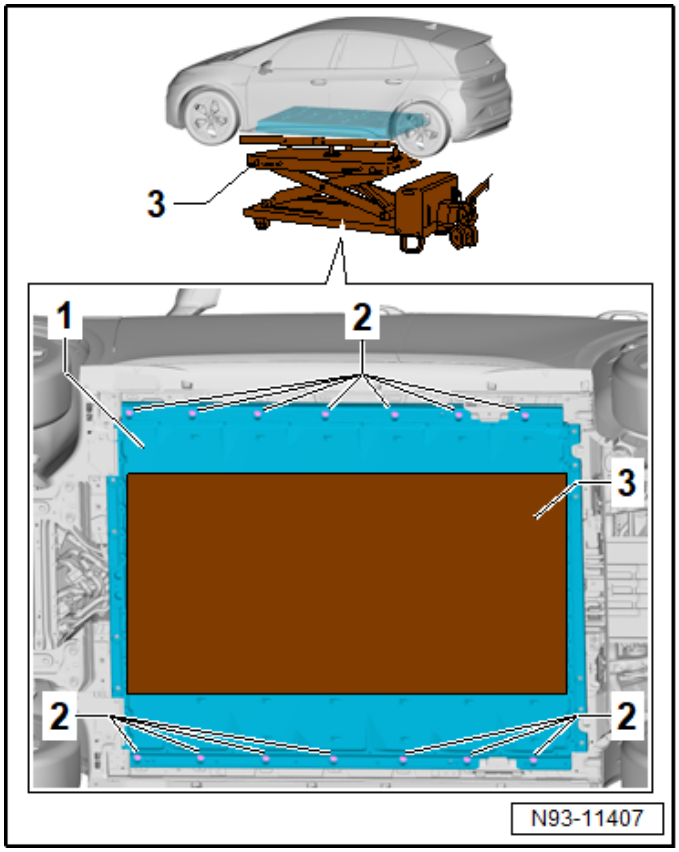


Perform high-voltage battery leak test:

- Before disconnecting the high-voltage battery connectors, remove the protective covers <1> from both of the connectors first.

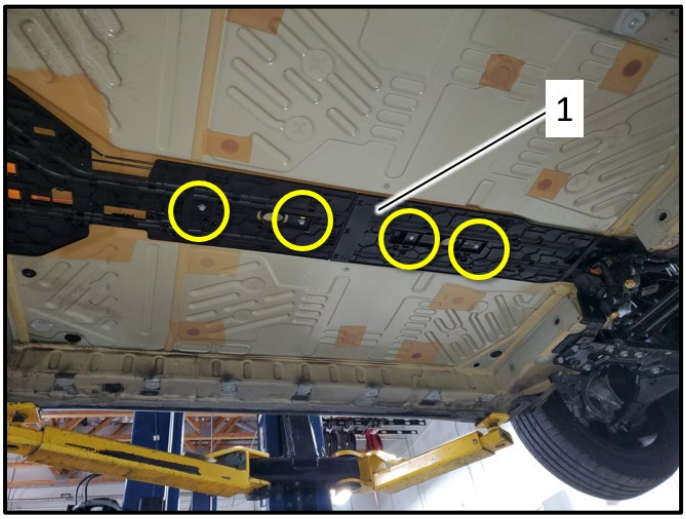


- See ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > High-Voltage Battery Leak Test, 1 AX2*
- Perform these steps in conjunction with Guided Function test plan, “008C – Initiation > select option: *Leak test of battery housing*.”



Remove high-voltage battery:

- See ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > High-Voltage Battery 1 AX2, Removing and Installing, 82 kWh*
- Note the following when removing the high-voltage battery:
  - Mark the position of the scissor lift table on the floor to aid in re-positioning the table during reinstallation.
  - Pay close attention to all wiring harnesses when lowering the battery.
  - Pay close attention to coolant hoses when lowering the battery.



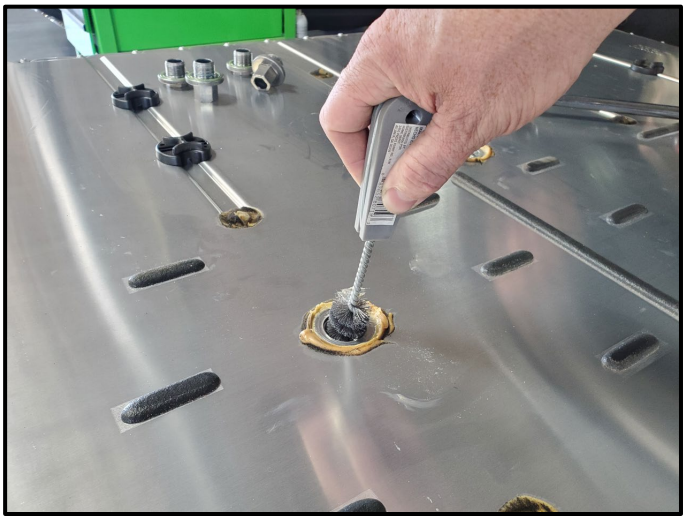
Secure media duct/channel (if necessary):

- If the media duct/channel <1> had not yet been secured, install new bolts <circles> and torque to 20 Nm.

Part Number	Part Description
N -102-252-02	Bolt

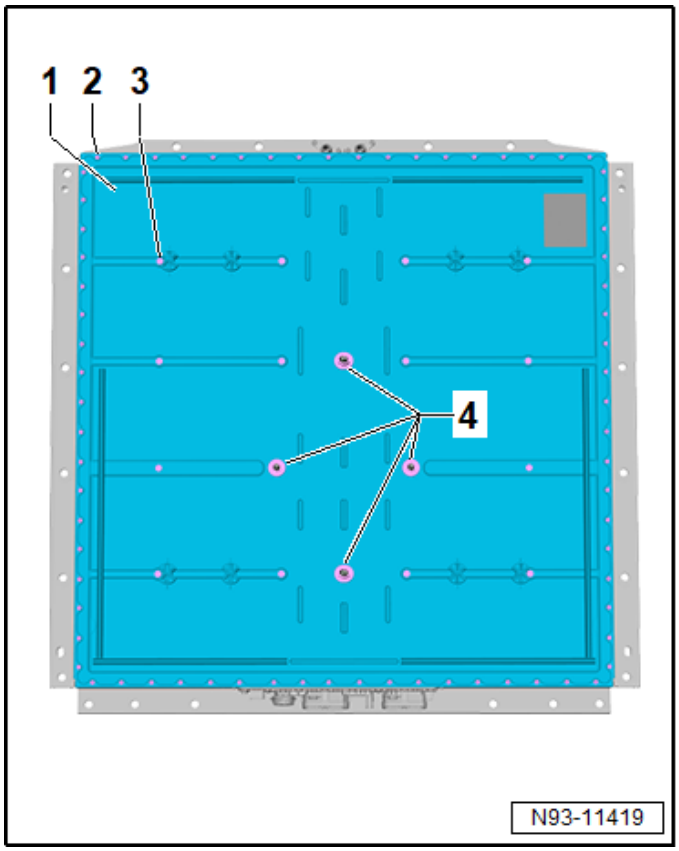
NOTE

If the media channel is already secured with bolts, the bolts do not have to be replaced again.



Clean high-voltage battery cover:

- Vacuum all loose dirt and debris from high-voltage battery.
- Clean the connection element threads using pipe brush -VAS294029- (or equivalent) as shown.



Remove high-voltage battery cover:

CRITICAL REPAIR STEP

STOP!

RISK OF SEVERE CONSEQUENTIAL DAMAGE!

USE HAND TOOLS ONLY!

Do not use power tools to remove any of the hollow bolts <4> or any of the perimeter bolts.

Using power tools to remove the bolts can damage the threads in the lower housing. Damaged threads for the hollow bolts <4> cannot be repaired and will require replacement of the lower housing.

Claims for lower housing replacements due to improper bolt removal will be denied.

- See ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > High-Voltage Battery 1 AX2 , Opening*

DANGER

High voltage increases the risk of fatal injury

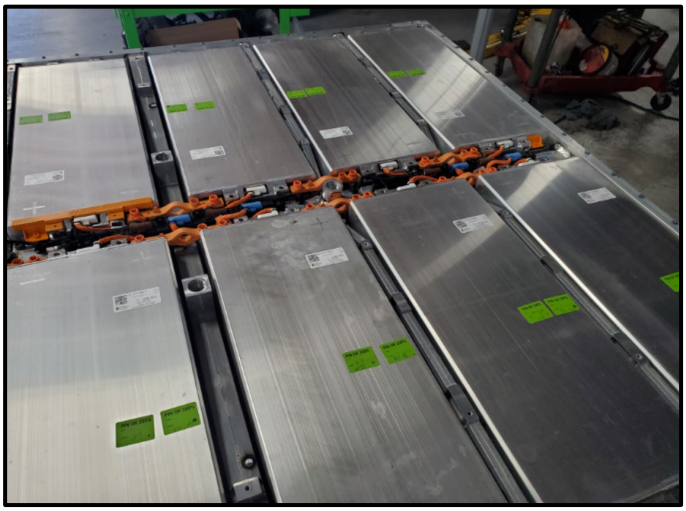
Electrocution can cause severe bodily or fatal injury

Pay close attention to which Repair Manual steps require Personal Protective Equipment.

NOTE

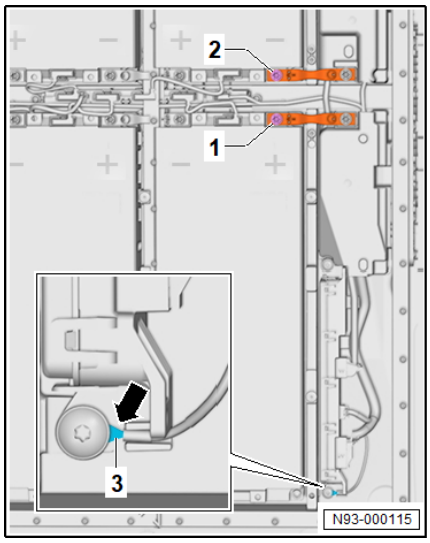
The upper part of battery housing can be reused under certain circumstances and does not have to be replaced.

To determine if the cover can be reused, refer to the ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > Battery Housing Upper Section, Checking for Re-Use*



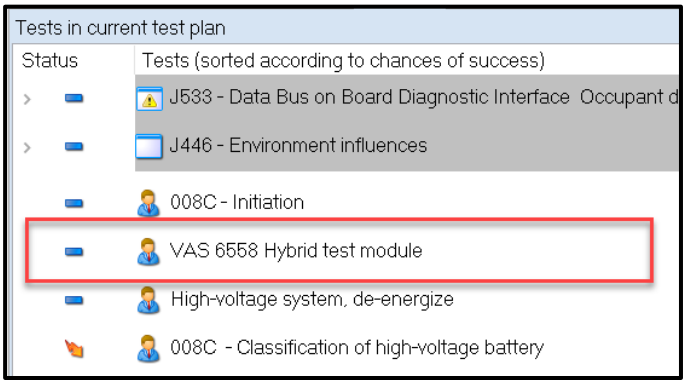
Identify cell module which requires replacement:

- Identify the module that requires replacement and clearly mark its location.



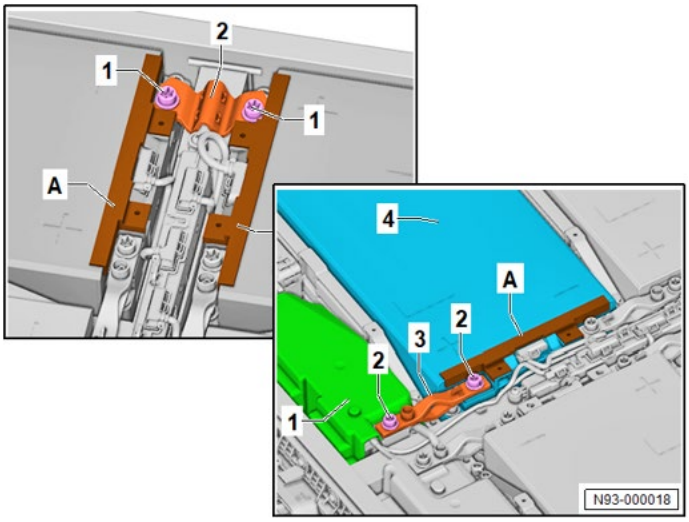
Perform insulation measurement:

- Perform insulation measurement according to ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > Voltage and Insulation Measurement, 82 kWh*
- Perform the measurement in conjunction with ODIS test plan, *"VAS 6558 Hybrid test module."*



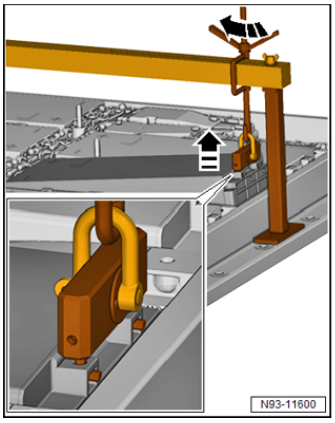
Clean high-voltage battery sealant off of lower housing:

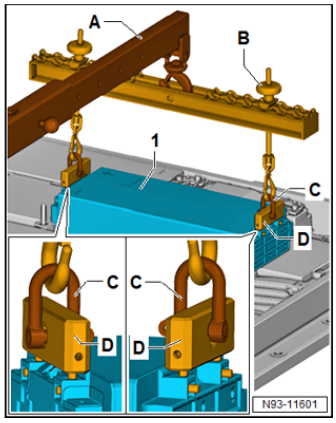
- Clean old sealant using a lint free cloth and Cleaner D -009-401-04 or isopropyl alcohol.



Disconnect the high-voltage circuit:

- See ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > Circuit, Disconnecting, 82 kWh*





Remove the cell module:

- See ELSA Repair manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Components > Battery Module, Removing*
- Ensure the shock protection is installed on ALL open high-voltage connections.

TIP

Pay close attention to the wiring harnesses, so they are not damaged or pinched during removal.

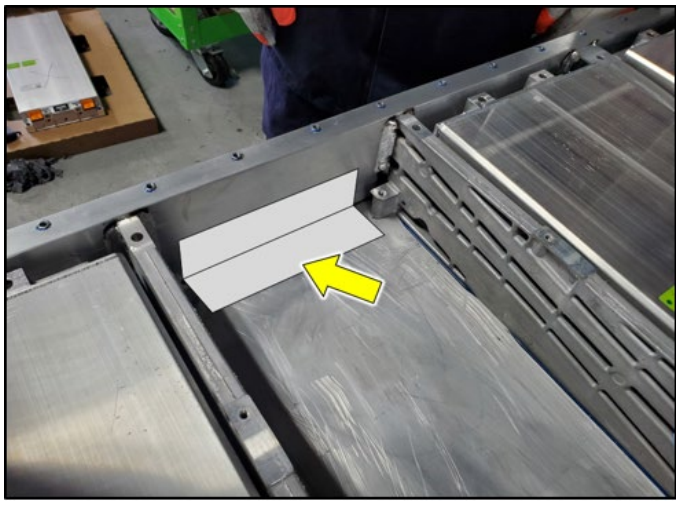
The cell module can be freed from the adhesive bond from either end of the cell module.

Clean the mounting area for the new cell module:

- When cleaning the cell module mounting area, use extreme care so the sealant for the high-voltage battery splines and lower housing is not damaged and that no cleaners come into contact with the sealant.
- Vacuum any loose debris from the mounting area of the cell module.
- Clean cell module mounting area with Cleaner D -009-401-04 or isopropyl alcohol and allow it to completely dry.
- Do not allow the cleaner to come in contact with any of the lower housing frame sealant.

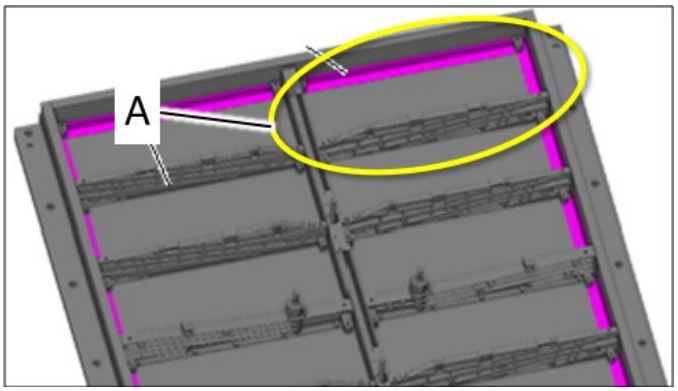
Installing new cell module(s):

- Reference ELSA Repair manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Components > Battery Module, installing*

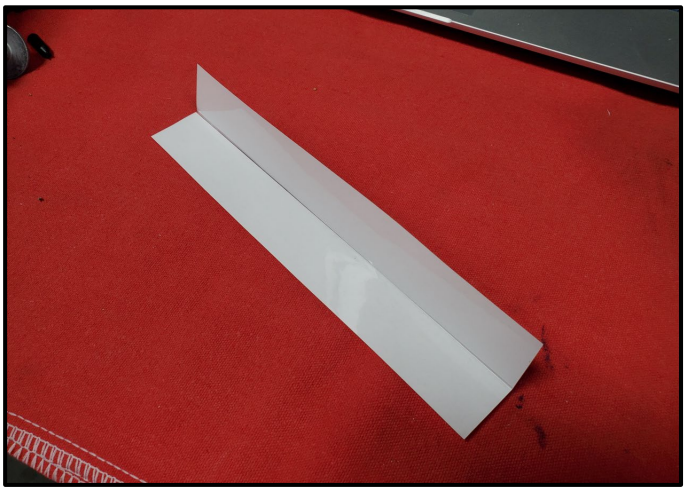


- Note the following when installing the new cell module(s):
- Peel off the protective backing and apply the separating foil <arrow> as needed along the outer frame edges, in the area where the cell module is mounted.

Part Number	Part Description
0Z1-998-474	Separating foil/film



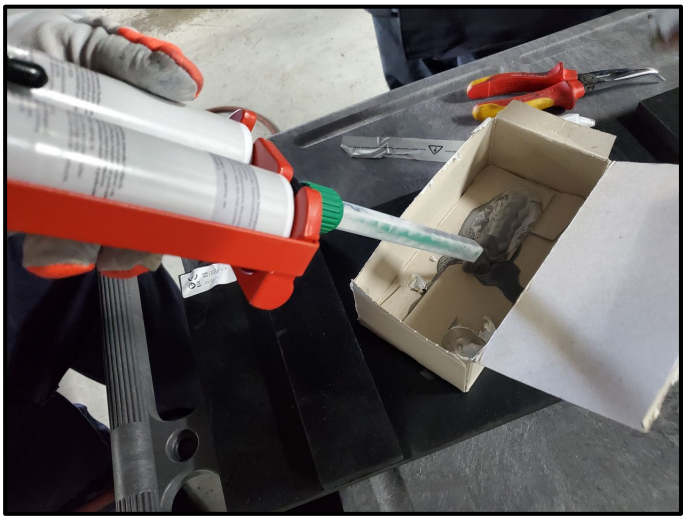
- If the cell module being replaced is in the corner of the high-voltage battery, the separating foil must be applied to both outer frame edges as shown in area <A>.



TIP

Having a second technician pre-fold the separating film before installing will aid in applying the film.

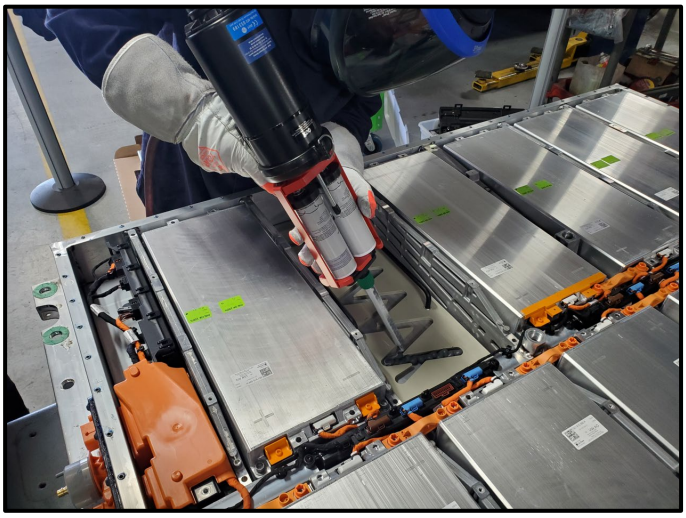
- Clean the bottom of the cell module using Cleaner D -009-401-04 or isopropyl alcohol and allow it to dry completely.



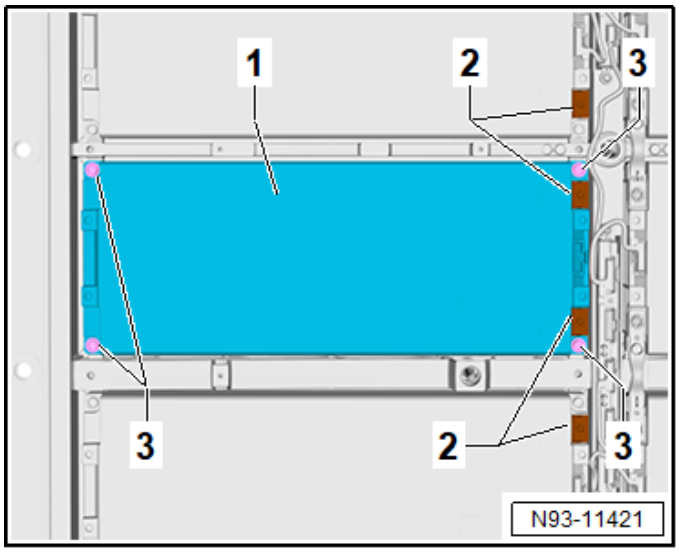
- Double check the expiration date of the paste before applying.
- Use Double Cartridge Adhesive Gun -VAS5237- to apply the heat paste.

Part Number	Part Description
D -G00-018-M3	Heat paste

- Before applying the heat paste, release a small amount through the applicator to ensure the paste is mixing properly.

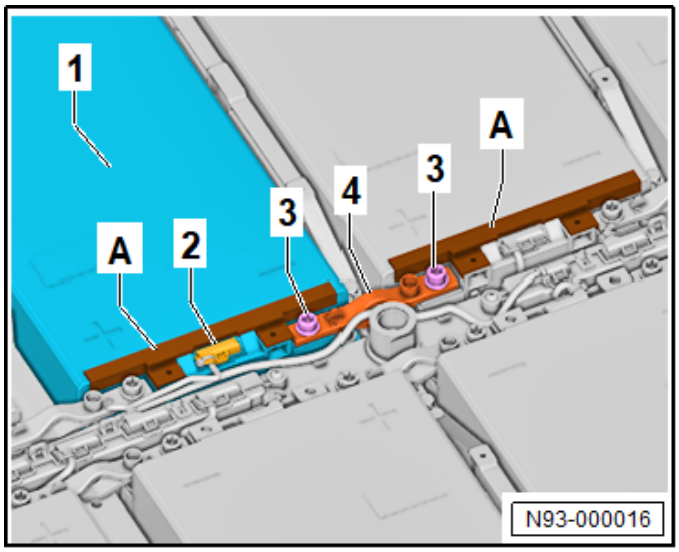


- When filling Template -T10606-, ALL of the heat paste must be used.



- Pay close attention to the wiring harnesses when installing the cell module.
- Torque new bolts <3> in a cross pattern to 16 Nm + 180°.

Part Number	Part Description
N -912-809-01	Bolt



- Torque bolts <3> for the high-voltage connection <4> to 8 Nm.

DANGER

STOP!

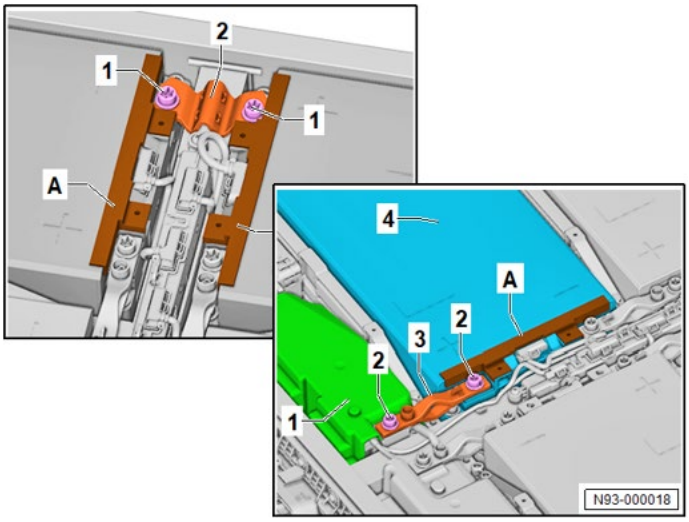
Incorrect installation of battery modules and module connectors.

Short circuit electric arc can cause severe bodily or fatal injuries.

Check the battery modules and module connectors for correct installation.

Only continue with the procedure when there is no voltage in between the battery terminals.

Pay very close attention to the Repair Manual steps outlining the use of the -VAS6762/45-.

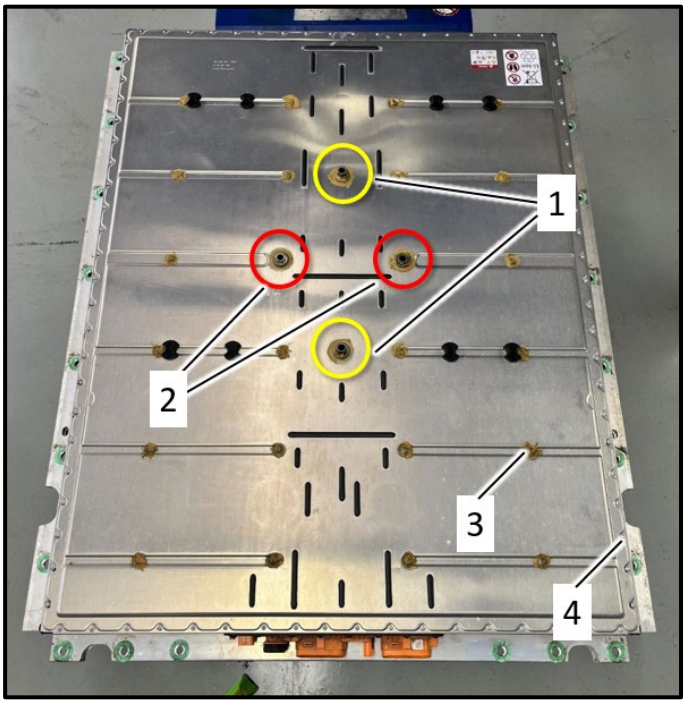


Reconnect high-voltage circuit:

- Reconnection is the reverse order of disconnecting.
- Reference ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > Circuit, Disconnecting, 82 kWh*

Check for high-voltage battery faults:

- Using -VAS671007- or -VAS5581A-, in conjunction with the Diagnostic Tester, verify there are no faults stored for any high-voltage battery component before installing the high-voltage battery cover.



Install and seal high-voltage battery cover:

NOTE

The upper part of battery housing can be reused under certain circumstances and does not have to be replaced.

To determine if the cover can be reused, refer to the ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > Battery Housing Upper Section, Checking for Re-Use*

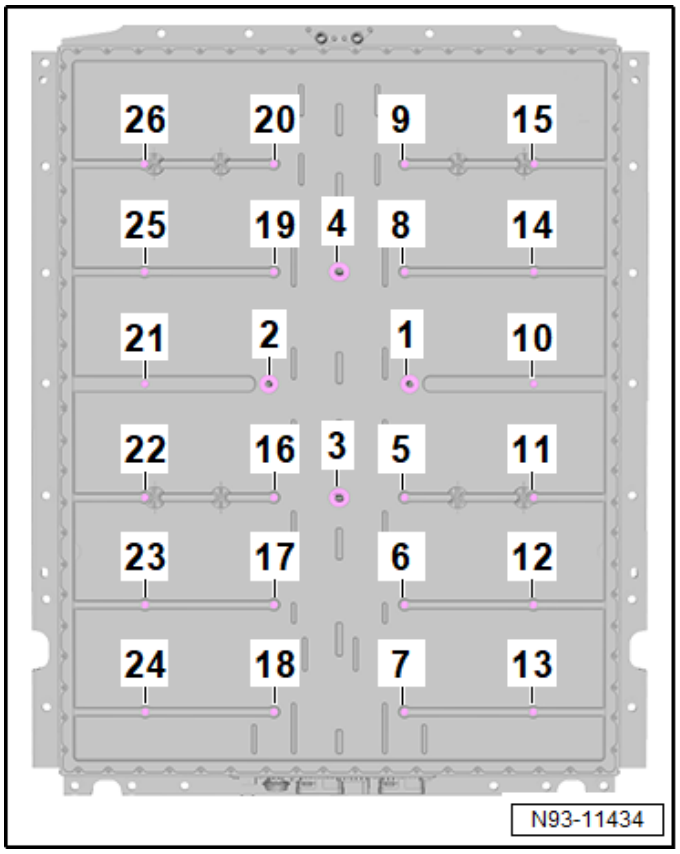
TIP

Ensure all shock protection is removed prior to installing cover.

Pay attention to the cover position. The cover part number stamping is positioned at the front of the high-voltage battery.

- SEE ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > High-Voltage Battery 1 AX2 , Sealing, 82 kWh*

Part Number	Part Description
1EA-804-841-AC	Cover (if necessary)
D -454-300-H2	Sealant
1EA-802-131-A	Connection element (qty. 2) Position <1>
1EA-802-132-A	Connection element (qty. 2) Position <2>
WHT-008-738-A	Middle bolts (qty. 22) Position <3>
WHT-009-218	Perimeter bolts (qty. 82) Position <4>

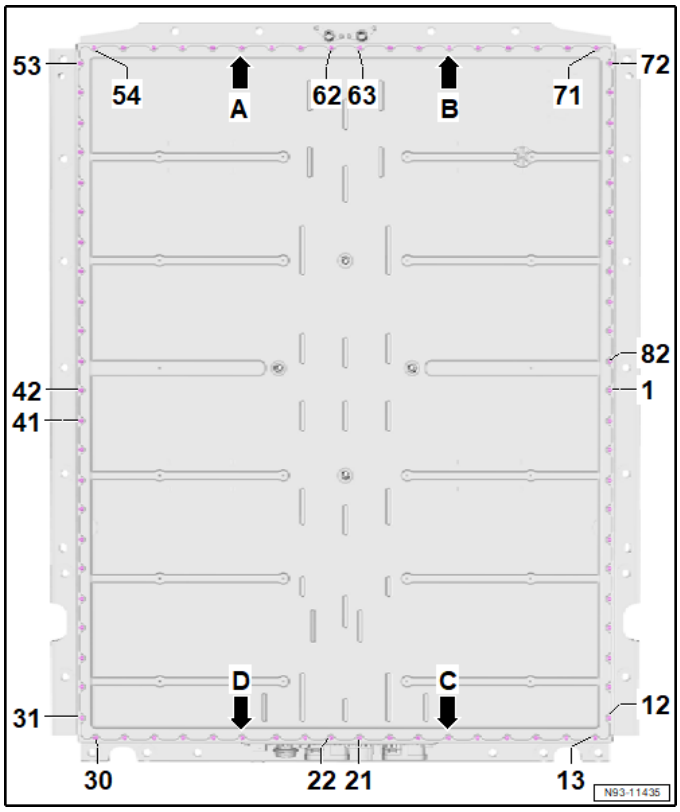


- Torque the new fasteners in the following order:

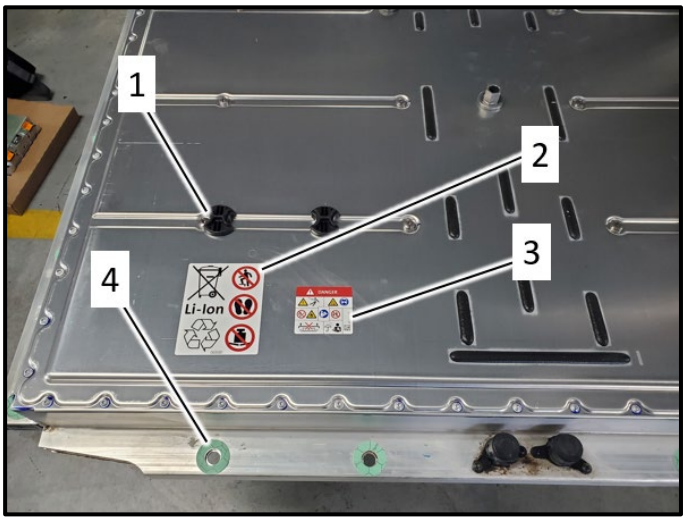
1. Connection element bolts <1 through 4> to 100 Nm.
2. Middle bolts <5 through 26> to 5.5 Nm + 90°.

TIP

Utilize a second technician to keep track of, or mark each bolt once it has been torqued.



3. Bolts <A, B, C and D> to 8 Nm.
4. Bolts <1 through 82> to 8 Nm.



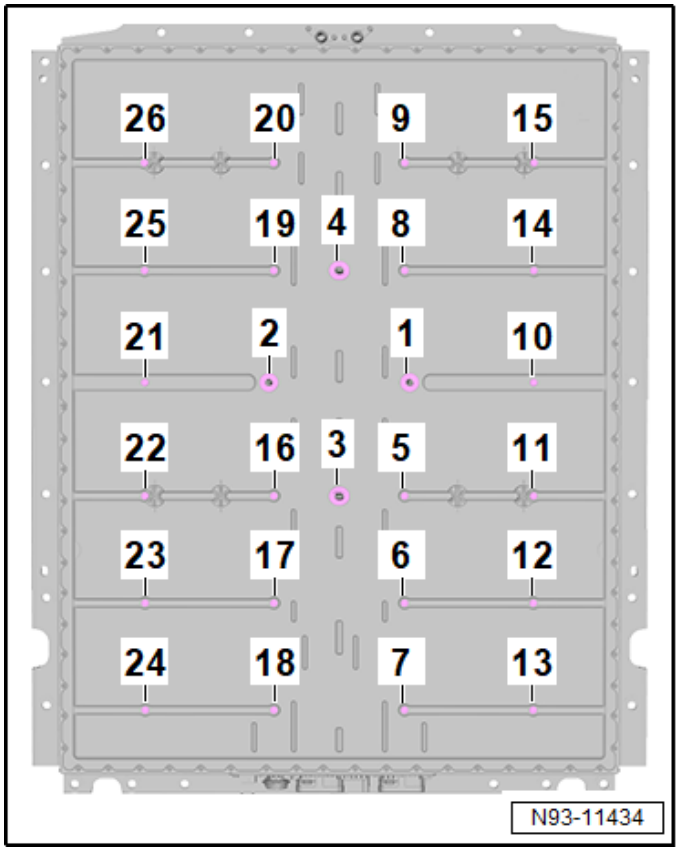
Prepare high-voltage battery for installation:

NOTE

Replacing the spacers and stickers is only necessary if the high-voltage battery cover is replaced.

- Install new spacers <1> (qty. 8) onto the high-voltage battery cover. Reference the old cover for installation position if needed.
- Apply new sticker <2> and warning sign <3>.
- Remove old separating film <4> from around the high-voltage battery mounting holes and install new separating film.
    - Do not install separating film if there was no existing film already in place.

Part Number	Part Description
1EA-804-973	Spacer (qty. 8)
1EA-998-103	Separating film
12E-010-006-AA	Sticker
1EA-010-505	Warning sign

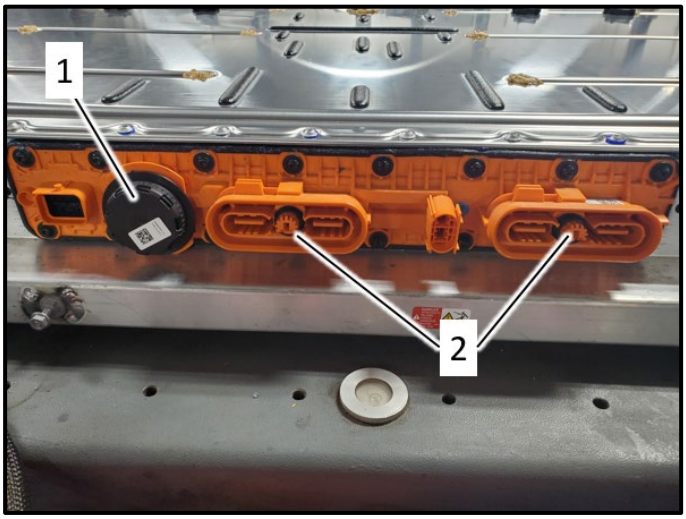


- Apply wax around the base of the connection elements <1 through 4>.
- Completely cover all (22) middle bolts <5 through 26> with wax.

Part Number	Part Description
D -316-000-A1	Wax/Undercoat

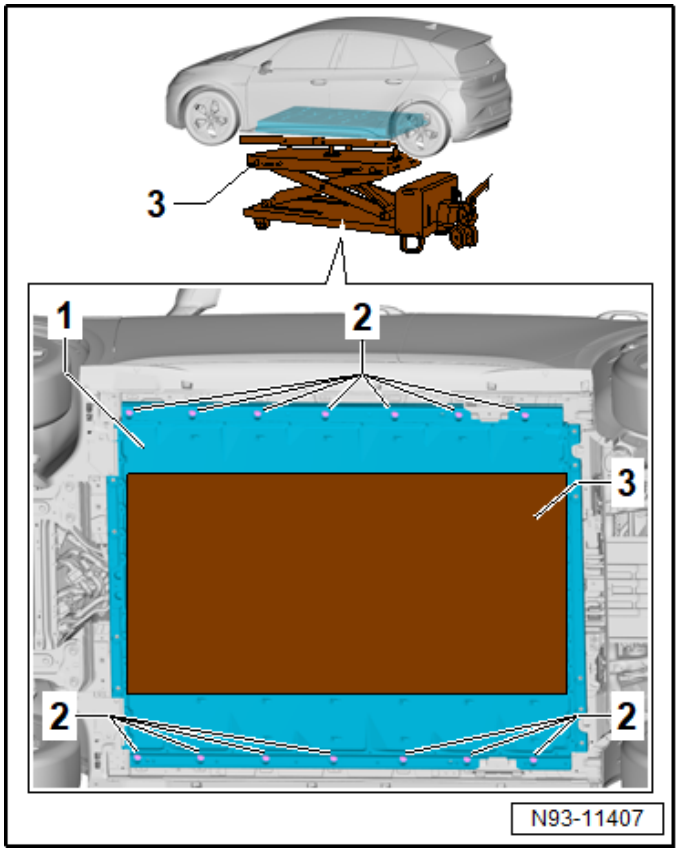
COVERAGE DETAIL

Connection elements <1 through 4>	
Middle bolts <5 through 26>	



- Install new pressure relief valve <1> and connection seals <2>.

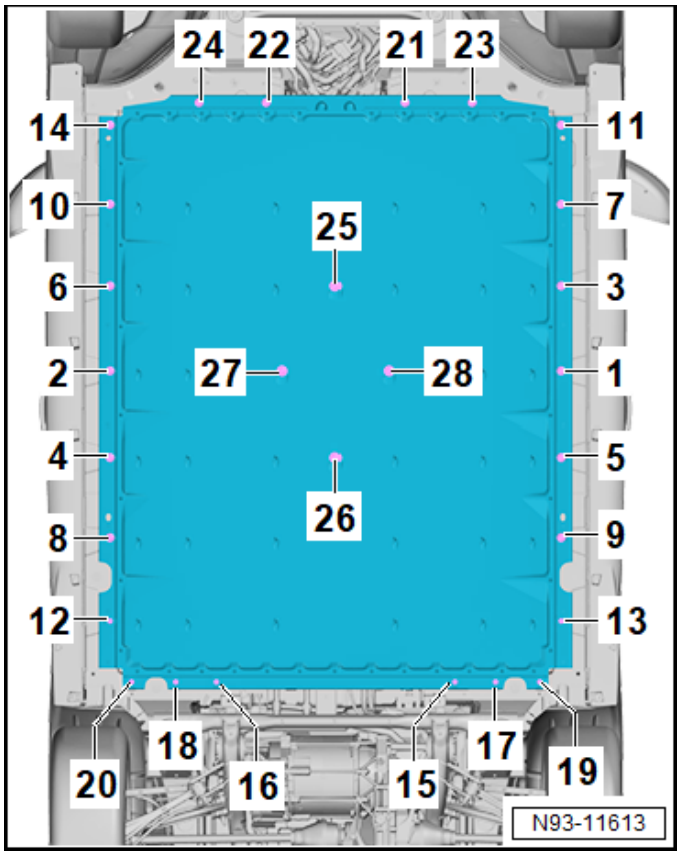
Part Number	Part Description
1HV-915-754-A	Valve
0Z1-915-433-A	Seal (qty. 2)



Re-install high-voltage battery:

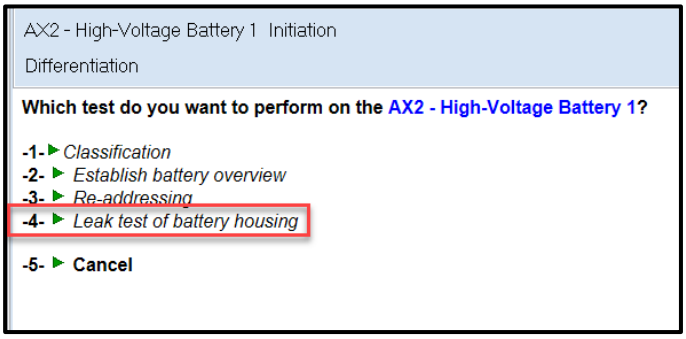
- Installation is the reverse order of removal.
- See ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > High-Voltage Battery 1 AX2 , Removing and Installing, 82 kWh*
- Use new bolts.

Part Number	Part Description
N -912-832-01	Center bolts (qty. 4)
N -909-428-04	Perimeter bolts (qty. 24)



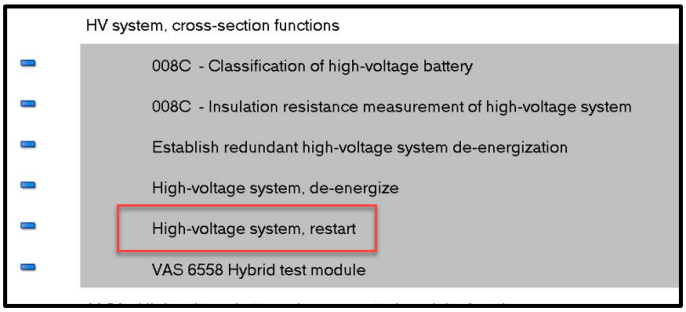
- Torque the new bolts in the following sequence:

1. Bolts <1 through 24> to 50 Nm + 90°.
2. Bolts <25 through 28> to 40 Nm + 180°.



Perform high-voltage battery leak test:

- See ELSA Repair Manual: *Repair Manual > Motor > Electric Drive Motor 0EH, 0EJ > 93 Electric drive > High-Voltage Battery Unit > High-Voltage Battery Leak Test, 1 AX2*
- Perform these steps in conjunction with Guided Function test plan, “008C – Initiation > select option: Leak test of battery housing.”



Restart the high-voltage system:

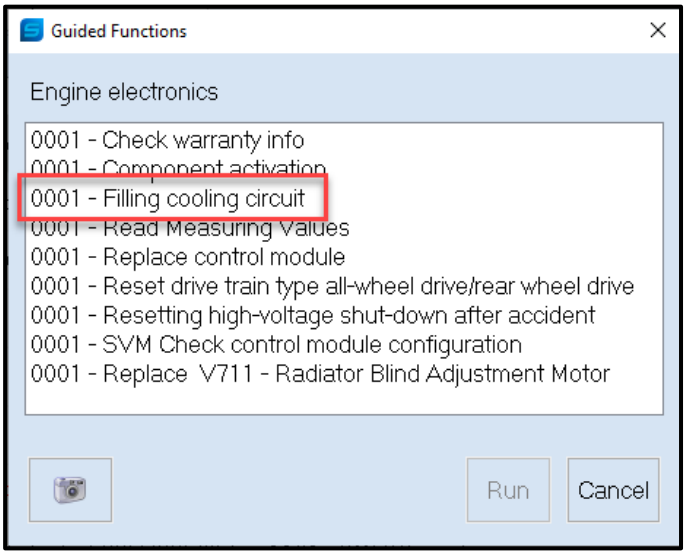
DANGER

High voltage increases the risk of fatal injury

Electrocution can cause severe bodily or fatal injury

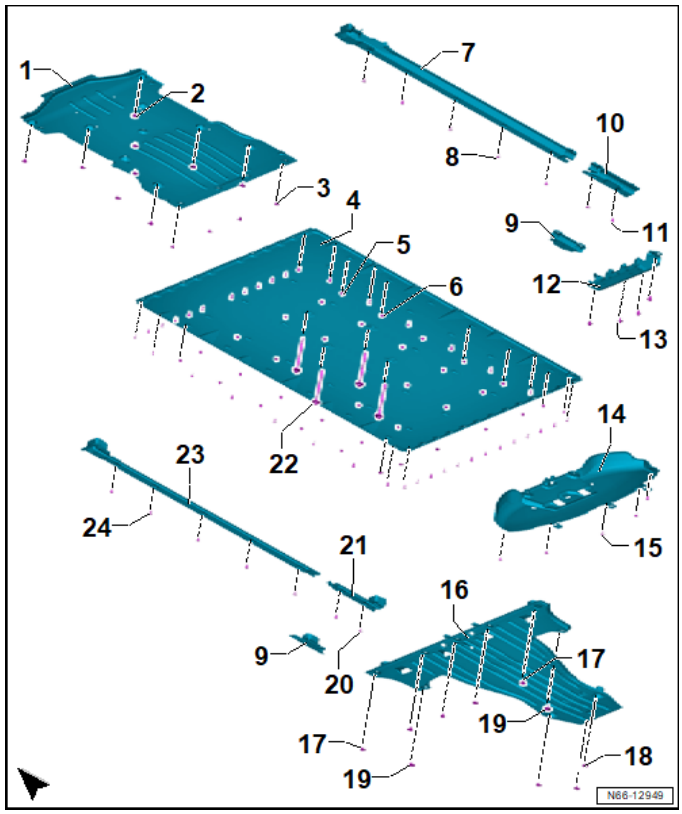
Have a high-voltage technician or a high-voltage expert recommission the high-voltage system.

- Follow the “*High-voltage system, restart*” test plan steps.
- Pay close attention to all of the test plan steps.



Fill cooling system

- Top off coolant.
- See ELSA Repair Manual: *Repair manual > Motor > Electric Drive Motor 0EH, 0EJ > 19 Cooling System > Cooling System/Coolant > Cooling System, Filling*
- Perform these steps in conjunction with Guided Function test plan, *"0001 – Filling cooling circuit."*

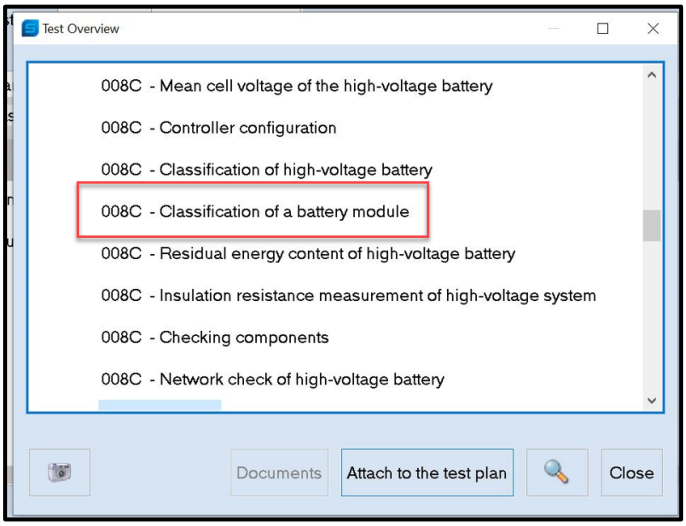


Reinstall underbody covers and side covers:

- Installation is the reverse order of removal.
- Reference the ELSA Repair Manual as needed.
- Replace any damaged fasteners.

Clear repair related faults:

- Exit GFF and send the diagnostic protocol to GFF paperless.

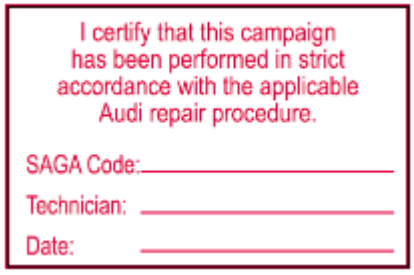


Perform classification of removed cell module(s):

- Select “Self Test” and populate the “008C – Classification of a battery module” test plan.
- Perform the test plan and follow all on-screen prompts.

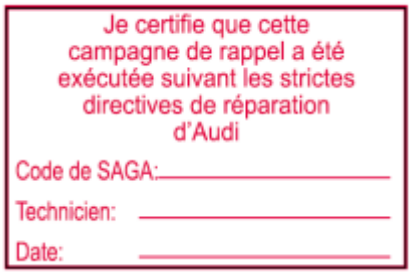
Proceed to Step 2 of the SVM instructions.

Section D – Campaign Completion Stamp



Item#: AUD4927ENG

-OR-



Item # AUD4927FRE

- Once the campaign has been completed, the technician should stamp the repair order.
- Stamps are available for ordering through the Compliance Label Ordering Portal.

US DEALERS - Proceed to Section E

CANADIAN DEALERS - Proceed to Section F

Section E - Parts Return/Disposal – US DEALERS ONLY

High-Voltage Battery Module(s):

Refer to the latest instructions for high-voltage battery recycling, found in Elsa2Go: *Elsa2Go-> Infomedia->Service References->Electric Vehicle Category ->"HV Battery Recycling Program Guide"*

All other parts:

Properly store (retain), destroy or dispose of removed parts in accordance with all state/province and local requirements, unless otherwise indicated and/or requested through the Warranty Parts Portal (WPP).

Section F - Parts Return/Disposal – CANADIAN DEALERS ONLY

High-Voltage Battery Module(s):

Refer to the latest version of TSB 2062871.

All other parts:

Properly store (retain), destroy or dispose of removed parts in accordance with all state/province and local requirements, unless otherwise indicated and/or requested through the Part Destruction and Core Disposition Report for Canada.

Appendix A – Bus Sleep Instructions

Carry out the following steps in the specified sequence to put the vehicle in a bus sleep.

- Switch off the ignition.
- Turn off the hazards.
- Remove diagnosis interface from the vehicle diagnosis connection.
- Remove battery charger from the 12V battery.
- Close front and rear lid as well as all doors.
- Lock vehicle.
- Move vehicle key (remote control) at least 20 meters away from the vehicle.
- Wait at least 5 minutes until the vehicle is in bus silence.
- Then unlock vehicle again.
- Connect and switch on battery charger.
- Insert diagnosis interface on vehicle diagnosis connection.
- Switch on the ignition.
- Place a vehicle key (remote control) in the center console on the reader coil.