This documentation refers to special tools that were not yet available when going to press.

61 27 711 Replace cell module 1

High-voltage system.

The high-voltage system operates on the basis of hazardous, electrical voltage and high currents. Danger to life through electric shock!

- All work on the high-voltage system may only be carried out by specially trained and technically experienced personnel.
- For additional information see:
- For additional information see:

Damaged high-voltage cables, high-voltage connectors and high-voltage components.

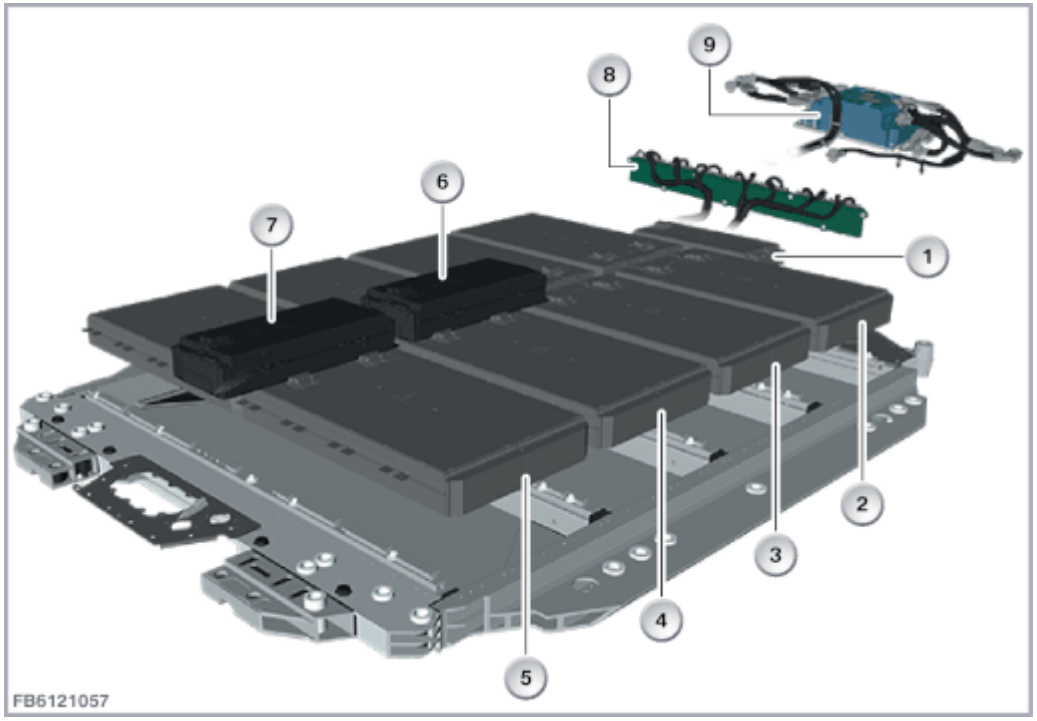
Danger to life through electric shock!

- Do not repair but always replace damaged high-voltage cables, high-voltage connectors and high-voltage components completely with new parts in their original packaging.
- Technical Support must be contacted immediately in case high-voltage cables, high-voltage connectors and high-voltage components are damaged and contact protection is no longer provided.

PRELIMINARY WORK

1 – Preparing the position plan

High-voltage battery unit



▶ Position plan

- Before removing cell modules: Print out position plan for cell modules and cell supervision circuits from diagnosis system!
- Label the installation position of all the cell modules and cell supervision circuits on the component.

- Enter the serial number of the cell module here.

Position number		Enter new serial numbers here:	Exchange part serial number:
1	Cell module 1		
2	Dual-cell module 2 (cell modules 2 and 11)		
3	Dual-cell module 3 (cell modules 3 and 10)		
4	Dual-cell module (cell modules 4 and 9)		
5	Dual-cell module (cell modules 5 and 8)		
6	Cell module 6		
7	Cell module 7		
8	Cell supervision circuit		
9	Battery management electronics (SME)		

2 – Adjust charging voltage

Please comply with instructions in Owner's Handbook.

- Prior to commencing work: Adjust the charging voltage of the new cell module when it is removed to the charging voltage of the cell modules in the high-voltage battery unit of the vehicle. Use the cell module charger for this purpose.
- **Cell modules must be charged individually.** Do not charge multiple cell modules at the same time.
- **Only with high-voltage battery units with dual-cell modules:** Dual-cell modules consist of two permanently connected individual cell modules**.** Dual-cell modules must be charged separately. Before charging, disconnect the modules from each other. Disconnecting the dual module screw connection is not permitted.
- List of charging cables:

  Cable 40A (charging cable for GEN5 module charger)

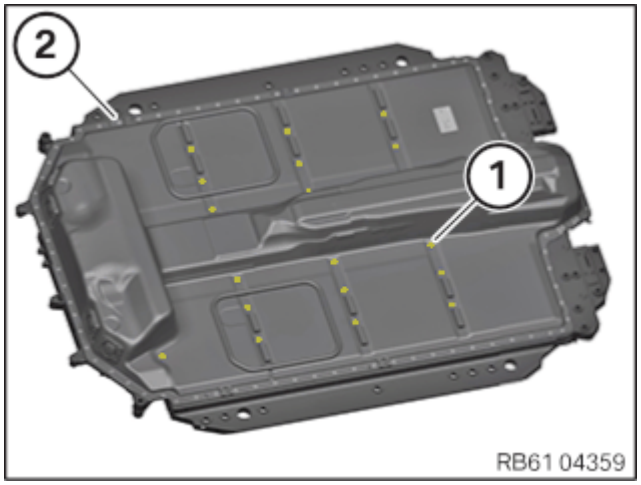
  Adapter cable encoding A +B

3 – Removing the lid of the high-voltage battery unit

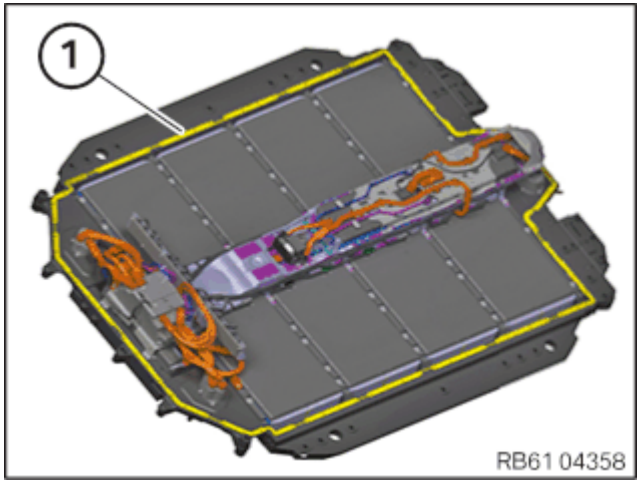
An electric screwdriver is permitted to be used in this step to release the screws.

Remove contamination and moisture from the lid of the high-voltage battery unit to prevent contamination of the high-voltage battery unit.

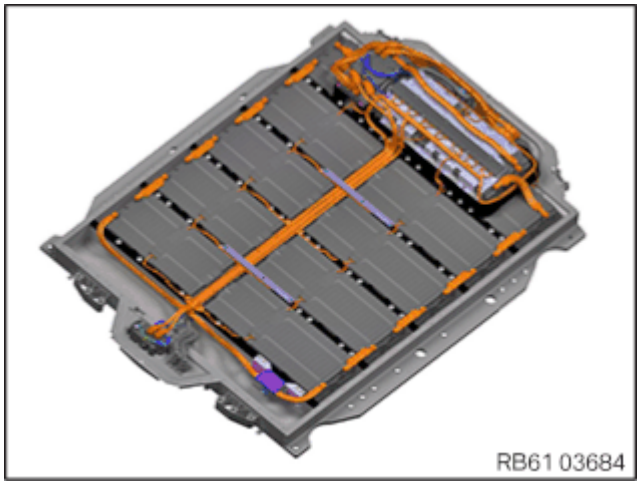
Carry out visual inspection for damage and conduct moisture ingress on opened high-voltage battery unit. If damage is detected, work must be stopped immediately and a qualified electrician or Technical Support must be contacted.



- Release all sealing screws (1).
- Unscrew all bolts (2) ..
- Remove lid with help of an auxiliary person.

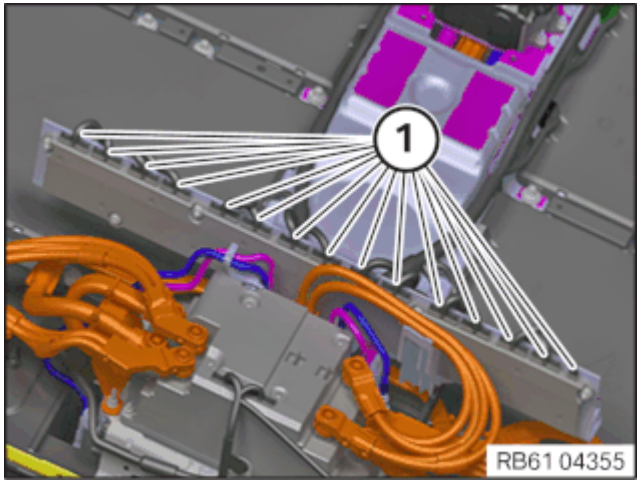


- Remove the sealing (1).



- In order to prevent damage to the cell modules, it is not permitted to apply support directly to the cell modules when working on them.

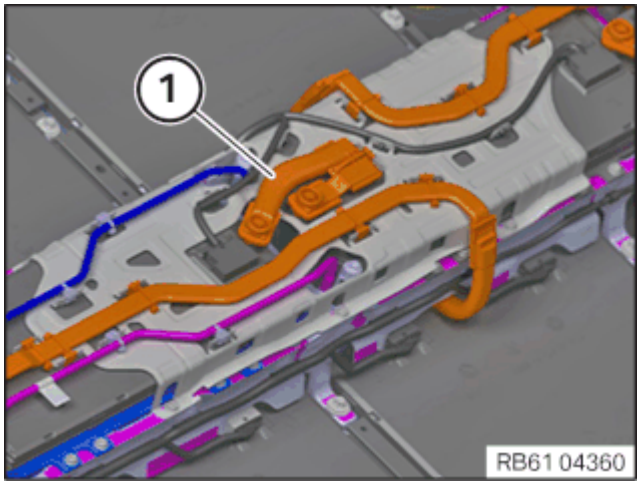
- **Carry out visual inspection for damage and conduct moisture ingress on opened high-voltage battery unit. If damage is detected, work must be stopped immediately and a qualified electrician or Technical Support must be contacted.**



If the connectors of the cell supervision circuit are disconnected individually, the cell supervision circuit may malfunction.

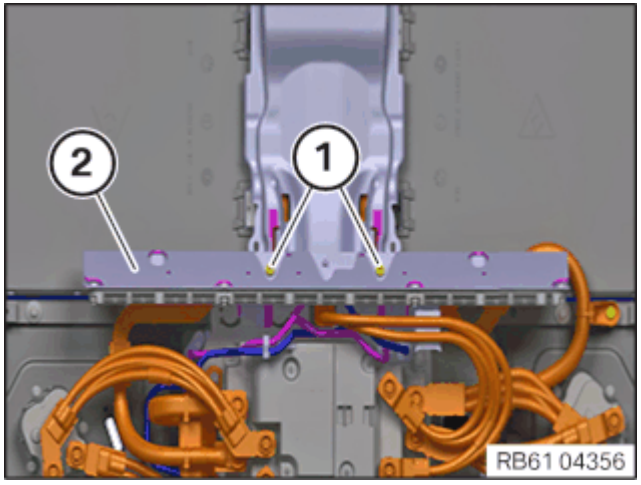
- All plug connections must always be disconnected and connected from left to right.
- It is not permissible to swap the connector positions for troubleshooting, as this can lead to a short circuit.

- Unplug all the connectors (1) on the cell supervision circuit with .

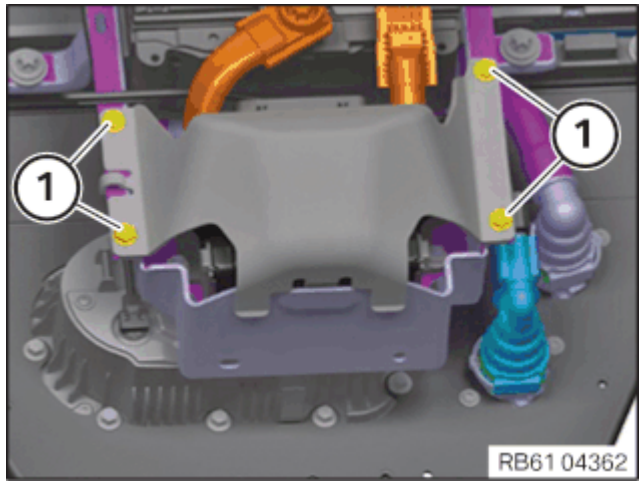


- Disconnect the high-voltage connector (1) to release the series connection.

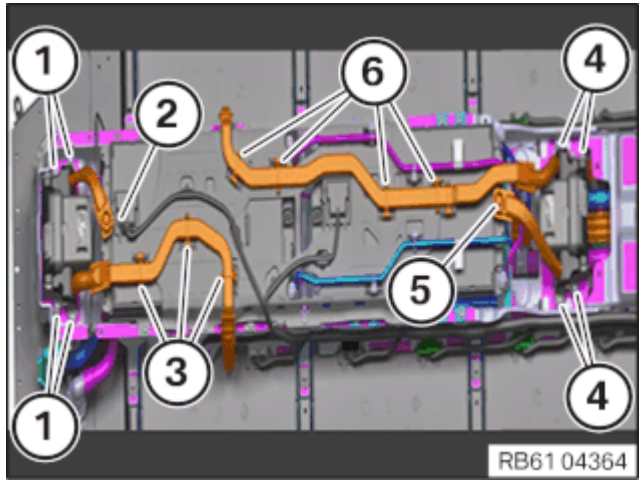
4 – Removing intermediate level



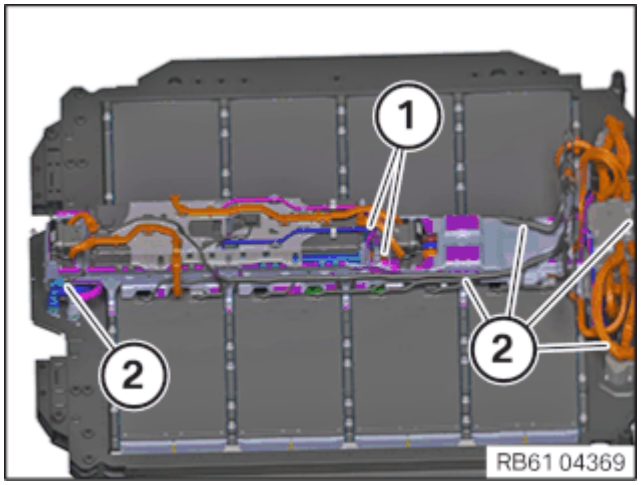
- Release screws (1) and remove holder (2) with cell supervision circuit.



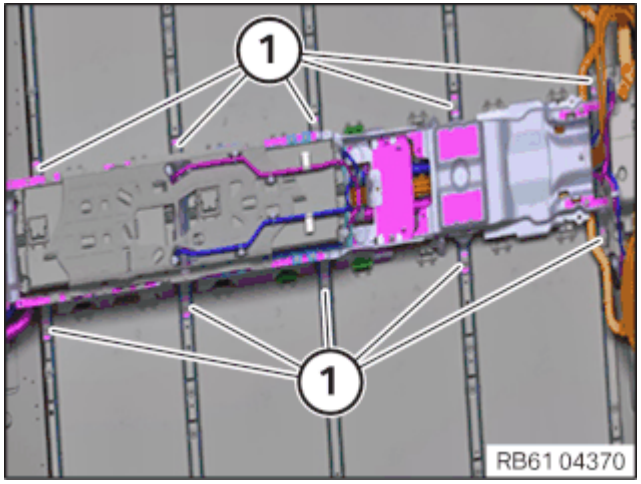
- Loosen screws (1).



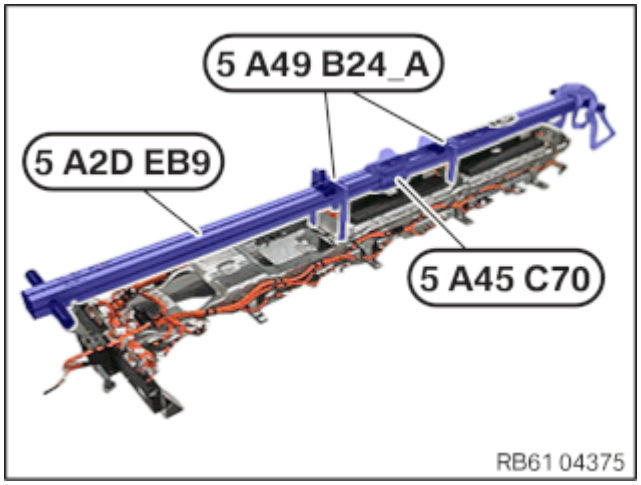
- Loosen nuts (1).
- Unscrew the bolt (2) on the module connector.
- Unclip the module connector (3) and carefully place the separating element to one side.
- Loosen nuts (4).
- Unscrew the bolt (5) on the module connector.
- Unclip the module connector (6) and carefully place the separating element to one side.



- Disconnect the coolant line (1).
- Disconnect and unclip communication wiring harness (2).
- For disconnecting all connectors, use .



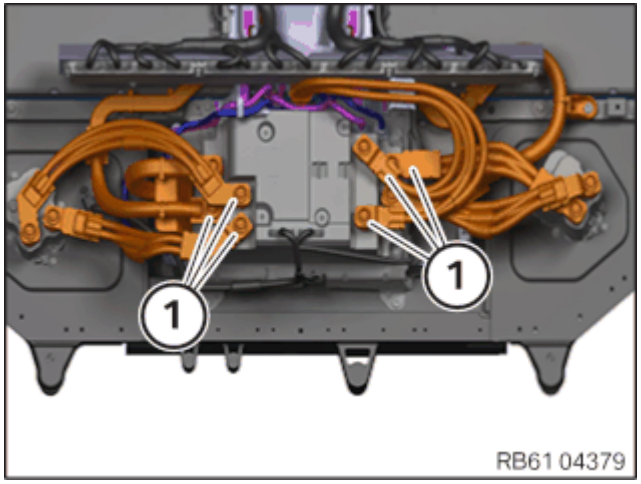
- Unscrew all bolts (1) ..



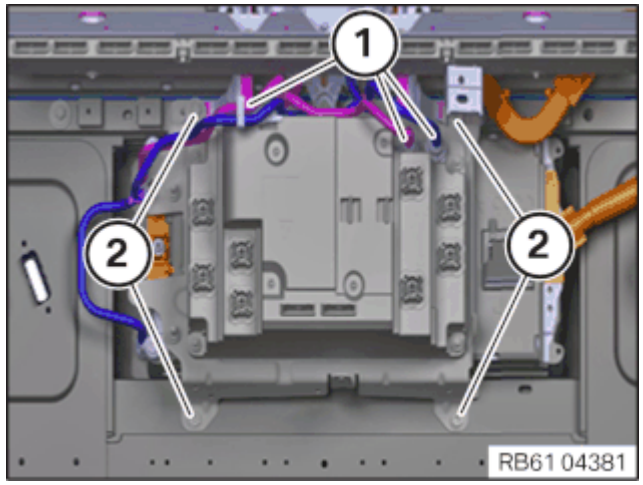
- Lift out the middle part with jacks and .
- Should the workshop crane **2 220 718** be used, the jack can be additionally equipped with .

MAIN WORK

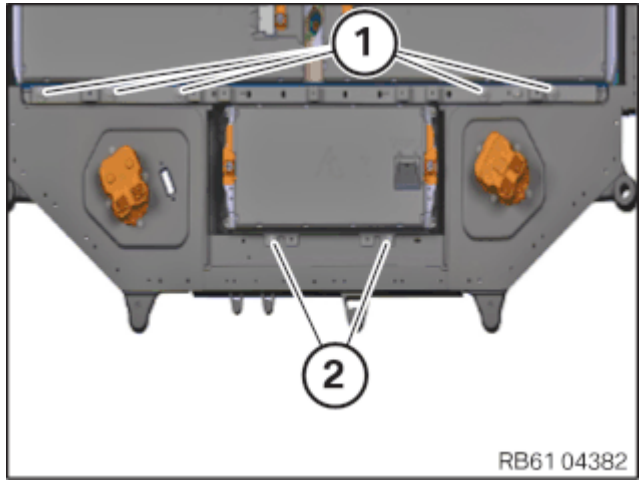
5 – Removing cell module 1



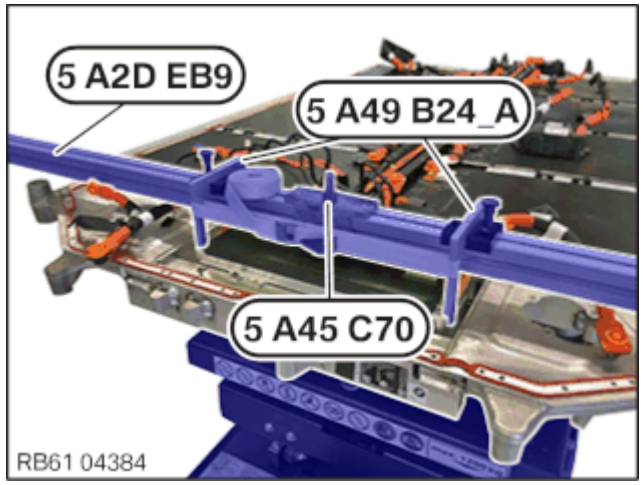
- Disconnect all the module connectors (1).



- Disconnect and unclip both the coolant lines (1).
- Release the screws (2) and remove the battery management electronics (SME) with the holder.

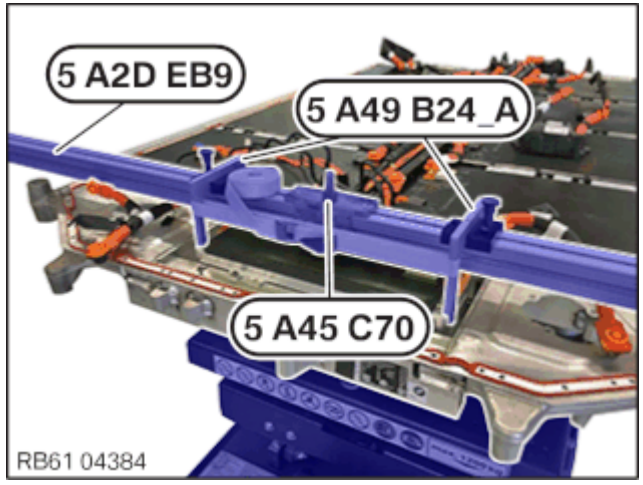


- Release the screws (1) on the clamping strip.
- Loosen screws (2).

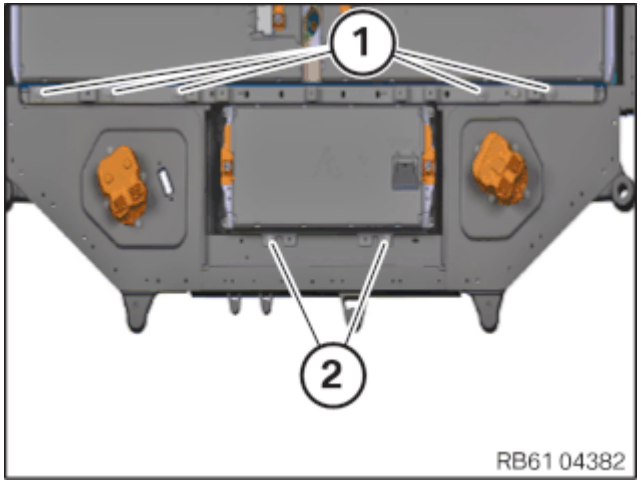


- Lift out the module with jack and .

6 – Installing cell module 1



- Lift module with jack and .



- Position the clamping strip and tighten the screws (1).

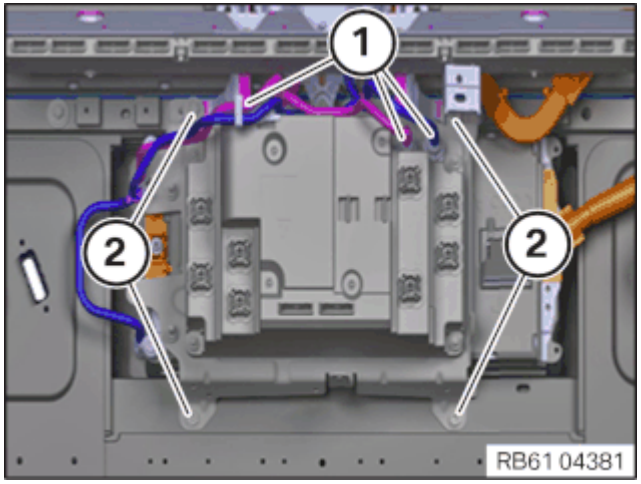
Clamping strip

M8x62	Renew screw.	28 Nm
	Angle of rotation	90 °

- Tighten the screws (2).

ScrewsM6

M6x18	Renew screw.	11.8 Nm



- Position the battery management electronics (SME) with the holder and tighten the screws (2).

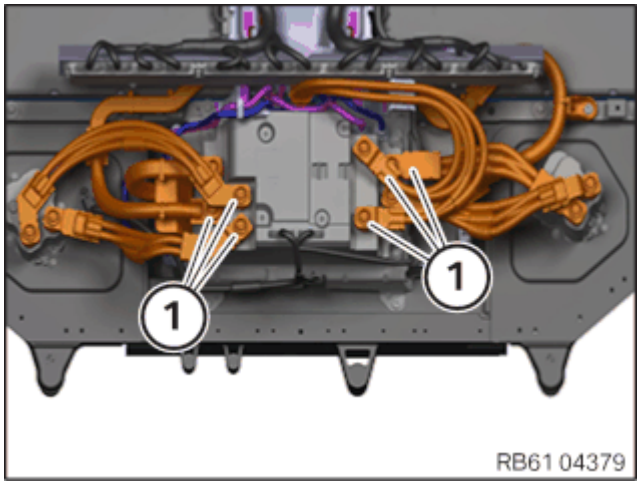
ScrewsM6

M6x18	Renew screw.	11.8 Nm

Clamping strip

M8x62	Renew screw.	28 Nm
	Angle of rotation	90 °

- Connect and clip in both coolant lines (1).



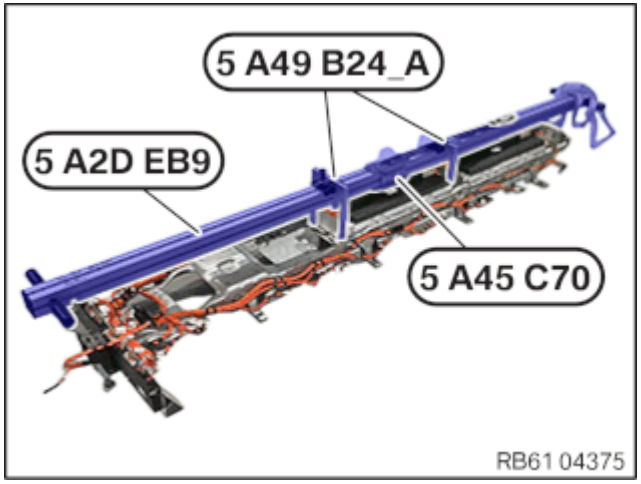
- Connect and tighten all module connectors (1).

Module connector

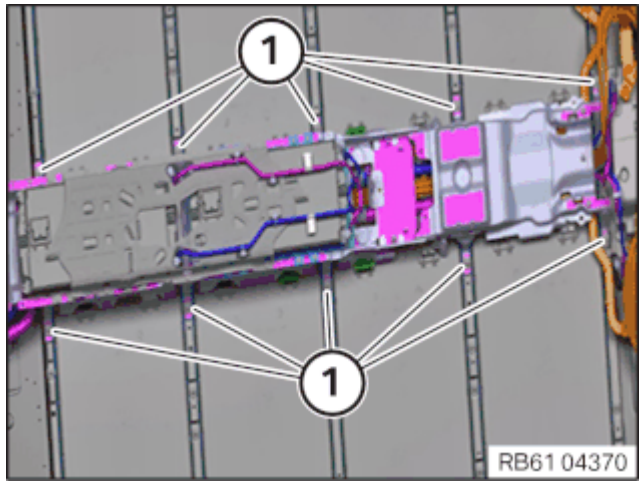
8,5 Nm

POSTPROCESSES

7 – Installing the intermediate level



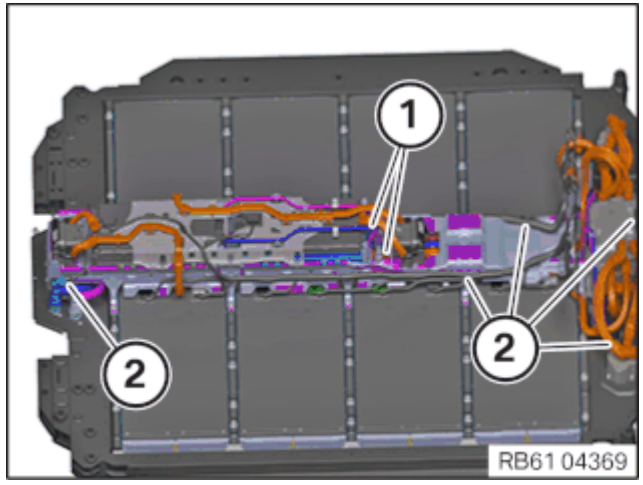
- Lift the centre section with jack and .
- If the workshop crane **2 220 718** is to be used for lifting, the jack can be additionally equipped with .



- Tighten all screws (1).

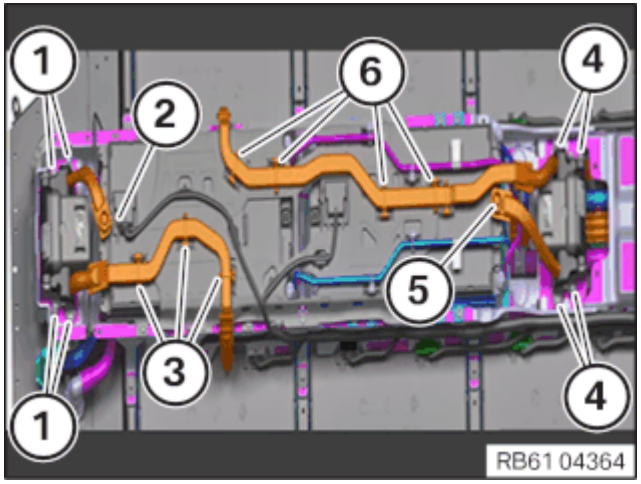
Intermediate level

M8x62	Renew screw.	28 Nm
	Angle of rotation	90 °



- Connect the coolant line (1).

  Ensure correct locking. The click sound and the yellow locking ring are no longer visible.
- Connect and clip in the communication wiring harness (2).



- Carefully place the separating element and clip in the module connector (6).
- Tighten nut (4).

Nut, separating element

Nut M6	8 Nm

- Tighten the screw (5) on the module connector.

Module connector

	8,5 Nm

- Carefully place the separating element and clip in the module connector (3).
- Tighten nut (1).

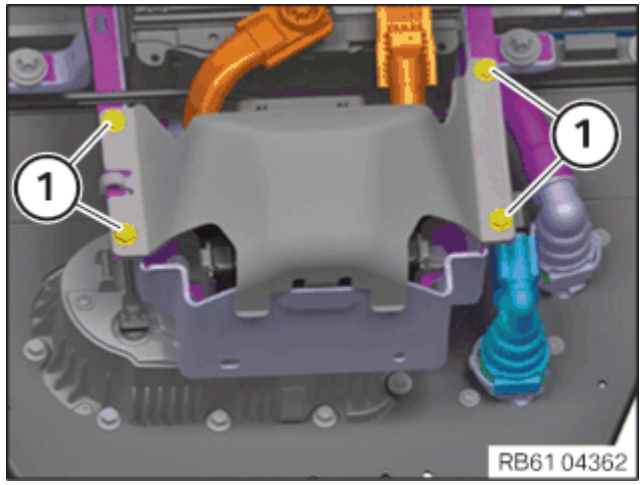
Nut, separating element

Nut M6	8 Nm

- Tighten the screw (2) on the module connector.

Module connector

	8,5 Nm



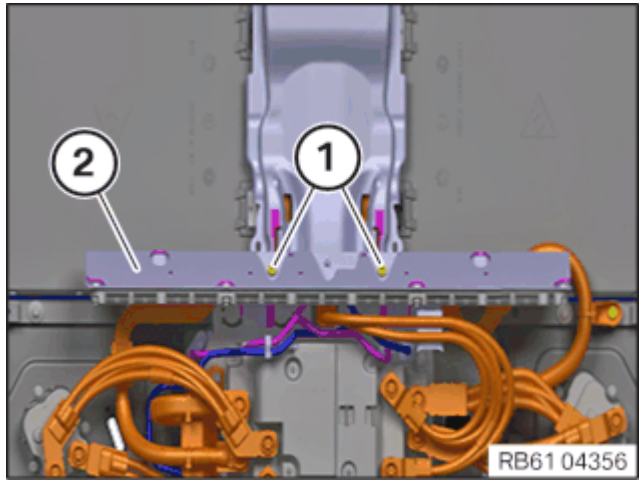
Line for temperature sensor crossed.

- Check the line before screwing it in to avoid crushing the line.

- Tighten the screws (1).

Protective plate, separating element

M6x18	11.8 Nm



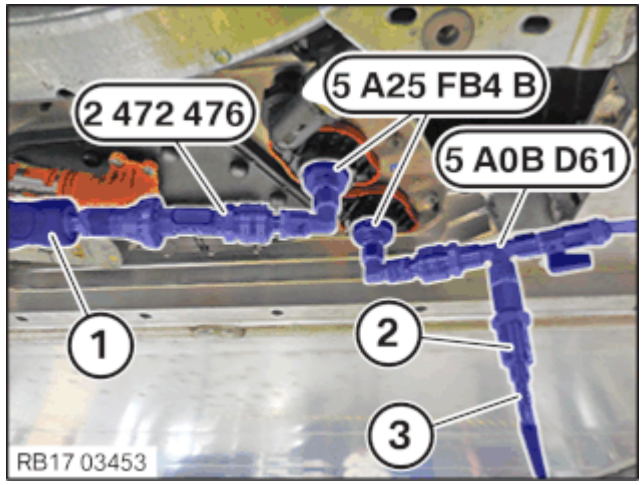
- Place the holder (2) with cell supervision circuit and tighten the screws (1).

Screws, retaining plate

M6x18	11.8 Nm

8 – Carrying out a pressure test of the cooling system

This step involves the same procedure in both the installed and removed state of the high-voltage battery unit.



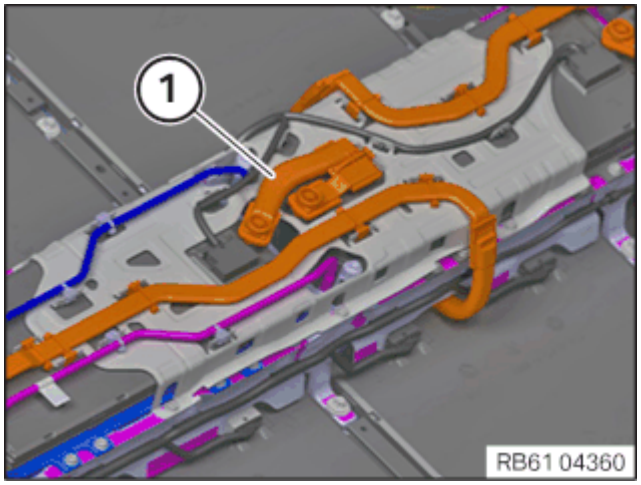
- Connect the special tool **5 A25 FB4 B** to the high-voltage battery unit.
- Use separate components from the set of special tools .
- Connect special tool to special tool **5 A25 FB4 B**.
- Connect special tool to second special tool **5 A25 FB4 B**.
- Screw the IMIB of pressure sensor (2) into special tool .
- Connect the IMIB of pressure sensor (2) with line (3) to the IMIB.
- Connect the special tool with the compressed air hose (1).

Service function does not require vehicle communication: Open the last ISTA process of the vehicle again or start a new process without a vehicle test by entering the vehicle identification number.

Do **not** switch on the terminal 15 on the vehicle, otherwise the coolant pumps will run dry and may be damaged.

- Run service function for the pressure test via the following path in ISTA.
  - Electric drive
  - Cooling
  - High-voltage battery unit: Cooling system leakage test
- Remove special tools after completing the pressure test.

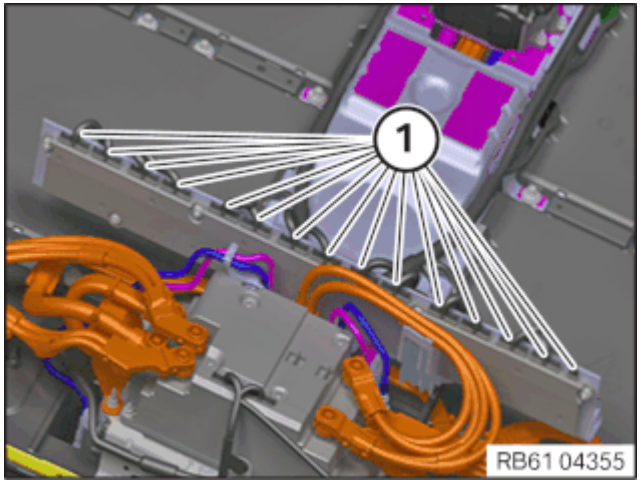
9 – Mounting the lid of the high-voltage battery unit



- Connect the high-voltage connector (1) and tighten it.

Module connector

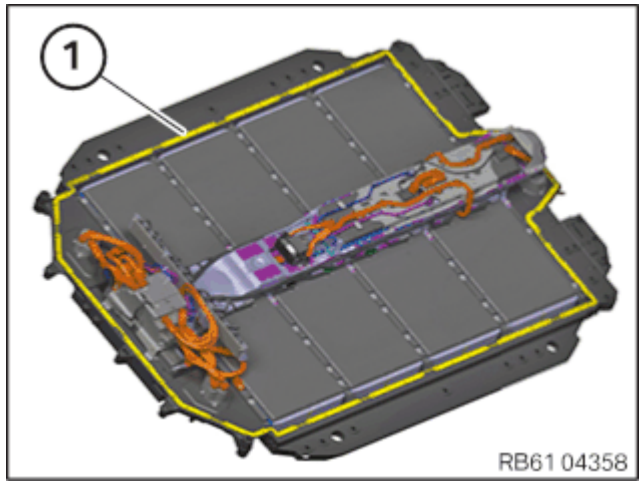
8,5 Nm



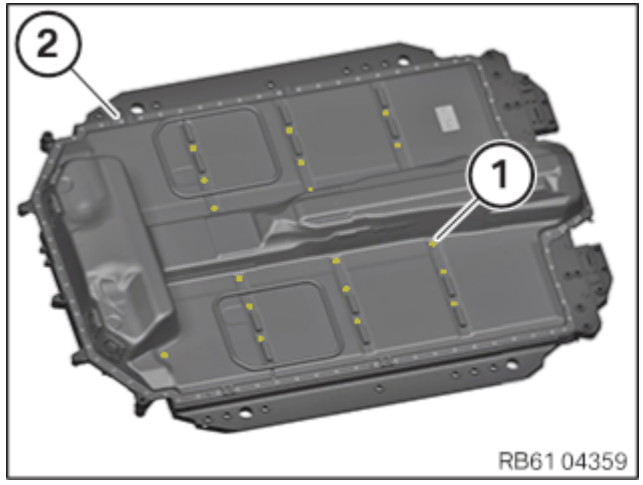
If the connectors of the cell supervision circuit are disconnected individually, the cell supervision circuit may malfunction.

- All plug connections must always be disconnected and connected from left to right.
- It is not permissible to swap the connector positions for troubleshooting, as this can lead to a short circuit.

- Connect all the connectors (1) of the cell supervision circuit.



- Bond the new seal (1).



- Put on lid with help of an auxiliary person.

Note: Position the lid exactly before putting it down to prevent the seal from sliding.

- Tighten all screws (2).

Upper housing section to lower housing section

M5x24	Renew screw.	6.8 Nm

- Tighten all sealing screws (1).

Sealing screw on upper housing section

M8x28	Renew screw.	28 Nm

10 – Perform EoS test

Please comply with instructions in Owner's Handbook.

- Connect special tool (IMIB HV) **2 458 280**.
- Adapter cable
- Start final test (EoS test) in ISTA.
- Perform in ISTA: **Start-up after the installation of the high-voltage battery unit in the vehicle**

Additional Information

Overview of Tightening Torques

Clamping strip		Used in step 6
M8x62	Renew screw.	28 Nm
	Angle of rotation	90 °

ScrewsM6		Used in step 6
M6x18	Renew screw.	11.8 Nm

Module connector		Used in step 6 7 9
		8,5 Nm
		Used in step 7

Intermediate level

M8x62	Renew screw.	28 Nm
	Angle of rotation	90 °

Nut, separating element Used in step 7

Nut M6		8 Nm

Protective plate, separating element Used in step 7

M6x18		11.8 Nm

Screws, retaining plate Used in step 7

M6x18		11.8 Nm

Upper housing section to lower housing section Used in step 9

M5x24	Renew screw.	6.8 Nm

Sealing screw on upper housing section Used in step 9

M8x28	Renew screw.	28 Nm

Overview of Special Tools

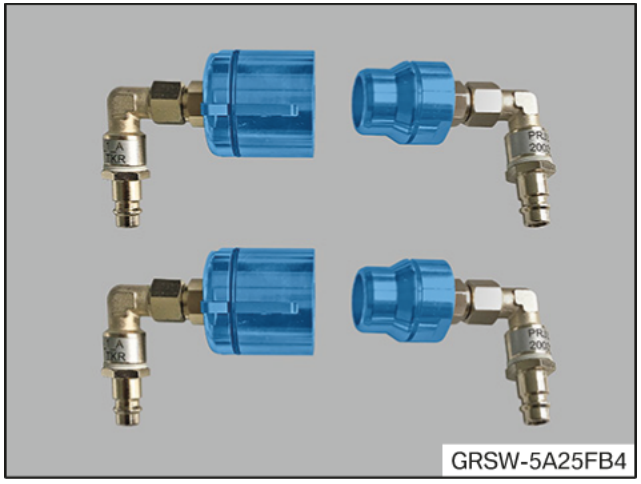
2 220 718 Workshop crane

Used in step 4 7

Common

Usage	WSK 1000
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	06 01 11 (701)

5 A25 FB4 Adapter



Common Used in step 8

Usage	Adapter (set NW20) for connecting the coolant circuit of the high-voltage battery unit and the existing tool set (2472491).
Included in the tool or work	
Storage location	Individual
Replaced by	
In connection with	
SI-Number	01 07 20 (727)

2 458 280 IMIB HV tool

Used in step 10

Common	
Usage	"IMIB HV" box including accessories for the high-voltage battery, generation 5. Submit a ticket for support on the tester via S-Gate -> ISPI User Cockpit. Use the Diagnostic Feedback via ISTA for support with questions about the diagnosis process. Replacement parts for reordering can be found in the Retailer Equipment Catalogue (S-Gate portal).
Included in the tool or work	
Storage location	
Replaced by	
In connection with	
SI-Number	

Links

Repair instructions (PRE)	Used in step
Safety information for handling electric and hybrid vehicles	
Notes on repair of high-voltage battery unit	

General repair instructions	Used in step
61 00 ... Safety information on handling hybrid cars	
61 25 ... Notes on repair of high-voltage battery unit	

Parts

Parts required

Designation	Used in step
Gasket	9
M5x19 screws	9
Sealing screws M8x23	9