Technical Service Bulletin

27 Low battery charge: Diagnosis tips and TAC instructions

27 14 24 2025360/3 April 29, 2014. Supersedes Technical Service Bulletin Group 27 number 12-12 dated February 28, 2012 for reasons listed below.

Model(s)	Year	VIN Range	Vehicle-Specific Equipment
A4	2009 - 2014	All	Battery Manager
A5	2008 - 2014	All	Battery Manager
A5 Cabriolet	2010 - 2014	All	Battery Manager
A6	2005 - 2014	All	Battery Manager
A7	2012 - 2014	All	Battery Manager
A8	2004 - 2014	All	Battery Manager
Q5	2009 - 2014	All	Battery Manager
Q7	2007 - 2014	All	Battery Manager

Condition

REVISION HISTORY		
Revision	**Date**	**Purpose**
3	-	Revised header data (Added model years) Updated entire bulletin (Added ODIS information)
2	2/28/2012	Revised header data (Added model years)
1	8/8/2011	Original publication

- Customer may report that the vehicle does not start due to a discharged battery.
- The vehicle has one of the following control modules:
  - Battery diagnostic management control module (J367)
  - Battery energy management control module (J644)

Technical Background

This TSB provides basic diagnosis steps for discharged batteries, general tips for working with batteries, and system verification steps to ensure that the vehicle is configured correctly.

For additional information on known current draw issues, refer to the following TSBs:

- 2014127: *27 Battery dead or low after returning to the vehicle* (2007 A6, A8, Q7)
- 2019143: *27 Battery discharged on some vehicles with Advanced Key* (2005 - 2008 A6, Q7)

Production Solution

Not applicable.

Service

1. Connect a battery maintainer to the vehicle.
2. Record the serial number of the battery.
3. If the vehicle is a Q7 and it has a sunroof:
   - Inspect the amplifier to verify that there are no water stains on the component.

   If the vehicle is an A4 Avant or A6 Avant:
   - Operate the rear washer, then inspect the amplifier for washer fluid stains or water damage.
   - If no stains or damage are found, take photographs of the top and bottom of the amplifier and of the electrical connector, as a Technical Assistance Center (TAC) ticket may be required.
4. If the vehicle is equipped with a **battery diagnostic management control module (J367)**, proceed to **Section A**, below. These vehicles include:
   - A6 (MY2009 and newer)
   - A4 (MY2009 and newer)
   - A8 (MY2011 and newer)
   - Q7 (MY2009 and newer)
   - Q5 (MY2009 and newer)
   - TT (MY2011 and newer)
   - A5 (MY2008 and newer)
   - A7 (MY2012 and newer)
   - R8 (MY2011 and newer)

   If the vehicle is equipped with a **battery energy management control module (J644)**, proceed to **Section B**, below. These vehicles include:
   - A6 (MY2008 and older)
   - Q7 (MY2008 and older)
   - A8 (MY2010 and older)

Section A (For vehicles equipped with a J367 control module)

Use the following procedure to determine if the discharged battery was caused by the customer:

1. Through ODIS GFF (Figure 1):
   - Select **Test plan** (A).
   - Select **Select self test…** (B)
   - In the Test Overview window, select **A - Battery, manufacturer data** (located under *Body >> Electrical equipment >> Battery, Starter, Generator, Cruise control >> electrical components >> A - Battery, manufacturer data*) (C).
   - Select **Attach to the test plan** (D).

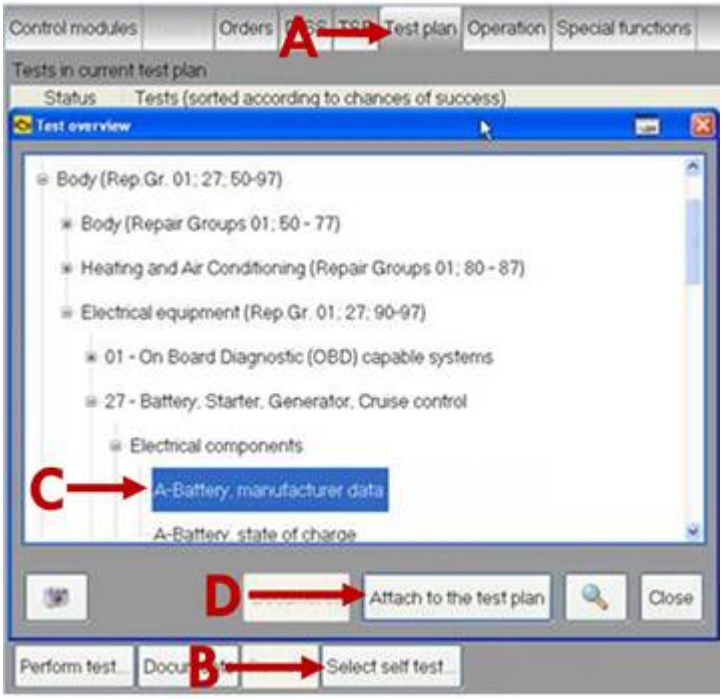

***Figure 1**. Selecting a test plan in ODIS.*

2. Verify that the battery serial number displayed in the scan tool (Figure 2) matches the serial number on the battery.

   If the serial numbers do not match, adapt the correct value into the vehicle through **A - Battery, Adaptation after replacing**, then check **A- Battery, manufacturer data** again to ensure that the new manufacturer data was accepted.

   Tip: For some vehicles, the scan tool may only display a portion of the battery serial number. If the string of characters displayed in the scan tool matches part of the full battery serial number, adaption is not necessary.

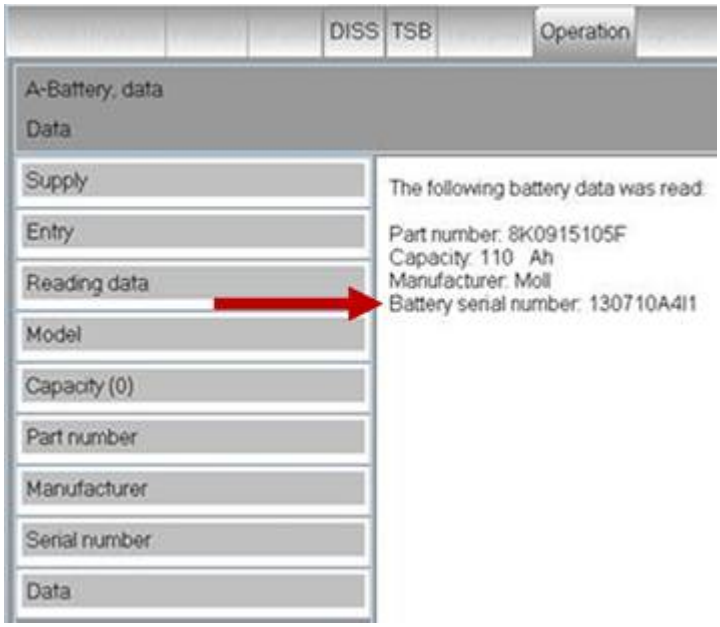

***Figure 2.** Battery serial number displayed in the scan tool.*

3. Test the battery through **A - Battery, testing** (located under *Special functions* >> *General jobs* >> *A - Battery, testing*).

   When asked if a new battery has been adapted in the last five days, select **No** to run the test.

4. View the test result (Figure 3):

   - If prompted, replace the battery and adapt the new serial number.
   - If the state of charge (SOC) is low, charge the battery according to the instructions in TSB 2023282: *27 Battery testing and charging - vehicles with BDM (J367)*.

   Tip: For some vehicles, the scan tool does not display the SOC during the battery test. For these vehicles, run **A - Battery, state of charge** to get this value.

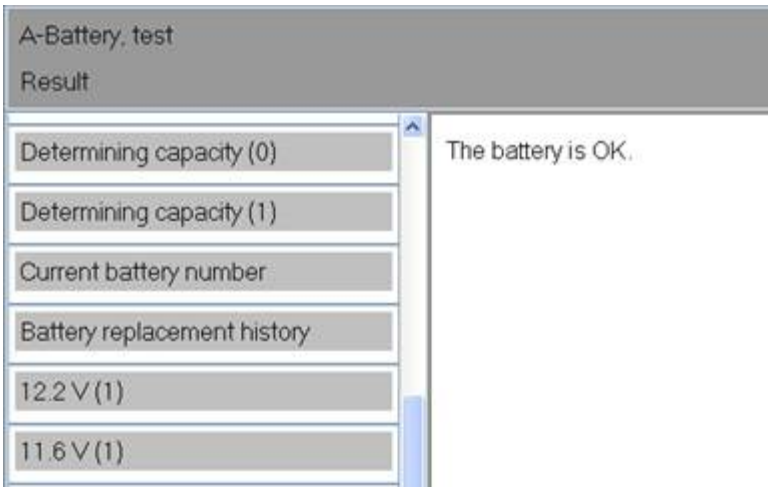

Figure 3. *Battery test result.*

5. Open the Control modules tab (Figure 4):

   - Right-click on the **Gateway module (19)** (A).
   - Select **Guided Functions** (B).
   - In the Guided Functions window, select **Reading history data** (C).
   - Select **Perform** (D).

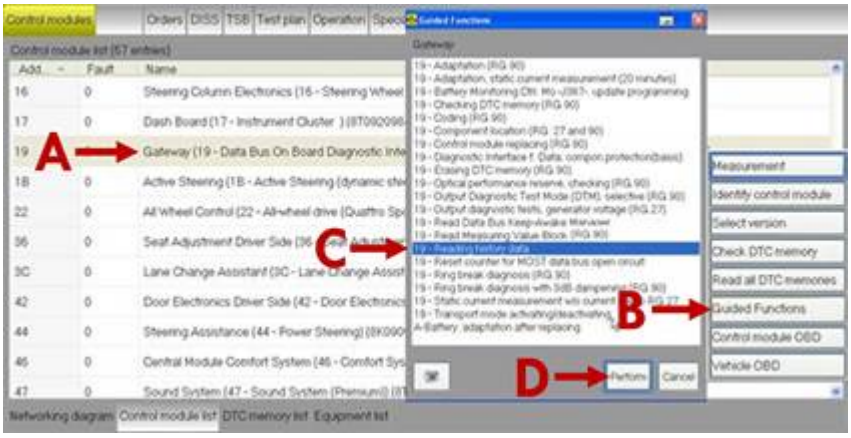

Figure 4. *Accessing Reading history data through the Control modules tab.*

6. Select **6. Data for energy critical vehicle condition** (Figure 5).

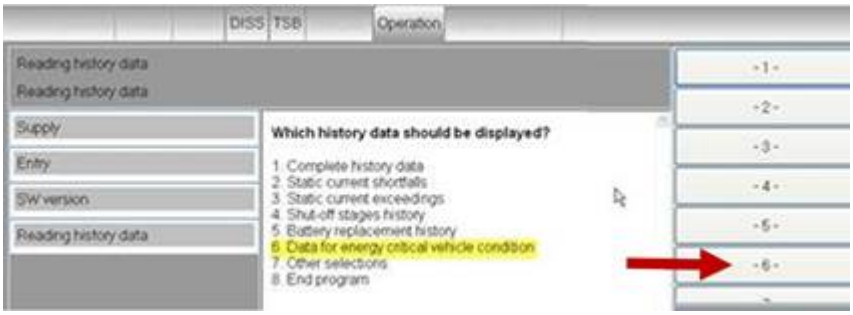

Figure 5. *Select -6-.*

7. Inspect the values in the **Energy critical vehicle conditions** readout, paying close attention to the highlighted areas shown in the image at right (Figure 6). These areas show information about the critical energy state of the battery, with battery history fields separated by an asterisk. Fields include:

   - The date the critical energy state occurred (A). This example shows May 9, 2010.
   - The time the critical energy state occurred (B). This example shows 2:48 PM.
   - The status of the exterior lights when the critical energy state occurred (C). This example shows that two exterior lights were on when the battery reached critical state.
   - The status of PRNDL (D). This example shows that vehicle was in "P" when the critical energy state occurred. Any gear other than "P" would be represented by a "1".

     Tip: Some BDM vehicles do not show PRNDL status. In this case, terminal 15 status will immediately follow the light status.
   - How long terminal 15 was on, in hours (E). This example shows that the ignition was on for 3.0 hours.
   - How long the data bus was awake, in hours (F). This example shows 3.1 hours.

     Tip: The data bus was awake during this time because terminal 15 was on. Data bus awake time without terminal 15 on could indicate a problem with a module.

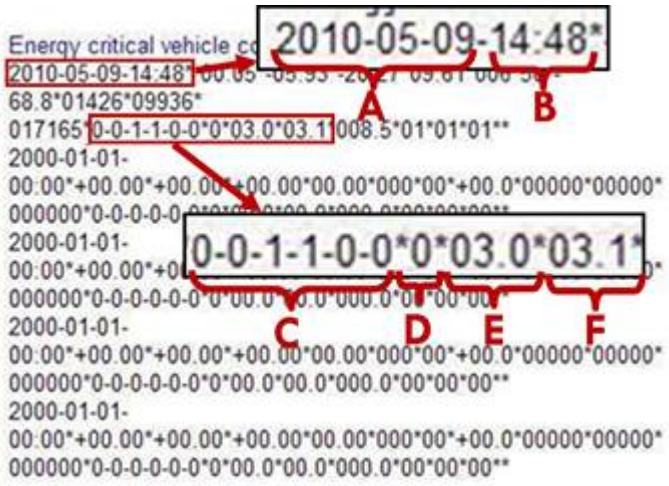

Figure 6. *Energy critical vehicle conditions readout.*

8. Return to the **Reading history data menu** and select **4. Shut-off stages history**.

   In the example Shut-off stages printout (Figure 7), the three sets of data (battery history fields) that are outlined in red were recorded on the date of the critical energy reading. When reading shut-off history, all information within ~24 hours of critical energy is valid.

   Starting in the top left corner of each battery history field, the information presented (separated by asterisks) is:

   - Date and time
   - Shutoff stage
   - Auxiliary heater
   - Battery SOC
   - Available charge
   - Current battery draw
   - Exterior lights status
   - Auxiliary heater
   - PRNDL status
   - Terminal 15 on (in hours)
   - Data bus awake (in hours)

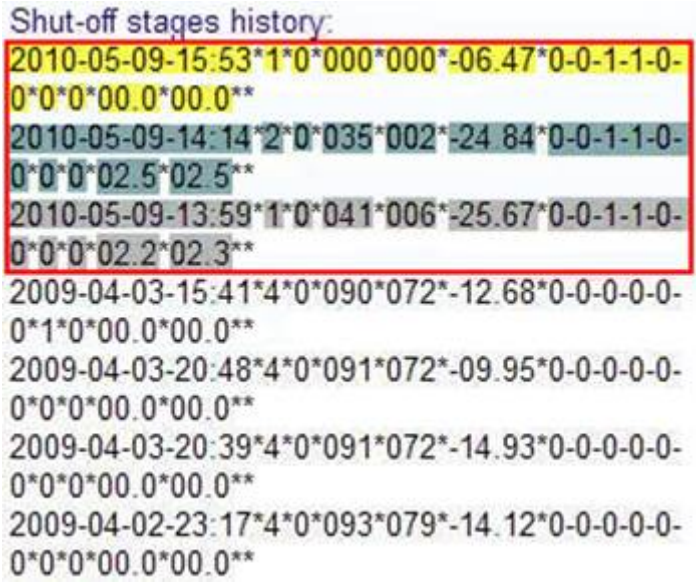

Figure 7. *Shut-off stages. The reading highlighted in yellow was taken when the battery SOC reached zero, the readings highlighted in blue and in gray were recorded on the same day, before the SOC reached zero.*

For example, the battery history field highlighted in gray shows the battery SOC at 41% (041) on May 9, 2010 at 1:59 PM (2010-05-09-13:59). It also shows that two (out of six) exterior lights were left on (0-0-1-1-0-0), and that terminal 15 was on for 2.2 (02.2) hours.

9. Review the shut-off stages history. The final battery history reading (highlighted in yellow in the example in Figure 7) shows the battery SOC at 0%.

   Investigate the battery history reading that occurred *just before* the final reading (highlighted in blue in the example in Figure 7) for customer-induced conditions. In the example, two exterior lights were on and the ignition was on for 2.5 hours, which show that the condition was customer-induced, as both the critical energy status and the matching shut-off stage show that energy-consumers were left on by the customer.

   - If both sections of the history *do not* show a customer-induced condition, proceed to step 10.
   - If both sections of the history *do* show a customer-induced condition, proceed to *Section C: Additional Tasks*.

10. On equipped vehicles (A5, Q5, 2009+ A4, 2012+ A6/A7, 2011+ A8), check the Keep-Awake Manager to determine if any modules kept the CAN bus awake (Figure 8):
    - Select **Test plan** (A).
    - Select **Select self test…** (B)
    - In the Test Overview window, select **Read Data Bus Keep-Awake Manager** (located under *Body >> Electrical equipment >> 01 - On Board Diagnostic (OBD) capable systems >> 19 - Data Bus On Board Diagnostic Interface | J533 >> 19 - Data Bus On Board Diagnostic Interface functions >> 19 - Read Data Bus Keep-Awake Manager)* (C).
    - Select **Attach to the test plan** (D).

Figure 8. *Selecting test plan in ODIS.*

11. The Keep-Awake Manager will display the keep-awake events (Figure 9). The most recent event will be displayed at the top of the list. If no data exists, then no data is shown.

    The example below (Figure 9) shows that on January 9, 2014 (09.01.2014) at 9:38:16 PM (21:38:16), the control module with diagnostic address 44 kept the CAN bus awake for 0.64 hours. If the date and time listed match (within 24 hours) the date and time in the critical energy reading, then the first control module listed is most likely the cause of the complaint.

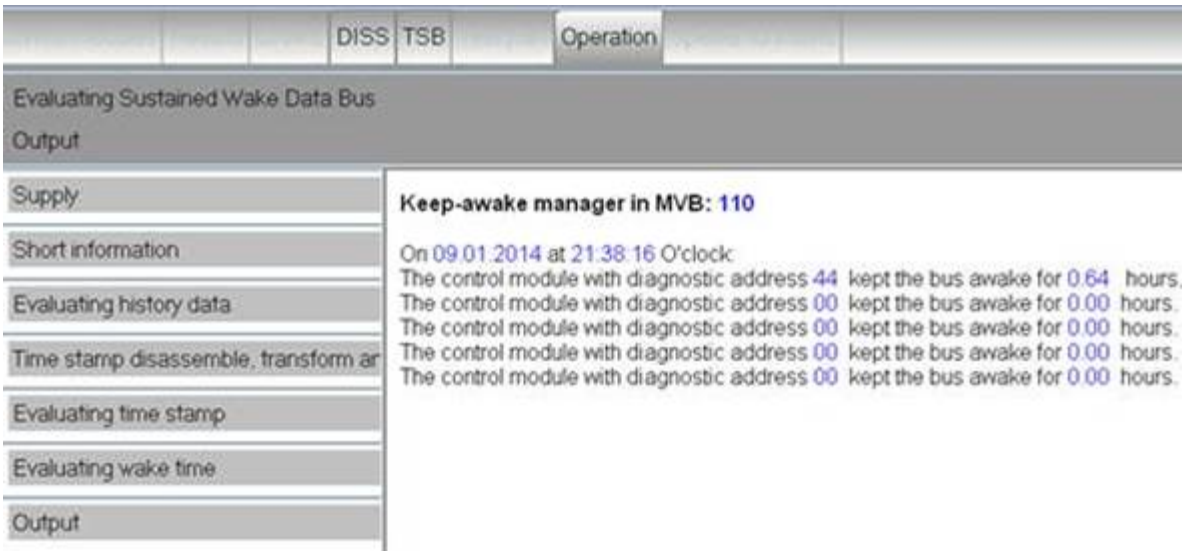

Figure 9. *BDM Keep-Awake Manager.*

12.
- If the source of the draw can be determined from the Keep-Awake Manager (in the example above, it is the control module with diagnostic address 44), proceed to *Section C: Additional Tasks.*
- If no data exists in the Keep-Awake Manager, proceed to step 13.

13. Determine if draw currently exists on the vehicle by using an ammeter with an inductive pickup (VAS6356 or similar tool, such as the Fluke Meter) to check battery draw using the steps below:
    - First, start the vehicle and operate all consumers (radio, lights, heated seats, door locks, sunroof, power liftgate, etc.).
    - Next, shut off the vehicle. Open left and right front doors, hood, and rear lid. Manually latch all opened items in order to gain access to the fuse boxes.
    - Next, zero the ammeter and attach the amp clamp to the negative battery cable. Lock the car using the remote and observe the ammeter, which should spike briefly as the doors are closed. This confirms that the ammeter is operating correctly.
    - After two hours, the ammeter should read under 0.040 (40mA). If the reading is above 40mA, attempt to locate the source of the excessive draw. Refer to VW TSB 2016076: *Battery, Discharged, Diagnosis for Excessive Static Current Draw*.
    - After diagnosis is complete, or if the diagnosis is inconclusive, proceed to *Section C: Additional Tasks*.

Section B (For vehicles equipped with a J644 control module)

1. Inspect the mounting point for the ground of the 61 module. Verify that it is clean and free of corrosion.

2. Open the Control modules tab (Figure 10):
   - Right-click on the **Battery Regulation Module (61)** (A).
   - Select **Control Module OBD** (B).
   - In the OBD functions window, select **Identification** (C).
   - Select **Perform** (D).

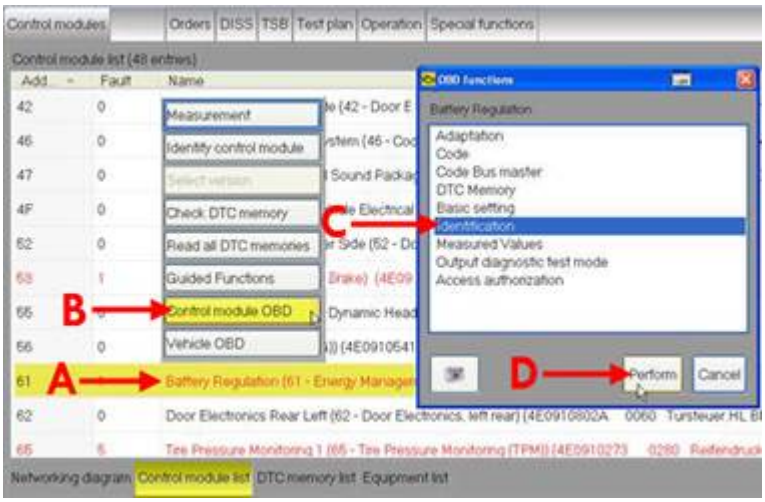

Figure 10. *Performing Identification.*

3. In the Identification screen (Figure 11), highlight the battery line (B).

   When the battery line is highlighted, the serial battery serial number will be displayed (C).

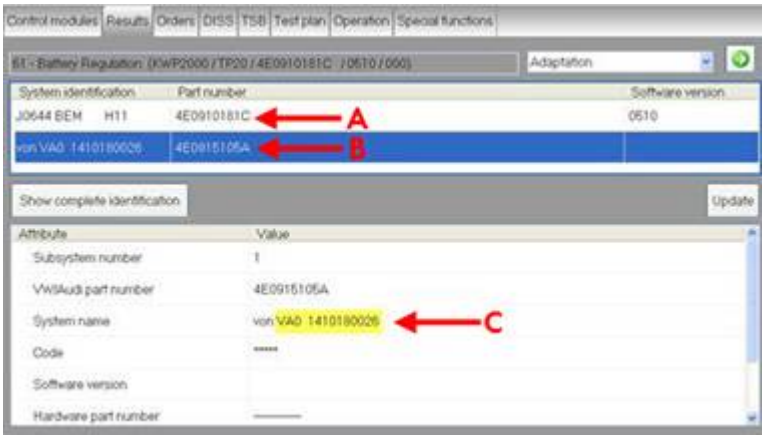

Figure 11. *Identification screen.*

4. Verify that the displayed serial number matches the serial number on the battery. (Depending on the vehicle, the scantool may only display a portion of the serial number. If the displayed digits are contained within the complete 10-digit serial number on the battery, they are a match).

   If the displayed digits do not match the serial number on the battery, adapt the correct value into the vehicle (Figure 12):

   - Open the **Test plan** tab (A).
   - Select **Select self test…**. (B)
   - In the test overview window, select **A-Battery, replacing and coding** (located under *Body >> Electrical equipment >> 01 - On Board Diagnostic (OBD) capable systems >> 61 - Battery Control >> Electrical components >> A-Battery, replacing and coding*).
   - Select **Attach to the test plan** (D).

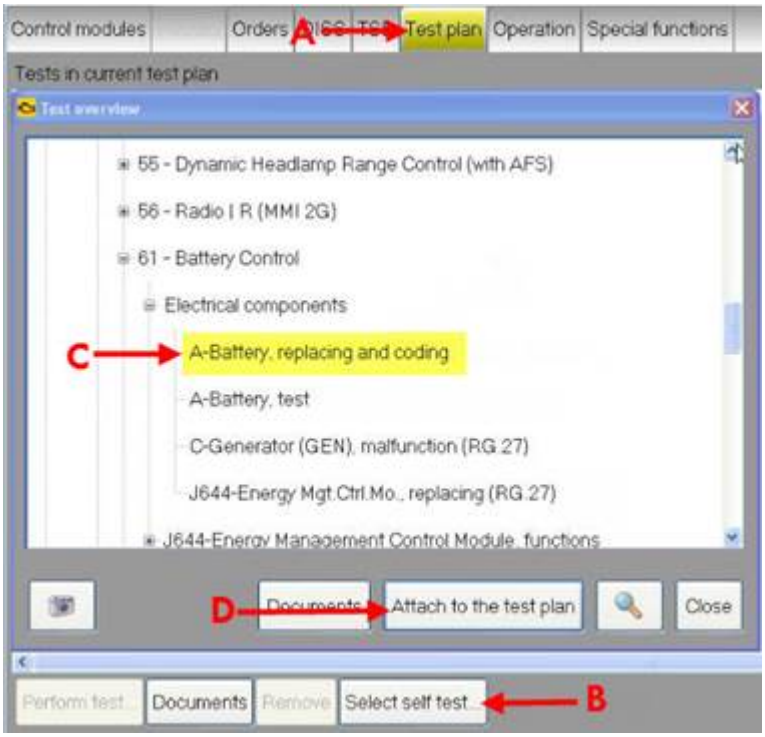

Figure 12. *Selecting test plan.*

5. Test the battery through **A-Battery, test** (Figure 13). When asked if a new battery has been adapted in the last 5 days, select **No** to run the test.

   - If prompted, replace the battery and re-adapt the new serial number using the instructions listed in step 4, above.
   - If the state of charge (SOC) is low, charge the battery. Follow instructions in TSB 2023330: *27 Battery testing and charging - vehicles with BEM (J644)*.

     Tip: Some vehicles will not display the SOC during the battery test. To get the SOC for these vehicles, run **A-Battery, state of charge**.

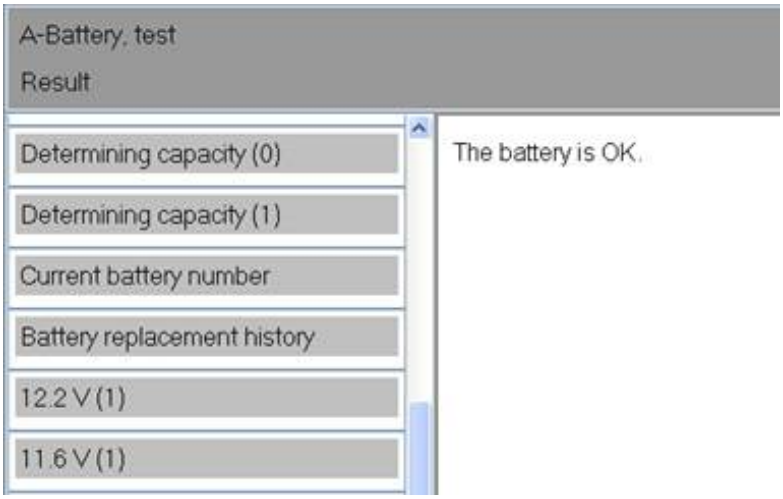

Figure 13*. A-Battery, test.*

6.
- Open the **Test plan** tab (A).
- Select **Select self test…**. (B)
- In the test overview window, select **J644-Energy Mgt.Ctrl.Mo.,read history data (RG.27)** (located under *Body >> Electrical equipment >> 01 - On Board Diagnostic (OBD) capable systems >> 61 - Battery Control >> J644-Energy Management Control Module, functions >> J644-Energy Mgt.Ctrl.Mo., read history data (RG.27)*).
- Select **Attach to the test plan** (D).

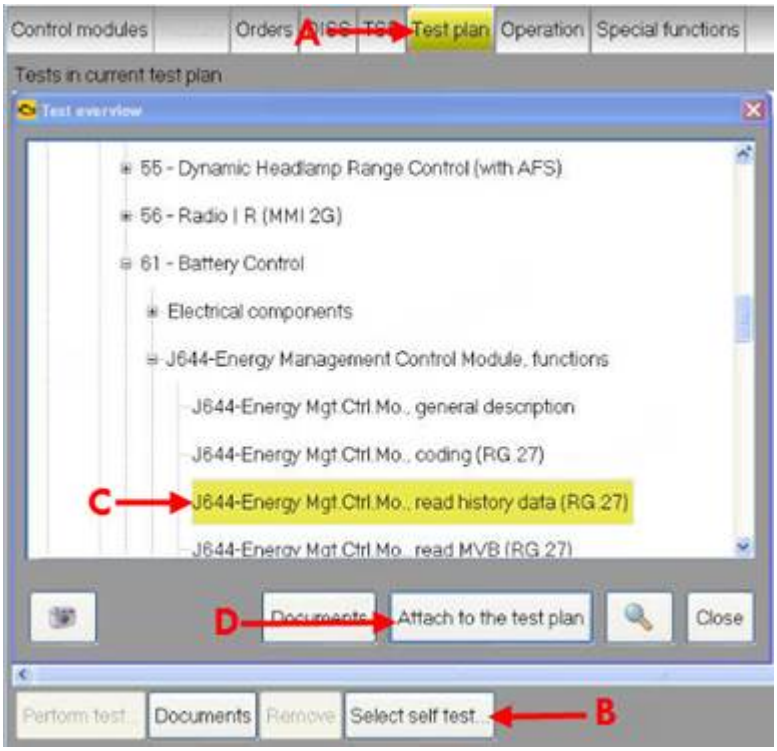

***Figure 14**. J644 Read history data.*

7. Select **3. Critical energy balance** to view the state of the vehicle at critical energy (Figure 15).

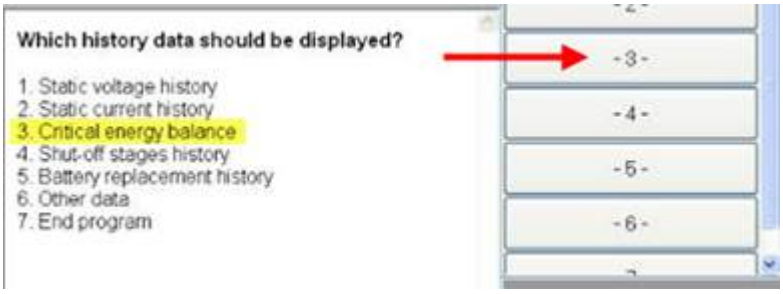

***Figure 15.** J644 Checking history data main menu.*

8. Inspect the values in the critical energy readout. Pay close attention to the values that indicate whether or not the ignition or any exterior lights were left on at the critical energy state of the battery, and the date and time (Figure 16).
   - If these values identify that any component was left on, record the date and time indicated and continue to with step 9.
   - If no component was identified, proceed to step 11.

The data record is written only if the vehicle was in a critical energy related status (breakdown).
00.00 A, average static current
26.64 A, average total current
-14.18 A, current strength at time of history data entry
09 %, state of charge of battery
99 mOhm, internal resistance of battery
+0693 Ah, energy throughput
-00068 Ah, energy balance
046792 km, km-mileage
2010-09-29,12:58:34 Date and time
Emergency flashers off
Parking light off
Parking light off
Low beam off
Fog light off
High beam off
02.7 Hours, teminal 15 on
02.8 Hours, data bus awake
002.8 Hours, last standing time
05 Number data bus on/off
11 Number of terminal 15 on/off
09 Number of breakdown entries in history data
003 Number of installed (replaced) batteries in vehicle

Figure 16*. The outlined area shows the values that indicate whether or not the ignition or any exterior lights were left on at the critical energy state of the battery, as well as the date and time.*

In this example, the ignition was left on for 2.7 hours and all of the exterior lights were off when the battery reached critical state.

9. Return to the Reading history data menu and select **4. Shut-off stages history**.

   In the example Shut-off stages printout (Figure 17), the sets of data outlined in red were recorded on the date of the critical energy reading. When reading shut-off history, all information within ~24 hours of critical energy is valid.

   In each line, the key information fields to review are (starting from the leftmost highlighted value, separated by asterisks):
   - Battery SOC
   - Date and time
   - Exterior lights status
   - Terminal 15 on

Shut-off stages history =
1*7*-24.85*00*2010-09-29,12:53:24*0-0-0-0-0-0*02.6**
6*7*-06.49*00*2010-09-29,12:46:21*0-0-0-0-0-0*02.6**
3*7*-09.33*00*2010-09-29,12:46:11*0-0-0-0-0-0*02.6**
5*7*-08.77*00*2010-09-29,12:46:00*0-0-0-0-0-0*02.6**
2*7*-08.51*00*2010-09-29,12:45:50*0-0-0-0-0-0*02.6**
1*7*-11.82*00*2010-09-29,12:42:40*0-0-0-0-0-0*02.6**
5*2*-18.07*26*2010-09-29,11:29:28*0-0-1-1-0-0*01.6**
2*2*-28.05*26*2010-09-29,11:29:18*0-0-1-1-0-0*01.6**
1*2*-36.52*31*2010-09-29,11:22:52*0-0-1-1-0-0*01.5**
1*7*-30.22*00*2010-07-23,08:39:41*0-0-0-0-0-0*00.0**
6*7*-07.33*07*2010-07-23,07:14:12*0-0-0-0-0-0*00.0**
3*7*-15.49*07*2010-07-23,07:14:02*0-0-0-0-0-0*00.0**
5*7*-15.59*07*2010-07-23,07:13:52*0-0-0-0-0-0*00.0**
2*7*-15.31*07*2010-07-23,07:13:40*0-0-0-0-0-0*00.0**
1*7*-15.40*08*2010-07-23,07:10:30*0-0-0-0-0-0*00.0**

Figure 17. *Shut-off stages. The readings outlined in read were recorded on the date of the critical energy reading. The reading*

highlighted in blue was the last reading taken before the battery SOC reached zero.

The reading highlighted in yellow shows the battery SOC at 31% (31) on September 29, 2011 at 11:22:52 AM (2010-09-29, 11:22:52). It also shows that two (out of six) exterior lights were left on (0-0-1-1-0-0), and that terminal 15 was on for 1.5 (01.5) hours.

10. Investigate the reading that occurred *just before* the battery SOC reached zero (in the example above, this reading is highlighted in blue) for customer-induced conditions. In the example, two exterior lights were on and the ignition was on for 1.6 hours, which show that the condition was customer-induced, as both the critical energy status and the matching shut-off stage show that energy-consumers were left on by the customer.
    - If both sections of the history *do not* show a customer-induced condition, proceed to step 11.
    - If both sections of the history *do* show a customer-induced condition, proceed to *Section C: Additional Tasks*.

11. Determine if draw currently exists on the vehicle by using an ammeter with an inductive pickup (VAS6356 or similar tool, such as the Fluke Meter) to check battery draw using the steps below:
    - First, start the vehicle and operate all consumers (radio, lights, heated seats, door locks, sunroof, power liftgate, etc.).
    - Next, shut off the vehicle. Open left and right front doors, hood, and rear lid. Manually latch all opened items in order to gain access to the fuse boxes.
    - Next, zero the ammeter and attach the amp clamp to the negative battery cable. Lock the car using the remote and observe the ammeter, which should spike briefly as the doors are closed. This confirms that the ammeter is operating correctly.
    - After two hours, the ammeter should read under 0.040 (40mA). If the reading is above 40mA, attempt to locate the source of the excessive draw. Refer to VW TSB 2016076: *Battery, Discharged, Diagnosis for Excessive Static Current Draw*.
    - After diagnosis is complete, or if the diagnosis is inconclusive, proceed to *Section C: Additional Tasks*.

Section C: Additional tasks

1. If it is necessary to contact TAC for additional guidance, please prepare the following information before opening a ticket. If TAC assistance is not necessary, proceed to the next step.
    - How many times has car been in for a battery concern?
    - When did the vehicle come in?
    - Was it towed in or jumped?
    - What day did the customer have the concern?
    - Is/was the date/time in cluster correct? If not, what was/is the date/time displayed?

- When did you start working on the car?
- What is the battery serial number in the vehicle?
- Are there any other electrical concerns on the R.O.?
- Attach a full GFF Log with complete battery history data and Keep Awake readout (For BDM vehicles).
- Attach pictures of the amplifier for Q7, A4 Avant, or A6 Avant vehicles if the amplifier shows no obvious signs of water damage.

2. Before returning the vehicle to the customer, test the battery SOC and verify that it is above 85%. If the SOC is below this value, charge the battery until at least 85% is achieved.

3. If the low SOC was due to customer influence, explain the situation to the customer.

Warranty

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

Additional Information

More information on this system can be found in the following resources:

- SSP: 972703, Audi Vehicle Batteries and Energy Management Systems

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

- TSB 2023282, *27 Battery testing and charging – vehicles with BDM (J367)*
- TSB 2023330, *27 Battery testing and charging – vehicles with BEM (J644)*
- TSB 2014127, *27 Battery dead or low after returning to the vehicle*
- TSB 2019143, *27 Battery discharged on some vehicles with Advanced Key*
- VW TSB 2016076, *Battery, Discharged, Diagnosis for Excessive Static Current Draw*

All parts and service references provided in this TSB (2025360) are subject to change and/or removal. Always check with your Parts Department and service manuals for the latest information.