

93 "Electrical system: Malfunction! Safely turn off vehicle" is in the cluster, DTC P0AC000 is stored in battery module

93 21 51 2059309/4 May 26, 2021. Supersedes Technical Service Bulletin Group 93 number 20-34 dated September 18, 2020 for reasons listed below.

Model(s)	Year	VIN Range	Vehicle-Specific Equipment
Q5 PHEV	2019 - 2021	All	PHEV
A7 PHEV	2021	All	PHEV

Condition

REVISION						
Revision	Date	Purpose				
4	-	Revised Service (Changed to software updates)				
3	05/26/2021	Revised header (Added A7 and Q5 MY 2021) Revised <i>Condition</i> (Updated Workshop findings) Revised <i>Production Solution</i> (Updated information) Revised <i>Service</i> (Changed to software updates) Revised <i>Warranty</i> (Added table) Revised <i>Additional Information</i> (Added reference)				
2	09/18/2020	Revised header (Updated model)				

Customer states:

- When the "ignition" is switched on, a red warning light appears and the vehicle cannot be moved.
- In the instrument cluster, the red battery symbol (Figure 1) with the text "electrical system: Malfunction! Safely turn off vehicle" is shown.



Figure 1. Red battery symbol.

• After turning the car off and then on again, the warning light usually goes out and the vehicle works properly again.

Workshop findings:

 According to Guided Fault Finding, the BJB (Battery Junction Box – SX6) should be replaced but the replacement is not effective.

The following DTC is stored in the hybrid battery management module, J840 (address word 008C):

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DTC P0AC000 (Hybrid/EV Battery Pack Current Sensor "A" Circuit Range/Performance).

Technical Background

The internal communication between the BJB (Battery Junction Box – SX6) electronics and the current/voltage sensor is under extremely unusual conditions and registers as inaccurate.

Production Solution

Improved software.

Service

The TSB applies if in the battery regulation control module, J840 (address word 008C) one of the following DTC combinations is logged:

DTC	Combination/Not	Other DTC	Instructions
P0AC000	As the only entry in 008C	N/A	Perform TSB
P0AC000	In combination with	P33F000	Perform TSB
P0AC000	In combination with	U059B00	Perform TSB

The TSB does not apply if other DTCs in addition to the DTC combinations above are logged in the battery regulation control module, J840 (address word 008C). If this is the case, standard diagnosis continues outside of this TSB.

Tip: To prevent the high-voltage battery from charging during the software update, the high-voltage charging cable on vehicles with high-voltage components must be unplugged **BEFORE** the SVM code is entered. Please note that charging the high-voltage battery during a software update can cause damage to the high-voltage components.

Tip: To ensure the flashing procedure does not fail, please ensure the diagnostic scan tool has been updated to the latest level

Tip: As the Battery Junction Box (SX6) is a slave of the hybrid battery management module, J840 (address word 008C) it does not display the software version of the control modules directly in the diagnostic log, instructions on how to evaluate the various software versions are provided below.

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Identifying the control modules:

1. To obtain the data we need to use the diagnostic scan tool then right-click and select the hybrid battery management module, J840 (address word 008C), and select "Guided Functions" (Figure 2).

Address	Incident	Name		
00CA	0	Sunroof control module (CA - Power Sunroof Control Module) (4K0907594AC 0002	Measurement	
0018	0	Active steering (Not yet identified) ()	Identify control module	
0028	0	Steering column lock (Not yet identified) ()	Select version	
0088	0	Distance regulation 2 (8B - Distance Regulation 2) (80A907541C 0451 LRR4)	Check DTC memory	_
0088	0	Rear drivers side door electronics (BB - Left rear door electronics) (4M1959795J 042)	Read all DTC memories	-
003C	0	Lane change assistance (3C - Lane Change Assistant) (80A907566B 0441 MRR1F	Guided Functions	
			Control module OBD	
006C	0	Rear view camera system (6C - Peripheral camera system) (8W0907428A 0106 An	Vehicle OBD	
008C	0	Hybrid battery management (8C - Hybrid Battery Management) (4M0915233AE 0278	BMC_PHEV_PL73)	

Figure 2. Guided Functions.

 In the Guided Functions menu select 008C – Identification and click "Perform" (Figure 3).

Hybrid battery management	
008C - High voltage insulation measurement deactiva	nted ^
008C - J840 - Battery Regulation Control Module che	ck configuration
008C - J840 - Battery Regulation Control Module rep	ace
008C - Potential equalization measurement of high-w	stage battery
008C - Classification of high-voltage battery	
008C - Control measurements in high-voltage battery	
009C - DTC memory	
008C - Determine capacity of high-voltage battery	
009C - Determine mean cell voltage	
DDBC - Insulation resistance measurement of high-volt	age battery
008C - addressing of modules	
008C - documentation high-voltage battery repair / par	sal initiation
008C - Identification	
008C - Read measuring values	
06D0 - SX6 - High-Voltage Battery Control Module cl	
06D0 - SX6 - High-Voltage Battery Control Module re	
06D1 - Control module 1 for cell module (J991 - Batte	
06D2 - Control module 2 for cell module (J992 - Batte	
06D3 - Control module 3 for cell module (J993 - Batte	
06D4 - Control module 4 for cell module (J994 - Batte	
06D5 - Control module 5 for cell module (J995 - Batte	
06D6 - Control module 6 for cell module (J996 - Batte	
D6D7 · Control module 7 for cell module (J997 · Batte	
06D8 - Control module 8 for cell module (J998 - Batte	y Module 8), component protection
VAS 6558 Hybrid test module	
VAS 6558 Hybrid test module	

Figure 3. Guided Functions Menu.

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3. The Identification data of the hybrid battery management module, J840 (address word 008C) is now displayed (Figure 4). Write down the Software part number, Software Version number, Hardware part number, and Hardware version number, as this information will be needed in the following steps. After you have saved the data for later, answer yes to the question "Do you still want additional identification data?"

Hybrid battery management 008C - High votage insulation measurement deactivated 008C - J840 - Battery Regulation Control Module check configuration 008C - 2010 - Sattery Regulation Control Module replace 008C - Potential equalization measurement of high-votage battery 008C - Classification of high-votage battery 008C - Control measurements in high-votage battery 008C - Dotermine capacity of high-votage battery 008C - Determine mean cell votage 008C - Determine mean cell votage 008C - Insulation resistance measurement of high-votage battery 008C - addressing of modules 008C - documentation high-votage battery repair / partial initiation	
0080 - J840 - Battery Regulation Control Module check configuration 0090 - J840 - Battery Regulation Control Module: replace 0080 - Potential equalization measurement of high-voltage battery 0080 - Classification of high-voltage battery 0080 - Dirc memory 0080 - Dirc memory 0080 - Determine capacity of high-voltage battery 0080 - Determine mean cell voltage 0080 - Determine mean cell voltage 0080 - Jostermine mean cell voltage 0080 - documentation high-voltage battery repair / partial initiation	
009C - J840 - Battery Regulation Control Module: replace 009C - Classification of high-voltage battery 009C - Classification of high-voltage battery 009C - Control measurements in high-voltage battery 009C - Determine capacity of high-voltage battery 009C - Determine mean cell voltage 009C - Determine mean cell voltage 009C - Josufation resistance measurement of high-voltage battery 009C - addressing of modules 009C - documentation high-voltage battery repair / partial initiation	
008C - Potential equalization measurement of high-voltage battery 009C - Classification of high-voltage battery 008C - Control measurements in high-voltage battery 008C - DTC memory 008C - Determine capacity of high-voltage battery 008C - Determine mean cell voltage 008C - Insulation resistance measurement of high-voltage battery 008C - addressing of modules 008C - documentation high-voltage battery repair / partial initiation	
009C - Classification of high-voltage battery 009C - Control measurements in high-voltage battery 009C - DTC memory 009C - Determine capacity of high-voltage battery 009C - Determine mean cell voltage 009C - Determine mean cell voltage 009C - Insulation resistance measurement of high-voltage battery 009C - addressing of modules 009C - documentation high-voltage battery repair / partial initiation	
008C - Control measurements in high-voltage battery 009C - DTC memory 008C - Determine capacity of high-voltage battery 009C - Determine mean cell voltage 009C - Determine mean cell voltage 009C - Insulation resistance measurement of high-voltage battery 009C - documentation high-voltage battery repair / partial initiation	
009C - DTC memory 009C - Determine capacity of high-voltage battery 009C - Determine mean cell voltage 009C - Insulation resistance measurement of high-voltage battery 009C - addressing of modules 009C - documentation high-voltage battery repair / partial initiation	
1980 - Determine capacity of high-voltage battery 1990 - Determine mean cell voltage 1988 - Insulation resistance measurement of high-voltage battery 1990 - addressing of modules 1988 - documentation high-voltage battery repair / partial initiation	
008C - Determine mean cell voltage 088C - Insulation resistance measurement of high-voltage battery 088C - addressing of modules 088C - documentation high-voltage battery repair / partial initiation	
008C + Insulation resistance measurement of high-voltage battery 009C - addressing of modules 008C - documentation high-voltage battery repair / partial initiation	
000C - addressing of modules 008C - documentation high-voltage battery repair / partial initiation	
08C - documentation high-voltage battery repair / partial initiation	
108C - Identification	_
008C - Read measuring values	
06D0 - SX6 - High-Voltage Battery Control Module check configuration	
06D0 - SX6 - High-Voltage Battery Control Module replace	
06D1 - Control module 1 for cell module (J991 - Battery Module 1), component	
06D2 - Control module 2 for cell module (J992 - Battery Module 2), component	
06D3 - Control module 3 for cell module (J993 - Battery Module 3), component	A
06D4 - Control module 4 for cell module (J994 - Battery Module 4), component	
06D5 · Control module 5 for cell module (J995 · Battery Module 5), component	
06D6 - Control module 6 for cell module (J996 - Battery Module 6), component	
06D7 · Control module 7 for cell module (J997 · Battery Module 7), component	
06D8 - Control module 8 for cell module (J998 - Battery Module 8), component	protection
/AS 6558 Hybrid test module	
VAS 6558 Hybrid test module	

Figure 4. Identification data, Hybrid Battery Management module.

- 4. After selecting "Yes" the scan tool will obtain more data from the hybrid battery management module, J840 (address word 008C). This data is not needed for this TSB so we can ignore it and click "Continue".
- 5. The next screen will ask "Do you want to read and display the subsystems" and it will display the number of slave control modules. Select "Yes".
- 6. After selecting "Yes" the scan tool will obtain the identification of all the slave modules of the hybrid battery management module, J840 (address word 008C). The Battery Junction Box (SX6) should be the 1st Slave displayed but if it is not scroll down until you find it and write down the Software part number, Software Version number, Hardware part number, and Hardware version number, as this information will be needed in the following step.

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J840 - Read identification data

Subsystems

Slave 1 of 9 Slave ID: 208 Slave system name: Battery interrupt switch Slave hardware part number: 80A915253D Slave hardware version: H18 Software part number: 80A915253E Software version: 0106 Slave serial number: NOT_SUPPORTED Slave coding value: not supported Slave system name: SX6 SFT426D0

Figure 5. Battery Junction Box (SX6) Identification.

- 7. Now compare your actual software and hardware with the table below and if the vehicle has the affected software in either the hybrid battery management module, J840 (address word 008C) or the Battery Junction Box (SX6) then update the control modules according to the SVM instructions below.
 - If both of the control modules already have the improved software this TSB does not apply.

	Affecte	d Software		Improved Software		
Control Module	Software part number	Software Level	Hardware part number	Software part number	Software Level	Hardware part number
	4K0915233	0275	4KD915233	4K0915233A	0278	4K0915233
008C	4M0915233R	0274	4M0915233C	4M0915233AE	0278	4M0915233C
	4K0915254C	0205	4K0915254C	4K0915254D	0206	4K0915254C
SX6	80A915253C	0103	80A915253C			
(06D0)	80A915253C	0105	80A915253C	80A915253E	0106	80A915253C
	80A915253D	0105	80A915253D	80A915253E	0106	80A915253D

SVM Update Instructions

8. Follow all instructions in TSB 2011732: 00 Software Version Management (SVM), operating instructions.

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- 9. Update the Hybrid Battery Management module, (J840) and/or the Battery Junction Box (SX6) using the SVM action codes as listed in the table below.
- 10. For this SVM update, two SVM action codes will have to be performed and they **must** be performed in the order described below.



If the sequence "SVM code 1 before SVM code 2" is not followed precisely when flashing or not followed through to the end, it may not be possible to operate the vehicle.

Step	Model	Control Module	Old Software Part Number	Old Software Version	New Software Part Number	New Software Version (or higher)	SVM Code Input #1
	Q5 TFSI e	008C	4K0915233	0275	4K0915233A	0278	
	A7 TFSI e	0080	4M0915233R	0274	4M0915233AE	0278	
	(PHEV, Hybrid)		4K0915254C	0205	4K0915254D	0206	004000
1		SX6	80A915253C	0103	80A915253E	0106	8CA006
		(06D0)	80A915253C	0105	80A 15253E	0106	
			80A915253D	0105	80A915253E	0106	

Step	Model	Control Module	Old Software Part Number	Old Software Version	New Software Part Number	New Software Version (or higher)	SVM Code Input #2
	Q5 TFSI e A7 TFSI e	008C	4K0915233 4M0915233R	0275 0274	4K0915233A 4M0915233AE	0278 0278	
2	(PHEV, Hybrid)	0.1/0	4K0915254C	0205	4K0915254D	0206	8CA006KONF
		SX6 (06D0)	80A915253C	0103	80A915253E	0106	
			80A915253C	0105	80A915253E	0106	

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	80A915253D	0105	80A915253E	0106	

11. After completion of both SVM updates the installed software should match the target software shown in the table in step 7.

Warranty

Warranty							
Claim Type:	 110 up to 48 Months/50,000 Miles. G10 for CPO Covered Vehicles – Verify Owner. 						
	 If the vehicle is outside any warranty, this Technical Service Bulletin is informational only. 						
Service Number:	9327						
Damage Code:	Damage Code: 0040						
Labor Operations:	Software Updates	0151 0000	Time stated on the diagnostic protocol (Max 70 TU)				
Diagnostic Time:	GFF	0150 0000	Time stated on the diagnostic protocol (Max 40 TU)				
	Road test prior to service procedure	No allowance	0 TU				
	Road test after service procedure	0121 0004	10 TU				
Claim Comment:	As per TSB #2059309/4						

All warranty claims submitted for payment must be in accordance with the Audi Warranty Policies and Procedures Manual. Claims are subject to review or audit by Audi Warranty.

Additional Information

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

• TSB 2011732, 00 Software Version Management (SVM), operating instructions.

All part and service references provided in this TSB (2059309) are subject to change and/or removal. Always check with your Parts Department and/or ETKA for the latest information and parts bulletins. Please check the Repair Manual for fasteners, bolts, nuts, and screws that require replacement during the repair.

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