



GROUP
ELE

MODEL
2016-2017MY
Soul (PS EV)

NUMBER
238

DATE
April 2021

TECHNICAL SERVICE BULLETIN

SUBJECT: SERVICE ACTION: BMS/FATC OPERATION LOGIC IMPROVEMENT WHILE BATTERY CHARGING (SA473)

* NOTICE

This Service Action (SA473) supersedes (TSB ELE203/SA427), which is now closed. Please follow the updated information in this bulletin for the noted issue.

This bulletin provides the procedure to upgrade the Battery Management System (BMS) and Full Auto Temperature Control (FATC) software on some 2016-2017MY Soul (PS EV) vehicles, produced from May 21, 2015 through August 29, 2017, in order to improve air conditioning operation while the battery is charging. To correct this concern, apply the improved logic to the following two (2) systems: BMS and FATC using the KDS ECU Upgrade function as described in this bulletin. For confirmation that the latest reflash has been applied to a vehicle you are working on, verify the ROM ID using the table on page 4 of this bulletin. Before conducting the procedure, verify the vehicle is included in the list of affected VINs.



Kia Diagnostic System (KDS)

* NOTICE

A Service Action is a repair program without customer notification that is performed during the warranty period. Any dealer requesting to perform this repair outside the warranty period will require DPSM approval.

Repair status for a VIN is provided on WebDCS (Service → Warranty Coverage → Warranty Coverage Inquiry → Campaign Information). Not completed Recall / Service Action reports are available on WebDCS (Consumer Affairs → Not Completed Recall → Recall VIN → Select Report), which includes a list of affected vehicles.

This issue number is SA473.

Printed TSB copy is for reference only; information may be updated at any time.
Always refer to KGIS for the latest information.

Circulate To: General Manager Service Manager Parts Manager
 Service Advisors Technicians Body Shop Manager Fleet Repair

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ECU Upgrade Procedure:

★ NOTICE

If the high voltage battery pack or Battery management System (BMS) has been replaced, and Upgrade Event #379 or #501 have already been performed, only Upgrade Event #540 is needed. It is not necessary to perform BMS Upgrade Event #501 again.

For more details, refer to the tables below, and to [TSB ELE155](#), “BMS Logic Improvement after Replacement of Battery Pack or BMS”.

Repair Scenarios (Refer to TSB ELE155 for details, ROM ID Table reproduced below)

| HV Battery Pack | BMS | BMS Reflash Y/N? | FATC Reflash Y/N? |
|---|--|---------------------|----------------------|
| Old Battery Pack | BMS not previously updated with Event #379 | Yes | Yes |
| Old Battery Pack (Previously Replaced) | New BMS updated with Event #379 | No | Yes |
| New Battery Pack | BMS previously updated with Event #379 | No | Yes |
| New Battery Pack | New BMS, confirmed with updated ROM ID | No | Yes |

FOR REFERENCE ONLY:

Upgrade Event #379 (from TSB ELE155)

| Model | System | BMS Part No. | Previous | | New | |
|-------|--------|-----------------|------------------------|---|------------------------|--------|
| | | | HV Battery Part No. | ROM ID | HV Battery Part No. | ROM ID |
| PSEV | BMS | 37513-E4050 | 37510-E4050 | 4440, 4460, 4480, 4500, 4800, 4900, 5000, 5100, 5300, 5400, 5500 | 37510-E4250 | 5720 |
| | | 37513-E4000 | 37510-E4000 | 4442, 4462, 4482, 4502, 4802, 4902, 5002, 5102, 5302, 5402, 5502 | 37510-E4200 | 5722 |

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To correct the condition noted on page 1, the BMS and FATC should be reprogrammed using the KDS download, as described in this bulletin.

| Upgrade Event Name |
|---|
| 501. PS EV FATC OPERATION LOGIC IMPROVEMENT WHILE BATTERY CHARGING (BMS) |
| 540. PS EV FATC OPERATION LOGIC IMPROVEMENT WHILE BATTERY CHARGING (FATC) |


* NOTICE

- **Confirm a fully charged battery with 12.3 volts or higher is necessary or the use of a fully charged jump starter box connected to the battery.**
- **Ensure the KDS GDS is sufficiently charged at 60% or higher prior to reflash.**
- All ECU upgrades must be done with the ignition key in the 'ON' position unless otherwise stated.
- Be careful not to disconnect the VCI-II connected to the vehicle during the ECU upgrade procedure.
- DO NOT start the engine during ECU upgrade.
- **DO NOT turn the ignition key 'OFF' or interrupt the power supply during ECU upgrade.**
- When the ECU upgrade is completed, turn the ignition 'OFF' and wait 10 seconds before starting the engine.
- **ONLY use approved ECU upgrade software designated for the correct**

❗ IMPORTANT

It is recommended to ALWAYS check the Electronic Parts Catalog (EPC) to locate the ECU Part Number respective to Auto/Manual Mode ROM IDs. DO NOT reference the parts label affixed to the ECU.

* NOTICE

Before attempting an ECU upgrade on any Kia model, make sure to first determine whether the applicable model is equipped with an immobilizer  security system. Failure to follow proper procedures may cause the PCM to become inoperative after the upgrade and any claims associated with this repair may be subject to chargeback.

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* NOTICE

Both BMS and FATC systems require software upgrades. Note the current ROM ID(s) in the vehicle, in the event that automatic upgrade fails and manual upgrade is required. (Recommendation) Check the battery SOH (State of health) in service data and write it down on the R.O, in order to analyze EV vehicle status.

ROM ID INFORMATION TABLE:

Upgrade Event #501 (BMS)

| Model | MY | Type | Hi-Volt. Batt. ECU P/N. | BMS ECU P/No. | ROM ID | | |
|-----------------|-------------------|-------------------|----------------------------|------------------|----------|------|------|
| | | | | | Previous | New | |
| PS (EV) | 16-17MY | Elevated Temp. | 37510-E4050 | 37513-E4050 | 4440 | 5000 | 5520 |
| | | | | | 4460 | 5100 | |
| | | | | | 4480 | 5200 | |
| | | | | | 4500 | 5300 | |
| | 4800 | 5400 | | | | | |
| | 4900 | 5500 | | | | | |
| Non- Heating | 37510-E4000 | 37513-E4000 | 4442 | 5002 | 5522 | | |
| | | | 4462 | 5102 | | | |
| | | | 4482 | 5202 | | | |
| | | | 4502 | 5302 | | | |
| 4802 | 5402 | 5720 | | | | | |
| 4902 | 5502 | | | | | | |
| 17MY | Elevated Temp. | 37510-E4250 | 37513-E4050 | 5700 | 5720 | | |
| | Non- Heating | 37510-E4200 | 37513-E4000 | 5702 | 5722 | | |

ROM ID INFORMATION TABLE:

Upgrade Event #540 (FATC)

| Model | EM | TM | ECU P/No. | ROM ID | |
|------------|------|----|--|----------------|-----|
| | | | | Previous | New |
| PS (EV) | 16MY | | 97250-E4000, 97250-E4010, 97250-E4100, 97250-E4110, 97250-E4020, 97250-E4030, 97250-E4040, 97250-E4050, 97250-E4060, 97250-E4070, 97250-E4080, 97250-E4090, 97250-E4360, 97250-E4370, 97250-E4380, 97250-E4390, 97250-E4200, 97250-E4210, 97250-E4220, 97250-E4230 | 08 07 11 | 21 |
| | 17MY | | 97250-E4001, 97250-E4011, 97250-E4101, 97250-E4111, 97250-E4121, 97250-E4131, 97250-E4021, 97250-E4031, 97250-E4041, 97250-E4051, 97250-E4022, 97250-E4032, 97250-E4042, 97250-E4052, 97250-E4061, 97250-E4071, 97250-E4081, 97250-E4091, 97250-E4361, 97250-E4371, 97250-E4381, 97250-E4391, 97250-E4201, 97250-E4211, 97250-E4221, 97250-E4231, 97250-E4241, 97250-E4251, 97250-E4601, 97250-E4611, 97250-E4621, 97250-E4631 | 09 12 | 22 |

To verify the vehicle is affected, be sure to check the Calibration Identification of the vehicle's ECM ROM ID and reference the Information Table as necessary.

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*** NOTICE**

Prior to performing the ECU upgrade, be sure to check that the KDS is fully charged.

1. Connect the VCI-II to the OBD-II connector, located under the driver's side of the instrument panel.

*** NOTICE**

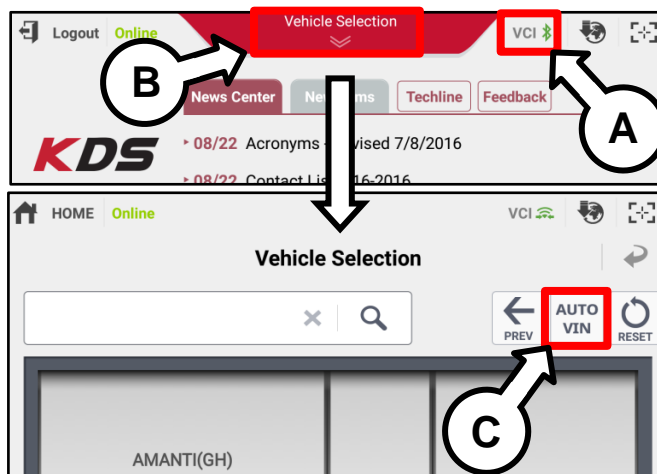
The ECU upgrade function on KDS operates wirelessly. It is not necessary to perform the upgrade via USB cable.



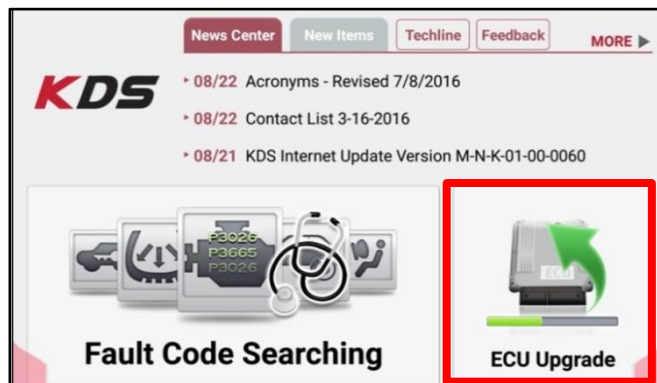
2. With the ignition ON, turn ON the KDS tablet. Select **KDS** from the home screen.



3. Confirm communication with VCI (A) and then configure the vehicle (B) using the **AUTO VIN** (C) feature.



4. Select **ECU Upgrade**.



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- The KDS will check the server for recently uploaded Events and then automatically download **Upgrade Event #501 (BMS) and #540 (FATC)**.

*** NOTICE**
 The vehicle must be identified in Vehicle Selection to download an Event for that vehicle.

After the download is complete, the program will shut down to install. Please wait until the program restarts.

| Event | Status |
|---|-------------|
| 271.QF 2.4GDI DTC P0171,P0420 LOGIC IMPROVEMENT | Downloading |
| 273.TF 2.4GDI DTC P0171,P0420 LOGIC IMPROVEMENT | Ready |

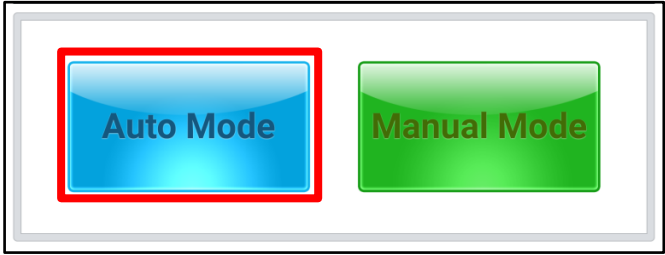
36%

Do not touch any system buttons while performing this function.

KDS screenshot shown above is for demonstration purposes only. Events shown in screenshot are not applicable to this bulletin.

- Select **Auto Mode**.

CAUTION
 Do NOT attempt to perform a Manual Mode upgrade UNLESS Auto Mode fails. Always follow the instructions given on the KDS in either Auto or Manual mode.



- Select the **BMS/FATC** system under the System selection menu.

Touch **ID Check (D)** and confirm that the latest update is available.

Select **Upgrade Event #501 and #540** and select **Upgrade** to continue.

- The ECU upgrade will begin and the progress of the upgrade will appear on the bar graph. Upgrade part (1/2) (E) will download the upgrade event to the VCI-II. Upgrade part (2/2) (F) will upgrade the ECU.

CAUTION
 Do not touch the system buttons (like 'Back', 'Home', 'etc.') while performing ECU Upgrade.

E

23%

ECU Upgrading...(1/2)
 ECU is in the process of being upgraded. Please wait a few minute.

F

6%

ECU Upgrading...(2/2)
 ECU is in the process of being upgraded. Please wait a few minute.



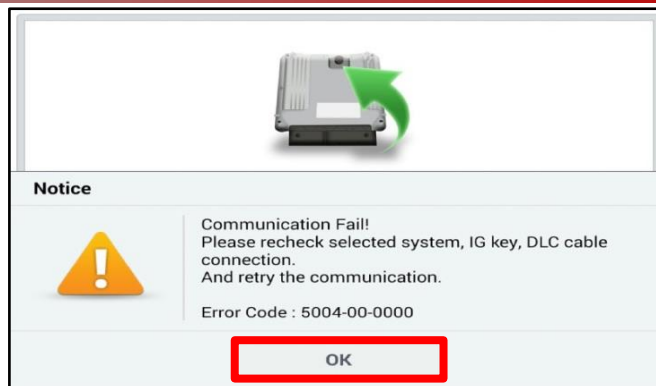
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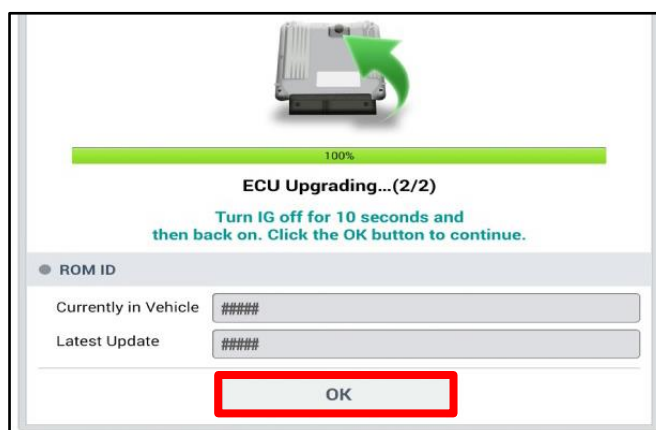
9. If a “Communication Fail” screen appears, verify that the VCI-II and KDS are communicating properly. Touch **OK** and restart the procedure from step 4.

* NOTICE

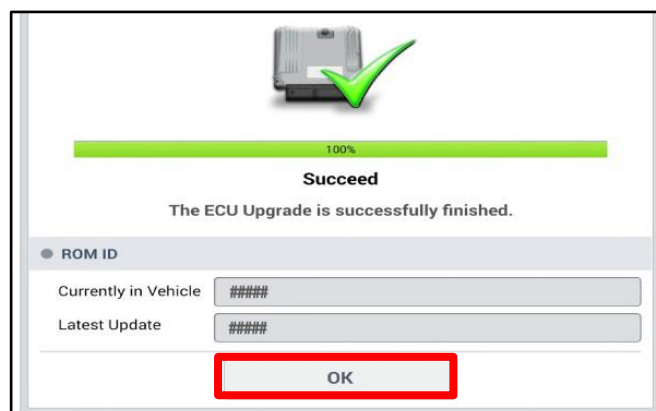
If an error notice continues to appear or if the upgrade cannot be performed, **DO NOT** disconnect the KDS/VCI-II. Contact GIT America Help Desk at (888) 542-4371 or Techline.



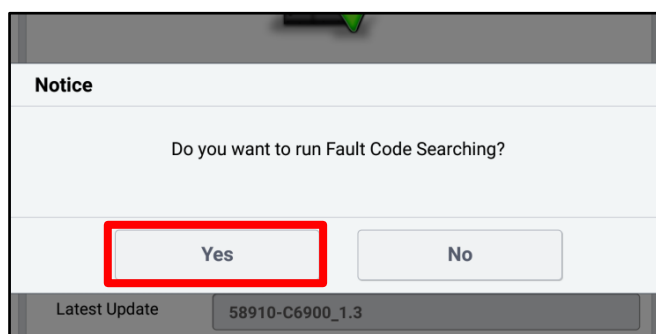
10. When instructed on the KDS, turn the ignition **OFF** for ten (10) seconds then back on. Touch **OK** to continue.



11. Once the upgrade is complete, touch **OK** to finalize the procedure.



12. When prompted, select **YES** to check for Diagnostic Trouble Codes (DTC) and erase any DTCs stored such as EPS, ESC, and TPMS that may have been set during the upgrade.



13. Start the engine to confirm proper operation of the vehicle.

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Manual Upgrade Procedure:

* NOTICE

The manual upgrade should **ONLY** be performed if the automatic upgrade fails.

If the automatic upgrade fails, turn the ignition **OFF** for about **10 seconds** then place it back in the **ON** position to reset the control unit **BEFORE** performing manual upgrade.

See table below for Manual Mode passwords.

Manual Mode ECU Upgrade Passwords

| Menu | Password |
|---|----------|
| PS EV BMS: 37513-E4050 (4440/460/480/500/800/900, 5000/100/200/300/400/500) | 4050 |
| PS EV BMS: 37513-E4050 (5700) | 4051 |
| PS EV BMS: 37513-E4000 (4442/462/482/502/802/902, 5002/102/202/302/402/502) | 4000 |
| PS EV BMS: 37513-E4000 (5702) | 4001 |
| PS EV FATC (17MY): 97250-E4001~E4631 (09, 12) | 7250 |
| PS EV FATC (16MY): 97250-E4000~E4230 (07~08, 11) | 7251 |

1. Within the ECU Upgrade screen displayed, select **Manual Mode**.
2. Select the **BMS and FATC** system(s) under the System selection menu. Select **Upgrade Event #501 (BMS) and #540 (FATC)** and select **Upgrade** to continue.
3. Select the appropriate control unit part number with reference to the ROM ID Information Table on page 4, and select **OK**.
4. Enter the appropriate password from the Manual Mode password table above and select **OK**.
5. The upgrade will begin and the progress of the upgrade will appear on the bar graph.
6. When instructed on the KDS, turn the ignition **OFF** for ten (10) seconds then back on. Touch **OK** to continue.
7. Once the upgrade is complete, touch **OK** to finalize the procedure.
8. When prompted, select **YES** to check for Diagnostic Trouble Codes (DTC) and erase any DTCs stored such as EPS, ESC, and TPMS that may have been set during the upgrade.
9. Start the engine to confirm proper operation of the vehicle.

SUBJECT:

SERVICE ACTION: BMS/FATC OPERATION LOGIC IMPROVEMENT WHILE BATTERY CHARGING (SA427)

AFFECTED VEHICLE RANGE:

| Model | Production Date Range |
|--------------|---------------------------------|
| Soul (PS EV) | May 21, 2015 to August 29, 2017 |

WARRANTY INFORMATION:

N Code: N99 C Code: C99

| Claim Type | Causal P/N | Qty. | Repair Description | Labor Op Code | Op Time | Replacement P/N | Qty. |
|------------|-------------|------|---|---------------|------------|-----------------|------|
| V | 37513 E4050 | 0 | (SA473) BMS and FATC Logic Improvement* | 210031R0 | 0.3 M/H | N/A | 0 |
| | | | FATC Logic Improvement (Only)* | 210031R1 | | | |

*Refer to page 2 for important details on required Upgrade events.

* NOTICE

VIN inquiry data for this repair is provided for tracking purposes only. Kia retailers should reference **SA473** when accessing the WebDCS system.

