TECHNICAL SERVICE BULLETIN

SUBJECT: MQ4 P/HEV GAMMA 1.6L T-GDI ECM & HCULDC LOGIC IMPROVEMENT FOR OIL DILUTION

This bulletin provides the procedure to update the software logic of the 'Engine' <u>and</u> Hybrid Control Unit Low DC-DC Converter 'HCULDC' systems on certain 2021-2023MY Sorento HEV, PHEV (MQ4 P/HEV) w/ Gamma 1.6L T-GDI vehicles produced from July 1, 2021 through November 3, 2022. The affected vehicles may exhibit a MIL 'ON' with DTCs stored (P144100, P1A7795, P00B700, P211800, P040100, P023600, P029900, P2B6000) due to the engine oil becoming diluted with fuel and/or moisture caused by repeated short drive trips, in low outdoor temperature (32°F -) environments. Follow the procedure outlined in this publication to apply the improved logic to both the 'Engine' <u>and</u> 'HCULDC' system 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 tables on pages 3-5 of this bulletin. Before conducting the procedure, verify that the vehicle is included in the list of affected VINs.

DTC Description:
P144100: Evap System Downstream Purge Control Valve Hose Off
P1A7795: Check Generator Belt
P00B700: Engine Coolant Flow Low/Performance
P211800: Throttle Actuator Control Motor Current Range/Performance
P040100: EGR 'A' Flow Insufficient Detected
P023600: Turbocharger/Supercharger System Boost Sensor 'A' Circuit Range Perform
P029900: Turbocharger/Supercharger System Underboost
P2B6000: Engine Coolant Flow Control Valve Position Sensor Circuit Range/Performance

Kia Diagnostic System (KDS)

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ECU Upgrade Procedure:

To correct this condition, the ECU should be reprogrammed using the KDS download, as described in this bulletin.

Upgrade Event Name
625. MQ4 HEV GAMMA 1.6TGDI ECM UPGRADE FOR OIL DILUTION (ECM)
626. MQ4 HEV GAMMA 1.6TGDI ECM UPGRADE FOR OIL DILUTION (HCULDC)
627. MQ4 PHEV GAMMA 1.6TGDI ECM UPGRADE FOR OIL DILUTION (ECM)
628. MQ4 PHEV GAMMA 1.6TGDI ECM UPGRADE FOR OIL DILUTION (HCULDC)

📄 NOTICE

- Confirm a fully charged battery (12.3 volts or higher is necessary) is used or utilize 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 performed with the ignition set to the 'ON' position unless otherwise stated.
- **Damaged VCI II units should not be used and promptly replaced.**
- 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 application.

ⓘ 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.

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> 📄 **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.

ROM ID INFORMATION TABLE:

Upgrade Event #625 (HEV ECM)

Model	EM	System	IMMO 🚗	ECU P/No.	ROM ID Previous	ROM ID New
21MY MQ4 HEV (2WD)	Gamma 1.6L T-GDI	ECM	Yes	39131 2MME0	JMQ41NS06F00KC60 JMQ41NS06F10KC70 JMQ41NS06F20LC00 JMQ41NS06F390C00 JMQ41NS06F496C00 JMQ41NS06F59BC00	JMQ41NS06F69BC00
			No	39133 2MMC0	JMQ41NS06E00KC60 JMQ41NS06E10KC70 JMQ41NS06E20LC00 JMQ41NS06E390C00 JMQ41NS06E496C00 JMQ41NS06E59BC00	JMQ41NS06E69BC00
21MY MQ4 HEV (4WD)			Yes	39131 2MMF0	JMQ41NS06F00KF60 JMQ41NS06F10KF70 JMQ41NS06F20LF00 JMQ41NS06F390F00 JMQ41NS06F496F00 JMQ41NS06F59BF00	JMQ41NS06F69BF00
			No	39133 2MMD0	JMQ41NS06E00KF60 JMQ41NS06E10KF70 JMQ41NS06E20LF00 JMQ41NS06E390F00 JMQ41NS06E496F00 JMQ41NS06E59BF00	JMQ41NS06E69BF00
22MY MQ4 HEV (2WD)			Yes	39131 2MME1	JMQ42NS06F091C00 JMQ42NS06F196C00 JMQ42NS06F29BC00	JMQ42NS06F39BC00

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Upgrade Event #625 (HEV ECM) *(Continued)*

Model	EM	System	IMMO 🔑	ECU P/No.	ROM ID Previous	ROM ID New
22MY MQ4 HEV (2WD)	Gamma 1.6L T-GDI	ECM	No	39133 2MMC1	JMQ42NS06E091C00 JMQ42NS06E196C00 JMQ42NS06E29BC00	JMQ42NS06E39BC00
22MY MQ4 HEV (4WD)			Yes	39131 2MMF1	JMQ42NS06F091F00 JMQ42NS06F196F00 JMQ42NS06F29BF00	JMQ42NS06F39BF00
			No	39133 2MMD1	JMQ42NS06E091F00 JMQ42NS06E196F00 JMQ42NS06E29BF00	JMQ42NS06E39BF00
23MY MQ4 HEV (2/4WD)			Yes	39131 2MME2	JMQ43NS06F09AC00 JMQ43NS06F19BC00	JMQ43NS06F29BC00
			No	39133 2MMC2	JMQ43NS06E09AC00 JMQ43NS06E19BC00	JMQ43NS06E29BC00

Upgrade Event #626 (HEV HCULDC)

Model	EM	System	ECU P/No.	ROM ID Previous	ROM ID New
22MY MQ4 HEV	Gamma 1.6L T-GDI	HCULDC	36600 3DEG2	GMQC2N6HNS0-C720	GMQC2N6HNS1-C720
			36600 3DEG0	GMQC2N6HNS0-C740	GMQC2N6HNS1-C740
20-21MY MQ4 HEV			36600 3DBG0	GMQC0N6HNS2-C720	GMQC0N6HNS3-C720

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Upgrade Event #627 (PHEV ECM)

Model	EM	System	IMMO	ECU P/No.	ROM ID Previous	ROM ID New
22MY MQ4 PHEV (4WD)	Gamma 1.6T-GDI	ECM	Yes	39131 2MMH0	QMQ42NS06F091F00 QMQ42NS06F193F00 QMQ42NS06F296F00 QMQ42NS06F39BF00	QMQ42NS06F49BF00
			No	39133 2MMH0	QMQ42NS06E091F00 QMQ42NS06E193F00 QMQ42NS06E296F00 QMQ42NS06E39BF00	QMQ42NS06E49BF00
23MY MQ4 PHEV (4WD)			Yes	39131 2MMH1	QMQ43NS06F09AF00 QMQ43NS06F19BF00	QMQ43NS06F29BF00
			No	39133 2MMH1	QMQ43NS06E09AF00 QMQ43NS06E19BF00	QMQ43NS06E29BF00

Event Upgrade #628 (PHEV HCULDC)

Model	EM	System	ECU P/No.	ROM ID Previous	ROM ID New
22MY MQ4 PHEV (4WD)	Gamma 1.6T-GDI	HCULDC	36600-3DBG5	GMQC2N6PNS1 C000	GMQC2N6PNS2 C000

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.

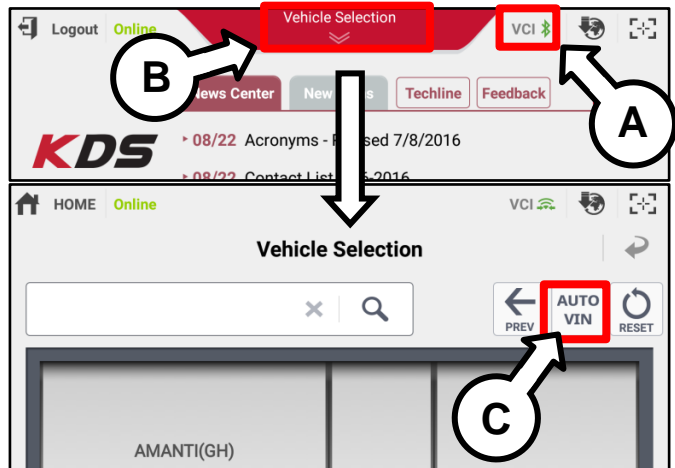1. Connect the VCI-II to the OBD-II connector, located under the driver's side of the instrument panel.

   📄 **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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5. The KDS will check the server for recently uploaded Events and then automatically download **Upgrade Event #625 and #626, or #627 and #628**.

> 📄 **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.

6. 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.

Auto Mode **Manual Mode**
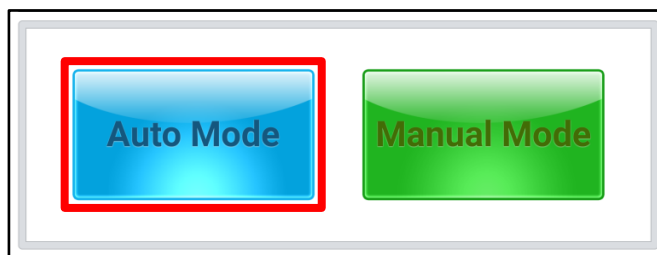
7. Select the **'Engine' and 'HCULDC'** system under the System selection menu.
   Touch ID Check (D) and confirm that the latest update is available.
   Select **Upgrade Event #625 (HEV ECM) and #626 (HEV HCULDC) or #627 (PHEV ECM) and #628 (PHEV HCULDC)** and select **Upgrade** to continue.

⦿ System

ENGINE   HCULDC   **D**

⦿ ROM ID
Currently in Vehicle ######
Latest Update ######   ID Check

⦿ Event Group   TSB
###.XX -----

Previous   Upgrade

8. 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. <u>If a "Communication Fail" screen appears</u>, verify that the VCI-II and KDS are communicating properly. Select **'OK'** and restart the from step 4.
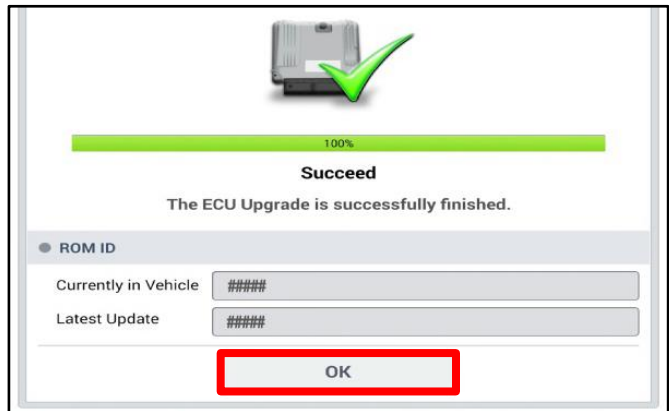
> 📄 **NOTICE**
>
> **If an error notice continues to appear or if the upgrade cannot be performed, DO NOT disconnect the KDS/VCI-II. Contact GIT America Help Desk at (888) 542-4371 or Techline.**
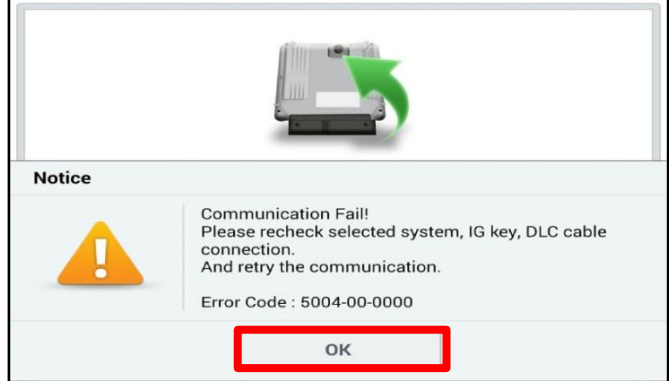
10. When instructed on the KDS, turn the ignition **OFF** for ten (10) seconds then back on. Select **'OK'** to continue.
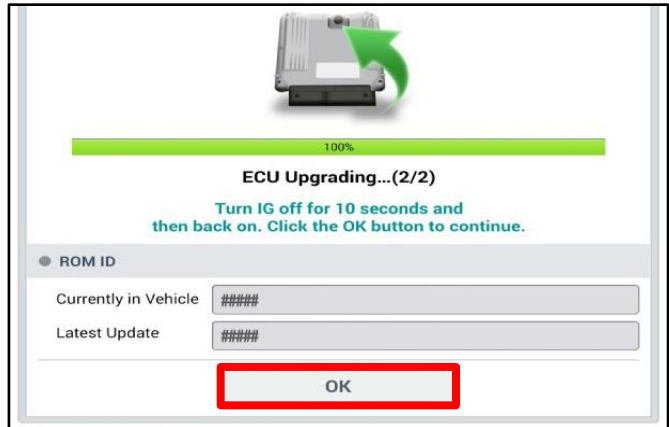
11. Once the upgrade is complete, select **'OK'** to finalize the procedure.

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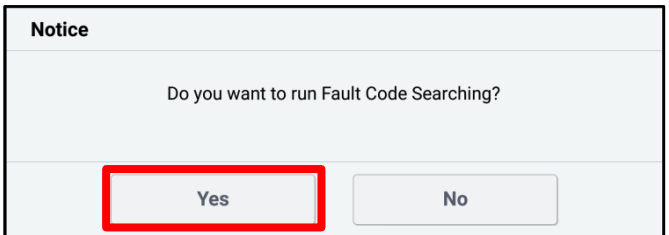
13. Start the engine to confirm normal operation of the vehicle.

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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

Event No.	Menu	Password
#625	MQ4 HEV 1.6T-GDI +IMMO/SMK 2WD 21MY (ECM) : 39131-2MME0	6251
	MQ4 HEV 1.6T-GDI +IMMO/SMK 4WD 21MY (ECM) : 39131-2MMF0	6252
	MQ4 HEV 1.6TGDI -IMMO 2WD 21MY (ECM) : 39133-2MMC0	6253
	MQ4 HEV 1.6TGDI -IMMO 4WD 21MY (ECM) : 39133-2MMD0	6254
	MQ4 HEV 1.6TGDI +IMMO/SMK 2WD 22MY (ECM) : 39131-2MME1	6255
	MQ4 HEV 1.6TGDI +IMMO/SMK 4WD 22MY (ECM) : 39131-2MMF1	6256
	MQ4 HEV 1.6TGDI -IMMO 2WD 22MY (ECM) : 39133-2MMC1	6257
	MQ4 HEV 1.6TGDI -IMMO 4WD 22MY (ECM) : 39133-2MMD1	6258
	MQ4 HEV 1.6TGDI +IMMO/SMK 2/4WD 23MY (ECM) : 39131-2MME2	6259
	MQ4 HEV 1.6TGDI -IMMO 2/4WD 23MY (ECM) : 39133-2MMC2	6260
#626	MQ4 HEV 1.6TGDI 22MY 2WD (HCULDC) : 36600-3DEG2	6261
	MQ4 HEV 1.6TGDI 22MY 4WD (HCULDC) : 36600-3DEG0	6262
	MQ4 HEV 1.6TGDI 20~21MY 2WD (HCULDC) : 36600-3DBG0	6263
#627	MQ4 PHEV 1.6GDI +IMMO/SMK 4WD 22MY (ECM) : 39131-2MMH0	6271
	MQ4 PHEV 1.6TGDI -IMMO 4WD 22MY (ECM) : 39133-2MMH0	6272
	MQ4 PHEV 1.6TGDI +IMMO/SMK 4WD 23MY (ECM) : 39131-2MMH1	6273
	MQ4 PHEV 1.6TGDI -IMMO 4WD 23MY (ECM) : 39133-2MMH1	6274
#628	MQ4 PHEV 1.6TGDI 22MY 4WD (HCULDC) : 36600-3DBG5	6281

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1. Within the ECU Upgrade screen displayed, select **Manual Mode**.

2. Select the **'Engine'** and **'HCULDC'** system under the System selection menu. Select **Upgrade Event #625 (HEV ECM)** and **#626 (HEV HCULDC)** or **#627 (PHEV ECM)** and **#628 (PHEV HCULDC)** and select **Upgrade** to continue.

3. Select the appropriate control unit part number with reference to the ROM ID Information Table on page 3, 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. Select **OK**.

7. Once the upgrade is complete, select **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.

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AFFECTED VEHICLE RANGE:

Model	Production Date Range
Sorento HEV (MQ4 HEV)	July 1, 2021 to November 3, 2022
Sorento PHEV (MQ4 PHEV)	

REQUIRED TOOL:

Tool Name	Figure	Comments
KDS		Kia Diagnostic System

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.
W	39131 2MME0	0	ECM & HCULDC Logic Improvement	39131F09	0.7 M/H	N/A	0

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