



GROUP

MODEL

ENG

2021-2023MY
Sorento (MQ4a)

NUMBER

DATE

257

December 2025

TECHNICAL SERVICE BULLETIN

ITM REPLACEMENT AND ECM & TCM
LOGIC IMPROVEMENT (CA2508)

SUBJECT:

This bulletin provides information to replace the Integrated Thermal Management Module (ITM) and then upgrade the Engine Control Module 'ECM' and (if applicable) the Transmission Control Module 'TCM' system software on certain 2021-2023MY Sorento (MQ4a) vehicles produced from September 09, 2020 through December 19, 2023. The affected vehicles may experience an illuminated Multifunction Indicator Lamp (MIL) 'ON' with DTC(s) P218100, P2181F0, and/or P2181F1 stored. This condition may occur due to degradation of the diaphragm inside the ITM. There are no drivability or other symptoms associated with this condition. Follow the procedure outlined in this publication to replace the ITM and then upgrade the ECM and TCM systems (as applicable). Refer to [SST081](#) for software upgrade instructions using Kia Diagnostic System (KDS) tablet and VCI-II and confirm the Upgrade Event Number/Name, ROM ID Information, and Manual Mode passwords (if applicable) on the applicable vehicle.

DTC Descriptions:**P218100 - Cooling System Performance****P2181F0 - Cooling System Performance****P2181F1 - Cooling System Performance**

A [Vehicle Diagnosis Number \(VDN\)](#) must be created for DTC's prior to ordering parts and performing necessary procedure(s), as outlined in this TSB. If a VDN is not created, Parts Ordering and Warranty claim submission issues WILL occur. Any claims for replacement parts are subject to Warranty review and chargeback.

NOTICE

A Technical Service Bulletin is a field fix repair program without customer notification that may be performed during the warranty period.

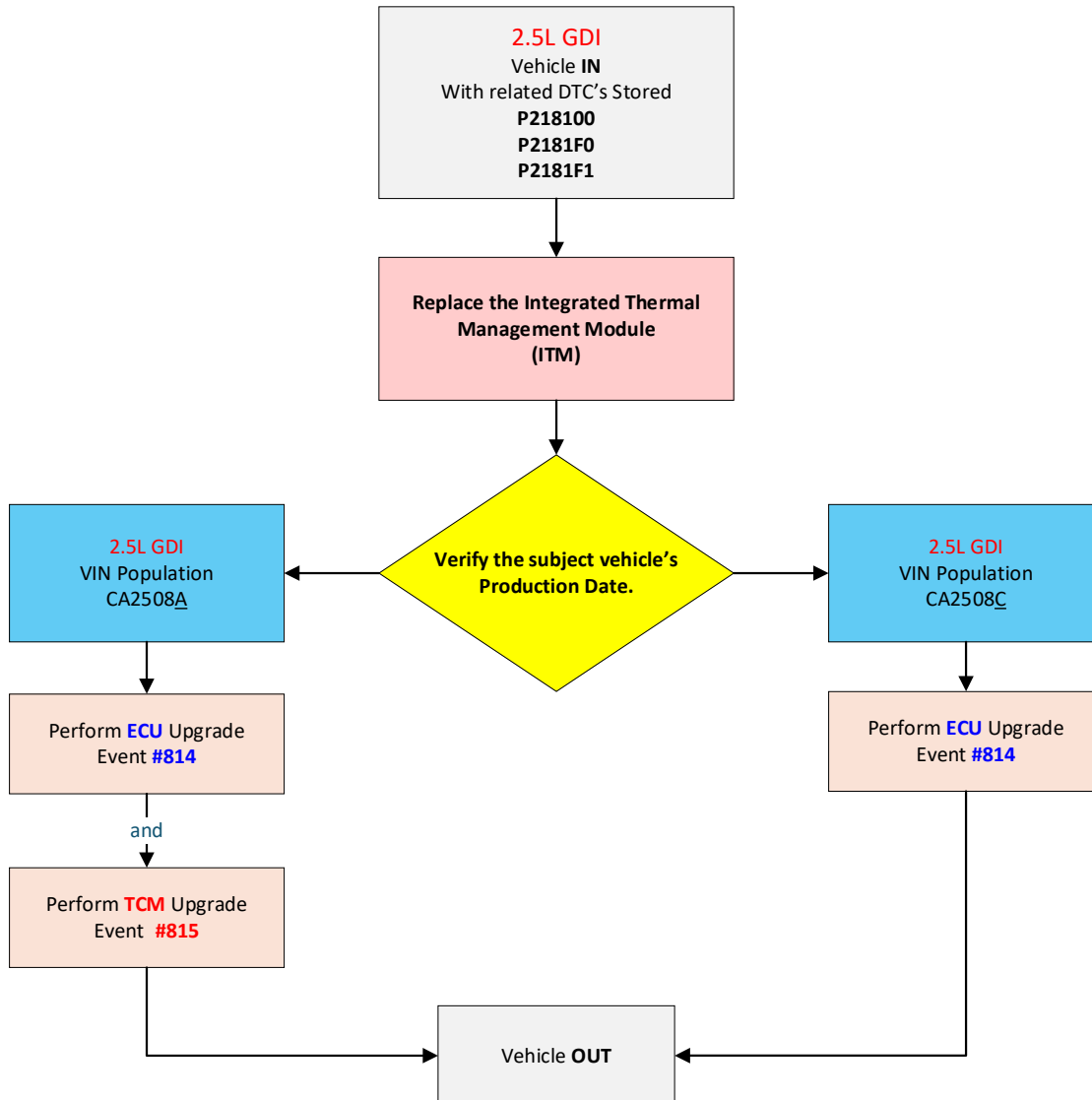
This bulletin should only be performed with valid customer of a Malfunction Indicator Lamp (MIL) 'ON' MUST be stated in the opening RO and Claim Notes with the related DTC's stored.

Repair status for a VIN is provided on KDealer+ (Service → Warranty Coverage → Warranty Coverage Inquiry. **If ENG257/CA2508A/B is complete, any subsequent or follow up concerns need to be addressed under the terms of Kia's Basic Limited Warranty Coverage.**

Flowchart: 2.5L GDI (Naturally Aspirated)

① IMPORTANT

Customer complaint of a Malfunction Indicator Lamp (MIL) 'ON' MUST be stated in the opening RO and Claim Notes with the related DTC's stored.



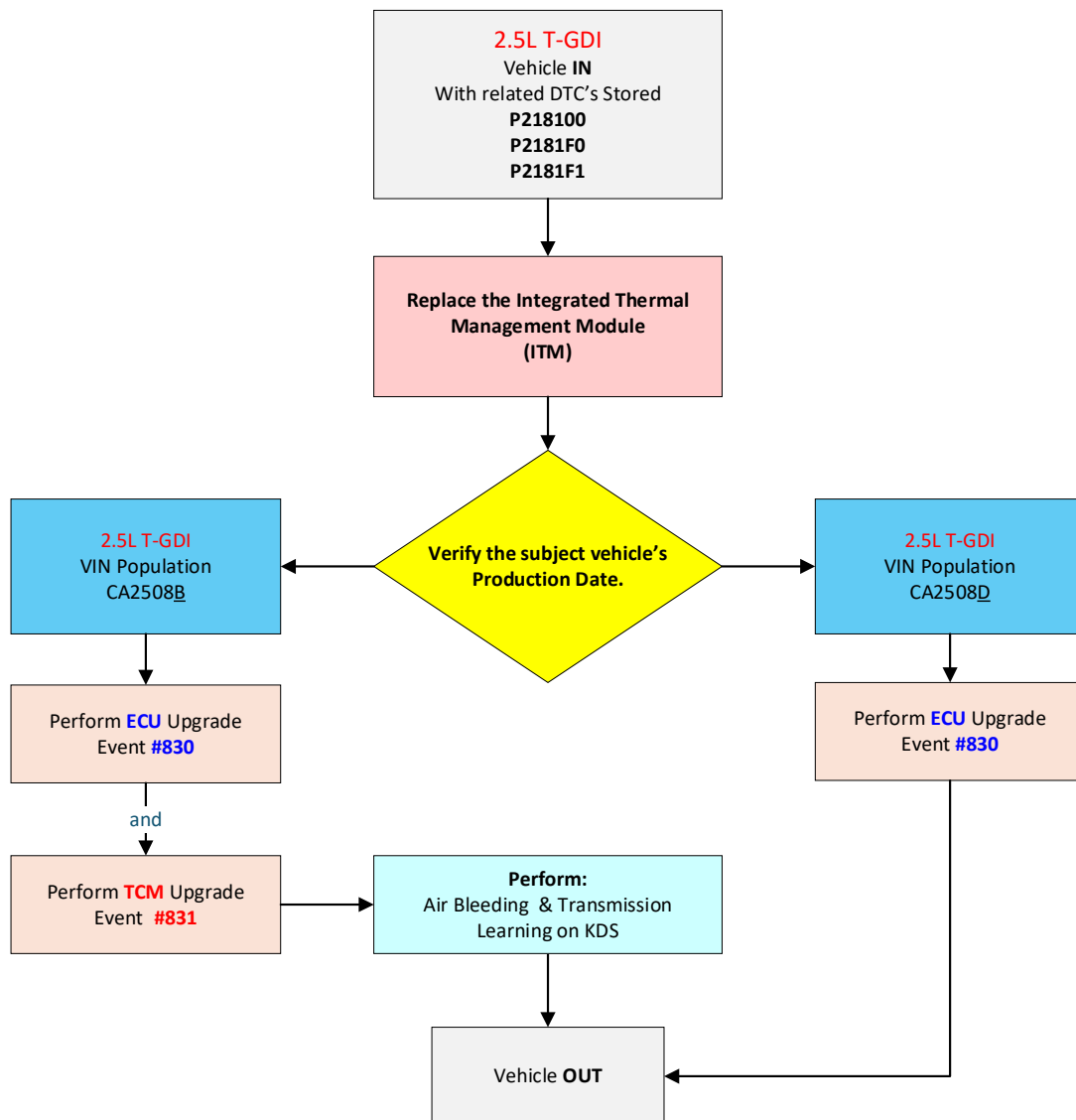
Perform the following software upgrade(s) in Auto Mode.

ENGINE	VIN LIST	SW #814	SW #815
2.5L GDI (Naturally Aspirated)	A	Yes	Yes
	C	Yes	N/A

SUBJECT:

ITM REPLACEMENT AND ECM & TCM LOGIC IMPROVEMENT (CA2508)**Flowchart: 2.5L T-GDI (Turbo)****❶ IMPORTANT**

Customer complaint of a Malfunction Indicator Lamp (MIL) 'ON' MUST be stated in the opening RO and Claim Notes with the related DTC's stored.



Perform the following software upgrade(s) in Auto Mode.

ENGINE	VIN LIST	SW #830	SW #831	Air Bleed Learning	Transmission Learning
2.5L T-GDI (Turbo)	B	Yes	Yes	Yes	Yes
	D	Yes	N/A	N/A	N/A

Repair Procedure:

1. Replace the Integrated Thermal Management Module 'ITM' (A) by referring to "Engine Mechanical System → Cooling System → Integrated Thermal Management Module (ITM) → Repair procedures" in the applicable Shop Manual on KGIS.



Tightening torque for bolts:
7.2 - 8.7 lb.ft (9.8 - 11.8 N.m)

NOTICE

Do NOT dismantle the actuator and collector. The new ITM is supplied as and assembly unit.

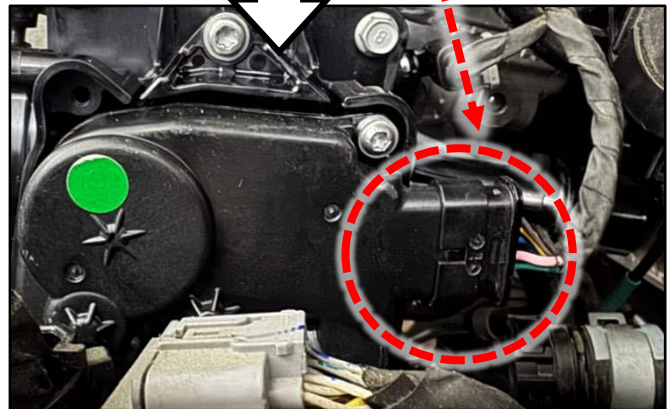
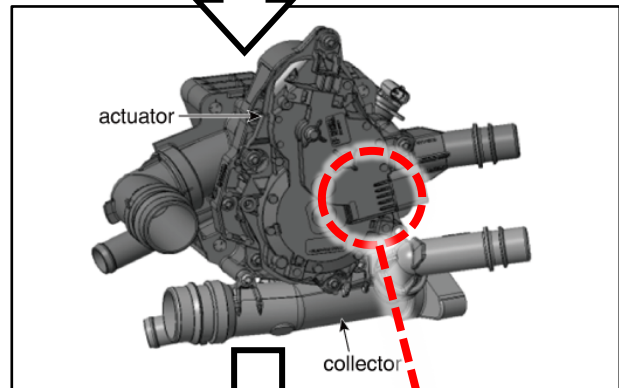
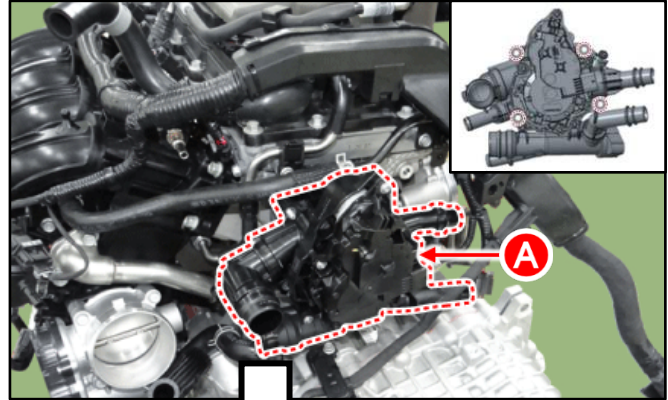
2. Reinstall all removed parts in reverse order of removal.

Note: The ITM connection orientation changes after replacing the new ITM part. The locking tab will face the engine.



CAUTION

Trying to make the connection on the new ITM in the same orientation as the original ITM may damage the connector pins/terminals.



3. Proceed to upgrade the 'ECM' AND if applicable, 'TCM' system in Auto Mode by referring to the ROM ID tables on pages 5 - 10.

Note: Depending on the VIN List (A, B, C or D):

Apply the corresponding software by referring to the flowcharts on pages 2-3 for Events #814, #815, #830 and #831.

IMPORTANT: After SW #831 Upgrade (if applicable) is completed:

Perform Air Bleeding and Transmission Learning procedure using KDS.

4. Verify normal vehicle operation.

SUBJECT:

ITM REPLACEMENT AND ECM & TCM LOGIC IMPROVEMENT (CA2508)

Refer to [TSB SST081](#) for instructions to upgrade the 'ECM' and 'TCM' systems:

❗ IMPORTANT

The ECU and TCM **MUST** be programmed in Auto Mode using the KDS 2.0 download as described in this bulletin.

To correct this condition, the specified system module should be reprogrammed using KDS as described in this bulletin in 'Auto Mode'.

Upgrade Event Name
814. MQ4a THETA 2.5GDI ECM Upgrade After ITM Parts Replacement
815. MQ4a THETA 2.5GDI TCM Upgrade After ITM Parts Replacement
830. MQ4a THETA 2.5T-GDI ECM Upgrade After ITM Parts Replacement
831. MQ4a THETA 2.5T-GDI TCM Upgrade After ITM Parts Replacement

📄 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.**

📄 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:

2021MY Sorento (MQ4a) 'ECM'

Upgrade Event #814

❗ 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.

Engine	System	Model Year	IMMO	AT	ECU P/No.	ROM ID	
						Previous	New
2.5L GDI	ECM	21MY	Yes	FWD	39120 2SMN0 39120 2SMN1	MACWN5GMAXXXXH0B MACWN5GMAXXXXH0C MACWN5GMAXXXXH0D MACWN5GMFXXXXG2C MACWN5GMFXXXXG3A MACWN5GMFXXXXH0A MACWN5GMGXXXXG2C MACWN5GMGXXXXG3A MACWN5GMGXXXXH0A	MACWN5GMAXXXXL8A
			No	AWD	39120 2SMM0 39120 2SMM1	MACWN5GSAXXXXH0B MACWN5GSAXXXXH0C MACWN5GSAXXXXH0D MACWN5GSFXXXXG2C MACWN5GSFXXXXG3A MACWN5GSFXXXXH0A MACWN5GSGXXXXG2C MACWN5GSGXXXXG3A MACWN5GSGXXXXH0A	MACWN5GSAXXXXL8A

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.

SUBJECT:

ITM REPLACEMENT AND ECM & TCM LOGIC IMPROVEMENT (CA2508)

2022MY Sorento (MQ4a) 'ECM'

Upgrade Event #814

Engine	System	Model Year	IMMO	AT	ECU P/No.	ROM ID	
						Previous	New
2.5L GDI	ECM	22MY	Yes	FWD	39120 2SMN2 39120 2SMN4	MADWN5GMFXXXXK5A MADWN5GMFXXXXK5B MADWN5GMFXXXXL5A MADWN5GMFXXXXL5B MADWN5GMFXXXXL8A MADWN5GMFXXXXL8B	MADWN5GMFXXXXL8C
			Yes	AWD	39120 2SMN3 39120 2SMN5	MADWN5GMGXXXXK5A MADWN5GMGXXXXK5B MADWN5GMGXXXXL5A MADWN5GMGXXXXL5B MADWN5GMGXXXXL8A MADWN5GMGXXXXL8B	MADWN5GMGXXXXL8C
			No	FWD	39120 2SMM2 39120 2SMM4	MADWN5GSFXXXXK5A MADWN5GSFXXXXK5B MADWN5GSFXXXXL5A MADWN5GSFXXXXL5B MADWN5GSFXXXXL8A MADWN5GSFXXXXL8B	MADWN5GSFXXXXL8C
			No	AWD	39120 2SMM3 39120 2SMM5	MADWN5GSGXXXXK5A MADWN5GSGXXXXK5B MADWN5GSGXXXXL5A MADWN5GSGXXXXL5B MADWN5GSGXXXXL8A MADWN5GSGXXXXL8B	MADWN5GSGXXXXL8C

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.



2023MY Sorento (MQ4a) 'ECM'**Upgrade Event #814**

Engine	System	Model Year	IMMO	AT	ECU P/No.	ROM ID	
						Previous	New
2.5L GDI	ECM	23MY	Yes	FWD	39120 2SMN6	MAEWN5GMFXXXXM1A MAEWN5GMFXXXXM1B	MAEWN5GMFXXXXM1C
			No				
			Yes	AWD	39120 2SMN7	MAEWN5GMGXXXXM1A MAEWN5GMGXXXXM1B	MAEWN5GMGXXXXM1C
			No				

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.

2021-2023MY Sorento (MQ4a) 'TCM'**Upgrade Event #815**

Engine	System	AT	ECU P/No.	ROM ID	
				Previous	New
2.5L GDI	TCM	FWD	39120 2SMM0 39120 2SMM2 39120 2SMM4 39120 2SMN0 39120 2SMN2 39120 2SMN4	TMQ4G25X2XSCONS0 TMQ4G25X2XSCONS1 TMQ4G25X2XSCONS2 TMQ4G25X2XSCONS3 TMQ4G25X2XSCONS4	TMQ4G25X2XSCONS5
		AWD	39120 2SMM1 39120 2SMM3 39120 2SMM5 39120 2SMN1 39120 2SMN3 39120 2SMN5	TMQ4G25X4XSCONS1 TMQ4G25X4XSCONS0 TMQ4G25X4XSCONS2 TMQ4G25X4XSCONS3 TMQ4G25X4XSCONS4	TMQ4G25X4XSCONS5

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.

SUBJECT:

ITM REPLACEMENT AND ECM & TCM LOGIC IMPROVEMENT (CA2508)

2021-2023MY Sorento (MQ4a) 'ECM'

Upgrade Event #830

Engine	System	Model Year	IMMO	ECU P/No.	ROM ID	
					Previous	New
2.5L Turbo-GDI	ECM	21MY	Yes	39121 2SMN0	MQBWN5TMD3XXXG3A MQBWN5TMD3XXXG3B MQBWN5TMD3XXXG3C	MQBWN5TMD3XXXG3E
			No	39131 2SMN0	MQBWN5TSD3XXXG3A MQBWN5TSD3XXXG3B MQBWN5TSD3XXXG3C	MQBWN5TSD3XXXG3E
			Yes	39121 2SMN1	MQBWN5TMD3TXXG3A MQBWN5TMD3TXXG3B MQBWN5TMD3TXXG3C	MQBWN5TMD3TXXG3E
			No	39131 2SMN1	MQBWN5TSD3TXXG3A MQBWN5TSD3TXXG3B MQBWN5TSD3TXXG3C	MQBWN5TSD3TXXG3E
		22MY	Yes	39121 2SMN5 39121 2SMN7	MQDWN5TMD3XXXJ1A MQDWN5TMD3XXXJ1B	MQDWN5TMD3XXXJ1D
			No	39131 2SMN5 39131 2SMN7	MQDWN5TSD3XXXJ1A MQDWN5TSD3XXXJ1B	MQDWN5TSD3XXXJ1D
			Yes	39121 2SMN6 39121 2SMN8	MQDWN5TMD3TXXJ1A MQDWN5TMD3TXXJ1B	MQDWN5TMD3TXXJ1D
			No	39131 2SMN6 39131 2SMN8	MQDWN5TSD3TXXJ1A MQDWN5TSD3TXXJ1B	MQDWN5TSD3TXXJ1D
		23MY	Yes	39122 2SMN0	MQEWN5TMD3XXXM1A	MQEWN5TMD3XXXM1C
			No	39132 2SMN0	MQEWN5TSD3XXXM1A	MQEWN5TSD3XXXM1C
			Yes	39122 2SMN1	MQEWN5TMD3TXXM1A	MQEWN5TMD3TXXM1C
			No	39132 2SMN1	MQEWN5TSD3TXXM1A	MQEWN5TSD3TXXM1C

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.



2021-2023MY Sorento (MQ4a) 'TCM'**Upgrade Event #831**

Engine	System	ECU P/No.	ROM ID	
			Previous	New
2.5L Turbo-GDI	TCM	954A1 2N180	WMQ4T25XXX700NM0 WMQ4T25XXX700NS0 WMQ4T25XXX700NS1 WMQ4T25XXX700NS2 WMQ4T25XXX700NS3 WMQ4T25XXX700NS4 WMQ4T25XXX700NS5 WMQ4T25XXX700NS6 WMQ4T25XXX700NS7 WMQ4T25XXX700NS8 WMQ4T25XXX700NS9 WMQ4T25XXX700NSB WMQ4T25XXX900NSD	WMQ4T25XXX920NSF
		954A1 2N181	WMQ4T25XXW900NS0 WMQ4T25XXW900NS1	WMQ4T25XXW920NS3

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.

SUBJECT:

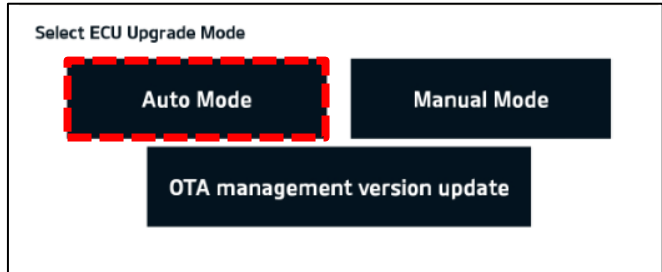
ITM REPLACEMENT AND ECM & TCM LOGIC IMPROVEMENT (CA2508)

Software Information:

❗ IMPORTANT

The ECU and TCM **MUST** be programmed in Auto Mode using the KDS 2.0 download as escribed in this bulletin.

The required software must be installed by selecting the '**Auto Mode**' ECU Upgrade option.



'Manual Mode' passwords.

Event No.	Menu	Password
814	MQ4a Theta 2.5GDI +IMMO/SMK: 39120-2SMN0/1	4022
	MQ4a Theta 2.5GDI -IMMO: 39120-2SMM0/1	9748
	MQ4a Theta 2.5GDI +IMMO/SMK 2WD: 39120-2SMN2/4	1929
	MQ4a Theta 2.5GDI +IMMO/SMK 4WD: 39120-2SMN3/5	1096
	MQ4a Theta 2.5GDI -IMMO 2WD: 39120-2SMM2/4	3444
	MQ4a Theta 2.5GDI -IMMO 4WD: 39120-2SMM3/5	2248
	MQ4a Theta 2.5GDI +IMMO/SMK 2WD: 39120-2SMN6	8781
	MQ4a Theta 2.5GDI +IMMO/SMK 4WD: 39120-2SMN7	7963
	MQ4a Theta 2.5GDI -IMMO 2WD: 39120-2SMM6	6732
	MQ4a Theta 2.5GDI -IMMO 4WD: 39120-2SMM7	6873
815	MQ4a Theta 2.5GDI (2WD): 39120-2SMM0/M2/M4/N0/N2/N4	5255
	MQ4a Theta 2.5GDI (4WD): 39120-2SMM1/M3/M5/N1/N3/N5	5404

'Manual Mode' passwords.

Event No.	Menu	Password
830	01.MQ4a 2.5TGDI +IMMO/SMK: 39121-2SMNO	3912
	02.MQ4a 2.5TGDI -IMMO: 39131-2SMNO	3913
	03.MQ4a 2.5TGDI +IMMO/SMK: 39121-2SMN1	9121
	04.MQ4a 2.5TGDI -IMMO: 39131-2SMN1	9131
	05.MQ4a 2.5TGDI +IMMO/SMK: 39121-2SMN5/N7	1219
	06.MQ4a 2.5TGDI -IMMO: 39131-2SMN5/N7	1319
	07.MQ4a 2.5TGDI +IMMO/SMK: 39121-2SMN6/N8	8621
	08.MQ4a 2.5TGDI -IMMO: 39131-2SMN6/N8	8622
	09.MQ4a 2.5TGDI +IMMO/SMK: 39122-2SMNO	0222
	10.MQ4a 2.5TGDI -IMMO: 39132-2SMNO	0223
	11.MQ4a 2.5TGDI +IMMO/SMK: 39122-2SMN1	2221
	12.MQ4a 2.5TGDI -IMMO: 39132-2SMN1	3221
831*	MQ4a 2.5TGDI: 954A1-2N180	2180
	MQ4a 2.5TGDI: 954A1-2N181	2181

***After SW #831 Upgrade is Completed:**

Perform Air Bleeding and Transmission Learning procedure using KDS.

UPGRADE EVENT: (2.5L GDI)

Select the applicable **'ECM' system** module and the Event Group.

- **814. MQ4a THETA 2.5GDI ECM Upgrade After ITM Parts Replacement**

Verify the affected vehicle Calibration Identification of the applicable ECU ROM ID and reference the Information Table on pages 5 - 10 as necessary.

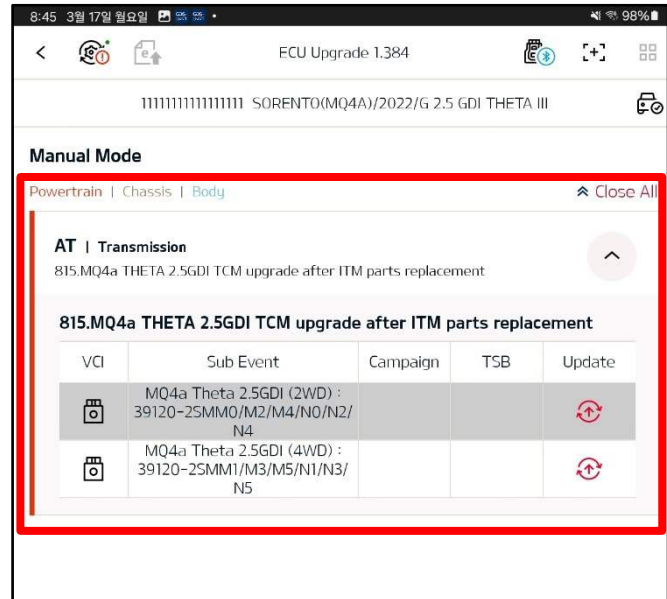
VO	Sub Event	Campaign	TSB	Update
814.MQ4a THETA 2.5GDI ECM upgrade after ITM parts replacement				
	MQ4a Theta 2.5GDI +IMMO/ SMK : 39120~25MM0/1			
	MQ4a Theta 2.5GDI -IMMO : 39120~25MM0/1			
	MQ4a Theta 2.5GDI +IMMO/ SMK 2WD : 39120~25MM2/4			
	MQ4a Theta 2.5GDI +IMMO/ SMK 4WD : 39120~25MM3/5			
	MQ4a Theta 2.5GDI -IMMO 2WD : 39120~25MM2/4			
	MQ4a Theta 2.5GDI -IMMO 4WD : 39120~25MM3/5			
	MQ4a Theta 2.5GDI +IMMO/			

SUBJECT: ITM REPLACEMENT AND ECM & TCM LOGIC IMPROVEMENT (CA2508)
UPGRADE EVENT: (2.5L GDI)

Select the applicable **'TCM'** system module and the Event Group.

- **815. MQ4a THETA 2.5GDI TCM Upgrade After ITM Parts Replacement**

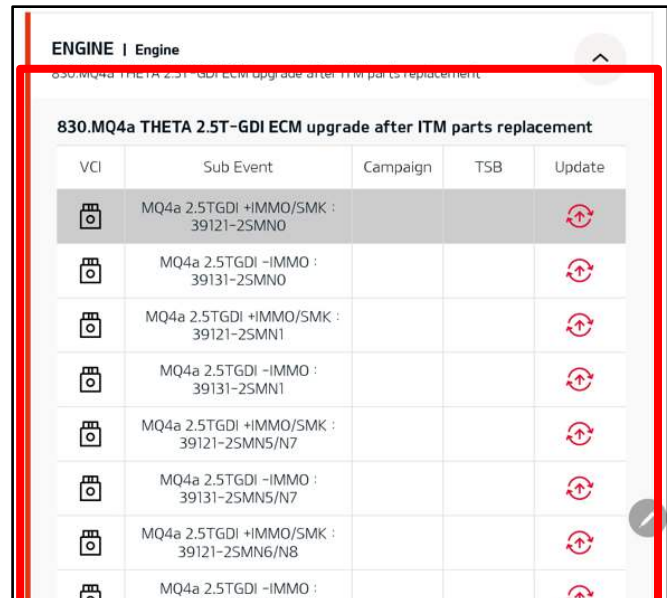
Verify the affected vehicle Calibration Identification of the applicable ECU ROM ID and reference the Information Table on pages 5 - 10 as necessary.


UPGRADE EVENT: (2.5L T-GDI)

Select the applicable **'ECM'** system module and the Event Group.

- **830. MQ4a THETA 2.5T-GDI ECM Upgrade After ITM Parts Replacement**

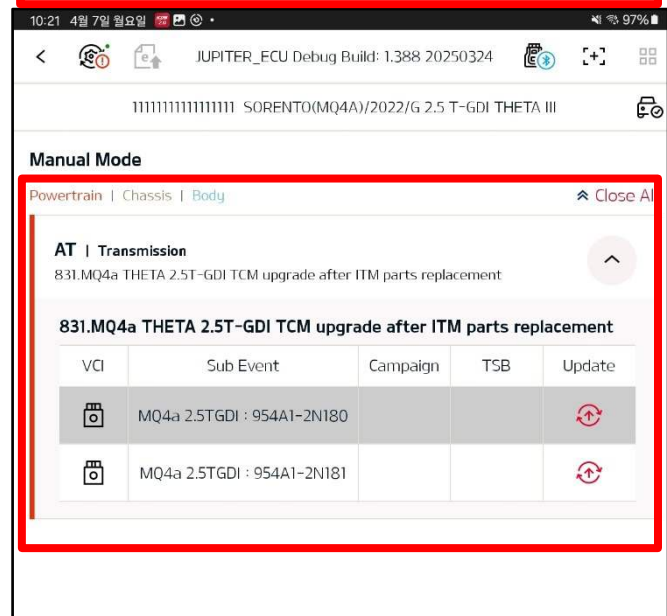
Verify the affected vehicle Calibration Identification of the applicable ECU ROM ID and reference the Information Table on pages 5 - 10 as necessary.


UPGRADE EVENT: (2.5L T-GDI)

Select the applicable **'TCM'** system module and the Event Group.

- **831. MQ4a THETA 2.5T-GDI TCM Upgrade After ITM Parts Replacement**

Verify the affected vehicle Calibration Identification of the applicable ECU ROM ID and reference the Information Table on pages 5 - 10 as necessary.



After SW #831 Upgrade is Completed:

Perform Air Bleeding and Transmission Learning procedure using KDS.

SUBJECT:

ITM REPLACEMENT AND ECM & TCM LOGIC IMPROVEMENT (CA2508)

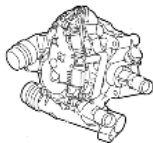
AFFECTED VEHICLE RANGE:

Model	Production Date Range
Sorento (MQ4a)	September 09, 2020 to December 19, 2023

REQUIRED TOOL:

Tool Name	Part Number	Figure	Comments
Kia Diagnostic System (KDS)	N/A		KDS + VCI

REQUIRED PART:

Part Name	Part Number	Figure	Qty.	Comments
ITM	25600 2S650QQK		1	N/A
Water Inlet Pipe O-ring	25462 2S000QQK		1	N/A
Coolant (Gal.)	UM020 CH263	N/A	2	Prediluted

Note: The replacement part numbers will require a VIN entry for parts ordering. DO NOT order these parts for stocking purposes, related to this TSB. Supply is very limited. Until supply stabilizes, please confirm part availability before scheduling customers. Please be sure to expedite warranty claim filing.

SUBJECT:

ITM REPLACEMENT AND ECM & TCM LOGIC IMPROVEMENT (CA2508)

WARRANTY INFORMATION:

N Code: N99 C Code: C99

Claim Type	Engine Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
V	2.5L GDI	39120 2SMN1	0	CA2508A ITM Replacement & ECU <u>and</u> TCM Logic Improvement (#814 & #815)	250A08R0	1.9 M/H	25600 2S650QQK	1
							25462 2S000QQK	1
							UM020 CH263	2
	2.5L T-GDI	39121 2SMN1	0	CA2508B ITM Replacement & ECU <u>and</u> TCM Logic Improvement (#830 & #831) + DCT Air Bleed and Learning	250A08R1	2.1 M/H	25600 2S650QQK	1
							25462 2S000QQK	1
							UM020 CH263	2
	2.5L GDI	39120 2SMN1	0	CA2508C ITM Replacement & ECU Logic Improvement (#814)	250A36R0	1.8 M/H	25600 2S650QQK	1
							25462 2S000QQK	1
							UM020 CH263	2
	2.5L T-GDI	39121 2SMN1	0	CA2508D ITM Replacement & ECU Logic Improvement (#830)	250A36R1	1.8 M/H	25600 2S650QQK	1
							25462 2S000QQK	1
							UM020 CH263	2

Note: When substitute transportation is provided, manually enter sublet code 'X2' for rental expense reimbursement or one roundtrip rideshare expense.

Note: A [Vehicle Diagnosis Number \(VDN\)](#) must be created for DTC's prior to ordering parts and performing necessary procedure(s), as outlined in this TSB. If a VDN is not created, Parts Ordering and Warranty claim submission issues WILL occur. Any claims for replacement parts are subject to Warranty review and chargeback.

