

 HYUNDAI Technical Service Bulletin	GROUP ENGINE ELECTRICAL SYSTEMS	NUMBER 23-EE-007H
	DATE APRIL, 2023	MODEL(S) SANTA FE HYBRID (TM HEV) & SANTA FE PLUG-IN (TM PHEV)
SUBJECT: ECU UPGRADE – G2T-GDI DTC MISDIAGNOSIS & OIL DILUTION IMPROVEMENT		

TSB 23-EE-007H supersedes 23-FL-001H to revise the service procedure with the latest GDS events and revise the warranty information & op time information.

DESCRIPTION: This bulletin provides information related to the Engine Control Module (ECM) software update for Santa Fe Plug-in Hybrid (TM PHEV) and Santa Fe Hybrid (TM HEV) vehicles to improve the following DTC and symptoms:

1. **P1441** (EVAP System Flow During Non-Purge Condition)
 - a. Misdiagnosis due to insufficient margin of pressure deviation when driving at constant speed with low engine load
 - i. Logic improvement to eliminate misdiagnosis
2. **P1A77** (Check Generator Belt)
 - a. Misdiagnosis due to poor synchronization release when the engine is stopped
 - i. Logic improvement to release synchronization even if CAM signal is active when engine is stopped
3. **P00B7** (Engine Coolant Flow Low/Performance)
 - a. ITM control error due to temporary ball valve stuck
 - i. Improvement to ITM cleaning logic (1 time -> 5 times)
4. **P2118** (Throttle Actuator Control Motor Current Range/Performance) / **P0401** (EGR Flow Insufficient Detected)
5. **P0236** (Turbocharger System Boost Sensor A Circuit Range/Performance) / **P0299** (Turbocharger underboost)
 - a. Failure due to EGR condensate freezing
 - i. Change the EGR Flow diagnosis condition (-40°C → -7°C)
6. Oil Dilution: Some vehicles may experience increased oil consumption and white smoke due to the diluting of engine oil with fuel because of the frequent transition between EV ↔ Engine mode during the winter season
 - a. Modify fuel injection strategy below 10°C and add oil heating function based on the driving pattern.
7. **P2B60** (Engine Coolant Flow Control Valve Position Sensor Circuit Range/Performance)
 - a. Ball valve stuck escape mode logic improvement
 - i. Change the Mas. Angle in the reverse direction when operating the escape mode (5 → 35 degrees)

FOR 21~22MY Santa Fe Hybrid (TM HEV): The HCU Update should be updated right after the ECU Update is completed. Please reference Campaign T9U TSB 23-01-032H - HCU UPGRADE - TM HEV IMMOBILIZER IMPROVEMENT

FOR 22-23MY Santa Fe Plug-in Hybrid (TM PHEV): The HCU Update should be updated at the same time. Please reference F/Fix TSB 23-EE-004H - HCU UPGRADE - TM PHEV G2T OIL DILUTION IMPROVEMENT

FOR 23MY Santa Fe Hybrid (TM HEV): No action required to update the HCU. These models already have the updated software.

APPLICABLE VEHICLES: All 21-23MY Santa Fe Hybrid (TM HEV) & 22-23MY Santa Fe Plug-in Hybrid (TM PHEV) equipped with 1.6L Gamma II turbocharged engines.

GDS INFORMATION: System Selection: **Engine:**

Event #	Description
#909	TM (P)HEV GAMMA2 T-GDI DTC MISDIAGNOSIS & OIL DILUTION IMPROVEMENT (ECU)

WARRANTY INFORMATION:

Model	Op Code	Operation	Op Time	Causal Part	Nature Code	Cause Code
Santa Fe Hybrid (TM HEV) & Santa Fe Plug-in (TM PHEV)	39131F21	ECU UPGRADE	0.3 M/H	39131-2MTC0 (21-22MY TM HEV) 39131-2MTL0 (23MY TM HEV) 39131-2MTF0 (22-23MY TM PHEV)	I3T	ZZ3

NOTE 1: Normal Warranty applies.

NOTICE

To verify the vehicle is affected, be sure to check the version of the vehicle’s ECU ROM ID with reference to the ECU ROM ID TABLE below before attempting to upgrade the control unit software.

You must attach a 12V battery charger to the vehicle before performing GDS ECU Update. This is to prevent a battery saver condition from occurring since Santa Fe Plug-in Hybrid uses a smaller battery.

You must initially perform GDS ECU Update in Auto Mode.

- If the ECU Update starts but then fails in Auto Mode, disconnect the battery cables and touch the cables together for one minute. Reconnect the battery cables, attach a battery charger and perform the update in Manual Mode to recover.
- Refer to the General Instructions found in TSB 15-GI-001 (GDS Mobile).

SERVICE PROCEDURE:

1. After the ECU Update is completed, check for Diagnostic Trouble Codes and erase any DTC.

ECU ROM ID TABLE:

Model	Part Number	ROM ID	
		Old	New
Santa Fe Hybrid (TM HEV)	39131-2MTC0	JTM-1NS06F00CF40	JTM-1NS06F388F00
		JTM-1NS06F183F00	
		JTM-1NS06F288F00	
	39131-2MTC1	JTM-2NS06F080F00	JTM-2NS06F488F00
		JTM-2NS06F180F00	
		JTM-2NS06F283F00	
		JTM-2NS06F388F00	
	39131-2MTC2	JTM-3NS06F087F00	JTM-3NS06F288F00
		JTM-3NS06F188F00	
	Santa Fe Plug-in (TM PHEV)	39131-2MTF0	QTM-2NS06F080F00
QTM-2NS06F181F00			
QTM-2NS06F283F00			
QTM-2NS06F388F00			
QTM-2NS06F488F00			
39131-2MTF1		QTM-3NS06F087F00	QTM-3NS06F288F00
		QTM-3NS06F188F00	

MANUAL UPDATE: If the ECU Update starts but then fails in Auto Mode, perform the update in Manual Mode to recover.

Model	Event	Menu	Password
Santa Fe Hybrid (TM HEV)	#909	TM PE HEV 1.6T-GDI 6AT 4WD 21MY 391312MTC0	3120
		TM PE HEV 1.6T-GDI 6AT 4WD 22MY 391312MTC1	3121
		TM PE HEV 1.6T-GDI 6AT 4WD 23MY 391312MTC2	3122
Santa Fe Plug-in (TM PHEV)		TM PE PHEV 1.6T-GDI 6AT 4WD 22MY 391312MTF0	3220
		TM PE PHEV 1.6T-GDI 6AT 4WD 23MY 391312MTF1	3221