

 HYUNDAI Technical Service Bulletin	GROUP AUTOMATIC TRANSMISSION	NUMBER 23-AT-009H
	DATE JULY 2023	MODEL SANTA FE (TMA) SONATA (DN8A)
SUBJECT: AUTOMATIC TRANSAXLE (8-SPEED DCT) POSITION SENSOR DTC P070500, P070512, P070514, P07051C, P070600, P070661 & P070696 DIAGNOSIS		

DESCRIPTION: If you are servicing an 8-speed DCT front-wheel-drive vehicle with the DTC or symptoms listed below, refer to the **Service Procedure** to diagnose the condition.

- **DIAGNOSTIC TROUBLE CODES:**
 - P070500 - Transmission range sensor circuit malfunction
 - P070512 - Transmission range sensor circuit malfunction
 - P070514 - Transmission range sensor circuit malfunction
 - P07051C - Transmission range sensor circuit malfunction
 - P070600 - Transmission range sensor circuit range/performance
 - P070661 - Transmission range sensor circuit range/performance
 - P070696 - Transmission range sensor circuit range/performance
- **SYMPTOMS:**
 - Malfunction Indicator Light (MIL) illuminated
 - 5th gear fail-safe
 - Intermittently won't shift into D or R
 - Intermittently won't shift out of P
 - Intermittently no engine crank in "P" or "N"

APPLICABLE VEHICLES:

2021~ Santa Fe (TMA) 2.5T with 8-DCT	VIN starts with 5NM
2021~ Sonata (DN8A) 2.5T with 8-DCT	VIN starts with 5NP

PARTS INFORMATION:

MY	Model	PNC Code	Part Number	Service Tool (SST)
2020~ 2021~	Sonata (DN8A) 2.5T Santa Fe (TMA) 2.5T	42700G	42700-2N700	OK427-P2100

NOTE: If you need replacement SST, contact Bosch at 866-539-4248.

NOTE: Refer to TSB 20-AT-006H for position switch replacement.

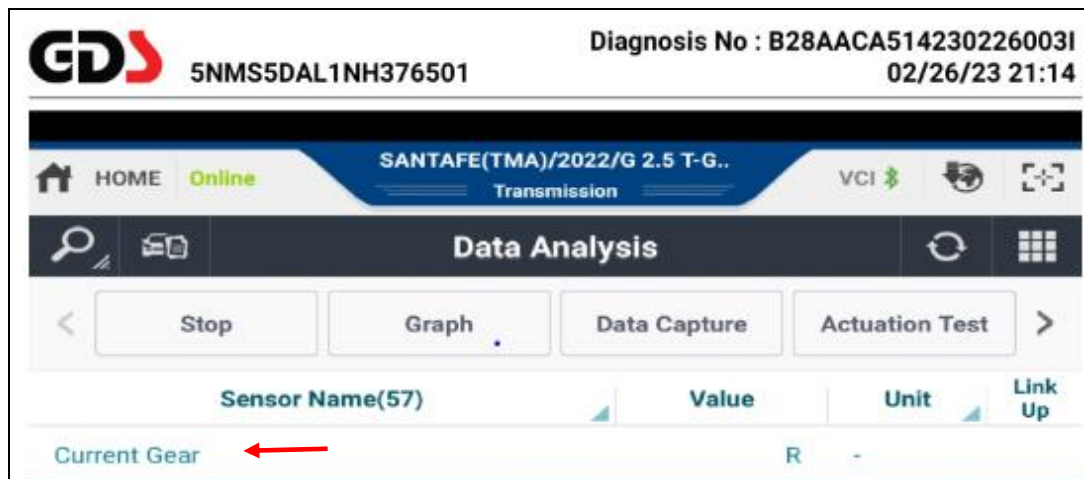
WARRANTY INFORMATION:

Model		Op Code	Operation	Op Time	Causal Part	Nature Code	Cause Code
2020~ 2021~	Sonata (DN8A) 2.5T Santa Fe (TMA) 2.5T	42700R00	Replace position sensor	Refer to WEBLTS for current LTS time	See Parts Information table above	I3A	ZZ3
All		42700RQ0	GDS				

NOTE: Normal Warranty applies.**SERVICE PROCEDURE:**

Refer to the latest Warranty Digital Documentation Policy for repair validation requirements.

1. Start the engine.
2. Attach a GDS and check for DTC in the "Automatic Transaxle" menu. **Record the DTC and description.** Delete the DTC.
3. Select **Data Analysis, A/T** menu and **Current Gear**. Depress the brake pedal and move the shift lever through all gears (P, R, N and D) and monitor the **Current Gear**. Confirm the indicator on the cluster shows all gears. Turn the ignition **OFF**.



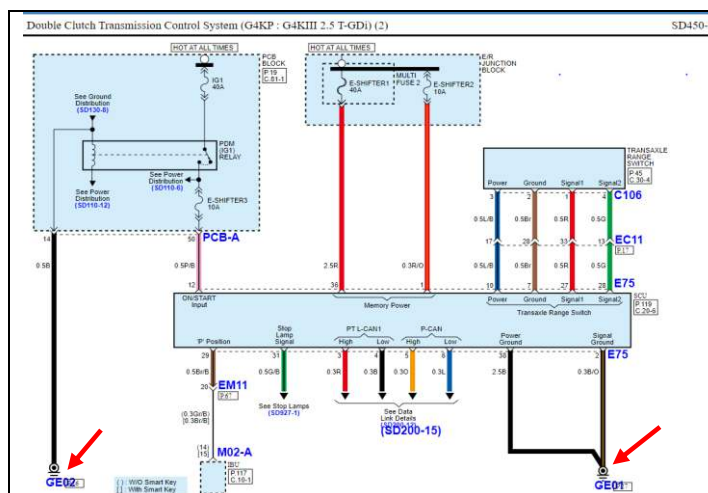
4. If the GDS shows:
 - The correct **Current Gear**, the wiring currently has no open/short circuits. Go to Step 6.
 - Does not show the correct **Current Gear**, go to Step 5.
5. Visually check the wiring harness between the ECU or TCU and position sensor for a damaged wire or open circuit/short circuit to ground. Check for a damaged pin or pin not fully inserted into the connector.
 - If damage is found, repair or replace the control wiring and drive the vehicle to confirm the repair.
 - If no damage or open/short circuit is found, go to Step 6.

6. Check the grounds for the electronic shift lever. (Refer to ETM, SD450-1).
Turn the ignition and headlights on. Use a DVOM to check the voltage drop between the wiring terminal and ground.

Specification: Less than 0.2 V.

- If more than 0.2V, clean the terminal and bolt threads and tighten the bolt.
- If less than 0.2V, go to Step 7.

Torque: 7~9 lb-ft, 1.0~1.2kgf.m, 10~12 N.m

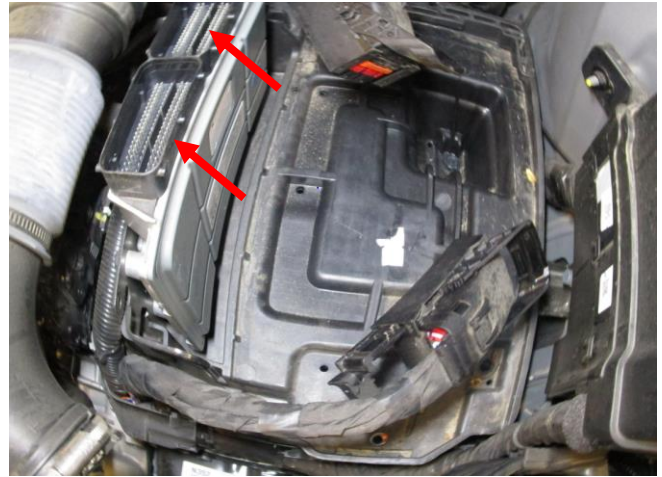


7. Push the start/stop button (SSB) two times to turn the ignition ON.
Set the parking brake or place wheel chocks to prevent vehicle movement.
Press the brake pedal and press the Neutral button (A) for several seconds until the cluster displays "N".
Turn the ignition off.



8. Remove the retaining clips and remove the air intake duct.
Remove the air cleaner. Refer to **Engine Mechanical System, Air cleaner**.
Remove the battery. Remove the mounting bracket and bolt. Slide the battery forward to remove the battery tray. Remove the battery tray and move out of the way to access the position sensor. Refer to **Engine Electrical System, Battery**.

9. Disconnect 2 ECM connectors, remove 2 bolts and remove the ECM and bracket as a unit. Move the ECM and bracket out of the way to access the position sensor. Refer to **Engine Control/Fuel System, ECM**.



10. For some models:

Use pliers to pinch the tab and disconnect the harness from the ECM bracket.

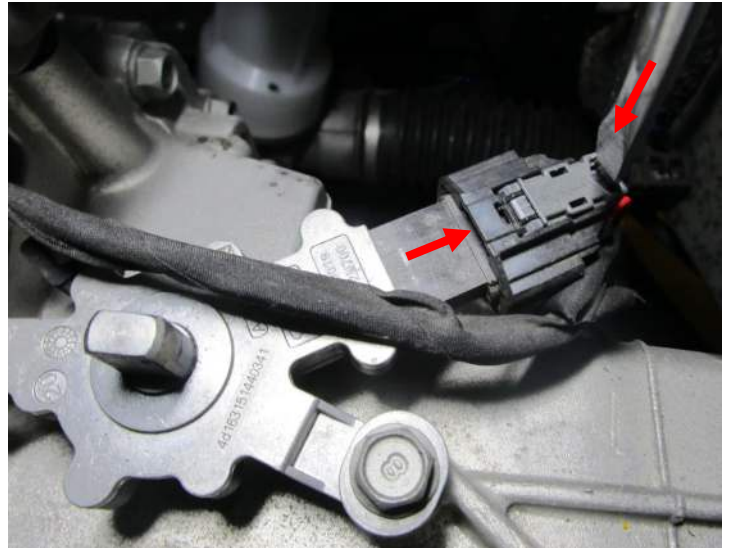
Move the ECM bracket out of the way to access the position sensor.



11. Press down on the tab and disconnect the shift by wire (SBW) actuator connector. Remove 3 bolts and remove the SBW actuator. Move the actuator out of the way to access the position sensor.



12. Use a thin screwdriver to push down on the tab to release the position sensor connector.
Push the lock tab in the direction shown.
Disconnect the position sensor connector.



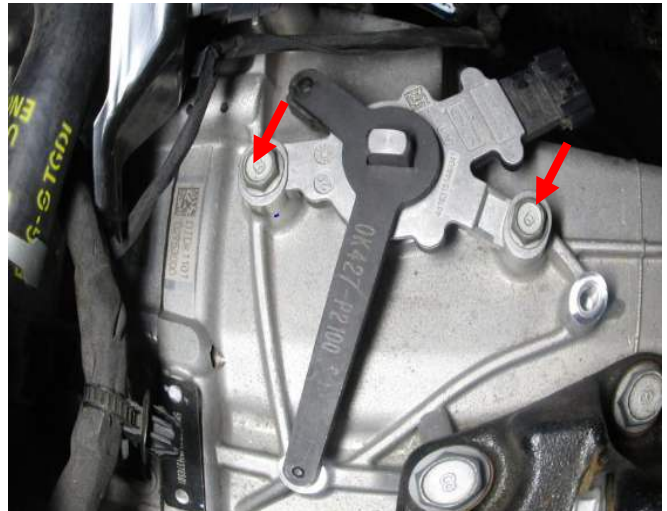
13. Remove 2 mounting bolts and remove the position sensor.
Install a new position sensor.
Install 2 bolts and loosely tighten the bolts.
Reconnect the connector.



14. Install the OK427-P2100 alignment tool on the manual valve and the holes on the transmission. Tighten both bolts that secure the position sensor.

Torque: 7~9 lb-ft, 1.0~1.2 kgf.m, 10~12 N.m

Remove the alignment tool.



15. Confirm the manual valve is horizontal to the radiator. If not, turn the manual valve to align with the electronic shift actuator.



16. Reinstall the SBW actuator.
Install 3 bolts and torque to specification.
Torque: 15~19 lb-ft, 2~3 kgf.m, 21~26 N.m
Reconnect the connector.



17. Reinstall all the removed parts in reverse order of removal.
Reset the preset radio stations.
18. Clear the DTC and test drive the vehicle for two drive cycles (two key-on to key-off driving cycles). If the DTC:
- Does not occur again, return the vehicle to the customer.
 - If the DTC occurs again, repair or replace the control wiring between the TCU and position sensor. If the DTC occurs again after repairing or replacing the control wiring, replace the TCU:
 - ✓ TMA: TCU (954A1-****).
 - ✓ DN8A: TCU (95440-****)
19. The Service Procedure is complete. Return the vehicle to the customer.