
 HYUNDAI Technical Service Bulletin	GROUP AUTOMATIC TRANSMISSION	NUMBER 23-AT-006H-2
	DATE NOVEMBER 2023	MODEL PALISADE (LX2) SANTA FE (TMA) SANTA FE HYBRID (TM/TMa HEV) SONATA (DN8A) SONATA HYBRID (DN8 HEV) TUCSON (NX4/NX4A) TUCSON HYBRID (NX4 HEV)
SUBJECT: AUTOMATIC TRANSAXLE PUSH-BUTTON SHIFTER DIAGNOSIS		

This TSB supersedes TSB 23-AT-006H-1 to add additional information regarding harness damage repair for Tucson (NX4A), Step 6.

DESCRIPTION: This TSB provides information to diagnose the push button shifter operation. If you are servicing a vehicle with any symptoms listed below or DTCs (listed on Page 2) , follow the Service Procedure on Page 3.

SYMPTOMS:

- “Shifter System Malfunction” displayed in the cluster
- Won’t shift into or out of gear or won’t shift out of Park
- Incorrect gear display in cluster and/or won’t start

<p>APPLICABLE MODELS:</p> <ul style="list-style-type: none"> • 2020~ Palisade (LX2) • 2021~ Santa Fe (TMA) 2.5L/2.5T (VINs beginning with “5NM”) • 2021 – 2022MY Santa Fe Hybrid (TM HEV) 1.6T (VINs beginning with “KM8”) • 2023~ Santa Fe Hybrid (TMa HEV) 1.6T (VINs beginning with “5NM”) • 2020~ Sonata (DN8/DN8A) 1.6T/2.5L/2.5T (VINs beginning with “5NP” or “KMH”) • 2020~ Sonata Hybrid (DN8 HEV) 2.0L • 2022~ Tucson (NX4/NX4A) 2.5L (VINs beginning with “5NM” or “KM8”) • 2022~ Tucson Hybrid (NX4 HEV) 1.6T 	
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DTC PARTIAL LIST: (Refer to SBW Control Unit or E-Shifter section for additional DTC)

DTC	Description
P060148	Functional Safety Level 2 SW failure (See TSB 21-AT-008H-1)
P065713	SBW actuator power relay error
P07FF00	SBW system Error – Abnormal power voltage
P0705**	Transmission range circuit malfunction
P0706**	Transmission range circuit range/performance
P106D00	SBW actuator stuck (See TSB 21-AT-008H-1)
P106D13	SBW actuator stuck - open/short
P106D14	SBW system Error - UVW open/short
P106D71	SBW actuator stuck (See TSB 21-AT-008H-1)
P28E214	Shift motor UVW circuit – open
P28E577	SBW actuator commanded position not reached - Short
P28E592	SBW motor performance
P28EA71	SBW actuator stuck
P28EA77	SBW actuator commanded position not reached
U110382	Lost communication with TGS lever (See TSB 21-AT-008H-1)
U110400	Lost communication with TGS lever

PARTS INFORMATION:

Refer to the PNC in the parts catalog to order the correct part numbers.

MODEL		DESCRIPTION	PNC	PART NUMBER	
2020~ 2021~ 2021- 2022 2023~ 2020~ 2020~ 2022~ 2022~	Palisade (LX2) Santa Fe (TMA) 2.5L/2.5T Santa Fe Hybrid (TM HEV) 1.6T Santa Fe Hybrid (TMa HEV) 1.6T	SBW Lever (Push button shifter)	46700	467W0-*****	
		SBW Control Unit (SCU)	42950 42951	42950-***** 42951-*****	
		SBW Actuator	42910	42910-*****	
		Position sensor	42700	42700-*****	
	Sonata (DN8/DN8A) 1.6L/2.5L/2.5T Sonata Hybrid (DN8 HEV) 2.0L Tucson (NX4/NX4A) 2.5L Tucson Hybrid (NX4 HEV) 1.6T	ECU (Unified ECU/TCU) TCU		39110 95440	39100-*****
					39101-*****
					39110-*****
					39111-*****
					39116-*****
					39131-*****
39132-*****					
95440-*****					
954A1-*****					

NOTE: Refer to TSB 23-AT-008H-1 to replace the position sensor or SBW actuator.

WARRANTY INFORMATION:

Model		OP Code	Operation	Op Time	Causal	Nature Code	Cause Code
2020~ 2021~ 2021-2022 2023~ 2020~ 2020~ 2022~ 2022~	Palisade (LX2) Santa Fe (TMA) 2.5L/2.5T Santa Fe Hybrid (TM HEV) Santa Fe Hybrid (TMa HEV) Sonata (DN8/DN8A) Sonata Hybrid (DN8 HEV) Tucson (NX4/NX4A) 2.5L Tucson Hybrid (NX4 HEV)	42700R00	Range switch	Refer to WEBLTS for current LTS time	See Parts Info. table on Page 2	I3A	ZZ3
		46700R00	Electronic lever				
		42910R00	Parking Actuator				
		42950R00	SBW Control Unit				
		39110R00	Engine control unit				
		95440R00	Transmission control unit				
2021~ 2020~ 2022~	Santa Fe Hybrid (TM HEV) Sonata Hybrid (DN8 HEV) Tucson Hybrid (NX4 HEV)	42700RH1	Hybrid				
All		42700RQ0	GDS				

NOTE 1: Normal warranty applies.

NOTE 2: Submit claim on Claim Entry Screen as “Warranty” type.

NOTE 3: Refer to the latest Digital Documentation Policy for repair validation requirements.

NOTE 4: If a part is found in need of replacement while performing this TSB and the affected part is still under warranty, submit a separate claim using the same repair order. If the affected part is out of warranty, submit a Prior Approval request for goodwill consideration prior to performing the work.

SERVICE PROCEDURE:




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

1. Attach a GDS and select **Fault Code Searching**. Complete a Fault Code search of all vehicle systems. Record the DTC and description. Delete the DTC.
2. If DTC are found, refer to DTC list on Page 1 or the related shop manual, **E-Shifter** or **SBW Control Unit** section for repair guidance.
If no DTC are found, go to Step 3.

3. Start the engine. From the GDS home screen, select **Data Analysis** and **A/T** menu and the parameters shown below. Push the shift buttons to change gears P, R, N and D. If the cluster and the GDS data shows:
 - Correct gear: The TCU received the correct signals from the SBW lever (Push-button shifter). The Push-button shifter is currently functioning correctly and the related harness currently does not have an open/short. Go to Step 4.
 - Does not show the correct gear: the Push-button shifter or related harness may have a fault. If no damage or loose pins are found with the related harness, replace the SBW lever (Push-button shifter).

Sensor Name(29)	Value	Unit	Link Up
Current Gear	1	-	
Shift Lever Switch	D	-	

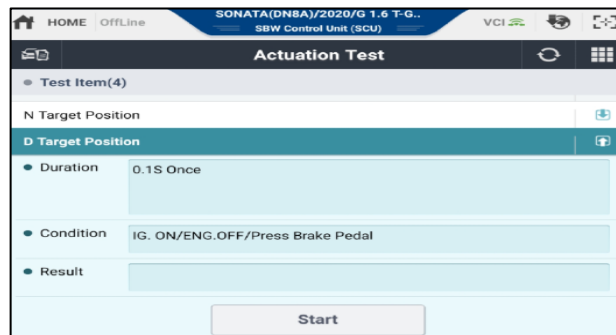
4. Start the engine. From the GDS home screen, select **Data Analysis, SCU** menu and the parameters shown below. Push the shift buttons to change gears. If the GDS data shows:
 - Correct **Target Lever Position** and **Actual Lever Position**: The SCU commanded the SBW actuator to shift to the requested gear. The SBW actuator and position sensors 1 and 2 are functioning correctly and the related harness currently does not have an open/short. Go to Step 5.
 - Does not show the correct **Target Lever Position**: The SCU did not command the SBW actuator to shift to the requested gear. The SCU or related harness may have a fault.
 - Does not show the correct **Actual Lever Position**: The SBW actuator did not select the requested gear. The SBW actuator or related harness may have a fault.

NOTE: The **Motor Feedback Current** should briefly show electrical current when a shift button is pressed, indicating the SCU sent current to the SBW actuator. If no amps is shown, the SCU or related harness may have a fault.

NOTE: The sum of Position sensor 1 and 2 should be approximately 100%.

Sensor Name(15)	Value	Unit	Link Up
Target Lever Position	D	-	
Actual Lever Position	D	-	
A/T Main Relay Voltage	14.3	V	
Motor Feedback Current	0.0	A	
Non-inhibit sw position sensor 1	80.7	%	
Non-inhibit sw position sensor 2	19.4	%	

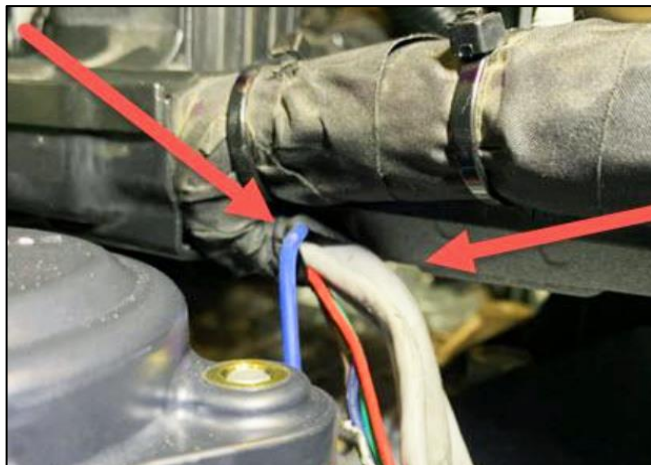
5. Turn the engine off and push the SSB 2 times to turn the ignition **ON**. Press the brake pedal. From the GDS home screen, select **Actuation Test** and **SCU** menu. Test the Target position for P, R, N and D. Press the arrow to change the selection. If the GDS and cluster show:
- Correct **Target Position** for P, R, N and D: The SCU sent electrical current to the SBW actuator, the SCU and SBW actuator are currently operating correctly and the related harness currently does not have an open/short circuit. Go to Step 6.
 - Does not show the correct **Target Position** for P, R, N and D: The SCU, SBW actuator or related harness may have a fault.



6. If Steps 3~5 do not show a fault, visually check the wiring harness between the PCM or TCU and transmission for a damaged wire or open/short circuit. Check for a damaged pin or pin not fully inserted into the connector.
- If damage or open/short circuit is found, repair or replace the related harness.
 - If no damage or open/short circuit is found:
 - ✓ For Santa Fe (TMa) 2.5L or Tucson (NX4/NX4A) 2.5L vehicles, continue to the section below.
 - ✓ For all other vehicles, go to Step 7.

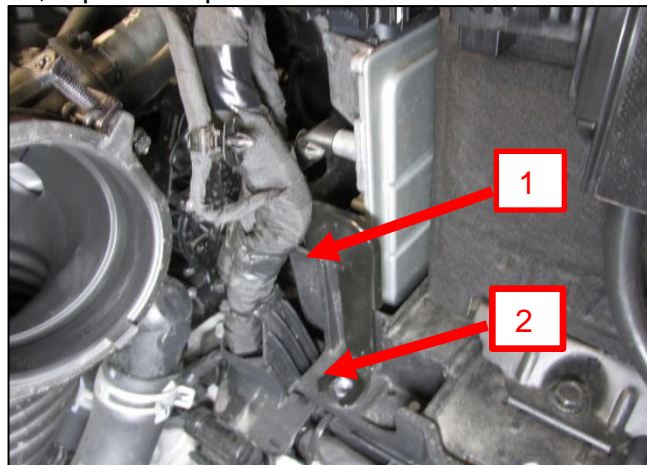
For the following vehicles only:

Santa Fe (TMa) 2.5L – VINs begin with 5NM:
Carefully unwrap the harness protector in the area shown below. Check the insulation on the wires to see if the insulation has been damaged by contact with the battery tray. If so, repair or replace the control harness.



Tucson (NX4/NX4A) 2.5L–VINs KM8 or 5NM:
Carefully unwrap the harness protector in the areas shown below:

- 1. NX4 (KM8):** Check if the insulation has been damaged by contact with the metal bracket.
- 2. NX4A (5NM):** Check for broken wires in the area of the 90 degree bend in the harness. If so, repair or replace the control harness.



NOTICE

If replacing the control harness, make sure the replacement harness does not contact the battery tray or other components. Otherwise, the harness may become damaged again.

Damage to the wiring harness may still be present, even if there is no external damage to the harness protector. Even slight damage to the wiring harness can cause these faults.

- If Steps 3~5 did not find any faults and the issue cannot be duplicated, the issue may be intermittent. Call Techline for further advice.

APPENDIX: SBW OPERATION

4 components are required to shift to P, R, N and D.

In addition, the PCM or TCU are required to select the correct transmission solenoids.

