



# HYUNDAI Technical Service Bulletin

Group	TRANSAXLE
Number	07-40-009
Date	AUGUST, 2007
Model	1999~SONATA, 2001~06 ELANTRA, 2001~SANTA FE & XG. 2003~ TIBURON, 2005~ TUCSON, 2006~ AZERA, 2007~ ENTOURAGE

Subject  
**AUTOMATIC TRANSAXLE HARSH AND/OR DELAYED ENGAGEMENT INTO DRIVE OR REVERSE**

<b>CIRCULATE TO:</b>	<input type="checkbox"/> GENERAL MANAGER	<input checked="" type="checkbox"/> PARTS MANAGER	<input checked="" type="checkbox"/> TECHNICIAN
<input checked="" type="checkbox"/> SERVICE ADVISOR	<input checked="" type="checkbox"/> SERVICE MANAGER	<input checked="" type="checkbox"/> WARRANTY MGR	<input type="checkbox"/> SALES MANAGER

***This TSB supersedes TSB 02-40-008 to use GDS to analyze shift performance.***

**DESCRIPTION:**

If you are diagnosing an automatic transaxle with a harsh and/or delayed shift into Drive or Reverse, follow the Diagnostic Procedure shown below:

**DIAGNOSTIC PROCEDURE:**

1. Check the ATF level when the engine is idling in "N" according to TSB 06-40-016. Adjust the ATF level as needed.
2. Perform the adaptive learning by shifting from Neutral to Reverse and Drive, stopping in each gear for 5 seconds. Repeat 10 times.
3. Compare to a similar model and year vehicle. If the shift delay is longer than the comparison vehicle, continue the diagnosis.
4. Check that idle speed is within specification. If not, inspect according to the appropriate shop manual, "Fuel System Section".
5. Check the engine and transaxle mounting brackets and roll support brackets. If necessary, replace the mounts.
6. Attach the GDS and check for Diagnostic Trouble Codes in both the "ENGINE" and "AUTOMATIC TRANSAXLE" menus. If DTC are found, repair according to the appropriate TSB or shop manual.
7. Attach the GDS and select "AUTOMATIC TRANSAXLE" menu, "CURRENT DATA" menu and "FLUID TEMPERATURE SENSOR". Confirm the oil temperature sensor operates correctly as shown below. If not, inspect the oil temperature sensor according to TSB 04-40-016 or appropriate shop manual.

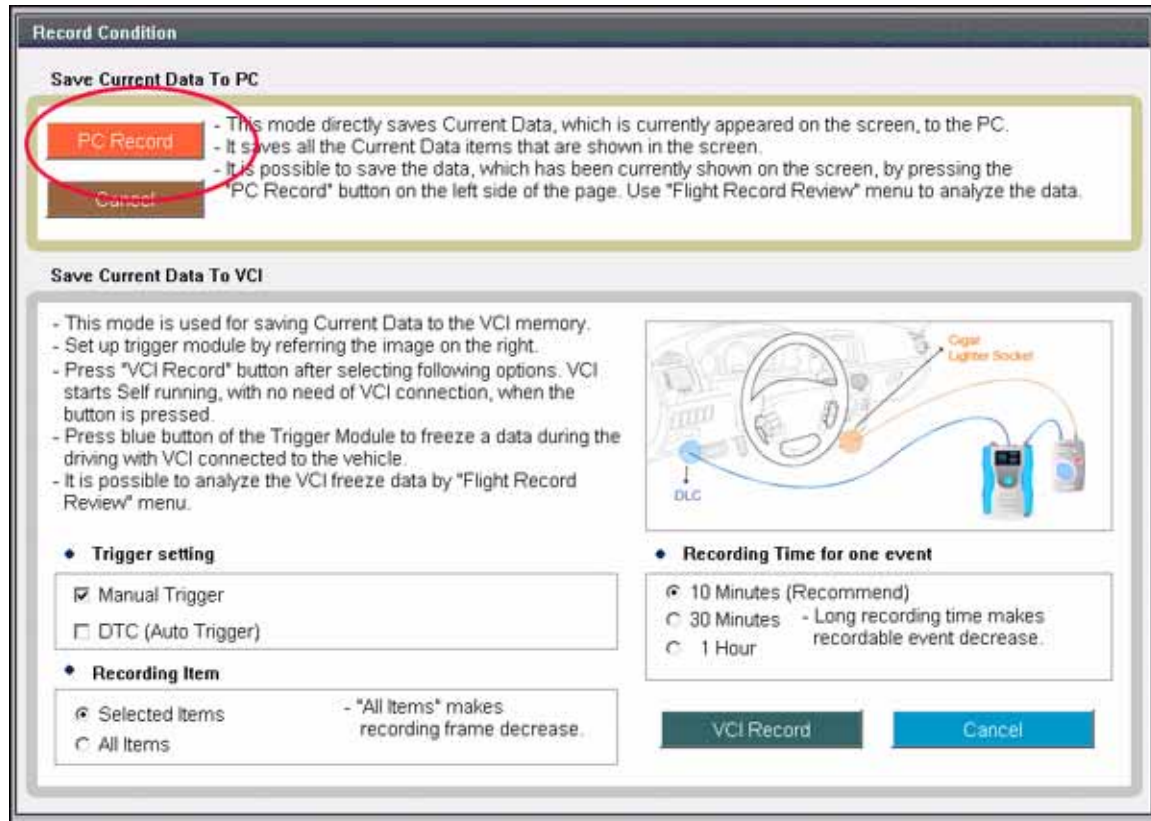
ATF TEMPERATURE	GDS READOUT
ATF cold	Same as outside temperature
ATF at normal operating temperature	(158-212°F, 70-100°C)

8. Select "CURRENT DATA" and "TPS". Open and close the throttle and confirm the TPS increases and decreases smoothly between approximately 0~100% duty.
9. Attach the GDS and select VIN and "A/T", "Current Data" and then select "Shift Position", "LR Solenoid Duty" and "Underdrive Solenoid Duty" as shown below
10. Start the engine and move the shift lever between Neutral, Drive and Reverse, stopping 3-5 seconds in each gear.
11. Select "Record" shown at the top right of the screen. GDS will record up to 10 minutes data prior to selecting "Record".





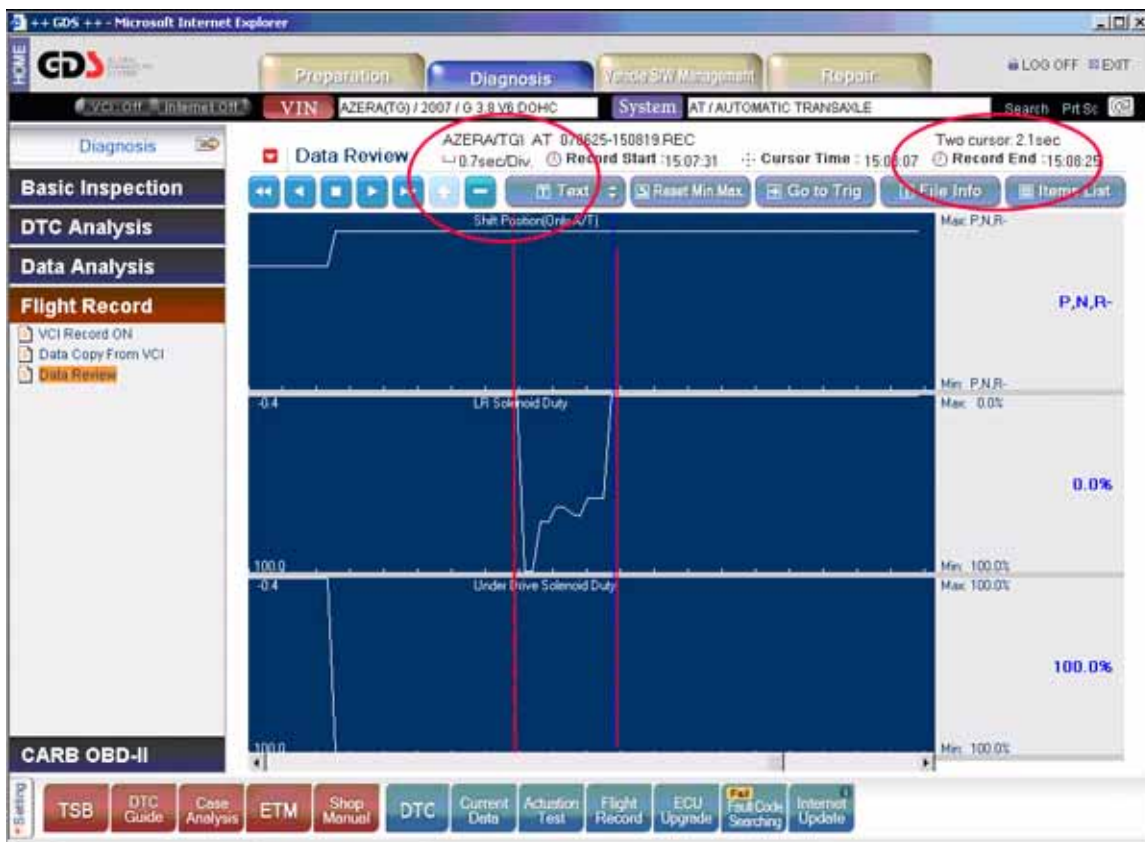
12. Select "PC Record" (top left of screen), then save file.



## MEASURE PARK TO REVERSE ENGAGEMENT TIME:

13. Select "Flight Record" and "Data Review", select the vehicle and open the file.
14. Select "Items List" (top right of screen), then select "Shift Position", LR Solenoid Duty" and "Underdrive Solenoid Duty".
15. Click the "+" button to change to "0.7 sec./Div" or smaller"
16. Move the cursor to the start of the shift and "Left click"
17. Move the cursor to the end of the shift and "Right Click".
18. Read the Low & Reverse solenoid engagement time on the top right of the screen. If the P-R shift requires more than 2.2 seconds, exchange a PCM or TCM from a properly operating vehicle and follow TSB 06-40-005, "Reset and Relearn Adaptive Values":
  - If the condition is improved, replace the PCM or TCM
  - If the condition is not improved, replace the transaxle.

**NOTE: The LR solenoid elapsed time is important; the shape of the graph is not.**

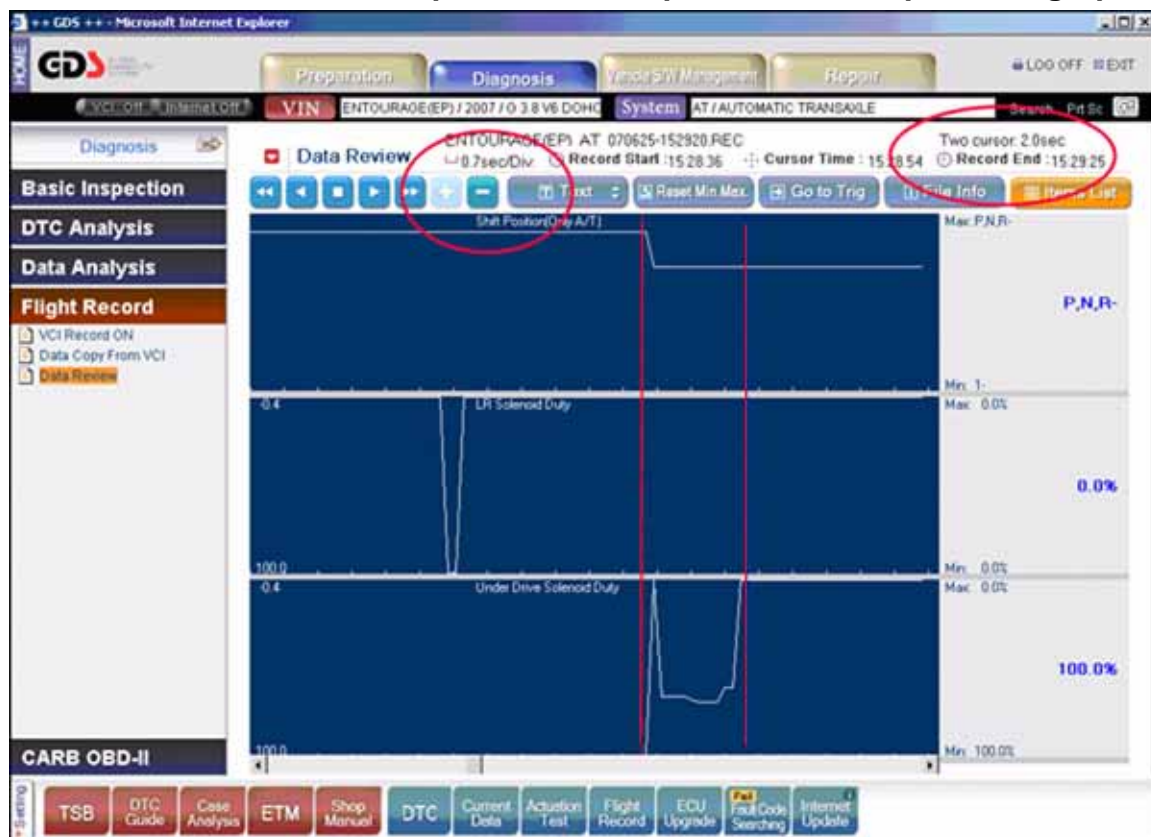




## MEASURE PARK TO DRIVE ENGAGEMENT TIME:

19. Select "Flight Record" and "Data Review", select the vehicle and open the file.
20. Select "Items List" (top right of screen), then select "Shift Position", LR Solenoid Duty" and "Underdrive Solenoid Duty".
21. Click the "+" button to change to "0.7 sec./Div" or smaller"
22. Move the cursor to the start of the shift and "Left click"
23. Move the cursor to the end of the shift and "Right Click".
24. Read the UD engagement time on the top right of the screen. If the P-D shift requires more than 2.2 seconds, exchange a PCM or TCM from a properly operating vehicle and follow TSB 06-40-005, "Reset and Relearn Adaptive Values":
  - If the condition is improved, replace the PCM or TCM
  - If the condition is not improved, replace the transaxle.

**NOTE: The UD solenoid elapsed time is important; the shape of the graph is not.**



**WARRANTY INFORMATION:**

MODEL	PCM/ TCM	OP CODE	OPERATION	OP TIME	CAUSAL P/N	OP QTY	NATURE CODE	CAUSE CODE
1999~ Sonata, 2001~05 Elantra, 2001~ Santa Fe, 2001~ XG, 2003~ Tiburon, 2005~ Tucson, 2006~ Azera	PCM	39110RP0	Hi-Scan Operation	0.3	Seeparts catalog	1	N26	C15
		39110RQ0	GDS Operation	0.3				
	TCM	95440RP0	Hi-Scan Operation	0.4				
		95440RQ0	GDS Operation	0.4				

**NOTE: Warranty Claim requires input of DTC codes on all claims using Hi-Scan or GDS operations. If no DTC code is identified by the Hi-scan or GDS, enter P0000 as a Scan Tool Test Code on the Warranty Claim and attach printout from the Hi-scan or GDS to the Repair Order.**

**NOTE: Printouts must be attached to all Repair Orders. Repair Orders without attached printouts are subject to chargeback.**