HYUNDAI **Technical Service Bulletin**	GROUP **AUTOMATIC TRANSMISSION**	NUMBER **20-AT-019H**
	DATE **May, 2020**	MODEL **SONATA (LFa)** **SANTA FE (TMa)** **PALISADE (LX2)** **SONATA (DN8)**
SUBJECT:	AUTOMATIC TRANSMISSION (8-SPEED FRONT-WHEEL DRIVE) HARSH AND/OR DELAYED SHIFTS – GDS ANALYSIS	

This TSB supersedes TSB 18-AT-003 to add additional models.

DESCRIPTION: If you are servicing any of the vehicles listed below with a harsh and/or delayed shift, use the GDS as shown in the Service Procedure to measure shift engagement time.

APPLICABLE VEHICLES:

2018~19	Sonata (LFa) 2.0T
2020~	Sonata (DN8) 1.6T/2.5L
2019~	Santa Fe (TMa) 2.0T/2.4L
2020~	Palisade (LX2) 3.8L

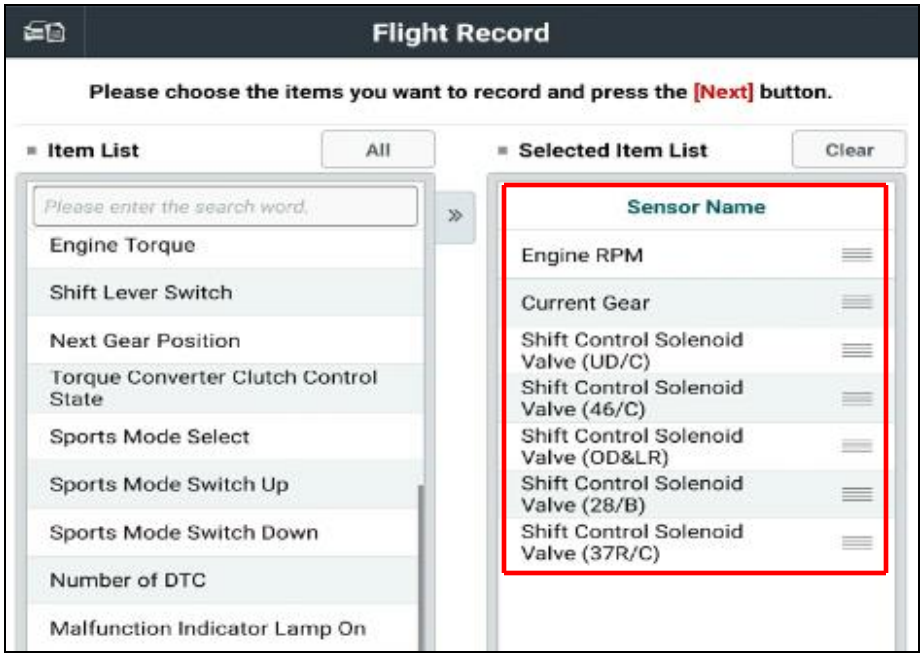
WARRANTY INFORMATION: Normal warranty applies

SERVICE PROCEDURE:

1. Attach the GDS and check for Diagnostic Trouble Codes in both the “Engine” and “Automatic Transaxle” menu. If DTCs are found, repair according to the appropriate TSB or shop manual.

2. Check the ATF level when the engine is idling in “P” and the ATF is 122°~140°F (50°~60°C) according to the related shop manual. Adjust the ATF level as needed using SP4-M ATF.

3.
- Attach the GDS.
- From the home screen, select **Flight Record.** Select the VIN and **A/T** menu. Select **OK**.
- Select the following parameters and select **Next**.



4
- Select 10 minutes recording time and **Manual Trigger**. Insert the trigger and select **VCI Record**. Select **OK.**
- When the trigger shows steady green**,** select **Close** and begin the test drive**.**
- Accelerate the vehicle in **Manual Mode** through gears 1-2-3-4-5-6-7-8. Hold each gear 3~4 seconds.
- Press the trigger at the end of the test drive. The trigger will flash green for a few seconds and then show steady green.
- Remove the trigger.
- To copy the data from the VCI to the tablet, go to the home screen and select **Recorded Data**. Select the VIN and the GDS data file. Select **Data Copy.**
- Select **Copy to SD card**, give the file a name and select **Save.** The VCI will copy the data to the SD card.

5. After the data has been recorded, you can review the data on the GDS Mobile.
   - Open GDS. Select **Recorded Data.**
   - Select the vehicle and the GSR file and select **File Open**.
   - Select **Graph**. Move all PIDs in the **Item List** to the **Selected Item List**. Select **OK**.
   - The recorded data will display. Select the arrow at the top right of the screen and press the + on the **Time scale** to select 1.0 sec/Div.
   - Select the arrow at the top left. The screen will show cursor **A** and **B**.
   - View the **Current Gear** and select the shift to be measured. Select **A** and place the cursor to the left of the related solenoid PID. Select **B** and place the cursor to the right of the related solenoid PID. Read the elapsed time at the top of the screen.

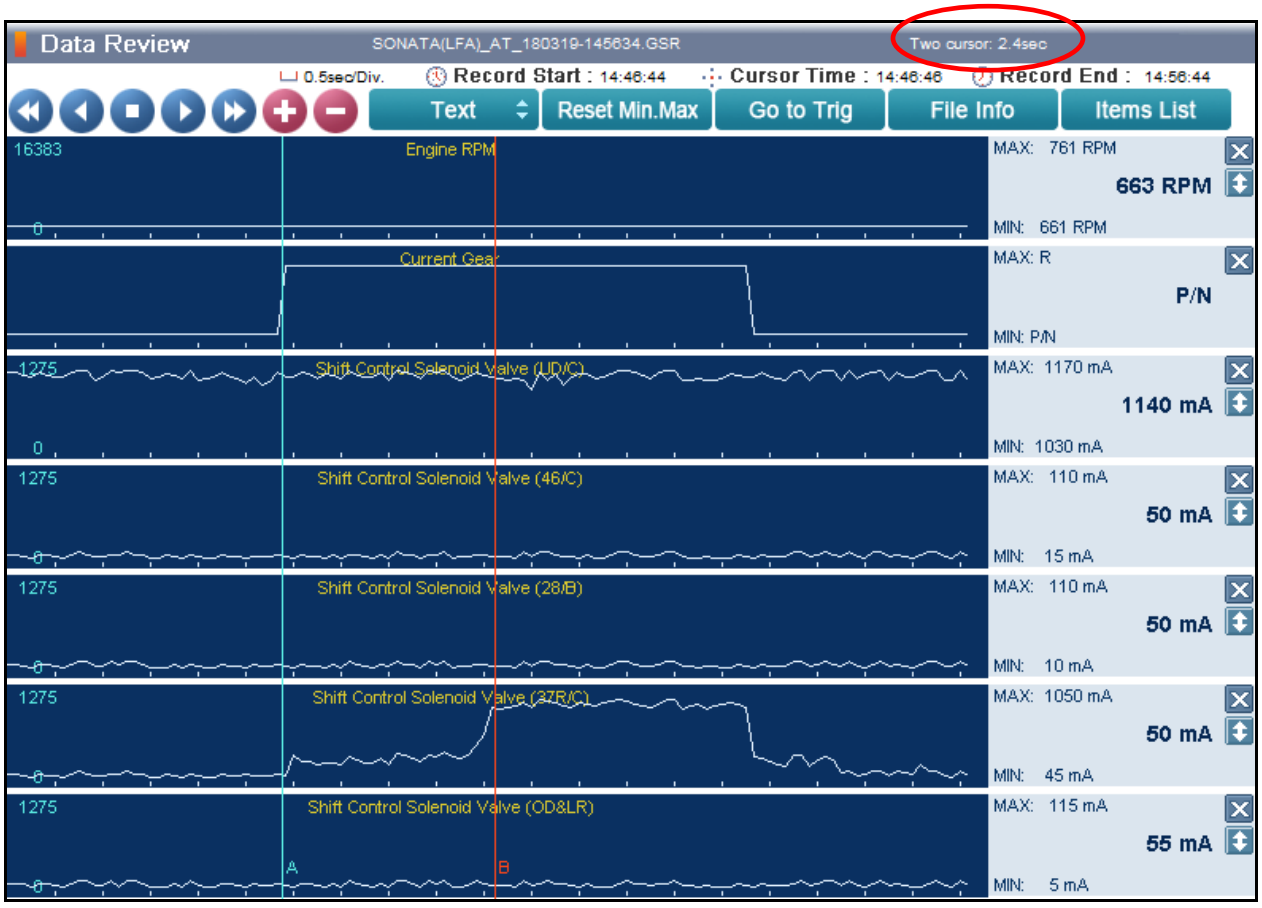
6. To send a GDS file to the Techline Repository using GDS Mobile:
   - From the GDS home page, select **Internet.**
   - Logon to hyundaidealer.com. Enter dealer code, user ID and password.
   - Select the down arrow next to **SERVICE**.
   - Select **Tech Info.**
   - Select **Technical Training**, select **Techline** and enter your information.
   - Select **Choose File.** At the bottom of the screen, select **Documents.**
   - Select SD Card, Android, Data, gitauto.GDSM, files, mcidata and Record.
   - Select your vehicle, VIN and recorded file. Confirm the GSR file is displayed.
   - Select **Submit**.

   NOTE: For additional information, see instructions on TSB 19-GI-006H or **Technical Training**, **Techline Procedures** and **GDS/Repository File Upload** (with or without SD card).

P-R SHIFT DIAGNOSIS:

Open the GDS. From the main screen, select **Flight Record**.

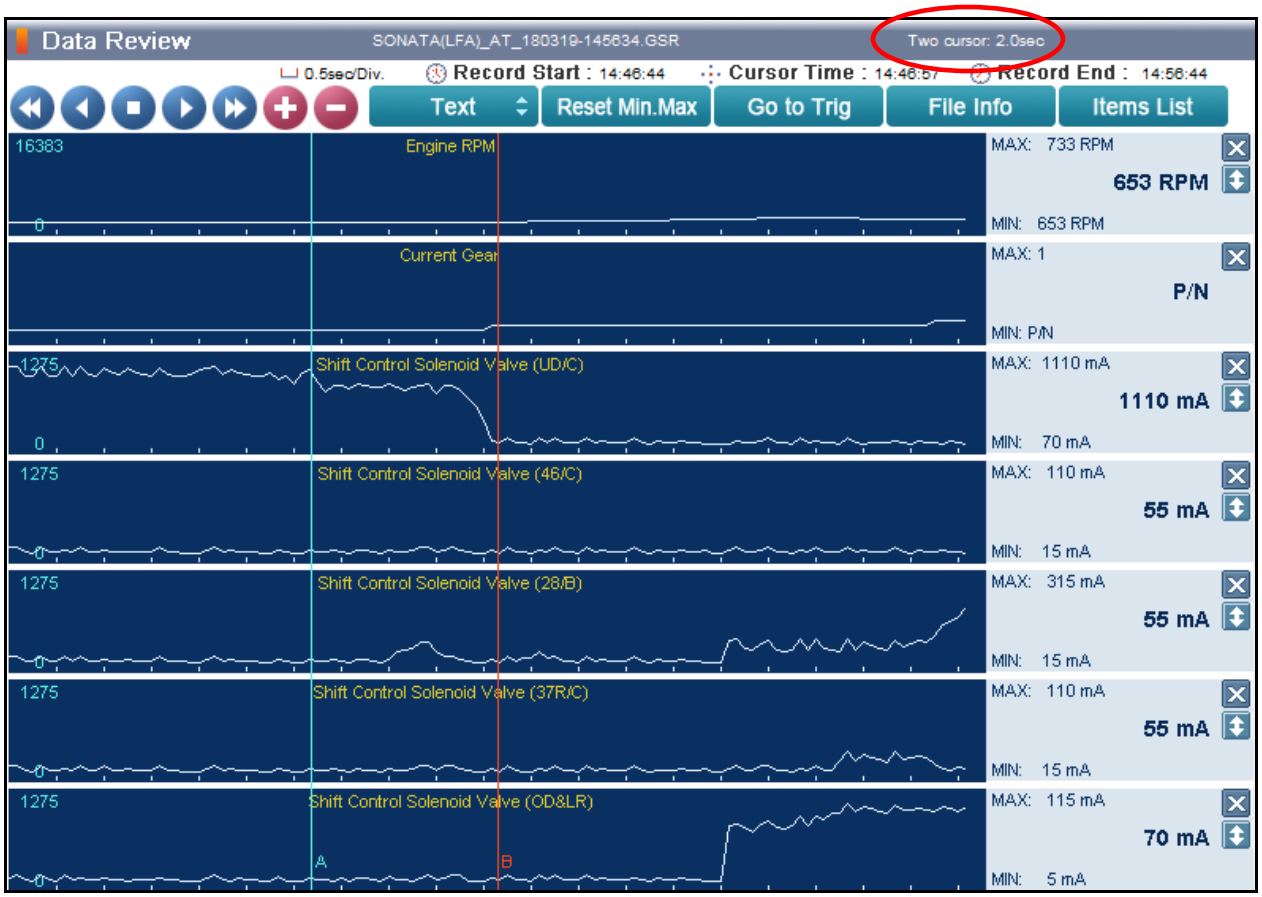
- Select the data file on your PC and select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **37R/C** solenoid graph and locate the shift.
- Move the cursor to the start of the shift and "Left click".
- Move the cursor to the end of the shift and "Right click".
- Read the **37R/C** solenoid elapsed time at the top right of the screen. If the P-R shift requires more than 2.8 seconds, refer to TSB 16-AT-001-2, "Reset and Relearn Adaptive Values":
  - ➢ If the shift is less than 0.5 seconds, exchange a PCM from another vehicle and retest.
  - ➢ If the shift time is more than 2.8 seconds, compare to a similar model and year vehicle. Replace the transmission if the shift time is longer than a comparison vehicle.



N-D SHIFT DIAGNOSIS:

Open the GDS. From the main screen, select **Flight Record**.

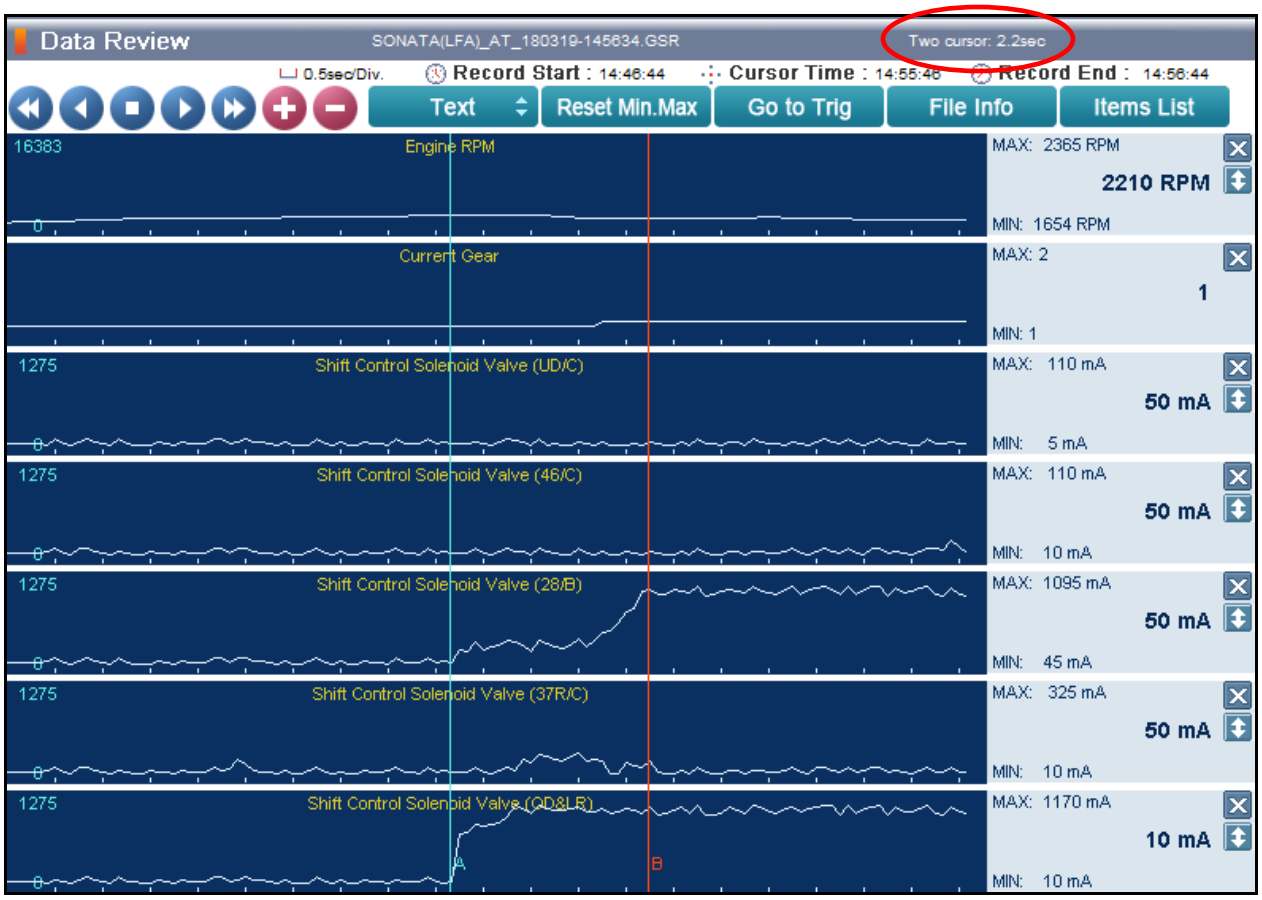
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **UD/C** solenoid graph and locate the shift.
- Move the cursor to the start of the shift and "Left click".
- Move the cursor to the end of the shift and "Right click".
- Read the **UD/C** solenoid elapsed time at the top right of the screen. If the N-D shift requires more than 2.8 seconds, refer to TSB 16-AT-001-2, "Reset and Relearn Adaptive Values":
  - If the shift is less than 0.5 seconds, exchange a PCM from another vehicle and retest.
  - If the shift time is more than 2.8 seconds, compare to a similar model and year vehicle. Replace the transmission if the shift time is longer than a comparison vehicle.



1-2 UPSHIFT DIAGNOSIS:

Open the GDS. From the main screen, select **Flight Record**.

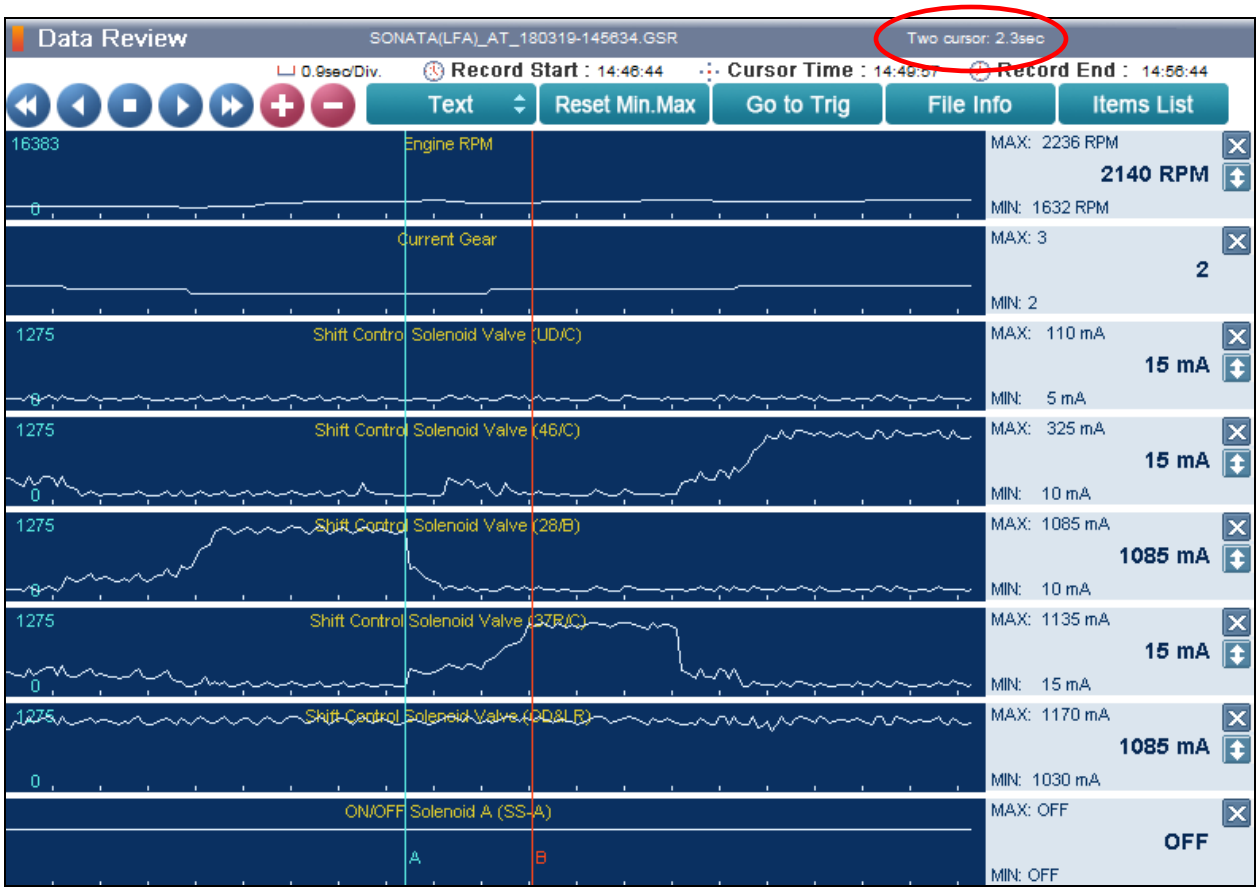
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **28/B** solenoid graph and locate the shift.
- Move the cursor to the start of the shift and "Left click".
- Move the cursor to the end of the shift and "Right click".
- Read the **28/B** solenoid elapsed time at the top right of the screen. If the 1-2 shift requires more than 2.8 seconds, refer to TSB 16-AT-001-2, "Reset and Relearn Adaptive Values":
  - ➢ If the shift is less than 0.5 seconds, exchange a PCM from another vehicle and retest.
  - ➢ If the shift time is more than 2.8 seconds, compare to a similar model and year vehicle. Replace the transmission if the shift time is longer than a comparison vehicle.



2-3 UPSHIFT DIAGNOSIS:

Open the GDS. From the main screen, select **Flight Record**.

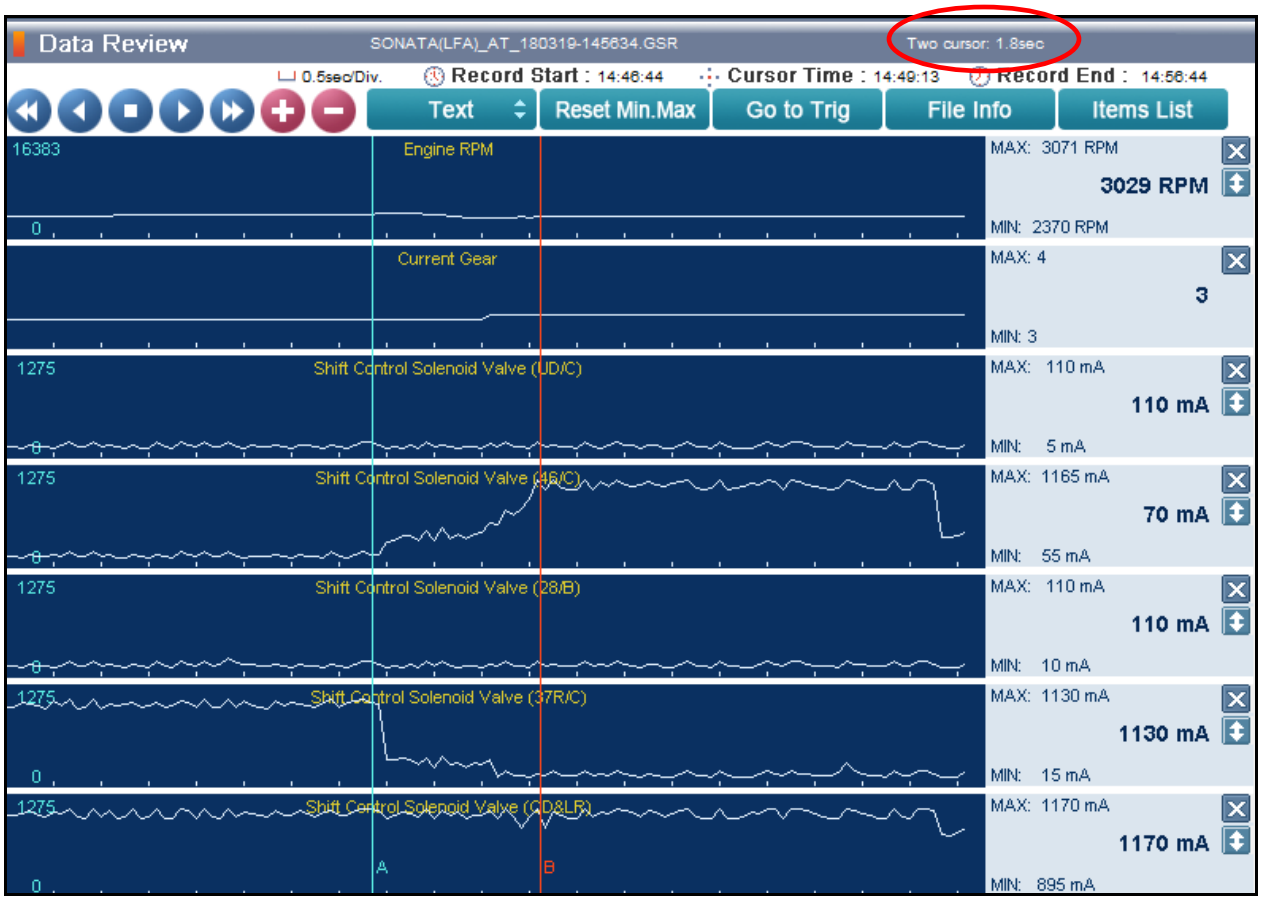
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **37R/C** solenoid graph and locate the shift.
- Move the cursor to the start of the shift and "Left click".
- Move the cursor to the end of the shift and "Right click".
- Read the **37R/C** solenoid elapsed time at the top right of the screen. If the 2-3 shift requires more than 2.8 seconds, refer to TSB 16-AT-001-2, "Reset and Relearn Adaptive Values":
  - If the shift is less than 0.5 seconds, exchange a PCM from another vehicle and retest.
  - If the shift time is more than 2.8 seconds, compare to a similar model and year vehicle. Replace the transmission if the shift time is longer than a comparison vehicle.



3-4 UPSHIFT DIAGNOSIS:

Open the GDS. From the main screen, select **Flight Record**.

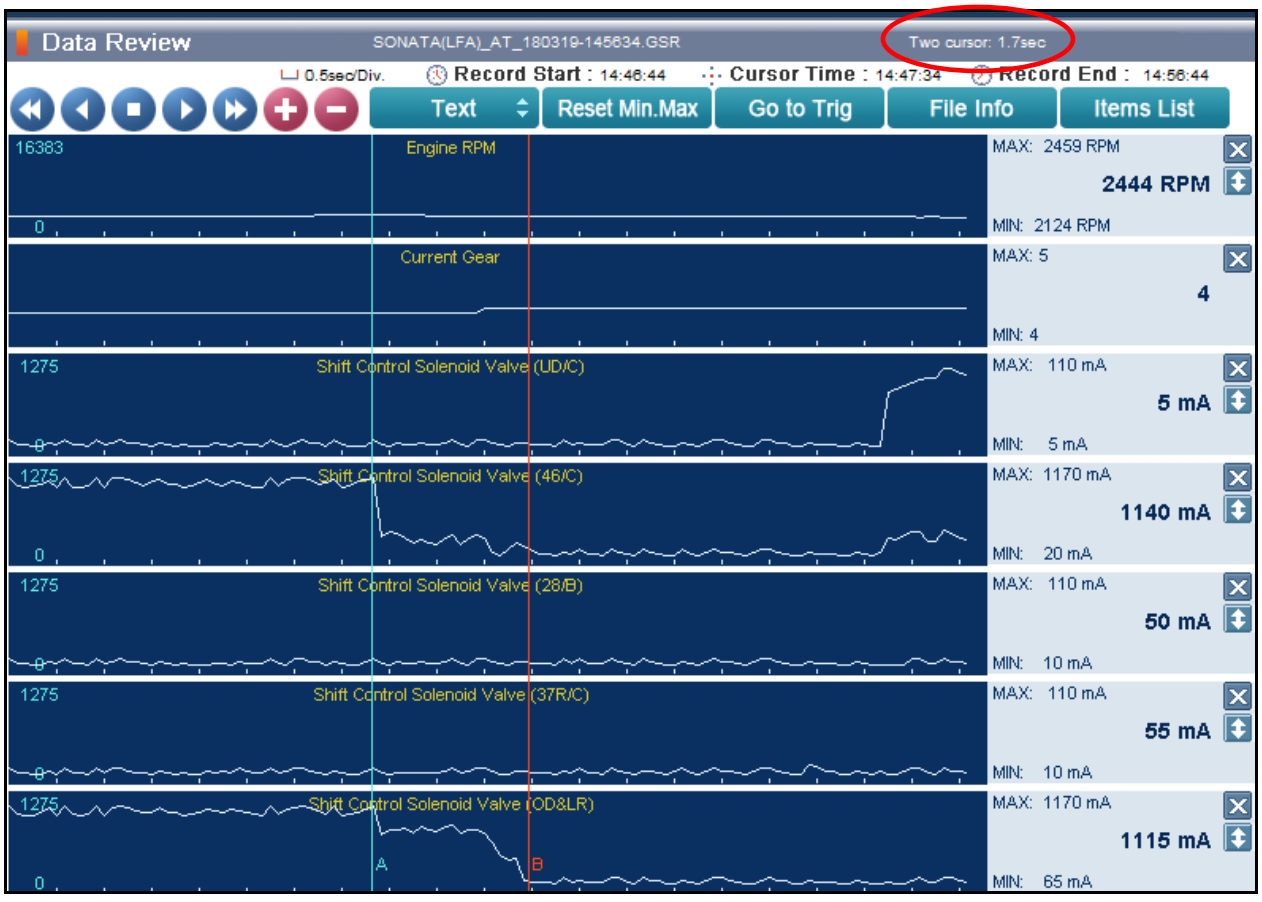
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **46/C** solenoid graph and locate the shift.
- Move the cursor to the start of the shift and "Left click".
- Move the cursor to the end of the shift and "Right click".
- Read the **46/C** solenoid elapsed time at the top right of the screen. If the 3-4 shift requires more than 2.8 seconds, refer to TSB 16-AT-001-2, "Reset and Relearn Adaptive Values":
  - If the shift is less than 0.5 seconds, exchange a PCM from another vehicle and retest.
  - If the shift time is more than 2.8 seconds, compare to a similar model and year vehicle. Replace the transmission if the shift time is longer than a comparison vehicle.



4-5 UPSHIFT DIAGNOSIS:

Open the GDS. From the main screen, select **Flight Record**.

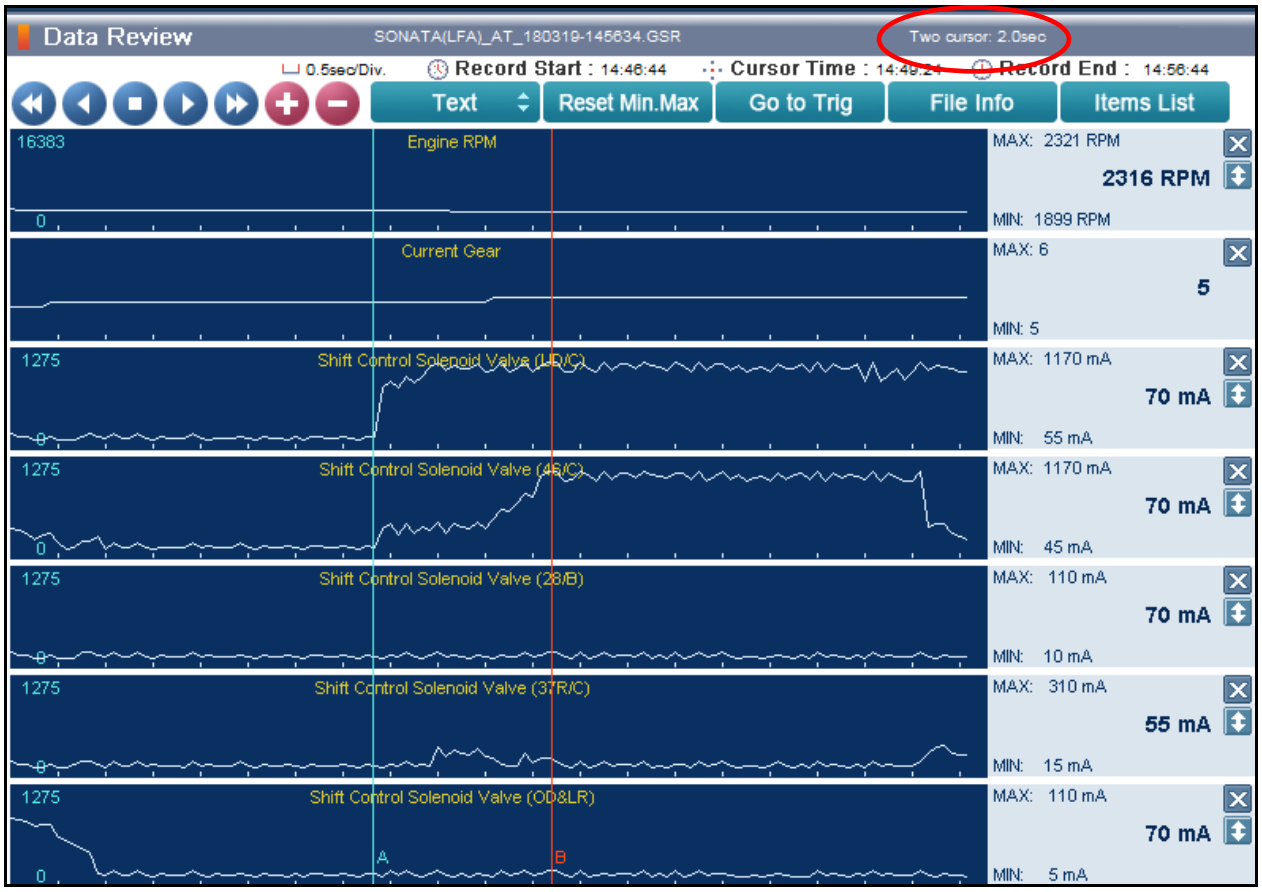
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **OD&LR** solenoid graph and locate the shift.
- Move the cursor to the start of the shift and "Left click".
- Move the cursor to the end of the shift and "Right click".
- Read the **OD&LR** solenoid elapsed time at the top right of the screen. If the 4-5 shift requires more than 2.8 seconds, refer to TSB 16-AT-001-2, "Reset and Relearn Adaptive Values":
  - If the shift is less than 0.5 seconds, exchange a PCM from another vehicle and retest.
  - If the shift time is more than 2.8 seconds, compare to a similar model and year vehicle. Replace the transmission if the shift time is longer than a comparison vehicle.



5-6 UPSHIFT DIAGNOSIS:

Open the GDS. From the main screen, select **Flight Record**.

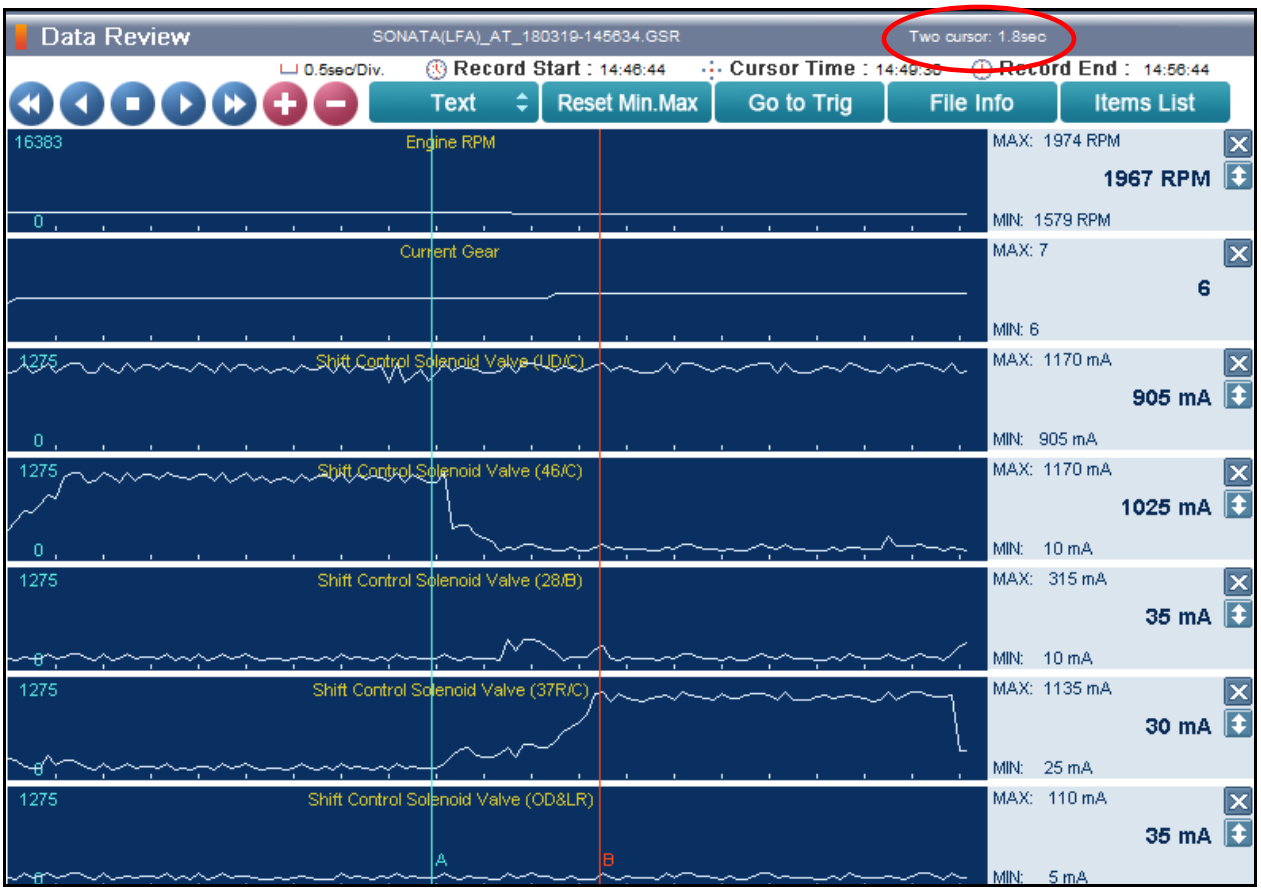
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **46/C** solenoid graph and locate the shift.
- Move the cursor to the start of the shift and "Left click".
- Move the cursor to the end of the shift and "Right click".
- Read the **46/C** solenoid elapsed time at the top right of the screen. If the 5-6 shift requires more than 2.8 seconds, refer to TSB 16-AT-001-2, "Reset and Relearn Adaptive Values":
  - ➢ If the shift is less than 0.5 seconds, exchange a PCM from another vehicle and retest.
  - ➢ If the shift time is more than 2.8 seconds, compare to a similar model and year vehicle. Replace the transmission if the shift time is longer than a comparison vehicle.



6-7 UPSHIFT DIAGNOSIS:

Open the GDS. From the main screen, select **Flight Record**.

- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **37R/C** solenoid graph and locate the shift.
- Move the cursor to the start of the shift and "Left click".
- Move the cursor to the end of the shift and "Right click".
- Read the **37R/C** solenoid elapsed time at the top right of the screen. If the 6-7 shift requires more than 2.8 seconds, refer to TSB 16-AT-001-2, "Reset and Relearn Adaptive Values":
  - ➢ If the shift is less than 0.5 seconds, exchange a PCM from another vehicle and retest.
  - ➢ If the shift time is more than 2.8 seconds, compare to a similar model and year vehicle. Replace the transmission if the shift time is longer than a comparison vehicle.



7-8 UPSHIFT DIAGNOSIS:

Open the GDS. From the main screen, select **Flight Record**.

- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **28/B** solenoid graph and locate the shift.
- Move the cursor to the start of the shift and "Left click".
- Move the cursor to the end of the shift and "Right click".
- Read the **28/B** solenoid elapsed time at the top right of the screen. If the 7-8 shift requires more than 2.8 seconds, refer to TSB 16-AT-001-2, "Reset and Relearn Adaptive Values":
  - If the shift is less than 0.5 seconds, exchange a PCM from another vehicle and retest.
  - If the shift time is more than 2.8 seconds, compare to a similar model and year vehicle. Replace the transmission if the shift time is longer than a comparison vehicle.