HYUNDAI **Technical Service Bulletin**	GROUP **AUTOMATIC TRANSMISSION**	NUMBER **18-AT-003**
	DATE **APRIL, 2018**	MODEL **SONATA (LFA)**
SUBJECT:	8-SPEED AUTOMATIC TRANSMISSION HARSH AND/OR DELAYED SHIFTS – GDS ANALYSIS	

Description: If you are servicing a vehicle with a harsh and/or delayed shift, use the GDS as shown in the Service Procedure to measure shift engagement time.

Applicable Vehicles: 2018~ Sonata 2.0T with 8-speed Front-Wheel Drive transmission

WARRANTY INFORMATION: Normal warranty applies

SERVICE PROCEDURE:

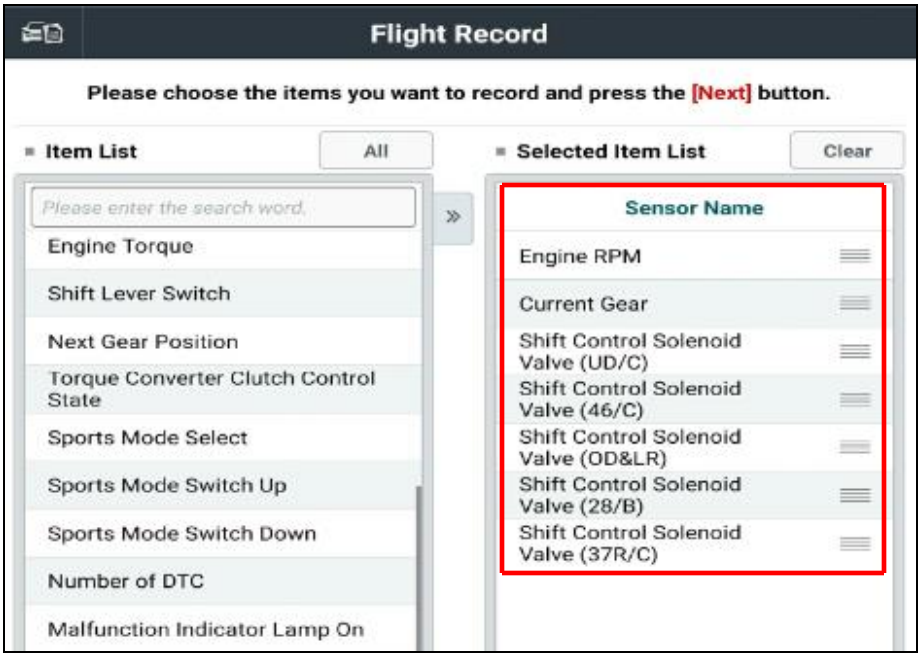
1. Attach the GDS and check for Diagnostic Trouble Codes in both the “Engine” and “Automatic Transaxle” menu. If DTCs are found, repair according to the appropriate TSB or shop manual.

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 2018 Sonata 2.0T Shop Manual. Adjust the ATF level as needed using SP4-M ATF.

NOTICE

Ask an assistant to drive the vehicle as you monitor the GDS.

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**.



- 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.

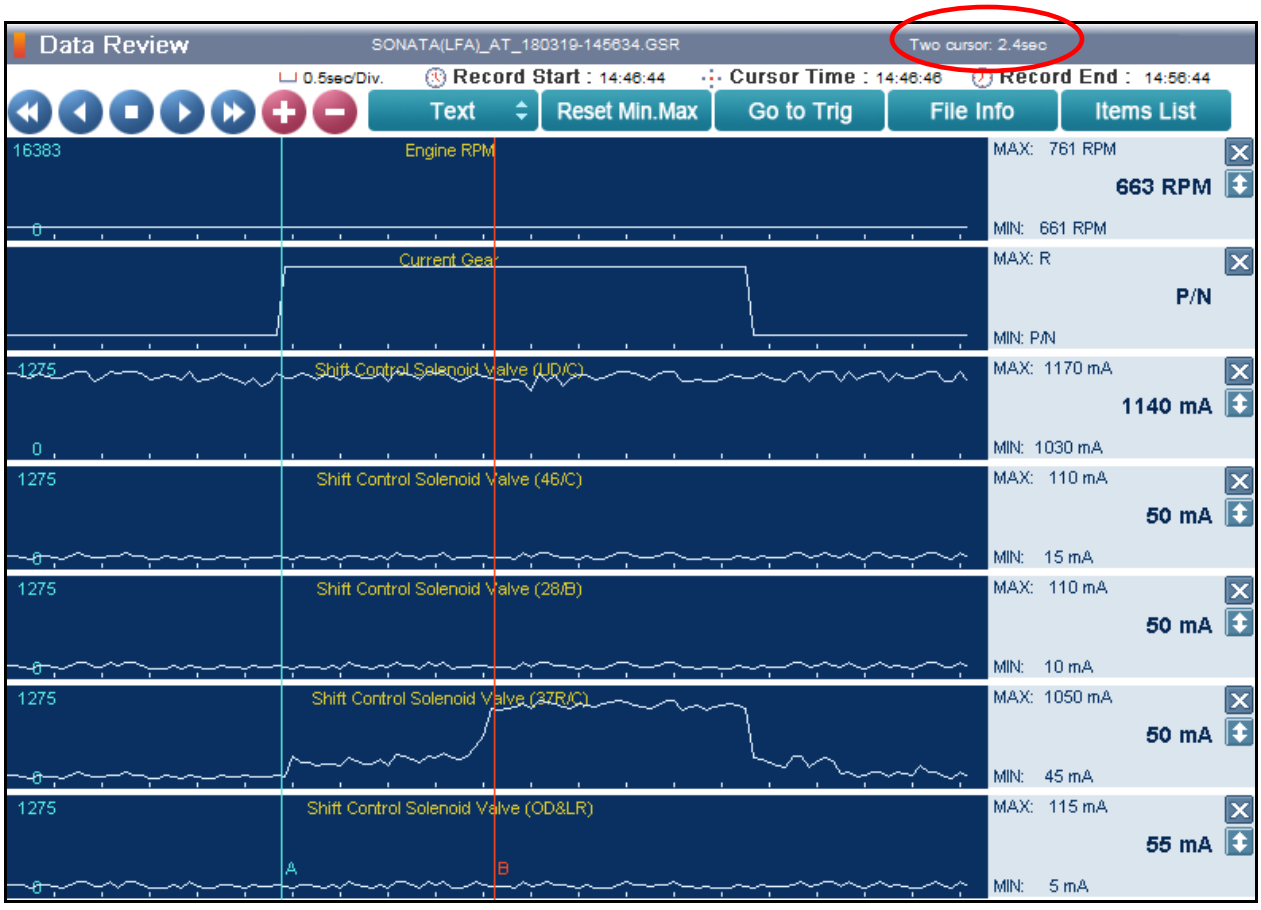
4 After the data has been recorded, you can review the data in two ways:

1. Review the data on the tablet:
   - Select **Recorded Data**, select the VIN and GDS file and view the recorded data.
2. Save the data to a PC:
   - After the data is recorded, connect the GDS to a PC using the charging cord.
   - Select Windows Explorer, **Computer** and **SM-P600**.
   - Double click on Card, Android, Data, gitauto.GDSM, files, mcidata and record.
   - Select VIN and the GDS data file and save the data file to your PC.
   - Open GDS in your PC to view the recorded files.

P-R SHIFT DIAGNOSIS:

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

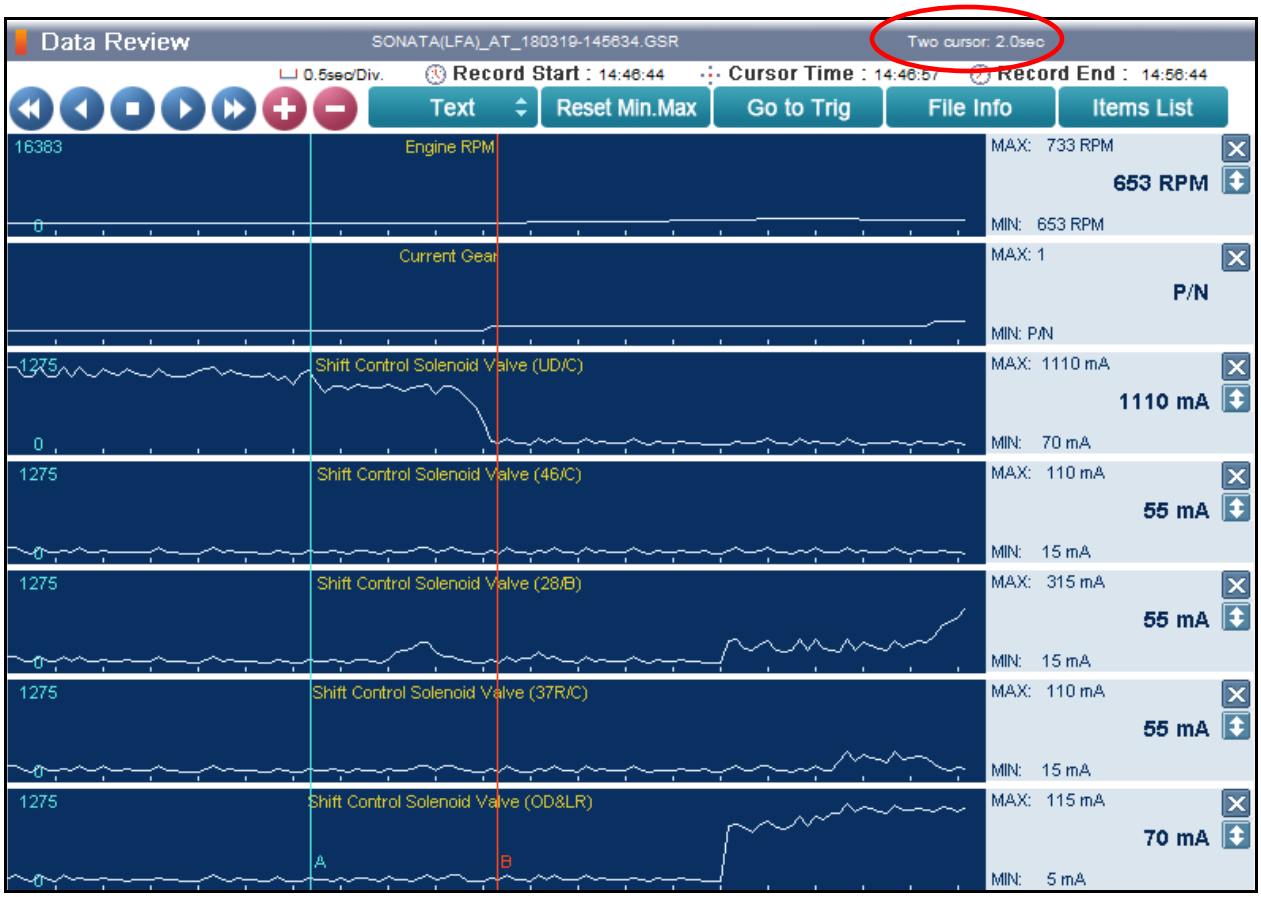
- Select the data file on your PC and select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **37R/C** solenoid graph and locate the shift.
- Move the cursor to the 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**.

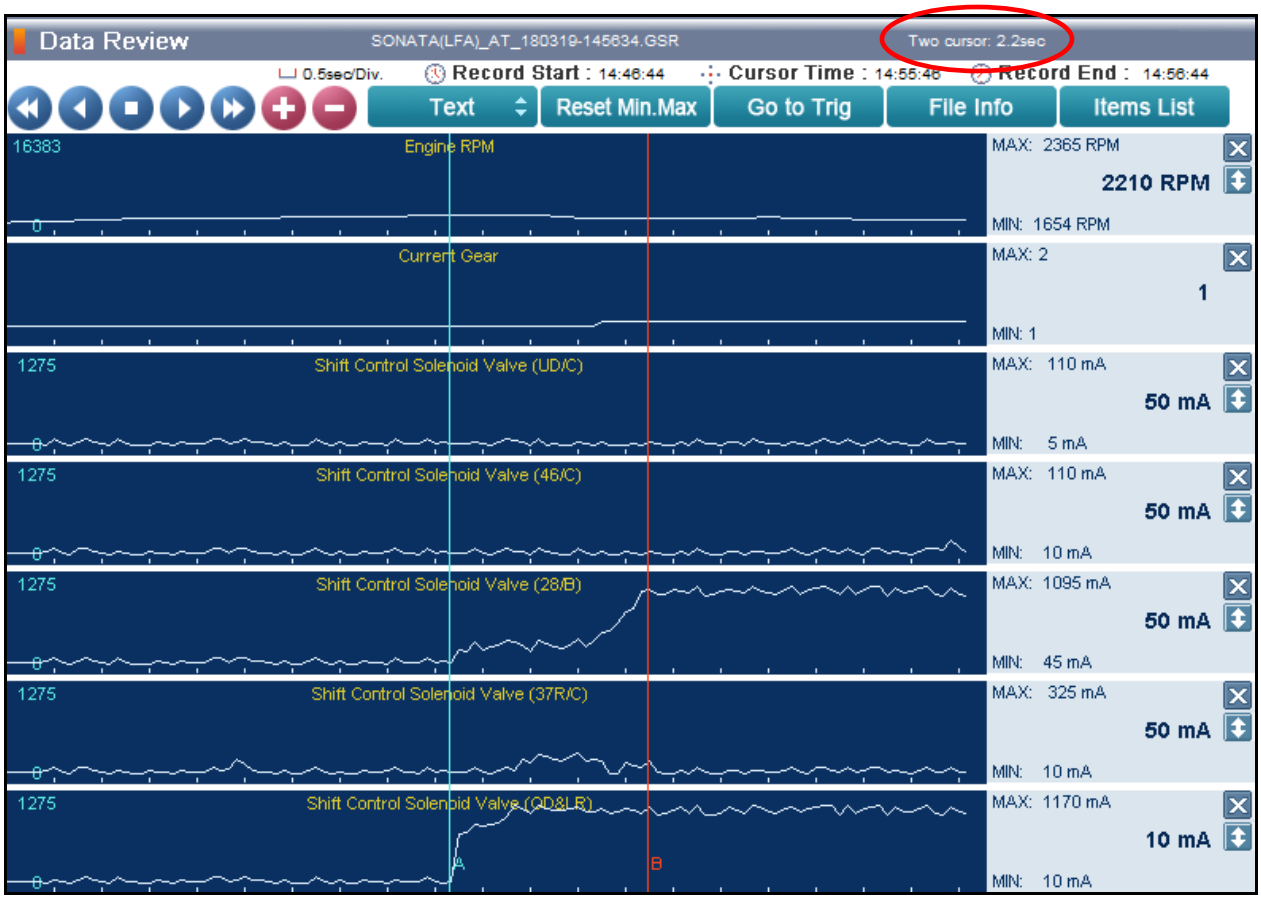
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **UD/C** solenoid graph and locate the shift.
- Move the cursor to the start 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**.

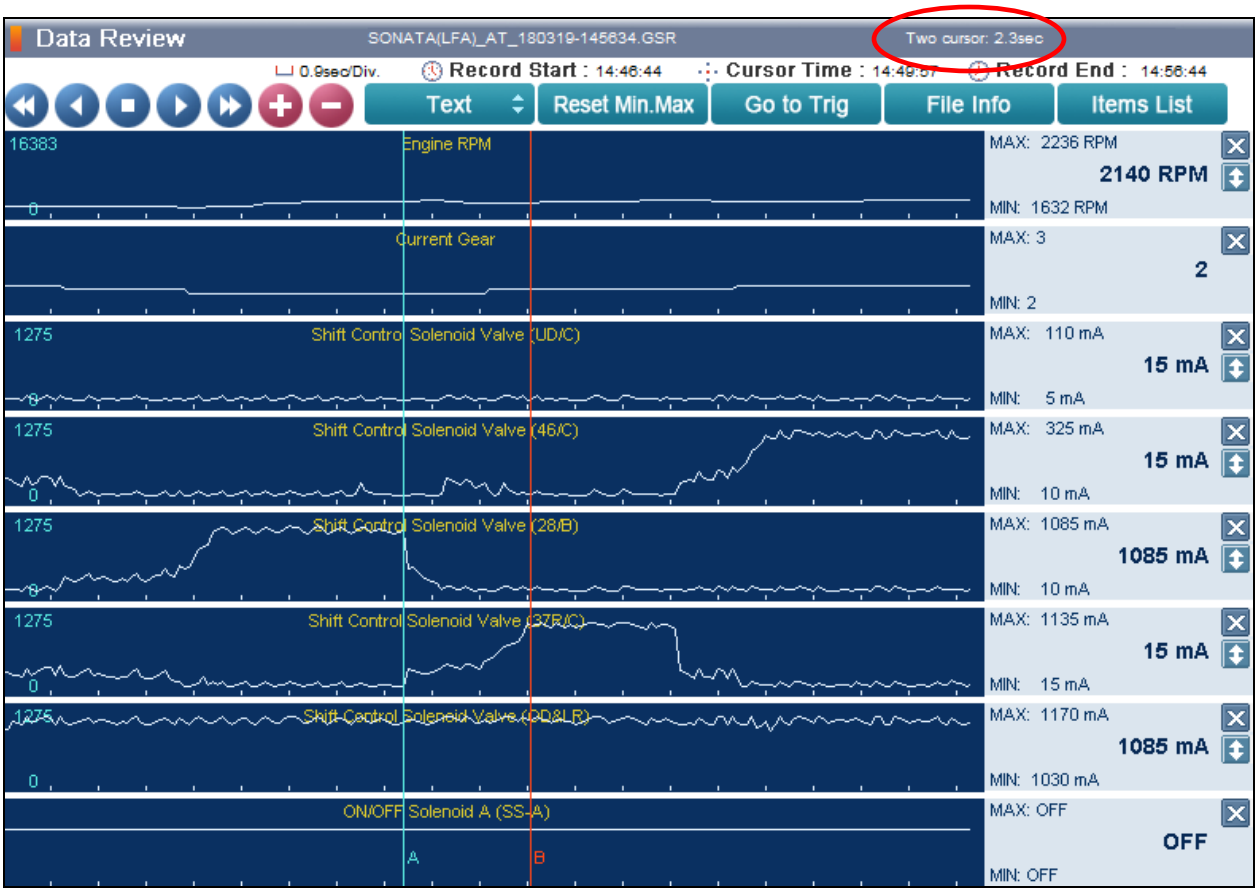
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **28/B** solenoid graph and locate the shift.
- Move the cursor to the start 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**.

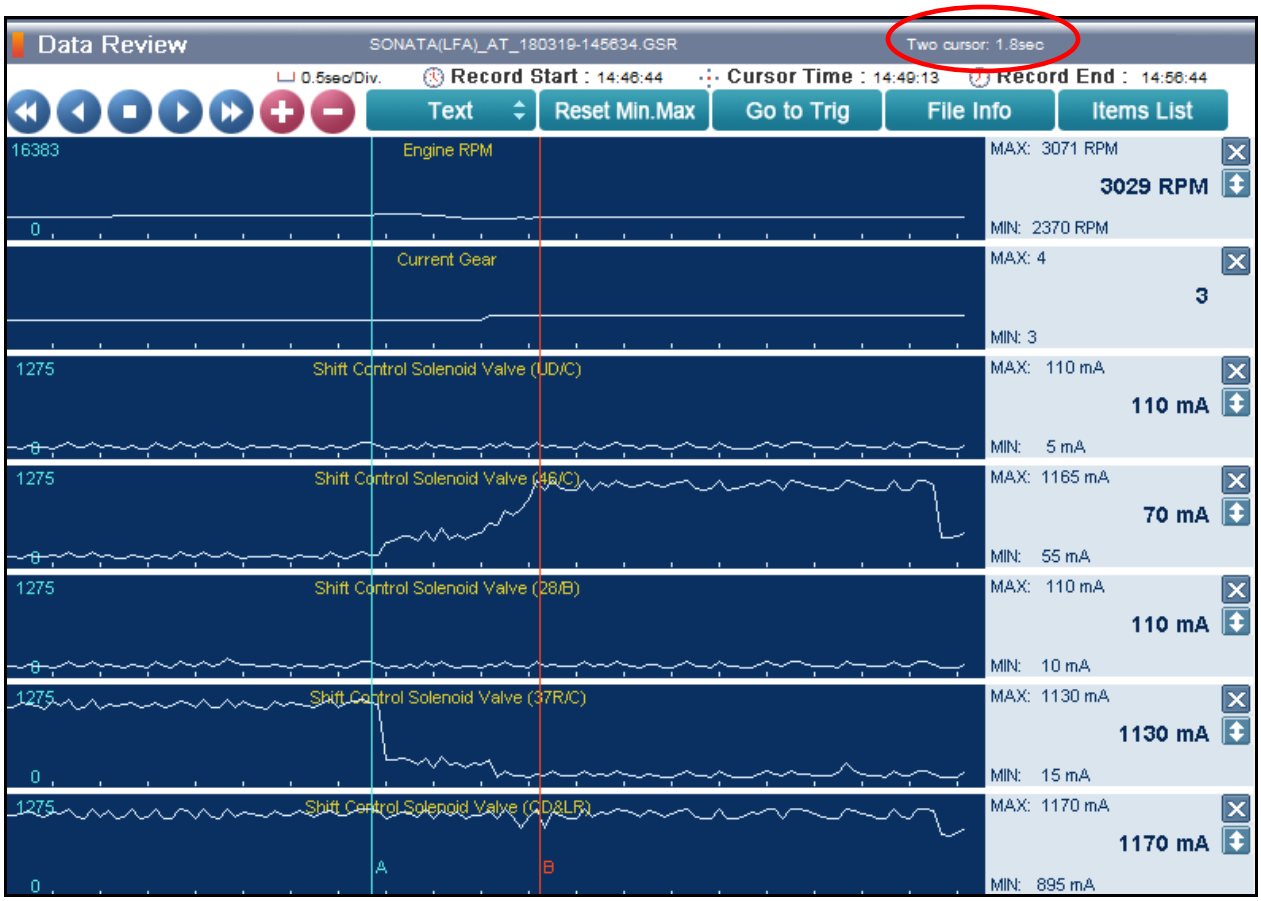
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **37R/C** solenoid graph and locate the shift.
- Move the cursor to the 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**.

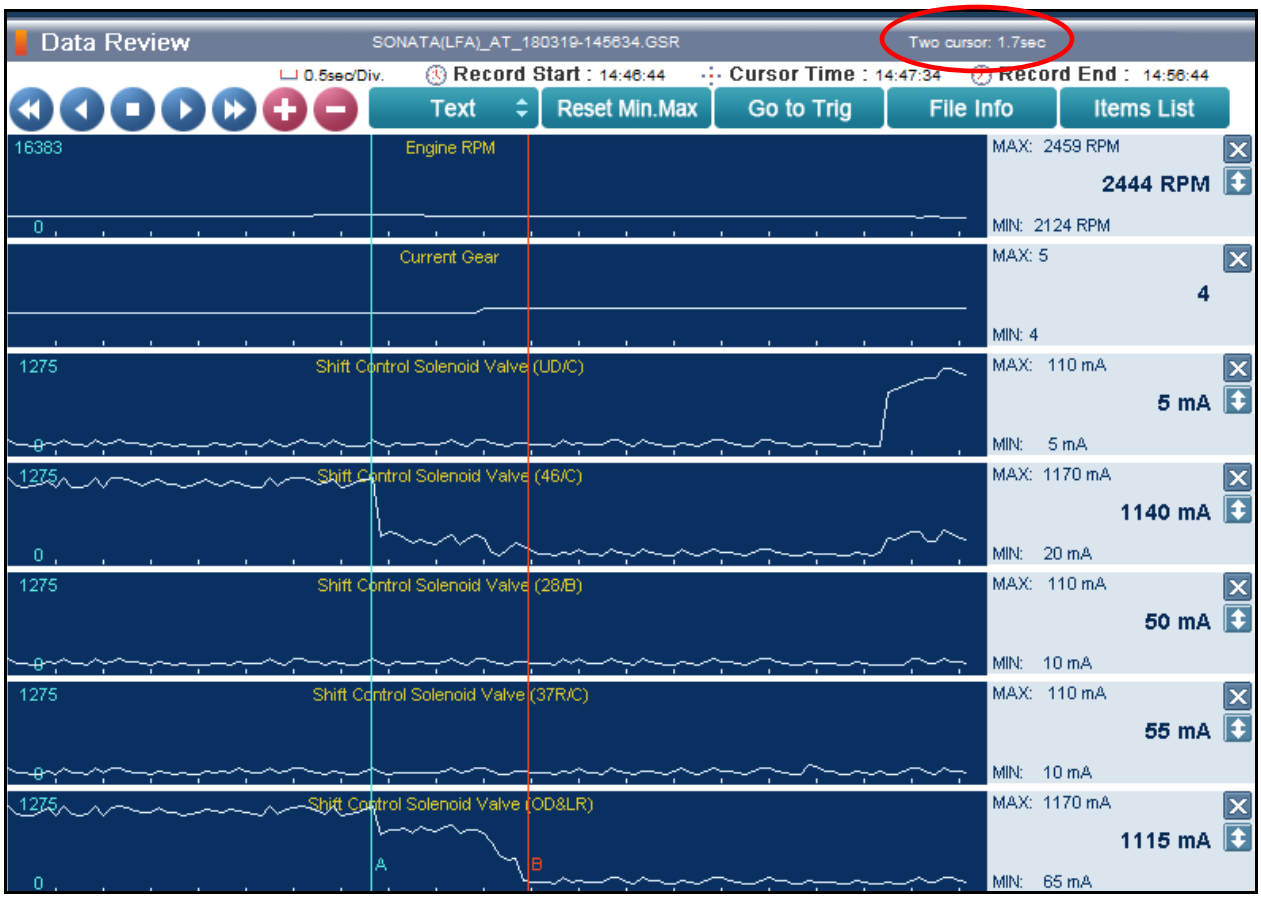
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **46/C** solenoid graph and locate the shift.
- Move the cursor to the start 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**.

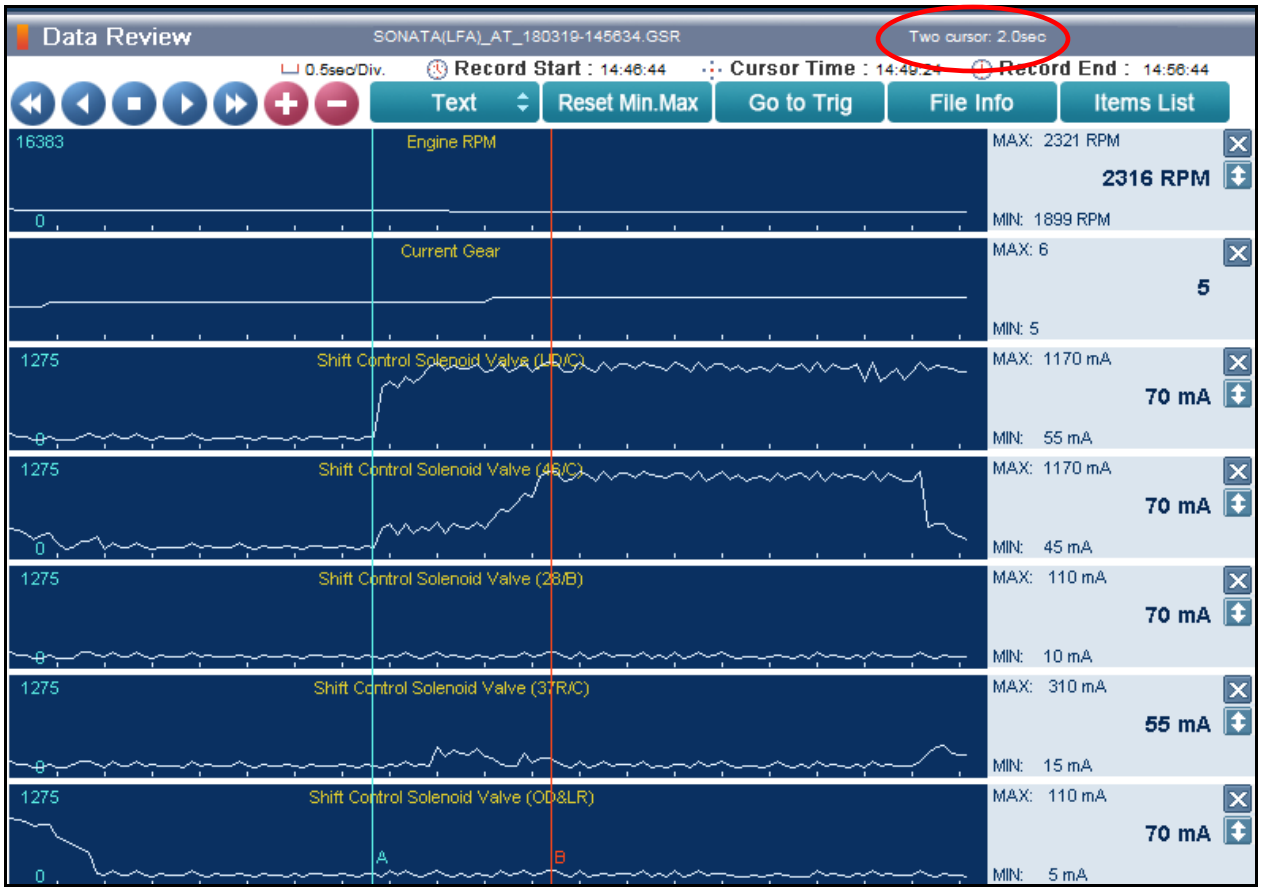
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **OD&LR** solenoid graph and locate the shift.
- Move the cursor to the 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**.

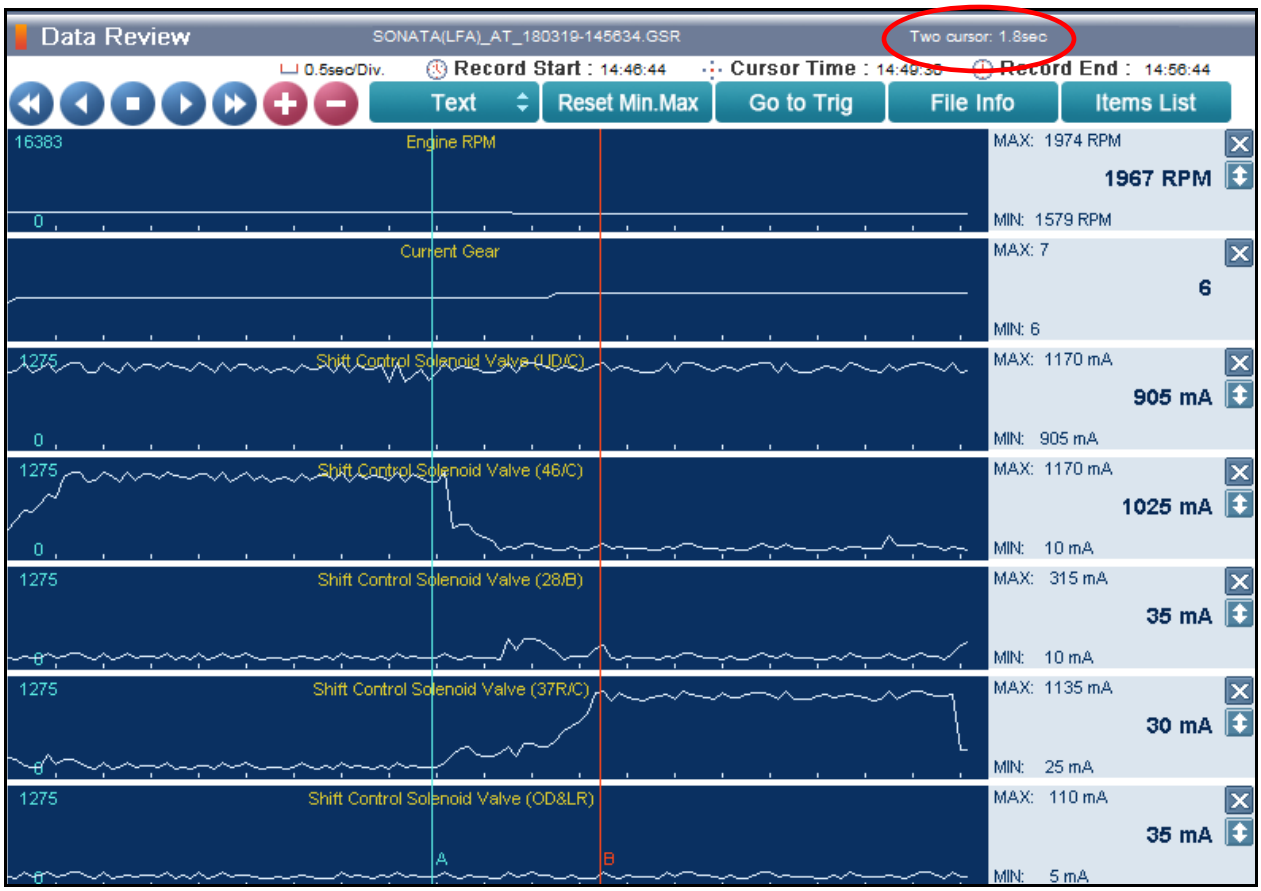
- Select the data file on your PC. Select the vehicle and **A/T** menu.
- Select **Data Review** and select the file**.** Select **Open** to view the file.
- Click the "+" or "-" buttons to choose 0.9 sec/Div or less.
- View the **46/C** solenoid graph and locate the shift.
- Move the cursor to the start 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.