

Torque Converter Clutch Shudder Snap Shot Evaluation

Supersedes Job Aid *Torque Converter Clutch Shudder and Vibration Job Aid*, dated February, 2019, to revise the information highlighted in **yellow**

REVISION SUMMARY

- Under BACKGROUND, information was updated.

AFFECTED VEHICLES

All models with A/T

BACKGROUND

If you suspect a torque converter **shudder**/vibration, a test-drive snap shot may help isolate the source of the issue.

Follow the instructions for the HDS or i-HDS below to capture and evaluate the snapshot for torque converter shudder and current software in the PCM.

- If the data shows RPM fluctuations similar to the examples of a torque converter shudder, replacement of the torque converter, a software update, and/or transmission fluid replacement may be necessary; refer to the applicable service bulletin repair procedure.
- If the snapshot does not compare with the sample snapshots of the faulty torque converter and look similar to the snapshots of known good torque converters, the torque converter is not the source of the vibration; continue with normal troubleshooting.

NOTE

For HDS instructions, go to HDS SET-UP (Page 1). For i-HDS instructions, go to i-HDS SET-UP (Page 5).

HDS SET-UP

Setting up the snapshot with the HDS:

1. Select Snapshot from the A/T mode menu.
2. Select manual trigger, 30 seconds, with the trigger point in the middle.
3. Test drive the vehicle and press the Camera icon  when you feel the vibration.

NOTE

AHM recommends having 2 people in the vehicle while recording any data on the HDS/i-HDS during a test drive; one person to drive the vehicle and an assistant to record any data on the HDS/i-HDS.

Tip: To duplicate, maintain a steady throttle, and as soon as the shudder is felt, hit the Camera icon. 

4. Enter standalone mode. Click on the open folder icon , and select your snapshot.
5. Click the configuration icon  and select the following parameters in the Line column:

- Engine Speed
- Input Shaft (Mainshaft) Speed (rpm)
- Output Shaft (CounterShaft) Speed (rpm)
- TP Sensor 1
- Shift Control

6. Click the line graph icon. 

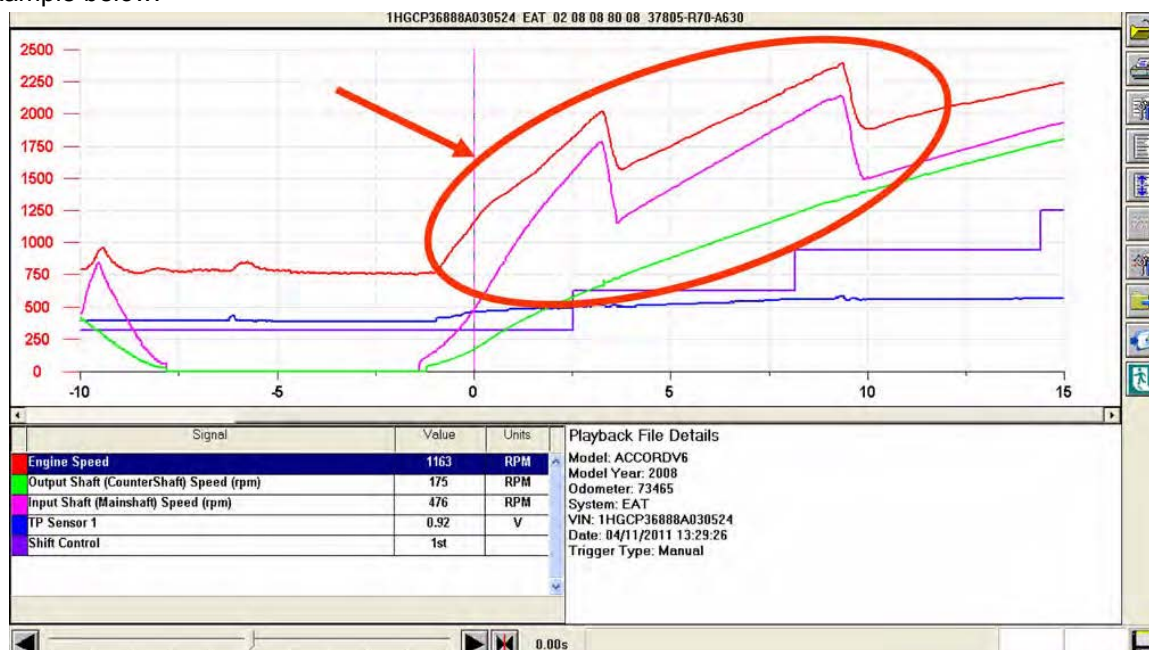
7. Click the graph configuration icon  and adjust the Max scale to 3000 RPM for Engine Speed, Input Shaft (Mainshaft) Speed (rpm) Output Shaft (Countershaft) Speed (rpm).

8. Click OK.

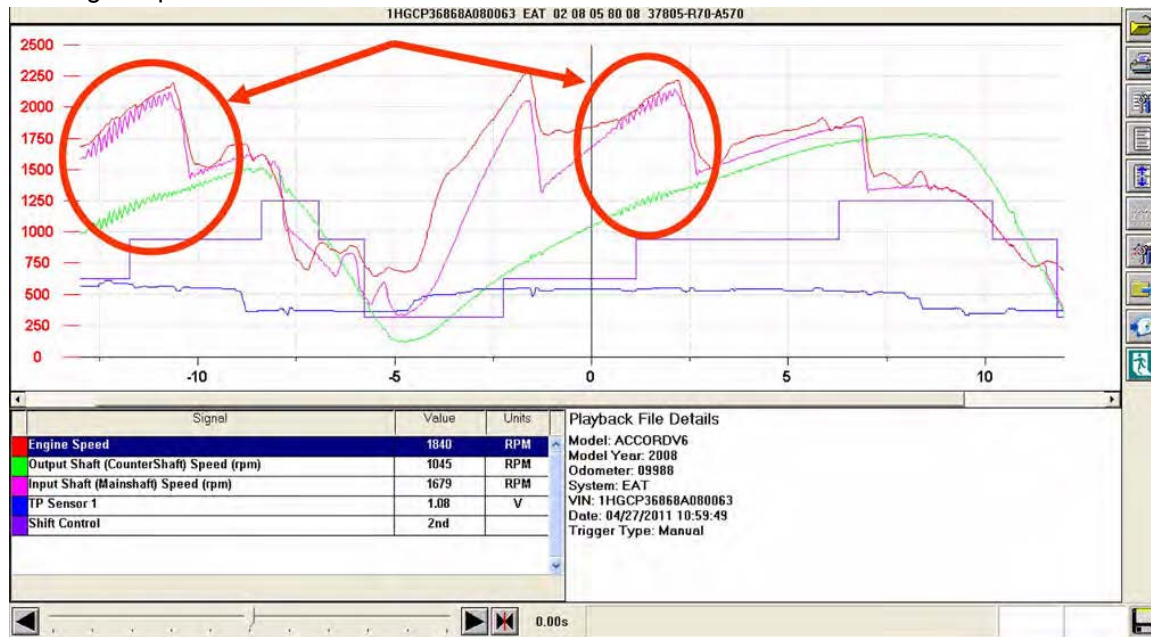
Evaluating the snapshot with the HDS:

To determine if the vibration you're feeling in the vehicle is being caused by the torque converter, examine the relationship between Engine Speed and Transmission Input (Main) and Output (Counter) Shaft Speed.

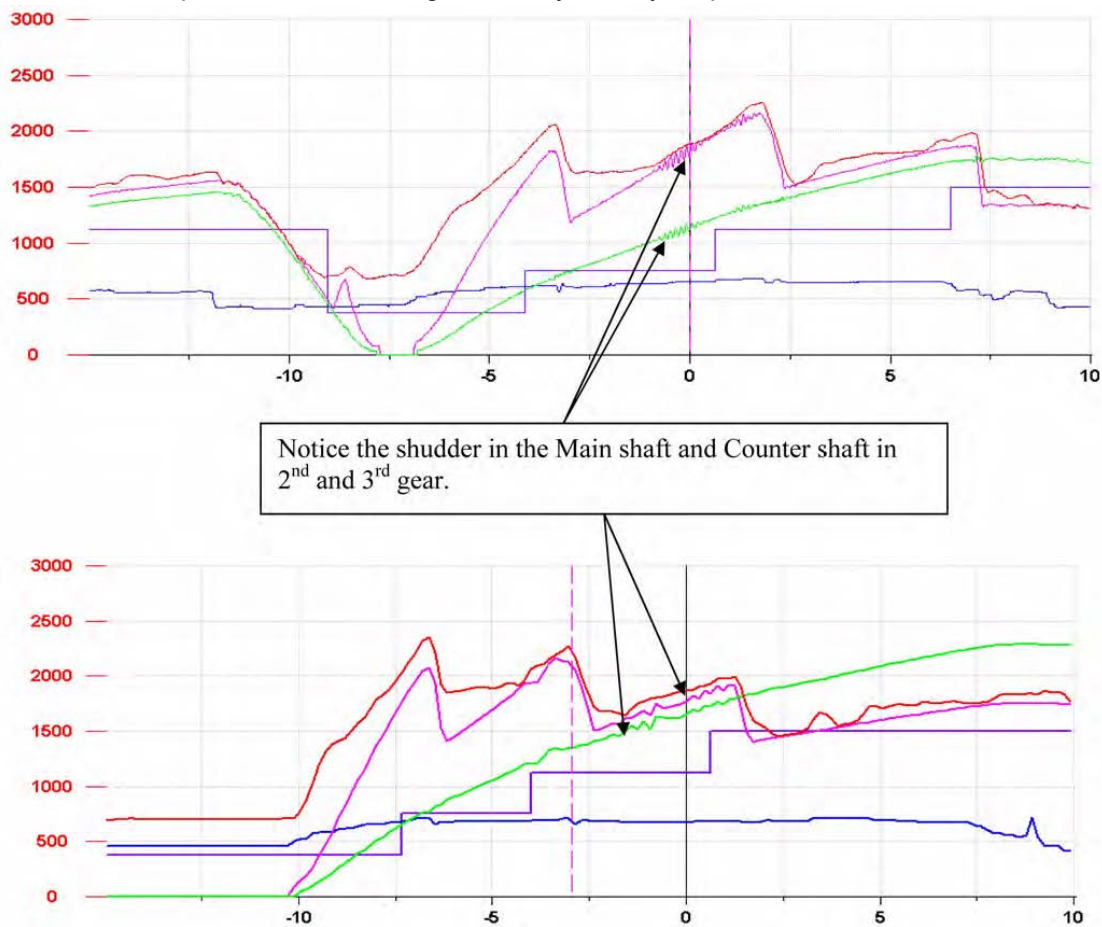
In a vehicle with a known good torque converter, Engine Speed, Input Shaft and Output Shaft speeds will all be smooth. See the example below:



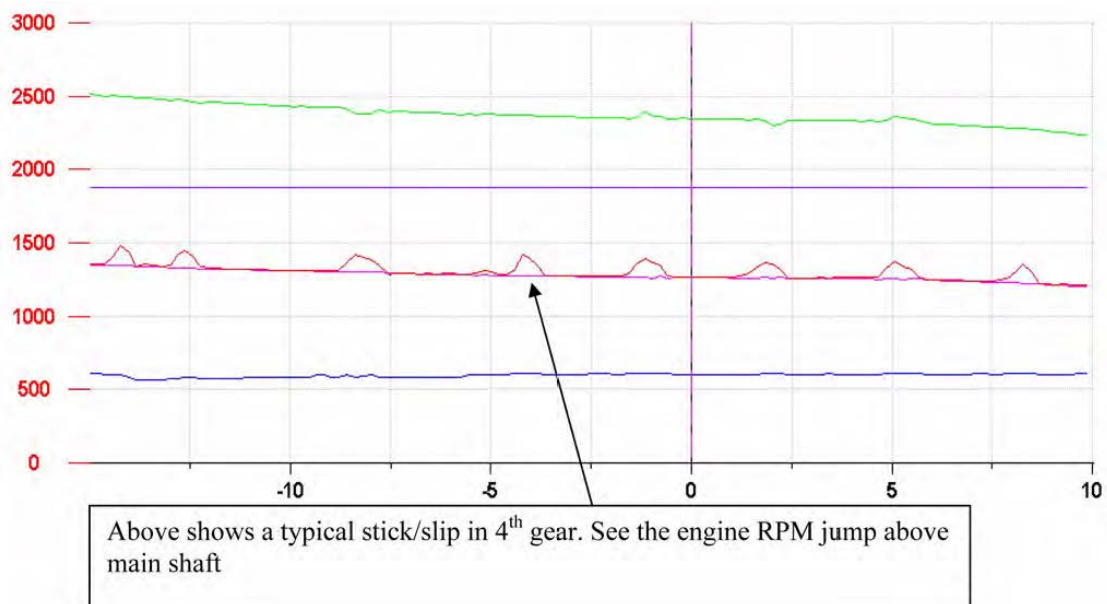
If you are dealing with a vibration caused by a faulty torque converter, you will see oscillations in the Input and Output shaft when the engine speed is smooth as shown below:



Here are a few more examples of vibration being caused by a faulty torque converter:



If you're feeling the vibration while under a steady cruise, look for Engine Speed to be briefly jumping above Main Shaft speed. This would indicate that the torque converter is experiencing a stick/slip condition as shown below:



I-HDS SET-UP

Setting up the snapshot with the i-HDS:

1. Connect the i-HDS to the vehicle, and input the Repair Order Number.

The screenshot shows the 'Vehicle Selection' screen of the i-HDS software. The 'Repair Order No.' field is highlighted with a red box. The 'Service Information' panel on the right shows the 'INTERACTIVE NETWORK' logo and a 'User Sign In' section with fields for Dealer Number, User ID, and Password.

Field	Value
VIN	SFPYK3F86JB000008
Odometer	12607 mile
Model	RIDGELINE
Model Year	2018
Repair Order No.	123345

Buttons: DTCs, Data List/Snapshot, Registration/Lea..., Function Test/O..., System Selecti...

2. Select **Data List/Snapshot**.

The screenshot shows the 'Vehicle Selection' screen of the i-HDS software. The 'Data List/Snapshot' button is highlighted with a red box. The 'Service Information' panel on the right shows the 'INTERACTIVE NETWORK' logo and a 'User Sign In' section with fields for Dealer Number, User ID, and Password.

Field	Value
VIN	SFPYK3F86JB000008
Odometer	12607 mile
Model	RIDGELINE
Model Year	2018
Repair Order No.	123345

Buttons: DTCs, Data List/Snapshot, Registration/Lea..., Function Test/O..., System Selecti...

3. Select **AT**, then select the check mark.

The screenshot shows the 'System Selection' screen of the i-HDS software. The 'AT' checkbox is highlighted with a red box. The 'Check Mark' button is also highlighted with a red box. The 'Service Information' panel on the right shows the 'INTERACTIVE NETWORK' logo and a 'User Sign In' section with fields for Dealer Number, User ID, and Password.

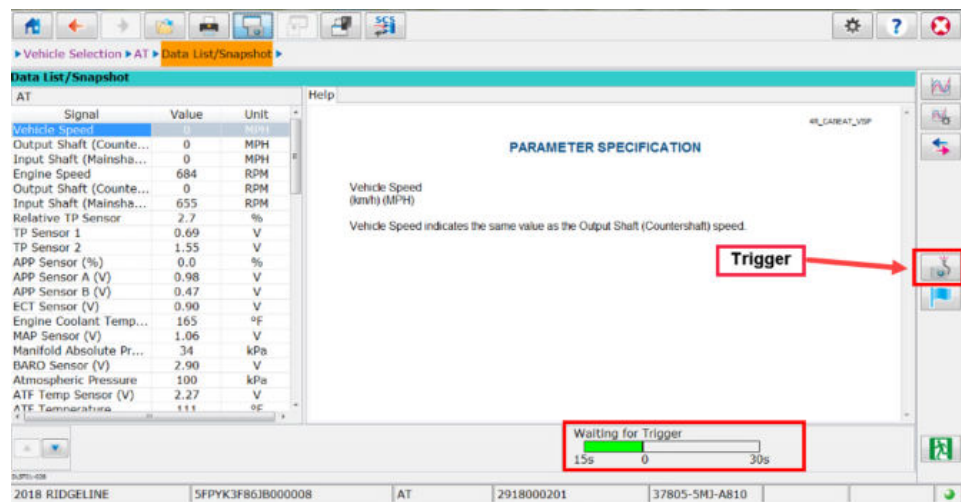
System	Status	Number of Selectable Systems
PGM-FI	✓ AT	1
IMMOBI	ABS/VSA	
Electric Powertrain	DIESEL	
TPMS	SH-AWD	
Active Damper System/Adaptive Damper Syst...	One-Push Start	
Driving Support ACC/BSI/FCW/LKAS/IDSS	CAN Gateway	
EDLC	FC	

Buttons: Check Mark, Screen Capture

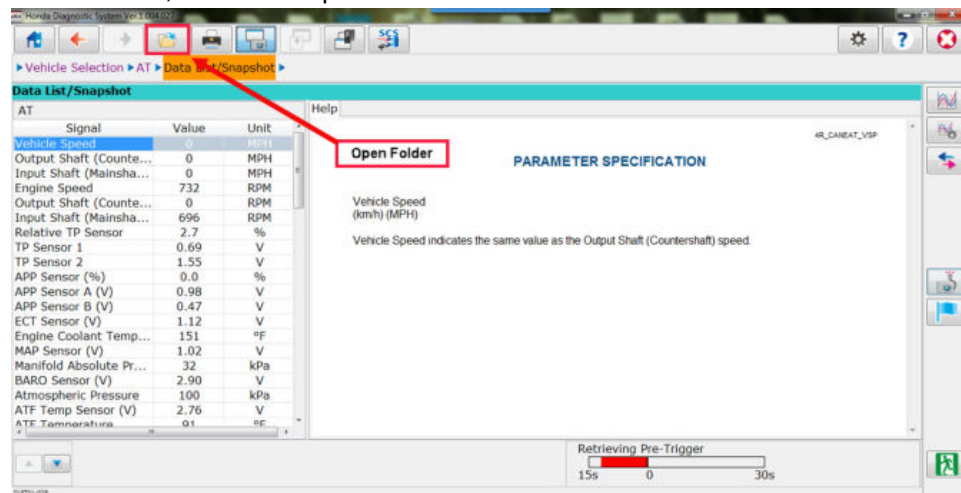
- Wait for the **Waiting for Trigger** bar to turn green, then drive the vehicle. When you feel the vibration/shudder, hit select the Trigger icon.

NOTE

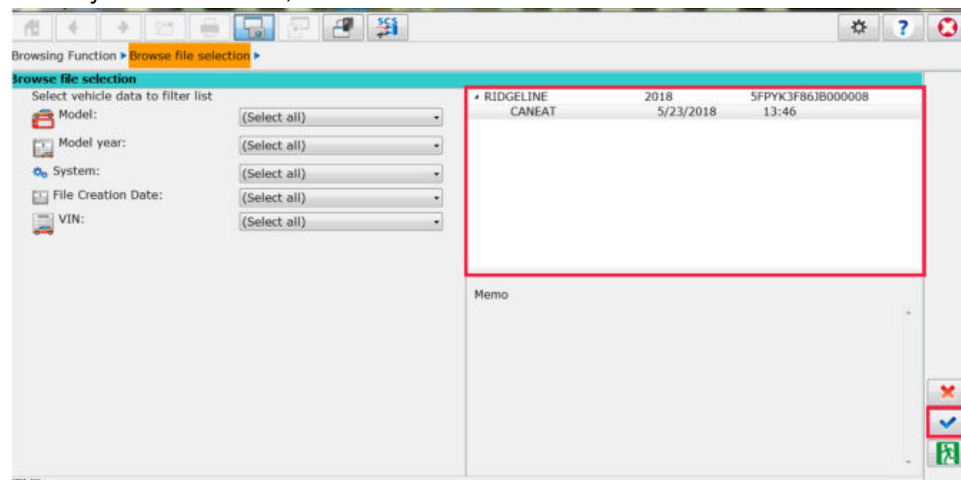
AHM recommends having 2 people in the vehicle while recording any data on the HDS/i-HDS during a test drive; one person to drive the vehicle and an assistant to record any data on the HDS/i-HDS.



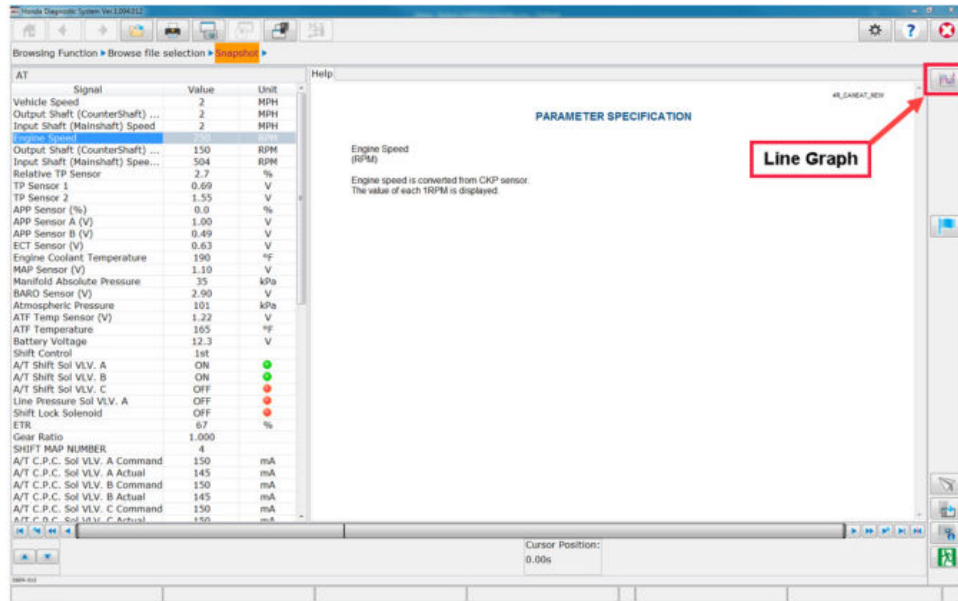
- After parking in a safe location, select the Open Folder icon.



- Select the snapshot file you want to view, then select the check mark.

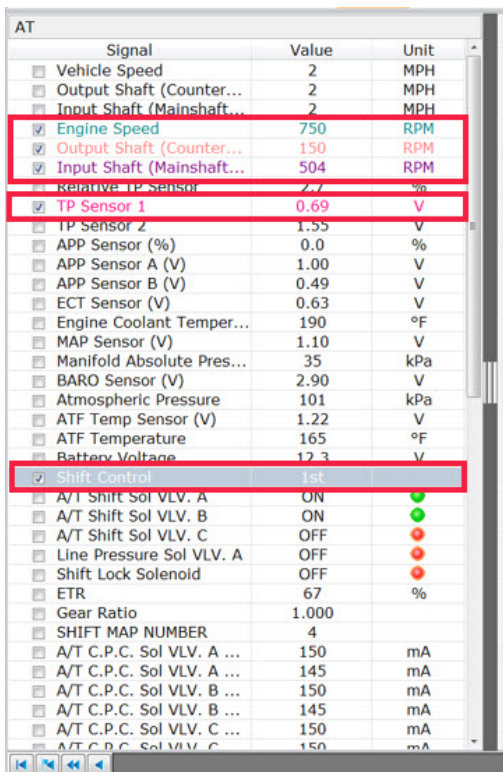


7. Select the Line Graph icon.

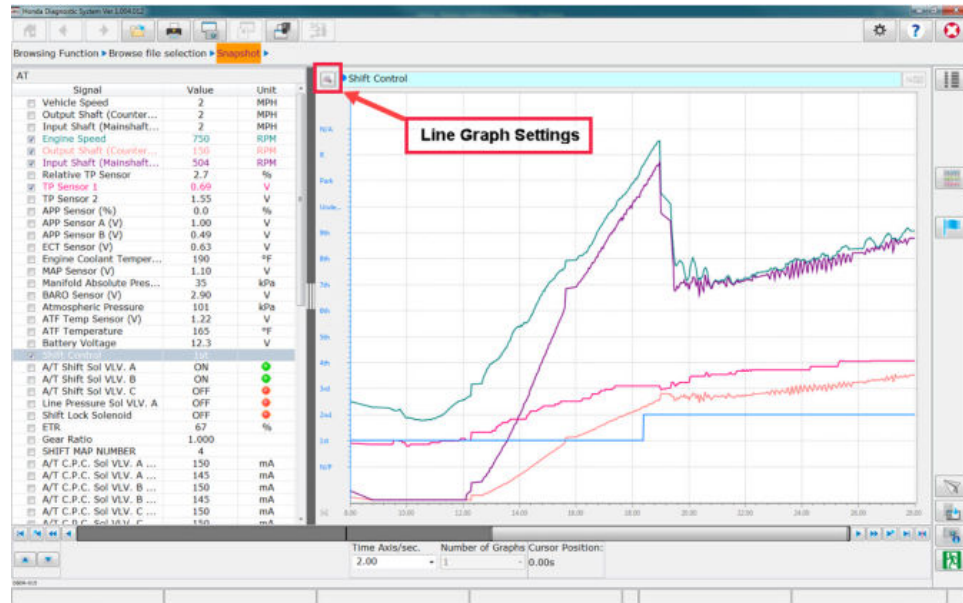


8. Select the following signals:

- Engine Speed
- Output Shaft (Counter Shaft) speed (rpm)
- Input Shaft (Main Shaft) speed (rpm)
- TP Sensor 1
- Shift Control

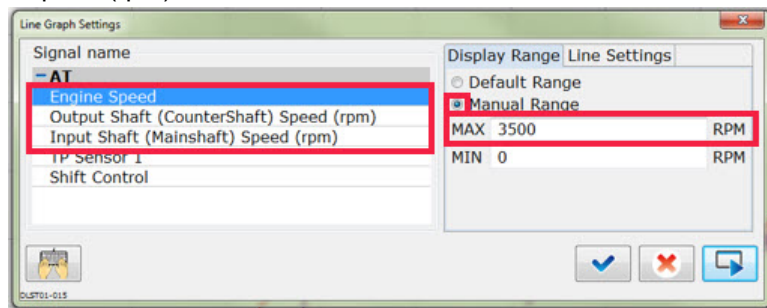


9. Select the Line Graph Settings icon.

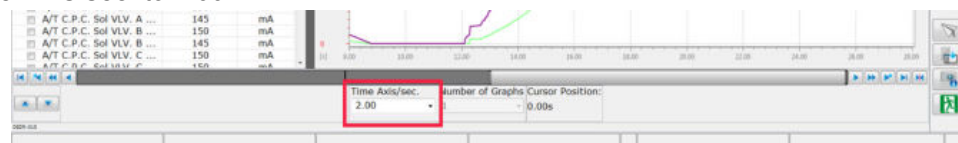


10. Change the **Display Range** from **Default Range** to **Manual Range**, and change the **MAX Display Range** in the following signals to 3500 RPM:

- Engine Speed
- Output Shaft (Countershaft) Speed (rpm)
- Input Shaft (Mainshaft) Speed (rpm)

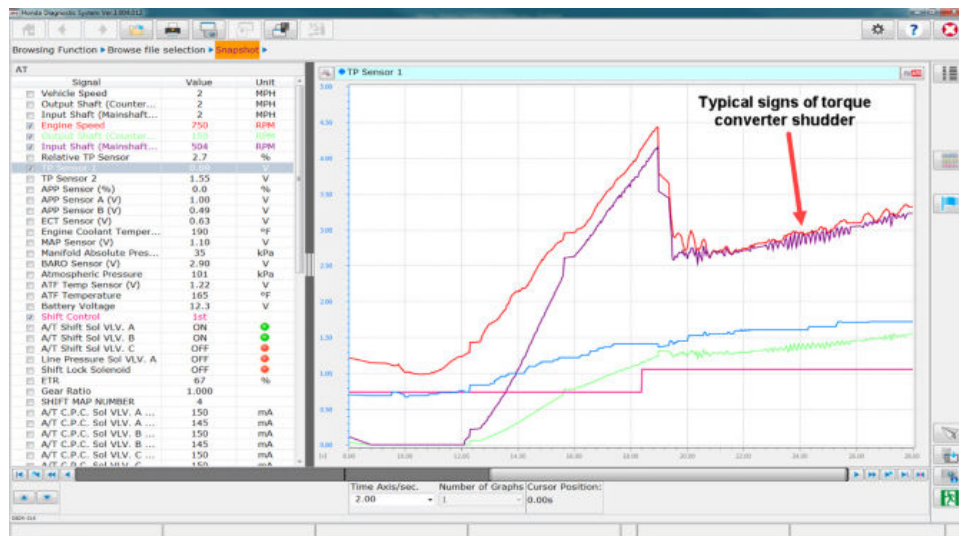


11. Change the **Time Axis/sec.** to 2.00.

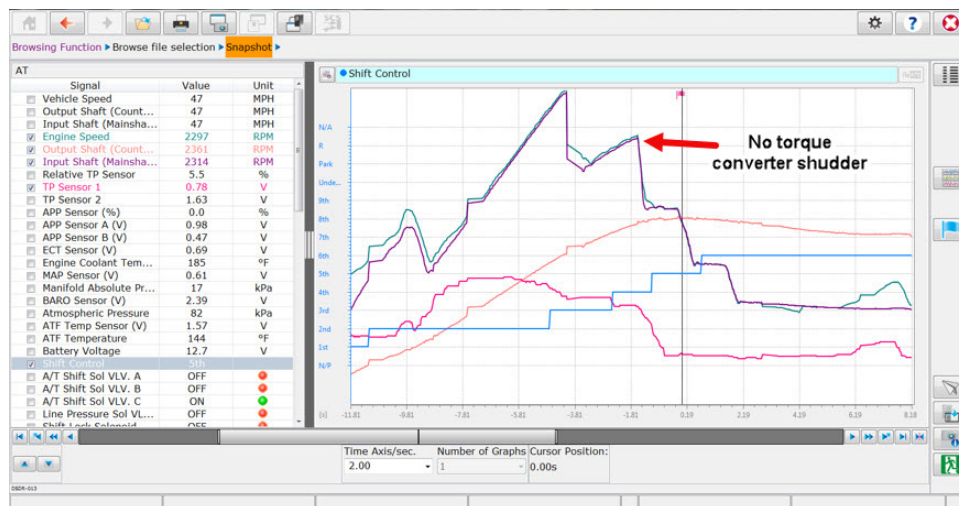


Evaluating the snapshot with the i-HDS:

To determine if the vibration you're feeling in the vehicle is being caused by the torque converter, examine the relationship between Engine Speed and Input Shaft (Main Shaft) speed (rpm) and Output Shaft (Counter Shaft) speed (rpm).



In a vehicle with a known good torque converter, Engine Speed, Input Shaft and Output Shaft speeds will all be smooth. See the example below:



END