ATTENTION:
GENERAL MANAGER ❑
PARTS MANAGER ❑
CLAIMS PERSONNEL ❑
SERVICE MANAGER ❑

IMPORTANT - All Service Personnel Should Read and Initial in the boxes provided, right.

SUBARU

QUALITY DRIVEN® SERVICE

SERVICE BULLETIN

APPLICABILITY: 2018-22MY Legacy and Outback
2017-22MY Impreza
2018-22MY Crosstrek
2019-22MY Forester
2019-22MY Ascent

NUMBER: 16-132-20R
DATE: 12/18/20
REVISED: 07/22/21

SUBJECT: Diagnostic Information for Alleged Chain Slip Condition on TR580 / TR690 Transmissions

INTRODUCTION:

This Service Information Bulletin provides updated diagnostic procedures to follow and a brief questionnaire to complete when diagnosing an alleged Chain Slip condition on the TR580 and TR690 model CVT transmissions used in the models listed above. In some cases, the customer may have had a concern of hearing an abnormal sound and / or felt an unusual vibration while driving. This information is intended to provide Technicians a user-friendly procedure which will help to ensure an accurate diagnosis and reduce the possibility of unnecessary CVT replacements.

SERVICE PROCEDURE / INFORMATION:

Customer satisfaction and retention starts with performing quality repairs.

After completing the questionnaire located at the end of the Troubleshooting section, following the diagnostic procedures supplied in this bulletin and when determined necessary, service procedures for CVT and / or TCM replacement remain unchanged. Always refer to the applicable Service Manual and review the full requirements of the repair being performed. The Service Manual procedures contain information critical to performing an effective repair the first time, every time. This includes but is not limited to important SAFETY precautions, proper inspection criteria, necessary special tools, required processes and related one-time-use parts needed for a complete and lasting repair.

VERY IMPORTANT: With any customer concern, it is important to get a complete and detailed description from them so their condition can be duplicated. Duplicating the condition is critical for a proper diagnosis and successful repair. **Whenever using this TSB for alleged CVT Chain Slip diagnosis, Technicians are required to submit a completed QMR which includes all Flow Chart test results, SSM data and a COMPLETED copy of the questionnaire found on pg. 8.** This information will be extremely helpful for SBR Engineers when analyzing what the customer was experiencing as Chain Slip. Cooperation with this special information request is greatly appreciated!

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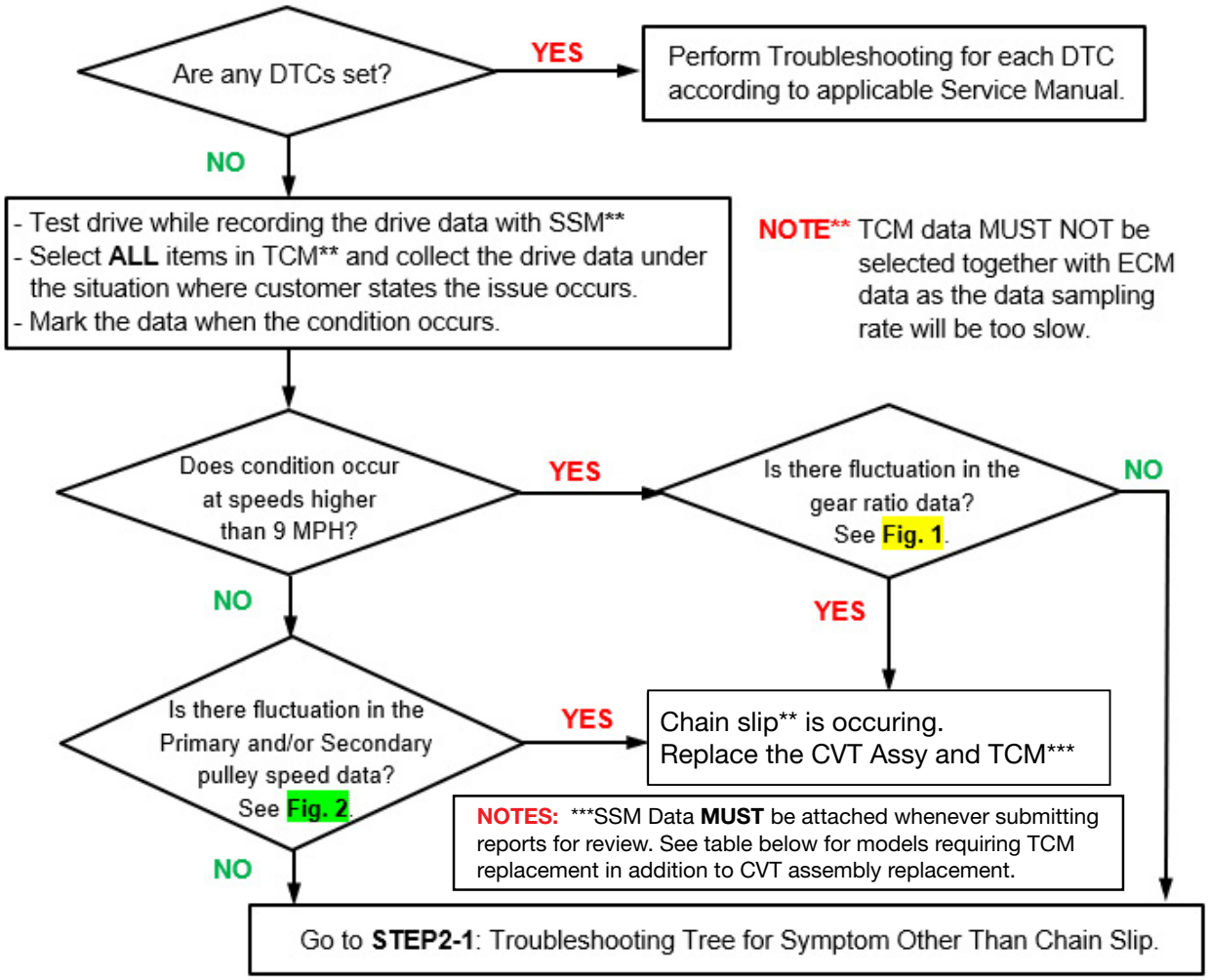
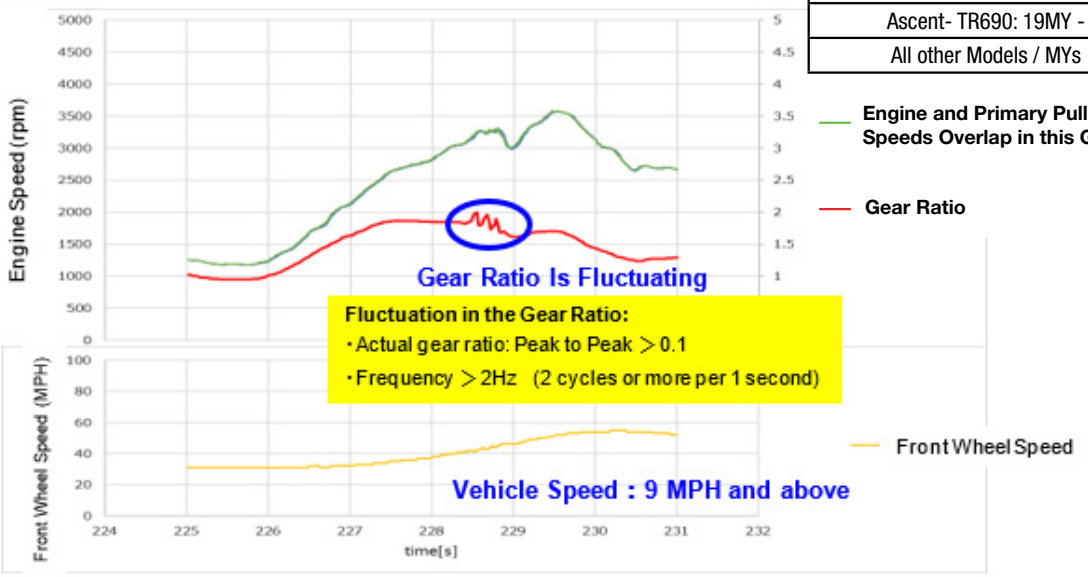
Troubleshooting Flow Chart for Alleged CVT Chain Slip:

- Connect the Subaru Select Monitor and check for DTCs.



Model / TCM Replacement Y/N?	
Legacy/Outback- 2.5L TR580: 20MY -	Y
2.4L DIT TR690: 20MY -	Y
Crosstrek- TR580: 20MY -	Y
Ascent- TR690: 19MY -	Y
All other Models / MYs	N

FIG. 1



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Example screenshot of TCM PIDS with **Front Wheel Speed and Secondary Revolution Speed** selected.

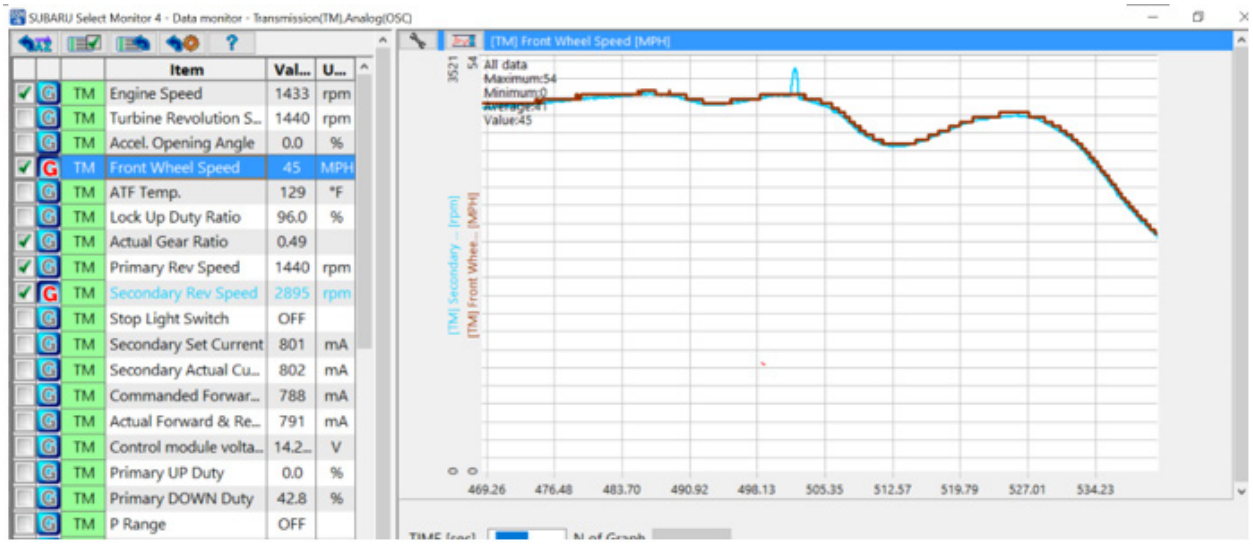
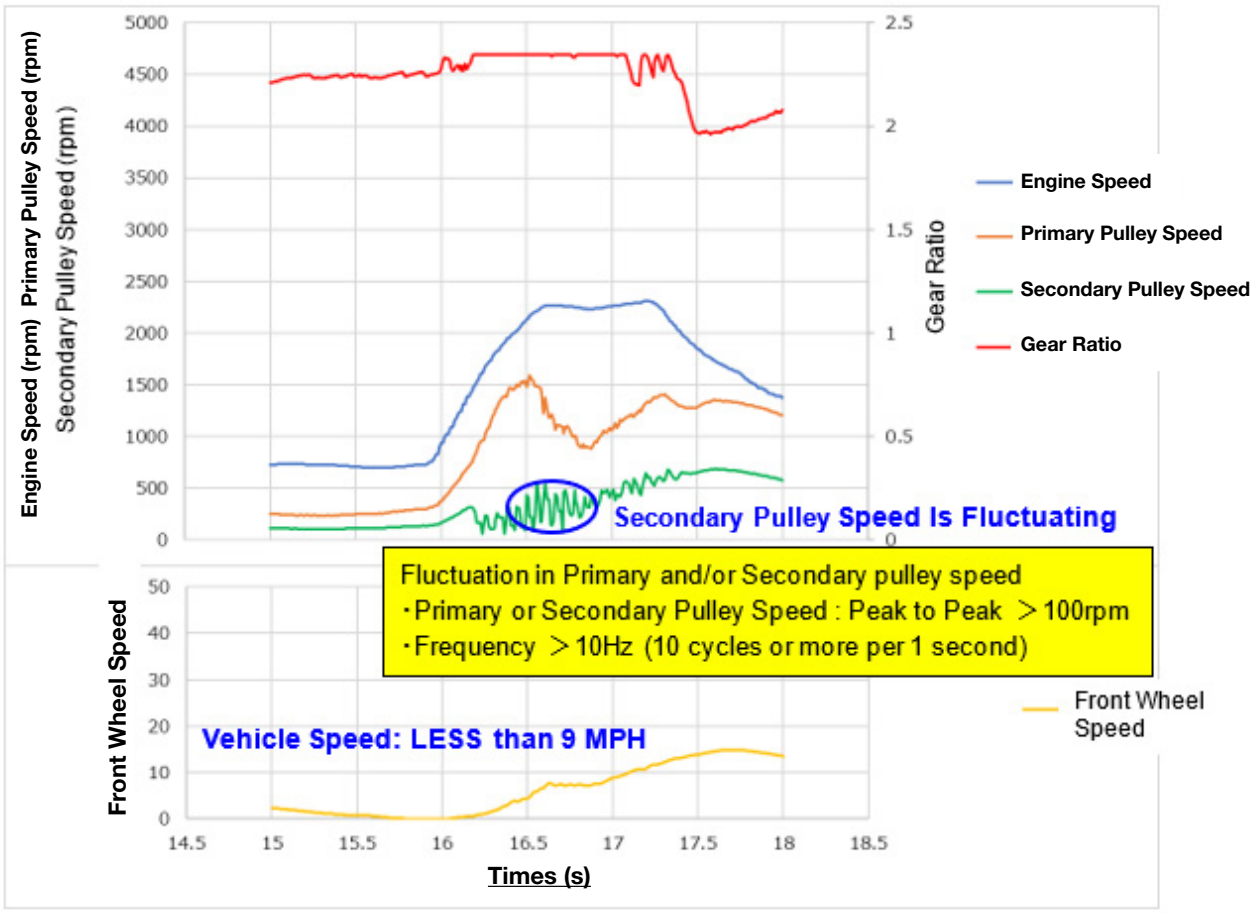


FIG. 2



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Troubleshooting Flow Chart for Symptom Other Than Chain Slip: -1

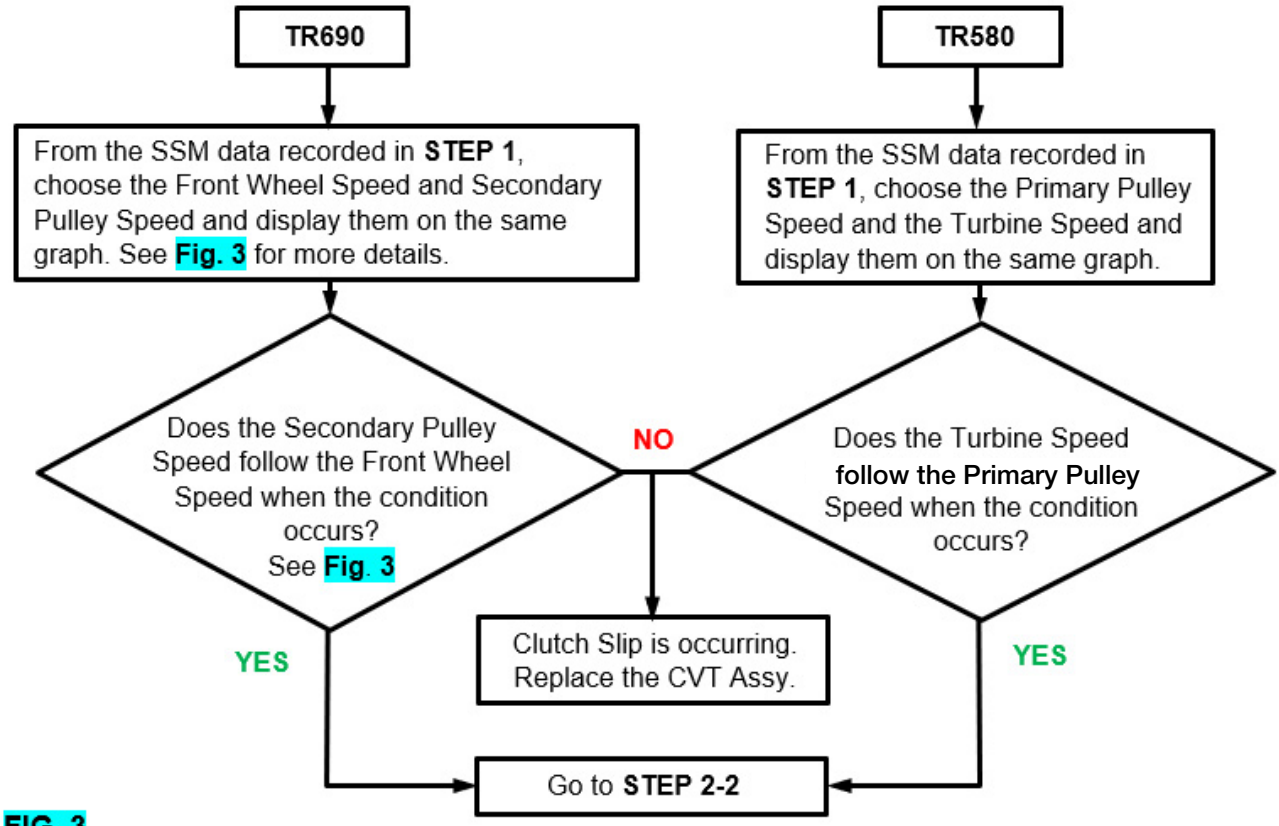
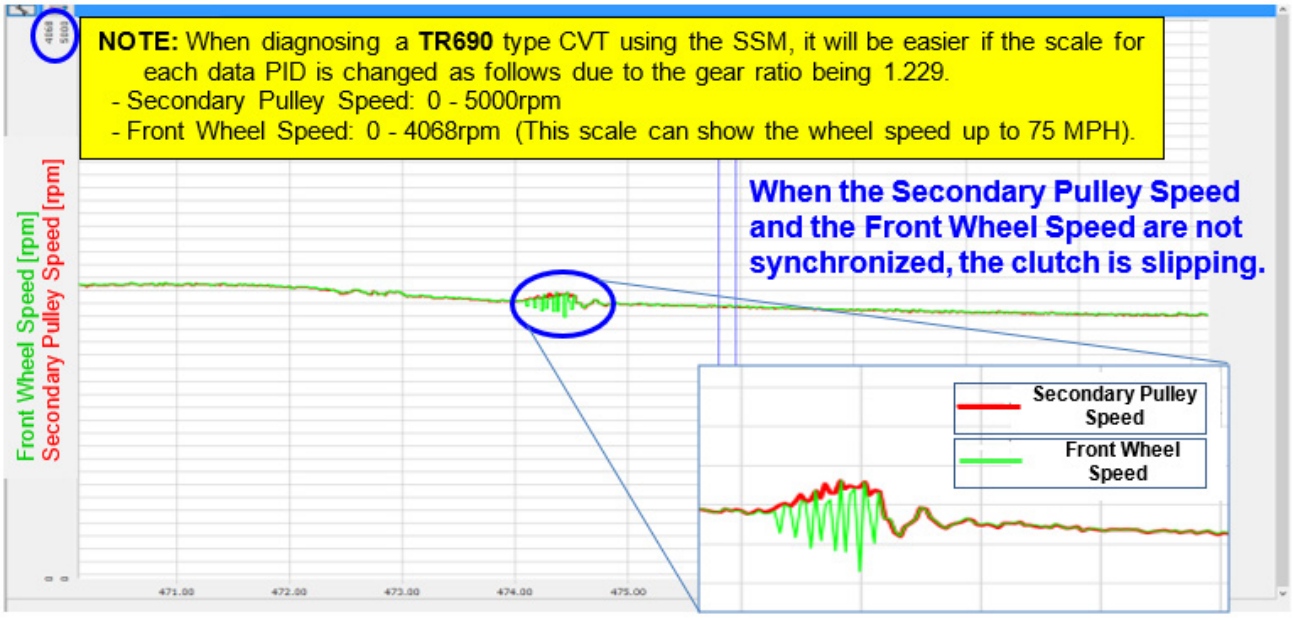


FIG. 3



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STEP 2-2: Troubleshooting Flow Chart for Symptom Other Than Chain Slip: -2 (Gear Change)

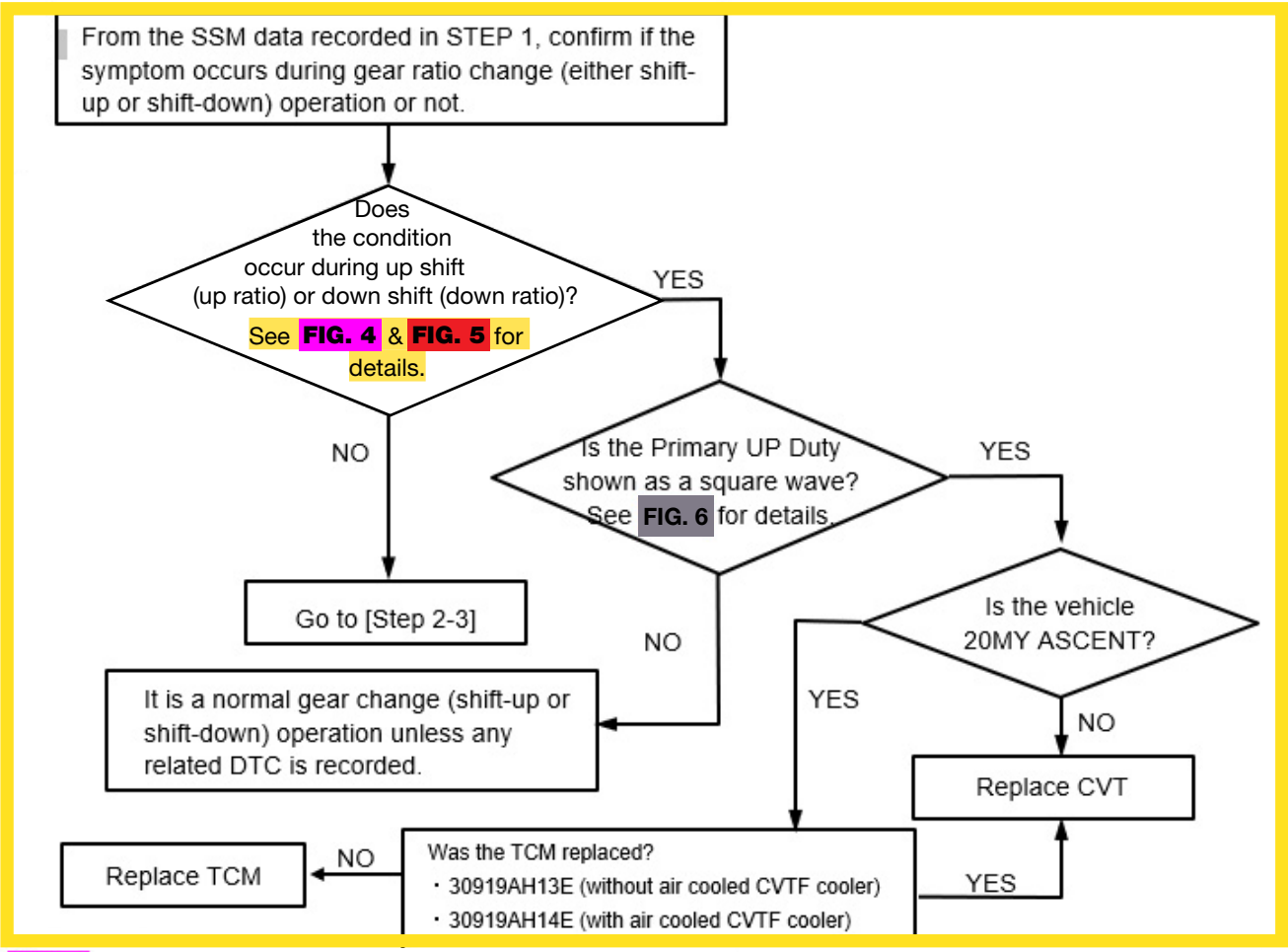

FIG. 4

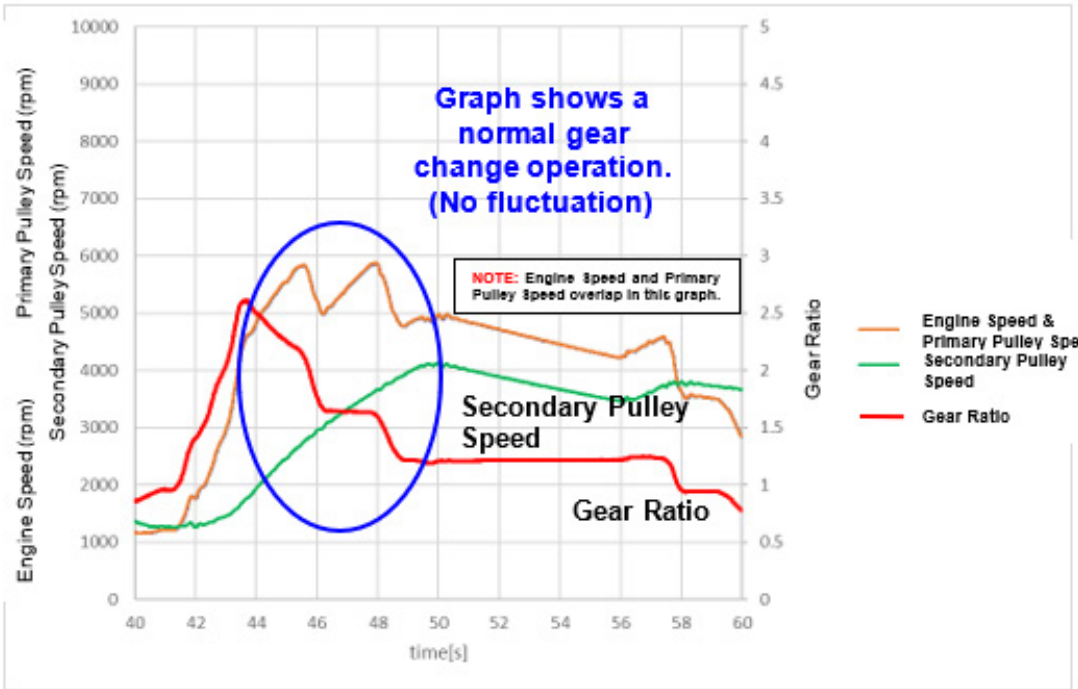

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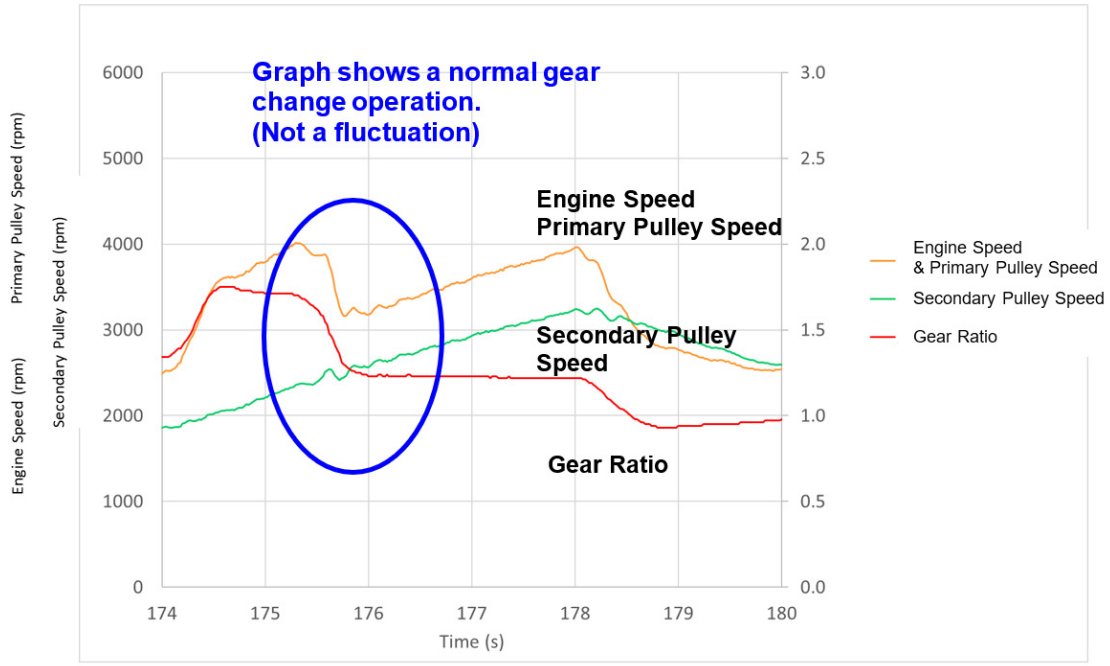
FIG. 5



STEP 2-3: Troubleshooting Flow Chart Symptom Other Than Chain Slip -3 (Lock-up)

Using the SSM data recorded in **STEP 1**, confirm whether or not the symptom occurs right before or after the lock-up operation.

Does the condition occur right before or after the lock-up operation? See **FIG. 7** for example.

YES

- Clear the learning value using the SSM.
- Perform AT Learning. (Refer to Service Manual > Transmission/Transaxle > CONTINUOUSLY VARIABLE TRANSMISSION > AT Learning)
- Perform Torque Converter Learning procedure. See **REF. 1** below for more details.

Is the condition solved?

YES

END

NO

Refer to further diagnosis for CVT in Service Manual [Transmission/Transaxle] > [Symptoms and causes] > [Inspection]

NO

Record and analyze the Engine SSM data to determine if the torque fluctuation is being caused by the engine.
See **FIG. 8** & **FIG. 9** example.

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FIG. 6

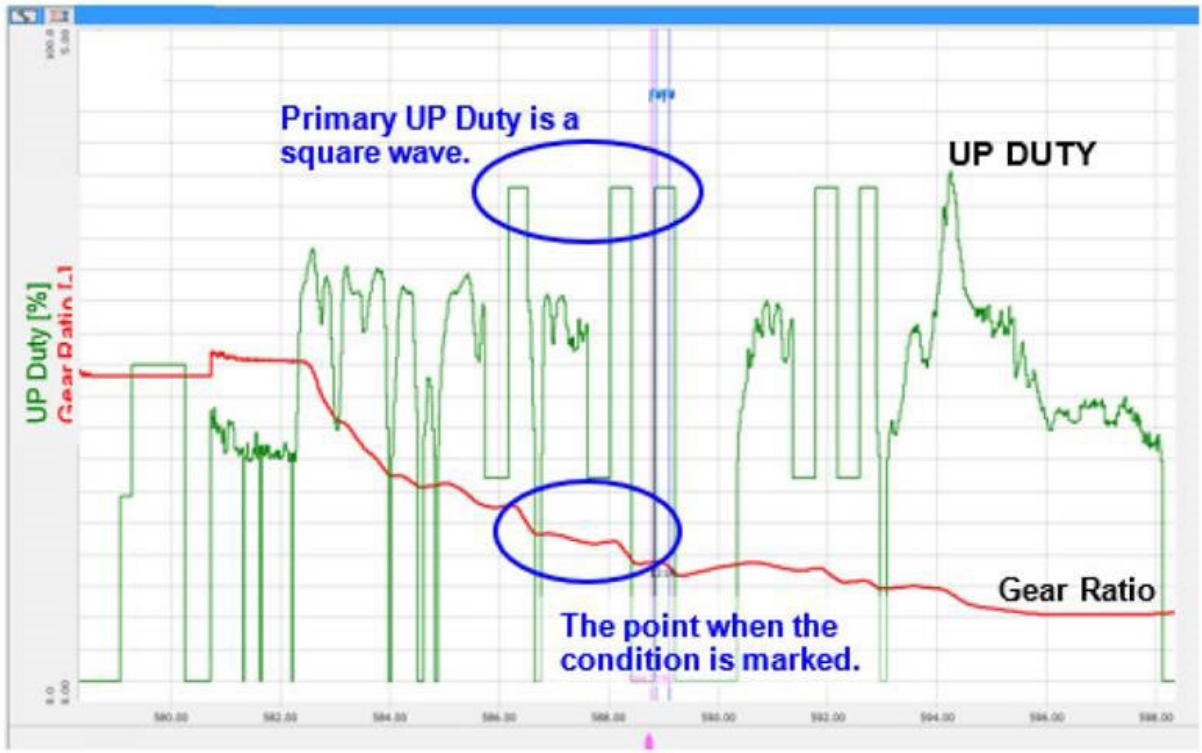

FIG. 7

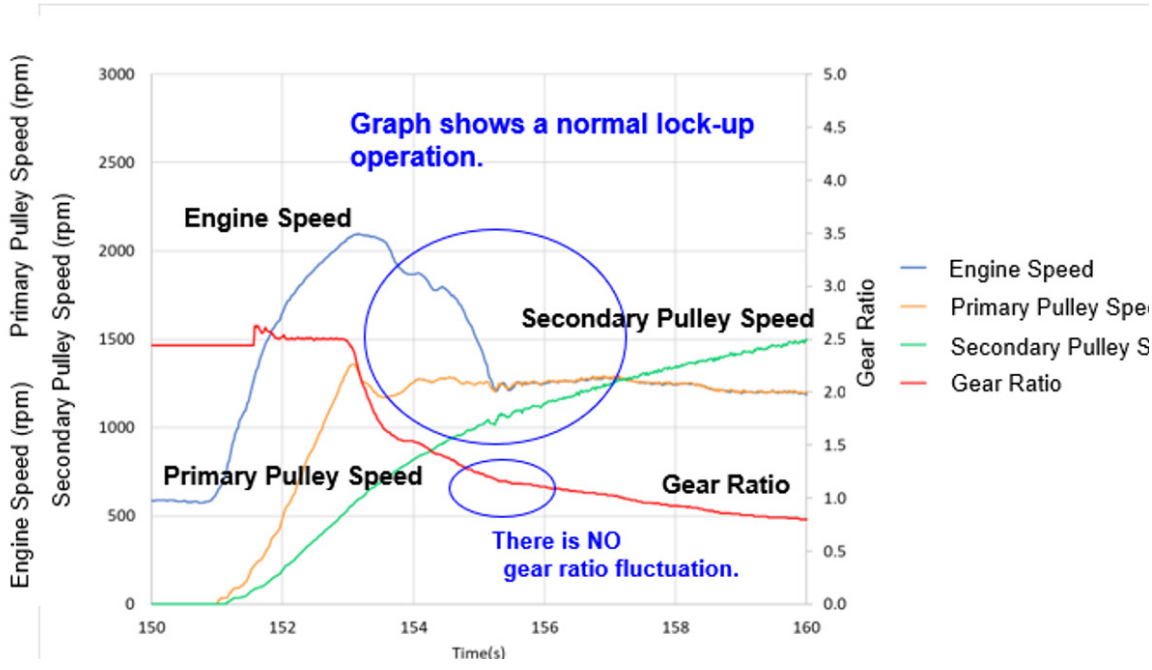

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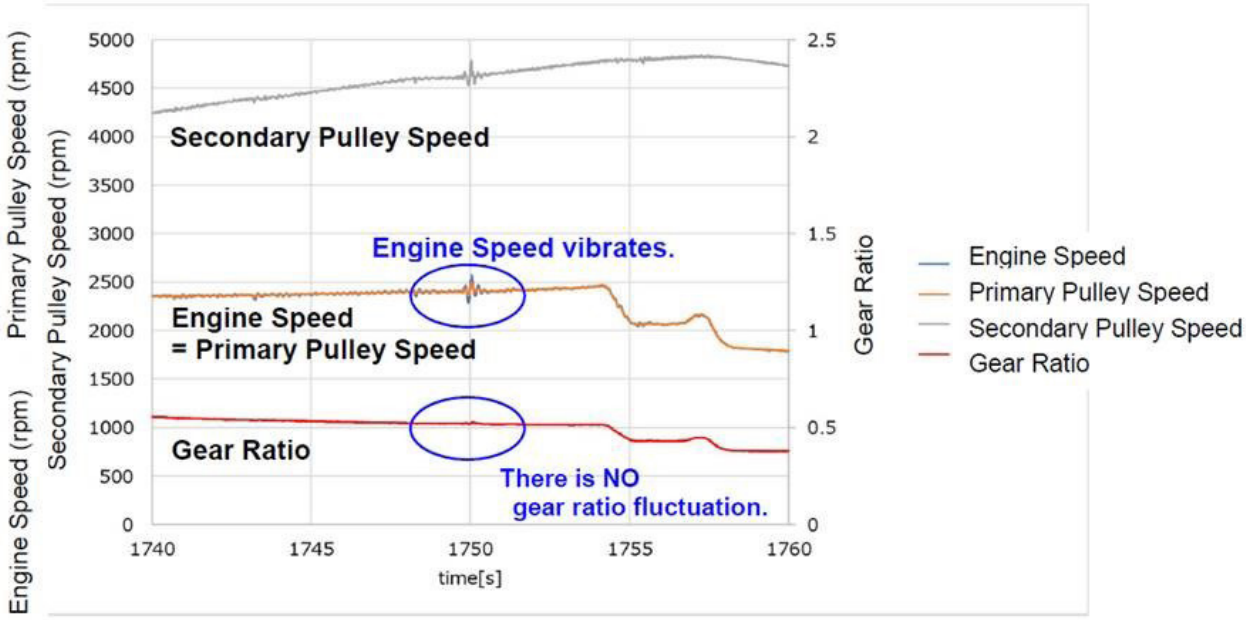
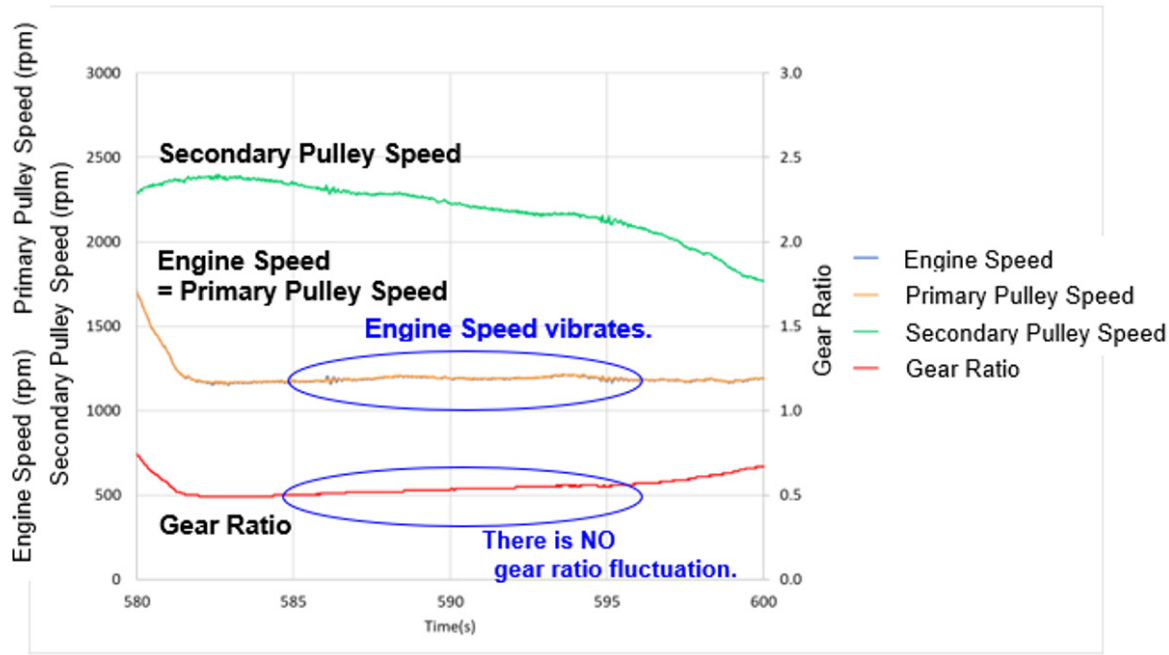
FIG. 8



The graph above is an example of recorded SSM data showing the torque fluctuation is NOT being caused by the transmission but by torque fluctuation of the engine.

FIG. 9



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REF. 1: Torque Converter Learning

Once all criteria has been met, safely drive the vehicle from 0 - 20MPH. Be sure to keep the engine speed between 1,000 and 1400 RPM. After reaching 20 MPH, decelerate the vehicle to a stop. Repeat this drive cycle 5 (FIVE) times.

NOTE: The AT Learning Value must be cleared using the SSM instead of by disconnecting the battery or the TCM especially for Ascent and 2020MY and newer Legacy and Outback models.

4. Maintenance related information

2. Lock up (engagement) learning

Purpose	To stabilize the lock up engagement quality (minimize the variation) due to the hardware or fluid temperature.
Learning logic	The lock-up torque value feed-back control. (The value when the clutch releases is considered to the next clutch engagement torque.)
Learning condition	Automatically performed when the condition is met*. * It is stated afterwards.
Learning value stability	5 times.
Learning value reset condition	• ~~Removal of the vehicle battery.~~ • ~~Removal of the TCU.~~ **Clear the AT learning value using the SSM.**

Conditions	Value
①CVT fluid temperature	68～212° F
②E/G coolant temperature	140～248° F
③A/C compressor	OFF
④E/G speed	1,000～1,400rpm
⑤Fuel cut	Active
⑥Deceleration	0.5～-3m/s^2

Clear the AT learning value (Refer to Service Manual > Transmission/Transaxle > CONTINUOUSLY VARIABLE TRANSMISSION > AT Learning > Procedure

Continued...

Questionnaire for Alleged CVT Chain Slip Condition

Please use all applicable check boxes.

Please enter a number value in ☐ vehicle speed box.

Please attach SSM data files for both before and after pre- and post-repair.

No.	Item		Answer
1	Condition:	CVT Temperature	☐ Immediately after starting the engine ☐ Warming-up ☐ After warming-up
2		Location	☐ Highway ☐ Paved-road ☐ Rough-road
3		Vehicle Speed	☐ mph
4		Driving Condition	☐ While accelerating ☐ While decelerating ☐ While cruising
5		Vehicle Used for Towing?	☐ Yes ☐ No
6		Frequency of Slip Condition	☐ Only once ☐ A few times ☐ Intermittent ☐ Always
7		How Long Has Condition Been Occurring?	☐ It just started ☐ Within the last month ☐ From new
8	Symptoms:		☐ Noise ☐ Vibration ☐ Shock/Bump ☐ Hesitation/Surge ☐ Shudder ☐ Jerking/Bucking ☐ Engine RPM rise/flare ☐ Lack of power / not accelerate ☐ Deceleration feeling ☐ Engine RPM not rise ☐ Engine RPM fluctuation / hunting gear ☐ Other (please describe:)
9	Repair(s):		☐ T/M assy replacement ☐ T/M part(s) replacement ☐ TCM Re-programing ☐ AT relearn / torque converter relearn ☐ No repair made (inspection only) ☐ Other (please describe:)
10	Customer Comments Post-Repair:		Example: Satisfaction / dissatisfaction level, further improvement requirements.

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IMPORTANT REMINDERS:

- SOA strongly discourages the printing and/or local storage of service information as previously released information and electronic publications may be updated at any time.
- Always check for any open recalls or campaigns anytime a vehicle is in for servicing.
- Always refer to STIS for the latest service information before performing any repairs.