

ATTENTION:

- GENERAL MANAGER
- PARTS MANAGER
- CLAIMS PERSONNEL
- SERVICE MANAGER

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

© 2020 Subaru of America, Inc. All rights reserved.



QUALITY DRIVEN® SERVICE

SERVICE INFORMATION BULLETIN

APPLICABILITY: 2018-23MY Legacy and Outback
 2017-23MY Impreza
 2018-23MY Crosstrek
 2019-23MY Forester
 2019-23MY Ascent

NUMBER: 16-132-20R

DATE: 12/18/20

REVISED: 06/28/23

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.

<p>CAUTION: VEHICLE SERVICING PERFORMED BY UNTRAINED PERSONS COULD RESULT IN SERIOUS INJURY TO THOSE PERSONS OR TO OTHERS.</p> <p>Subaru Service Bulletins are intended for use by professional technicians ONLY. They are written to inform those technicians of conditions that may occur in some vehicles, or to provide information that could assist in the proper servicing of the vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do the job correctly and safely. If a condition is described, DO NOT assume that this Service Bulletin applies to your vehicle, or that your vehicle will have that condition.</p>	<p style="text-align: center;">Subaru of America, Inc. is ISO 14001 Compliant</p> <p>ISO 14001 is the international standard for excellence in Environmental Management Systems. Please recycle or dispose of automotive products in a manner that is friendly to our environment and in accordance with all local, state and federal laws and regulations.</p>
--	--

Continued...

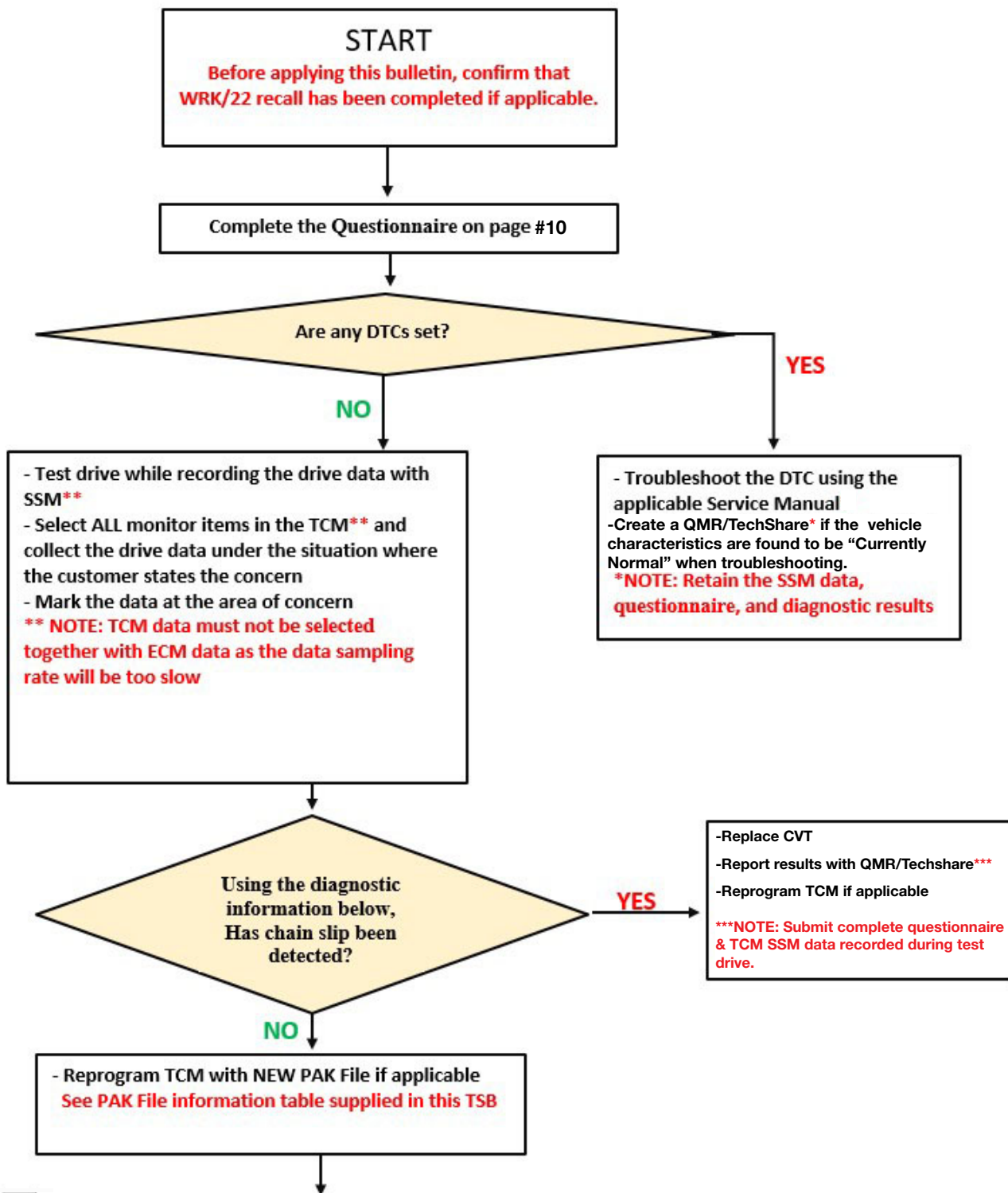
Please refer to the table below as it outlines cases where submitting a Quality Monitoring Report (QMR) is required when replacing the CVT. Ensure that all the necessary diagnostic requirements and results, as listed in this bulletin, are included with each QMR submission. It is important to note that the table and data requirements will change periodically, so always refer to the latest revision of this bulletin with each CVT diagnosis. Coding for claim submission on vehicles requiring QMR submission (shown in the table below) is outlined on pg. 10 and 11 of this bulletin.

DSQMs and DPSMs may at their discretion as District Managers, require retailer QMR submission for CVT repair or replacement pre-authorizations. In these cases, the appropriate labor time supplied from the coding information on pg. 10 and 11 can be added to the claim which DPSM/DSQM can authorize.

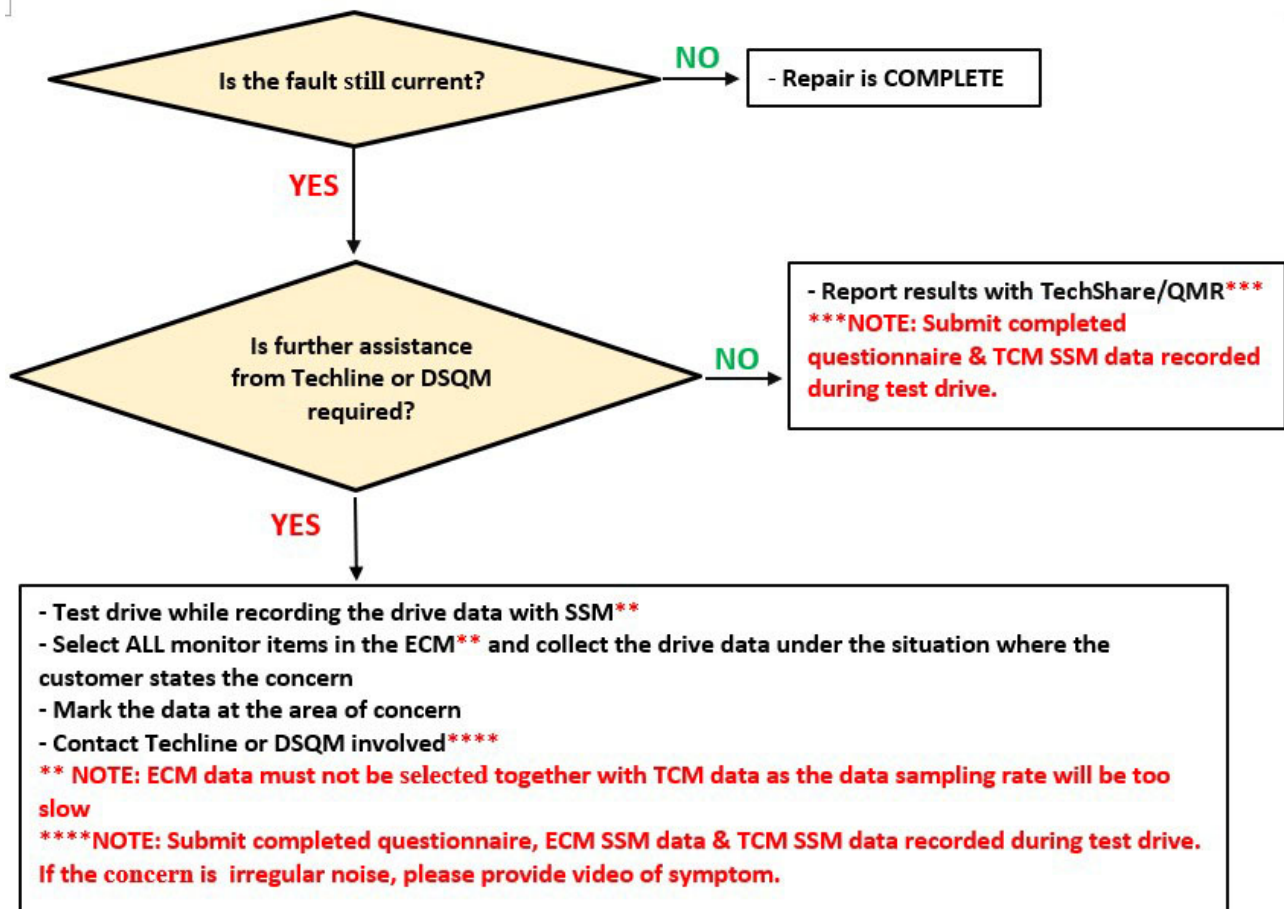
	2017	2018	2019	2020	2021	2022	2023
Impreza	No need	No need	No need	No need	No need	No need	No need
Crosstrek	No need	No need	No need	Need	Need	Need	Need
Forester	No need	No need	No need	No need	No need	No need	No need
Forester Wilderness	No need	No need	No need	No need	No need	Need	Need
Ascent	No need	No need	Need ONLY with WRK-21/22 completed	Need ONLY with WRK-21/22 completed	Need ONLY with WRK-21/22 completed	Need ONLY with WRK-21/22 completed	Need
Leg/Obk 2.5	No need	No need	No need	Need	Need	Need	Need
Leg/Obk 2.4Turbo	No need	No need	No need	Need ONLY with WRK-21/22 completed	Need ONLY with WRK-21/22 completed	Need ONLY with WRK-21/22 completed	Need

Continued...

Troubleshooting Flow Chart for Alleged CVT Chain Slip:



Continued...



PAK FILE INFORMATION:

IMPORTANT NOTES:

- When performing and CVT replacement or TCU reprogramming, always confirm the fault has been corrected.
- When submitting TechShare/QMR reports, include the TSB number of this document (16-132-20R) as a keyword. This is used to manage cases.

If the vehicle being repaired is not listed in the table below, or if the reprogramming file listed in the table below is already installed, proceed to the next Step in diagnosis procedure. The reprogramming file may be further updated in the future. Always refer to the most current revisions.

Continued...

Model	MY	File name	Specification	Old Part Number	Keyword	New CID
ASCENT	19	30919AF98G.pak	2.4L DIT CVT without CVTF cooler (air cool)	30919AF98E 30919AF98F	6CB17BE5	R83EE000
	19	30919AF99G.pak	2.4L DIT CVT with CVTF cooler (air cool)	30919AF99E 30919AF99F	1648933C	R83EF000
	20-21	30919AH13H.pk2	2.4L DIT CVT without CVTF cooler (air cool)	30919AH13F 30919AH13G	B3DFD2E3	Q93EE100
	20-21	30919AH14H.pk2	2.4L DIT CVT with CVTF cooler (air cool)	30919AH14E* 30919AH14G	B5D0FB3D	Q93EF100
	22	30919AJ53B.pk2	2.4L DIT CVT without CVTF cooler (air cool)	30919AJ53A	D3DF9A7B	N2FEE600
	22	30919AJ54B.pk2	2.4L DIT CVT with CVTF cooler (air cool)	30919AJ54A	CED94BB7	N2FEF600

* A TCM with software version 30919AH14E as the current software status will require an additional step when reprogramming. Until further revision is announced, the Temporary PAK file used in WRK-21/22 MUST be reprogrammed to the TCM before the 30919AH14H file can be installed.

NOTE: The temporary reprogramming files used in WRK-21/22 are not to be used for CVT chain slip diagnosis on vehicles currently unaffected by WRK-21/22.

CVT Chain Slip Assessment:

There are three main forms of CVT chain slip.

- Continuous Micro-Slip
- Short-Time Slip
- Long-Time Slip

Using Subaru Select Monitor (SSM), check and record data monitors and compare to the three examples listed below. If the recorded data from the vehicle matches the examples below, the CVT will require replacement. The SSM data will be required for claim submission. A QMR containing the same information will also be required.

1. Continuous Micro-Slip:

During a continuous micro-slip, while the Accelerator Opening Angle monitor displays a stable value for more than one second, there are fluctuations in the Actual Gear Ratio monitor:

Peak to Peak > 0.02

Frequency > 3 cycles per 1 second

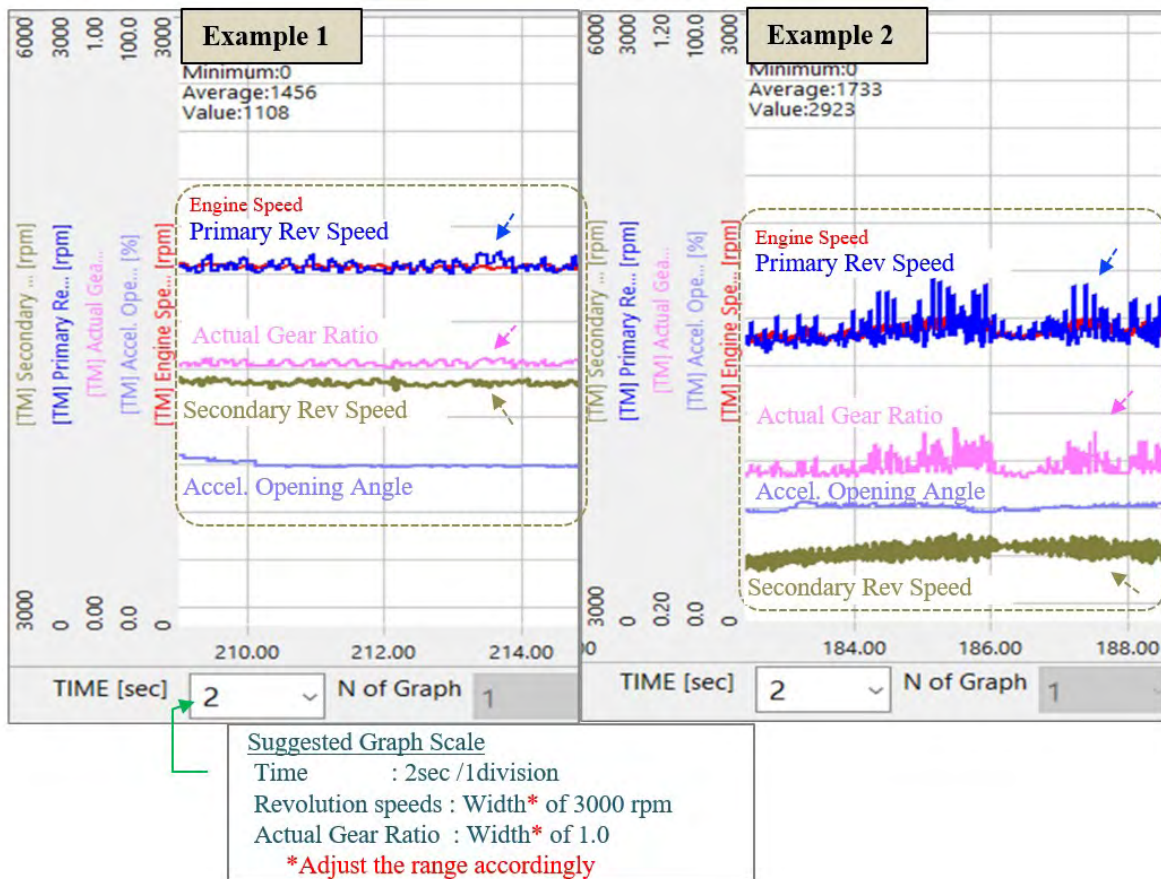
There are fluctuations in the Primary Rev Speed and/or Secondary Rev Speed monitor:

Peak to Peak > 50 rpm

Frequency > 3 cycles per 1 second

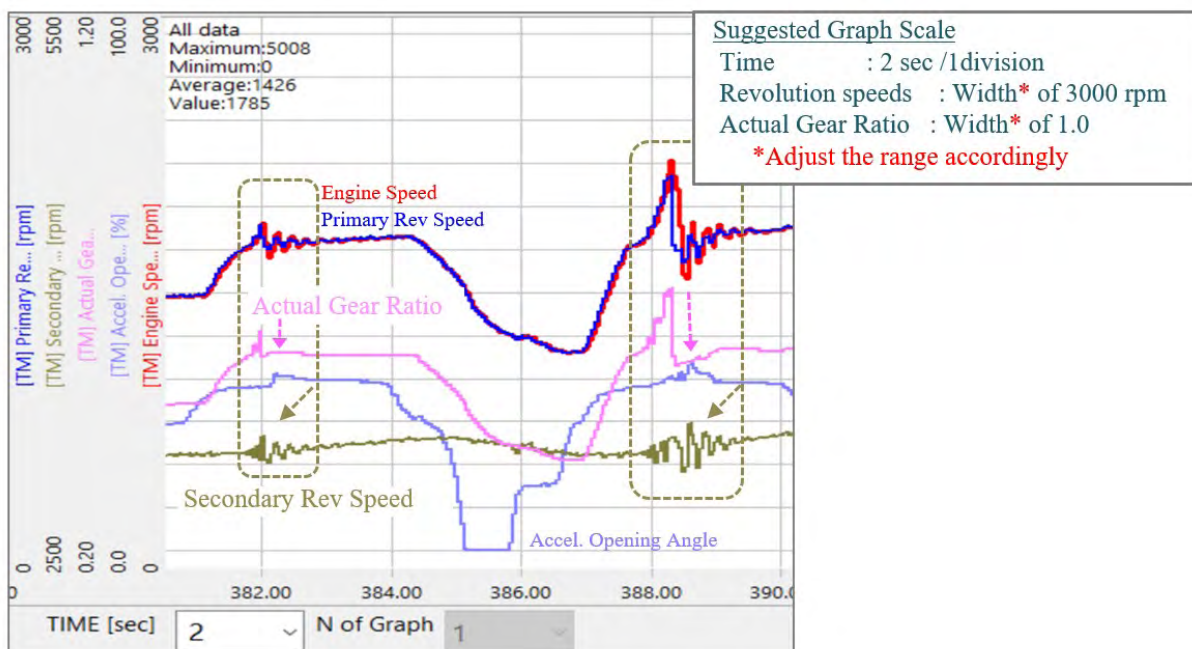
Continued...

Below are two examples of the data monitoring during Continuous Micro-Slip



2. Short-Time Slip:

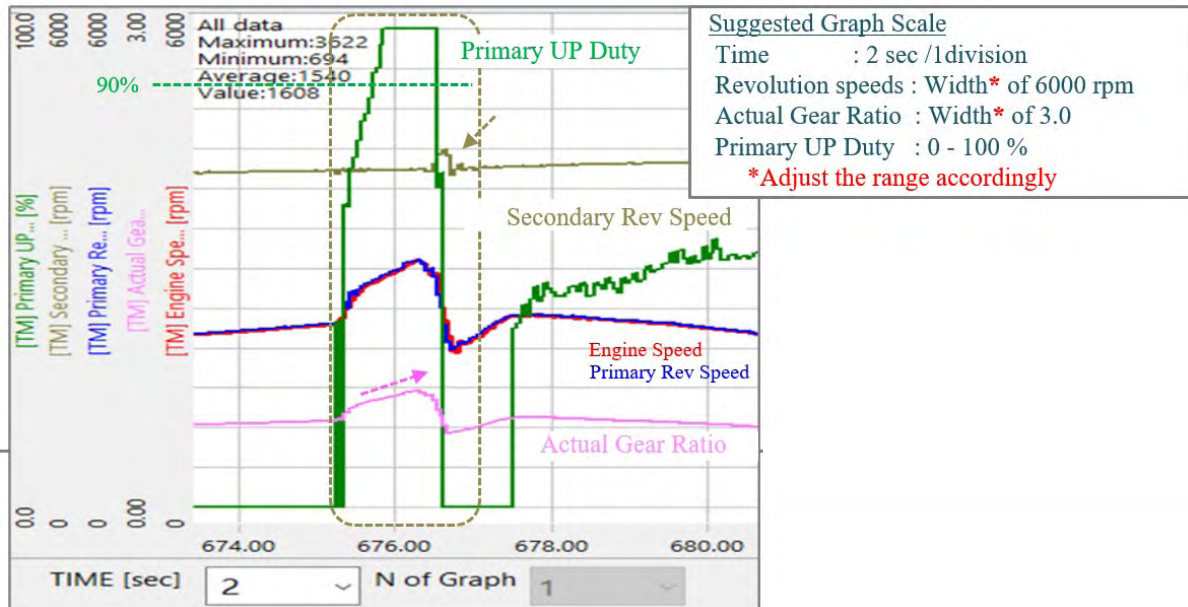
When a short-time slip occurs, the changes in the Actual Gear Ratio monitor will be larger than 0.1 per 0.1 second. After the Actual Gear Ratio monitor resumes to stable conditions, distinct fluctuations in revolution speed continues.



Continued...

3. Long-Time Slip:

When a long-time slip occurs, the Primary UP Duty monitor will be larger than 90% and the Actual Pulley Ratio monitor lowers for a duration of 0.5 seconds or more. Even after the Actual Gear Ratio monitor resumes to stable conditions, distinct fluctuations in revolution speed continues.



Reference Material: Similar Symptoms To CVT Chain Slip

In some cases, a customer may report symptoms of chain slip when in fact there is no actual slippage within the CVT. Listed below are examples of situations than can mimic the symptoms of chain slip.

1. Forward Clutch Slip Shock:

This shock can occur when the forward clutch slips. If this situation is reported, reprogram the TCM with new software if it is available.

The rotation speeds for the upstream and downstream sides of the forward clutch do not synchronize when driving.

Continued...

Example for
2.4L Turbo or 3.6L NA equipped vehicles

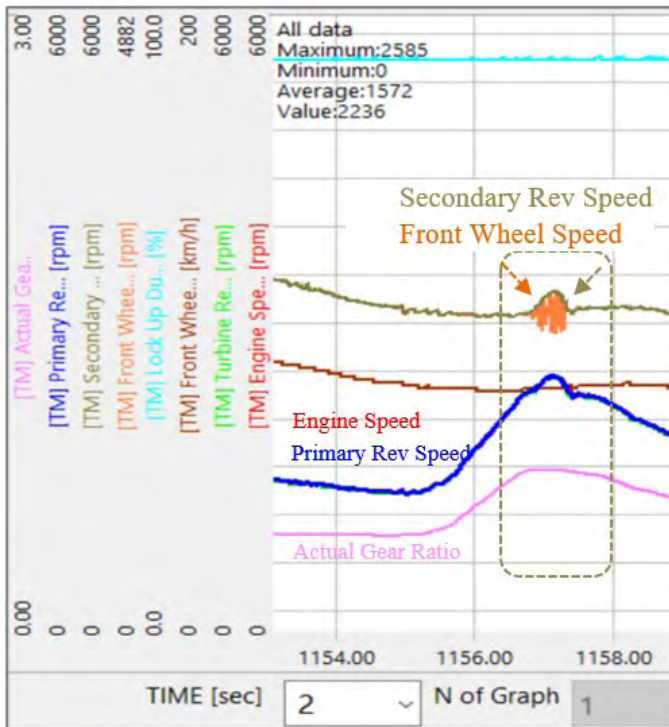
Upstream side of the forward clutch-
Secondary Rev Speed

Downstream side of the forward clutch-
Front Wheel Speed

Example for vehicles **WITHOUT**
2.4L Turbo or 3.6L NA

Upstream side of the forward clutch-
Turbine Revolution Speed

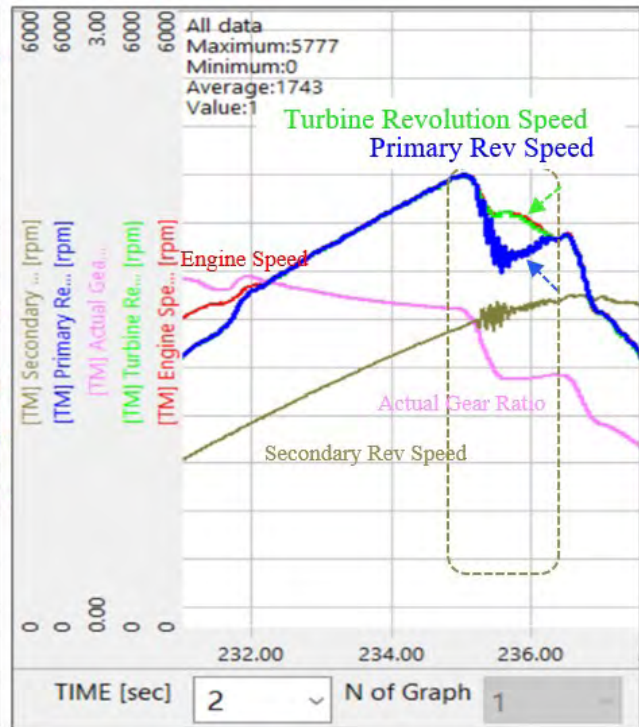
Downstream side of the forward clutch-
Primary Rev Speed



Suggested Graph Scale

Time : 2sec /1division
 Engine Speed : 0 - 6000 rpm
 Primary Rev Speed : 0 - 6000 rpm
 Secondary Rev Speed : 0 - 6000 rpm
 Front Wheel Speed : 0 - 4882**** rpm
 Actual Gear Ratio : 0.0 - 3.0
 Lock Up Duty Ratio : 0 - 100 %

Note** : Due to the secondary reduction gear ratio 1.229**



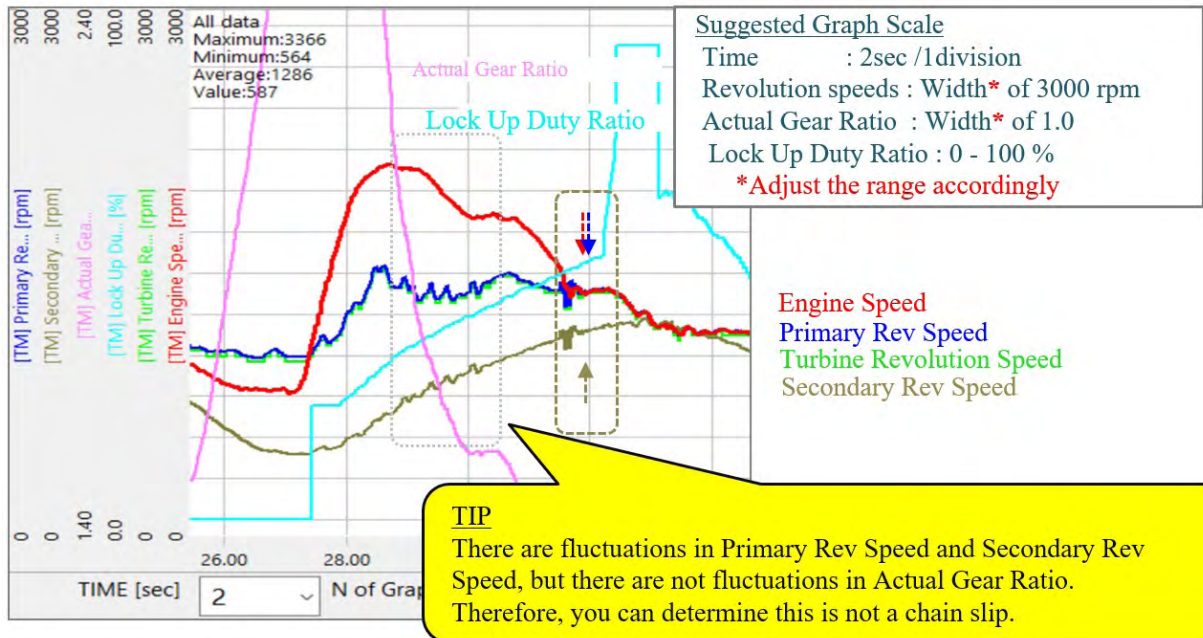
Suggested Graph Scale

Time : 2sec /1division
 Engine Speed : 0 - 6000 rpm
 Turbine Revolution Speed : 0 - 6000 rpm
 Primary Rev Speed : 0 - 6000 rpm
 Secondary Rev Speed : 0 - 6000 rpm
 Front Wheel Speed : 0 - 6000 rpm
 Actual Gear Ratio : 0.0 - 3.0
 Lock Up Duty Ratio : 0 - 100 %

Continued...

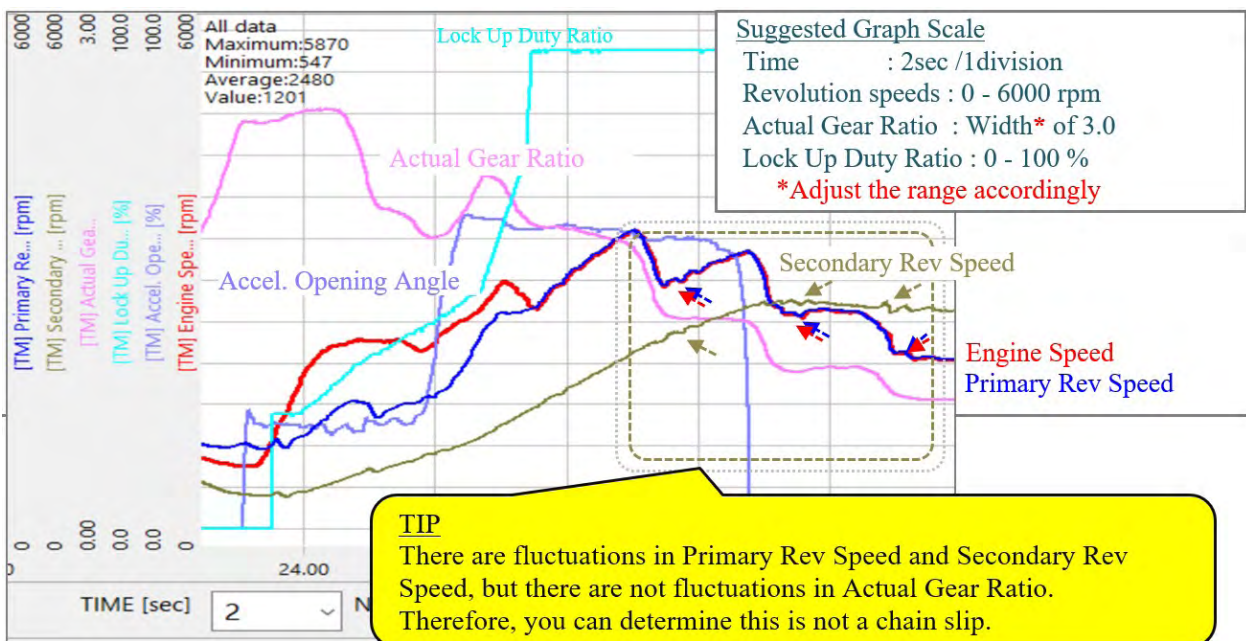
2. Lock Up Clutch Engagement Shock:

This shock can occur when the lock up clutch engages rapidly. If this situation is reported, reprogram the TCM with new software if it is available.



3. Shift Up Shock:

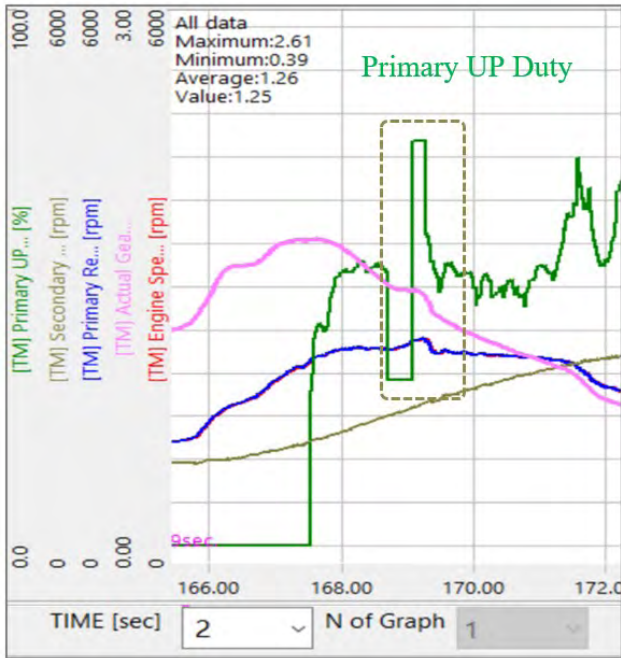
This shock can occur when the CVT upshifts. If this situation is reported, reprogram the TCM with new software if it is available. If there is no new software available or the reprogramming does not remedy the issue, report the situation to Techline.



Continued...

4. Primary Up Duty Square Control (Ascent Models up to 2021MY):

A harsh shift can be felt while driving. If this situation is reported, reprogram the TCM with new software if it is available. If there is no new software available or the reprogramming does not remedy the issue, report the situation to Techline.



Suggested Graph Scale
 Time : 2sec / 1division
 Revolution speeds : 0 - 6000 rpm
 Actual Gear Ratio : Width* of 3.0
 Primary UP Duty : 0 - 100 %
 *Adjust the range accordingly

Engine Speed
 Primary Rev Speed
 Actual Gear Ratio

WARRANTY / CLAIM INFORMATION:

NOTE: ALWAYS confirm and verify the specific vehicle Warranty coverage prior to performing any work to the vehicle.

For vehicles within the Basic New Car Limited Warranty period Powertrain Limited Warranty or covered by an active Subaru Added Security Powertrain, Classic or Gold plan, this repair may be submitted using the following claim information:

Labor Description	Labor Operation #	Labor Time	Fail Code
QUESTIONNAIRE, DTC DIAG = CURRENTLY NORMAL & QMR	A303-720	0.8H	MKO-98
*QUESTIONNAIRE, SSM TEST DRIVE W/ CHAIN SLIP DETECTED & QMR	C303-716	0.7H	TMA TMB MQJ
**QUESTIONNAIRE, SSM TEST DRIVE NO CHAIN SLIP & NO FAULT AFTER TCM UPDATE	C303-728	0.5H	MJZ-48
QUESTIONNAIRE, SSM TEST DRIVE NO CHAIN SLIP, CURRENT FAULT & QMR	A303-722	0.9H	MKO-98

*To be claimed in conjunction with CVT repair coding from LTG as a dependent operation.

** To be claimed in conjunction with TCM update B860-737 when applicable.

Continued...

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.

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	CVT Temperature	<input type="checkbox"/> Immediately after starting the engine <input type="checkbox"/> Warming-up <input type="checkbox"/> After warming-up
2	Location	<input type="checkbox"/> Highway <input type="checkbox"/> Paved-road <input type="checkbox"/> Rough-road
3	Vehicle Speed	<input style="width: 100px; height: 20px; border: 1px solid black;" type="text"/> mph
4	Condition:	<input type="checkbox"/> While accelerating <input type="checkbox"/> While decelerating <input type="checkbox"/> While cruising <input type="checkbox"/> While turning
5		<input type="checkbox"/> Yes <input type="checkbox"/> No
6		<input type="checkbox"/> Only once <input type="checkbox"/> A few times <input type="checkbox"/> Intermittent <input type="checkbox"/> Always
7		<input type="checkbox"/> It just started <input type="checkbox"/> Within the last month <input type="checkbox"/> From new
8		Symptoms:
9	Repair(s):	<input type="checkbox"/> T/M assy replacement <input type="checkbox"/> T/M part(s) replacement <input type="checkbox"/> TCM Re-programing <input type="checkbox"/> AT relearn / torque converter relearn <input type="checkbox"/> No repair made (inspection only) <input type="checkbox"/> Other (please describe:)
10	Customer Comments Post-Repair:	Example: Satisfaction / dissatisfaction level, further improvement requirements.