ΔΤΤΕΝΤΙΟΝ·			
GENERAL MANAGER	IMPORTANT - All Service Personnel		
PARTS MANAGER	Should Read and		
CLAIMS PERSONNEL	provided, right.		
SERVICE MANAGER	© 2017 Subaru o	of America.	Inc. All rial



QUALITY DRIVEN® SERVICE

SERVICE BULLETIN

APPLICABILITY:	2015-2017MY Legacy / Outback 2.5 CVT Models	NUMBER:	16-104-17
SUBJECT:	"Bump" Feeling from CVT at Idle in Drive	DATE:	02/23/17

INTRODUCTION:

This bulletin provides a diagnostic procedure along with Transmission Control Module (TCM) reprogramming files to address isolated customer concerns of a "bump" feeling from the CVT. The bump feeling has been reported to occur after the CVT is fully up to operating temperature, in Drive and with the engine at idle.

PRODUCTION CHANGE INFORMATION:

The new TCM logic was incorporated into production starting with the following VINs:

- 2017MY Legacy: H*046299
- 2017MY Outback: H*324232

Model	PAK File Name New TCM Part Number Old		Old TCM Part Numbers	Decryption Keyword	New CID Number
2015MY Legacy	30919AD323.pak	30919AD323*	30919AD320, 321 &322	C7427FA5	F4F20082
2015MY Outback	30919AD333.pak	30919AD333*	30919AD330, 331 &332	4561EC13	F4F24082
2016MY Legacy	30919AF032.pak	30919AF032*	30919AF030 & 031	74977F60	E5F20081
2016MY Outback	30919AF042.pak	30919AF042*	30919af040 & 041	0082F1E2	E5F24081
2017MY Legacy	30919AF46B.pak	30919AF46B*	30919AF46A	05D465F6	D6F20080
2017MY Outback	30919AF47C.pak	30919AF47C*	30919AF47A & 47B	9D78B154	D6F24081

PACK FILE APPLICABILITY:

***NOTE:** These New TCM part numbers are not currently available for order. In the meantime, if a replacement is needed, please use the current part number TCM for the VIN and update it with the corresponding pak file.

Continued...

CAUTION: VEHICLE SERVICING PERFORMED BY UNTRAINED PERSONS COULD SERVICING INJURY TO THOSE PERSONS OR TO OTHERS.

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.

SUBARU OF AMERICA, INC. IS ISO 14001 COMPLIANT

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.

SERVICE PROCEDURE / INFORMATION:

Overview:

- After setting up the DST-i and SM4, perform the test procedure following the steps below to determine whether or not the bump condition exists.
- If the bump condition is confirmed, variator damage has likely occurred requiring CVT assembly replacement.
- Regardless of whether or not the bump condition is confirmed, after testing <u>or</u> repairs are complete, the TCM **MUST** be reprogrammed before releasing the vehicle to the customer.

Preparation of SM4:

- Connect the DST-i and start the SM4 application on the SDS PC.
- From the Start menu, select "Diagnosis".



• Input (or confirm) the Vehicle information.

Vehicle specifica	ations	
VIN		
		Vehicle
		- second second
Vehicle information	tion	
Vehicle	(Select)	
Model		

• Select "Multiple System" from the Main Menu.



• From the System List, select "Engine", "Transmission", and "Brake Control".

Start Diagnosis	System List	
Vakiela	Engine (EGI)	Transmission (TM)
Legacy /	Brake Control (BC)	Tire Pressure Monitor (TPN
Outback	Body Control (BIU)	Occupant Detection (OCPT
Target Multisystem	Impact Sensor	Airbag (AB)

Continued...

• Select "Multiple active test".

	System EGI, TM, BC
	System selected
	Multiple data monitor
G	F2 Multiple active test

• Select "Idle speed control".

	EGI	Turbocharger Wastegate Solenoid
System	EGI	CPC Solenoid 2
colimbe	EGI	Fuel Pump Control (OFF Drive)
System selected	EGI	Fixed Idle Ignition Timing
Multiple 7	EGI	Idle Speed Control
monitor	EGI	Injection Stop Mode (Injector 1)
Multiple	EGI	Injection Stop Mode (Injector 2)
Ame? active test	EGI	Injection Stop Mode (Injector 3)

• Select "OK".

Keyw	ord		- 🔎			REC Time (Normal)	20min Continuous Autosave	
EGI	•	All Data		•		No. of item	selected = 317	
				1	Add All	EGI	Engine Speed	
					00	EGI	Mass Air Flow	
-					> Add	EGI	Vehicle Speed	
ted						EGI	Throttle Opening Angle	
data						EGI	Accel. Opening Angle	
or						EGI	A/F Sensor #1	
le est				E		EGI	Ignition timing adv. #1	
						EGI	Coolant Temp.	
				ч		EGI	Fuel Injection #1 Pulse	
						EGI	Short term fuel trim B1	
				ч	C Od	EGI	Long term fuel trim B1	
					00.00	EGI	Learned Ignition Timing	
					All All	EGI	Mani. Absolute Pressure	\

- Always confirm the CVTF temperature is 176 degrees f. (80 C) or above.
- Set the engine Idle speed to 850 rpm using the up/down arrows then select "Start".

SUBARU Select Mor	nitor 4 -	Multiple act	ive test - Engine(EGI), Transmission(TM), Brake Control(BC), Analog(OSC)								
Start	(Engine	e]Idle Spee	d Control					2 ?			
Diagnosis	Targ	get Value	850 rp	m	-	1					
Vehicle											
-					0.00	- G		P 📈 Start			
Target	500					2000	Ct	art of Are to Tort			
2 ris montrystern	1						50				
System EGLTM.BC.OSC			Item	Value	Unit	Maximum	Minimum	Average 🐴			
		EGI	Engine Speed	681	rpm	687	669	680			
System selected		EGI	Mass Air Flow	0.24	lb/min	0.24	0.23	0.24			
Multiple data	1	EGI	Vehicle Speed	0	MPH	0	0	0			
monitor	1	EGI	Throttle Opening Angle	13	%	13	13	13			
Multiple active test		EGI	Accel. Opening Angle	0.0	%	0.0	0.0	0.0			
		EGI	A/F Sensor #1	0.99		1.00	0.99	1.00			
		EGI	Ignition timing adv. #1	4.5	۰	7.0	4.0	5.0			
		EGI	Coolant Temp.	181	°F	181	180	181			
	12	EGI	Fuel Injection #1 Pulse	0.77	ms	0.77	0.77	0.77			
	1	EGI	Short term fuel trim B1	-0.8	%	0.8	-0.8	-0.2			
	57	EGI	Long term fuel trim B1	3.1	%	3.1	2.3	3.0			
		EGI	Learned Ignition Timing	0.0	deg	0.0	0.0	0.0			
	0	EGI	Mani. Absolute Pressure	3.9	psi	4.1	3.9	4.0 +			
<u>9</u> 14.16V	Numi	ber of sam	ples 21				Elapse	d time 00:00:10.928			
Project	M		4) 4 [
		Sp Gra	fit Combo Graph Monitor			Trigger 🕻	Mark	Få Stop			

• Confirm the idle speed is about 850 rpm.

Target Value	850 rpm					Executing
500	9 9 8 8 8 8 8 9 8 7 8 9 8	а ж а а Х Л Х Х		2000		Sto
12 III III 10 10 III						?
Item		Value	Unit	Maximum	Minimum	Average
EGI Engine Speed		853	rpm	883	669	741
ECI Mare Air Flow		0.20	Ib/min	0.20	0.22	0.26

• Select "Combo Graph"



• Select the following list of items:

Engine speed Vehicle Speed Turbine Revolution Speed Primary Rev Speed Longitudinal G sensor (BC)

2	1 1 1 1 1 1 1 1 1 1		[Engine]Idle Speed	Control									5
	Item	1-	Target Value				850 rpm					E	xecutina
EGI	Engine Speed	E .											
EGI	Vehicle Speed			— <u> </u>									Stor
TM	Primary Rev Speed		500								2000	1	S
BC	Longitudinal G Sensor		Test ITMP	rimary Rev Speed	[rom]						2000		
EGI	Mass Air Flow	0	6 6 0	ningity may appear	1050.0								
EGI	Throttle Opening Ang		996 11 1000										
EGI	Accel. Opening Angle												
EGI	A/F Sensor #1												
EGI	Ignition timing adv. #1		10.000										
EGI	Coolant Temp.		1 I I I I I I I I I I I I I I I I I I I										
EGI	Fuel Injection #1 Pulse	1	111										
EGI	Short term fuel trim B1		· · · · · · · · · · · · · · · · · · ·	_	-							-	
EGI	Long term fuel trim B1		uga 🕴										
EGI	Learned Ignition Timi												
EGI	Mani. Absolute Press												
EGI	Oxvaen sensor #12	c											
EGI	VVT Adv. Ang. Amou												
EGI	VVT Advance Target												
EGI	VVT Adv. Ang. Amou												
EGI	VVT Advance Target		272.00	273.00	274.00	275.00	276.00	277.00	278.00	279.00	280.00	281.00	
EGI	Exh. VVT Retard Ang. R		TIME [Sec] 1	• N OT Gra	1								
EGI	Fx VVT Retard Target		Number of sample	s 515								Elapsed	time 00:04:41
EGI	Exh. VVT Retard Ang. L												
and the second		1.17	Carden de la carde									The second second	and the start

• Perform the test following the flow chart and graph supplied below.

CAUTION: Perform this drive testing only in a closed area (such as parking lot) away from other vehicle traffic and **never** on a public roadway due to the need to brake and hold position for 60 seconds during each test cycle. In addition, the use of a co-driver to either drive the vehicle or monitor the SM4 data during this testing is **strongly encouraged**.



• While performing the testing above, determine if the "bump" condition can be confirmed and / or if the data graph shows any chain slippage. Examples of "OK" and "NG" graphs are supplied below for reference to help make a proper determination.



• If the bump condition is confirmed, there is most likely variator damage requiring CVT assembly replacement. Follow the service procedure in the applicable Service Manual when replacing the CVT assembly is required.

VERY IMPORTANT REMINDERS:

The FFD and / or SM4 Project File **must be saved** to qualify for a replacement CVT when determined necessary. Claims may be charged back for those that do not have these files saved and available to support their testing results when requested.

The serial number found on the installed (replacement) unit must be entered in the Miscellaneous Detail field during claim entry for all replacement transmission assemblies. See Section 13.4.4 of the Policy and Procedure manual for more information.

Regardless of whether or not the bump condition is confirmed, after testing <u>or</u> repairs are complete, the TCM **MUST** be reprogrammed following the procedure provided below before releasing the vehicle to the customer.

• Reprogram the TCM using the SM4 following the normal FlashWrite procedure.

Step 1: SOA now highly recommends connecting the Midtronics GR8 Diagnostic Battery Charger to the vehicle and utilizing the Power Supply Mode feature anytime a vehicle control module is being reprogrammed. Once the GR8 is connected to the vehicle, as long as the battery is fully charged, it takes less than 3 minutes to boot-up the charger, select the Power Supply Mode, and have the battery voltage stabilized and ready for reprogramming.

VERY IMPORTANT: This information is applicable to the Midtronics GR8 Diagnostic Battery Charger **ONLY**. It does not apply to any other brand / type of "generic" battery charger whatsoever. **ONLY** the GR8 and its Power Supply Mode feature has been tested and approved by Subaru of America, Inc. (SOA).

- If the GR8 indicates the vehicle's battery must be charged, charge the battery using the GR8 before proceeding to reprogram the vehicle while using the Power Supply Mode.
- Control module failures as a result of battery discharge during reprogramming are not a matter for warranty. Should any DTCs reset after the reprogramming update is performed, diagnose per the procedure outlined in the applicable Service Manual.

Step 2: Using the SSM4, clear the AT Learning Data using the following procedure:

- Start > Diagnosis > Vehicle Selection > Each System > Transmission > Work Support > Clear AT Learning Data.
- Click "YES" and when "Execute Clear AT Learning" is displayed, click "YES" again.
- Turn the ignition OFF, wait at LEAST 30 seconds then turn the ignition back ON. At this point, the AT Temp light will start blinking; 4 times in 2 seconds to signify the Clear AT Learning procedure has completed successfully. If the AT Temp light does not flash as described, repeat Step 2 again from the beginning.

Step 3: Using the SSM4, perform the AT Learning Control following the procedure outlined in the applicable Service Manual.

IMPORTANT: The **NEW** Calibration Identification number (CID) for any newly-installed programming (as confirmed from the actual control module **AFTER** installation) **MUST** be noted on the repair order as this information is required for claim submission.

NOTE: The pack file listings provided in this bulletin are the latest available at the time of publishing. Updates are often released thereafter without revision to the original bulletin. For this reason, it is critical to always have the latest version of Select Monitor software installed on your system. You can confirm if a later version is available by entering the CID listed in this bulletin into FlashWrite. If a newer CID is shown as available in FlashWrite, reprogram using that file.

WARRANTY / CLAIM INFORMATION:

For vehicles within the Basic New Car Limited or Powertrain Limited Warranty period 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
REPROGRAM TCM & AT LEARNING CONTROL FOR BUMP FEEL	B860-733	0.7	
CVT REPLACEMENT FOR VERIFIED BUMP FEEL	C303-003	4.2	MKK-25
CVT (REMAN UNIT) REPLACEMENT FOR VERIFIED BUMP FEEL, ADD	C303-005	0.3	

NOTE: C303-003 is complete and includes cooler flush, logging the serial number for claim submission, logging radio presets, and use of the engine hold tool.

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.