ATTENTION:

GENERAL MANAGER ❑
PARTS MANAGER ❑
CLAIMS PERSONNEL ❑
SERVICE MANAGER ❑

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

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SUBARU

QUALITY DRIVEN® SERVICE

SERVICE BULLETIN

DTC APPLICABILITY:	20MY Legacy & Outback 2020-21MY Forester 2020-21MY Impreza 2020-21MY Crosstrek	**NUMBER:** 05-78-20 **DATE:** 10/13/2020

BIT TABLE APPLICABILITY:
2018-19MY Legacy & Outback
2019MY Forester
2017-19MY Impreza
2018-19MY Crosstrek
2019-21MY Ascent

SUBJECT: DTC C2921 ID Registration Error and Bit Translation Table for Use in Tire Pressure Monitor System (TPMS) Diagnostics

INTRODUCTION:

This Service Information Bulletin announces additional diagnostic procedures for TPMS related DTC C2921 on the applicable models listed above. In addition, a Bit Translation table for interpreting Tire Pressure Monitor System (TPMS) data and tire status will also be added to the Service Manuals for the models listed above. A copy of the Bit Table is also included here. DTC C2921 is detected when the ID registration has failed resulting in the TPMS warning light blinking 25 times, then staying illuminated.

SERVICE PROCEDURES / INFORMATION:

REMINDER: Customer satisfaction and retention starts with performing quality repairs.

• The following **C2921 Diagnostics Information** will be added to the applicable Service Manuals soon.

• If the vehicle being repaired does not support DTC C2921, proceed to the Bit Translation table below.

DTC Detecting Condition: When the ID registration is failed
Trouble Symptom: Tire Pressure warning light blinks 25 times and then stays on

Continued...

STEP	CHECK	YES	NO
1. CHECK DTC. Read the DTC of «Tire Pressure Monitor» using the Subaru Select Monitor.	Is a DTC other than DTC C2921 displayed as current or past malfunction?	Perform the diagnosis for the displayed DTCs. If the past malfunction C2121-C2124 is displayed, perform the diagnosis from the Step 2 of the DTC C2121-C2124.	Go to Step 2.
2.REPRODUCTION OF FAILURE. 1) Perform the drive test. Drive the vehicle at 40 km/h (25 MPH) or faster for at least 10 minutes until the Bit 4 (PAL Condition) of the Tire Status becomes "0". 2) Read the DTC of «Tire Pressure Monitor» using the Subaru Select Monitor.	Is DTC displayed as current malfunction?	Go to Step 3.	When DTC is displayed as "Past faults", it means that the system has returned to normal. **NOTE: In this case, conditions such as electromagnetic interference for which ID registration is difficult are assumed.**
3. ID REGISTRATION. Register the ID.	Can the ID be registered?	Go to Step 2.	Replace the TPMS.

- **Bit Translation Table Information: Use and Interpretation of Select Monitor Values**

The Bit code is used to determine details of tire status and condition through an 8-digit binary TPMS status value on the SSM display, and is read **Right to Left**. Each digit is associated with a Bit number of 7-0, with the Bit 7 being the left most digit, and Bit 0 being the right most as illustrated below.
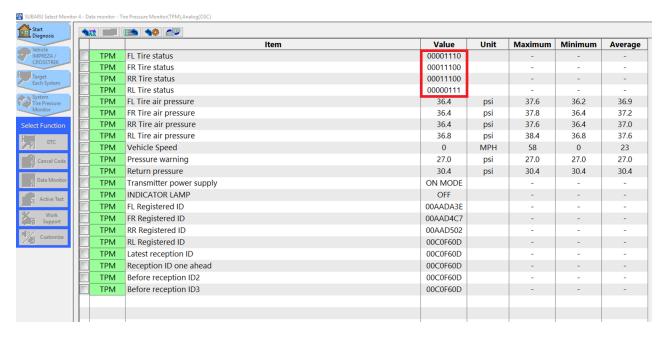
CRITICAL REMINDER: Bit codes are to be read from **Right to Left**, with each Bit's associated number going in descending order. This means the far-left digit is Bit 7, while the last three digits to the right are Bits 2, 1 and 0 (referred to as Bit 2-0).

Bit	Data	Condition
7	Low Battery	Indicates remaining battery
6	Sensor Fail	Indicates malfunction of TPMS
5	LF Response	Indicates response transmission to LF signal
4	PAL Condition	Indicates positioning information status
3	Rolling Detection	Indicates statuses of tire rotation detection

Bit Translation Table   NOTE: Bit 2-0 (Status Code) must be read as a group, NOT individually. There are 7 conditions within Bit 2-0, therefore, an additional table explaining the binary combinations which could be seen on the SSM display is shown here and used to determine the condition.

Bit numbers: 7 6 5 4 3 2 1 0

TPMS status: 0 0 0 0 0 | 1 0 0

2-0 (2,1,0)	Status Code	Indicates status at valve transmission	0: Responded to LF signal "Learn LF" 1: Tire pressure change detected
			1: Tire pressure change detected
			2: --
			3: LF signal "Entering off LF" responded
			4: Position detection in progress
			5: Position detection in progress (transmission timing asynchronized with tire rotation
			6: Normal driving (when position detection mode completed)
			7: End of tire pressure change detected

In the above example, the digits boxed in red are Bit 2-0. Referencing the Bit 2-0 chart above right shows this combination (**100**) translates to Condition 4: Position detection in progress. The additional table below is provided to supplement the Service Manual information.

Continued...

Status Code in SSM (Binary Bit code 2-0)	Condition Number (Decimal)	Condition
111	7	End of tire pressure change detected
110	6	Normal driving (when position detection mode)
101	5	Position detection in progress (transmission timing asynchronized with tire rotation)
100	4	Position detection in progress
011	3	LF signal "Entering off LF" responded
010	2	-----
001	1	Tire pressure change detected
000	0	Responded to LF signal "Learn LF" 1:Tire pressure change detected

The Select Monitor screenshot below shows data for the TPM status for each wheel. The four status lines in the red box are the Bit code values for each wheel. According to the Service Procedure above, FL Tire Status and RL Tire Status have a "0" for Bit 4, which means ID registration can be attempted. If they cannot be registered, those two TPMS sensors must be replaced. Conversely, if Bit 4 stays at "1" after driving the vehicle for over 10 minutes, replace the indicated TPMS sensors and perform registration. In the SSM4 window below, the FR Tire Status and RR Tire Status are both "1". If this is present after a test drive of at least 10 minutes, those TPMS sensors should be replaced for these wheels.

SUBARU Select Monitor 4 - Data monitor - Tire Pressure Monitor(TPM),Analog(OSC)

		Item	Value	Unit	Maximum	Minimum	Average
TPM	FL Tire status		00001110		-	-	-
TPM	FR Tire status		00011100		-	-	-
TPM	RR Tire status		00011100		-	-	-
TPM	RL Tire status		00000111		-	-	-
TPM	FL Tire air pressure		36.4	psi	37.6	36.2	36.9
TPM	FR Tire air pressure		36.4	psi	37.8	36.4	37.2
TPM	RR Tire air pressure		36.4	psi	37.6	36.4	37.0
TPM	RL Tire air pressure		36.8	psi	38.4	36.8	37.6
TPM	Vehicle Speed		0	MPH	58	0	23
TPM	Pressure warning		27.0	psi	27.0	27.0	27.0
TPM	Return pressure		30.4	psi	30.4	30.4	30.4
TPM	Transmitter power supply		ON MODE		-	-	-
TPM	INDICATOR LAMP		OFF		-	-	-
TPM	FL Registered ID		00AADA3E		-	-	-
TPM	FR Registered ID		00AAD4C7		-	-	-
TPM	RR Registered ID		00AAD502		-	-	-
TPM	RL Registered ID		00C0F60D		-	-	-
TPM	Latest reception ID		00C0F60D		-	-	-
TPM	Reception ID one ahead		00C0F60D		-	-	-
TPM	Before reception ID2		00C0F60D		-	-	-
TPM	Before reception ID3		00C0F60D		-	-	-

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.