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SUBARU TECHLINE HOLIDAYS & HOURS OF OPERATION

Mon. - Thurs.	8:30AM - 7:30PM EST
Friday	10:30AM - 5:00PM EST
Saturday	9:00AM - 3:00PM EST

01 QMR of the Month

We are pleased to announce this month's QMR of the Month Winner:

Yeong Tam from
Star Subaru in Bayside, NY

October's QMR of the Month outlined the diagnosis and repair of a 2021MY Ascent with a customer concern of the Blind Spot Detection system not working. Once Yeong verified the condition, he began his diagnosis by scanning the vehicle and finding DTC B2301, a rear radar circuit code for the left side. He also noted the left-hand blind spot indicator light on the side view mirror was inoperative, but the right side operated normally. After swapping the indicators left to right to rule out a part failure, Yeong proceeded to diagnose the DTC as per the trouble tree. No other DTCs were stored. He removed the LH door panel and disconnected connector D5 to the outer mirror. Using the split-half technique to track down what appeared to be an open circuit, a continuity check between connector R466 pin 55 and R25 pin 4 confirmed it. Yeong proceeded to remove rear bumper to isolate and repair the wiring as needed. He was able to recreate the open by wiggle-testing the left rear harness where it was chafing against the LH blind spot unit's mounting bracket. After repairing the wiring, the DTC cleared normally, the warning lamp in the combination meter went out and both the mirror indicators operated normally on his post-repair road test. Yeong's report which he submitted via TechShare™ included all his test results, related photos and even a movie file documenting his repair.

In appreciation for going the extra mile and sharing his experience with us, Yeong will be receiving the following from his Field Service Engineer:

\$500.00 Snap-On gift card

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

The Subaru TechTIPS newsletter is intended for use by professional Technicians ONLY. Articles 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 your vehicle has or will have that condition. Impreza, Legacy, Justy, Loyale, Outback, Forester, Subaru SVX, WRX, WRX STI, Baja, Tribeca, BRZ, XV Crosstrek, Ascent, Crosstrek Hybrid and "Quality Driven" are Registered Trademarks.

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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.



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01 QMR of the Month (CONTINUED)

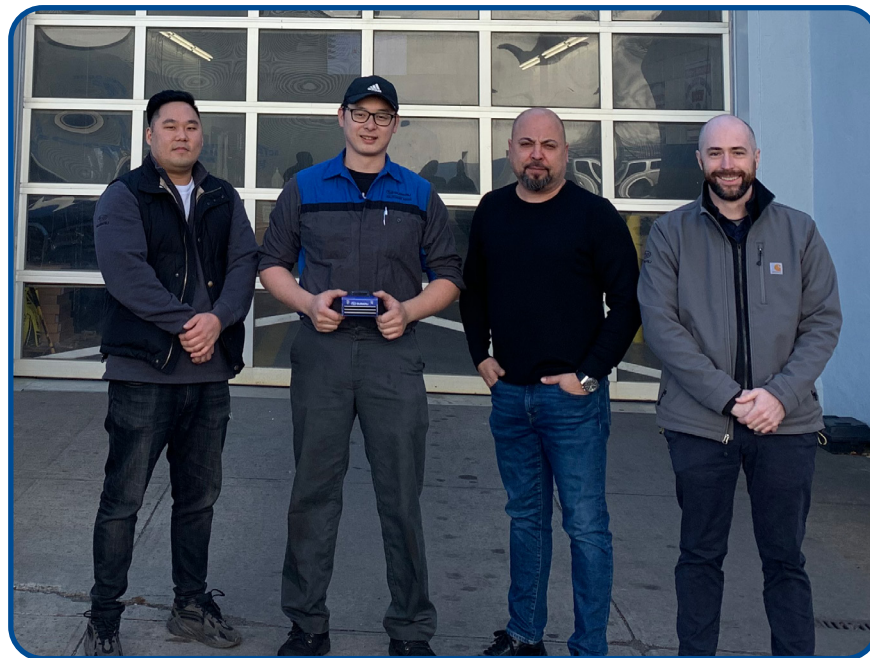
The other Regional winners selected from QMRs submitted during August 2021 were:

- **Scott Graham** from **Santa Cruz Subaru** in Capitola, CA
- **Elijah Aubuchon** from **Huffine's Subaru** in Corinth in Corinth, TX
- **Marvin Joya** from **Sheehy Subaru of Fredericksburg** in Fredericksburg, VA
- **Darin Richey** from **Colonial Subaru** in Danbury, CT

Any Subaru Technician can participate in the QMR of the Month program. See the February 2013 and January 2016 issues of Tech TIPS for full details. You just might see your name and photo in a future issue of Tech TIPS!

01 QMR of the Month Award Presentations

As part of our “enhanced” QMR of the Month recognition program, we will include a photo (whenever available) of the recipient’s award presentation in TIPS. The winner selected from QMR of the Month submissions received during October 2021 was Yeong Tam, a Technician from Star Subaru in Bayside, NY.



Yeong is shown above (left/center) after being presented with his \$500.00 Snap-On Gift Card. To Yeong's right is Star Subaru's Service Manager Kevin Suh and to his left are Star's Fixed Operations Director Alex Collao and Subaru Distributors Corporation Field Service Engineer Brian Gray.

*Congratulations and **THANK YOU** to our October 2021 QMR of the Month Award recipient!*

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From left to right: Judge Seth McVea, FSTM, Lance Wood, Matthew Winger, competitors; coach, Doug Emery and Judge Michael Wedgeworth, FSTM.

Texas Motor Speedway, Fort Worth, TX: A team of student automotive Technicians from the Technology Exploration Career Center East of the Lewisville Independent School District (ISD) took home a first-place finish in the North Texas Auto Dealers' association (NTXAD) competition on Saturday, December 4 in the infield garage of the Speedway.

The contest pitted 20+ teams of high school automotive students in a competition for tool and scholarship money. Subaru of America and two local Subaru retailers, Ewing Subaru of Plano and Five Star Subaru of Grapevine, sponsored teams from Career Center East and Ratteree Career and Development Center of the Irving ISD, respectively.

Thanks to the Dallas ATC team of Michael Wedgeworth and Seth McVea for vehicles, scan tools, bugs, judging, technical and logistical support; the Dallas Zone Team of Tim Powers, Dave Adams, Elise Seoles and WingPui Yip for tons (literally tons: a Wilderness Outback on display, shirts and swag, too!) of support and their time. Last but not least a BIG Thank You to Casey Griffin and the Central Region for generous their financial support.

Continued on the next page

01 One-Time Use Parts and other Service Manual Component Symbols

When making repairs to any Subaru vehicle, it is critical to review the related service procedures in the applicable Service Manual for the component(s) being removed or replaced. Some of these components may be one-time use, meaning once they have been removed, they CANNOT be reinstalled and MUST be replaced. Always check the applicable Service Manual for any related one time use parts necessary and review those needs with your Parts Department personnel whenever performing repairs.

To aid in this process, exploded views of components and locations can be found for each system in the applicable Service Manual – General Description/ Component section on STIS. This should serve as a reference when assessing component removal and repair, along with the removal/installation instructions provided. Component diagrams can be found under any of the major vehicle sections on STIS, (i.e. Engine, Suspension, Driveline/Axle, etc).

Below is an example for clarity. Colored boxes have been added here to highlight sample component images as found in the General Description/ Component area(s) of the Service Manual. The colored boxes have been used only as a reference.

Engine

FUEL INJECTION (FUEL SYSTEMS) (H4DOTC)

General Description

SPECIFICATION

COMPONENT

CAUTION

PREPARATION TOOL

Throttle Body

Intake Manifold Assembly

Tumble Generator Valve

Tumble Generator Valve Actuator

Fuel Insulator

Fuel Injector

Fuel Pressure Sensor

High Pressure Fuel Pump

High Pressure Fuel Delivery Pipe

Engine Wiring Harness

Engine Coolant Temperature Sensor

Engine Oil Temperature Sensor

Crankshaft Position Sensor

Crankshaft Position Sensor Plate

Camshaft Position Sensor

Oil Control Solenoid

Knock Sensor

Throttle Position Sensor

2. FUEL INJECTOR

(1) Fuel pressure sensor (6) Fuel injector **Tightening torque: N·m (kgf·m, ft·lb)**

(2) Fuel injector pipe RH (7) Decoupling **T1: 19 (1.9, 14.0)**

(3) Holder (8) Fuel injector seal **T2: 46 (4.7, 33.9)**

(4) O-ring (9) Fuel injector pipe LH

(5) Support disc

* : When removing the fuel pressure sensor from the fuel injector pipe RH, replace it with a new one.

IMPORTANT: ANY component marked with a black star ★ is one-time use. If removed or pressed off another component, this is considered used. Any component with a black circle Ⓢ is a selectable component and STIS will need be reviewed in order to make the necessary measurements to insure the proper size component is used during reassembly.

Here is a quick reference to common symbols found in component diagrams.

3.2. Component

Illustrations are provided for each component. The information necessary for repair work (tightening torque, grease up points, etc.) is described on these illustrations. Information is described using symbol.

List of symbols used in illustrations

* : Selective part or note (Notes are located outside of the illustration.)

★ : Part that cannot be reused

Ⓢ : Selective part (New symbol)

: Should be applied with sealing or locking agent.

: Should be lubricated with oil.

: Should be lubricated with grease.

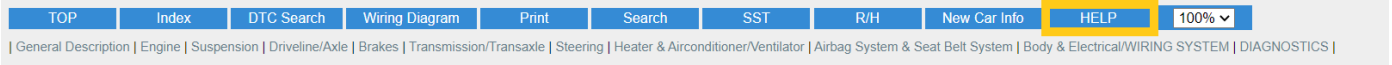
T, T1, T2, T3 ... : Tightening torque

x2, x3, x4, ... : Number of bolts, nuts, clips, etc.

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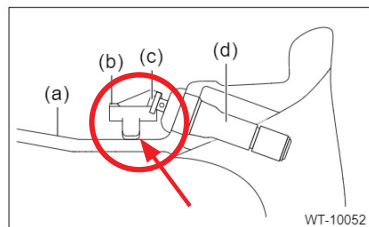
01 One-Time Use Parts and other Service Manual Component Symbols (CONTINUED)

This information can be found under the Help tab at the top of the page of the applicable service manual on STIS.



05 TPMS Sensor Installation

It has been brought to SOAs attention there is the possibility of installing newer style TPMS sensors incorrectly. If this happens, the sensor may not function as designed to read the rotational force during driving and wake up/communicate with the TPMS control module. This may result in intermittent DTCs and/or tire pressure values not displaying in the combination meter. When installing new sensors, it is imperative they are installed properly for the TPMS system to operate as intended. Refer to STIS for correct sensor orientation and installation procedures. Shown below is an incorrectly installed sensor for reference.



- (a) Wheel
- (b) Transmitter
- (c) Screw
- (d) Valve



Special thanks to Tom Jones & Brandon Bell at Hadwin-White Subaru for identifying this and correcting a very intermittent customer concern of a TPMS light.

Continued on the next page

If encountering a customer concern of the Lane Keep Assist is inoperative, even when activated, there may be an issue with the wiper circuit. Technicians faced with this concern identified Cancel Codes in the Eyesight System, i.e., 28, 50 & 51. Depending on model/year and vehicle setting status, if these Cancel Codes are found, inspection of the wiper circuit is recommended first.

19MY Ascent

20MY Legacy/ Outback

Eyesight (DIAGNOSTICS) > Lane Departure Prevention Assist Deactivate Code(s) Display LIST

List of lane keep assist code

Code	Item	Contents of diagnosis
04	Lateral Acceleration is Large	Detected when control output value exceeds the controllable range by a driving operation such as rounding a curve at high speed or making a sharp turn.
0C	Lane Recognition Prohibition(Environmental Factor)	Detected when a driving lane width is narrowed.
18	Out of Control Return Possibility Range	Detected when lane departure prevention control continues for a predetermined time.
26	Real Yaw Rate Excessive	Detected when actual yaw rate exceeds the maximum value of target yaw rate by a specified amount.
37	Yaw Rate Sensor Abnormal(Control)	Detected when the difference between actual yaw rate and expected yaw rate becomes the specified value or more.
50	Camera Adjustment Abnormal 1	Detected when the accuracy of camera learning values is not sufficient. Usually detected after replacing the camera and performing an aiming, and resolved by an automatic adjustment while driving.
52	Yaw Rate Sensor	Detected when the vehicle weaves all over the road or when the

Eyesight (DIAGNOSTICS) > Traffic Jam Assist / Lane Keeping Assist Cancel Code(s) Display LIST

List of traffic jam assist / lane keep assist cancel code

Code	Item	Contents of diagnosis
02	Judging Steering Wheel Not Held	Detected when steering wheel operation by the driver is not detected for a predetermined time (approx. 45 seconds).
04	Lateral Acceleration is Large	Detected when rounding a curve at high speed or making a sharp turn.
05	Speed of Steering Angle Change	Detected when the steering wheel is turned suddenly.
06	Steering Angle Excessive	Detected when the steering wheel is turned widely.
07	VDC Operation	Detected when VDC operates.
09	Driver Steering Torque Excessive	Detected when the steering wheel is operated slightly strongly by the driver, such as for curving and evasion steering operation.
0D	EPS Conversion	Detected when, with vehicle speed at 50 km/h or less, there is a steer-angle input due to excessive steering angle instructions from EyeSight and external factors such as wheel tracks.
0E	Driver Override	Detected when the steering wheel is operated by the driver to a direction different from the control direction in the case such as for intended lane changing.
14	DTV Operation	Detected when the active torque vectoring operates.
28	Wiper Hi Speed	Detected when wiper HI operation is activated.
2A	Control cannot be	Detected in order to cancel the function to prevent unintended

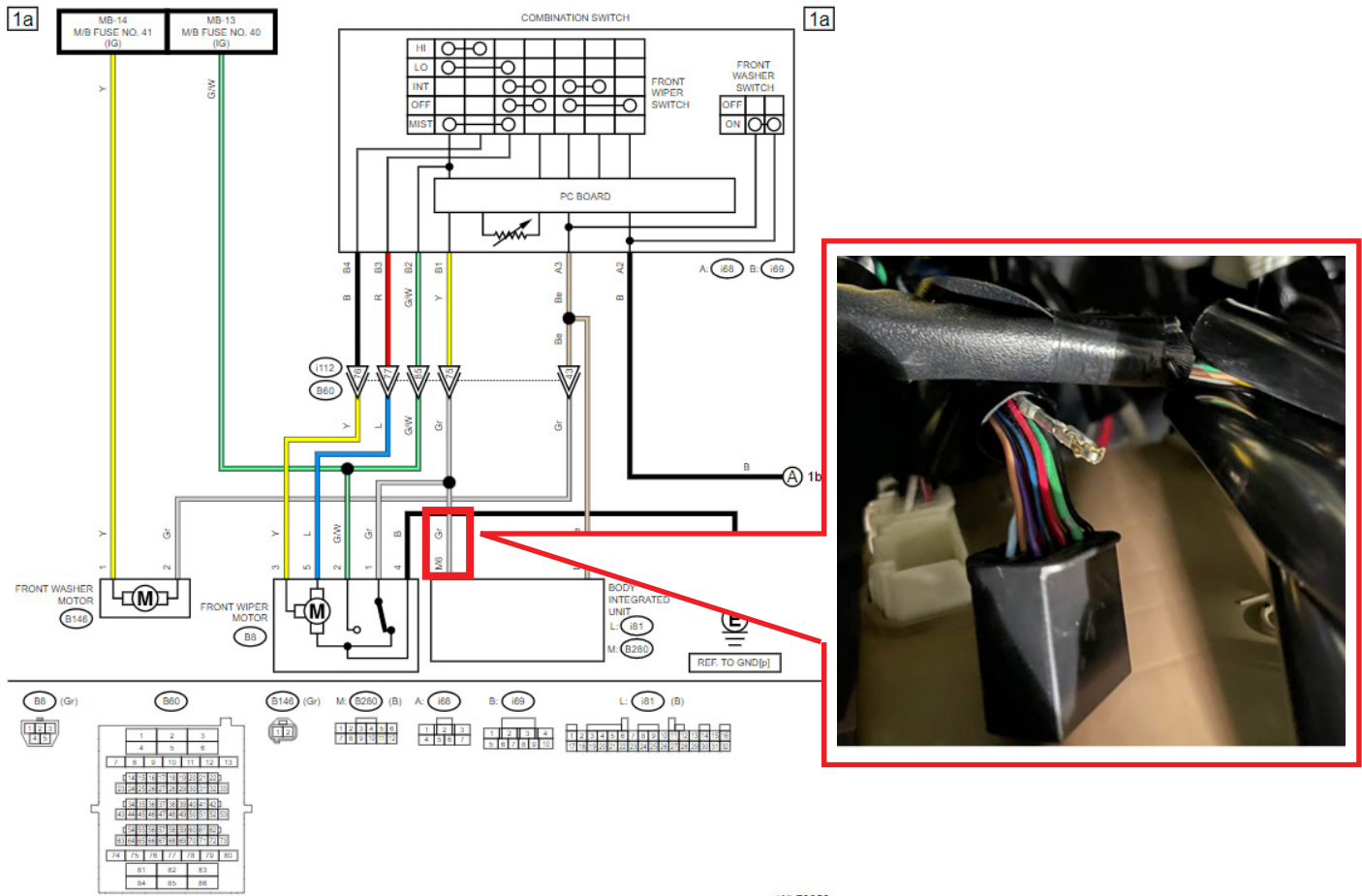
In the case of this, 19MY Ascent, the Automatic Adjustment and Function Check by Driving in the Camera Adjustment Inspection would not complete. The adjustment made no changes while being monitored in the live data. This was caused by an ‘open circuit’ between the Wiper Switch and BIU. The BIU was unable to distinguish between a ‘switch opened’ and ‘open circuit’, therefore communicating ‘Hi’ with the Eyesight system. When this is received by the Eyesight system, it is interpreted as the wipers being active and will not run the Auto Adjustment procedure. To confirm this, Technicians should look at the Eyesight live data PID, Wiper SW (Front). If the PID is found ‘ON’ continuously, without wiper activation, suspect the wiper switch circuit to be open or shorted.

Item	Value	Unit	Maximum	Minimum	Average
ES Camera Temperature Operation Status	Normal		-	-	-
ES Camera Temperature (Previous Maximum Value)	122.0	°F	127.4	122.0	125.4
ES Ignition SW ON Count When Camera Temperature (Prev...	690	Time	690	690	690
ES Camera Temperature (Previous Minimum Value)	77.9	°F	77.9	77.9	77.9
ES Ignition SW ON Count When Camera Temperature (Prev...	642	Time	642	642	642
ES Headlight SW (LO)	OFF		-	-	-
ES Wiper SW (Front)	ON		-	-	-
ES VDC "OFF" SW	ON		-	-	-
ES VDC "OFF" Indicator Status	OFF		-	-	-
ES Camera Failure Real-Time Check (At The Time of Failure)	00		-	-	-
ES Camera Temperature (At The Time of Failure)	32.0	°F	32.0	32.0	32.0
ES Image ON/OFF Status/Sensor Ready Status (At The Time ...	OFF		-	-	-
ES EyeSight Reception (VDC)	Not Receive		-	-	-
ES Hill Descent Control Status	OFF		-	-	-
ES Hill Start Assist Operation Status	Not Opera...		-	-	-
ES Brake Lamp SW Fail Status	Normal		-	-	-
ES Brake Lamp Relay Drive	Not Opera...		-	-	-

For this 19MY Ascent, the circuit was open. Connector B280 at the BIU had a backed-out pin. Once properly seated in the connector, the system returned to normal operation.

Continued on the next page

07 Lane Keep Assist Inoperative, Even When Set To "ON" (CONTINUED)



WI-78056

15 2022 BRZ Auto-Dimming Homelink Mirror Inoperative

If a customer presents with a concern of the HomeLink feature being inoperative, the Technician should inspect the mirror harness prior to performing additional diagnostic procedures. When an incorrect harness is installed, the HomeLink icons will not illuminate properly when the corresponding buttons are pressed.



Continued on the next page

15 2022 BRZ Auto-Dimming Homelink Mirror Inoperative (CONTINUED)

Some early production kits were packaged with an incorrect harness. To ensure the correct kit was installed the Technician should inspect the production date of the kit. If the kit packaging is marked with June 30, 2021 or earlier, it is not the correct kit for this vehicle. If the kit has already been installed on the vehicle an incorrect harness can be identified by the lack of a blue wire in the connector or by the revision label reading "AAA". The correct harness has the revision "AAC" and a blue wire visible at the connector. If you find the incorrect part installed, please order the replacement kit P.N. H501SCC000.



15 DTC P0116 Setting with Engine Block Heater Use



When encountering a vehicle with DTC P0116, first verify if an engine block heater is installed. If no engine block heater is installed, please follow the applicable service manual on STIS.

Continued on the next page

If P0116 is set when using an engine block heater, this may be due to ECM logic. On earlier models at engine startup, the ECM monitors the engine coolant temperature against ambient temperature. Later models monitor both coolant temperature sensors against the engine oil temperature. If a predetermined temperature difference between the sensor is observed, P0116 may result. Refer to STIS for the applicable detecting criteria.

The ECM is able to detect an engine block heater is in use **ONLY IF** the heater controls are in **ON/AUTO mode**. To help avoid this DTC, instruct the customer to have the **HVAC in the ON/AUTO** position at engine start-up. This will allow the warmed and cold coolant to combine and circulate, allowing the ECM to determine a block heater is in use, thus helping to mitigate the trigger of P0116.

In addition, if the blower motor is in the 'OFF' position, the coolant will not circulate on startup and the temperature differential may become 'out of range' also resulting in a DTC.

Refer to TSB **11-201-21** for additional information on ECM reprogramming. Additional reprogramming PAK files for more models will be released in the near future to counteract this DTC.

ITEM CODE	ITEM TYPE	TITLE	CREATED DATE
16-132-20R	Technical Service Bulletin	Diagnostic Information for All...	6-Jan-22
WRJ-21R	Subaru Product/Campaign Bulletin	Left Front B-Pillar / Inspecti...	5-Jan-22
02-189-22	Technical Service Bulletin	Oil Drain Plug / Design Change...	4-Jan-22
15-246-19R	Technical Service Bulletin	New Immobilizer Registration P...	4-Jan-22
F411SVC010	Accessory Installation Guide	2022MY WRX Rear Seat Cover	4-Jan-22
E231SSJ020	Accessory Installation Guide	2022MY Forester - Hood Protect...	3-Jan-22
15-234-18R	Technical Service Bulletin	2019 Audio/Navigation & Power ...	3-Jan-22
15-272-20R	Technical Service Bulletin	2021 Audio/Navigation & Power ...	3-Jan-22
15-249-19R	Technical Service Bulletin	2020 Audio/Navigation & Power ...	3-Jan-22
E7210VC200	Accessory Installation Guide	2022MY WRX - Trunk Spoiler	2-Jan-22
J101SVC100	Accessory Installation Guide	2022MY WRX - Mud Flaps	2-Jan-22
F411SVC000	Accessory Installation Guide	2022MY WRX - Seat Cover - Rear...	2-Jan-22
SOA567R300	Accessory Installation Guide	2022MY WRX - Pet Rear Door Pro...	2-Jan-22
SG970VA000	Accessory Installation Guide	2022MY WRX - STI Cherry Red Mi...	2-Jan-22
SG920VA040	Accessory Installation Guide	2022MY WRX - STI Lateral Link ...	2-Jan-22
SG930VA000	Accessory Installation Guide	2022MY WRX - STI Brembo Brake ...	2-Jan-22
L101SAN000	Accessory Installation Guide	PORT INSTALLATION: 202-2022MY ...	2-Jan-22
SG950VA030	Accessory Installation Guide	2022MY WRX - STI Flexible Draw...	2-Jan-22
SG950VA020	Accessory Installation Guide	STI Flexible Draw Stiffener Re...	2-Jan-22
SG920VA010	Accessory Installation Guide	2022MY WRX - STI Flexible Draw...	2-Jan-22
C1010CC000	Accessory Installation Guide	PORT INSTALLATION: 2022MY BRZ ...	2-Jan-22
SG920VA000	Accessory Installation Guide	2022MY WRX - STI Flexible Draw...	2-Jan-22
H4510SJ000	Accessory Installation Guide	PORT INSTALLATION: 2022MY Fore...	2-Jan-22
F551SSJ200	Accessory Installation Guide	PORT INSTALLATION: 2022MY Fore...	2-Jan-22
15-283-21	Technical Service Bulletin	2022 Audio/Navigation & Power ...	2-Jan-22
TIPS_SE_Dec2021	TechTIPS NewsLetter	Transfer Clutch System Diagnos...	31-Dec-21
SOA567B051	Accessory Installation Guide	Thule Bike Carrier – Hitch Mou...	31-Dec-21
15-251-19R	Technical Service Bulletin	DTC B2A16	29-Dec-21
15-289-21	Technical Service Bulletin	Subaru STARLINK® Owner's Manua...	28-Dec-21
12-232-21	Technical Service Bulletin	Trailer Hitch Fascia Panel Tem...	28-Dec-21
E515SSJ200	Accessory Installation Guide	2022MY Forester Wilderness Edi...	28-Dec-21
SOA567B041	Accessory Installation Guide	Thule Bike Carrier – Hitch Mou...	21-Dec-21
SG990VA010	Accessory Installation Guide	2015-2021MY WRX and WRX STI Tr...	21-Dec-21
05-88-21	Technical Service Bulletin	Front Stabilizer Bushing- Desi...	21-Dec-21
15-240-19R	Technical Service Bulletin	New Harman Audio Amplifiers	15-Dec-21
WRG-21R	Subaru Product/Campaign Bulletin	Fuel Pump Impeller Failure	9-Dec-21

All revised publications are highlighted in yellow.

Continued on the next page

This is your chance to offer suggestions for use in future issues of TechTIPS! Make sure that if you e-mail us, you place in the **subject line** of your e-mail **“For TechTIPS Newsletter”**. Thank you!

Model: _____

Year: _____

VIN: _____

Description of situation encountered: _____

Your suggestion for repair procedure, product improvements, etc.: _____

Please attach separate sheets, if necessary. You may also want to include Service Manual diagrams or references, or your own drawings to assist in describing your suggestion. All information submitted becomes the property of Subaru of America, Inc. Permission is granted to Subaru of America, Inc. to print your name and suggestions in TechTIPS and other Subaru of America, Inc. publications. Mail items to: PO Box 9103; Camden, NJ 08101-9877.

Your Name: _____

Signature: _____

Dealer's Name: _____

City: _____

Date: _____

Dealer Code: _____