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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:

**Leo Gilmore** from  
**Ruge's Subaru** in Rhinebeck, NY

The QMR of the Month selected from December's submissions detailed a rather unusual condition which became evident after a routine clutch replacement on an 83,000+ mile, 2016MY Impreza 5-Door. Removing the transmission revealed severely worn clutch components which included a pressure plate with several fingers missing from the diaphragm spring. Upon completion of the repair and subsequent confirmation road testing, the Check Engine light came on. Leo reported finding random misfire codes in memory and roughness counts even though the car ran perfectly normal. Since the primary source of misfire data is the crankshaft position sensor, he began by removing it for a visual inspection. With no damage identified, Leo proceeded to inspect each tooth of the reluctor using a borescope while slowly rotating the crankshaft. No damage or misalignment was found. Leo proceeded by connecting his Pico scope and taking a closer look at the waveform data for both camshaft position sensors and the crankshaft sensor. He also used the same waveform data from a known good vehicle for comparison with no significant differences seen. After ruling out an imbalance of the replacement clutch components by installing another assembly, Leo decided to swap in a known good crankshaft position sensor, clear the ECM memory then headed back out for another road test with the scope reconnected. The roughness counts disappeared, and the Check Engine light did not reset. After replacing the crankshaft position sensor with a new part and another confirmation road test, the vehicle was returned to the customer. Leo's TechShare report included his detailed diagnostic steps along with scope data screenshots and numerous high-quality photos.

In appreciation for his continuing to go the extra mile, Leo 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.

#### 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.



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## 01 QMR of the Month (CONTINUED)

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

- **Charles Johnston** from **Subaru of Macon** in Macon, GA
- **Raymond Quintana** from **Shingle Springs Subaru** in Shingle Springs, CA
- **Bryan Finochiaro** from **Baxter Subaru Omaha** in Omaha, NE
- **Daniel Evans** from **North Reading Subaru** in North Reading, MA

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 include a photo (whenever available) of the recipient’s award presentation in TIPS. The winner selected from QMR of the Month submissions received during December 2021 was (once again) Leo Gilmore, a Technician from Ruge’s Subaru in Rhinebeck, NY.



*Leo is shown above after being presented with his \$500.00 Snap-On Gift Card. To Leo’s right are Dealer Principals Lewis Ruge and Kristin Hutchins. To his left are Service Manager Jack Cleary and Subaru Distributors Corporation Field Service Engineer, Jim Colamarino.*

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

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# TECH TIPS GREATEST TIPS

This series features TechTIPS articles frequently referred to by Techline. This month's features are from April 2009 and December 2020.

## 02 P0171 , Rough Running Condition After Cold Start

If you encounter a 2005 or newer M/Y turbocharged vehicle experiencing a Check Engine Light for DTC P0171 and/or a customer complaint of rough running for a short period after start-up when cold, check for a vacuum leak at the intake manifold. The complaint has been noted primarily in northern climates when the outside temperatures are often below freezing. There is an orange rubber o-ring type intake manifold gasket used between the plastic upper intake plenum and the tumble generator part of the intake manifold. In some cases, idle quality was compromised. At times the SSMIII showed a 25% enrichment from the A/F sensor and a slightly lower MAP reading. After removing and separating the intake components, a dirty, blackened tracing could be seen where the leak was occurring (see photo). Symptoms would diminish as the engine warmed up. After replacing the o-ring gaskets, readings returned to normal and idle quality was restored.



## 11 DTC P0171 Diagnostics

### Unmetered Air

- Air entering the engine **after** the **MAF** will cause lean air/fuel mixtures.
  - Inspect all air intake connections for damage or looseness after the MAF.
  - In order to locate air leaks which cannot be visually inspected, use a method of fuel enrichment while monitoring your fuel trims. If the fuel trims drop toward 0% or A/F sensor returns to  $\leq 1.0$  during enrichment of a certain location, suspect an air leak.
  - Test the **CPC solenoid** and **brake booster** by blocking the hose connected to the component while monitoring the fuel trims to determine if there is a fault.

### Exhaust

- **Air** entering the exhaust system between the cylinder head and A/F sensor will also cause a false lean condition.

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**Metering devices**

- Metering devices for the air/fuel mixture can send incorrect information to the ECM causing incorrect fuel corrections.
  - o Inspect the connections at all air/fuel metering devices for poor connection and contamination.
  - o Swap the **MAF** and **A/F** sensor into a like vehicle to see if the condition follows the sensor.

**Combustion chamber**

- Poor combustion in a cylinder can result in unburned oxygen. The A/F sensor will read the unburned oxygen as a lean condition.
  - o Verify **valve clearances** and **compression** readings are within specifications according to the applicable Service Manual.
  - o Information regarding cylinder **leak-down** testing can be found on STIS in Technician's Reference Booklet: Engine Theory and Diagnosis MSA5P2106C.

With the new addition of the TechShare app, Techline and FQA felt it necessary to remind everyone on the importance, reason, proper usage, and effectiveness behind Quality Monitoring Reports (QMR)s, A QMR should be completed for the following:

- Any vehicle repair made at the time of PDI.
- Any vehicle repair or condition you feel is unusual.
- Any potential safety related concern.
- Any common trend you as the field Technician are seeing that SOA may not be aware of.

A QMR should **NOT** be completed with questions regarding vehicle operation, repair procedures or claims entry. These topics were not intended for QMRs or the TechShare app, even though a steady increase has been seen. It is recommended to exhaust all available resources on Subarunet, STIS, fellow coworkers/shop foreman, contacting the SOA Techline or the Claims Support for further assistance.

The new TechShare QMR incorporates an interactive dialog option for the retailer Technician and FSE. This new option for dialog is intended to help Technicians receive feedback regarding their QMR entry from their FSE, not for diagnosis. This option should be utilized solely as a line of communication for coaching opportunities to create a more effective QMR.

In addition, QMRs should **NEVER** be used to escalate a vehicle concern if the Technician is having a difficult diagnosis/repair. Always utilize Techline for any repair escalations. Keep in mind, QMRs are a great way to report a new or hard to diagnose concern **AFTER** it has been successfully repaired. This will help the repair review process and provide potential improvement.

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## 01 The TechShare QMR and You (CONTINUED)

Finally, in today's world everyone's time is valuable, remember, the key to any diagnosis is in the details. Without the details, the ability of the next level to help you is significantly reduced. The same goes for reporting quality or safety concerns. The more details provided, the better and faster action can take place. Pictures, videos, troubleshooting results and SSM data are vital to good quality improvement escalations. Efficiency is crucial. In this case efficiency means sharing all the details so quick evaluations, judgments, further escalation and follow up actions can be made effectively.

For questions regarding claim entry or claims procedures, see your Warranty Administrator, refer to **Subarunet > Claims & Warranty Administration > Claims Policy and Procedures** or contact the SOA Claims Team.

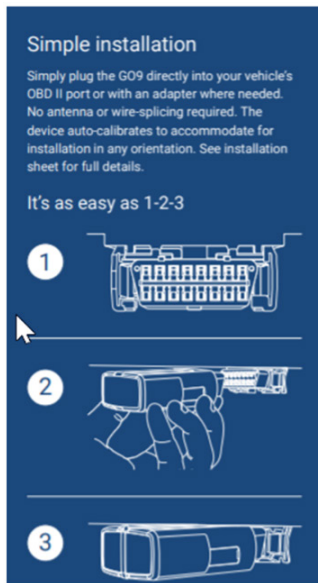
## 05 Flat Spots and Road Force Tire Balance

Some customers may describe a concern of a steering wheel vibration, oscillation, or a "shimmy" condition at highway speeds. This could be caused by many factors including improper tire/wheel balance, excessive radial force variation (RFV), and / or improper tire inflation. Another possibility often overlooked is if the vehicle sits for long periods of time, there is the potential for a "flat spot" to develop on the tire. When faced with a concern like this, start by interviewing the customer and test driving the vehicle to verify the concern. The next step would be a thorough visual inspection of the wheels and tires. Make sure they are properly inflated with no obvious signs of external damage like signs of scuffing/rubbing, sidewall damage or rubber missing, bubbles, excessive wear or cords showing. After this process has been completed, a tire balance check may be necessary. A Hunter GSP 9700 tire balance machine (or newer) is highly recommended when checking for balance and road force. The Hunter machine should be kept in good condition and calibrated regularly to maintain accurate results when checking for an imbalance or RFV. Failure to keep the balancer in proper working order could result in false or incorrect readings when attempting to repair this concern. STIS provides a service limit maximum of 0.18 oz for wheel balance, which is less than a quarter ounce! When performing a Road Force balance, be sure to keep the RFV to 8.0kg (17.6lbs) or less. TSB 05-50-10 is a great place to look for information when a vehicle comes in with a possible tire balance concern.

## 15 GEOTAB, Fleet Tracking Device

GeoTab is a brand name for a device used commonly across many vehicle manufacturers and fleet organizations. GeoTab has worked directly with SOA Fleet Sales, to ensure the best possible operation of the device. It is used for several purposes: insurance tracking, fuel mileage logs, maintenance, and for taxes. There are currently no known concerns associated with the use of a GeoTab device on Subaru vehicles. Recently, Techline has been informed that retailers are refusing to diagnose vehicles for conditions if the GeoTab is found to be installed. These conditions vary widely, from Apple CarPlay connectivity to CVT Chain Slip, as being related to the use of the GeoTab device. All conditions reported were later resolved through normal diagnostics when the GeoTab was still installed/connected. The device had no bearing on the conditions presented. The initial refusal to diagnose the vehicle resulted in an easily avoidable poor customer experience for those fleet drivers. Never refuse to diagnose vehicles equipped with GeoTab branded devices. If after performing diagnosis related to the condition, and you believe there may be a concern specifically related to the GeoTab device reach out to Techline for further review.

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If a vehicle with a GeoTab device is brought into the shop for a concern, simply unplug the OBD portion from the OBD port while any SSM Diagnosis is being completed. If the device is hardwired, and the OBD port is not blocked, there is no need to attempt removal. Perform an All-DTC scan and visual inspection. If a communication code (U0XXX) is found with no obvious signs of failure, e.g. the SSM cannot establish communication with a particular module, diagnosis the concern as it presents. If no clear fault can be found after completing the related Service Manual Diagnosis, only then should it be recommended further testing be performed without the device installed.

If the customer concern is for an unrelated system such as Infotainment, HVAC, or an Engine or CVT concern, the proper diagnostic procedure should always be followed. Simply unplug the GeoTab, then duplicate the customer's concern. GeoTab removal **SHOULD NOT** be the first recommendation to the customer before attempting duplication of the concern and is not necessary when performing initial diagnosis of the concern.

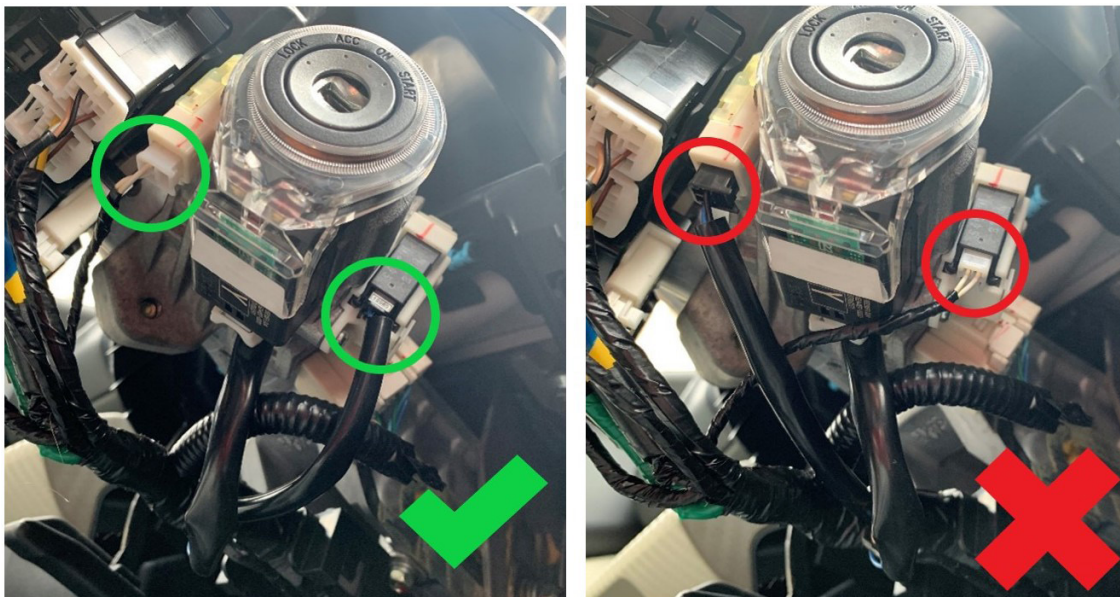
In addition, GeoTab should not cause a DTC B2A15 seen commonly with other OBD devices. The reference TSB 15-257-19R for this condition does not apply to the GeoTab brand devices if the device's software is up to date. The GeoTab device does not interfere with STARLINK Telematics functionality, even in the rare event a B2A15 is present.

If a B2A15 is current, diagnose it per the applicable service manual or TSB. If the root cause of the condition cannot be determined after performing this diagnosis, only then refer the customer back to their fleet provider for assistance with the GeoTab device.

If a STARLINK concern is reported that is not B2A15 and a GeoTab OBD extension or device is found in the vehicle, perform an All-DTC scan and determine if a current code is set. Determine if the RED LED on the overhead console is on then reference TSB 15-286-21R (Telematics Diagnostic Strategy). It is highly recommended to perform a test call and speak to a Telematics representative. If still unsure whether the Telematics is experiencing a fault, contact Techline for further assistance and before any part replacement.

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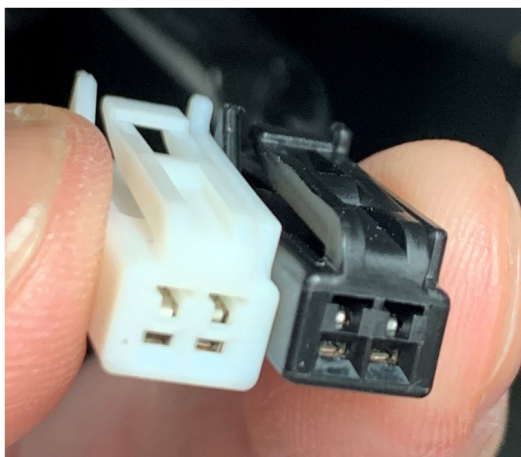
It has been brought to Techline's attention that some models have identical connectors at the Key Lock solenoid connector and Key Warning switch connector. If these two connectors are interchanged at any point, multiple systems can become inoperative. One of the most likely situations in which this could happen is during an ignition cylinder replacement or RES installation.



If the connectors are switched, there are two main concerns the customer could experience. First, the keyless entry will become inoperative because the BIU sees the key warning switch is always active. Second, the key chime does not function at all **OR** functions continuously even with the key physically removed. It is important to note the keyless entry will only work if the key is out of the ignition.

This condition can also affect Immobilizer Registration processes. This is commonly seen when attempting to program additional keys. The Immobilizer must see the key switch to "OFF" when removed from the ignition in order to progress to the next key registration. If the vehicle can only program one key and then times out, check the key switch BIU live data PID.

The other BIU live data PID that will need to be inspected is the Key-Lock Warning SW. The Key-Lock Warning SW will never switch to "OFF" if the connectors are installed incorrectly. If this is found to be the case, the next step would be to review the wiring and perform a visual inspection of the connectors.



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**NOTE:** All pictures here are for reference. Different models may have the same connector color. The connectors are the same shape and pin count. It is a recommended practice to mark these wires with tape during disassembly, so reinstallation is correct.

A quick reference table has been made below to identify 'like' connectors in this situation only. Additional guidance can be found in the "Shift Lock Control System" section on STIS for the vehicle being serviced. It is highly recommended to match the wire colors to the correct connector. Always consult the appropriate service manual on STIS when performing any diagnosis.

Vehicle	Year Range	Connectors are identical shape
Outback	2015-up	i63 & i52 / i181 & i182
Legacy	2015-up	i63 & i52 / i181 & i182
Impreza	2012-up	B557 & B555 / i52 & i63
Forester	2014-up	B557 & B555 / i52 & i63
Crosstrek	2013-up	B557 & B555 / i52 & i63
WRX/STI	2015-up	B555 & B555
Ascent	2019-up	i63 & i52

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ITEM CODE	ITEM TYPE	TITLE	CREATED DATE
TIPS0122	TechTIPS NewsLetter	2022 January TechTIPS Newslett...	25-Mar-22
15-246-19R	Technical Service Bulletin	New Immobilizer Registration P...	22-Mar-22
06-86-22	Technical Service Bulletin	Squeaking Sound from Brake Ped...	21-Mar-22
15-192-22R	Technical Service Bulletin	Infotainment Concern Data Coll...	18-Mar-22
15-192-22R	Technical Service Bulletin	Infotainment Concern Data Coll...	18-Mar-22
C1010VA001	Accessory Installation Guide	PORT INSTALLATION: 2022MY WRX ...	16-Mar-22
SOA567R200	Accessory Installation Guide	2019-22MY Ascent Pet Rear Door...	16-Mar-22
SOA567R100	Accessory Installation Guide	2019-22MY Forester Pet Rear Do...	16-Mar-22
F411SSJ020	Accessory Installation Guide	2019-22MY Forester Seat Cover ...	16-Mar-22
07-205-22	Technical Service Bulletin	Subaru Rear Vehicle Detection ...	15-Mar-22
13-104-21	Technical Service Bulletin	2022 MY Paint Coding Informati...	10-Mar-22
16-136-22R	Technical Service Bulletin	Vibration & Possible Judder Co...	9-Mar-22
18-217-22R	Technical Service Bulletin	Service Manual Correction / DT...	9-Mar-22
06-84-22	Technical Service Bulletin	DTC B2809- VDC Abnormal & B2C2...	7-Mar-22
L9020BE	Service Manual	2022MY WRX Body Repair Manual	7-Mar-22
09-83-21R	Technical Service Bulletin	3.6L Water Pump-Design Change ...	7-Mar-22
15-293-22	Technical Service Bulletin	Remote Climate Control Operati...	4-Mar-22
15-240-19R	Technical Service Bulletin	New Harman Audio Amplifiers	2-Mar-22
09-80-21	Technical Service Bulletin	DTC # P2682 & P26Ax** / Thermo...	28-Feb-22
12-234-22	Technical Service Bulletin	Body Repair Manual Correction	28-Feb-22
J121SAN500	Accessory Installation Guide	2022MY Outback Exterior Graphi...	28-Feb-22
J121SAN200	Accessory Installation Guide	2022MY Outback Exterior Graphi...	28-Feb-22
J121SAN100	Accessory Installation Guide	2022MY Outback Exterior Graphi...	28-Feb-22
01-175-16	Technical Service Bulletin	E-Mailing Files to Techline an...	28-Feb-22
06-85-22	Technical Service Bulletin	Rear Stabilizer Bar / Design C...	23-Feb-22
WRL-21	Subaru Product/Campaign Bulletin	Front Axle Housings	23-Feb-22
15-255-19R	Technical Service Bulletin	Map Data Update Procedure for ...	22-Feb-22
C1010VA001	Accessory Installation Guide	PORT INSTALLATION: 2022MY WRX ...	22-Feb-22
15-234-18R	Technical Service Bulletin	2019 Audio/Navigation & Power ...	21-Feb-22
WRE-21R	Subaru Product/Campaign Bulletin	Ignition Coil Replacement	21-Feb-22
MSA5B2205A	Owner Manual	2022MY WRX Getting Started Gui...	18-Feb-22
15-291-22	Technical Service Bulletin	Gen1 Telematics DCM Replacemen...	18-Feb-22
MSA5M2210A	Owner Manual	2022MY WRX Subaru STARLINK® Ow...	18-Feb-22
MSA5M2215A	Owner Manual	2022MY WRX Eyesight Owner's Ma...	18-Feb-22
MSA5M2205A	Owner Manual	2022MY WRX Owner's Manual	18-Feb-22
07-204-22	Technical Service Bulletin	Tentative Select Monitor Proce...	18-Feb-22
H505SSJ000	Accessory Installation Guide	PORT INSTALLATION: 2022MY Fore...	18-Feb-22

ITEM CODE	ITEM TYPE	TITLE	CREATED DATE
E7210VC200	Accessory Installation Guide	PORT INSTALLATION: 2022MY WRX ...	18-Feb-22
J121SVC000	Accessory Installation Guide	2022MY WRX - Carbon Fiber Trun...	18-Feb-22
H101SSJ000	Accessory Installation Guide	2022MY Forester Long Range Pus...	18-Feb-22
15-192-22	Technical Service Bulletin	Infotainment Concern Data Coll...	16-Feb-22
12-233-22	Technical Service Bulletin	Squeak Sound During Front Wind...	11-Feb-22
05-75-20R	Technical Service Bulletin	Front Coil Spring- Design Chan...	10-Feb-22
16-132-20R	Technical Service Bulletin	Diagnostic Information for All...	8-Feb-22
06-83-22	Technical Service Bulletin	VDC Reprogramming File Availab...	8-Feb-22
16-125-19R	Technical Service Bulletin	CVT Oil Pan- Design Change	3-Feb-22
16-138-22R	Technical Service Bulletin	DTC P0613 – TCM Processor	3-Feb-22
E721SAN031XX	Accessory Installation Guide	2020-2022MY Legacy - Trunk Spo...	2-Feb-22
TSG 900MHz KS	Troubleshooting Guide	Remote Engine Start Systems Tr...	2-Feb-22
	Service Diagnostics	2022 WRX Service Manual VH	2-Feb-22
09-85-22	Technical Service Bulletin	Front Exhaust Pipe Cover Repla...	1-Feb-22
15-201-20R	Technical Service Bulletin	Reprogramming File Availabilit...	28-Jan-22
SUTTIPSLOC	Other/Miscellaneous	TechTIPS Article Locator Index...	25-Jan-22

**All revised publications are highlighted in yellow.**

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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:** \_\_\_\_\_