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Wiper Blade Performance Diagnosis

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Wiper Blade Performance Diagnosis

Streaking is the most common warranty condition found with wiper blades on GM models. However, worn blades are not the only cause of streaking. Several other issues that can affect wiper blade performance include contamination build-up on the blade, windshield or rear glass; tears or nicks in the blade element; and non-uniform-blade element edges. Each of these potential causes should be checked when inspecting wiper blades for poor performance.

Most concerns about wiper performance are the result of dirty wiper blades, damaged wiper arms or blades, or blades that are worn beyond their useful life. Depending on environmental conditions and use, wiper blades can have dramatic differences in lifespan.

Wipe Quality Rating Scale	Aspect	Description
10		No fault in the wiping pattern.
9		One not persistent, very thin streak out of the central wiping pattern.
8		One persistent, very thin streak out of the central wiping pattern.
7		Three persistent, very thin streaks out of the central wiping pattern.
6		Four persistent streaks (1 mm maximum) out of the central wiping pattern or one persistent ridge, very thin in the central wiping pattern.
5		Six persistent streaks (1 mm maximum) out of the central wiping pattern or one persistent ridge, very thin in the central wiping pattern.
4		Numerous persistent streaks.
3		Unwiped film.
2		Unwiped area.
1		Chattering.

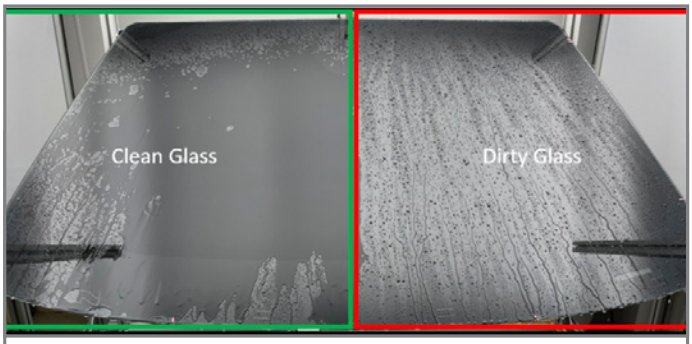
Wipe Quality Reading Scale

Let's take a look at initial wipe quality diagnosis and evaluation, cold weather operation and a few other tips to help ensure proper wiper blade performance.

WIPE QUALITY DIAGNOSIS

If the vehicle exhibits a condition where the windshield wiper blade performance is compromised, check the following items in order to properly evaluate the wipe quality:

1. Determine the wiper blade warranty status. The warranty window for wiper blades is 12 months or 7,500 miles. If the vehicle exceeds either of the criteria, the wiper blade cannot be replaced under warranty.



Clean the windshield before beginning wiper diagnosis. Clean glass, left, and dirty glass, right.

2. Clean the windshield with windshield cleaner or equivalent. The cleaner should not scratch the glass or harm the paint.
3. Lift each wiper blade off the windshield and clean the element with a lint-free cloth saturated with washer solvent.
4. Place both wiper blades back on the glass and activate the front windshield wash system to confirm if the wipe quality concern is still present.
5. If the wipe quality issue is not present, do not replace the blades. The blades should be replaced only if the wipe quality issue can be recreated after cleaning the glass and blades.

As with other criteria, wipe quality has different ratings to demonstrate ideal performance vs. degraded performance. The following chart shows the different wipe quality ratings, where GM advises any rating of 7 or higher is deemed acceptable. The wipe quality readings should be performed 3 seconds after the wipers stop.

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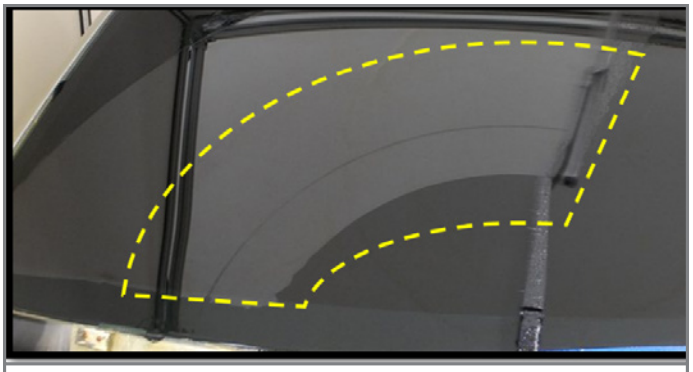
COMMON CONCERNS

Streaking can be caused by a variety of issues, including:

- Small tears in the blade element.
- Blade wear over time.
- Nicks created from attempting to clear the windshield of ice; contamination buildup on the wiper blade or windshield, such as from bugs, road grime, sap or car wash/wax treatments.
- Non-uniform blade-element edges (as manufactured).

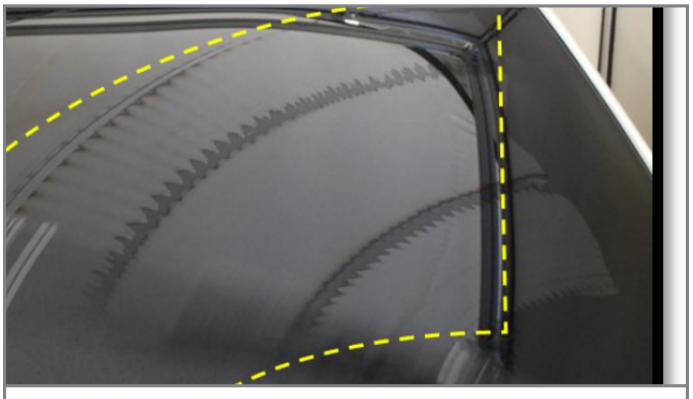


Example of a streaking condition.

Chatter is a wiper defect where the blades move across the glass with a bouncing or uneven motion. The causes of chatter can be related to:

- The permanent set of the blade, causing resistance of the blade to flip after reversal.
- High tip force of the arm.
- Snow or ice buildup in the wiper blade hinge.
- The blade not sitting on the glass at the proper angle.

If a chatter condition still exists after a blade change, it's possible that the tip force of the wiper arm is contributing to the chatter.



Example of a chatter condition

A number of environmental conditions can play a role in the performance and longevity of wiper blades:

- Extremely dusty areas, such as driving on dirt roads, may cause a wiper blade's rubber edge to wear quickly and unevenly.
- Sand and salt used on roads for increasing traction and ice control during the winter may cause the wiper blades to wear more quickly.
- Areas with significant snowfall may require more frequent blade replacements.

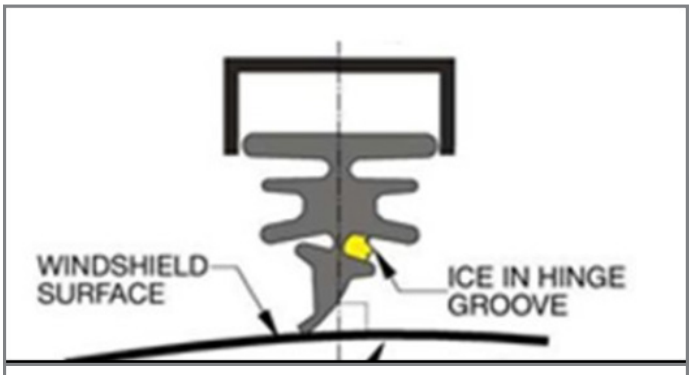
COLD WEATHER TIPS

Winter weather is generally a rough season for the wiper blades. The wipers should not be used to "wear through" frost or to clear snow and ice off the windshield as it can cause damage to the wiper blade's rubber element. Instead, allow the vehicle's defrosters to melt the frost, snow or ice, or manually clear the windshield.

Banging wipers on the glass to remove ice and snow also may cause the blade to bend, dislodging the rubber and causing potential scratching of the windshield.

Ice in the wiper blade hinge should be cleared to allow the wiper blade to function properly.

Remove ice and snow prior to using the wipers.



Ice in hinge groove

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Improper use of ice scrapers also can lead to wiper blade damage. Rubber blades are easily cut or torn when using ice scrapers. Avoid excessive contact with the wiper blade by moving the ice scraper parallel to the blade, which minimizes the possibility of damage. Do not pull the blades off a frozen windshield, which can tear the rubber or damage the wiper.

Ice scraper damage

To avoid contacting the wiper blades with an ice scraper, place the wiper arms in the "service up" position, if applicable. With the wiper arms up, the wipers will not collect snow or stick to the glass, and it will prevent the ice scraper from contacting a wiper blade that is frozen to the windshield.

Wiper arms in the "service up" position.

WIPER BLADE HANDLING AND MAINTENANCE

Vehicle windshield wipers are exposed to weathering elements as soon as a vehicle is produced. Dealership policies or customer habits also can affect wiper blade performance in many ways.

The following items should be considered when a vehicle is stored on the lot or a vehicle is at the dealership for service.

- During extended outdoor storage, the wiper blades may be affected by dirt and debris stuck on the blade surface. The wiper blades should be cleaned with a lint-free cloth or paper towel soaked with windshield washer fluid. Be sure to wash the windshield thoroughly when cleaning the blades.
- Tree sap and pollen should be cleared off the windshield prior to using the wipers to avoid the contamination being transferred or causing damage to the wiper blades. If possible, avoid parking under trees to prevent contamination of the wipe area.

Clear the windshield before operating the wipers.

- Do not operate the wipers if the vehicle is extremely dirty with gritty or sandy materials, or if there are twigs/sticks in the cowl area. If this type of debris is dragged by the force of the wipers while the windshield is dry, it may cause glass scratching.
- Drive-through car washes with wax treatment and water repellants may compromise wipe quality when the treatments cover the windshield. These treatments should be avoided to ensure proper wipe quality.

Do not place dealership paperwork under the wiper blade.

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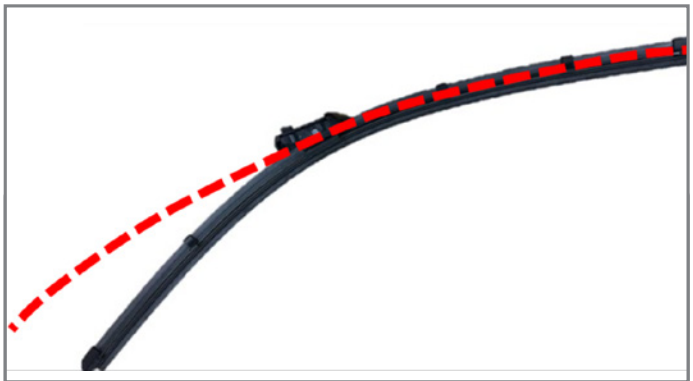
- Dealership service tickets or any paperwork should not be placed under the wiper blade. The rubber blade element should only be in contact with the glass as it can be distorted and possibly create a papercut on the blade lip.
- Stickers or decals should not be placed in the front or rear wipe areas as the sticker creates unnecessary wear each time it passes over the blade and compromises wipe quality.

Decals should not be placed in the wipe areas.

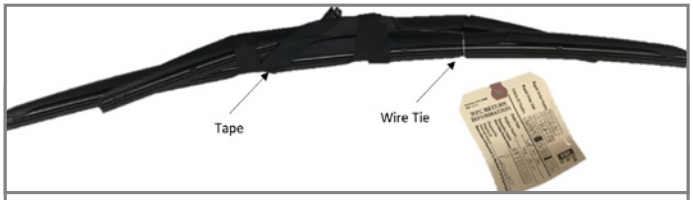
- Vehicles with windshield chips or cracks in the wipe zone should be repaired to avoid tearing or creating nicks in the wiper blade element.



Ensure wiper blades are not straightened or bent.

- Precautions should be taken when handling the wiper blade to protect the blade element and avoid distortion. For example, blades should not be stacked on one another as the blade element can be distorted and take a "set" that compromises wipe quality. Wiper blades should be kept in the protective packaging as long as possible to mitigate outside damage.
- Special care should be taken to ensure wiper blades are not straightened or bent. OEM blades are designed to fit the contour of the glass. Once wiper blades are bent, the fit to the glass is compromised and can lead to wipe quality issues.

PART RETURNS



Properly package the part return when requested.

GM will occasionally open part return projects on certain vehicle programs and model years for wiper blade returns. The intention of these projects is to gain a better understanding of the issues contributing to the warranty claim by returning the wiper blade for additional analysis. If GM is requesting parts back, do not apply tape around the rubber blade element or use a twist-tie wire to secure the blades as this will distort the blade element and prevent further testing.

For more details about wiper blade diagnosis as well as proper handling and use, refer to the appropriate Service Information.

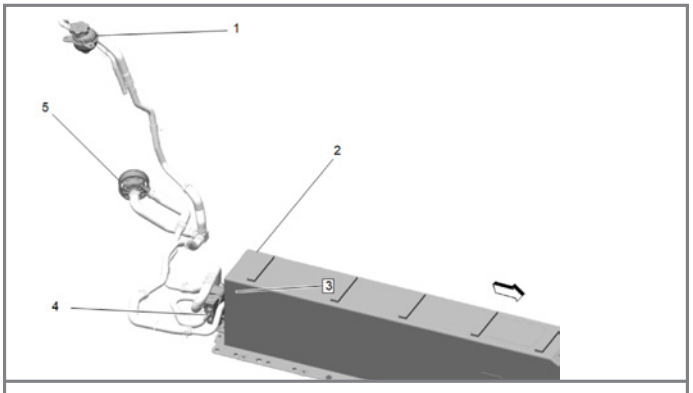
▶ Thanks to Blake Whelan

Purging the Hybrid/Electric Battery Coolant Pump

The 2024-2025 Corvette E-Ray features an independent cooling system to cool the high-voltage battery. If air gathers and gets trapped in the hoses around the Hybrid/Electric Vehicle Battery Coolant Pump during repairs, it can cause the pump to stop for self-protection, which the Battery Energy Control Module (BECM) interprets as an under-speed condition. DTC P0E3C (Hybrid/Electric Vehicle Battery Pack Coolant Pump Underspeed) may set in the BECM and DTC P0A7B (Battery Energy Control Module Requested Malfunction Indicator Lamp Illumination) may set in the Engine Control Module (ECM). The air trapped in the system must be purged.

TIP: If any other DTCs set related to the battery pump or loss of isolation, follow the appropriate Service Information diagnostics for those DTCs.

To purge the pump, begin by removing the Front Compartment Rear Access Cover and the Underbody Rear Air Deflector. The G65 Hybrid/Electric Vehicle Battery Coolant Pump is on the lower-left side of the of the engine bay. The pump will need to be slid inboard out of its mount and lowered relative to the other plumbing without kinking the hoses.



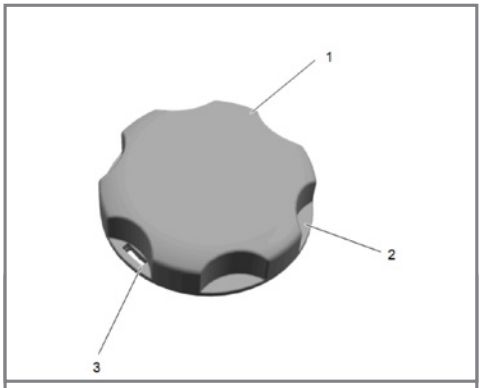
Hybrid/Electric Vehicle Battery Coolant Pump (#5)

In the engine compartment, rotate the high-voltage battery coolant (RESS) surge tank cap upper cover counterclockwise to align the slot in the cap cover with the slot in the cap body. Insert a suitable flat-bladed tool into the slot and, with the cap sections engaged, rotate the surge tank cap counterclockwise to remove it. Do not use the flat-bladed tool to loosen the cap.

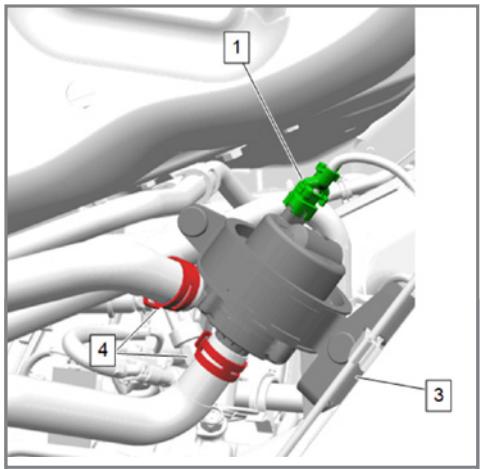
To maintain battery voltage, connect a battery charger, and then place the vehicle in Service Mode.

Use GDS 2 to run the Hybrid/Electric Vehicle Battery Coolant Pump at 4,000 RPM for 15 minutes. If the coolant level drops, fill the cooling system using DexCool 50/50 Premix. The coolant level should just cover the white indicator at the bottom of the small coolant reservoir. For reference, the total system volume is 1.9 L. Run the pump again if needed to purge all air from system.

If DTC P0E3C sets again after two or more purges, follow the appropriate Service Information diagnostics for the pump.



Rotate the surge tank cap upper cover (#1) counterclockwise to align the slot (#3) in the cap cover with the slot in the cap body (#2).



Run the pump to purge air from the system.

For more details, refer to Bulletin #24-NA-160.

▶ **Thanks to Lane Rezek**

Techline Customer Support Center

INTRODUCES DEALER CASE MANAGEMENT SUPPORT

The Techline Customer Support Center (TCSC) has introduced Dealer Case Management (DCM) support for all inbound cases. The DCM system (U.S.) enables dealership technicians to create, view and update Techline cases in real time, reducing the time spent waiting on a phone call for assistance when diagnosing a programming condition or other Techline-related issue. The DCM system is designed to enhance response times and help technicians get the information they need more quickly.

The new Techline DCM feature is found on the same page as the Technical Assistance Center (TAC) DCM system. To access the DCM, go to the App Center on GlobalConnect. Select Service from the Department drop-down menu and then select Dealer Case Management System & Resources from the list of apps. The DCM launch box will appear. Click the Launch button to open the application. .

DCM APP

To start a case in the DCM application, select the Technical Assistance Center tab and click the New Techline Case button at the top of the page:

Technicians are encouraged to start and manage a Techline case in the DCM portal. After starting a case, technicians have the option to await a response in the DCM portal or call Techline at 1-800-828-6860. All notes and communications will be documented in the DCM to be reviewed at any time.

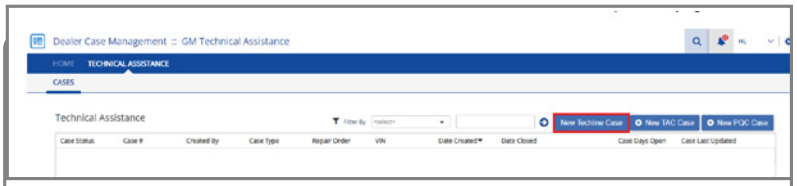
PC SPECS

After clicking the New Techline Case button, please fill out all the required information before proceeding in order to help the TCSC advisors collect all the details needed to provide assistance on the case. The Techline support case form includes PC specifications.

The PC specs information can be located by searching and opening System Information on your PC:

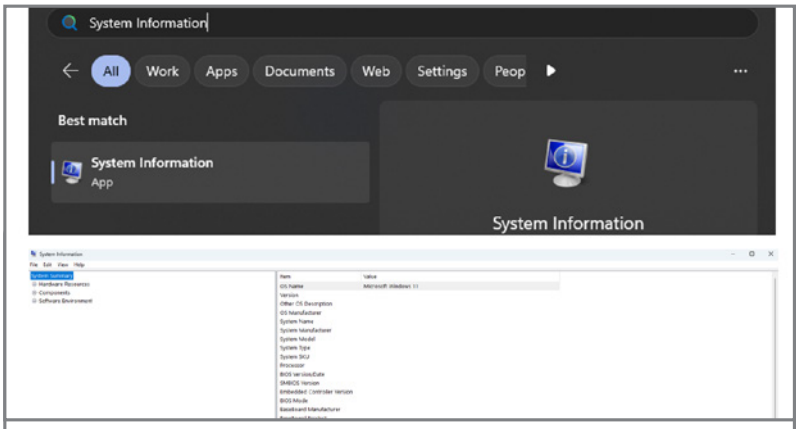
For additional information about using the DCM system, there are several training aids available. To review, select the App Resources button included in the DCM launch box on GlobalConnect.

For support with Dealer Case Management (DCM) access or performance, contact the GlobalConnect Help Desk at 1-888-337-1010, prompt 1 and then prompt 2.



After selecting the Technical Assistance Center tab, click the New Techline Case button to start a case.

Provide the required information to help the TCSC advisors collect all the details needed for assistance on the case.

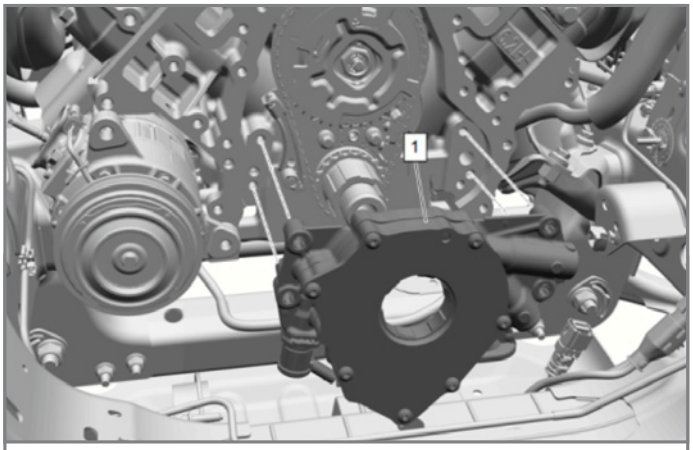


Include the PC specs when starting a case.

▶ Thanks to John Sauer

Oil Pump Assembly Oil Pressure Relief Valve Condition

There may be low oil pressure in the 5.3L V8 engine (RPO L84) or 6.2L V8 engine (RPO L87) on some 2019-2024 Silverado 1500, Tahoe, Suburban, Sierra 1500, Yukon; and 2021-2024 Escalade models. If the oil pressure relief valve inside the oil pump assembly is stuck, it may cause low oil pressure at idle and, as a result, the Check Engine MIL may be illuminated and DTC P0521 (Engine Oil Pressure Sensor Performance) may be set in the Engine Control Module (ECM).



Oil pump assembly

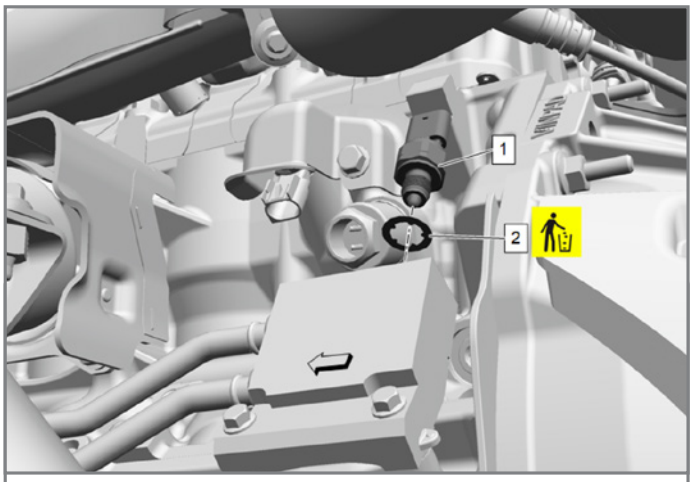
On some vehicles, the engine oil pressure sensor or ECM may have been replaced during a prior service repair.

ELECTRICAL OR OIL PRESSURE SENSOR CONCERNS

Begin diagnosis by following the flow chart for DTC P0521. Check that there are not any electrical or oil pressure sensor concerns before inspecting the oil pump.

OIL PRESSURE TEST

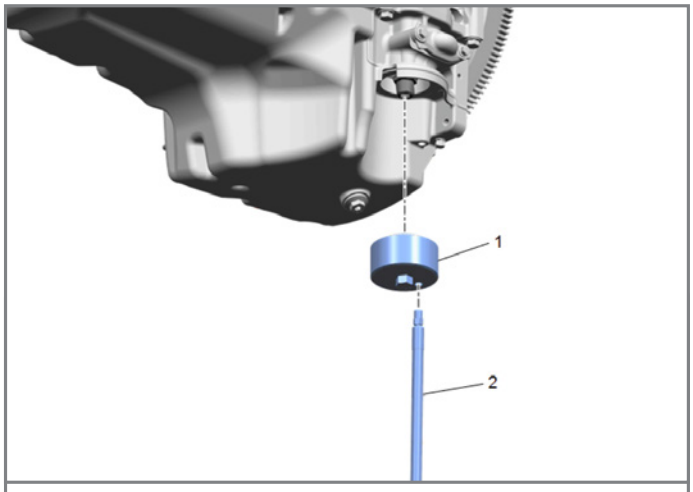
If there aren't any electrical or oil pressure sensor issues, perform a mechanical oil pressure test using the Oil Pressure Gauge Kit. Testing must be done with the engine at idle and at a normal



Oil pressure and temperature sensor

operating temperature. Refer to Oil Pressure Diagnosis and Testing in the appropriate Service Information.

Oil pressure can vary greatly at the oil filter location vs. at the oil pressure sensor location using the adapter specified in the service procedure. A difference of up to 10 psi may be found when checking oil pressure at both locations during testing



Oil filter pressure testing

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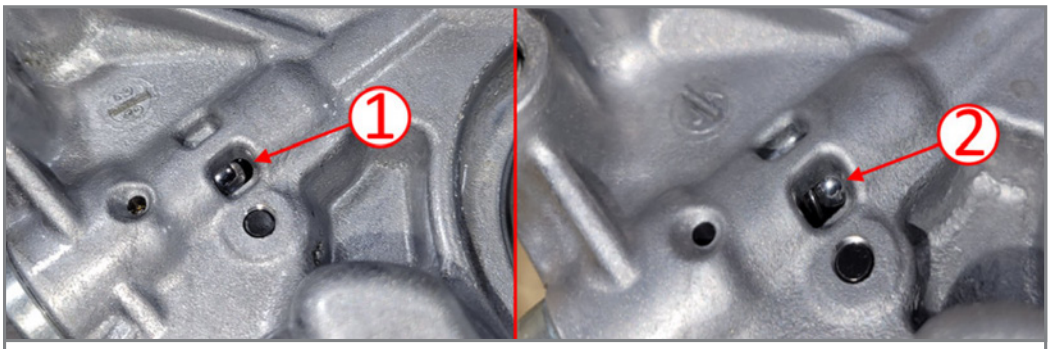

Stuck valve (#1) and a normal valve (#2).

OIL PRESSURE RELIEF VALVE

If the oil pressure reading is below 20 psi when measured at the oil sensor port, it may be due to a stuck oil pressure relief valve inside the oil pump assembly.

At this point, it will be necessary to remove the oil pump for further inspection. If the valve is found to be stuck, replace the oil pump. Refer to Oil Pump Replacement in the appropriate Service Information.

For additional information, including part numbers, refer to Bulletin #24-NA-173.

▶ **Thanks to Bryan Salisbury**

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