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Other Languages: NONE

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Coding Information

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Title: S13 Integrated Powertrain Known Leak Diagnostics

Applies To: S13 Integrated Powertrain

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

02/23/2026 - Changes to step 1 of T14 leak section.
02/19/2026 - Removal of manual pathing and addition of GUIDE step instructions
01/12/2026 - Addition of links to the manual sections per truck model.
02/02/2026 - Removal of S13 leak section and migration to manual notes added
01/26/2026 - Addition to Best Practices section for opening a case file. ESN cutoff addition to step

DESCRIPTION

This article is to walk through and assist the technician in diagnosing and repairing some of the known leaks around the **S13 Integrated Powertrain**.

SYMPTOM(s)

Diagnostic Trouble Code(s) & Dashboard Indicator Light(s):

DTC/Light	Description
N/A	No Faults or Warning Lights

Customer Observations or Concerns:

- Oil Leak
- Coolant Leak

Before performing any diagnostics, please note:

- S13 Engine:** The engine comes with dye in the oil from the factory, which will glow under UV light.
- T14 Transmission:** The transmission does NOT have dye in the oil.

[S13 Fluid Leak Diagnostics](#)

[T14 Fluid Leak Diagnostics](#)

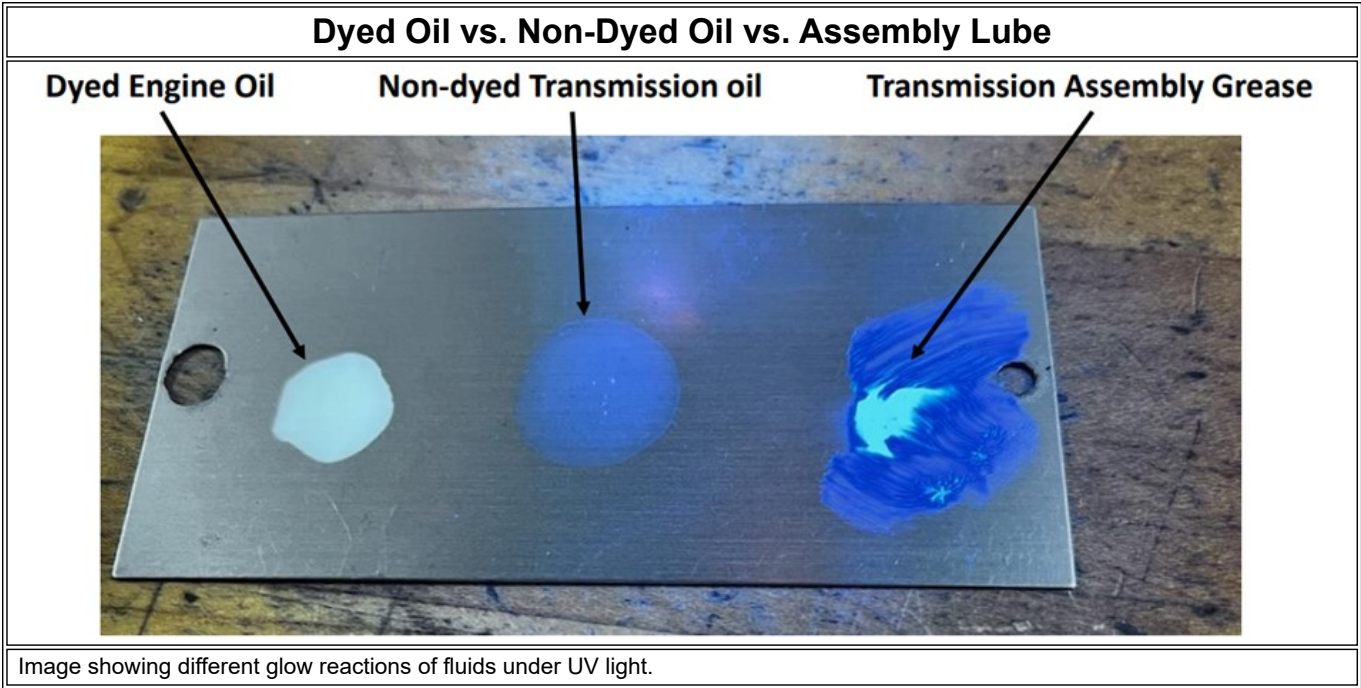
[Tech Tips & Updated Parts Information](#)

Service Parts Information:

Please consult with the dealer parts department and confirm that the current and updated service part numbers are being used. Parts are being updated frequently, which may cause dealer stock to be an older part number.

Best Practices:

- **Oil Detection:** If oil is seen, use UV light as a first-pass detection method. Be sure to clean all the oil off using an engine degreaser. After cleaning, monitor with UV light to identify where the oil leak reappears for proper leak source identification.
- **Assembly Lube and Fuel:** These can also glow under UV light. Be cautious when identifying the type of fluid. If in doubt, clean the area and monitor for the dye to reappear.
- **UV Light Tips:** If the dye is hard to see, do not add more dye. Instead, try using a different UV light, as each UV light has different wavelengths that react better or worse to various dyes.
- **Opening a Tech Service Case File:** When opening a case file, the following **MUST** be provided; tech service will not move on to other diagnostics or provide repair directions until the required information is provided:
 1. Clear images showing the leak source, including an image showing the UV light results highlighting the leak (oil leak specific).
 1. See Dyed Oil vs. Non-Dyed Oil vs. Assembly Lube image below.
 2. **NOTE**, if the image quality is not acceptable, to **CLEARLY** confirm the leak source location, tech service will ask for a better image. Ensure the image taken is reviewed by the technician and confirmed clear, concise, and acceptable before attaching to the case file.
 2. Complete step-by-step results from this article, including confirmation that the affected leak area was cleaned, and the engine ran to test the source of the leak.
 3. Confirmation of recent repairs related to leaks, what repair was performed, and if the same leak or a new leak has returned.



SPECIAL TOOL(s) / SOFTWARE

Tool Description	Tool Number	Comments	Instructions
UV Light	N/A		Locally Sourced

WARNING! To prevent property damage, personal injury, and / or death, park vehicle on a hard, flat surface, turn the engine off, set the parking brake, and install wheel chocks to prevent the vehicle from moving in either direction.

WARNING! To prevent property damage, personal injury, and / or death, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

WARNING! To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

WARNING! To prevent property damage, personal injury, and / or death, keep flames or sparks away from vehicle and do not smoke while servicing the vehicle's batteries. Batteries expel explosive gases.

WARNING! To prevent property damage, personal injury, and / or death, remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last.

S13 FLUID LEAK DIAGNOSTIC STEP(s)

The S13 Engine Oil Leak steps have been migrated to GUIDE diagnostics.

Navigate to MSI [Service Information by VIN](#)

1. Enter the chassis number
2. Click the "Fault Code Action Plan" button
3. Source Address = 80000
4. Fault Type = CC01224
5. FMI = 0
6. Click "Search"

Image Based Instructions

The screenshot shows the 'FCAP Search Criteria' form. Red numbered boxes and arrows indicate the following steps: 1. Points to the 'Chassis' input field. 2. Points to the 'Fault Code Action Plan' radio button under 'Search By:'. 3. Points to the 'Source Address' input field (containing '80000'). 4. Points to the 'Fault Type (numbers and letters)' input field (containing 'cc01224'). 5. Points to the 'FMI' input field (containing '0'). 6. Points to the 'Search' button on the right side of the form.

The S13 Engine Coolant Leak steps have been migrated to the service and Diagnostic Manual "Symptoms" section.

12 - Engine > Engine > International S13 Diesel Engine (2024 GHG) > Symptom Diagnostics > Cooling System > Low Coolant Level / Coolant Leak

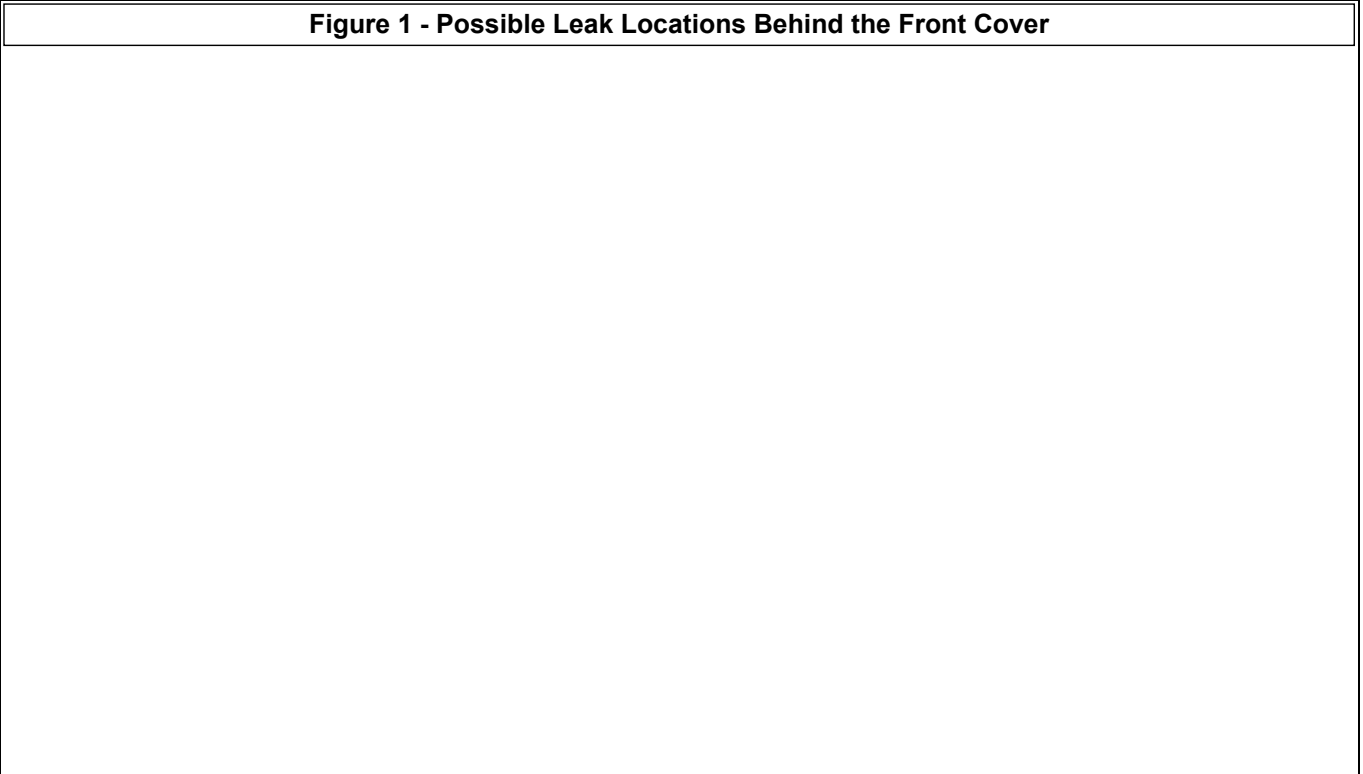
- [LT/RH - Low Coolant / Coolant Leak](#)
- [HX - Low Coolant / Coolant Leak](#)
- [HV - Low Coolant / Coolant Leak](#)

T14 FLUID LEAK DIAGNOSTIC STEP(s)

Step	Front of Transmission	Decision
#1	Inspect the clutch inspection port for signs of oil leaking. Remove the plug if a fluid leak is found and verify the fluid identified is oil from the engine or oil	Yes, oil leak from the engine.

	from the transmission. Clean the affected area and re-test for the leak to confirm the source location:	Perform External Engine Oil Leak GUIDE session.
	Was an oil leak discovered?	
	NOTE: Before major disassembly, verify whether the fluid leaking is engine or transmission oil. Keep in mind that if the vehicle has not had an oil change, the engine oil has dye added from the factory, while the transmission oil does not. Compare the glow of the oil using a UV light on the dipstick with what is observed from the leak to determine if the oil is engine oil or transmission oil.	
		Yes, oil leak from the transmission.
		Proceed to step 2.
		No,
		Proceed to step 3.

Step	Front of Transmission	Decision
#2	Remove the transmission for further inspection. Inspect for oil leaking behind the front cover of the transmission. See Figure #1 and Figure #2 for examples:	Yes.
	Was an oil leak discovered?	Capture images of the oil leak location. Open a Powertrain Technical Support case file. See Best Practices section for case opening requirements.
		If the leak is originating from location 2, confirm which colored arrow is the source, and provide an image for review.
		No.
		Ensure the oil is not leaking from the engine. Review Step 11 from the S13 Oil Leak Diagnostic section above.



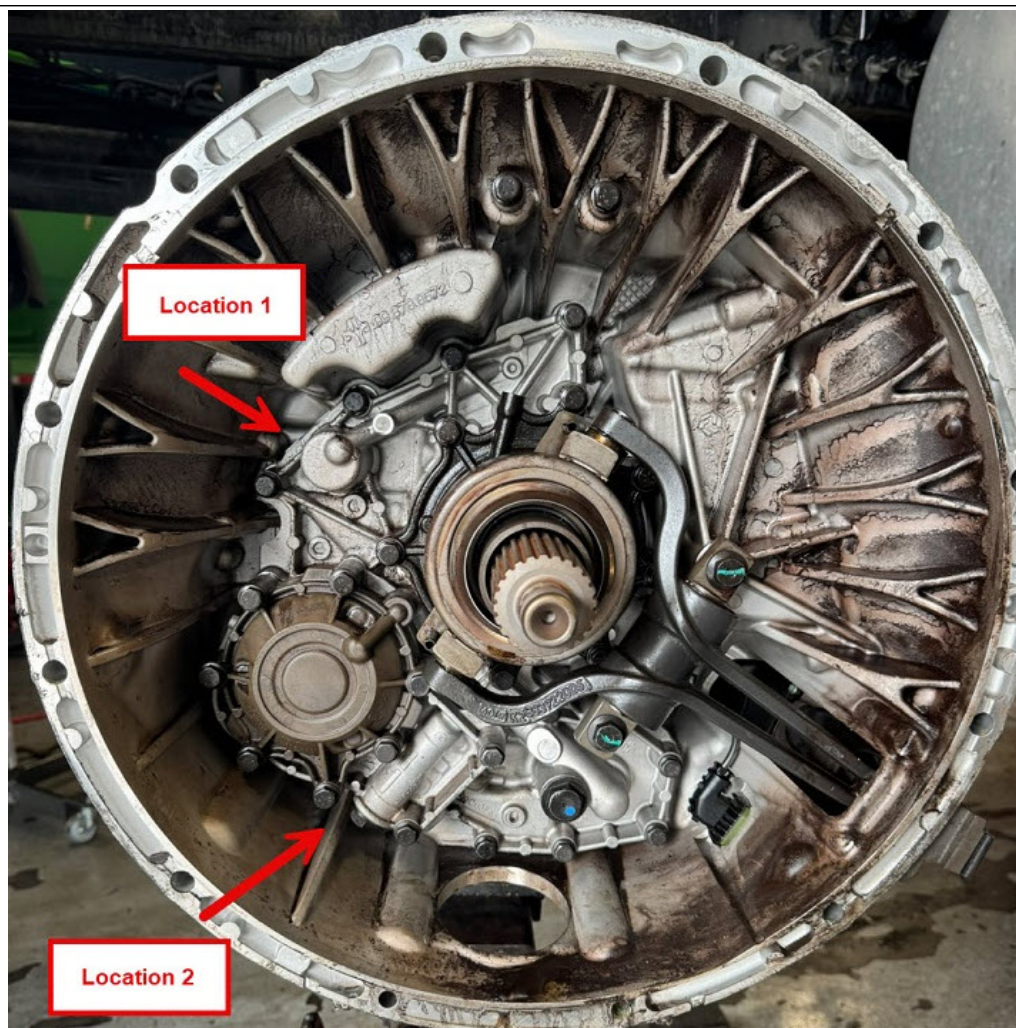
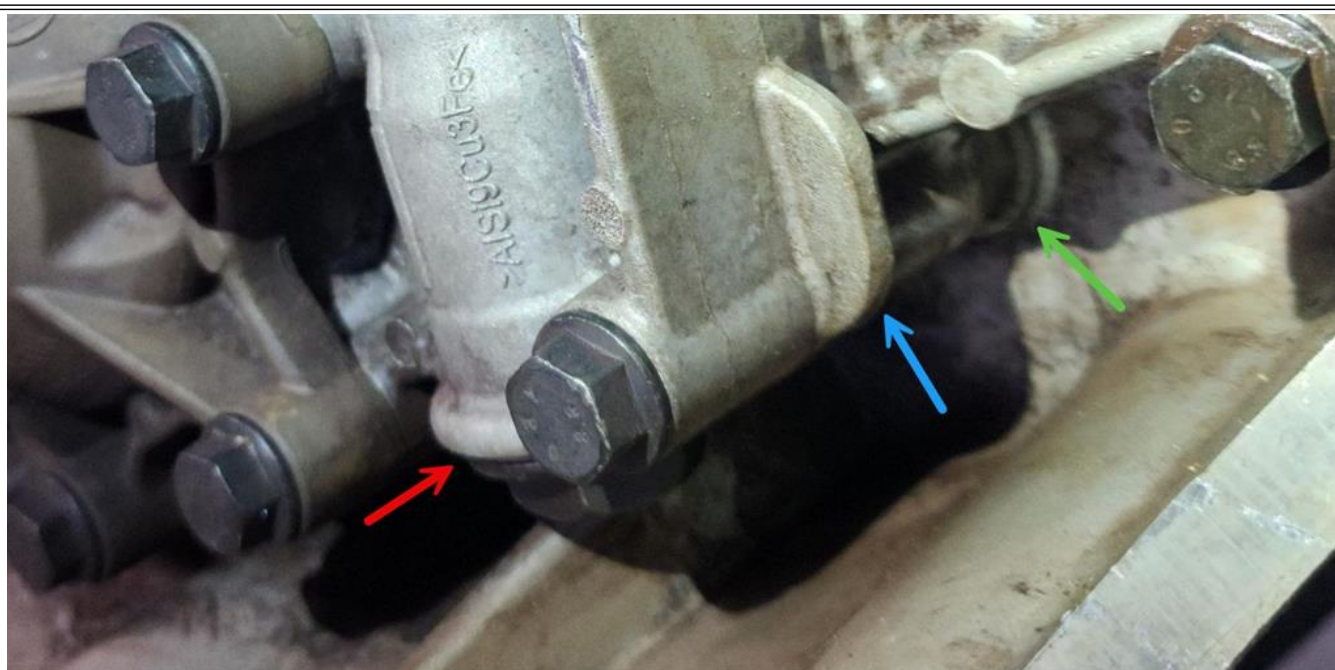


Figure 2 - Location 2 Leak Example



Step	Passenger Side Transmission	Decision
#3	Inspect for coolant on the passenger side of the transmission. Coolant can be seen seeping through the joints of rubber coolant hoses and at the hard lines near the transmission cooler area. There are two sections of rubber hose on	Yes.

the supply side of the cooler and two sections of rubber hose on the return side of the cooler. See [Figure #3](#), [Figure #4](#), and [Figure #5](#) for examples:

Was a coolant leak discovered?

Reference [IK1300194](#) for repair instructions.

No.

Proceed to step 4.

Figure 3 - Transmission Cooler Hose Leak

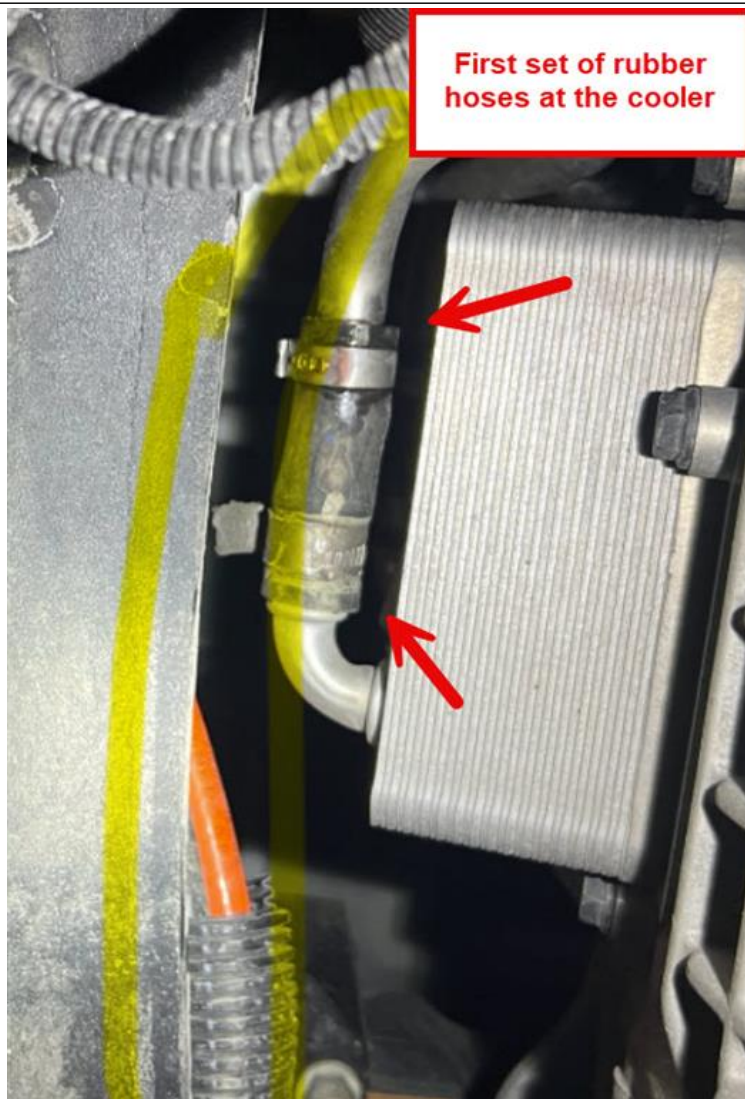


Figure 4 - Transmission Cooler Hose Leak

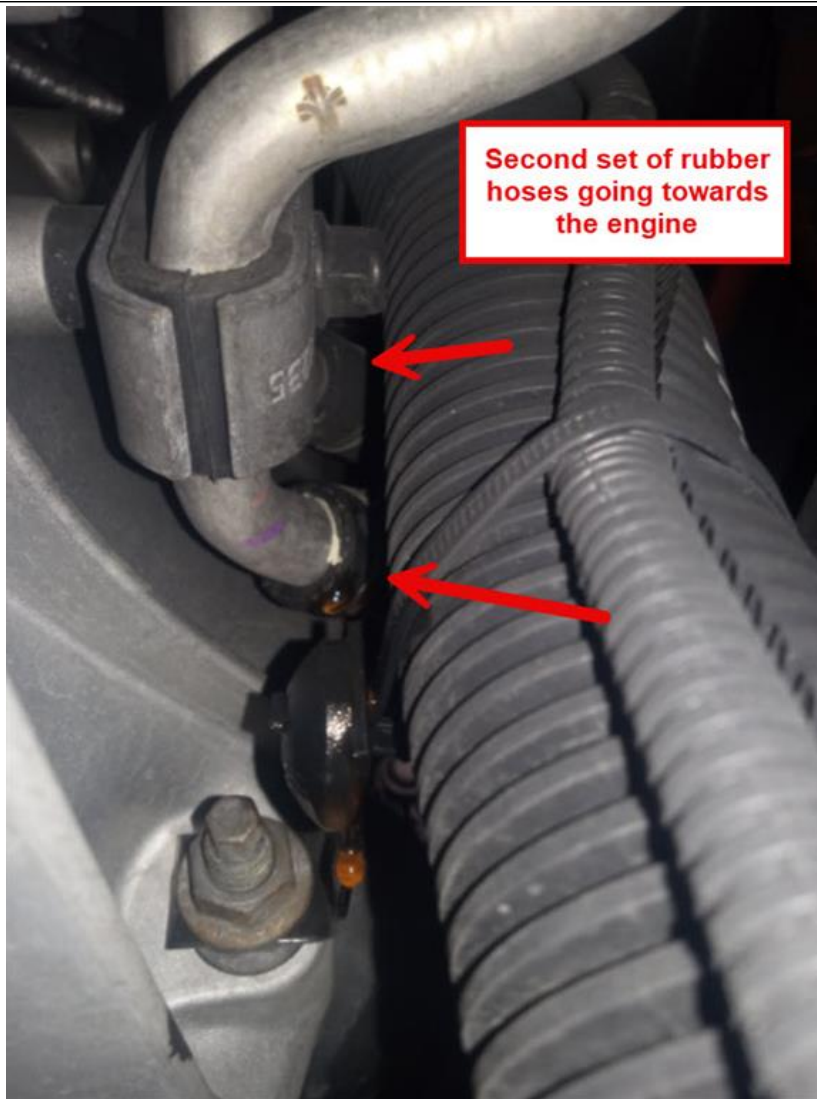


Figure 5 - Transmission Cooler Hose Leak

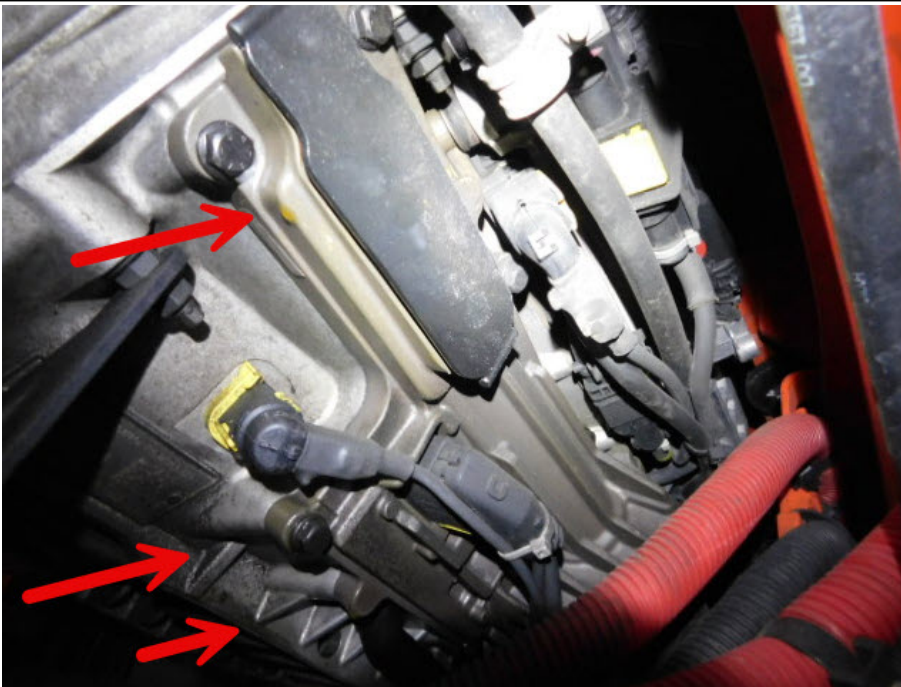


Step	Driver Side & Under The ECA	Decision
#4	Inspect under the transmission on the driver's side. Inspect for oil leaking down the ECA (Electronic Clutch Actuator) and collecting at the bottom of the transmission. See Figure #6 and Figure #7 for examples: Was an oil leak discovered?	Yes. Proceed to step 5 for further inspection and repair steps.
		No. Proceed to step 6.

Figure 6 - Oil Leak at the ECA



Figure 7 - Oil Leak at the ECA



Step	ECA Inspection/Repair	Decision
#5	Inspection: - Remove the ECA and inspect for wetness at the pointed galley from Figure #8. - If wetness is observed, remove the main valve body assembly, inspect the condition of the green O-Ring as called out in Figure #9. - If the O-Ring is in good condition, inspect the 3 air ports at the top for wetness as shown in Figure #10. NOTE: There will be oil present in the housing behind the main valve body assembly; this is normal. The system is designed for shift rails to pass a slight amount of oil so they self-lubricate, oil that collects in the housing then flows back into the sump through one of the drilled passages. The galley with the green o-ring called out in Figure #9 is the same galley behind the ECA as	Repairs: Green O-Ring from Figure #9 - 104229N1 Black O-Ring in shift actuators that position sensors sit in - 105465N1 Green O-Ring on the position sensor harness connector that sits in the housing - 104440N1

called out in [Figure #8](#). If the green o-ring is left out, not installed properly, or gets pinched due to slippage during the installation process, the collected oil will run down into the ECA area, and this will result in an external transmission leak.

Figure 8 - ECA Removed

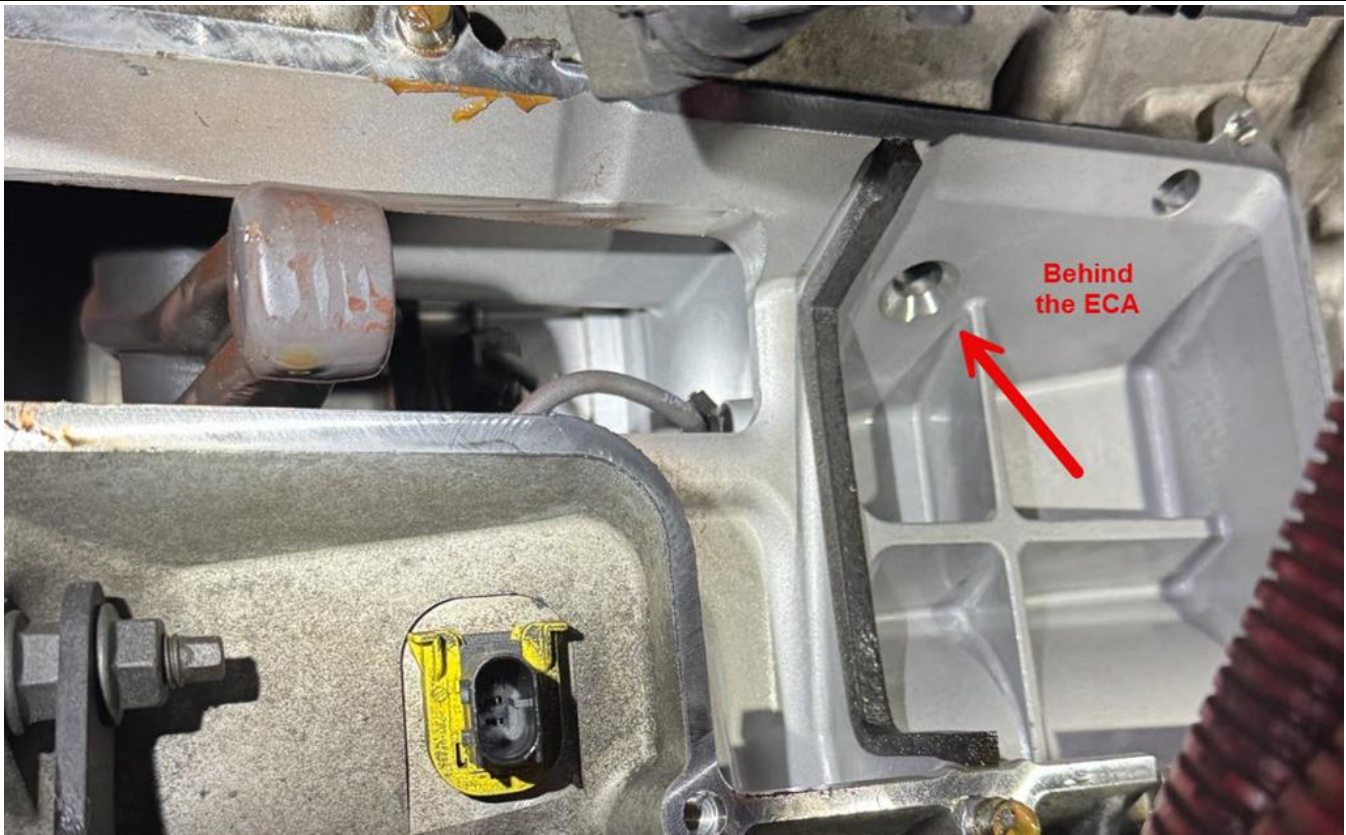


Figure 9 - Main Valve Body Removed

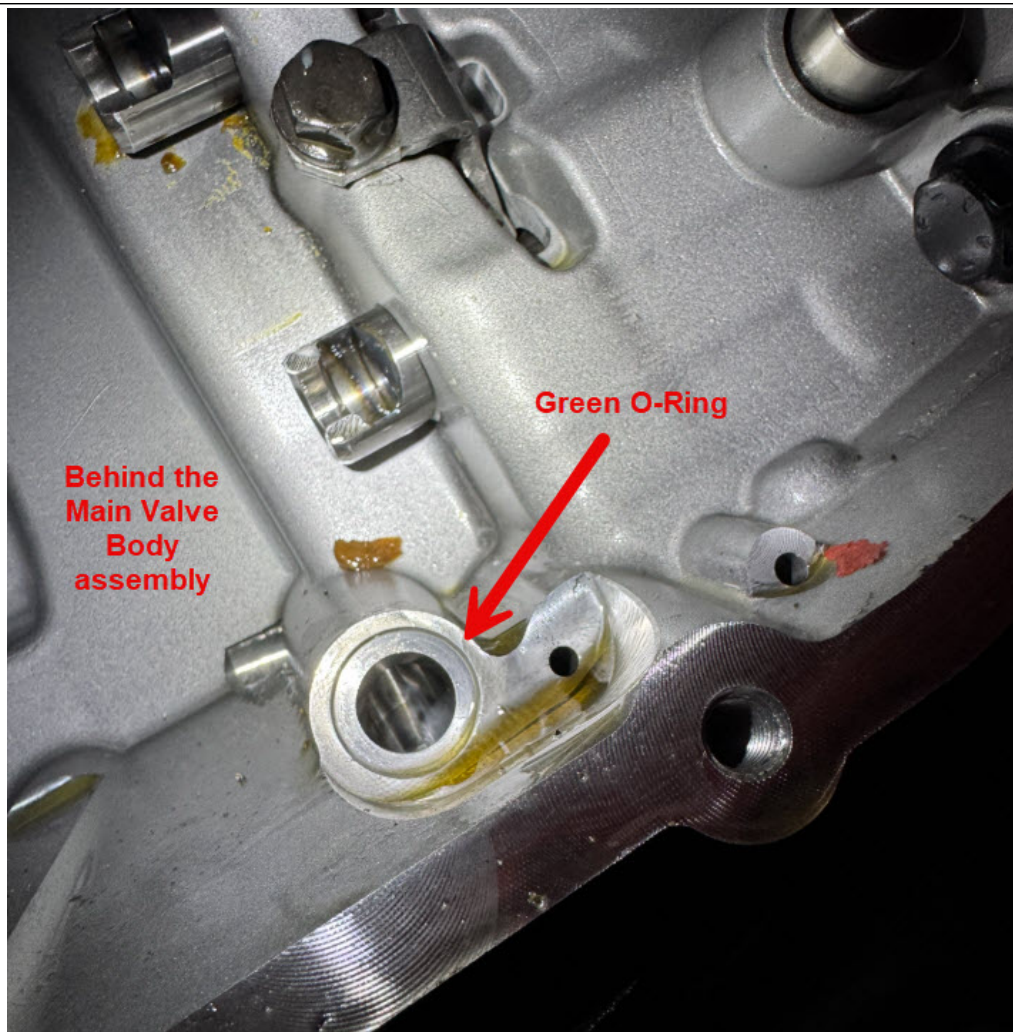


Figure 10 - Air Ports Behind the Main Valve Body



Step	Back of Transmission	Decision

#6	Inspect the rear of the transmission for signs of oil leaking/coating. See Figure #11 and Figure #12 for examples. Check the output shaft for excessive play: Was an oil leak discovered with SPN 191 FMI 2 present? NOTE: This symptom may be associated with a fault code. If the vehicle has logged SPN 191 FMI 2, check the output yoke for play, pull the output speed sensor for inspection and check if there is any metal noticed on the tip of the sensor. See Figure #13 for an example.	Yes, a leak is present with no fault present. Replace the output flange seal. Reference the S13 Integrated Powertrain Technician Manual - "Output Flange and Output Flange Seal Removal"
		Yes, a leak, fault code, excessive play on the output, and metal on the sensor is present. Capture images of the damage found and then open a technical support case file for direction. See Best Practices section for case opening requirements.
		No. Open a technical support case file. See Best Practices section for case opening requirements.

Figure 11 - Rear Output Yoke Leak

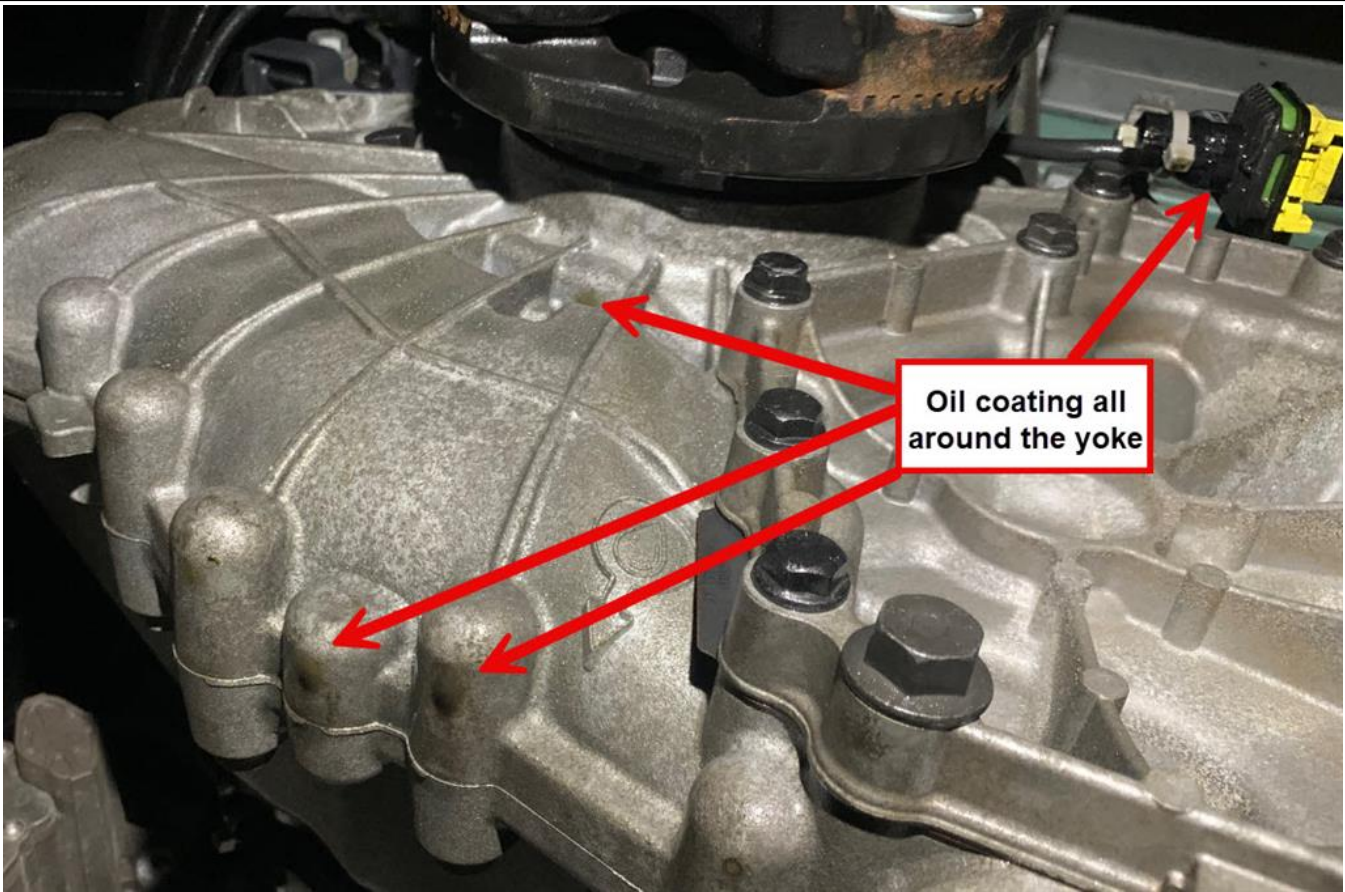


Figure 12 - Rear Output Yoke Leak

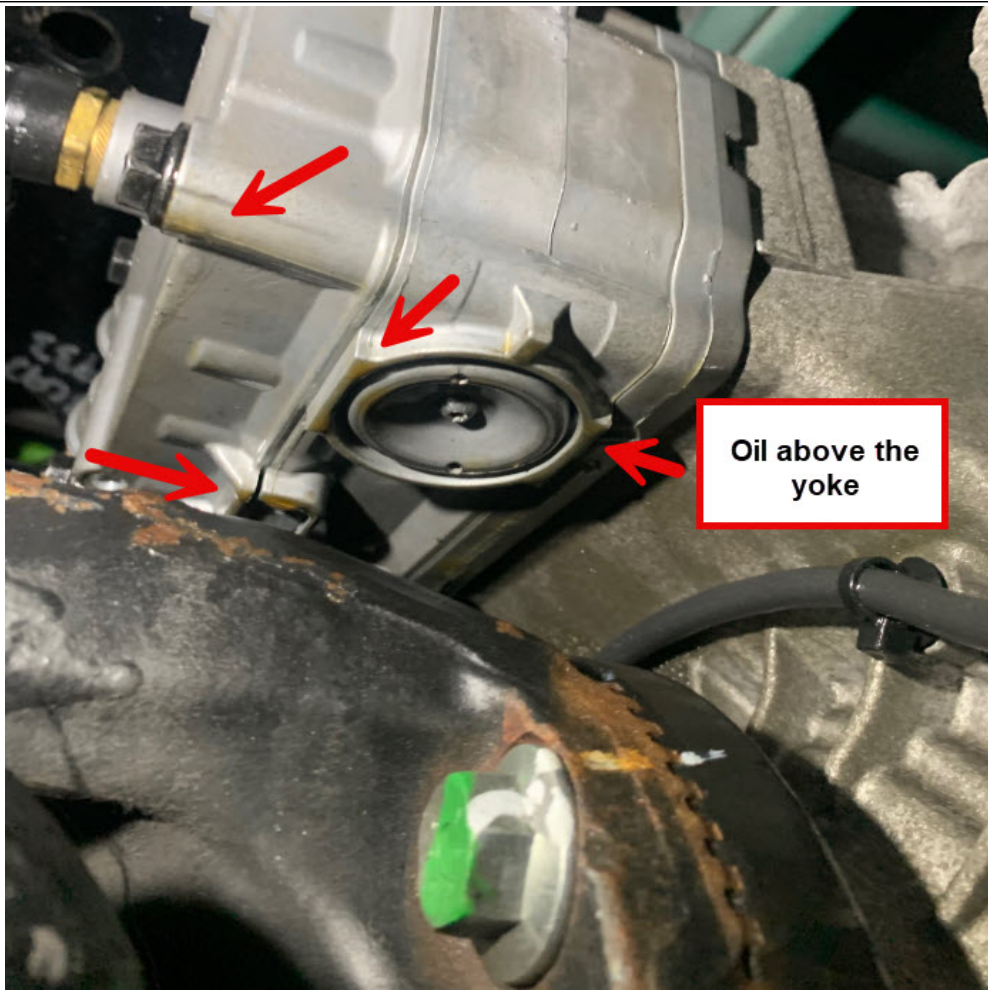


Figure 13 - Output Speed Sensor Metal Debris

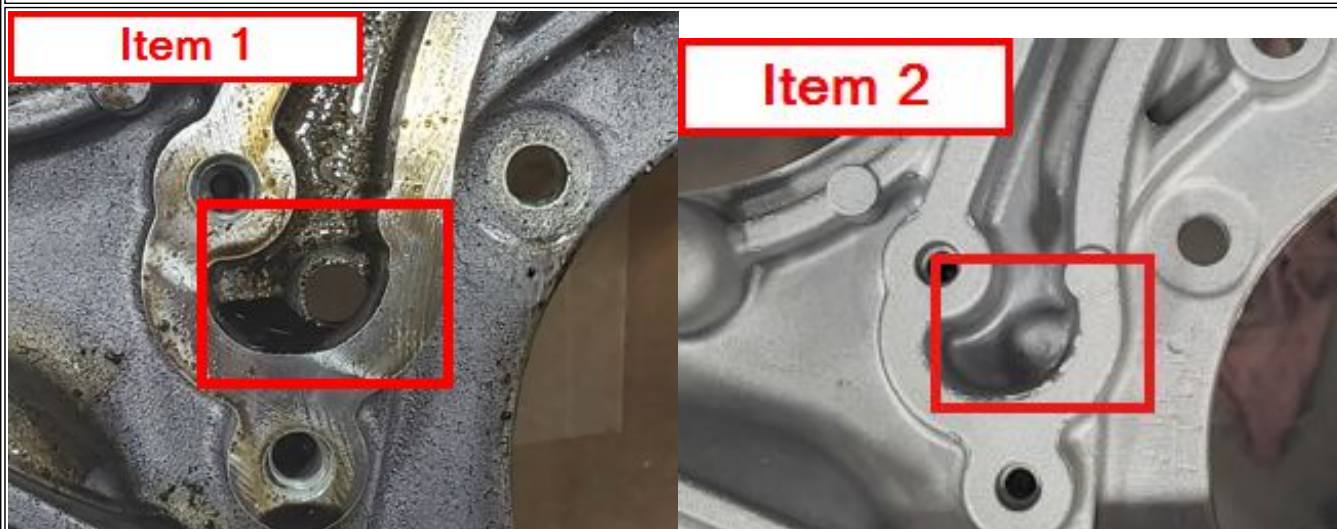


[Return to top](#)

Tech Tips & Updated Parts Information

- The inner gear housing has been updated to remove the upper oil feed dowel-pin bore. This is not required, and the updated parts can be used without issue. See Figure #1 below for an example.

Figure 1



Item 1: Old-style housing with a dowel hole drilled.
Item 2: New-style housing with no dowel hole drilled.

[Return to top](#)

WARRANTY INFORMATION

Warranty Claim Coding:

Refer to the [Warranty Coding Manual](#) for Group and Noun Codes.

Standard Repair Time(s):

Refer to the [SRT Manual](#) for Repair Times

OTHER RESOURCES

[Master Service Information Site](#)

 Hide Details

Feedback Information

Viewed: 7617
Helpful: 11
Not Helpful: 0

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