



Preliminary Information

PIT5801 Diagnostic Tip / Vehicle Sits Unlevel / Leans / Sags / Leveling Unavailable Message / Speed Limited Message / Service Air Suspension Message / DTC C1190 C1191 C1192 C1193 C1187 C1188 C1189 C118A C118B C118C C118E C118F

Models

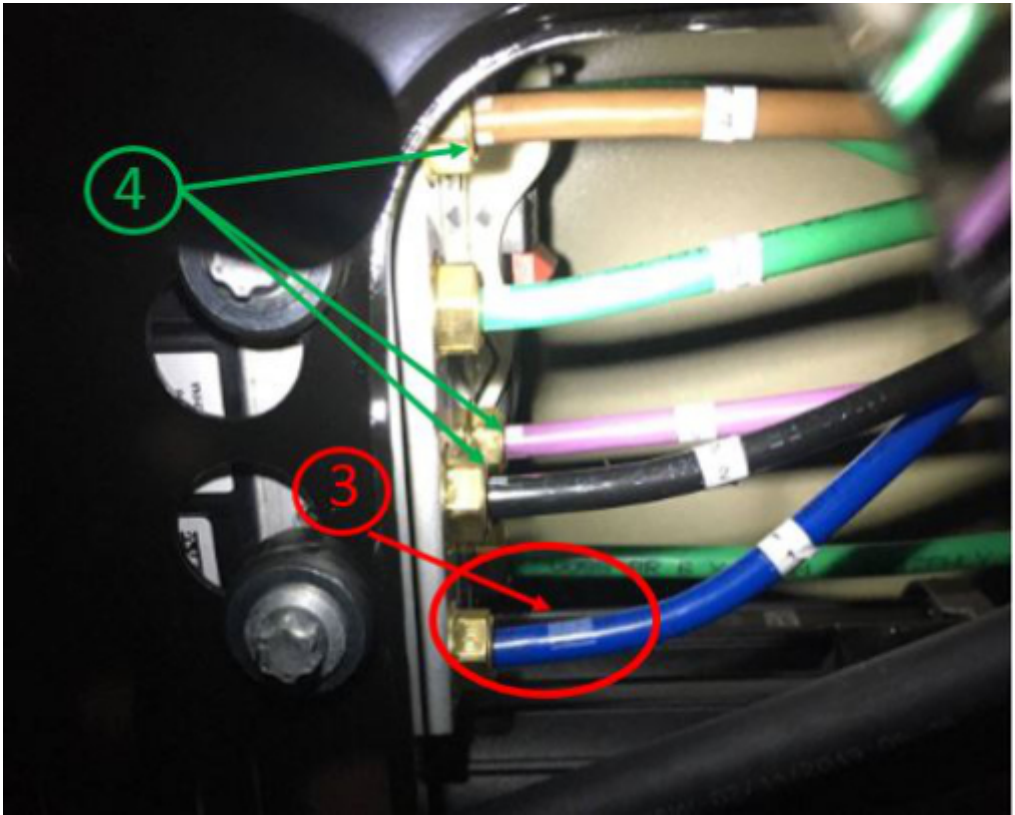
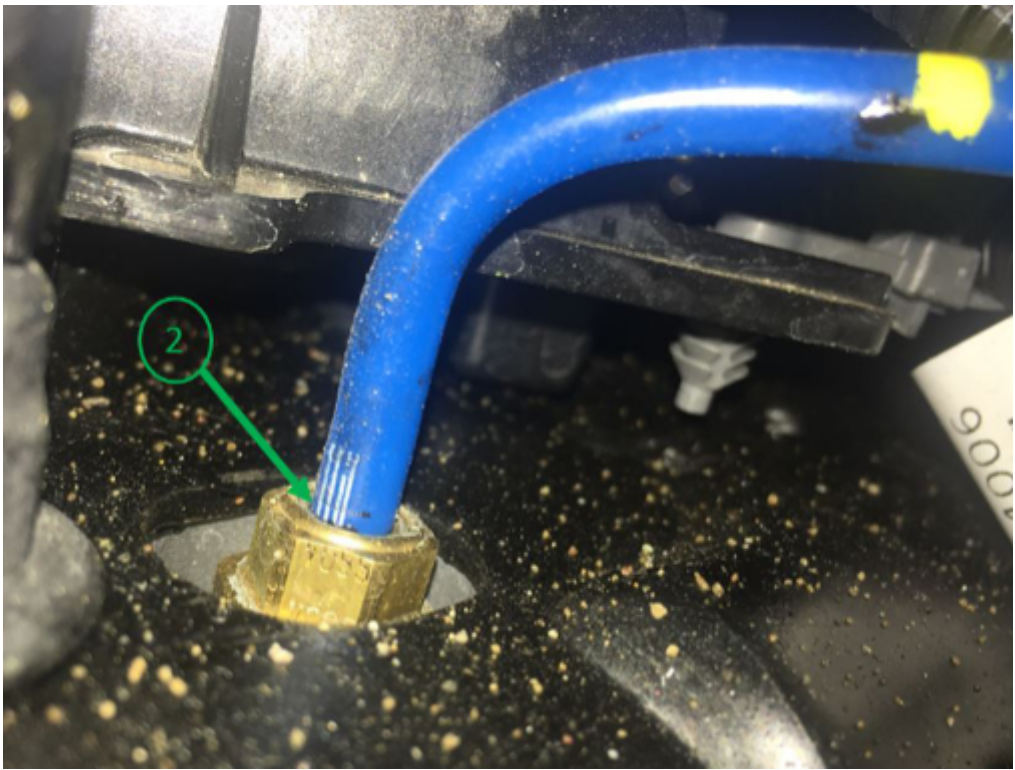
Brand:	Model:	Model Years:	VIN:		Engine:	Transmissions:
			from	to		
Cadillac	Escalade Models	2021	All	All	All	All
Chevrolet	Suburban	2021	All	All	All	All
Chevrolet	Tahoe	2021	All	All	All	All
GMC	Yukon Models	2021	All	All	All	All

Involved Region or Country	North America
Additional Options (RPO)	F47 - Air Ride Suspension
Condition	<p>Some customers may notice one or more of the following conditions related with the air ride suspension.</p> <ul style="list-style-type: none"><li>- Vehicle suspension trim height is too high or too low at one or more corners.</li><li>- DIC Messages "Leveling Unavailable", "Service Air Suspension" and/or "Speed Limited"</li><li>- DTC's: C1190, C1191, C1192, C1193, C1187, C1188, C1189, C118A, C118B, C118C, C118E, C118F</li></ul>
Cause	<p>The cause of these concerns could be one or more of the air lines not being fully seated into an air spring or air manifold block assembly. An air line that is not fully seated can cause the air spring to be either over inflated or under inflated.</p> <p>It can be easy to understand and explain why an air line that is not fully seated can cause an air spring to be under inflated, due to the air leaking out, but over inflated air springs will require some additional details. The air springs use a unique air line fitting that contains a one way check valve. This one way check valve was needed for manufacturing purposes to keep a small amount of air inside the air spring before it is installed on the vehicle. Once the air spring is installed in the vehicle and the air line is fully seated into the air spring fitting, the one way check valve is no longer needed and the air line holds the check valve open. If the air line is not fully seated into the fitting, it will not fully open the one way check valve. When this happens, air can be pushed past the one way check valve into the air spring, but air can not be released. This will cause the air spring to inflate but during a deflate it cannot release the air from inside the air spring.</p> <p>Because it is critical for the air lines to be fully seated into the air fittings, there are white marks on each air line to indicate when the air line is fully seated. The air line has to be inserted into the air fitting until it bottoms out AND the white marks are going into the top of the fitting. Below is a picture of an air line, at one of the air springs, which is NOT fully seated (1). This is indicated by the white markings not actually going into the fitting. The second photo below shows the air line after it was fully seated (2). You can see the white marks are now down into the top of the air line fitting (2) and the air line is bottomed out in the fitting.</p>

**NOTE:** It is recommended to push the line into the fitting as far as it will go. At least part of the white marking **MUST** be into the top of the fitting.

For additional examples see the third photo below. This is a picture of the air lines at the air manifold block. In this example, there are several fully seated lines as shown in call out 4. Each of these lines are fully seated as indicated by the white markings being into the top of the air line fitting. Call out 3 is an example of a line that is not fully seated. In call out 3 you can see the white marking is not into the air line fitting as it should be.





Correction:

Note: The purpose of this PI is to focus on the air line connections at the air shocks and air manifold block. It is understood that other issues with the air suspension system can cause over or under inflated air springs. In addition to this PI, please follow all published SI diagnostics and safety procedures when working on the air suspension system.

Typically, performing a very thorough inspection of each air line at the four shocks and manifold valve block will prove to be the most fruitful way at discovering the root cause within the system. Make sure the white marking on each air line is into the top of the fitting and that the air line is bottomed out in the fitting, as both shown and described above. If an air line is not fully seated, then push the air line into the fitting until it is fully seated and the white marking is into the top of the fitting. In most cases, there is no need to loosen the air line fitting to fully seat the air line.

Perform the following test to ensure the air lines are fully seated:

1. To test for an air spring that will not deflate due to the air line not being fully seated into the air spring, perform the following test:  
  
If this condition exists, suspect the side or corner that is sitting higher than the others. For example, if the vehicle sits high on the left side, then suspect the left side air springs are not able to deflate.



- Ensure the battery is fully charged
- Close all Doors, Hood and Liftgate
- Ignition on and engine off
- Connect GDS2 and go into the Automatic Level Control Module > Data Display > Automatic Level Control System Data and note the suspect corner's "Position Offset from Trim" shown in millimeters (mm). Note: The units button in GDS2 may have to be selected to change from cm to mm.
- Once the "Position Offset from Trim" is noted for the suspect corner, then use GDS2 and go into Control Functions > Short Term Deflate > then select the suspect corner (LF, RF, LR, RR) and perform two short term deflate commands.
- Once complete, use GDS2 and go back into Data Display > Automatic Level Control System Data and note the suspect corner's "Position Offset from Trim" again. Typically, the vehicle will lower 5 to 8 mm's. If the vehicle does not lower after performing the Short Term Deflates, then suspect the air line is not fully seated at the air spring. In some cases, if the air spring is full of air and under high pressure, it can be very difficult to push the air line into the air fitting. This is because the one way check valve is being pushed closed by the high pressure air inside the air spring. In these cases, try lifting the vehicle by the frame so the suspension is fully extended and/or if necessary, while using extreme care, push the air line into the fitting with a suitable tool. If the air line gets kinked, pinched, or damaged, it will need to be replaced.

2. To test for an under inflation condition where the air line is not fully seated and leaking air, perform the following test:

If this condition exists, then suspect the side or corner that is low. Example, if the vehicle sits very low on the left side then suspect that the left side air spring lines may be leaking.

- Apply soapy water to the air lines and fittings at the air spring and air manifold block, while looking for any leaks. If the air pressure is too low in the air spring, then perform the following steps to add air into the suspect corner, while inspecting for any leaks.
- Ensure the battery is fully charged
- Close all Doors, Hood and Liftgate
- Ignition on and engine off
- Connect GDS2 and go into the Automatic Level Control Module > Control Functions > Short Term Inflate > then select the suspect corner (LF, RF, LR, RR) and perform short term inflate commands, as needed.

**Note:** If the vehicle was driven for a period of time with no air pressure in an air spring, it may have damaged the air spring. Once the vehicle is repaired, a thorough inspection of the inflated air spring should be performed. If any damage is found, or if it is uncertain that any damage occurred, then the air spring should be replaced.

Warranty Information

For vehicles repaired under warranty, please use the appropriate warranty labor operation based on the repair needed.

Version History

Version	1
Modified	11/30/2020 - Created on.

