



## Preliminary Information

### PIT3098G Diagnostic Tips: Vehicle Body Tilt or Lean

#### Models

Brand:	Model:	Model Years:	VIN:		Engine:	Transmissions:
			from	to		
Cadillac	Escalade	1999 - 2006	All	All	All	All
Chevrolet	Avalanche	1999 - 2006	All	All	All	All
Chevrolet	Silverado Classic	1999 - 2007	All	All	All	All
Chevrolet	Silverado HD	2007 - 2019	All	All	All	All
Chevrolet	Suburban	1999 - 2006	All	All	All	All
Chevrolet	Suburban HD	2007 - 2013	All	All	All	All
Chevrolet	Suburban 3500HD	2016 - 2019	All	All	All	All
Chevrolet	Tahoe	1999 - 2006	All	All	All	All
GMC	Sierra Classic	1999 - 2007	All	All	All	All
GMC	Sierra HD	2007 - 2019	All	All	All	All
GMC	Yukon Models	1999 - 2006	All	All	All	All
GMC	Yukon XL HD	2007 - 2013	All	All	All	All

With Torsion Bar Front Suspension

#### Supersession Statement

This PI was superseded to update Model Years. Please discard PIT3098F.

The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

#### Condition / Concern

This procedure should be followed to diagnose and correct customer complaints of vehicle leaning left or right. The same steps are followed whether the lean appears in the front, rear, or both ends of the vehicle. Generally the vehicle's stance can be adjusted with the torsion bar adjuster bolts. In certain cases, however, other changes may be needed.

#### Recommendations / Instructions

Measure fender wheel-opening heights, front and rear, to quantify vehicle lean. Fender wheel-opening heights are related to, but distinct from, trim height (a.k.a. Z and D height). The front wheel-opening height is known as P height, and the rear wheel-opening height is known as R height. The P and R heights are not set at the factory, nor is a specification given for them. However, they are the most direct and repeatable measurement of what a customer would perceive as a leaning condition.

Perform the following before measuring the fender wheel-opening heights:

- Make sure the vehicle is on a level surface, such as an alignment rack.
- Remove the alignment rack floating pins.
- Set the tire pressures to the pressure shown on the certification label. Refer to Label - Vehicle Certification in General Information.
- Check the fuel level. Add additional weight if necessary to simulate a full tank.

- To ensure proper weight distribution make sure the rear storage compartment is empty.
- Close the doors and hood.

#### P Height and R Height Measurements:

P height and R height are measured the same way. They are the distance from the ground to the highest point on their respective wheel-opening, going through the center of their respective wheel.

If the difference left to right, P and or R height is 1/2 inch (12 mm) or less no repairs are suggested as the vehicle is within specification. If the difference left to right exceeds 1/2 inch (12 mm) follow 1 of the 3 diagnostics below.

1. If P height is more than 1/2 inch (12 mm) different left to right, and R height is more than 1/2 inch (12 mm) different from left to right.

1.1. Check Z height and D height. See Trim Height Inspection Procedure.

1.2. If Z height is out of spec and D height delta is greater than 1/2 (12 mm), adjust Z height until it is within spec and P and R height deltas are less than 1/2 inch (12 mm).

1.3. If Z height is within spec but D height delta is greater than 1/2 inch (12 mm), adjust Z height to reduce P and R height deltas to less than 1/2 inch (12mm), staying within the Z height tolerance. If this is not possible, check front eye of rear leaf spring for matching color-coded tape or paint. Both sides should be the same color. If not, switch springs side to side. If so, replace leaf spring on lower side only.

1.4. Recheck Z, D, P, and R heights.

1.5. If Z height is out of spec but D height delta is less than 1/2 inch (12 mm), adjust Z height until it is within spec and P and R height deltas are less than 1/2 inch (12 mm). If this is not possible, shim the front fenders and box as needed.

1.6. If Z height is within spec and D height delta is less than 1/2 inch (12 mm), adjust Z height, within tolerance, until P and R height deltas are less than 1/2 inch (12 mm). If this is not possible, shim body and/or pick-up box until P and R height deltas less than 1/2 inch (12 mm).

2. If P height is within 1/2 inch (12 mm) left to right, and R height is more than 1/2 inch (12 mm) different from left to right.

2.1. Check Z height and D height. See Trim Height Inspection Procedure.

2.2. If Z height is out of spec and D height delta is greater than 1/2 inch (12 mm), adjust Z height until it is within spec and P and R height deltas are less than 1/2 inch (12 mm).

2.3. If Z height is within spec but D height delta is greater than 1/2 inch (12 mm), adjust Z height to reduce P and R height deltas to less than 1/2 inch (12 mm), staying within the Z height tolerance. If this is not possible, check front eye of rear leaf spring for matching color-coded tape or paint. Both sides should be the same color. If not, switch springs side to side. If so, replace leaf spring on lower side only.

2.4. Recheck Z, D, P, and R heights.

2.5. If Z height is within spec and D height delta is less than 1/2 inch (12 mm), shim body and/or pick-up box until P and R heights are within 1/2 inch (12 mm) left to right.

3. If P height is more than 1/2 inch (12 mm) different from left to right, and R height is within 1/2 inch (12 mm) left to right.

3.1. Check Z height and D height. See Trim Height Inspection Procedure.

3.2. If Z height is out of spec and D height delta is greater than 1/2 inch (12 mm), adjust Z height to spec. Recheck P, R, and D heights.

3.3. If Z height is within spec and D height delta is less than 1/2 inch (12 mm), adjust Z height, staying within tolerance, until P height delta is less than 1/2 inch (12 mm) and R height delta is less than 1/2 inch (12 mm). If this is not possible, add fender shims as necessary to make P and R height deltas less than 1/2 inch (12 mm).

3.4. If Z height is out of spec and D height delta is less than 1/2 inch (12 mm), adjust Z height until within spec and P and R height deltas are less than 1/2 inch (12 mm). If this isn't possible, check D height with Z height in spec. If D height delta is greater than 1/2 inch (12 mm), then check front eye of rear leaf spring for matching color-coded tape or paint. Both sides should be the same color. If not, switch springs side to side. If so, replace leaf spring on lower side only.

3.5. Recheck Z, D, P, and R heights.

3.6. If Z height is within spec and D height delta is greater than 1/2 inch (12 mm), shim front fenders to get P height delta less than 1/2 inch (12 mm).

4. After all adjustments are done, perform a front-end alignment and check headlight aim.

### Warranty Information

**The correction for this concern may be one of several repairs described in the diagnostic tips above. For vehicles repaired under warranty please use the appropriate warranty labor operation based on the actual cause and repair**

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.



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