



## Preliminary Information

### PIT5481H Diagnostic Tip - Lane Keep Assist and Lane Departure Warning Functionality

#### Models

Brand:	Model:	Model Years:	VIN:		Engine:	Transmissions:
			from	to		
Cadillac	Escalade Models	2016 - 2023	All	All	All	All
Chevrolet	Blazer	2019 - 2023	All	All	All	All
Chevrolet	Silverado 1500	2016 - 2023	All	All	All	All
Chevrolet	Suburban	2016 - 2023	All	All	All	All
Chevrolet	Tahoe	2016 - 2023	All	All	All	All
GMC	Sierra 1500	2016 - 2023	All	All	All	All
GMC	Yukon Models	2016 - 2023	All	All	All	All

**With Lane Keep Assist (RPO UHX)**

#### **Supersession Statement**

**This PI was superseded to update the models. Please discard PIT5481G.**

**This PI is to provide additional information on the functionality of Lane Keep Assist (LKA) and why customers may not get a lane departure warning alert (audible chime or haptic seat) when they cross a lane marker.**

**The Lane Keep Assist system (RPO UHX) replaced the Lane Departure Warning (LDW) system (RPO UFL) starting with some models in 2016 model year. The LKA system incorporates the functionality of the LDW system, but it works slightly different when compared to a vehicle that only has LDW.**

**Lane Keep Assist (LKA) has two driver interventions: Stage 1 and Stage 2. Lane Keep Assist is designed to assist the driver in keeping the vehicle from drifting out of a driving lane that has clearly identified lane markings (Stage 1). The electric power steering provides a gentle steering correction if a lane marking is being approached and the driver is NOT actively responding (i.e. NO driver steering wheel torque, accelerating, braking, use of turn signal).**

**In situations where the LKA steering correction does not keep the vehicle from crossing the lane marker and the driver has NOT actively responded (ie. NO driver steering wheel torque, accelerating, braking, use of turn signal), then it enters Stage 2 and the LDW activates and provide an alert (chime or haptic seat).**

**To help better understand Stage 1 and Stage 2:**

**When Stage 1 is active: LKA icon changes from Green to a solid Amber. The Forward Camera Module is actively commanding a torque request to the Electronic Power Steering. This means that the driver should also feel some feedback from the steering wheel. There will be NO chimes or haptic seat feedback. Stage 1 occurs when approaching the lane marking.**

**When Stage 2 is active: LKA icon changes from solid Amber to flashing Amber. The Forward Camera Module is actively commanding a torque to the Electronic Power Steering. This**

means that the driver should also feel some feedback from the steering wheel. This will also be accompanied with LDW chimes or haptic seat feedback, depending on vehicle settings.

Stage 2 occurs when the vehicle has actually crossed a lane marking.

The main difference between Stage 1 and 2, is when the vehicle enters Stage 2, the LKA icon will start to flash and a LDW alert (chime or haptic seat feedback) will occur. If the LKA icon does not flash, then there will be NO LDW alert (chime or haptic seat feedback). There are several reasons why the vehicle will not enter Stage 2, but the most common is the driver applying more torque to the steering wheel to overcome the LKA. This would lead to the LKA fading out, and as a result, the vehicle will not progress to Stage 2.

Many drivers try to "test" the LDW alert (chime/haptic) by intentionally crossing the lane marker. It can be very difficult to "test" the LDW alert (chime/haptic), because the system most likely will see that the driver is intentionally applying torque to the steering wheel, and it will interpret this as an active response. As a result, the system will NOT enter Stage 2.

Therefore, LDW alerts do NOT occur as often with Lane Keep Assist when compared to a vehicle which only has the LDW system that was used in previous model years or on HD trucks.

For Lane Keep Assist to start providing assist, the following criteria must be met:

- Vehicle speed between 38 mph and 111 mph
- Lane markings are clearly visible
- Lane Keep Assist is turned "on" via the enable/disable button located on the dash. When enabled, the LED on the button will illuminate.
- Lane marker width meets Lane Keep Assist criteria (not too wide or narrow)
- Lane marker radius meets Lane Keep Assist criteria (curve is not too tight)

When the criteria listed above is met, the Lane Keep Assist icon will illuminate, as seen in the photo below.



The Lane Keep Assist icon has several different indication modes:

- Solid green indicates the system is ready to assist.
- Solid amber indicates Lane Keep Assist intervention is occurring - Stage 1.
- Flashing amber indicates unintentional crossing of the lane marker along with a LDW alert (chime or safety seat vibration) - Stage 2.

Lane Keep Assist and Lane Departure Warning alerts are suppressed with any deliberate driver response (ie. steering, accelerating, braking, use of turn signal, see below). Drivers can suppress/override Lane Keep Assist with the following deliberate maneuvers:

- Turning the steering wheel (applying torque to the steering wheel)
- Intentional holding the steering wheel from turning when the LKA is trying to provide assist
- Braking
- Accelerating
- Turn signal is turned on in the direction of the lane crossing

Proper operation may be affected by factors outside the vehicle, including:

- Nearby vehicles ahead (tailgating)
- Sudden lighting changes, such as going through a tunnel
- Banked roads
- Poor lane markings, such as on some two-lane roads
- Snow, frost, ice, dirt, mud, bugs, etc on the windshield that are blocking the front camera
- Tar marks, cracks, shadows, temporary lane markings and other road imperfections
- Lane markings on one side of the road only (Lane Keep Assist provides assist only on the side with markings).

**The driver is advised to turn off the system when these conditions are present. This does not indicate a system failure.**

**In addition, do not use Lane Keep Assist while towing a trailer or on a slippery road, as this may cause a loss of vehicle control.**



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