

# Lane Departure Systems

# What Are Lane Departure Systems

## **What:**

Systems designed to assist or warn driver when they are moving out of their marked lane

## **Why:**

To improve passenger safety by providing warnings and / or intervention to potentially tired or distracted drivers.

## **Benefits:**

Decrease in accidents / injuries / deaths caused by tired or distracted drivers

Pathway to autonomous vehicles

Increased traffic flow

## **How:**

Utilization of cameras and electronically controlled systems can interpret and react to changing conditions faster than a human driver in many situations reacts. System can be “Passive” (Provide audio, visual or haptic feedback) to notify driver of a pending situation or can be “Active” (Intervention with steering) as the situation dictates.

# Lane Departure System Operation

Camera(s) to see road stripes / markings

Some systems utilize only one camera, newer systems use two

Notify driver when leaving lane (LDW)

Turn signal activation key operational factor

May have correction capability

Audio, visual, haptic warning(s) to driver

To keep the vehicle in the lane (LKA)

Has correction capability

Audio, visual, haptic warning(s) to driver

To keep the vehicle centered in the lane (LC)

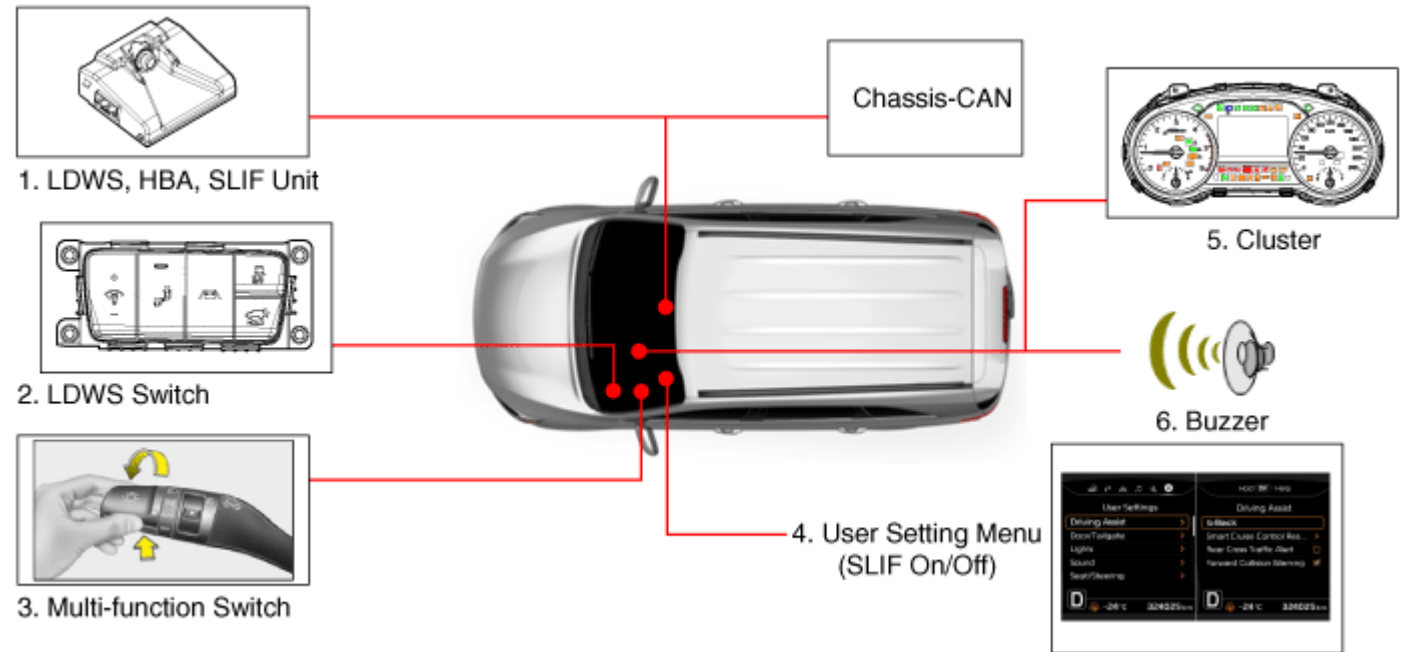
May have a “ping-pong” effect, weaving between the lines due to over corrections

Audio, visual, haptic warning(s) to driver



# Lane Departure System Components

- Camera(s)
- Module(s)
- Switches
- Steering
- Visual Indicators
- Audio
- Haptic feedback  
(Steering wheel shake,  
seat vibration)



# Lane Departure System Diagnosis

## Visual inspection

- Damage to glass
- Damage to camera(s)

## Fault codes

- OEM
- SAE

## Electrical testing

- Power
- Ground
- Signals
- BUS Communications

## External conditions

- Weather
  - Heavy rain
  - Snow / Sleet / Hail
  - Fog
  - Smoke / Dust
- Clarity of road markings
- Cleanliness of windshield



PATH: Chassis Electrical > Safety And Security > Object Detection > Diagnostic Information And Procedures > Lane Departure Warning System Malfunction

## Lane Departure Warning System Malfunction

### LANE DEPARTURE WARNING SYSTEM MALFUNCTION

#### Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

#### Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
B+	1	1	--	--
Lane Departure Warning Switch Signal	B356A 02	1	1	--
Lane Departure Warning Indicator Control Circuit	1	1	1	--
Vehicle Direction Alert Alarm Warning Module Ground	--	1	--	--

1. Lane Departure Warning Malfunction

#### Circuit/System Description

The lane departure warning system is controlled by the vehicle direction alert alarm warning (VDAAW) module mounted on the windshield. Lane departure warning is enabled and disabled through a switch located in the headlamp switch assembly. When enabled, the VDAAW module will illuminate the indicator located in the windshield. When the system is operating and can detect the lane markings, the VDAAW module will request via serial data communications that the instrument panel cluster illuminate the green lane departure ready-to-assist indicator. If the VDAAW module detects that the vehicle has crossed a lane marking without the turn signal being

# Lane Departure System Service / Calibration

## Mechanical

### Targets

Some cameras hard mounted, some may be adjustable

Non-related repairs and services can require calibration

### Windshield

### Alignment

### Collision

## Self / Auto

### Driving

Road identification critical (markings)

