



Hyundai NEXO

2018

Highway Assist System



AD System Name	Smart Cruise Control with Lane Following Assist	
Standard Active Safety Systems	AEB Car-to-Car	●
	AEB VRU	●
	LSS	●
	SAS	●
Available on	<a href="#">Hyundai KONA</a> Hyundai NEXO KIA Ceed (2019)	

Comments

Lane Following Assist with Smart Cruise Control on the Hyundai NEXO gives the driver a moderate level of support while maintaining the impression of the driver being in control with the car assisting them. The system is readily perceived as a system to assist the driver which aligns well with the information provided.

The name "Lane Following Assist with Smart Cruise Control" clearly indicates that the system is a driver-assist system, not an autonomous one, and is not readily misunderstood. The limited scenarios tested provide a similar impression. The user manual mentions that the system is designed for main roads and motorways, but the system is not geofenced and can therefore be engaged on any road with distinct lane markings. The legally-required hands-off warning tells the driver to keep his hands on the wheel, but slight steering input is sufficient to suppress this warning. In case of no response to the warning, the system will simply shut down but will not bring the car to a controlled stop.

Within the longitudinal scenarios, the NEXO shows a high level of support in the slower-moving and braking car scenarios. When approaching a stationary car the vehicle provides full support up to 60 km/h above which the vehicle will warn the driver of an imminent collision. In the 'cut-in' scenario, the system offers minor support, while in the 'cut-out' scenario moderate assistance is given by the vehicle. In all cases the driver is primarily required to handle the situation.

Lane Following Assist provides subtle steering support resulting in a good balance between the driver and the system in the S-bend scenario. In the absence of lane markings or other vehicles to acts as a guide, Lane Following Assist will change to a passive mode and will resume assistance when clear lane markings are detected.

Overall, the Hyundai system is balanced with little risk of the driver over-reliance the system.

## Human Machine Interaction

System Name	The system name, Smart Cruise Control with Lane Following Assist, clearly indicates that this is an Assist System	
Official Manufacturer Information		
System Features	<b>SPEED CONTROL</b>	
	Automatic Speed Limit Adaptation	—
	Speed Adjustment for Road Features	—
	<b>STEERING SUPPORT</b>	
	Assisted Lane Change	—
User Manual	Description of Operational Design Domain (areas where the system can be used)	●
	Description of the Driver's Role	●
	Description of Adaptive Cruise Control Limitations	●
	Description of Lane Centering Limitations	●
	Description of Hands OFF Warning Sequence	✘
<p style="text-align: center;"><b>Hands Off Warning timeline</b></p> <p>The chart shows a sequence of events starting at approximately 15 seconds. A 'Visual Warning' (eye icon) begins at 15s and ends at 35s. An 'Audible Warning' (speaker icon) begins at 15s and ends at 35s. A 'Shutdown' (power icon) begins at 35s and ends at 35s. The x-axis is labeled 'time [s]' and ranges from 0 to 100.</p>		

- Explained in user manual
- Feature fitted as part of the system
- ✘ Not explained in user manual
- Feature not available as part of the system

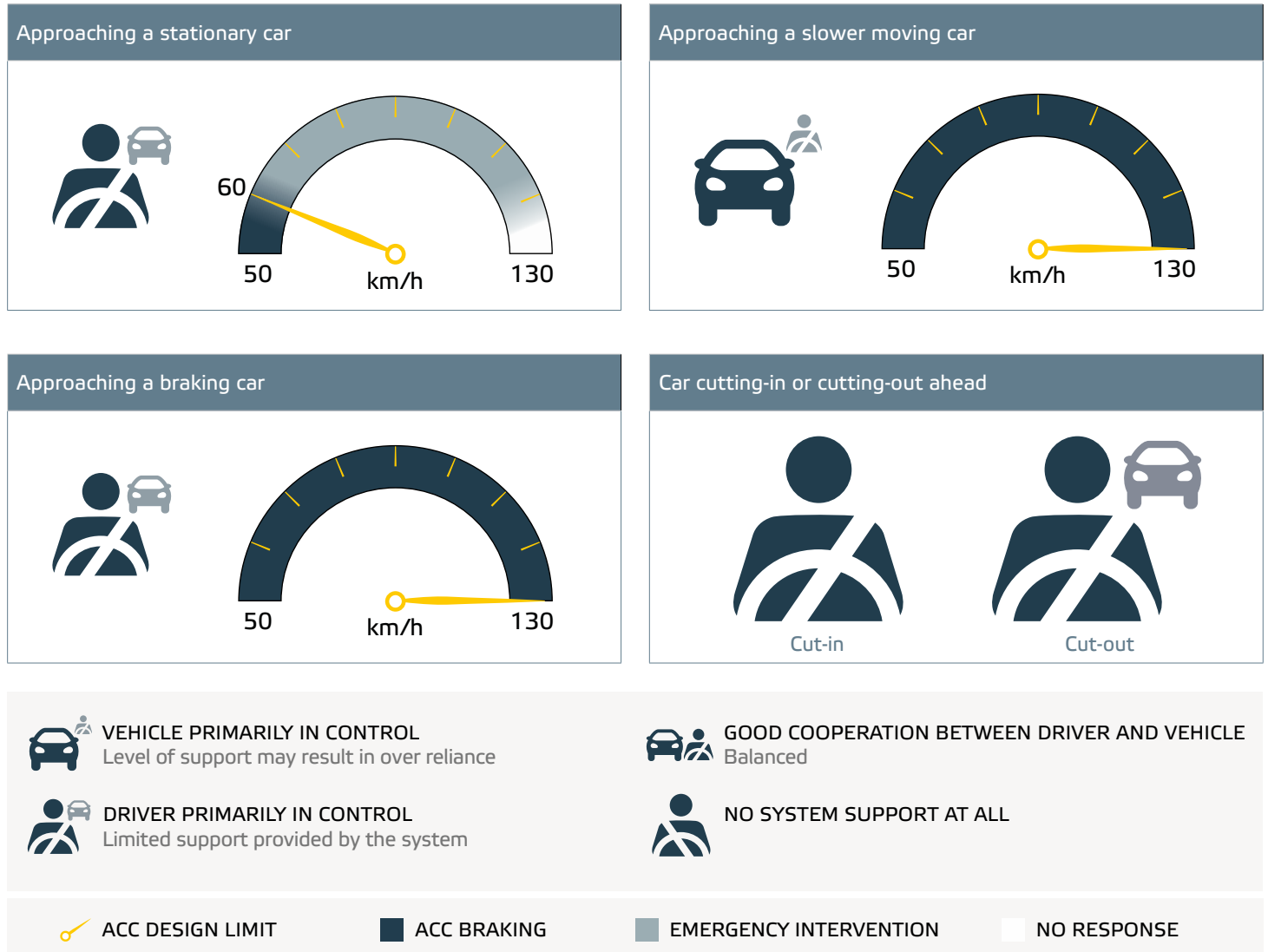
### Comments

While the user manual clearly explains the limitations of the systems and where they can operate reliably, system use is not limited as geofencing is not implemented. The role of the driver during the use of the system is also clearly stated and is in line with the system design. Specific scenarios where the driver must be primarily in control or where no system response is expected are mentioned in the user manual.

Enabling of the systems is performed using the vehicle settings menu. Engaging the systems is simple and intuitive using a dedicated cluster of buttons on the steering wheel.

Marketing information from Hyundai clearly explains the design and intended use of the systems.

## Adaptive Cruise Control Tests

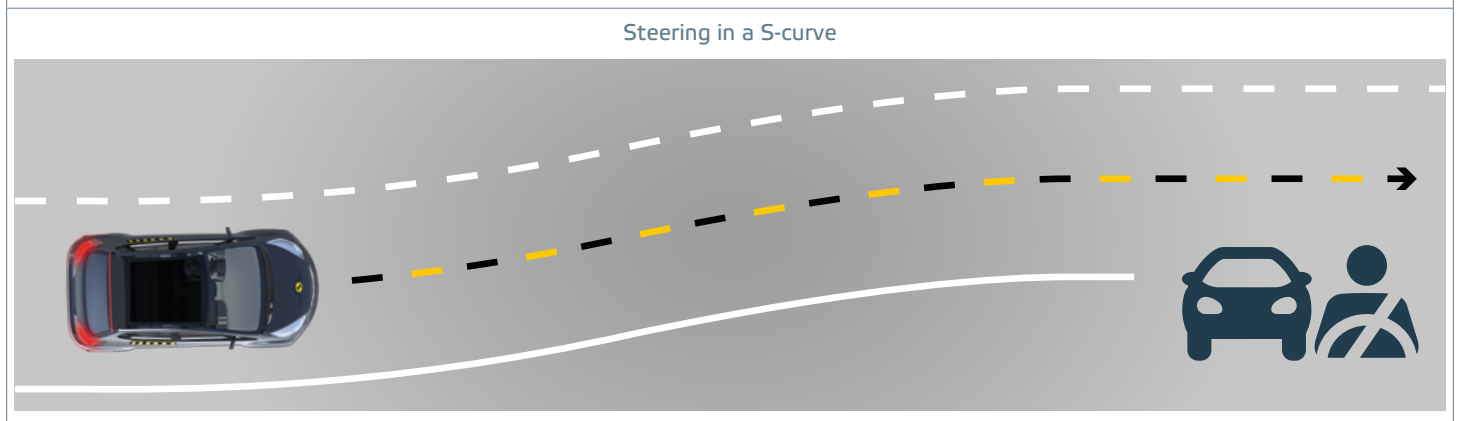
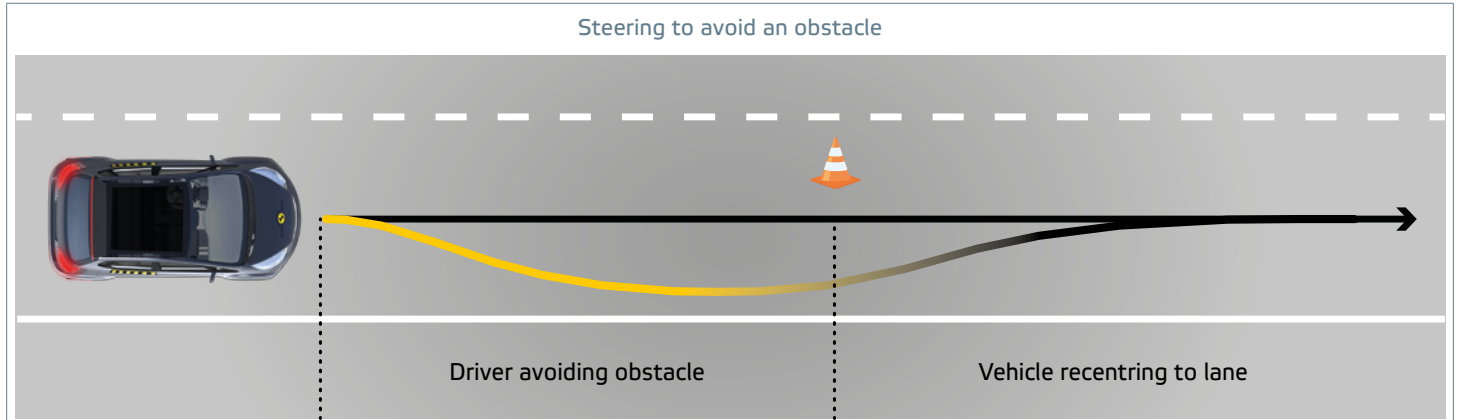






### Comments


In the scenarios tested, Smart Cruise Control responds to a stationary vehicle directly ahead and the ACC function will bring the car to a halt up to 60 km/h after which the AEB/FCW system keeps supporting the driver up to 120 km/h. In both the slower-moving scenarios, the car responds well and provides full support across the test speed range. For a braking lead vehicle, the system provides moderate support where AEB/FCW intervention is required. Minor system response was witnessed in the cut-in and cut-out scenarios which are critical and challenging due to the rapidly changing conditions. Warnings are issued only in the 'cut-out' situation to alert the driver of the possible crash in these cases.


Overall the system performs moderately in the ACC scenarios and a good balance exists between the car and the driver. The driver clearly needs to stay alert and take appropriate action in more critical day-to-day scenarios such as the sudden 'cut-in' situation.

# Steering Support



 <p><b>VEHICLE PRIMARILY IN CONTROL</b> Level of support may result in over reliance</p>	 <p><b>GOOD COOPERATION BETWEEN DRIVER AND VEHICLE</b> Balanced</p>
 <p><b>DRIVER PRIMARILY IN CONTROL</b> Limited support provided by the system</p>	 <p><b>NO SYSTEM SUPPORT AT ALL</b></p>

 **STEERING SUPPORT PATH**

 **DRIVER STEERING PATH**

**Comments**

In the scenarios tested, Lane Following Assist gives the impression that the driver is in control and the car is supporting them by providing steering assistance, which encourages good driver engagement. Where a driver wants to reposition the car within the lane, for example to avoid an obstacle or increase clearance to adjacent traffic, the system readily accommodates driver inputs and subsequently continues to provide steering assistance.