



Volvo V60

2018

Highway Assist System



AD System Name	Pilot Assist	
Standard Active Safety Systems	AEB Car-to-Car	●
	AEB VRU	●
	LSS	●
	SAS	●
Available on	<a href="#">Volvo S/V60</a> <a href="#">Volvo S/V90</a> <a href="#">Volvo XC40</a> <a href="#">Volvo XC60</a> <a href="#">Volvo XC90</a>	

Comments

Pilot Assist on the Volvo V60 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 "Pilot Assist" 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 handbook mentions that the system has specific limitations for particular driving conditions, 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 on the steering wheel 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 V60 shows a moderate level of support in the slower-moving and braking car scenarios. When approaching a stationary car, the vehicle provides no support, but will warn the driver of an imminent collision and/or activates AEB. In the 'cut-in' and 'cut-out' scenarios, the system offers no support, the driver being required to handle the situation.

Pilot Assist provides moderate 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 act as a guide, Pilot Assist will change to a passive mode and will resume assistance when clear lane markings are detected.

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

# Human Machine Interaction

System Name	The system name, Pilot 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;">Hands Off Warning timeline</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

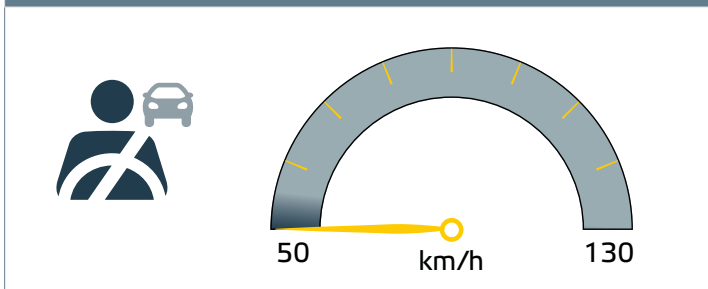
While the user manual clearly explains the limitations of the system and where they can operate reliably, system use is not limited as geofencing is not implemented. The role of the driver during the use of the system is also clearly stated and is in line with the system design. Specific scenarios where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

Enabling and engaging the system is performed using a button on the steering wheel and is simple and intuitive.

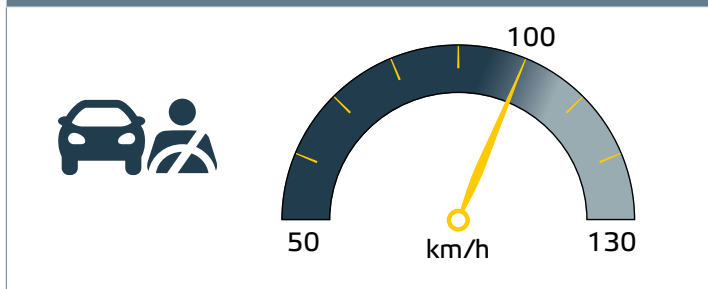
Marketing information from Volvo clearly explains the design and intended use of the system.

## Adaptive Cruise Control Tests

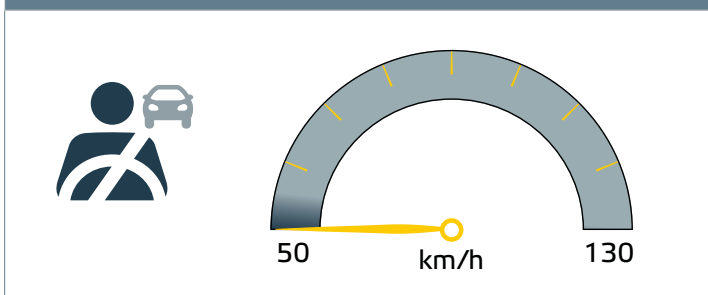
Approaching a stationary car



Approaching a slower moving car



Approaching a braking car



Car cutting-in or cutting-out ahead



**VEHICLE PRIMARILY IN CONTROL**  
Level of support may result in over reliance



**GOOD COOPERATION BETWEEN DRIVER AND VEHICLE**  
Balanced



**DRIVER PRIMARILY IN CONTROL**  
Limited support provided by the system



**NO SYSTEM SUPPORT AT ALL**

ACC DESIGN LIMIT

ACC BRAKING

EMERGENCY INTERVENTION

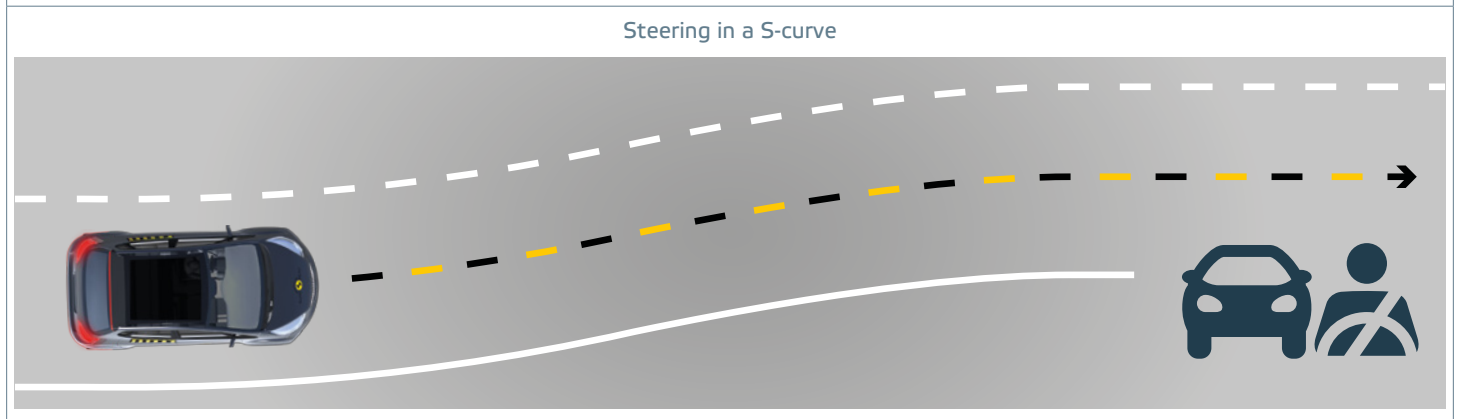
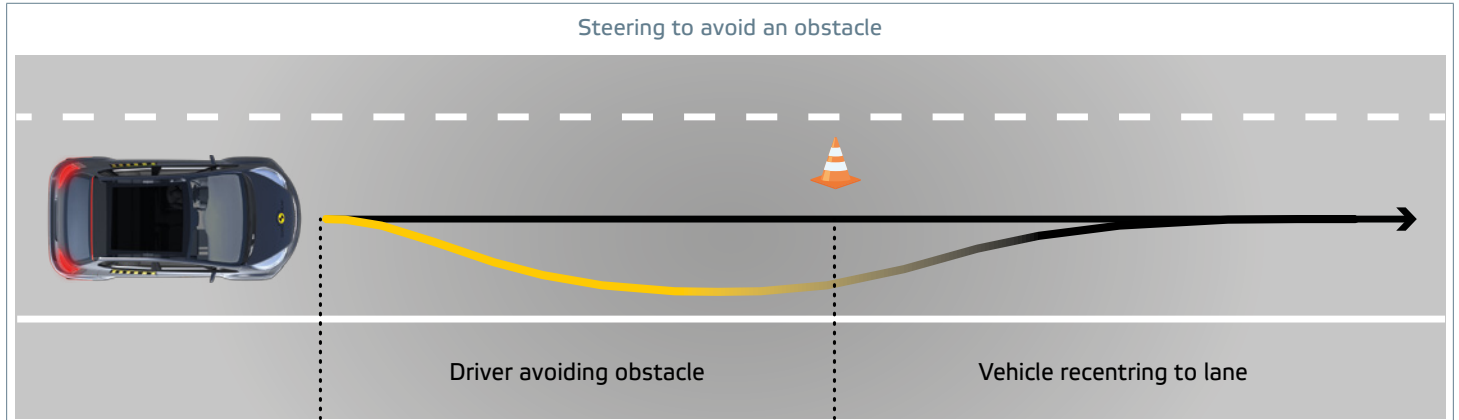
NO RESPONSE





### Comments


In the scenarios tested, Pilot Assist does not respond to a stationary vehicle directly ahead but the AEB/FCW system keeps supporting the driver up to the maximum speed assessed. In both the slower-moving and braking lead vehicle scenarios, the car responds well and provides full support in scenarios with a maximum speed differential of 80 km/h. No 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 to alert the driver of the possible crash, and/or AEB is activated 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, Pilot Assist gives the impression that the driver is in control with the car 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.