

FUNCTION : LANE ASSIST

N.B. : (*) According to version.

1. Principle of operation

The lane assist function is a driving assistance function designed to improve the vehicle's trajectory without the driver needing to act and using information from the multifunction video camera to control the electric power steering.

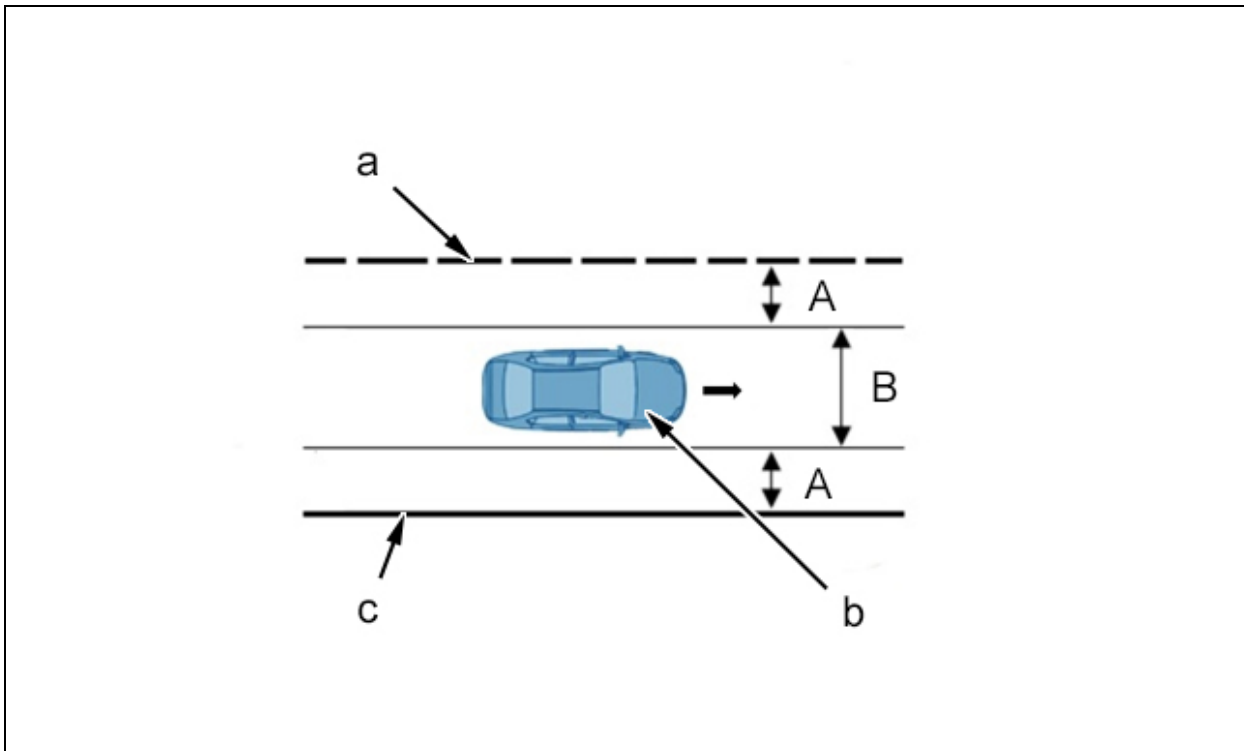


Figure : D4EAEI6D

"A" Comfort zone.

"B" Regulation zone.

"a" Marking line.

"b" Vehicle fitted with the lane assist function.

"c" Road limit.

The in-lane path keeping assist function keeps the vehicle in the lane by steering the vehicle, and keeps the vehicle in the position selected by the driver.

The driver can position the vehicle in the centre of the lane, move the vehicle to the right-hand side of the lane without going off the edge of the road "c" or move the vehicle to the left-hand side of the lane without crossing the lines "a".

The driver can change the position of the vehicle in the lane at any time using the steering wheel. After selecting the desired position in the lane, the driver should always keep their hands on the steering wheel but without applying any pressure, in order to ensure the in-lane path keeping assist function keeps the vehicle in the position selected by the driver.

The lane assist function corrects the vehicle's trajectory and reduces unnecessary movement within the chosen lane by keeping the vehicle in the regulation area "B".

The lane assist function requires two lateral lane markers.

When one of the two markers is no longer detected by the multifunction video camera, the lane assist function keeps the vehicle in the regulation area "B", maintaining the same comfort zone "A" calculated at the time the marker disappeared, and requests the driver to react.

The lane assist function is based on the interaction of 2 components :

- A multifunction video camera that detects continuous or broken lines marking the lane
- The electric power steering system which corrects the trajectory of the vehicle

The driver's intention to change lane is deduced from the direction indicator activation information.

The maximum torque applied by the lane assist function to the steering wheel is 4 N.m.

N.B. : The lane assist function is always selected when the vehicle is started, even if the system was deactivated during the previous journey, and is only active upon activation of the adaptive cruise control with stop-&-go function.

CAUTION : The effectiveness of the lane assist function may be temporarily disrupted by conditions outside the vehicle (Difficulty detecting a road marker in poor weather conditions, fading of a road marker due to wear, poor contrast between a road marker and the road surface, dirt on the windscreen).

The lane assist function filters the different types of road markers (detected markers and filtered markers) using the following parameters :

- A trajectory with a radius of curvature of the road greater than 250 m
- A trajectory with angles below 4°
- The activation of the lane assist function
- The speed of the vehicle is between 0 and 180 km/h

2. Conditions of activation and deactivation of the lane assist function

2.1. Activation of the lane assist function

The lane assist function is activated in the following cases :

- The lane assist function is in "selected" mode
- The adaptive cruise control with stop-&-go function is activated
- The vehicle speed is below 180 km/h
- The dynamic stability control is operational (not inhibited and not faulty) (No fault has been detected.)
- The driver applies a torque to the steering wheel below 1,5 N.m
- There is no direction indicator in use
- No trailer electrical plug is inserted in the towbar socket (*)
- No space-saving spare wheel with a non-standard diameter detected (*)

2.2. Deactivation of the lane assist function

The lane assist function is deactivated in the following cases :

- The adaptive cruise control with stop-&-go function is deactivated
- The vehicle speed exceeds 180 km/h
- The dynamic stability control is deactivated or faulty
- The driver applies a torque to the steering wheel above 1,5 N.m
- The driver activates a direction indicator with no target in the blind spot
- If one of the lane assist function components malfunctions
- The lane assist function is deactivated by the driver
- The adaptive cruise control until the vehicle stops with automatic restarting function is faulty
- No more road markers are detected on either side of the lane
- A trailer electrical plug is inserted in the towbar socket (*)
- Space-saving spare wheel with a non-standard diameter detected (*)
- For a given vehicle speed, the speed of rotation of the steering wheel is below the threshold for deactivation of the lane assist function

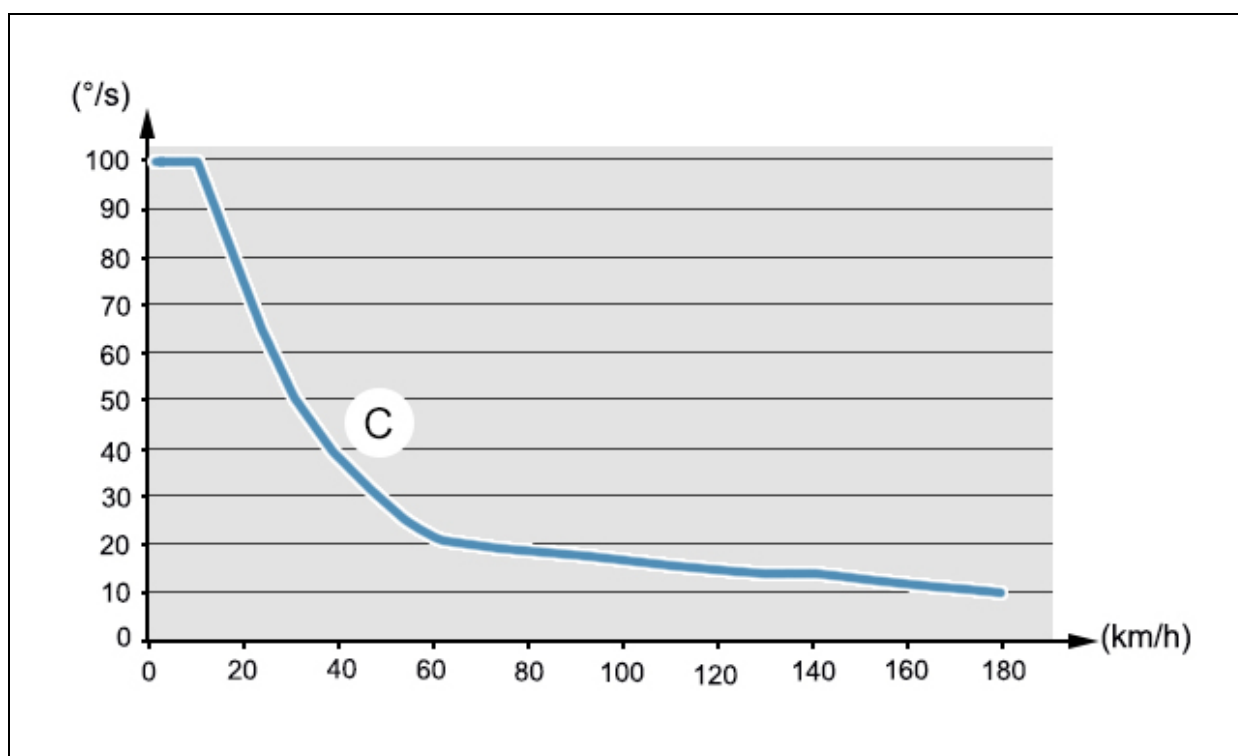


Figure : D4EAEI7D

(°/s) Speed of rotation of the steering wheel (In degrees per second).

(km/h) Vehicle speed (In kilometres per hour).

"C" Deactivation threshold for the lane assist function.

3. Vehicle situations of the lane assist function

The vehicle situations identified for the lane assist function are as follows :

- Function not available
- Function activated
- Function deactivated
- Function faulty

The lane assist function is activated using the activation/deactivation button for this system.

The lane assist function :

- Informs the driver of the status of the in-lane path keeping assist function using a display on the digital instrument panel or the head up display unit
- Informs the driver that a correction is in progress using a display on the digital instrument panel or the head up display unit
- Informs the driver that he must resume control of the steering wheel using a temporary message on the digital instrument panel

The correction of the vehicle's trajectory is stopped if the driver does not hold the steering wheel during a period of 25 seconds and an alarm is triggered.

The lane assist function warns the user of the need to resume control of the steering wheel in the following cases :

- Correction of the vehicle's trajectory for 15 seconds with no detection of the driver's hand on the steering wheel
- Crossing of a continuous or road limit line while correction is in progress
- Difficulty keeping the vehicle in the lane selected by the driver due to the curvature of the road

3.1. Function not available

The lane assist function cannot be activated if the activation conditions are not met.

3.2. Function activated

The lane assist function analyses the information from the multifunction video camera; 2 cases may arise :

- Function active : The lane assist function has detected the lines and can control the electric power steering if the vehicle drifts
- Function passive : Not all of the conditions for control are met. No control takes place in this mode

3.3. Function deactivated

The lane assist function does not control the electric power steering under any circumstances.

3.4. Function faulty

A fault with one of the components of the lane assist function is preventing control of the electric power steering by the lane assist function.

4. Types of marking detected

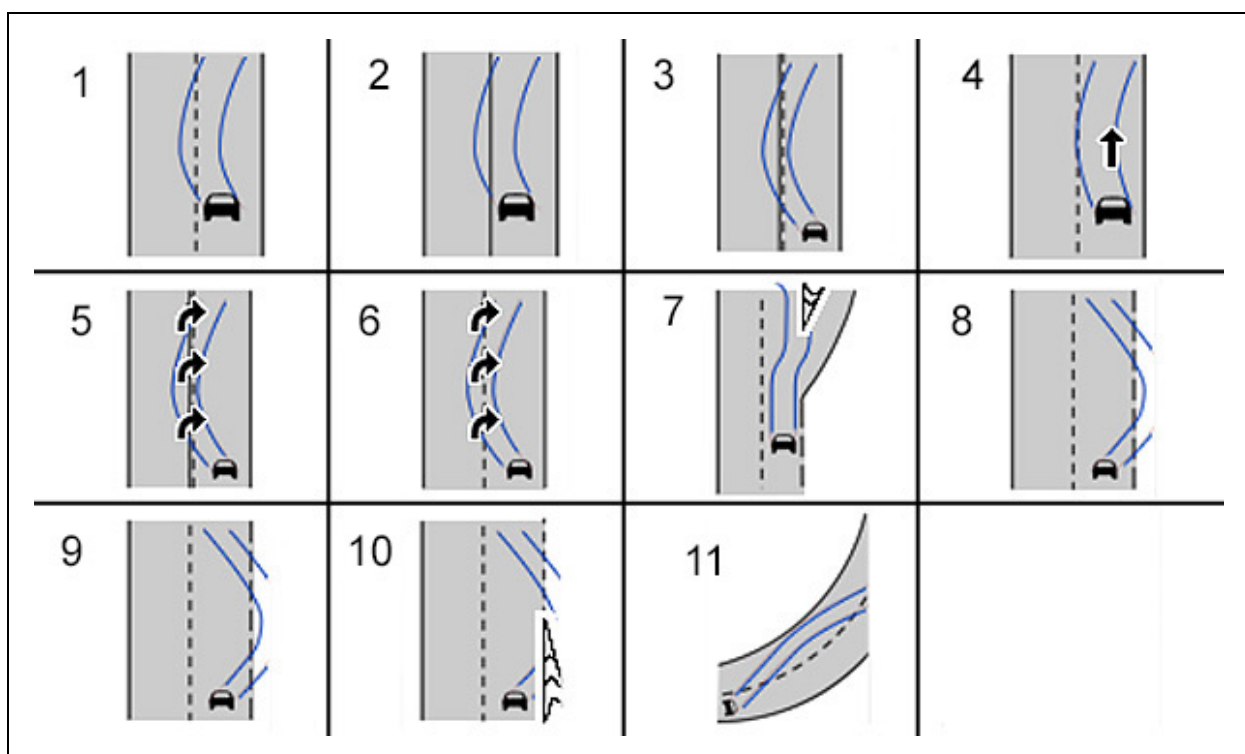


Figure : D4EAEI8D

This list is not exhaustive but shows the types of marking detected.

- (1) All broken lines.
- (2) Continuous lines.
- (3) Continuous and broken lines.
- (4) One wheel on a dotted line and the other on a filtered marking.
- (5) Lane change arrow.
- (6) Lane change arrow.
- (7) Hatching.
- (8) Broken hard shoulder marking.
- (9) Rumble strips on the hard shoulder marking.
- (10) Hatching.
- (11) Broken line in a bend.

5. Types of filtered marking

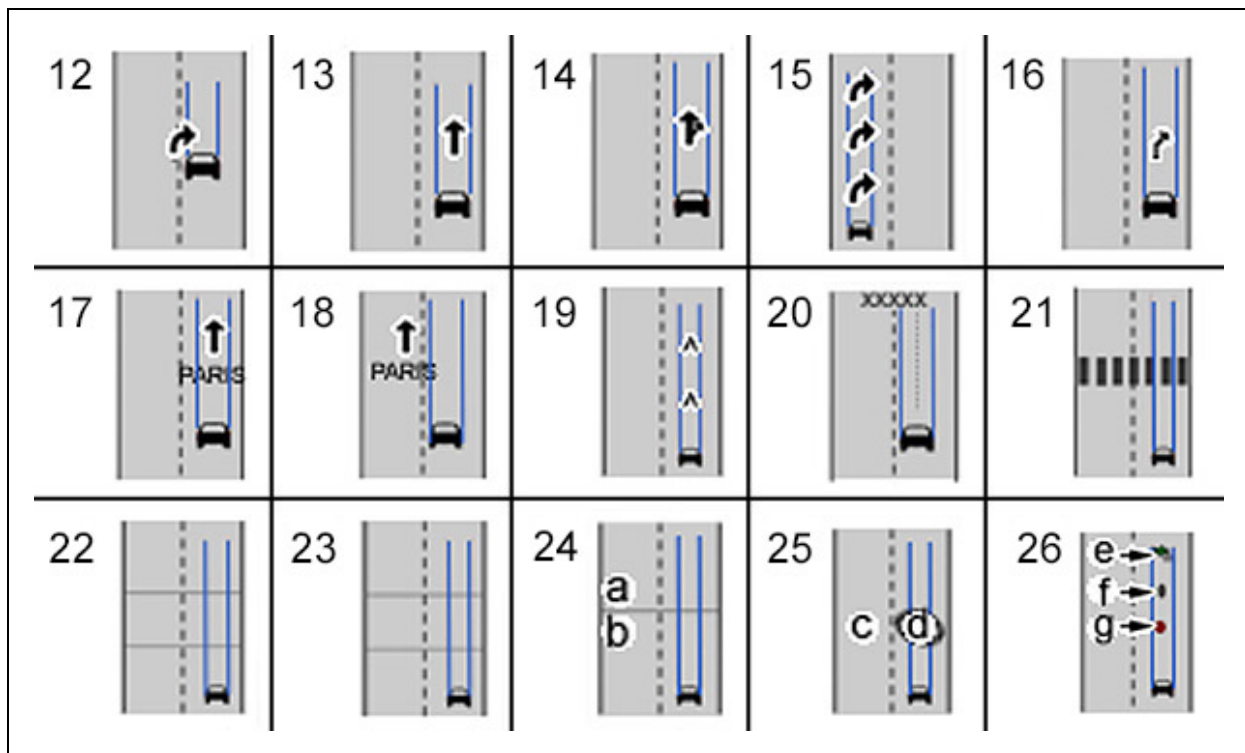


Figure : D4EAEI9D

N.B. : This list is not exhaustive but shows the types of filtered markings.

"a", "b", "c", "d" Trims (Non-exhaustive list) :

- Asphalt
- Concrete
- Cement
- Grooved, bumpy, poor quality

"e" Leaves.

"f" oil.

"g" Mud.

(12) Touch a lane change arrow.

(13) Direction arrow.

(14) Direction arrows.

(15) Lane change arrow.

(16) Direction arrow.

(17) Direction written on the road.

(18) Touch writing on the road.

(19) Safety distance chevron.

(20) Road marking in the middle of a lane in road works.

(21) Pedestrian crossing.

(22) Bridge joint.

(23) Speed bump in different colours.

(24) Change of road surface.

(25) Patching.

(26) Leaves, oil and mud on the road.