Blind-Spot Collision Warning (BCW) System

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Service Tips (1)

Circuit Description

Blind Spot Collision Warning System operates BCW (Blind Spot Collision Warning), LCA (Lane Change Assist) functions by providing an alert when a vehicle has entered a blind spot to the rear or side of the vehicle. Blind Spot Collision Warning System assists drivers by providing information (Visual, auditory) measuring the distance and speed of a rear vehicle using two radars installed on the left and right backside of vehicle.

- Rear And Side Warning Radar (BCW & LCA)

  BCW radar is Phase Mono-Pulse type of FMCW (Frequency Modulation Continuous Wave). ECU and sensors are integrated module.

  1. BCW & LCA control sequence
     1) Driver controls BCW switch. (ON / OFF)
     2) BCW & LCA sensor detects rear and side of the vehicle.
        - Calculates position and velocity of rear vehicle using current vehicle's speed signal and yaw sensor. (Rear vehicle speed, distance, acceleration/ deceleration, and current road curvature)
     3) Alert algorithm
        - Check the alert entry conditions using current vehicle's speed signal and road curvature.
        - When BCW or LCA warning condition is satisfied, outputs alert.
  2. Activation conditions of sensors
     1) BCW Switch : Switch ON (LED Illuminates)
     2) Speed : Faster than 30km/h.
     3) Change of curvature : Longer than 170m.
  3. Deactivation conditions of sensors.
     1) BCW Switch : Switch OFF. (LED Illuminates)
     2) Speed : Slower than 30km/h.
     3) Change of curvature : Shorter than 150m.
     4) Overtaking speed faster than 15km/h.
  4. Prohibition conditions of BCW System
     1) When front of radar is covered with obstacles. (System status - blockage) message output
     2) When location of radar mounted is distorted by external shocks. (Fault code sent)
     3) BCW & LCA system failure. (fault code sent)
     4) Radar overheating. (the system state - over temperature) message output

- LCA System mode operation
  1. When start engine with switch in OFF, LCA system is OFF mode.
  2. When press the ON switch from OFF mode, LCA system goes to passive mode.
  3. When start engine with switch in ON, LCA system is passive mode.
  4. While driving, if activation conditions (Speed, Change of curvature) is satisfied, LCA system mode changes from passive to active mode. (alert ON)
  5. While driving, if activation conditions (Speed, Change of curvature) is not satisfied, LCA system goes to passive mode. (alert OFF)
  6. When LCA system is malfunction in any mode, LCA system mode changes to failure mode.
  7. When LCA system operates normally in failure mode, LCA system mode changes to OFF mode.
  8. When OFF switch is pressed while LCA system in Active/Passive mode, LCA system mode changes to OFF mode.

- Sensor Alignment

  Sensor's recognizing direction must be in aligned with drive direction of vehicle to operate normally.

  BCW sensor alignment is matching direction of the vehicle with sensor. Without performing BCW sensor alignment, it may causes false alarm or system malfunction due to poor detection performance.

  ※ Auto-alignments must be done for bumper accident vehicle.