

STAR Case

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Symptom/Vehicle Issue: Blind Spot Monitor With Trailer Connected Operation

Discussion: The customer may complain that blind spot monitor intermittently not work when trailer is connected. This can be after performing the "Trailer Merge Assist" procedure.

There are limitations to the blind spot system. Certain behaviors of the system may explain the customer's concern about the system not detecting targets. See the below items for system operation information.

1. Auto Trailer Detection - If the system is unable to detect the presence of the trailer, this could lead to false target alerts. The system looks for the presence of the trailer within the first 90s of driving (and/or after 90s of standstill). If the trailer is not detected during these times, the system will assume no trailer is present and operate as "vehicle only". In this case, the presence of the trailer could cause several false blind spot alerts.
2. Trailer Type - If the system has detected the trailer, it will extend the blind spot zone accordingly. Certain trailer types tend to perform better than others. "High Visibility" trailers such as unloaded flat beds allow the sensors to clearly detect objects in the blind spot zone. These types of trailers tend to perform better than "Low visibility trailers." "Low visibility trailers" such as wide box trailers tend to impede some of the detection ability of the system. Similarly, some trailers such as Loaded V-hull Boat trailers and V-Nose Box trailers tend to cause issues due to the frontal shape of the trailer. Missed detections, late detections, and false detections are possible.
3. System operation (Auto vs Max) - If the trailer is detected and the system is operating in MAX mode, the blind spot zones will be extended to Maximum length. If the customer is driving a short trailer, the maximum zone length may be longer than comfortable and could be perceived as causing false alerts. Vice versa for Auto Mode. If the system is operating in Auto mode and the system has measured the trailer length too short, it may be perceived as alerting late on objects.

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4. System behavior - There are some system behaviors that could be perceived as missed targets. Target vehicles passing from behind at high speed difference will not be alerted. Passing a target vehicle at high speed difference will not be alerted. Also, the truck must be above 10kph to begin alerts.

5. Target vehicle maneuvers - The target vehicle maneuver can also have an affect on the blind spot system performance. If the target vehicle is hiding behind the trailer and then merges into the blind spot zone, the system may be late to alert. This is due to the radar noise filtering that occurs at the rear of the zone. If the target vehicle is driving in the blind spot zone at the same speed, this is called a stagnation. If the stagnation conditions are such that the speed difference between the truck and target vehicles are zero (or nearly zero), the system may not be able to classify and alert on the target. This could cause missed or dropped targets. This behavior may be noticeable alongside semi-trucks at low speed. In this scenario, the system thinks the semi is the road edge and therefore won't alert.

6. Environment - Crowded environments such as full parking lots or gas stations with over-head structure can cause missed trailer detections, missed target detections and/or false detections. Objects such as tunnels, guard rails, and other structures along the road edge can cause similar issues.

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