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2001 Jeep WRANGLER Service Manual

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If the **BLIND SPOT SYSTEM TEMPORARILY UNAVAILABLE** message is received for a minimum of 5 minutes, please verify that the outboard area at each end of the rear bumper fascia behind the rear wheel openings where the radar sensors are located is not blocked by snow, ice or road debris. If the area is blocked, remove the blockage. Full system functionality should be restored after about 2 minutes of driving. Then verify that the message is no longer present in the EVIC display.

NOTE

If the vehicle has experienced any trauma in the outboard area at each end of the rear bumper fascia behind the rear wheel openings where the sensors are located, even if the fascia is not damaged, the radar sensor may have become misaligned. A misaligned radar sensor will result in the BSM system not operating properly.

The hardwired circuits between components related to the BSM system may be diagnosed using conventional diagnostic tools and procedures. Refer to the appropriate wiring information. The wiring information includes wiring diagrams, proper wire and connector repair procedures, details of wire harness routing and retention, connector pin out information and location views for the various wire harness connectors, splices and grounds.

However, conventional diagnostic methods will not prove conclusive in the diagnosis of the BSM system or the electronic controls and communication between modules and other devices that provide some features of the system. The most reliable, efficient and accurate means to diagnose the BSM system or the electronic controls and communication related to BSM system operation requires the use of a diagnostic scan tool. Refer to the appropriate diagnostic information.

YOUR CURRENT VEHICLE

CADM

CADM

0:00 / 2:46

When a CADM is replaced, the following procedures need to be performed using the scan tool:

1. Perform the PROXI configuration
2. Perform the Long Range Radar calibration. The routine is called the **CADM Long Range Radar Static/In Bay Calibration Routine** located in the "Misc. Functions" tab in the CADM.

NOTE

The routine requires the

ADAS Calibration System

MOPAR ESSENTIAL TOOLS

3. Perform the Long Range Front Camera calibration. The routine is called the "Forward Facing Camera Dynamic Service Alignment". This is a drive style routine. This routine is to be used only for the Long Range Front Camera on the windshield.

Global Navigation Motion Module

GLOBAL NAVIGATION MOTION MODULE

When replacing the Global Navigation Motion Module (GNMM), perform the following steps:

1. Load the satellite Ephemeris and Almanac data.

2. Position the vehicle to an area where a full range of satellites are in view (Open Sky).

NOTE

No obstructions >10 degrees above the GNMM antenna.

3. Connect the scan tool to the vehicle.
4. Navigate to the Guided Diagnostics tab.
5. Select and perform the " **PROXI Configuration Alignment** " routine.
6. Check the LAT/LONG position is correct for the vehicles current location.

YOUR CURRENT VEHICLE

Range Radars

RANGE RADARS

Video #1 - This video focuses on tool setup and procedure.

Video #2 - This video focuses on the radar plate and leveling.

LONG RANGE RADAR

1. Using the diagnostic scan tool, navigate top the CADM “Misc. Functions menu to select and perform the “ **CADM Long Range Radar Static/In Bay Calibration Routine** ”. The routine will walk through setting up the ADAS tool to perform the calibration.

NOTE

The routine requires the

- Visual indications using the driver assist screen on the IPC.

Hands On Steering Wheel Detection - The driver is required to remain engaged in the task of driving the vehicle at all times. The ALM system determines driver engagement by using a combination of capacitive sensing by the SWSM plus steering wheel torque sensing by the EPS in order to determine whether at least one of the drivers hands is in contact with the steering wheel. If the driver removes both hands from the steering wheel, an initial visual warning is issued to engage the driver. If the driver keeps their hands off the steering wheel continuously, the ALM system escalates the visual warning level. If the driver does not assume control of the vehicle, the ALM system will further escalate efforts to engage the driver via invasive alerts (i.e. audible, visual, haptic notifications). If the driver re-engages during the warning phase, the ALM system will resume normal operation. If the driver still does not assume control of the vehicle, the ALM system enters a safety response mode; at which time, it will ramp out lateral control and return full lateral control of the vehicle to the driver. Momentary “hands off” is considered acceptable misuse. Prolonged continuous “hands off” operation of ALM is not considered acceptable misuse and will result in an escalated driver notification strategy to reengage the driver in the driving task. Failure to reengage will cause the ALM to disengage and return control of the vehicle to the driver.

ALM Interaction with the Lane Centering System - In all cases, the Lane Centering system takes precedence over the ALM system. The ALM system is only capable of being engaged when the Lane Centering system is not engaged.

Auxiliary Switch Bank Module (ASBM)

Component Index

The ASBM transmits the state the button (pressed/not pressed) to the BCM which gates the message to the CADM. The BCM transmits a signal to the ASBM indicating if the LED should be active or be deactivated based on the button state.

Body Control Module (BCM)

Component Index

The BCM supplies the CADM with a gated ALM switch status which allows the CADM to enable or disable the ALM state depending on the customers input.

Central ADAS Decision Module (CADM)

Component Index

The CADM is the decision master and the main operating component of the ALM system and its sub systems.

Lane Management System

Steering Wheel Sensor Module (SWSM)

Component Index

The SWSM activates a hands On Sensor to determine if the driver has their hands on the steering wheel. The SWSM receives the sensor input then uses its own internal algorithm to determine if the hands are off or on the steering wheel. The SWSM transmits this determination in a signal to the CADM. The CADM uses this signal and/or the EPS torque sensing signal in order to determine the final hands on / hands off state.

The IPC is responsible for displaying temporary unavailable and service warnings to the customer. These are generated by the CADM.

The IPC is provides information about the blind spot alert feature selected to the CADM.

Mid Range Radar Rear Left (MRRRL) and Mid Range Radar Rear Right (MRRRR)

Component Index

Both radars are hardwired directly to the CADM and are used to provide object detection feedback in support of this system. For servicing (Refer to Electrical/8B - Driver Assist/RADARS/Removal and Installation).

SYSTEM SIGNALS

Related ECUs and their associated signals:

NOTE

The Body Control Module (BCM) is the gateway used for the signals between the CANs listed below.

Input/Output Communications To System CAN ECUs: CAN-FD-3, 14 and CAN-IHS		
CAN-FD-3	BCM	Ignition position.
		Turn indicator status.
		Blind spot detection indicator failure - driver and passenger side.
	CADM	Sensor blinded request from blind spot sensor.
		Blind Spot Sensor service warning request.
		Blind spot left and right warning.
	IPC	Blind spot alert feature selected.
	TCM	The shift lever position.
CAN-FD-14	BSM	The average vehicle speed calculated.
		This signal indicates the status of yaw rate signal and value.
	CADM	Sensor blinded request from blind spot sensor.

- Wheel Speed Signals from the BSCM
- Active Lane Management Torque From the EPS.
- Highway Assist Torque from the EPS
- Steering Column Torque from the EPS
- Shift Lever Position from the Transmission Control Module (TCM)
- Transmission Gear Engaged from the TCM
- Driver Door Open/Close state from the BCM
- Ignition State from the BCM
- First Row Driver Seatbelt Switch status from the Occupant Restraint Controller (ORC)

The CADM requests a visual and audible alert when the system detects a drowsy driver. The CADM control the activation and deactivation of the warnings displayed on the IPC. The CADM will continue to display this message until the CADM receives the state of the “OK” button press.

When DDD is enabled but becomes unavailable due to faults in the system, the CADM continuously transmits signal indicating that the system is not available and that a fault is present. The CADM will continue to do this until the system is no longer faulted. When this system is faulted, the CADM instructs the IPC to display a popup message “DROWSY DRIVER NOT AVAILABLE SERVICE REQUIRED”.

Body Control Module (BCM)

Component Index

The BCM is the vehicle configuration master as well as the gateway.

Central Active Drivers Assistance Module (CADM)

Component Index

The CADM receives and sends bus messages in support of the DDD system.

If the CADM detects a fault in the DDD system, the CADM will disable that system and a popup message on the IPC will state that the system is not available.

Electronic Power Steering (EPS)

Component Index

The EPS gear module provides the tolerance band to the CADM for determining the normal operating range of the steering wheel. The EPS also provides a haptic feedback from the steering wheel.

Instrument Panel Cluster (IPC)

- Intersection Collision Assist Right Brake Request (ICA-R).

The AEB system is a Driver Assistance System designed to assist the driver in detecting, avoiding and mitigating collisions with vehicles and pedestrians in its forward path. Using a radar paired with a LRCF, the AEB system is able to determine the likelihood of a probable frontal collisions. The AEB system is able to determine the range and speed of a vehicle by using the LRRF. The AEB system also uses the LRRF to determine the range, speed and direction of pedestrian motions in the forward path of the host vehicle. By using the LRCF, the AEB system is able to perform object classification and to determine lane markings. The AEB system uses a sensor fusion algorithm to combine the information from the CADM and the LRCF. This sensor fusion algorithm and logic is contained within the CADM itself.

The AEB system uses the sensor fusion information to determine probable collisions with vehicles, pedestrians, and cyclists in the forward path of the host vehicle. The Cyclist Emergency Braking feature adheres to the Pedestrian Emergency Braking (PEB) system performance. Additionally, the AEB system has the capability of detecting potential intersection collision through the use of the sub-feature Intersection Collision Assist (ICA) system. The ICA system is able to determine probable intersection collisions, particularly in urban areas, at low speeds by utilizing the forward looking radar, LRCF, and corner radars. Based on the sensor fusion algorithm and vehicle dynamic data the AEB system determines a Time To Collision (TTC) between the host vehicle and any target vehicles, objects or pedestrians in its forward path. When the TTC becomes too small the AEB system issues visual, audible and haptic warnings to alert the driver of a probable collision. At low vehicle speeds, in addition to the above mentioned functionality, the AEB system provides full autonomous braking to attempt to mitigate a frontal collision. These AEB FCW events occur as needed in the order of criticality of events. This is determined by the CADM.

Other items of note concerning the AEB systems are:

- The AEB System is only active at vehicle speeds above a calibrated value in a forward gear.
- The AEB System is only active at vehicle speeds above a 5 kmh (3 mph) while in a forward gear.
- AEB is unavailable when the vehicle transfer case is engaged in the 4-Low position.
- The AEB system reacts on moving objects. A target is considered a moving object if it has a velocity greater than zero while the system is tracking it.
- The AEB system reacts on stopped objects. A target is considered a stopped object if it has a velocity greater than zero, then comes to a stop while the system is tracking it.
- The AEB system reacts on stationary objects classified by the LRCF as vehicles or pedestrians. A target is considered a stationary object if it has zero velocity the entire time the system is tracking it.

PEB and the Cyclist Emergency Braking Systems

The CADM provides the following PEB/Cyclist functionality based on:

- TTC
- Pedestrian/Cyclist detection
- Detection by radar or LRCF and sensor availability