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2002 JEEP Wrangler OEM Service and Repair Workshop Manual

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which they occur. One cache stores powertrain (P-Code), chassis (C-Code) and body (B-Code) DTCs, while the second cache is dedicated to storing network (U-Code) DTCs.

CAN-FD NETWORKING MANAGEMENT

CAN-FD

The CAN-FD uses partial networking which is a selective wake-up function in an ECU that determines the CAN bus messaging for a specific corresponding task, allowing an ECU to use less overall current and energy. This can be used when updating (flashing, downloading, and messaging) ECU software during service.

The CAN-FD networks use different classifications for ECU communication.

- Responsive = The ECU is allowed to wake up or be awakened by CAN messages, when the ignition is off.
- Passive Responsive = The ECU receives a message that causes the ECU to begin sending messages on that CAN.
- Non-Responsive = The ECU is not allowed to wake up or be awakened by CAN messages, when the ignition is off.

CAN-FD ECU network classifications are listed as follows:

- **CAN-FD-1**

RESPONSIVE
Air Suspension Control Module (ASCM)
Body Control Module (BCM)
Security Gateway Module (SGW)

- **CAN-FD-2**

RESPONSIVE
Body Control Module (BCM)
Electric Power Steering (EPS)
Security Gateway Module (SGW)

NON-RESPONSIVE	
Occupant Restraint Controller (ORC)	
Park Assist Module (PAM)	[Fused Ignition]
OR	
Central Vision Park Assist Module (CVPAM)	[Fused B+]

- **CAN-FD-3**

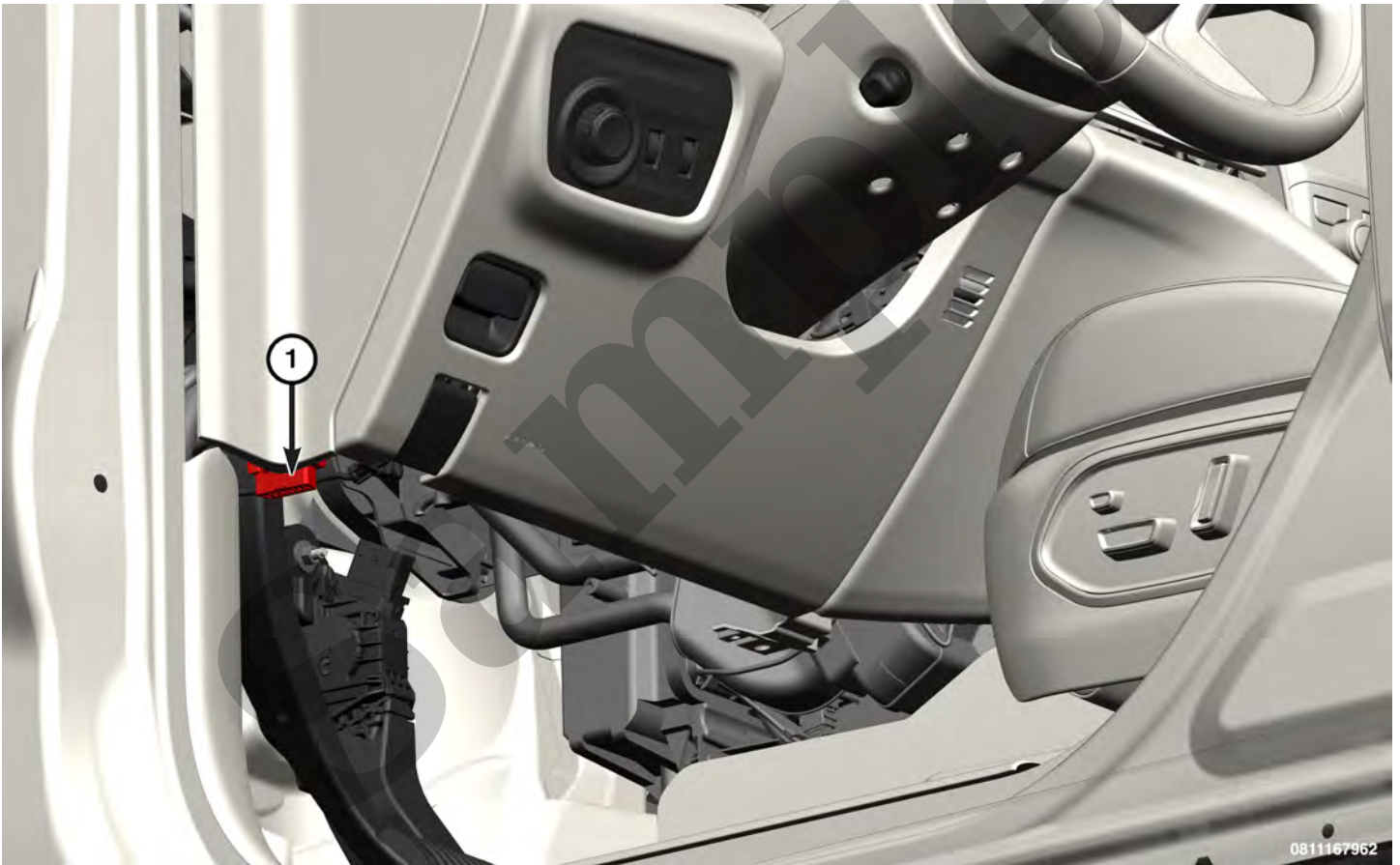
RESPONSIVE
Body Control Module (BCM)
Brake System Module (BSM)
Electronic Shift Module (ESM)
Electronic Steering Lock Module (ESL)
Instrument Panel Cluster (IPC)
Radio Frequency Hub Module (RFHM)
Security Gateway Module (SGW)

YOUR CURRENT VEHICLE

Data Link Connector (DLC)

DATA LINK CONNECTOR (DLC)

DESCRIPTION



1 - DLC

The Data Link Connector (DLC) is a 16-way molded plastic connector insulator on a dedicated take out of the instrument panel wire harness. This connector is located at the lower edge of the instrument panel, outboard of the steering column. The connector insulator is retained by integral snap features within a rectangular

second following a battery disconnect or failure. The purpose of the capacitor is to provide backup SRS protection in case there is a loss of battery current supply to the ORC during an impact.

Various sensors within the ORC are continuously monitored by the ORC logic. These internal sensors, along with several external impact sensor inputs allow the ORC to determine both the severity of an impact and to verify the necessity for deployment of any SRS components. Two remote front impact sensors are located on the back of the right and left sides of the vertical member of the radiator support near the front of the vehicle. The electronic impact sensors are accelerometers that sense the rate of vehicle deceleration, which provides verification of the direction and severity of an impact.

The ORC also monitors inputs from up to eight additional remote side impact sensors located within both the left and right front doors, the B and C-pillars and below the rear quarter windows to control deployment of the Side AirBag Inflatable Curtains (SABIC) units, knee airbag units, and the seat airbag units. The ORC also monitors an internal rollover sensor for inflation of the SABIC.

The impact sensors within the ORC are electronic accelerometer sensors that provide additional logic inputs to the ORC microcontroller. These sensors are used to verify the need for a SRS component deployment by detecting impact energy of a lesser magnitude than that of the primary electronic impact sensors, and must exceed a safing threshold in order for the SRS components to deploy. A separate impact sensor within the ORC provides confirmation to the ORC microcontroller of side impact forces. This separate sensor is a bi-directional unit that detects impact forces from either side of the vehicle.

Pre-programmed decision algorithms in the ORC microcontroller determine when the deceleration rate as signaled by the impact sensors indicate an impact that is severe enough to require SRS protection and, based upon the severity of the monitored impact, determines the level of front airbag deployment force required for each front seating position. When the programmed conditions are met, the ORC sends the proper electrical signals to deploy the dual multistage front airbags at the programmed force levels, the front seat belt tensioners, side curtain and seat airbag.

The ORC also contains an integral Electronic Stability Control (ESC) dynamics sensor. The ORC microcontroller energizes the ESC dynamics sensor, then relays the sensor outputs to the Antilock Brake System (ABS) Module over the CAN data bus ([Refer to Electrical/8E - Electronic Control Modules/MODULE, Brake System Control/Description and Operation](#))(Refer To List 1).

For specific inputs and outputs of the ORC, ([Refer to 10 - Restraints/Description and Operation](#)).

Refer To List:

List 1

- [08 - Electrical / 8E - Electronic Control Modules / MODULE, Brake System Control \(BSCM\) / Description and Operation](#)
- [08 - Electrical / 8E - Electronic Control Modules / MODULE, Brake System Control 2 \(BSCM2\) / Description and Operation](#)

DESCRIPTION	SPECIFICATION	COMMENT
Drivetrain Control Module (DTCM) Bracket Nut	7 N·m (62 In. Lbs.)	-
Electronic Limited Slip Differential (ELSD) Module Nut	7 N·m (62 In. Lbs.)	-
Electronic Steering Lock (ESL) Module Bolts	6 N·m (53 In. Lbs.)	-
Occupant Restraint Controller to Body Nut	8 N·m (71 In. Lbs.)	-
Park Guide Bracket to Case Bolt	13 N·m (10 Ft. Lbs.)	-
Power Inverter Module (PIM) Retaining Bolts	6 N·m (53 In. Lbs.)	-
Powertrain Control Module (PCM) to Bracket Bolt	8 N·m (71 In. Lbs.)	-
PCM to Bracket Nut	8 N·m (71 In. Lbs.)	-
PCM Bracket to Body Bolt	6 N·m (53 In. Lbs.)	-
PCM Ground Wire	7 N·m (62 In. Lbs.)	-
PCM Ground Wire Nut	20 N·m (15 Ft. Lbs.)	-
Power Inverter Module to CCB Bolt	6 N·m (53 In. Lbs.)	-
Security Gateway Module (SGW) to Instrument Panel Bolt	5 N·m (44 In. Lbs.)	-
Video Routing Module (SGW) to Body Nuts	8 N·m (71 In. Lbs.)	-

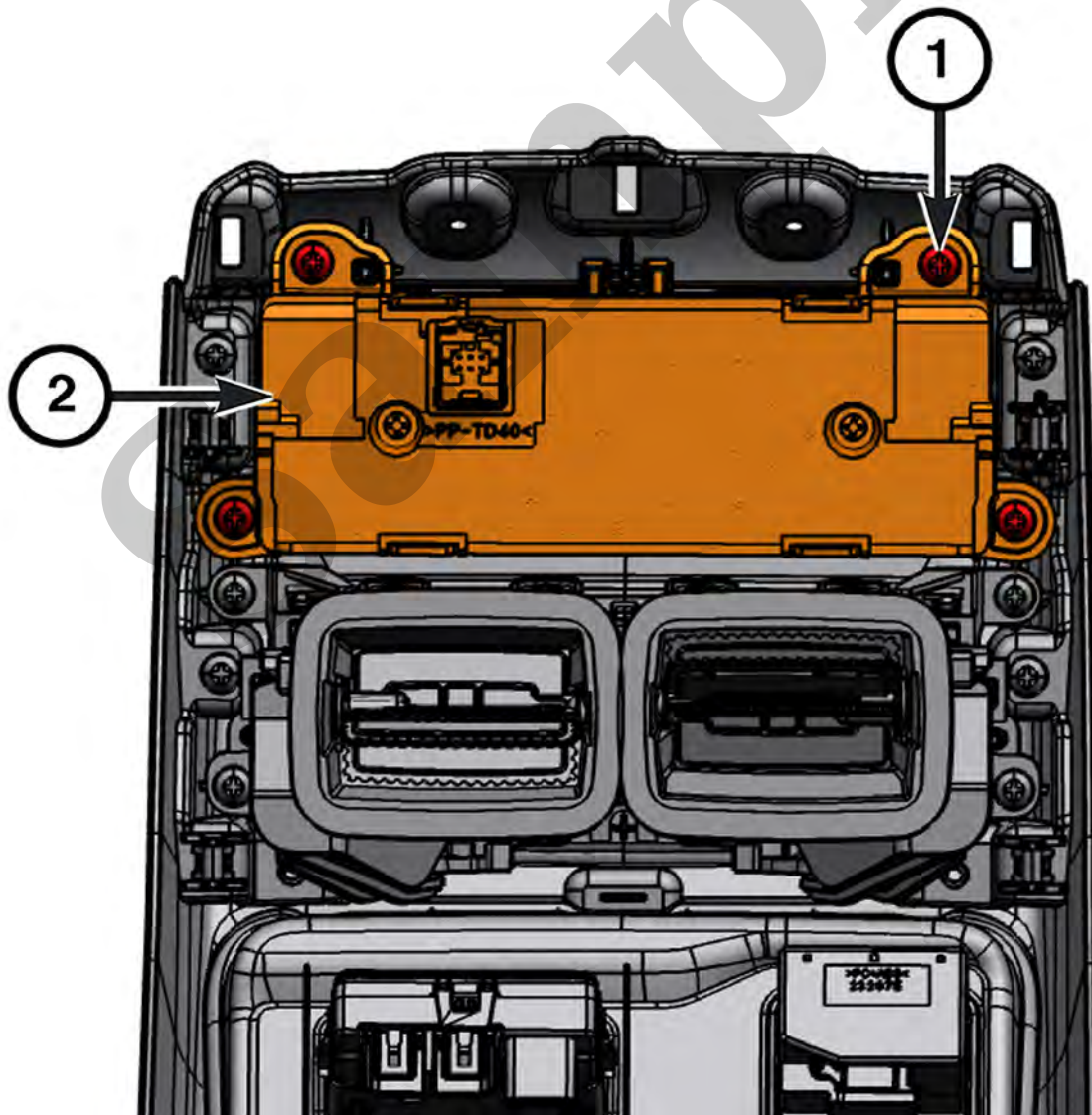
YOUR CURRENT VEHICLE

Rear Cabin Comfort Controls (RCCC)

REAR CABIN COMFORT CONTROLS (RCCC)

REMOVAL

1. Remove the floor console end cap (Refer to Body/Interior/CONSOLE, Floor, End Cap/Removal and Installation)(Refer To List 1).



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Active Sway Bar System (ASBS) Switch

[Component Index](#)

The ASBS switch communicates over a Local Interface Network (LIN) with the Body Control Module (BCM). The BCM simply gates the switch request to the ASBS module and the LED request from the BCM to the ASBS switch. There is no other functionality in the BCM.

A request to UNLOCK is made by the user by pressing the SWAY BAR button once, but can be cancelled by pressing the SWAY BAR button a second time. The button is a press and release button that simply reports the switch state as "pressed" or "not pressed" to the BCM and does not latch in place when pressed.

When the stabilizer bar is DISENGAGED/UNLOCKED, the LED in the switch will be on SOLID. The LED will be OFF when the stabilizer bar is ENGAGED/LOCKED and will not automatically disengage without a user request (switch actuation).

The LED on the switch will flash for the following reasons:

- A stabilizer bar disconnect or connect is "In Progress"
- Vehicle speed threshold has been exceeded with the stabilizer bar disengaged (when transfer case is 4LO or 4HI)
- The stabilizer bar was previously disengaged (in 4LO/4HI) and re-engaged with the transfer case in the neutral (N) position

Body Control Module (BCM)

[Component Index](#)

The BCM gates the switch request to the ASBS module and the LED request from the BCM to the ASBS switch. There is no other functionality in the BCM.

Electronic Vehicle Information Center (EVIC)/Instrument Panel Cluster (IPC)

[Component Index](#)

The EVIC displays ASBS status messages provided by the ASBS module.

Air Suspension Control Module (ASCM)

AIR SUSPENSION CONTROL MODULE (ASCM)

WARNING

All pressurized air suspension components contain high pressure air (up to 220 psig). Use extreme caution when inspecting for leaks. Wear safety goggles and adequate protective clothing when inspecting or servicing the air suspension system. A sudden release of air under this amount of pressure can cause possible serious or fatal injury.

WARNING

Before performing any service on the air suspension system, the system must be disabled to prevent the system from changing ride height. Before any given component is to be serviced it must be deflated. Servicing the air suspension system without the system disabled, or with pressure in any specific component, can cause possible serious or fatal injury.

CAUTION

When removing an air line from a component and the air line is to be reused, do not remove the 90° fitting or the brass fitting from the air line. If either is removed, the air line must be replaced. New components have air line fittings attached; however if the original air line is used the original fitting must also be used. Do not remove protective caps or plugs from air lines or components until ready to install the air line to prevent moisture or dirt intrusion. All air line fittings must be hand started to avoid cross threading.

NOTE

If the Air Suspension Control Module (ASCM) is replaced, it must be initialized using the diagnostic scan tool. This will remove the ASCM from Plant Mode. The ASCM can also be removed from Plant Mode by driving the vehicle above 19 km/h (12 mph).

YOUR CURRENT VEHICLE

Ambient Lighting Module (ALM)

AMBIENT LIGHTING MODULE (ALM)

REMOVAL

1. Remove the Body Control Module (BCM) ([Refer to 08 - Electrical/8E - Electronic Control Modules/MODULE, Body Control/Removal and Installation](#)).

NOTE

Left Hand Drive (LHD) vehicle shown, Right Hand Drive (RHD) vehicle similar.

- Starter relay
- Ignition Run-Start relay
- Washer Pump

LSD :

- Provides a ground (-) for the load device requiring operation
- Can be used by an ECU to switch ground (-) to an electrical circuit, which is typically powered through its harness and associated circuitry

BCM FUNCTION

The BCM will gate messages among all modules on the following bus networks:

- CAN-Chassis (CAN-C)
- CAN-Interior High Speed (CAN-IHS)
- LIN

The BCM provides the following diagnostic features:

- Diagnoses and reports hundreds of Diagnostic Trouble Codes (DTCs)
- Monitors the CAN bus for failures and logs network DTC "U" communication codes

LIN MASTER - The BCM is a LIN master module to the following components:

- Intelligent Battery Sensor (IBS)
- Steering Wheel Switches (SWS) via the Steering Column Control Module (SCCM)
- Electronic Overhead Module (EOM)
- Humidity Light Rain Sensor Module (HLRSM)
- Integrated Center Stack (ICS) module
- Tailgate Module
- Power Inverter Module (PIM)
- Heated Seat Switches
- Wireless Charging Pad Module
- Inside Rearview Mirror

OPERATION CONTROL

The BCM operates the following functions:

- Exterior lighting
- Washer and Wiper control
- Ignition control
- Horn
- Power Locks