BCM COMMUNICATIONS DIAGNOSTIC PROCEDURE

COMMUNICATION DIAGNOSTIC PROCEDURE

Communication Diagnostic Procedure

1. **CHECK FOR POSSIBLE CAUSES**

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1. This Communication Diagnostic Procedure is intended to provide the technician with a common starting point.

NOTE: For an in-depth explanation of the Controller Area Network (CAN) Bus system operation, (Refer to 08 - Electrical/8E - Electronic Control Modules/COMMUNICATION/Description) and (Refer to 08 - Electrical/8E - Electronic Control Modules/COMMUNICATION/Operation) .
NOTE: For intermittent communication issues, or if multiple communication related DTCs are set in other Electronic Control Modules (ECUs), check the suspected ECU power and ground circuits, including at the body sheet-metal, for loose or poor connections. Performing a load test on these circuits will verify the circuit is capable of carrying the amperage needed to perform properly, along with confirming that excessive resistance does not exist in the circuit(s) being tested. For additional information on CIRCUIT LOAD TESTING PROCEDURES, (Refer to 29 - Non-DTC Diagnostics/Circuit Testing Procedures/Standard Procedure) . The vehicle communication systems may be diagnosed with the Mopar Scope, (Refer to 29 - Non-DTC Diagnostics/Communication - Diagnosis and Testing) .

2. Check the Battery for proper State of Charge (SOC) and the Charging System for proper operation. (Refer to 08 - Electrical/Charging/Diagnosis and Testing) .
3. With the scan tool, check all Electronic Control Modules (ECUs) for battery and ignition voltage related DTCs and record on the repair order.
4. Check for and perform all Service Bulletins that could be related to the customer’s concern.
5. Check aftermarket accessories for proper installation. (Check for improper electrical connections and fasteners that may be contacting wire harnesses)
6. With the scan tool, check all ECUs for software updates that are related to the customer's concern. Update ECU(s) as necessary.
7. Check related wire harnesses for collision related damage.

Were any problems found?

Yes

- Repair the problem as necessary.
- With the scan tool, erase DTCs from the related ECUs and perform the appropriate VERIFICATION TEST. If a VERIFICATION TEST is not available for an ECU, perform the BCM VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Body Control (BCM) /Standard Procedure).

No

- Go To **2**

2. **CHECK ELECTRONIC CONTROL MODULES FOR VEHICLE CONFIGURATION DTCS**

NOTE: A Configuration DTC indicates that an ECU is not programmed with information that is specific to the vehicle (VIN, mileage, etc.). If an ECU is not configured properly, serial data communication failures may exist. The following list includes, but is not limited to, DTC descriptors that indicate a Configuration DTC.

- **ECU Configuration Mismatch - Not Configured**
- **ECU Unable To Configure**
- **Implausible/Missing ECU Network Configuration Data**
- **Implausible/Missing Vehicle Configuration Data**
- **Implausible Vehicle Configuration**
- **Incorrect Variant/Configuration**
- **PROXI Not Programmed (If applicable)**
- **Restore Vehicle Configuration**
- **Vehicle Configuration Mismatch**
- **Vehicle Configuration Not Programmed**

TYPES OF CAN BUS FAULTS	
LOSS OF COMMUNICATION	will set by an active receiving/reporting ECU on a CAN Bus network that detects no communication from another ECU on the same CAN Bus network. Insufficient power, ground, bus voltage, or inaccurate vehicle configuration will cause a loss of communication.
IMPLAUSIBLE MESSAGE	will set by an active receiving/reporting ECU, when it determines the data sent from the active transmitting/offending ECU is missing part of the message, or the message is an irrational value over the CAN Bus.
MISSING MESSAGE	will set by an active receiving/reporting ECU, when it determines a data message to be missing partial information when sent from the active transmitting/offending ECU over the CAN Bus network.
BUS OFF	set by an ECU that has experienced approximately 32 transmit errors, this can be caused by ECU internal faults as well as external bus faults like shorts or plugging and unplugging test tools to the diagnostic connector.
PHYSICAL	is only detectable by an ECU that has a transceiver that is able to detect shorts on the bus. If the ECU does not, it generally will set bus off faults due to shorted bus lines.

NOTE: A Vehicle Scan Report can be helpful if online/phone assistance is needed.

1. With the scan tool, generate a Vehicle Scan Report and record on the repair order.
2. With the scan tool, check all ECUs for Configuration DTCs.

Are any Configuration DTCs set?

Yes

- Configure the ECU(s) as necessary in accordance with the Service Information.
- Perform the appropriate VERIFICATION TEST. If a VERIFICATION TEST is not available for an ECU, perform the BCM VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Body Control (BCM) /Standard Procedure).

No

- Go To **3**

3. **CHECK ELECTRONIC CONTROL MODULES FOR ACTIVE COMMUNICATION RELATED DTCS**

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1. Refer to the scan tool DTCs.

Are any Communication related DTCs active?

Yes

- Go To **4**

No

- Go To **5**

4. **CHECK ACTIVE DTCS**

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1. Refer to the scan tool DTCs.

NOTE: Diagnose Lost Communication DTCs (not to be confused with CAN Bus Off or Can Bus Performance DTCs) before diagnosing other CAN related DTCs.

Which type of Communication DTC is active?

Lost Communication

- Go To **7**

Implausible Data, Implausible Signal, Missing Message or Invalid Data

- Go To **9**

5. **CHECK STORED DTCS**

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1. Refer to the scan tool DTCs.

NOTE: Diagnose all Lost Communication DTCs before diagnosing other CAN related DTCs.

Which type of Communication DTC is stored?

Lost Communication

- Perform the STORED LOST COMMUNICATION DTCS procedure. (Refer to 29 - Non-DTC Diagnostics/Communication/Diagnosis and Testing) .

Implausible Data, Implausible Signal, Missing Message or Invalid Data

- Go To **6**

6. **CHECK THE 'SENDING CONTROL MODULE' FOR DTCS**

NOTE: The 'Sending Control Module' is the ECU that the Implausible Data, Implausible Signal, Missing Message or Invalid Data is set against. Below is a list of some items (depending on vehicle configuration) a 'Sending Control Module' may provide as a bussed out to one or more "Reporting Control Module'.

- **Sensors**
  - **Adjustable Pedal**
  - **Air Temperature**
  - **Battery**
  - **Blind Spot**
  - **Crankshaft**
  - **Impact**
  - **Park Assist**
  - **Passive Entry**
  - **Rain**
  - **Ride Height**
  - **Seat**
  - **Sun**

    - **Tire Pressure**
    - **Wheel Speed**
- **Switches**
    - **Audio**
    - **Brake / Stop Lamp**
    - **Door Ajar**
    - **Hazard**
    - **Heated**
    - **Hood**
    - **Ignition**
    - **Lighting**
    - **Multifunction**
    - **Power Seat**
    - **PRNDL**
    - **SOS Console**
    - **Speed Control**

TYPES OF CAN BUS FAULTS	
LOSS OF COMMUNICATION	will set by an active receiving/reporting ECU on a CAN Bus network that detects no communication from another ECU on the same CAN Bus network. Insufficient power, ground, bus voltage, or inaccurate vehicle configuration will cause a loss of communication.
IMPLAUSIBLE MESSAGE	will set by an active receiving/reporting ECU, when it determines the data sent from the active transmitting/offending ECU is missing part of the message, or the message is an irrational value over the CAN Bus.
MISSING MESSAGE	will set by an active receiving/reporting ECU, when it determines a data message to be missing partial information when sent from the active transmitting/offending ECU over the CAN Bus network.
BUS OFF	set by an ECU that has experienced approximately 32 transmit errors, this can be caused by ECU internal faults as well as external bus faults like shorts or plugging and unplugging test tools to the diagnostic connector.
PHYSICAL	is only detectable by an ECU that has a transceiver that is able to detect shorts on the bus. If the ECU does not, it generally will set bus off faults due to shorted bus lines.

1. Refer to the scan tool DTCs.

Are any DTCs set in the 'Sending Control Module'?

Yes

- Refer to the appropriate diagnostic procedure.

No

- Go To **11**

7. **CHECK FOR MULTIPLE LOST COMMUNICATION DTCS**

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1. Refer to the scan tool DTCs.

Choose the scenario that best describes the condition of the vehicle from the list below:

One ECU is reporting a Lost Communication DTC against a single ECU.

- Go To **8**

Multiple ECUs are reporting a Lost Communication DTC against a single ECU.

- Perform the NO RESPONSE or NO RESPONSE FROM ECU diagnostic procedure for the ECU that is not communicating. (Refer to 29 - Non-DTC Diagnostics/Communication/Diagnosis and Testing) .

8. **CHECK THE 'SENDING CONTROL MODULE' FOR COMMUNICATION**

NOTE: **The 'Sending Control Module' is the ECU that the Lost Communication DTC is set against.**

1. Refer to the scan tool DTCs.

Is the 'Sending Control Module' active on the bus?

Yes

- Replace the Reporting Control Module in accordance with the Service Information
- Perform the appropriate VERIFICATION TEST. If a VERIFICATION TEST is not available for an ECU, perform the BCM VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Body Control (BCM) /Standard Procedure).

No

- Perform the NO RESPONSE or NO RESPONSE FROM ECU diagnostic procedure for the 'Sending Control Module' that is not communicating. (Refer to 29 - Non-DTC Diagnostics/Communication/Diagnosis and Testing) .

9. **CHECK THE 'SENDING CONTROL MODULE' FOR DTCS**

NOTE: **The 'Sending Control Module' is the ECU that the Implausible Data, Implausible Signal, Missing Message or Invalid Data DTC is set against.. Below is a list of some items (depending on vehicle configuration) a 'Sending Control**

Module' may provide as a bussed out to one or more "Reporting Control Module'.

- **Sensors**
  - **Adjustable Pedal**
  - **Air Temperature**
  - **Battery**
  - **Blind Spot**
  - **Crankshaft**
  - **Impact**
  - **Park Assist**
  - **Passive Entry**
  - **Rain**
  - **Ride Height**
  - **Seat**
  - **Sun**
  - **Tire Pressure**
  - **Wheel Speed**
- **Switches**
  - **Audio**
  - **Brake / Stop Lamp**
  - **Door Ajar**
  - **Hazard**
  - **Heated**
  - **Hood**
  - **Ignition**
  - **Lighting**
  - **Multifunction**
  - **Power Seat**
  - **PRNDL**
  - **SOS Console**
  - **Speed Control**

TYPES OF CAN BUS FAULTS	
LOSS OF COMMUNICATION	will set by an active receiving/reporting ECU on a CAN Bus network that detects no communication from another ECU on the same CAN Bus network. Insufficient power, ground, bus voltage, or inaccurate vehicle configuration will cause a loss of communication.
IMPLAUSIBLE MESSAGE	will set by an active receiving/reporting ECU, when it determines the data sent from the active transmitting/offending ECU is missing part of the message, or the message is an irrational value over the CAN Bus.
MISSING MESSAGE	will set by an active receiving/reporting ECU, when it determines a data message to be missing partial information when sent from the active transmitting/offending ECU over the CAN Bus network.

TYPES OF CAN BUS FAULTS	
BUS OFF	set by an ECU that has experienced approximately 32 transmit errors, this can be caused by ECU internal faults as well as external bus faults like shorts or plugging and unplugging test tools to the diagnostic connector.
PHYSICAL	is only detectable by an ECU that has a transceiver that is able to detect shorts on the bus. If the ECU does not, it generally will set bus off faults due to shorted bus lines.

1. Refer to the scan tool DTCs.
2. With the scan tool, check the 'Sending Control Module' for non-U-code DTCs that are related to the U-code that is set, or related to the customer's concern if the U-code DTC name is not clear about which signal is faulted.

Is a related non U-code DTC set in the 'Sending Control Module'.

Yes

- Refer to the appropriate diagnostic procedure.

No

- Go To **10**

10. **CHECK OTHER CONTROL MODULES FOR RELATED NON U-CODE DTCS**

NOTE: **IMPORTANT: Some ECUs simply pass information from one ECU to the other. In some cases, a U-code DTC may be set that implicates the "pass-through" ECU that sent the information. For example, if an Engine Coolant Temperature (ECT) Sensor DTC is set in the Powertrain Control Module (PCM), the HVAC Module may set an "Implausible Data from BCM" DTC because the BCM is the ECU that normally passes that information from the PCM to the HVAC Module. However, the BCM may not set any DTCs related to the faulted ECT Sensor because the BCM does not use the ECT information. In this case, the PCM ECT DTC should be diagnosed before the Implausible Data DTC. If you suspect a scenario like this, diagnose the non U-code DTC(s) before diagnosing any Implausible Data, Implausible Signal, Missing Message or Invalid Data DTCs. Below are some further examples of different sensors and switches:**

- **Sensors**
  - **Adjustable Pedal**
  - **Air Temperature**
  - **Battery**
  - **Blind Spot**
  - **Crankshaft**
  - **Impact**
  - **Park Assist**
  - **Passive Entry**
  - **Rain**

    - **Ride Height**
    - **Seat**
    - **Sun**
    - **Tire Pressure**
    - **Wheel Speed**
- **Switches**
    - **Audio**
    - **Brake / Stop Lamp**
    - **Door Ajar**
    - **Hazard**
    - **Heated**
    - **Hood**
    - **Ignition**
    - **Lighting**
    - **Multifunction**
    - **Power Seat**
    - **PRNDL**
    - **SOS Console**
    - **Speed Control**

1. With the scan tool, check all other ECUs for non-U-code DTCs that are related to the U-code that is set, or related to the customer's concern if the U-code DTC name is not clear about which signal is faulted.

Is a related non U-code DTC set in another ECU?

Yes

- Diagnose the related DTC. Refer to the appropriate Diagnostic Procedure.

No

- Replace the 'Sending Control Module' in accordance with the Service Information.
- Perform the appropriate VERIFICATION TEST. If a VERIFICATION TEST is not available for an ECU, perform the BCM VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Body Control (BCM) /Standard Procedure).

11. **CHECK THE 'SENDING CONTROL MODULE' RELATED WIRE HARNESS CONNECTIONS**

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1. Disconnect all 'Sending Control Module' related wire harness connectors.
2. Disconnect all related in-line wire harness connections (if equipped).
3. Inspect wire harness connectors, component connectors, and all male and female terminals for the following conditions:
    - Proper connector installation.
    - Damaged connector locks

- Corrosion
- Signs of water intrusion.
- Weather seal damage (if equipped).
- Bent terminals.
- Overheating due to a poor connection (terminal may be discolored due to excessive current draw).
- Terminals that have been pushed back into the connector cavity.
- Perform a terminal drag test on each connector terminal to verify proper terminal tension.

Repair any conditions that are found.

4. Connect all 'Sending Control Module' related wire harness connectors. Be certain that all wire harness connectors are fully seated and the connector locks are fully engaged.

5. Connect all in-line wire harness connectors (if equipped). Be certain that all connectors are fully seated and the connector locks are fully engaged.

6. With the scan tool, erase DTCs.

7. Operate the vehicle in the conditions that set the DTC.

8. With the scan tool, read DTCs.

Did the DTC return?

Yes

- If there is a history of this DTC setting multiple times, replace the 'Sending Control Module' in accordance with the Service Information.
- Perform the appropriate VERIFICATION TEST. If a VERIFICATION TEST is not available for an ECU, perform the BCM VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Body Control (BCM) /Standard Procedure).

No

- Perform the appropriate VERIFICATION TEST. If a VERIFICATION TEST is not available for an ECU, perform the BCM VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Body Control (BCM) /Standard Procedure).
- Test Complete