

XJ / XK

CAN (Controller Area Network)

XJ / XK CAN Modules

The following control modules communicate directly through the CAN network:

- Anti-lock braking / traction control module (ABS / TC CM)
- Transmission control module (TCM)
- Engine control module (ECM)
- Gear selector illumination module (does not transmit; used only as a “bridge” for gear selector position lights)
- Instrument pack (INST)

The CAN network is also connected to the DLC (data link connector) for diagnostics.

Refer to the applicable Electrical Guide Appendix for individual module messages

CAN is unable to communicate directly with SCP. However, the INST converts specific message data allowing communication between networks.

NOTE: All modules have fail safe default modes in case of a network failure.

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CAN Network Troubleshooting

WDS CAN Network Diagnostics

WDS automatically tests the network integrity and communications before running specific diagnostic routines. First, WDS establishes communication with the vehicle via the DLC and begins its automatic test sequence. Once network integrity and communications are both confirmed, WDS begins the specific diagnostic routine. If the network communications and integrity test is failed, PDU directs the user to an appropriate test from the CAN network menu.

CAN Network Failure Modes

The WDS diagnostic routine tests the network wiring but will not pin point an individual module failure. If a network failure is established using WDS, then pin point the fault using the following information and a DVOM.

An open circuit in both the CAN high (+) AND the CAN low (-) wires will stop communications at the open circuit. Modules on either side of the open circuit will continue to communicate with modules on the same side of the open circuit but no data will be cross the open circuit. Modules will continue to operate by substituting default values for the missing data.

CAN modules will communicate only when the CAN high (+) and CAN low (-) are in an acceptable electrical state. The following shows communication possibilities depending on the electrical state of each wire. If all communication is lost on the CAN bus, the modules will continue to function but will substitute default values for any missing data.

Wire	Condition	Communication
CAN high (+)	open circuit	NO
CAN high (+)	short circuit to ground	NO
CAN high (+)	short circuit to B+ voltage	NO
CAN high (+)	short circuit to CAN low (-)	NO
CAN low (-)	open circuit	YES (if CAN high (+) is functioning)
CAN low (-)	short circuit to ground	YES (if CAN high (+) is functioning)
CAN low (-)	short circuit to B+ voltage	NO

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CAN Network Troubleshooting (continued)

CAN Network Communications Functional Check

The following procedure confirms that data message communication is possible between all of the control modules connected to the CAN bus without using WDS.

- Switch the ignition ON to position II and observe the MILs.
- Switch the ignition OFF and disconnect the battery negative cable.

Disconnect the ABS / TC CM.

Reconnect the battery negative cable and switch the ignition to position II.

The following warnings should activate:

XJ and XK with traction control

MILs: ABS; BRAKE; AMBER

LEDs: TRAC switch

Message center display: TRACTION CONTROL FAILURE; STABILITY CONTROL FAILURE

XK without traction control

MILs: ABS; BRAKE

LEDs: ASC switch

Switch the ignition OFF and disconnect the battery negative cable.

Reconnect the ABS / TC CM.

Reconnect the battery negative cable and switch the ignition to position II.

If the MILs, LEDs, and message center display are inactive, the CAN network is communicating from one end to the other (ABS / TC CM to INST).

- Start the engine and apply the parking brake and foot brake. Move the gear selector through all of the gear positions.

If the gear selector indicator lights operate correctly, the CAN network is communicating from the TCM to the gear selector module.

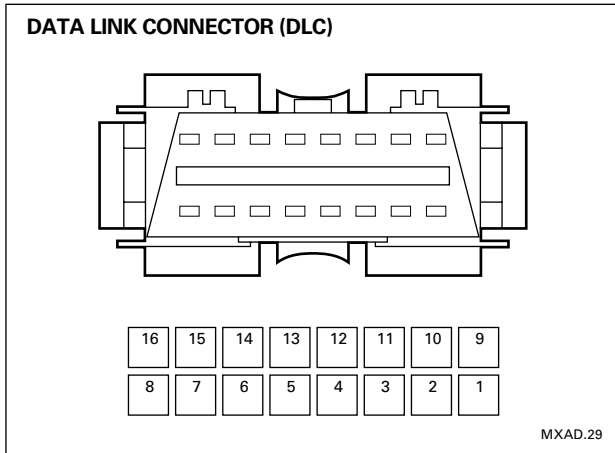
CAN Network Integrity Check without WDS

- With the ignition switched OFF, connect a DVOM between DLC pin 6 (CAN high [+]) and DLC pin 14 (CAN low [-]). A reading of $60 \times$ indicates a good CAN bus:
 - < 60Ω indicates a short circuit on the bus
 - > 60Ω indicates high resistance on the bus
- Disconnect the DVOM from the DLC and switch to the voltage scale.
- Switch the ignition ON to position II.
- Connect the DVOM between DLC pin 6 (CAN high [+]) and ground. The measured value should be 2.7 V (approx.).
- Connect the DVOM between DLC pin 14 (CAN low [-]) and ground. The measured value should be 2.5 V (approx.).

NOTES

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Data Link Connector (DLC)



Both the CAN and SCP busses are directly connected to the DLC. WDS contains hardware and software that allows it to function as a “node,” an additional module added to networks. The software and hardware supports direct communications between WDS and the networks for diagnostics and module programming. In addition, WDS communicates via the DLC with non-multiplexed modules using a Serial Data Link (ISO 9141).

Generic scan tools access the legislated OBD II DTCs and freeze frame information in the ECM via DLC pins 7 and 15.

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