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V-MUX® Six Step Troubleshooting
Version 3

1) Understand how the vehicle is supposed to operate

a) The key to fixing any vehicle problem is understanding how the system is supposed to work.
b) Have the V-MUX Input/Output Relationships Report at hand; if necessary request it from the OEM that manufactured the exact vehicle being examined, based on Build or VIN number.
c) Verify that what is being investigated is a V-MUX problem, rather than a general electrical problem. A faulty power solenoid is a common problem that affects V-MUX but is external to it.

2) Check V-MUX Inputs

a) With the Diagnostics software tool connected to the vehicle, manually test the switch Input On/Off; corresponding On/Off V-MUX messages should normally appear in the lower portion of Diagnostics. If such messages appear, it is not a switch Input problem.
b) Remove the Input pin from the V-MUX node and use a multimeter to test for proper Switch On polarity (+Batt or Ground). The V-MUX Report will list correct polarity for each Input circuit.
c) To test if the Input on the node itself is bad, use a jumper wire to put either a +Batt or Ground signal to the Input and verify that Diagnostics shows the corresponding V-MUX message.
d) Common problems with Inputs on the V-MUX Network:

- A faulty switch or problem with harness wire continuity due to faulty splices.
- A Ground fault, resulting in noise feedback through the switch to V-MUX.
- A resistor fault when the switch circuit must be electrically pulled to an Off state.

3) Check V-MUX Outputs.

a) Command Check: From Diagnostics, Send the applicable V-MUX Command(s) to turn the suspect Output On/Off. If the device turns on, it is not an Output problem.
b) Continuity Check: Remove the Output pin from the node and jump +Batt to the applicable pin on the connector. If the device turns on, it is not a wire continuity problem.
c) To test if the Output on the node itself is bad, use a multimeter to check for +Batt on the circuit. Toggle the command or switch on and off and check for voltage at the pin. Note that when off, an Output may “float” in a high impedance state at between 6V and 9V.
d) Common Problems with Outputs on the V-MUX Network:

- Improper device Grounds.
- A problem with wire continuity due to faulty splices.
- “Overcurrent detect” shutdown due to an aged rotator motor.

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4) Verify V-MUX Communications

a) Using Diagnostics or a Vista display, verify node communications with a Ping test. If all nodes Reply to Ping then all are powered, programmed, and communicating.

b) Monitor V-MUX network message traffic with Diagnostics.

i. Indications of abnormally heavy or compromised V-MUX traffic in Diagnostics:

· Compromised: The “PC” and “BC” counters increment with few to none message updates.

· Abnormally Heavy: V-MUX messages update so rapidly that they can’t be read, or the same Command is issued over and over again, as seen in the Diagnostics “Count” column.

ii. Indications of no V-MUX network messages from any node

· “System Voltage” and “Sync” do not display in the upper portion of Diagnostics.

· No Digital Command states in the lower portion.

· Pinging all nodes yields no Replies at all.

c) Common problems with communication on the V-MUX network:

· Water in the network junction Tee connecters (Deutsch DT04-3P-P007).

· Improper Grounding of the nodes. Review the “V-MUX Installation Practices” manual.

· Pinched or cut network cable.

· Bad crimps or poor plug-in connections at the network junctions (“Tees”).

· Bad switch or a wire fault resulting in On/Off Input toggling at a high rate of speed.

5) Divide the V-MUX System into smaller segments

a) Rather than troubleshoot the entire vehicle at once, break the V-MUX network into smaller segments to try to isolate at which segment the problem exists.

b) In the case of communications, that may mean breaking the communication lines into smaller segments or disconnecting nodes.

6) Ask for Help

a) The OEM that manufactured the vehicle should be the primary resource for understanding how it was built and operates. If you do not understand how something is supposed to work, or how the truck was wired, call the OEM.

b) The V-MUX hardware and software are designed and manufactured by Weldon. If you are having problems understanding how to use the software or how to troubleshoot a particular problem, call Weldon at 1-800-989-2718.

c) The latest software and manuals are always available online at www.v-mux.com

· V-MUX Installation Practices manual

· V-MUX Diagnostics and Downloader manuals

· V-MUX Connector Specification and Network Layout resources

· Latest Software releases for all V-MUX