

Electrical/Electronic System

Diagnostics Guide

(Reference the appropriate electrical schematic first and follow “POSSIBLE CAUSES” in sequence)

<u>PROBLEM</u>	<u>POSSIBLE CAUSES</u>	<u>REMEDY</u>
1. Control panel is not functional.	• Vehicle ignition switch isn't activated.	• Activate vehicle ignition switch.
	• Loss of power supply.	• Examine the chassis's HVAC circuit's protection device for failure (i.e. fuse or circuit breaker). Two power sources are required.
	• Open circuit between vehicle ignition and control panel. Open circuit between ground source and control panel.	• Check primary connections at power source, ground source and the control panel. Verify vehicle voltage at each connection. Perform continuity test between each connection. Repair or replace harness if necessary.
	• Loose connection(s) at the control panel.	• Insure all connections are mated properly.
2. Controller knob is rotating beyond its defined positions.	• Failed control panel.	• Replace control panel.
	• Knob is damaged.	• Replace knob.
	• Control device is damaged.	• Internal stop has been broken. If control device can be rotated through more than designed positions, replace control device.
3. Discharge and/or inlet air systems aren't functioning properly. Blower is operating properly.	• Loss of power supply.	• Examine the chassis's HVAC circuit's protection device for failure (i.e. fuse or circuit breaker). Separate source from the blower motor circuit.
	• Open circuit between vehicle ignition and control panel. Open circuit between ground source and control panel.	• Verify vehicle voltage at each connection. Perform continuity test between the control panel and shutter actuator(s) connections. Repair or replace harness if necessary.
	• Incorrect circuit(s).	• Reference the “ Expected Voltages - Matrix ” section. Correct the circuit(s) if possible or replace harness.
	• Faulty shutter actuator.	• Replace the actuator if needed.
	• Faulty ventilation mode, or recirculated air push button switch.	• Replace the switch or control panel if needed.

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<u>PROBLEM</u>	<u>POSSIBLE CAUSES</u>	<u>REMEDY</u>
4. Blower does not operate at any speeds.	<ul style="list-style-type: none">• Loss of power source.• Open circuit in harness between the circuit protection and control panel.• Faulty blower switch.• Open circuit in harness between the control panel and blower resistor.• Faulty blower resistor.• Faulty blower motor.	<ul style="list-style-type: none">• Examine the chassis’s HVAC circuit’s protection device for failure (i.e. fuse or breaker).• Verify vehicle voltage at each blower switch connection. Perform continuity test between connections. Repair or replace harness if necessary.• With vehicle ignition ON, rotate blower switch through all of its positions, check for voltage at all terminals. If no voltage is measured, replace switch or control panel if needed.• Rotate the blower switch to LOW speed. Verify vehicle voltage at LOW speed connection of the blower resistor. Perform continuity test between connections. Repair or replace harness if necessary.• Measure the voltage at the connection that feeds the motor lead. If no voltage is measured, replace blower resistor.• Rotate the blower switch to HIGH speed. Check for voltage at the motor connection. If no voltage is measured, replace blower motor. Perform continuity test between connections if necessary.
5. Blower does not operate at all speeds.	<ul style="list-style-type: none">• Faulty blower switch.• Open circuit in harness between the control panel and blower resistor.• Faulty blower resistor.	<ul style="list-style-type: none">• With vehicle ignition ON, rotate blower switch to its inoperative speed position. Check for voltage at the controller’s speed setting terminal. If no voltage is measured, replace switch or control panel if needed.• Verify vehicle voltage at each speed connection on the blower resistor. Perform continuity test between connections. Repair or replace harness if necessary.• Measure the voltage at the connection that feeds the motor lead. If no voltage is measured, replace blower resistor. Reference the “Expected Voltages - Matrix” section.

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| 6. A/C Clutch does not operate. | <ul style="list-style-type: none">• Blower switch isn't activated.• AC switch receives its power source from the blower switch. Turn blower switch to any speed selection. Verify blower operation. |
| 7. A/C Clutch does not operate. Blower is operating properly. | <ul style="list-style-type: none">• AC switch isn't activated.• Verify AC switch is depressed and operating correctly.• Faulty AC switch.• Metal Control Panel's AC switch requires a "Compressor Activated" signal from the blower switch. Make sure the switch is receiving this signal from the blower switch. If not then replace the blower switch. Otherwise measure voltage at the control panel's "AC Signal" terminal. If no voltage is measured on the correct circuit, replace switch or control panel if needed.• Open circuit between A/C switch and A/C thermostat, or thermostat to clutch.• Check primary connections at the control panel. Perform continuity test between AC switch connection and A/C thermostat. Repair or replace harness if necessary.• Defective A/C thermostat.• Place a jumper across terminals of thermostat, if the clutch engages then replace thermostat.• Faulty A/C pressure switch (make certain adequate refrigerant is contained in system).• Place a jumper across terminals of vehicle's harness mating connector, if the clutch engages then replace the switch.• Faulty A/C Clutch.• With the engine OFF apply a separate 12V+ supply directly to clutch terminals and listen for clutch engagement. Replace clutch if there is no engagement.• Faulty chassis circuitry. If voltage is read at pressure switch, and the clutch is working as noted above, the problem is originating in the chassis wiring. Refer to the chassis manufacturer service manual. |