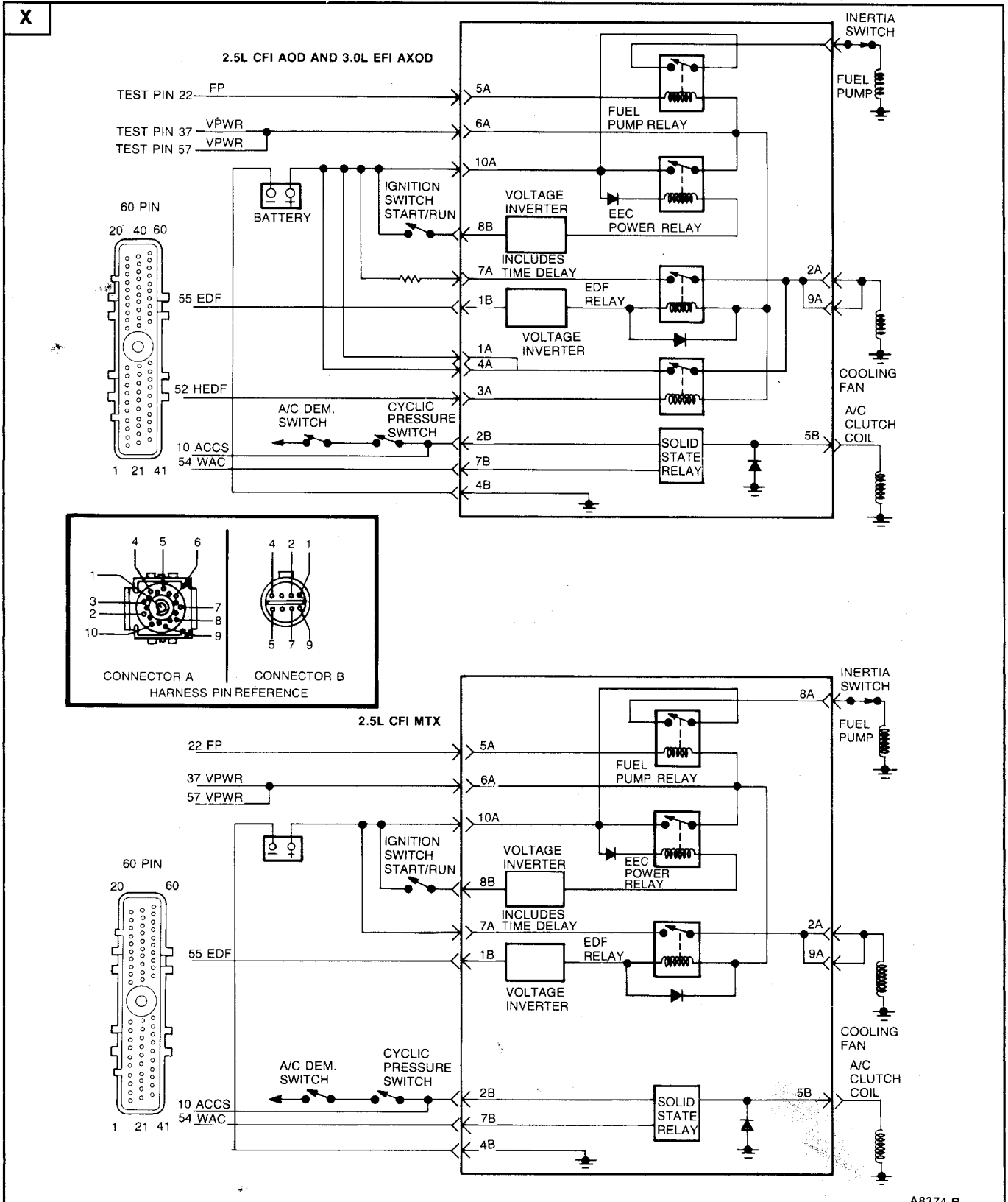


# Integrated Relay Controller Module

# Pinpoint Test

X



## Integrated Relay Controller Module

## Pinpoint Test

# X

### STOP-WARNING

You should enter this Pinpoint Test only when service codes 83 and 87 are received in Quick Test Step 3.0 or you are directed here from Pinpoint Test A, Pinpoint Test C, or Diagnostic By Symptom.

To prevent the replacement of good components, be aware that the following non-EEC area may be at fault:

- Fuel Lines
- Fuel Filters
- Contaminated Fuel
- Fuel Pump
- Ignition Switch
- Battery Cables
- Alternator
- Voltage Regulator
- Ground Straps
- A/C Clutch
- A/C Demand
- Cooling Fan Motor

This pinpoint test is intended to diagnose only the following:

- Integrated Relay Controller Module (within this Pinpoint Named Integrated Controller)
- Battery Voltage
- Power Relay
- EDF Relay
- HEDF Relay (Auto Trans Only)
- WAC Relay
- Fuel Pump Relay
- Harness Circuits: V Batt., VPWR, F.P., Ground and Power to Fuel Pump(s), WAC, ACCS, Cooling Fan Power, A/C Clutch, Key Power, Powers To Integrated Controller
- Processor Assembly
- A/C Demand Switch Input

<b>Integrated Controller</b>	<b>Pinpoint Test</b>	<b>X</b>
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TEST STEP	RESULT	ACTION TO TAKE
<b>VEHICLE BATTERY</b>		
<b>X1</b>   BATTERY VOLTAGE CHECK		
<ul style="list-style-type: none"> <li>● Key On, Engine Off.</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage across battery terminals.</li> </ul>	10.5V or greater <span style="float: right;">▶</span> Less than 10.5V <span style="float: right;">▶</span>	GO to <b>X2</b> .  SERVICE discharged battery, REFER to Shop Manual, Group 31.
<b>X2</b>   BATTERY POWER GROUND CHECK		
<ul style="list-style-type: none"> <li>● Key On, Engine Off.</li> <li>● Processor connected.</li> <li>● DVOM on 20V range.</li> <li>● Measure voltage between battery negative post and Signal Return circuit in the Self-Test connector.</li> </ul>	Less than 0.5V <span style="float: right;">▶</span> 0.5V or greater <span style="float: right;">▶</span>	GO to <b>X6</b> .  GO to <b>X3</b> .
<b>X3</b>   GROUND FAULT ISOLATION		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Disconnect processor 60 Pin connector and inspect for damaged pins, corrosion, loose wires. Service as necessary.</li> <li>● Install Breakout box.</li> <li>● Key On, Engine Off.</li> <li>● Processor connected.</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage between battery negative post and test Pins 40 and 60 at the Breakout box.</li> </ul>	Both readings less than 0.5V <span style="float: right;">▶</span> One or both readings 0.5V or greater <span style="float: right;">▶</span>	GO to <b>X4</b> .  Circuit(s) with greater than 0.5V has high resistance or open. CORRECT faulty ground circuit. RERUN Quick Test.

# Integrated Controller

# Pinpoint Test

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TEST STEP		RESULT	ACTION TO TAKE
<b>X4</b>	<b>PROCESSOR GROUND FAULT ISOLATION</b>		
<ul style="list-style-type: none"> <li>● Breakout box installed.</li> <li>● Key Off, wait 10 seconds.</li> <li>● Processor connected.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance between test Pin 46 and test Pin 40 and between test Pin 46 and test Pin 60.</li> </ul>		Both readings less than 5 ohms One or both readings 5 ohms or greater	GO to <b>X5</b> .  DISCONNECT processor connector and INSPECT for corrosion, damaged pins, etc. SERVICE as necessary and RETEST. If fault is still present, REPLACE processor. RERUN Quick Test.
<b>X5</b>	<b>HARNESS CHECK (SIGNAL RETURN)</b>		
<ul style="list-style-type: none"> <li>● Breakout box installed.</li> <li>● Key Off, wait 10 seconds.</li> <li>● Processor connected.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance between test Pin 46 and Signal Return circuit at the Self-Test connector.</li> </ul>		Less than 5 ohms 5 ohms or greater	System OK. RUN Quick Test.  CORRECT cause of resistance in the harness Signal Return circuit. RERUN Quick Test.
<b>X6</b>	<b>MEASURE VOLTAGE AND GROUND TO INTEGRATED CONTROLLER</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller Module disconnected (both connectors.)</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage at the harness connector to the integrated controller from connector Pin 10A (+) to Pin 4B (-). (Refer to illustration X.)</li> </ul>		Less than 10.5V 10.5V or greater	GO to <b>X9</b> . GO to <b>X7</b> .
<b>X7</b>	<b>KEY POWER TO INTEGRATED CONTROLLER</b>		
<ul style="list-style-type: none"> <li>● Integrated Controller disconnected.</li> <li>● DVOM on 20V scale.</li> <li>● Key On.</li> <li>● Measure voltage at the harness connector to the integrated controller from connector Pin 8B (+) to Pin 4B (-).</li> <li>● Refer to illustration X.</li> </ul>		Less than 10.5V 10.5V or greater	SERVICE open between 8B and ignition switch. RECONNECT Integrated Controller. RERUN Quick Test.  GO to <b>X8</b> .

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TEST STEP		RESULT	ACTION TO TAKE
<b>X8</b>	<b>MEASURE CONTINUITY OF VPWR</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Disconnect processor 60 Pin connector and inspect for damaged pins, corrosion, loose wires, etc. Service as necessary.</li> <li>● Install Breakout box.</li> <li>● Leave processor disconnected.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance from test Pin 37 and 57 to Integrated Controller harness Pin 6A.</li> </ul>		5 ohms or greater	SERVICE open in VPWR circuit. CONNECT Integrated Controller. RERUN Quick Test.
		Less than 5 ohms	REPLACE Integrated Controller. RERUN Quick Test.
<b>X9</b>	<b>MEASURE CONTINUITY OF POWER GROUND TO INTEGRATED CONTROLLER</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller disconnected.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance from battery negative to Integrated Controller connector Pin 4B.</li> </ul>		5 ohms or greater	SERVICE open in battery ground to B4 connector. RERUN Quick Test.
		Less than 5 ohms	SERVICE open in battery positive to 10A (Integrated Controller harness connector). RERUN Quick Test.
<b>X11</b>	<b>POWER AT FUEL PUMP(S) CHECK</b>		
<ul style="list-style-type: none"> <li>● Key On, engine Off.</li> <li>● Locate fuel pump(s).</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage between chassis ground and power-to-pump(s) circuit at fuel pump during crank mode.</li> </ul>		8.0V or greater during crank	GO to Shop Manual, Group 24, Electric Fuel Pump Diagnosis.
		Less than 8.0V during crank	GO to <b>X12</b> .
<b>X12</b>	<b>RESISTANCE CHECK OF FUEL PUMP INERTIA SWITCH</b>		
<ul style="list-style-type: none"> <li>● Key Off, wait 10 seconds.</li> <li>● Locate and disconnect fuel pump inertia switch.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure the resistance of the fuel pump inertia switch.</li> </ul>		Less than 5.0 ohms	GO to <b>X13</b> .
		5.0 ohms or greater	REPLACE fuel pump inertia switch. RERUN Quick Test.

# Integrated Controller

# Pinpoint Test







# X

TEST STEP		RESULT	ACTION TO TAKE
<b>X13</b>	<b>POWER-TO-PUMP CIRCUIT CONTINUITY CHECK</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Integrated Controller disconnected.</li> <li>● Pump(s) disconnected.</li> <li>● Measure resistance from Integrated Controller harness connector Pin 8A to fuel pump(s) harness connector at fuel pump.</li> </ul>		Less than 5 ohms	REPLACE Integrated Controller. RECONNECT all components. RERUN Quick Test.
		5 ohms or greater	SERVICE open in power-to-pump(s) circuit. RECONNECT Integrated Controller. RERUN Quick Test.
<b>X14</b>	<b>CHECK POWER-TO-PUMP(S) FOR SHORTS TO POWER</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller disconnected.</li> <li>● Fuel pumps disconnected.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance from Integrated Controller harness connector Pin 8A to Pin 6A (VPWR) and battery + post.</li> </ul>		Any readings less than 10,000 ohms	SERVICE short circuit. RECONNECT all components. ATTEMPT to start vehicle. If vehicle runs, RERUN Quick Test. If vehicle will not run, REPLACE Integrated Controller. RERUN Quick Test.
		All readings 10,000 ohms or greater	REPLACE Integrated Controller. RERUN Quick Test.
<b>SERVICE CODE: 87</b>			
<b>X15</b>	<b>FUEL PUMP CIRCUIT CONTINUITY</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Disconnect processor 60 Pin connector and inspect for damaged pins, corrosion, loose wires, etc. Service as necessary.</li> <li>● Install Breakout box.</li> <li>● Processor disconnected.</li> <li>● Integrated Controller disconnected.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance of fuel pump circuit, from test Pin 22 at the Breakout box to Integrated Controller harness connector Pin 5A.</li> </ul>		Less than 5 ohms	GO to <b>X16</b> .
		5 ohms or greater	SERVICE open in fuel pump circuit. RECONNECT processor and controller. RERUN Quick Test.

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TEST STEP		RESULT	ACTION TO TAKE
<b>X16</b>	<b>CHECK FUEL PUMP CIRCUIT FOR SHORTS TO POWER AND GROUND</b>		
	<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Breakout box installed.</li> <li>● Processor disconnected.</li> <li>● Integrated Controller disconnected.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance from test Pin 22 to test Pins 37, 57 and battery positive and from test Pins 22, 40, 60 and battery negative.</li> </ul>	All readings 10,000 ohms or greater Any readings less than 10,000 ohms	GO to <b>X17</b> .  SERVICE fuel pump circuit shorts to power or ground. RECONNECT all components. RERUN Quick Test. If code 87 is still present, GO to <b>X17</b> .
<b>X17</b>	<b>CHECK RESISTANCE OF FUEL PUMP RELAY COIL</b>		
	<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller disconnected.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance of Integrated Controller from Pin 5A to 6A.</li> <li>● Is resistance between 65 and 100 ohms?</li> </ul>	Yes  No	REPLACE processor. RECONNECT component. RERUN Quick Test.  REPLACE Integrated Controller. RECONNECT components. RERUN Quick Test.
<b>X20</b>	<b>NO FAN, HIGH OR LOW WITH NO CODE 83</b>		
	<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller disconnected.</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage between battery negative post and Pins 1A, 4A, 7A, respectively at the Integrated Controller harness connector.</li> </ul>	All readings 10.5V or greater Any reading less than 10.5V	GO to <b>X21</b> .  SERVICE open in battery power circuit. RE-EVALUATE symptom.
<b>X21</b>	<b>FAN MOTOR CHECK</b>		
	<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller connector "A" (10 Pin) disconnected.</li> <li>● Jumper Pin 2A to Pin 1A at Integrated Controller harness.</li> <li>● Does fan run?</li> </ul>	Yes  No	GO to <b>X22</b> .  GO to <b>X23</b> .

**Integrated Controller****Pinpoint  
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TEST STEP		RESULT	ACTION TO TAKE
<b>X22</b>	CHECK FAN RUNNING MODE (LOW)		
	<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Disconnect processor.</li> <li>● Integrated Controller connected.</li> <li>● Key On.</li> <li>● Does fan run at low speed?</li> </ul>	Yes  No 	GO to <b>X26</b> . GO to <b>X24</b> .
<b>X23</b>	MEASURE BATTERY VOLTAGE SUPPLY AT FAN — BYPASSING INTEGRATED CONTROLLER		
	<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Cooling fan disconnected.</li> <li>● Integrated Controller connector "A" (10 Pin) disconnected.</li> <li>● Jumper Pin 2A to Pin 1A at Integrated Controller harness connector.</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage at cooling fan harness connector.</li> </ul>	8.0V or greater  Less than 8.0V 	CHANGE fan RE-EVALUATE symptom. GO to <b>X25</b> .
<b>X24</b>	CHECK EDF CIRCUIT FOR SHORT TO GROUND		
	<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Processor and controller disconnected.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance from Pin 1B to Pin 4B at Integrated Controller harness connector.</li> </ul>	10,000 ohms or greater  Less than 10,000 ohms 	CHANGE Integrated Controller. RECONNECT processor and controller. RE- EVALUATE symptom. SERVICE short to ground in EDF circuit. RECONNECT processor and Integrated Controller. RE-EVALUATE symptom.



<b>Integrated Controller</b>	<b>Pinpoint Test</b>	<b>X</b>
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TEST STEP		RESULT	ACTION TO TAKE
<b>X25</b>	<b>COOLING FAN GROUND VERIFICATION</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Cooling fan disconnected.</li> <li>● Integrated Controller connector "A" (10 Pin) disconnected.</li> <li>● Jumper Pin 2A to Pin 1A at Integrated Controller harness connector.</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage positive at cooling fan harness connector, negative to battery negative.</li> </ul>		8.0V or greater	SERVICE open in ground circuit to fan. RECONNECT Integrated Controller. RE-EVALUATE symptom.
		Less than 8.0V	SERVICE open in power-to-fan circuit from 2A and 9A of Integrated Controller harness connector to cooling fan connector. RECONNECT controller, RE-EVALUATE symptom.
<b>X26</b>	<b>JUMPER HIGH ELECTRIC-DRIVE SIGNAL (HEDF) TO GROUND</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Disconnect processor 60 Pin connector and inspect for damaged pins, corrosion, loose wires. Service as necessary.</li> <li>● Install Breakout box.</li> <li>● Integrated Controller connected.</li> <li>● Processor disconnected.</li> <li>● Jumper test Pin 52 to test Pin 40 at Breakout box.</li> <li>● Does fan run at high speed?</li> </ul>		Yes	GO to <b>X27</b> .
		No	REPLACE Integrated Controller. RECONNECT processor. RE-EVALUATE symptom.
<b>X27</b>	<b>ECT SENSOR CHECK</b>		
<ul style="list-style-type: none"> <li>● Reconnect processor.</li> <li>● Check engine coolant level.</li> <li>● Warm engine to operating temperature before taking ECT resistance measurement.</li> <li>● Key Off, wait 10 seconds.</li> <li>● Harness disconnected from ECT sensor.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance of the ECT sensor.</li> <li>● Is the resistance reading between 1500 ohms and 2000 ohms?</li> </ul>		Yes	REPLACE processor. RECONNECT harness to ECT sensor. RECONNECT Integrated Controllers. RE-EVALUATE symptom.
		No	REPLACE ECT sensor. RECONNECT all components. RE-EVALUATE symptom.









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TEST STEP		RESULT	ACTION TO TAKE
<b>X30</b>	<b>SERVICE CODE 83: RESISTANCE CHECK OF HEDF CONTROLLER CIRCUIT</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller disconnected.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance between Pin 3A and Pin 6A at the Integrated Controller.</li> <li>● Is the resistance reading between 50 ohms and 100 ohms?</li> </ul>		Yes	GO to <b>X31</b> .
		No	REPLACE controller. RERUN Quick Test.
<b>X31</b>	<b>CHECK HEDF PROCESSOR SIGNAL TO INTEGRATED CONTROLLER FOR OPEN</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Disconnect processor 60 Pin connector and inspect for damaged pins, corrosion, loose wires. Service as necessary.</li> <li>● Install Breakout box, leave processor disconnected.</li> <li>● Integrated Controller connector "A" (10 Pin) disconnected.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure continuity from test Pin 52 at Breakout box to Pin 3A of Integrated Controller harness.</li> <li>● Is resistance 5 ohms or less?</li> </ul>		Yes	GO to <b>X32</b> .
		No	SERVICE open in HEDF circuit. RECONNECT all components. RERUN Quick Test.
<b>X32</b>	<b>CHECK FOR SHORTS TO GROUND IN THE HEDF CIRCUIT</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Breakout box installed.</li> <li>● Processor and Integrated Controller disconnected.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance from test Pin 52 to test Pin 40.</li> <li>● Is resistance 10,000 ohms or less?</li> </ul>		No	GO to <b>X33</b> .
		Yes	SERVICE short to ground in HEDF circuit. RERUN Quick Test.
<b>X33</b>	<b>CHECK FOR SHORTS TO POWER IN THE HEDF CIRCUIT</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Breakout box installed.</li> <li>● Processor and Integrated Controller disconnected.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance from test Pin 52 to test Pin 37.</li> <li>● Is resistance 10,000 ohms or less?</li> </ul>		No	REPLACE processor. RECONNECT all components. RERUN Quick Test.
		Yes	SERVICE short to power. RECONNECT all components. RERUN Quick Test. If code 83 is still present, REPLACE processor. RERUN Quick Test.

<b>Integrated Controller</b>	<b>Pinpoint Test</b>	<b>X</b>
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TEST STEP		RESULT	ACTION TO TAKE
<b>X35</b>	LOW SPEED OR HIGH SPEED FAN ALWAYS "ON", NO SERVICE CODE 83 OR 67		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Disconnect processor 60 Pin connector and inspect for damaged pins, corrosion, loose wires. Service as necessary.</li> <li>● Breakout box installed, leave processor disconnected.</li> <li>● Disconnect the Integrated Controller.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure the resistance between test Pin 55 and controller harness Pin 1B.</li> <li>● Is reading 5 ohms or less?</li> </ul>		Yes	GO to <b>X36</b> .
		No	SERVICE open in EDF circuit. RECONNECT all components. RE-EVALUATE symptom.
<b>X36</b>	CHECK EDF CIRCUIT FOR SHORTS TO POWER		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Breakout box installed.</li> <li>● Processor and Integrated Controller disconnected.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance from test Pin 55 to test Pin 37 and from test Pin 55 to battery positive.</li> <li>● Is resistance 10,000 ohms or less?</li> </ul>		No	GO to <b>X37</b> .
		Yes	SERVICE short to power in EDF circuit. GO to <b>X37</b> .
<b>X37</b>	EDF SHORT TO GROUND CHECK		
<ul style="list-style-type: none"> <li>● Key On.</li> <li>● Breakout box installed.</li> <li>● Processor disconnected.</li> <li>● Integrated Controller connected.</li> <li>● Jumper test Pin 55 to ground test Pin 40 or 60.</li> <li>● Does fan continue to run?</li> </ul>		Yes	REPLACE controller RE-EVALUATE symptom.
		No	REPLACE processor. RE-EVALUATE symptom.

<b>Integrated Controller</b>	<b>Pinpoint Test</b>	<b>X</b>
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TEST STEP		RESULT	ACTION TO TAKE
<b>X40</b>	<b>NO FAN</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller disconnected.</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage between battery negative post and Pin 7A at the Integrated Controller harness connector.</li> </ul>		10.5V or greater  Less than 10.5V 	GO to <b>X41</b> .  SERVICE open in battery power circuit. RE-EVALUATE symptom.
<b>X41</b>	<b>FAN MOTOR CHECK</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller connector "A" (10 Pin) disconnected.</li> <li>● Jumper Pin 2A to Pin 7A at Integrated Controller harness.</li> <li>● Does fan run?</li> </ul>		Yes  No 	GO to <b>X42</b> .  GO to <b>X43</b> .
<b>X42</b>	<b>CHECK FAN RUNNING MODE</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Disconnect processor.</li> <li>● Integrated Controller connected.</li> <li>● Key On.</li> <li>● Does fan run?</li> </ul>		Yes  No 	GO to <b>X46</b> .  GO to <b>X44</b> .
<b>X43</b>	<b>MEASURE BATTERY VOLTAGE SUPPLY AT FAN — BYPASSING INTEGRATED CONTROLLER</b>		
<ul style="list-style-type: none"> <li>● Key Off</li> <li>● Cooling fan disconnected.</li> <li>● Integrated Controller connector "A" (10 Pin) disconnected.</li> <li>● Jumper Pin 2A to Pin 7A at Integrated Controller harness connector.</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage at cooling fan harness connector.</li> </ul>		80V or greater  Less than 8.0V 	CHANGE fan. RE-EVALUATE symptom.  GO to <b>X45</b> .







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TEST STEP		RESULT	ACTION TO TAKE
<b>X44</b>	<b>CHECK EDF CIRCUIT FOR SHORT TO GROUND</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Processor and controller disconnected.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance from Pin 1B to Pin 4B at Integrated Controller harness connector.</li> </ul>		10,000 ohms or greater	CHANGE Integrated Controller. RECONNECT processor and controller. RE-EVALUATE symptom.
		Less than 10,000 ohms	SERVICE short to ground in EDF circuit. RECONNECT processor and Integrated Controller. RE-EVALUATE symptom.
<b>X45</b>	<b>COOLING FAN GROUND VERIFICATION</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Cooling fan disconnected.</li> <li>● Integrated Controller connector "A" (10 Pin) disconnected.</li> <li>● Jumper Pin 2A to Pin 7A at Integrated Controller harness connector.</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage positive at cooling fan harness connector, negative to battery negative.</li> </ul>		8.0V or greater	SERVICE open in ground circuit to fan. RECONNECT Integrated Controller, RE-EVALUATE symptom.
		Less than 8.0V	SERVICE open in power-to-fan circuit from 2A and 9A of Integrated Controller harness connector to cooling fan connector. RECONNECT controller. RE-EVALUATE symptom.
<b>X46</b>	<b>ECT SENSOR CHECK</b>		
<ul style="list-style-type: none"> <li>● Reconnect processor.</li> <li>● Check engine coolant level.</li> <li>● Warm engine to operating temperature before taking ECT resistance measurement.</li> <li>● Key Off, wait 10 seconds.</li> <li>● Harness disconnected from ECT sensor.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance of the ECT sensor.</li> <li>● Is the resistance reading between 1500 ohms and 2000 ohms?</li> </ul>		Yes	REPLACE processor. RECONNECT harness to ECT sensor. RECONNECT Integrated Controller. RE-EVALUATE symptom.
		No	REPLACE ECT sensor. RECONNECT all components. RE-EVALUATE symptom.

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Test****X**

TEST STEP		RESULT	ACTION TO TAKE
<b>X50</b>	<b>CHECK FOR VOLTAGE AT A/C CLUTCH</b>		
<ul style="list-style-type: none"> <li>● Key On, Engine Off.</li> <li>● A/C demand to A/C.</li> <li>● DVOM on 20V scale.</li> <li>● Check voltage at A/C clutch harness connector.</li> </ul>		10.5V or greater	GO to Shop Manual, Group 36, A/C Diagnosis.
		Less than 10.5V	GO to <b>X51</b> .
<b>X51</b>	<b>CHECK FOR CONTINUITY FROM INTEGRATED CONTROLLER TO A/C CLUTCH</b>		
<ul style="list-style-type: none"> <li>● Key Off.</li> <li>● Integrated Controller "B" disconnected, (8 Pin).</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance between Pin 5B at controller harness to the power circuit at the A/C clutch harness connector.</li> <li>● Is resistance 5 ohms or less?</li> </ul>		Yes	GO to <b>X52</b> .
		No	SERVICE open in power to A/C. RE-EVALUATE symptom.
<b>X52</b>	<b>ENTER OUTPUT STATE CHECK (REFER TO APPENDIX)</b>		
<p><b>NOTE: Do not use STAR tester for this Step, use VOM/DVOM.</b></p> <ul style="list-style-type: none"> <li>● Key Off, wait 10 seconds.</li> <li>● DVOM on 20V scale.</li> <li>● Connect DVOM negative test lead to STO and positive test lead to battery positive.</li> <li>● Jumper STI to signal return.</li> <li>● Perform Key On, Engine Off Self-Test until the completion of the Continuous Test Codes.</li> <li>● DVOM will indicate zero volts.</li> <li>● Depress and release the throttle.</li> <li>● Did DVOM reading change to a high voltage reading?</li> </ul>		Yes	REMAIN in Output State Check. GO to <b>X53</b> .
		No	DEPRESS throttle to WOT and RELEASE. If STO voltage does not go high, GO to Pinpoint Test Step <b>Q40</b> .  LEAVE equipment hooked up.

**Integrated Controller****Pinpoint  
Test****X**

TEST STEP		RESULT	ACTION TO TAKE
<b>X53</b>	CHECK WAC OUTPUT FOR PROPER ELECTRICAL OPERATION		
	<ul style="list-style-type: none"> <li>● Key On, engine Off.</li> <li>● Disconnect processor 60 Pin connector and inspect for damaged pins, corrosion, loose wires. Service as necessary.</li> <li>● Connect Breakout box to harness. Reconnect processor.</li> <li>● A/C demand switch to A/C on position.</li> <li>● DVOM on 20V scale.</li> <li>● Connect DVOM positive test lead to test Pin 37 and negative test lead to test Pin 54.</li> <li>● While observing DVOM, depress and release the throttle several times (to cycle output on and off).</li> <li>● Does voltage output cycle high and low?</li> </ul>	Yes  No 	GO to <b>X54</b> . GO to <b>X57</b> .
<b>X54</b>	CHECK FOR VOLTAGE AT A/C CLUTCH SWITCH		
	<ul style="list-style-type: none"> <li>● Key On, Engine Off.</li> <li>● A/C demand switch to A/C on position.</li> <li>● DVOM on 20V scale.</li> <li>● Leave Breakout box installed.</li> <li>● Processor and Integrated Controller connected.</li> <li>● Measure voltage between test Pin 10 and test Pin 40 at Breakout box.</li> <li>● Is voltage 10.5V or greater?</li> </ul>	No  Yes 	GO to <b>X56</b> . GO to <b>X55</b> .
<b>X55</b>	CHECK CONTINUITY OF ACCS TO INTEGRATED CONTROLLER		
	<ul style="list-style-type: none"> <li>● Key Off, wait 10 seconds.</li> <li>● Processor disconnected.</li> <li>● Integrated Controller "B" connector disconnected.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance between test Pin 10 at Breakout box and test Pin 2B at controller harness connector.</li> <li>● Is resistance 5 ohms or less?</li> </ul>	No  Yes 	SERVICE open in ACCS circuit. RE-EVALUATE symptom. REPLACE Integrated Controller. RE-EVALUATE symptom.

**Integrated Controller****Pinpoint  
Test****X**

TEST STEP		RESULT	ACTION TO TAKE
<b>X56</b>	<b>CHECK CONTINUITY OF ACCS CIRCUIT</b>		
<ul style="list-style-type: none"> <li>● Key Off, wait 10 seconds.</li> <li>● A/C demand to A/C.</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance between test Pin 10 and A/C demand switch.</li> <li>● Is resistance 5 ohms or less?</li> </ul>		No	SERVICE open in circuit. RERUN Quick Test.
		Yes	EEC-IV system OK. REFER to Shop Manual, Group 36 A/C Diagnosis.
<b>X57</b>	<b>CHECK CONTINUITY IN WAC TO INTEGRATED CONTROLLER CIRCUIT</b>		
<ul style="list-style-type: none"> <li>● Key Off, wait 10 seconds.</li> <li>● Disconnect processor 60 Pin connector and inspect for damaged pins, corrosion, loose wires. Service as necessary.</li> <li>● Connect Breakout box to harness. Leave processor and Integrated Controller connect "B" disconnected, (8 Pin).</li> <li>● DVOM on 200 ohm scale.</li> <li>● Measure resistance between test Pin 54 and Pin 7B at Integrated Controller harness.</li> <li>● Is resistance 50 ohms or less?</li> </ul>		No	SERVICE open in WAC circuit. RE-EVALUATE symptom.
		Yes	GO to <b>X58</b> .
<b>X58</b>	<b>CHECK WAC CIRCUIT FOR SHORTS TO GROUND</b>		
<ul style="list-style-type: none"> <li>● Key Off, wait 10 seconds.</li> <li>● Leave Breakout box installed and processor disconnected, (8 Pin).</li> <li>● Integrated Controller connector "B" disconnected.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance between test Pin 54 and test Pin 40 and between test Pin 54 and test Pin 46 and between test Pin 54 and battery negative post.</li> </ul>		All resistance readings 10,000 ohms or greater	GO to <b>X59</b> .
		Any resistance reading less than 10,000 ohms	SERVICE shorts to ground in WAC circuit. RE-EVALUATE symptom.



<b>Integrated Controller</b>	<b>Pinpoint Test</b>	<b>X</b>
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TEST STEP		RESULT	ACTION TO TAKE
<b>X59</b>	<b>CHECK WAC CIRCUIT FOR SHORTS TO POWER</b>		
<ul style="list-style-type: none"> <li>● Key Off, wait 10 seconds.</li> <li>● Leave Breakout box installed and processor disconnected.</li> <li>● Integrated Controller connector "B" disconnected.</li> <li>● DVOM on 200,000 ohm scale.</li> <li>● Measure resistance between test Pin 54 and test Pin 37 and between test Pin 54 and battery positive.</li> </ul>		<p>All readings 10,000 ohms or greater</p> <p>Any readings less than 10,000 ohms</p>	<p>GO to <b>X60</b>.</p> <p>SERVICE shorts to power in WAC circuit and then GO to <b>X60</b>.</p>
<b>X60</b>	<b>CHECK FOR VOLTAGE AT A/C CLUTCH</b>		
<ul style="list-style-type: none"> <li>● Key Off, wait 10 seconds.</li> <li>● Leave Breakout box installed.</li> <li>● Processor disconnected.</li> <li>● Integrated Controller connected.</li> <li>● A/C clutch disconnected.</li> <li>● A/C demand to A/C.</li> <li>● Key On, Engine Off.</li> <li>● DVOM on 20V scale.</li> <li>● Measure voltage at A/C clutch harness connection.</li> <li>● 10.5V or greater?</li> </ul>		<p>Yes</p> <p>No</p>	<p>REPLACE processor. RE-EVALUATE symptom.</p> <p>REPLACE Integrated Controller. RE-EVALUATE symptom.</p>

# Erratic Ignition

## Pinpoint Test

### Y

TEST STEP		RESULT	ACTION TO TAKE
Y1	CODE 14: ERRATIC IGNITION		
<p><b>NOTE: Code 14 indicates two successive erratic profile ignition pickup (PIP) pulses occurred, resulting in a possible engine miss or stall.</b></p> <ul style="list-style-type: none"> <li>• Check EEC-IV and ignition systems harnesses for:               <ul style="list-style-type: none"> <li>— Loose wires/connectors.</li> <li>— Arcing secondary ignition components (coil, cap, rotor, wires, plugs, etc.).</li> <li>— On-board transmitter (2-way radio).*</li> </ul> </li> <li>• Are any of the above present?</li> </ul> <p>*Verify all 2-way radio installations. Carefully follow manufacturer's installation instructions regarding the routing of antenna and power leads.</p>		<p>Yes</p> <p>No</p>	<p>SERVICE as necessary. RERUN Quick Test.</p> <p>GO to <b>Y2</b>.</p>
Y2	CHECK DISTRIBUTOR		
<ul style="list-style-type: none"> <li>• Key Off, wait 10 seconds.</li> <li>• Deactivate Self-Test.</li> <li>• Connect VOM or STAR per Quick Test Step 2.0.</li> <li>• Enter Engine Running Continuous Monitor Test (as instructed in Quick Test Step 6.3).</li> <li>• Observe VOM or STAR LED for indication of a fault while performing the following:               <ul style="list-style-type: none"> <li>• Lightly tap on TFI module and distributor.</li> <li>• Wiggle TFI connector.</li> <li>• Is a fault indicated?</li> </ul> </li> </ul>		<p>Yes</p> <p>No</p>	<p>DISCONNECT and INSPECT connectors. If connector and terminals are good, GO to Section 15, Ignition System Diagnostics.</p> <p>GO to <b>Y3</b>.</p>
Y3	CHECK EEC-IV HARNESS		
<ul style="list-style-type: none"> <li>• While still in Continuous Monitor Test from Step Y2 observe VOM or STAR LED for a fault indication while performing the following:               <ul style="list-style-type: none"> <li>• While looking for faults grasp the harness close to the TFI connector. Wiggle, shake or bend a small section of the ignition and EEC-IV systems harness while working your way to the other components and dash panel. Also wiggle, shake or bend the EEC-IV harness from the dash panel to the processor. Isolate the PIP circuit if needed for this test.</li> <li>• Is a fault indicated?</li> </ul> </li> </ul>		<p>Yes</p> <p>No</p>	<p>ISOLATE fault and SERVICE as necessary. RERUN Quick Test.</p> <p>GO to <b>Y4</b>.</p>

<b>Erratic Ignition</b>	<b>Pinpoint Test</b>	<b>Y</b>
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TEST STEP		RESULT	ACTION TO TAKE
<b>Y4</b>	<b>CHECK PROCESSOR AND HARNESS CONNECTORS</b>		
<ul style="list-style-type: none"> <li>● Key Off, wait 10 seconds.</li> <li>● Disconnect processor 60 Pin connector and inspect for damaged pins, corrosion, loose wires.</li> <li>● Are connectors and terminals OK?</li> <li>● Reconnect processor when this Step is completed.</li> </ul>		No	<p><b>SERVICE</b> as necessary. <b>RERUN</b> Quick Test.</p>
		Yes	<p>Unable to duplicate an erratic ignition fault in the EEC-IV System, for further diagnosis, <b>GO</b> to Section 15, Ignition System Diagnostics.</p>