



Instrument Panel, Gauges and Warning Indicators: Testing and Inspection

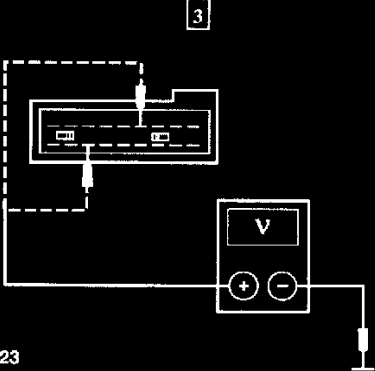
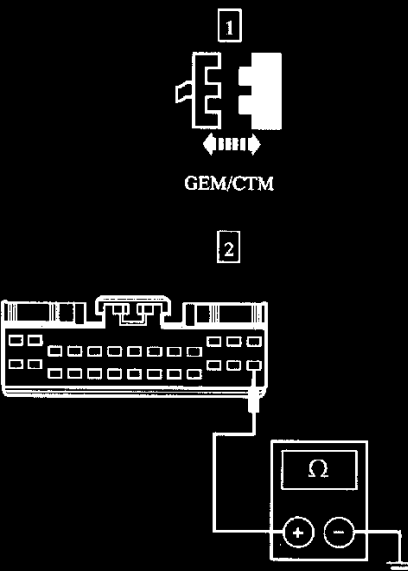
Pinpoint Tests

PINPOINT TEST A: NO COMMUNICATION WITH THE GENERIC ELECTRONIC MODULE (GEM)/CENTRAL TIMER MODULE (CTM)	
CONDITIONS	DETAILS/RESULTS/ACTIONS
A1 CHECK CENTRAL JUNCTION BOX (CJB) FOR OPENS	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>1</p>  </div> <div style="text-align: center;"> <p>2</p>  <p>GEM/CTM</p> </div> </div>	

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A1




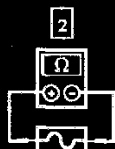
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST A: NO COMMUNICATION WITH THE GENERIC ELECTRONIC MODULE (GEM)/CENTRAL TIMER MODULE (CTM) (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>A1 CHECK CENTRAL JUNCTION BOX (CJB) FOR OPENS (Continued)</p>  <p>A0010923</p>	<p>3 Measure the voltage between CJB C240d terminal 4, and ground; and between CJB C240d terminal 16, and ground.</p> <ul style="list-style-type: none"> • Are the voltages greater than 10 volts? <p>→ Yes GO to A2.</p> <p>→ No REPAIR or INSTALL a new CJB. TEST the system for normal operation.</p>
<p>A2 CHECK CIRCUIT 676 (PK/OG) FOR OPEN</p>  <p>GEM/CTM</p> <p>GK6309-A</p>	<p>2 Measure the resistance between GEM/CTM C240a pin 26, circuit 676 (PK/OG), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes REFER to Module Communications Network (Information Bus).</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

A1 - A2

Test B: All Gauges Are Inoperative



DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST B: ALL GAUGES ARE INOPERATIVE**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>B1 VERIFY WARNING INDICATOR PROVE-OUT</p> <p>1</p>  <p>3</p> 	<p>2</p> <p>Observe the instrument cluster warning indicators.</p> <ul style="list-style-type: none"> • Do the SERVICE ENGINE SOON, battery, safety belt, brake, or ABS indicators prove out? <p>→ Yes GO to B3.</p> <p>→ No GO to B2.</p>
<p>B2 CHECK THE FUSE(S)</p> <p>1</p>  <p>2</p> 	<p>2</p> <p>Central junction box (CJB) Fuses 2 (5A), 19 (5A), 29 (5A) (Excursion only), CJB Fuses 15 (5A), 19 (5A), 29 (5A) (Super Duty F-Series only), or CJB Fuses 10 (5A), 14 (10A) and battery junction box (BJB) Fuse 9 (5A) (Motorhome only).</p> <ul style="list-style-type: none"> • Are the fuses OK? <p>→ Yes REINSTALL the fuse(s). GO to B3.</p> <p>→ No INSTALL a new fuse in question. TEST the system for normal operation. If the fuse fails again, CHECK for short to ground. REPAIR as necessary.</p>
<p>B3 VERIFY CONNECTOR SEATING</p>	<p>1</p> <p>Verify the instrument cluster connectors are connected correctly. Partial removal of the instrument cluster is necessary.</p>

(Continued)

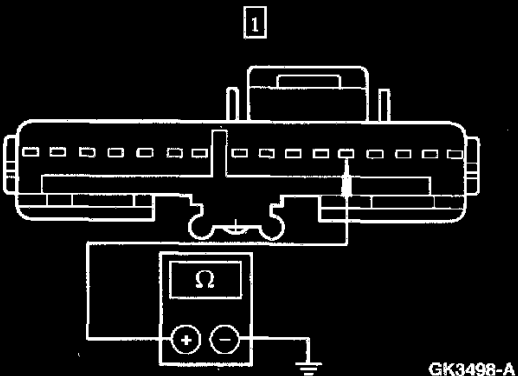
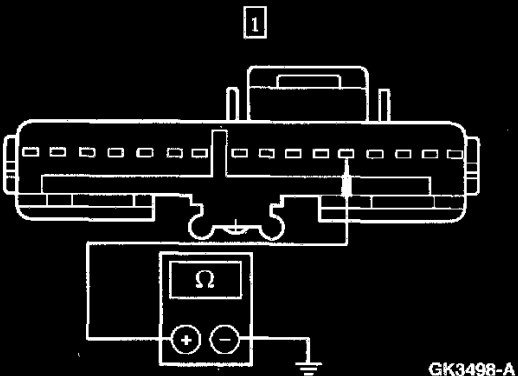
B1 - B3

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST B: ALL GAUGES ARE INOPERATIVE (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS																														
B3 VERIFY CONNECTOR SEATING (Continued)																															
	<p>2 Verify the instrument cluster connector between the instrument cluster printed circuit and instrument cluster is connected correctly.</p> <ul style="list-style-type: none"> • Are the instrument cluster connectors connected correctly? <p>→ Yes GO to B4.</p> <p>→ No CONNECT the instrument cluster connectors. TEST the system for normal operation.</p>																														
B4 CHECK CIRCUIT 640 (RD/YE), CIRCUIT 1044 (WH/YE), 22 (LB/BK) AND CIRCUIT 729 (RD/WH) FOR OPEN																															
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>1</p>  <p>Instrument Cluster</p> </div> <div style="text-align: center;"> <p>2</p>  </div> </div>	<p>3 Measure the voltage between the instrument cluster harness side and ground as follows:</p> <table border="1" data-bbox="844 1029 1331 1659"> <thead> <tr> <th>Instrument Cluster Connector</th> <th>Circuit</th> <th>Vehicle Application</th> </tr> </thead> <tbody> <tr> <td>C250a pin 12</td> <td>640 (RD/YE)</td> <td>Except Motorhome</td> </tr> <tr> <td>C250a pin 7</td> <td>1044 (WH/YE)</td> <td>Except Motorhome</td> </tr> <tr> <td>C250b pin 3</td> <td>729 (RD/WH)</td> <td>Excursion only</td> </tr> <tr> <td>C250b pin 3</td> <td>22 (LB/BK)</td> <td>Super Duty F-Series only</td> </tr> <tr> <td>C250b pin 11</td> <td>640 (RD/YE)</td> <td>Except Motorhome</td> </tr> <tr> <td>C250 pin 1</td> <td>640 (RD/YE)</td> <td>Motorhome only</td> </tr> <tr> <td>C250 pin 6</td> <td>1044 (WH/YE)</td> <td>Motorhome only</td> </tr> <tr> <td>C250 pin 6</td> <td>640 (RD/YE)</td> <td>Motorhome only</td> </tr> <tr> <td>C250 pin 14</td> <td>729 (RD/WH)</td> <td>Motorhome only</td> </tr> </tbody> </table>	Instrument Cluster Connector	Circuit	Vehicle Application	C250a pin 12	640 (RD/YE)	Except Motorhome	C250a pin 7	1044 (WH/YE)	Except Motorhome	C250b pin 3	729 (RD/WH)	Excursion only	C250b pin 3	22 (LB/BK)	Super Duty F-Series only	C250b pin 11	640 (RD/YE)	Except Motorhome	C250 pin 1	640 (RD/YE)	Motorhome only	C250 pin 6	1044 (WH/YE)	Motorhome only	C250 pin 6	640 (RD/YE)	Motorhome only	C250 pin 14	729 (RD/WH)	Motorhome only
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(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST B: ALL GAUGES ARE INOPERATIVE (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
B4 CHECK CIRCUIT 640 (RD/YE), CIRCUIT 1044 (WH/YE), 22 (LB/BK) AND CIRCUIT 729 (RD/WH) FOR OPEN (Continued)	<ul style="list-style-type: none"> • Are the voltages greater than 10 volts? → Yes GO to B5. → No REPAIR the circuit(s) in question. TEST the system for normal operation.
B5 CHECK GROUND CIRCUIT 676 (PK/OG) OR CIRCUIT 1203 (BK/LB) FOR OPEN <div style="text-align: center;">  <p style="text-align: right;">GK3498-A</p> </div>	<div style="text-align: center;">  <p style="text-align: right;">GK3498-A</p> </div> <ul style="list-style-type: none"> 1 Measure the resistance between instrument cluster C250b pin 5, circuit 676 (PK/OG), harness side and ground (except Motorhome); or between instrument cluster C250b pin 12, circuit 1203 (BK/LB), harness side and ground (Motorhome only). • Is the resistance less than 5 ohms? → Yes VERIFY the instrument cluster printed circuit connector is fully seated. If so, INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No REPAIR the circuit in question. TEST the system for normal operation.

B4 - B5

Test C: Incorrect Fuel Gauge Indication**PINPOINT TEST C: INCORRECT FUEL GAUGE INDICATION**




CONDITIONS	DETAILS/RESULTS/ACTIONS
C1 CHECK FUEL GAUGE	<ul style="list-style-type: none"> 1 Carry out the Fuel Gauge Component Test. Refer to Component Test. • Does the fuel gauge operate correctly? → Yes GO to C2. → No GO to C4.

(Continued)

C1

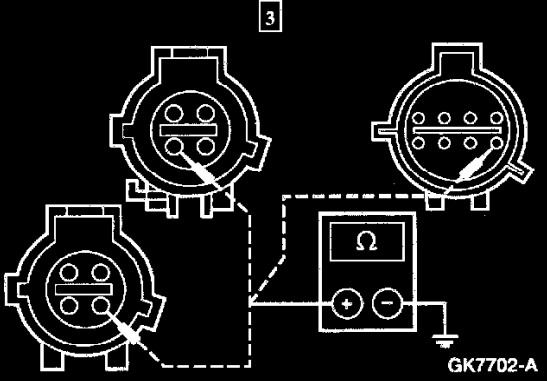
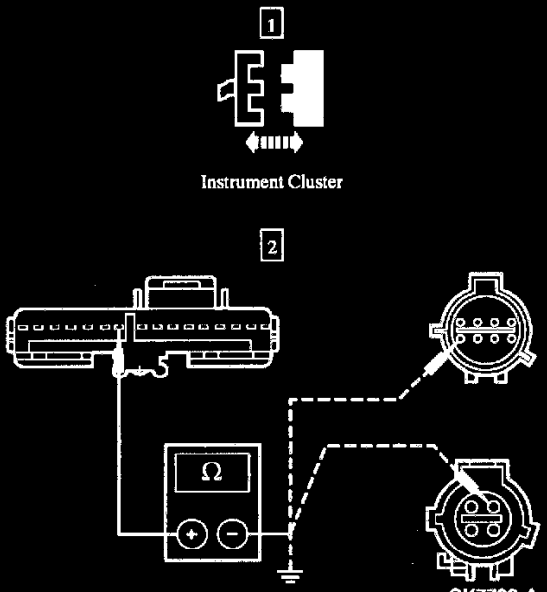
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST C: INCORRECT FUEL GAUGE INDICATION (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
C2 INSPECT THE FUEL TANK	
	<p>2 Visually inspect the fuel tank for any damage or deformation.</p> <ul style="list-style-type: none"> • Is the fuel tank OK? <p>→ Yes GO to C3.</p> <p>→ No INSTALL a new fuel tank. REFER to Fuel Delivery and Air Induction. TEST the system for normal operation.</p>
C3 INSPECT THE FUEL PUMP MODULE	
	<p>1 Inspect the fuel pump module, wiring, float, and float rod for damage or obstruction.</p> <ul style="list-style-type: none"> • Is the fuel pump module and wiring OK? <p>→ Yes INSTALL a new fuel sender. REFER to Fuel Delivery and Air Induction. TEST the system for normal operation.</p> <p>→ No REPAIR the fuel pump module as necessary. TEST the system for normal operation.</p>
C4 CHECK CIRCUIT 396 (BK/OG) OR CIRCUIT 1203 (BK/LB) FOR OPEN	
  <p>Fuel Level Sensor and Pump</p>	


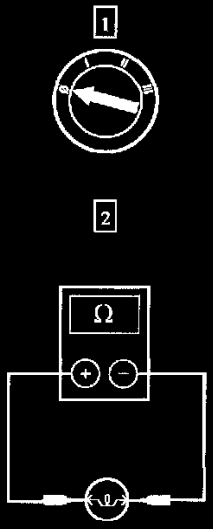
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DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST C: INCORRECT FUEL GAUGE INDICATION (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>C4 CHECK CIRCUIT 396 (BK/OG) OR CIRCUIT 1203 (BK/LB) FOR OPEN (Continued)</p> 	<p>3 Measure the resistance between fuel level sensor and pump C441 (except California) or C442 (California only), circuit 396 (BK/OG), harness side and ground (except Motorhome); or between fuel level sensor and pump C441, circuit 1203 (BK/LB), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes GO to C5.</p> <p>→ No REPAIR the circuit in question. TEST the system for normal operation.</p>
<p>C5 CHECK CIRCUIT 29 (YE/WH)</p> 	<p>2 Measure the resistance between instrument cluster C250b pin 10, circuit 29 (YE/WH), harness side and fuel level sensor and pump C441 (except California) or C442 (California only), circuit 29 (YE/WH), harness side; and between instrument cluster C250b pin 10, circuit 29 (YE/WH), harness side and ground (except Motorhome); or between instrument cluster C250b pin 7, circuit 29 (YE/WH), harness side and fuel level sensor and pump C441, circuit 29 (YE/WH); and between instrument cluster C250b pin 7, circuit 29 (YE/WH), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms between the instrument cluster and the fuel level sensor and pump, and greater than 10,000 ohms between the instrument cluster and ground? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

DIAGNOSIS AND TESTING (Continued)


PINPOINT TEST D: THE LOW FUEL WARNING INDICATOR IS NEVER ON

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>D1 CHECK THE FUEL GAUGE</p> 	<p>2 Check the fuel gauge.</p> <ul style="list-style-type: none"> • Does the fuel gauge operate correctly? <p>→ Yes GO to D2.</p> <p>→ No GO to Pinpoint Test C.</p>
<p>D2 CHECK THE LOW FUEL INDICATOR BULB</p>  <p style="text-align: right;">GK3486-A</p>	<p>2 Remove the LOW FUEL indicator bulb and measure the resistance between the bulb terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.</p>

D1 - D2

Test E: Incorrect Voltage Gauge Indication


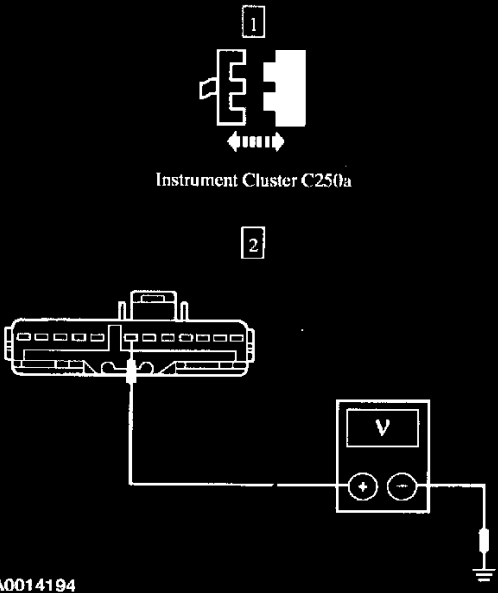
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST E: INCORRECT VOLTAGE GAUGE INDICATION**

CONDITIONS	DETAILS/RESULTS/ACTIONS
E1 CHECK THE BATTERY AND CHARGING SYSTEM	
	<p data-bbox="797 254 1349 310">1 Check the battery and charging system. Refer to Charging System.</p> <ul style="list-style-type: none"> <li data-bbox="854 331 1295 363">• Is the battery and charging system OK? <p data-bbox="854 386 1013 438">→ Yes GO to E2.</p> <p data-bbox="854 464 1211 516">→ No REFER to Charging System.</p>
E2 CHECK VOLTAGE GAUGE INDICATION — ENGINE OFF	
NOTE: Make sure all electrical loads are turned off.	
	<p data-bbox="797 821 1219 852">2 Check the voltage gauge indication.</p> <ul style="list-style-type: none"> <li data-bbox="854 875 1240 907">• Is the pointer in the correct range? <p data-bbox="854 930 1013 982">→ Yes GO to E5.</p> <p data-bbox="854 1008 1377 1136">→ No If the voltage gauge displays high, INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p data-bbox="902 1159 1360 1190">If the voltage gauge displays low, GO to E3.</p>

(Continued)


E1 - E2

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST E: INCORRECT VOLTAGE GAUGE INDICATION (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>E3 CHECK CENTRAL JUNCTION BOX (CJB) FUSE 2 (5A) (EXCURSION ONLY), CJB FUSE 15 (5A) (SUPER DUTY F-SERIES ONLY), OR BATTERY JUNCTION BOX (BJB) FUSE 9 (5A) (MOTORHOME ONLY)</p> 	<p>2 Check central junction box (CJB) Fuse 2 (5A) (Excursion only), CJB fuse 15 (5A) (Super duty F-series only), or battery junction box (BJB) Fuse 9 (5A) (Motorhome only)</p> <ul style="list-style-type: none"> • Is the fuse OK? <p>→ Yes REINSTALL the fuse. GO to E4.</p> <p>→ No INSTALL a new fuse. TEST the system for normal operation. If the fuse fails again, CHECK for a short to ground. REPAIR as necessary.</p>
<p>E4 CHECK HOT AT ALL TIMES POWER SUPPLY — CIRCUIT 1044 (WH/YE)</p>  <p>Instrument Cluster C250a</p> <p>A0014194</p>	<p>2 Measure the voltage between instrument cluster C250a pin 7, circuit 1044 (WH/YE), harness side and ground (except Motorhome); or between instrument cluster C250a pin 6, circuit 1044 (WH/YE), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>


(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST E: INCORRECT VOLTAGE GAUGE INDICATION (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
E5 CHECK VOLTAGE GAUGE INDICATION — ENGINE RUNNING	
NOTE: Make sure all electrical loads are turned off.	
<p data-bbox="483 289 506 319">1</p> 	<p data-bbox="803 485 826 514">2</p> <p data-bbox="849 485 1219 514">Check the voltage gauge indication.</p> <ul style="list-style-type: none"> <li data-bbox="849 537 1240 567">• Is the pointer in the correct range? <p data-bbox="849 590 1097 642">→ Yes The system is OK.</p> <p data-bbox="849 665 1360 802">→ No CHECK for poor engine-to-bulkhead or instrument panel ground connections. REPAIR as necessary. TEST the system for normal operation.</p>

E5



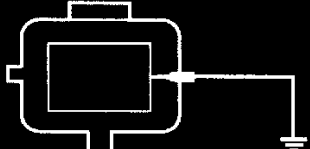

Test F: Incorrect Oil Pressure Gauge Indication**PINPOINT TEST F: INCORRECT OIL PRESSURE GAUGE INDICATION**

CONDITIONS	DETAILS/RESULTS/ACTIONS
F1 CHECK INSTRUMENT CLUSTER OPERATION	
NOTE: For correct operation of the oil pressure gauge, make sure the engine oil is at the correct level and the connector is securely attached to the oil pressure switch. During hard braking, a momentary drop in oil pressure is normal. Make sure the engine-to-chassis and engine-to-bulkhead ground straps are securely fastened.	
<p data-bbox="500 1241 522 1270">1</p> 	<p data-bbox="820 1438 842 1467">2</p> <p data-bbox="865 1438 1276 1467">Check the oil pressure gauge indication.</p> <ul style="list-style-type: none"> <li data-bbox="865 1491 1377 1570">• Do the oil pressure gauge and the oil pressure warning indicator both indicate low oil pressure? <p data-bbox="865 1593 1024 1646">→ Yes GO to F2.</p> <p data-bbox="865 1669 1382 1770">→ No INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p>

(Continued)

F1

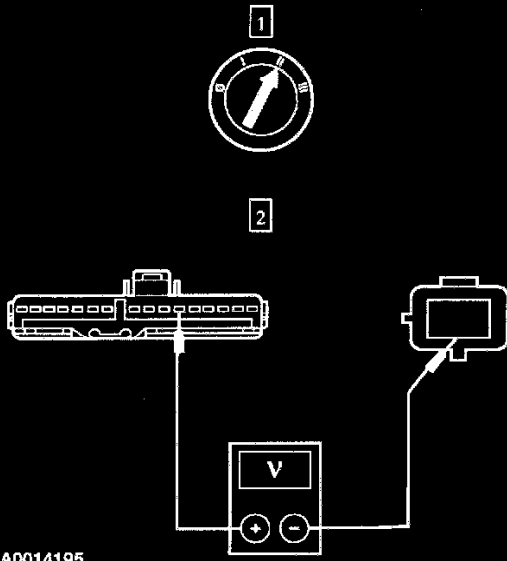
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST F: INCORRECT OIL PRESSURE GAUGE INDICATION (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>F2 CHECK THE OIL PRESSURE SWITCH</p>   <p>Oil Pressure Switch C135</p>  <p>GK7097-A</p> 	<p>3 Connect a fused (10A) jumper wire between oil pressure switch C135, circuit 31 (WH/RD), harness side and ground.</p> <ul style="list-style-type: none"> • Does the oil pressure gauge indicate normal pressure? <p>→ Yes CHECK the engine oil pressure. TEST the system for normal operation.</p> <p>If the oil pressure is within specification, INSTALL a new oil pressure switch.</p> <p>→ No DISCONNECT the jumper wire. GO to F3.</p>

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DIAGNOSIS AND TESTING (Continued)

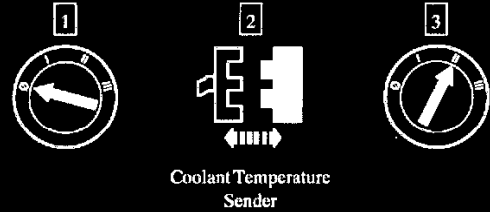
PINPOINT TEST F: INCORRECT OIL PRESSURE GAUGE INDICATION (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>F3 CHECK CIRCUIT 31 (WH/RD) FOR OPEN</p>  <p>A0014195</p>	<p>F3 Measure the resistance between instrument cluster C250b pin 6, circuit 31 (WH/RD), harness side and oil pressure switch C135, circuit 31 (WH/RD), harness side (except Motorhome); or between instrument cluster C250b pin 11, circuit 31 (WH/RD), and oil pressure switch C135, circuit 31 (WH/RD), harness side (Motorhome only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

F3

Test G: Incorrect Temperature Gauge Indication

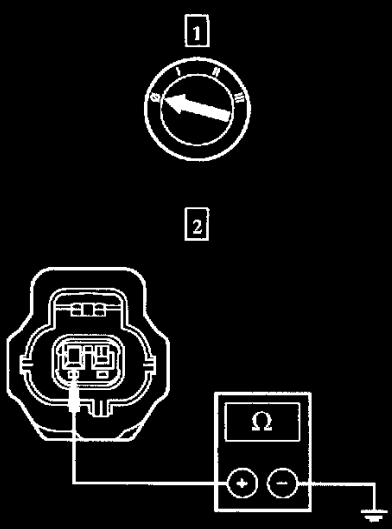
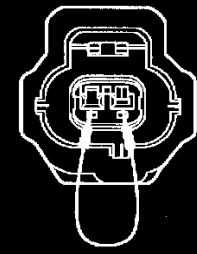

PINPOINT TEST G: INCORRECT TEMPERATURE GAUGE INDICATION

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>G1 CHECK TEMPERATURE GAUGE OPERATION — COLD</p> <p>NOTE: For correct operation of the temperature gauge, make sure the engine coolant is at the correct level and that the connector is securely mated to the coolant temperature sender.</p>	
 <p>Coolant Temperature Sender</p>	<ul style="list-style-type: none"> • Does the temperature gauge read in the cold band? <p>→ Yes GO to G3.</p> <p>→ No GO to G2.</p>

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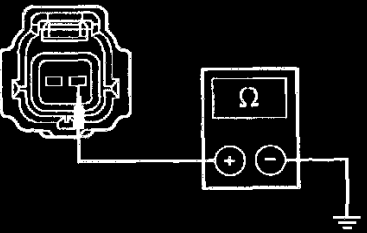


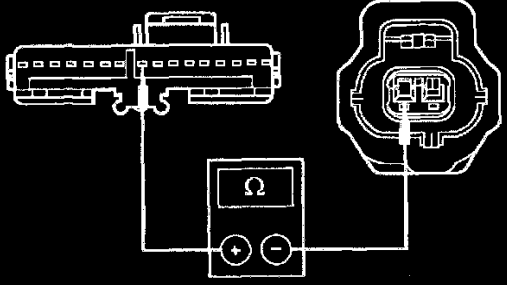
G1

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST G: INCORRECT TEMPERATURE GAUGE INDICATION (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>G2 CHECK CIRCUIT 39 (RD/WH) FOR SHORT TO GROUND</p>  <p style="text-align: center;">GK7100-A</p>	<p>2 Measure the resistance between coolant temperature sender C150, circuit 39 (RD/WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes GO to G4.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>G3 CHECK THE TEMPERATURE GAUGE OPERATION — HOT</p>  <p style="text-align: center;">GK2156-A</p>	<p>1 Connect a fused (10A) jumper wire between the two coolant temperature sender pins of C150.</p> <ul style="list-style-type: none"> • Does the temperature gauge read in the hot band? <p>→ Yes REMOVE the jumper wire. RECONNECT the coolant temperature sender. START the vehicle and ALLOW the engine to reach normal operating temperature. If the gauge is not in normal range, INSTALL a new coolant temperature sender. REFER to Cooling System. TEST the system for normal operation.</p> <p>→ No GO to G4.</p>
<p>G4 CHECK CIRCUIT 45 (YE/RD) FOR OPEN</p>  <p style="text-align: center;">GK2156-A</p>	

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DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST G: INCORRECT TEMPERATURE GAUGE INDICATION (Continued)**






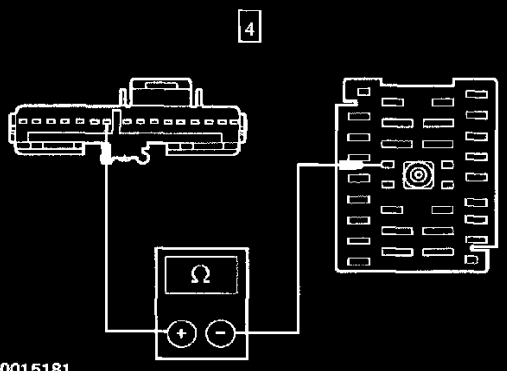
CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>G4 CHECK CIRCUIT 45 (YE/RD) FOR OPEN (Continued)</p> <p>2</p>  <p>GK7956-A</p>	<p>2</p> <p>Measure the resistance between coolant temperature sensor C150, circuit 45 (YE/RD), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes GO to G5.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>G5 CHECK CIRCUIT 39 (RD/WH) FOR OPEN</p> <p>1</p>  <p>2</p>  <p>Instrument Cluster</p> <p>3</p>  <p>GK7101-A</p>	<p>3</p> <p>Measure the resistance between instrument cluster C250b pin 9, circuit 39 (RD/WH), harness side and coolant temperature sensor C150, circuit 39 (RD/WH), harness side (except Motorhome); or between instrument cluster C250b pin 8, circuit 39 (RD/WH), harness side and coolant temperature sensor C150, circuit 39 (RD/WH), harness side (Motorhome only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

G4 - G5

Test H: Speedometer Is Inoperative

DIAGNOSIS AND TESTING (Continued)

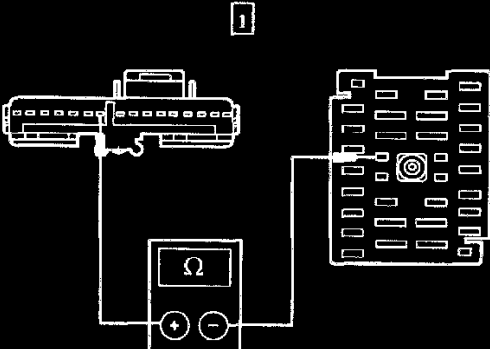
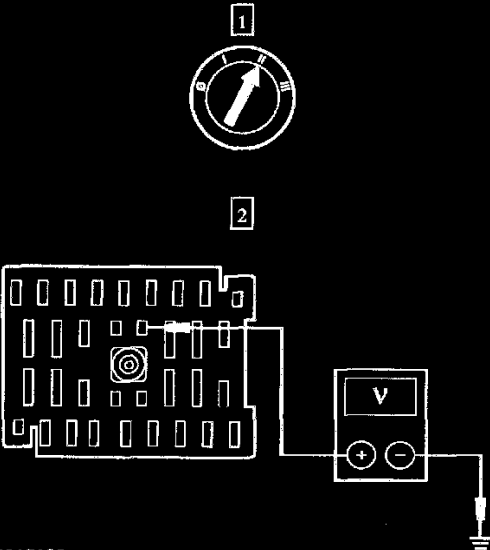

PINPOINT TEST H: THE SPEEDOMETER IS INOPERATIVE (EXCEPT MOTORHOME)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>H1 CHECK THE GEM PID VSS__GEM (EXCEPT MOTORHOME)</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>1</p> <p>Diagnostic Tool</p> </div> <div style="text-align: center;">  <p>2</p> </div> </div>	<p>2 Monitor the GEM PID VSS__GEM while driving vehicle between 0 and 89 km/h (0 and 55 mph).</p> <ul style="list-style-type: none"> • Does the PID VSS__GEM value agree with the speedometer? <p>→ Yes GO to H2.</p> <p>→ No REFER to Transfer Case.</p>
<p>H2 CHECK THE CIRCUIT 679 (GY/BK) FOR OPEN</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>1</p> </div> <div style="text-align: center;">  <p>2</p> <p>Central Junction Box (CJB) C242b</p> </div> <div style="text-align: center;">  <p>3</p> <p>Instrument Cluster C250b</p> </div> </div> <div style="text-align: center; margin-top: 20px;">  <p>4</p> </div> <p>A0015181</p>	<p>4 Measure the resistance between central junction box (CJB) C242b pin 14, circuit 679 (GY/BK), harness side and instrument cluster C250b pin 7, circuit 679 (GY/BK), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes GO to H3.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

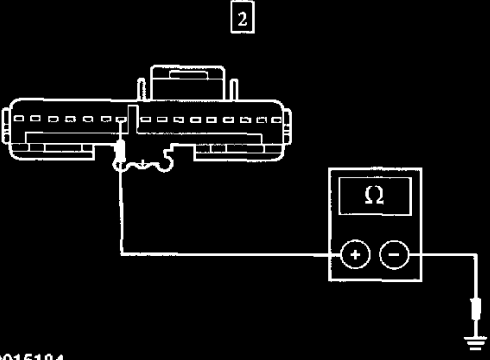
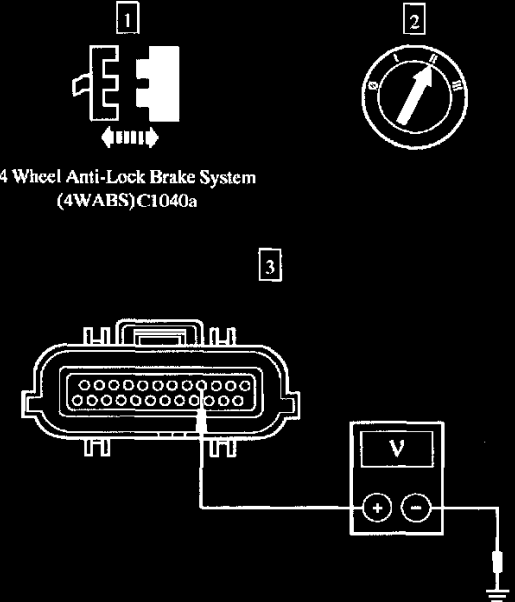
(Continued)

H1 - H2

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST H: THE SPEEDOMETER IS INOPERATIVE (EXCEPT MOTORHOME)
(Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>H3 CHECK OVERHEAD CONSOLE FOR SHORT TO GROUND</p>  <p>A0015181</p>	<p>1 Measure the resistance between CJB C242b pin 22, circuit 679 (GY/BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes GO to H4.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>H4 CHECK OVERHEAD CONSOLE FOR SHORT TO POWER</p>  <p>A0015183</p>	<p>2 Measure the voltage between CJB C240b pin 22, circuit 679 (LG/BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is voltage present? <p>→ Yes REPAIR the circuit. TEST the system for normal operation.</p> <p>→ No GO to H5.</p>
<p>H5 CHECK CIRCUIT 679 (GY/BK) FOR SHORT TO GROUND</p>  <p>Central Junction Box (CJB) C242b</p>	<p>(Continued)</p>

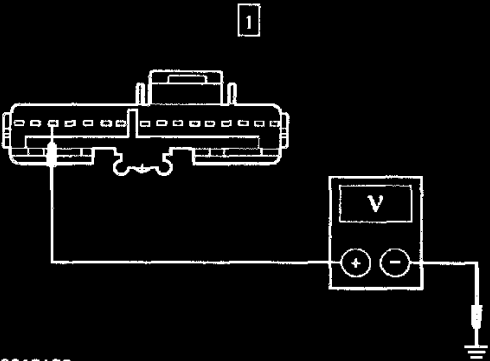
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST H: THE SPEEDOMETER IS INOPERATIVE (EXCEPT MOTORHOME)
(Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>H5 CHECK CIRCUIT 679 (GY/BK) FOR SHORT TO GROUND (Continued)</p>  <p>A0015184</p>	<p>2 Measure the resistance between instrument cluster C250b pin 7, circuit 679 (GY/BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes GO to H6.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>H6 CHECK CIRCUIT 679 (GY/BK) FOR SHORT TO POWER</p>  <p>4 Wheel Anti-Lock Brake System (4WABS)C1040a</p> <p>A0015185</p>	<p>3 Measure the voltage between 4WABS C1040a pin 16, circuit 679 (GY/BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is voltage present? <p>→ Yes REPAIR the circuit. TEST the system for normal operation.</p> <p>→ No GO to H7.</p>

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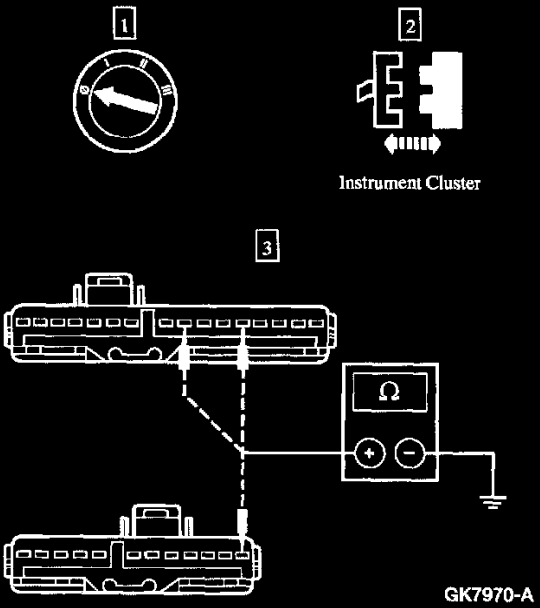
H5 - H6

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST H: THE SPEEDOMETER IS INOPERATIVE (EXCEPT MOTORHOME)
(Continued)**




CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>H7 CHECK CIRCUIT 729 (RD/WH) FOR POWER</p>  <p>A0015186</p>	<p>1 Measure voltage between instrument cluster C250b pin 3, circuit 729 (RD/WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes GO to H8.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>H8 CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</p>	<p>1 Check:</p> <ul style="list-style-type: none"> • for corrosion • for pushed-out pins • that connector seats correctly <p>2 Connect any disconnected connectors.</p> <p>3 Make sure all other system connectors are fully seated.</p> <p>4 Operate the system and verify the concern is still present.</p> <ul style="list-style-type: none"> • Is the concern still present? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel.</p> <p>→ No The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>

H7 - H8

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST I: INCORRECT TACHOMETER INDICATION**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>I1 CHECK CIRCUITS 397 (BK/WH), CIRCUIT 398 (BK/YE) (GASOLINE ONLY), OR CIRCUIT 1203 (BK/LB) (MOTORHOME ONLY) FOR OPEN</p> 	<p>3 Measure the resistance between instrument cluster C250b pin 8, circuit 397 (BK/WH), harness side and ground (6.8L gasoline engine only); between instrument cluster C250a pin 1, circuit 398 (BK/YE), and ground (5.4L gasoline engine only); or between instrument cluster C250b pin 9, circuit 1203 (BK/LB), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Are the resistances less than 5 ohms? → Yes GO to I2. → No REPAIR the circuit(s) in question. TEST the system for normal operation.
<p>I2 CHECK FOR CLEAN TACH OUT (CTO) CIRCUIT OPEN OR SHORT</p>	<p>1 Check for clean tach out (CTO) circuit open or short. Refer to Computers and Control Systems.</p> <ul style="list-style-type: none"> • Is the CTO circuit OK? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No REFER to Computers and Control Systems to continue diagnosis.

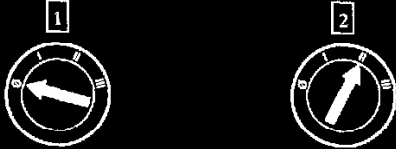
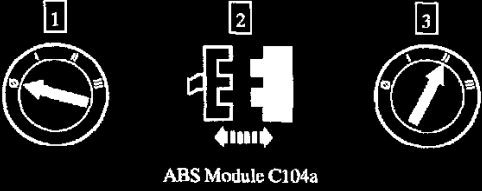
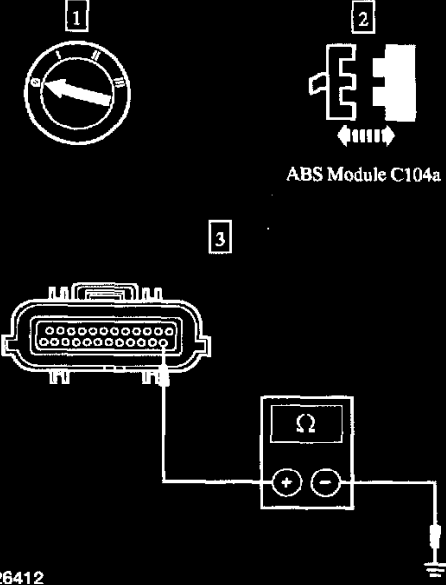
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST J: INACCURATE SPEEDOMETER READING — ODOMETER FUNCTIONS CORRECTLY (EXCEPT MOTORHOME)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
J1 CHECK THE SPEEDOMETER AT LOW SPEED	
NOTE: Vehicle must be traveling at a steady speed while carrying out this test.	
NOTE: Only carry out test Step K1 if speed limits do not allow test Step K2 to be carried out.	
 <p>1</p>  <p>2</p> <p>Diagnostic Tool</p>	<p>2] Monitor the GEM PID VSS__GEM while driving the vehicle at 50 km/h (30 mph).</p> <p>3] Hold vehicle speed steady (set speed control, if equipped) when the PID VSS__GEM is indicating 50 km/h (30 mph).</p> <ul style="list-style-type: none"> • Does the speedometer read 47-58 km/h (28-35 mph)? <p>→ Yes GO to J2.</p> <p>→ No INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p>
J2 CHECK THE SPEEDOMETER AT HIGH SPEED	
NOTE: Vehicle must be traveling at a steady speed while carrying out this test.	
 <p>1</p>	<p>1] Monitor the GEM PID VSS__GEM while driving the vehicle at 100 km/h (60 mph).</p> <p>2] Hold vehicle speed steady (set speed control, if equipped) when the PID VSS__GEM is indicating 100 km/h (60 mph).</p> <ul style="list-style-type: none"> • Does the speedometer read 94-108 km/h (58-65 mph)? <p>→ Yes The system is OK.</p> <p>→ No INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p>

J1 - J2

Test K: Brake Warning Indicator Is Never/always On - Yellow ABS Warning Indicator

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST K: THE BRAKE WARNING INDICATOR IS NEVER/ALWAYS ON — YELLOW ABS WARNING INDICATOR**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>K1 VERIFY LAMP OPERATION</p> 	<p>2 Observe the ABS warning indicator lamp prove-out.</p> <ul style="list-style-type: none"> • Does the ABS warning indicator lamp prove-out? <p>→ Yes If the air bag indicator is always on, GO to K2.</p> <p>→ No If the air bag indicator is inoperative, GO to K4.</p>
<p>K2 CHECK ABS INDICATOR LAMP OPERATION</p>  <p>ABS Module C104a</p>	<p>3 Observe the ABS indicator lamp.</p> <ul style="list-style-type: none"> • Is the ABS indicator lamp illuminating? <p>→ Yes GO to K3.</p> <p>→ No REFER to Antilock Brake System.</p>
<p>K3 CHECK CIRCUIT 603 (DG) FOR SHORT TO GROUND</p>  <p>ABS Module C104a</p>	<p>3 Measure the resistance between 4WABS/RABS module C104a pin 1, circuit 603 (DG), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>



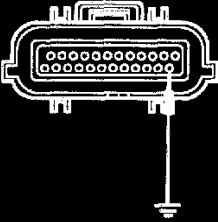


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K1 - K3

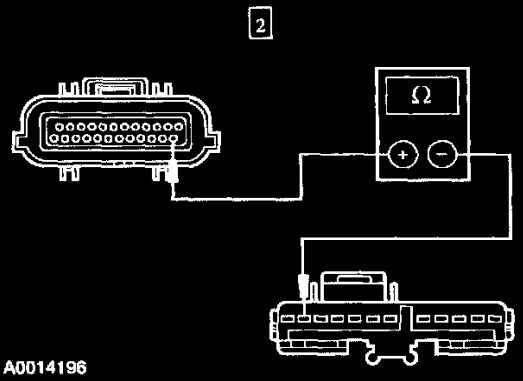
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST K: THE BRAKE WARNING INDICATOR IS NEVER/ALWAYS ON — YELLOW ABS WARNING INDICATOR (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>K4 CHECK THE ABS WARNING INDICATOR CONTROL CIRCUIT</p>   <p>ABS Module C104a</p>  <p>GK7971-A</p> 	<p>3 Connect a fused (10A) jumper wire between 4WABS/RABS module C104a pin 1, circuit 603 (DG), harness side and ground.</p> <ul style="list-style-type: none"> • Does the indicator illuminate? → Yes REFER to Antilock Brake System. → No GO to K5.
<p>K5 CHECK CIRCUIT 603 (DG) FOR OPEN</p>  <p>Instrument Cluster</p>	<p>(Continued)</p>

DIAGNOSIS AND TESTING (Continued)


PINPOINT TEST K: THE BRAKE WARNING INDICATOR IS NEVER/ALWAYS ON — YELLOW ABS WARNING INDICATOR (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>K5 CHECK CIRCUIT 603 (DG) FOR OPEN (Continued)</p>  <p>A0014196</p>	<p>2 Measure the resistance between 4WABS/RABS module C104a pin 1, circuit 603 (DG), harness side and instrument cluster C250c pin 11, circuit 603 (DG), harness side (except Motorhome); or between 4WABS/RABS module C104a pin 1, circuit 603 (DG), harness side and instrument cluster C250 pin 2, circuit 603 (DG), harness side (Motorhome only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No REPAIR the circuit. TEST the system for normal operation.

K5

Test L: Brake Warning Indicator Is Never On - Red Brake Warning Indicator





PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L1 RETRIEVE THE DIAGNOSTIC TROUBLE CODES (DTCs)</p>	
<p>NOTE: If DTC C1125 and C1189 are set together, diagnose DTC C1125 first.</p>	
 <p>Diagnostic Tool</p>	<p>4 Retrieve and record GEM continuous DTCs.</p> <p>5 Clear continuous DTCs.</p>

(Continued)

L1

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)**


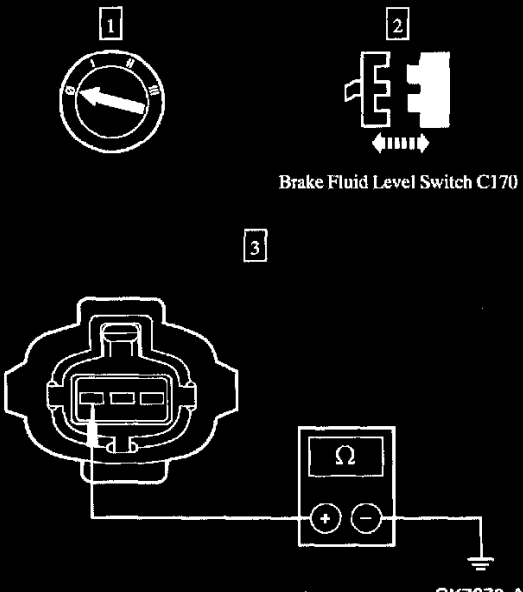
CONDITIONS	DETAILS/RESULTS/ACTIONS
L1 RETRIEVE THE DIAGNOSTIC TROUBLE CODES (DTCs) (Continued) 	6 Retrieve GEM on-demand DTCs. <ul style="list-style-type: none"> • Are any DTCs recorded? <ul style="list-style-type: none"> → Yes If DTC C1125, GO to L6. → No GO to L2. If DTC C1189, GO to L9. If DTC C1223, GO to L4. If DTC C1225, GO to L4. If DTC C1446, GO to L10. If DTC B1342, GO to L20.
L2 CHECK THE PARK BRAKE SWITCH OPERATION  	2 Monitor the GEM PID PARK__SW while engaging and disengaging the parking brake. <ul style="list-style-type: none"> • Does the PID PARK__SW indicate OFF when disengaged and ON when engaged? <ul style="list-style-type: none"> → Yes GO to L3. → No If the PID always indicates OFF, GO to L11. If the PID always indicates ON, GO to L13.
L3 CHECK BRAKE LAMP OPERATION 	1 Make sure the parking brake is not engaged. 2 Select the GEM active command mode. Toggle active command BRAKE LAMP ON, and wait five seconds.

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L1 - L3

DIAGNOSIS AND TESTING (Continued)






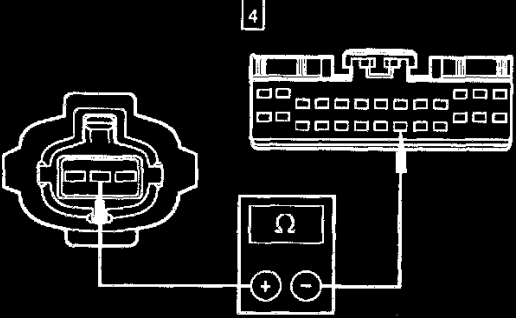
PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L3 CHECK BRAKE LAMP OPERATION (Continued)</p>	
	<p>3 Toggle active command BRAKE LAMP OFF.</p> <ul style="list-style-type: none"> • Does the brake indicator lamp illuminate for five seconds after the OFF command is made? <p>→ Yes GO to L4.</p> <p>→ No If the brake indicator lamp does not illuminate, GO to L15.</p> <p>If the brake indicator lamp stays illuminated at all times, GO to L17.</p>
<p>L4 CHECK CIRCUIT 57 (BK) FOR OPEN CIRCUIT</p>	
 <p>1</p> <p>2</p> <p>Brake Fluid Level Switch C170</p> <p>3</p> <p>GK7973-A</p>	<p>3 Measure the resistance between brake fluid level switch C170 pin 1, circuit 57 (BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes GO to L5.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

(Continued)

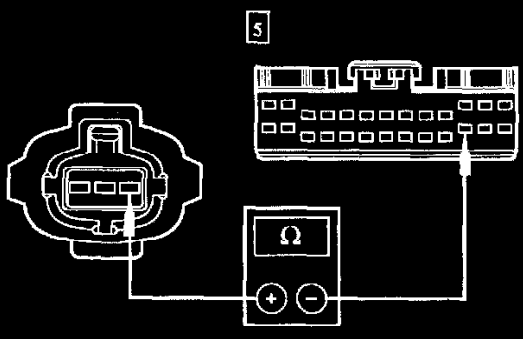
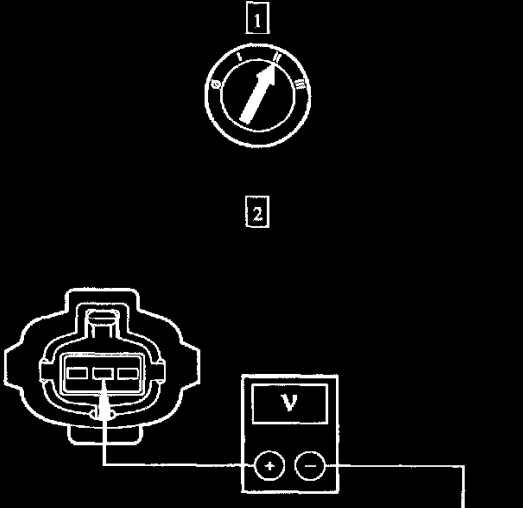
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L5 CHECK THE BRAKE FLUID LEVEL SWITCH</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>1</p> <p>Brake Fluid Level Switch C170</p> </div> <div style="text-align: center;">  <p>2</p> </div> </div>	<p>2 Monitor the GEM PID FLUID__1 while disconnecting the brake fluid level switch.</p> <ul style="list-style-type: none"> • Does the PID FLUID__1 change from OFF to ON? <p>→ Yes INSTALL a new brake fluid level switch. TEST the system for normal operation.</p> <p>→ No GO to L20.</p>
<p>L6 CHECK CIRCUITS 512 (TN/LG) AND 531 (DG/YE) FOR OPEN CIRCUIT</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>1</p> </div> <div style="text-align: center;">  <p>2</p> <p>Brake Fluid Level Switch C170</p> </div> <div style="text-align: center;">  <p>3</p> <p>GEM C240a</p> </div> </div> <div style="text-align: center; margin-top: 20px;">  <p>4</p> <p>GK7974-A</p> </div>	<p>4 Measure the resistance between brake fluid level switch C170 pin 2, circuit 512 (TN/LG), harness side and GEM C240a pin 21, circuit 512 (TN/LG), harness side.</p>

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DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)**

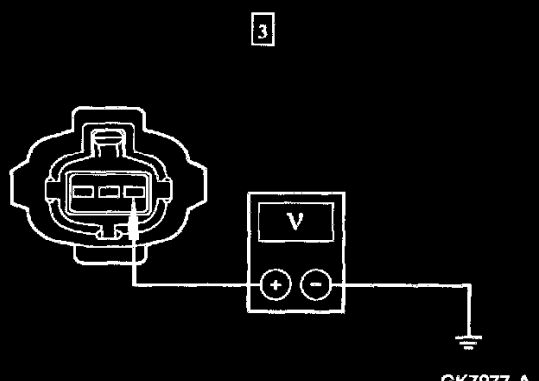
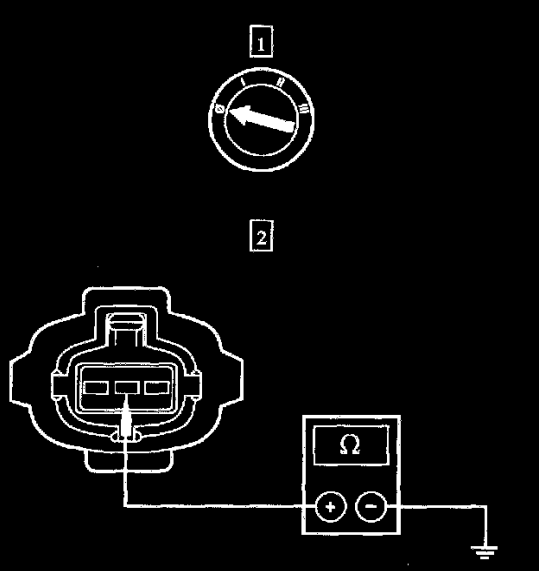
CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L6 CHECK CIRCUITS 512 (TN/LG) AND 531 (DG/YE) FOR OPEN CIRCUIT (Continued)</p>  <p style="text-align: center;">GK7975-A</p>	<p>5 Measure the resistance between brake fluid level switch C170 pin 3, circuit 531 (DG/YE), harness side and GEM C240a pin 24, circuit 531 (DG/YE), harness side.</p> <ul style="list-style-type: none"> • Are the resistances less than 5 ohms? → Yes GO to L7. → No REPAIR the circuit(s) in question. TEST the system for normal operation.
<p>L7 CHECK CIRCUITS 512 (TN/LG) AND 531 (DG/YE) FOR SHORT TO POWER</p>  <p style="text-align: center;">GK7976-A</p>	<p>2 Measure the voltage between brake fluid level switch C170 pin 2, circuit 512 (TN/LG), harness side and ground.</p>

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L6 - L7

DIAGNOSIS AND TESTING (Continued)

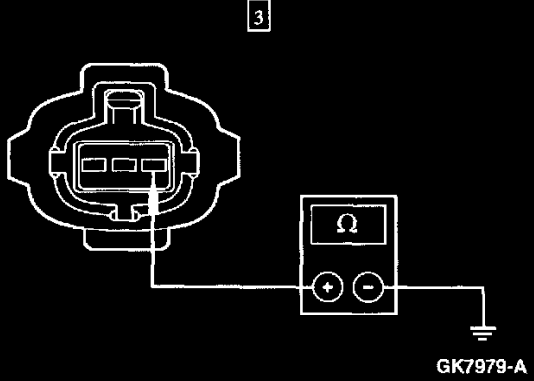
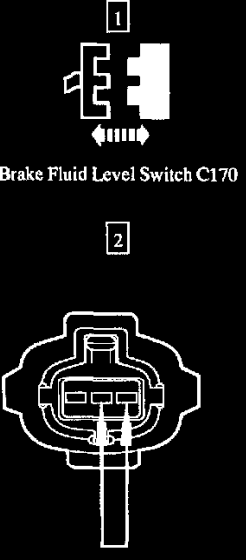
PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L7 CHECK CIRCUITS 512 (TN/LG) AND 531 (DG/YE) FOR SHORT TO POWER (Continued)</p> <div style="text-align: center;">  <p>GK7977-A</p> </div>	<p>3 Measure the voltage between brake fluid level switch C170 pin 3, circuit 531 (DG/YE), harness side and ground.</p> <ul style="list-style-type: none"> • Are the voltages greater than 10 volts? → Yes REPAIR the circuit(s) in question. TEST the system for normal operation. → No GO to L8.
<p>L8 CHECK CIRCUITS 512 (TN/LG) AND 531 (DG/YE) FOR SHORT TO GROUND</p> <div style="text-align: center;">  <p>GK7978-A</p> </div>	<p>2 Measure the resistance between brake fluid level switch C170 pin 2, circuit 512 (TN/LG), harness side and ground.</p>

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DIAGNOSIS AND TESTING (Continued)


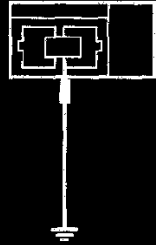


PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L8 CHECK CIRCUITS 512 (TN/LG) AND 531 (DG/YE) FOR SHORT TO GROUND (Continued)</p> <div style="text-align: center;">  </div>	<p>3 Measure the resistance between brake fluid level switch C170 pin 3, circuit 531 (DG/YE), harness and ground.</p> <ul style="list-style-type: none"> • Are the resistances greater than 10,000 ohms? → Yes GO to L9. → No REPAIR the circuit(s) in question. TEST the system for normal operation.
<p>L9 CHECK THE BRAKE FLUID LEVEL SWITCH</p>	
<div style="text-align: center;">  <p>Brake Fluid Level Switch C170</p> </div>	<p>2 Monitor the GEM PID FLUIDLVL__1 while connecting a fused (10A) jumper wire between brake fluid level switch C170 pin 2, circuit 512 (TN/LG), harness side and brake fluid level switch C170 pin 3, circuit 531 (DG/YE), harness side.</p> <ul style="list-style-type: none"> • Does the PID FLUIDLVL__1 indicate OFF with the jumper wire connected? → Yes INSTALL a new brake fluid level switch. TEST the system for normal operation. → No GO to L20.

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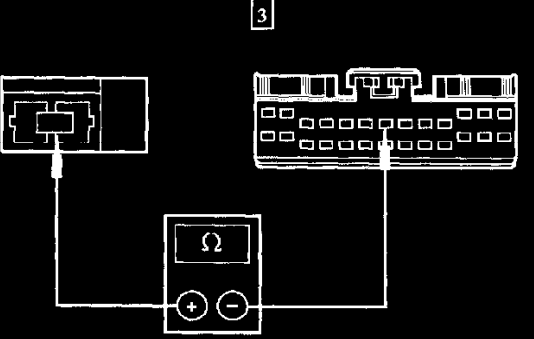

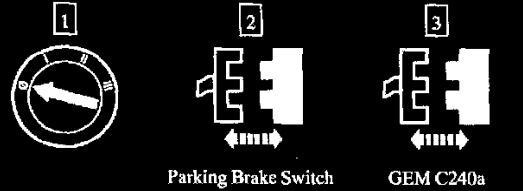
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L10 VERIFY PARKING BRAKE ENGAGEMENT</p>	<p>1 Verify that the vehicle parking brake is engaged.</p> <ul style="list-style-type: none"> • Is the parking brake engaged? <p>→ Yes GO to L11.</p> <p>→ No ENGAGE the parking brake. REPEAT the GEM Self-Test.</p>
<p>L11 CHECK THE PARK BRAKE SWITCH</p> <div style="text-align: center;">  <p>1</p>  <p>2</p> <p>GK7981-A</p> </div>	<p>2 Monitor the GEM PID PARK__SW while connecting a fused (10A) jumper wire between park brake switch C276, circuit 162 (LG/RD), harness side and ground.</p> <ul style="list-style-type: none"> • Does the PID PARK__SW indicate ON with the jumper wire connected? <p>→ Yes INSTALL a new parking brake switch. TEST the system for normal operation.</p> <p>→ No GO to L12.</p>
<p>L12 CHECK CIRCUIT 162 (LG/RD) FOR OPEN CIRCUIT</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>1</p> <p>GEM C240a</p> </div> <div style="text-align: center;">  <p>2</p> <p>Parking Brake Switch C276</p> </div> </div>	

(Continued)

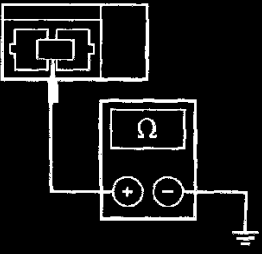



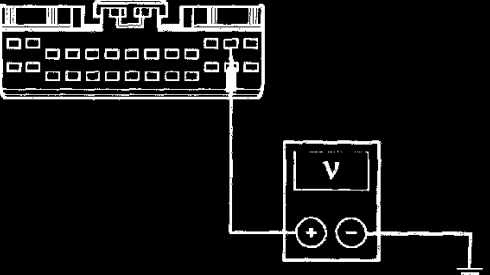
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L12 CHECK CIRCUIT 162 (LG/RD) FOR OPEN CIRCUIT (Continued)</p>  <p style="text-align: right;">GK7982-A</p>	<p>3 Measure the resistance between parking brake switch C276, circuit 162 (LG/RD), harness side and GEM C240a pin 7, circuit 162 (LG/RD), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes GO to L20. → No REPAIR the circuit. TEST the system for normal operation.
<p>L13 CHECK THE PARKING BRAKE SWITCH</p>  <p style="text-align: center;">Parking Brake Switch C276</p>	<p>2 Monitor the GEM PID PARK__SW while disconnecting the parking brake switch C276.</p> <ul style="list-style-type: none"> • Does the PID PARK__SW indicate OFF with the switch disconnected? → Yes INSTALL a new parking brake switch. TEST the system for normal operation. → No GO to L14.
<p>L14 CHECK CIRCUIT 162 (LG/RD) FOR SHORT TO GROUND</p>  <p style="text-align: center;">Parking Brake Switch C276 GEM C240a</p>	

(Continued)

L12 - L14

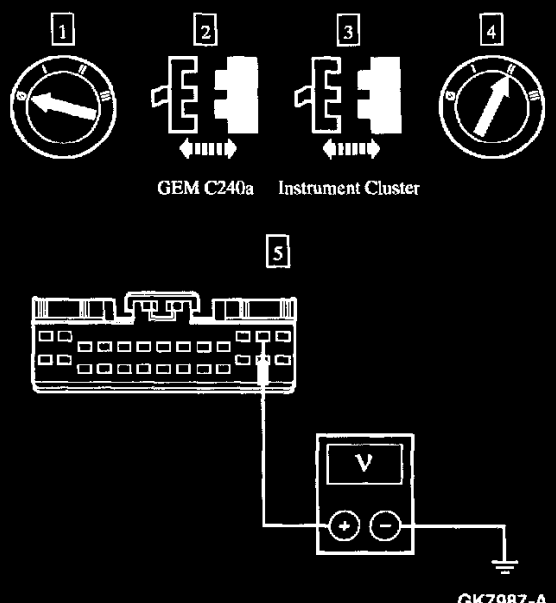
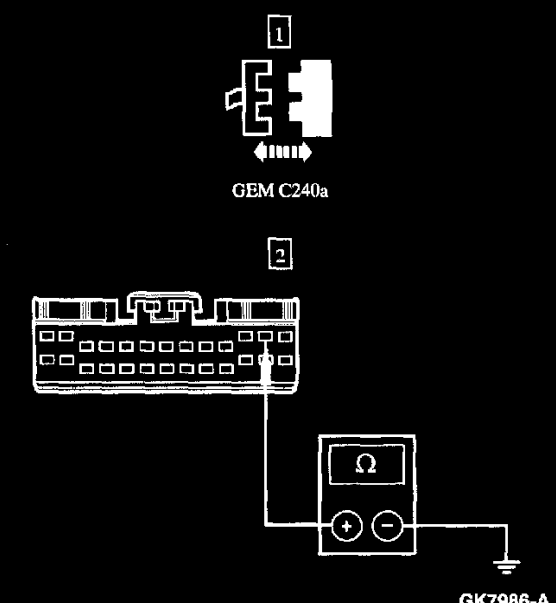
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L14 CHECK CIRCUIT 162 (LG/RD) FOR SHORT TO GROUND (Continued)</p> <p style="text-align: center;">4</p>  <p style="text-align: right;">GK7983-A</p>	<p>4 Measure the resistance between parking brake switch C276, circuit 162 (LG/RD), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes GO to L20.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>L15 CHECK CIRCUIT 977 (VT/WH) FOR VOLTAGE</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>1</p>  </div> <div style="text-align: center;"> <p>2</p>  <p>GEM C240a</p> </div> <div style="text-align: center;"> <p>3</p>  </div> </div> <p style="text-align: center;">4</p>  <p style="text-align: right;">GK7987-A</p>	<p>4 Measure voltage between GEM C240a pin 12, circuit 977 (VT/WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes GO to L16.</p> <p>→ No GO to L17.</p>

(Continued)

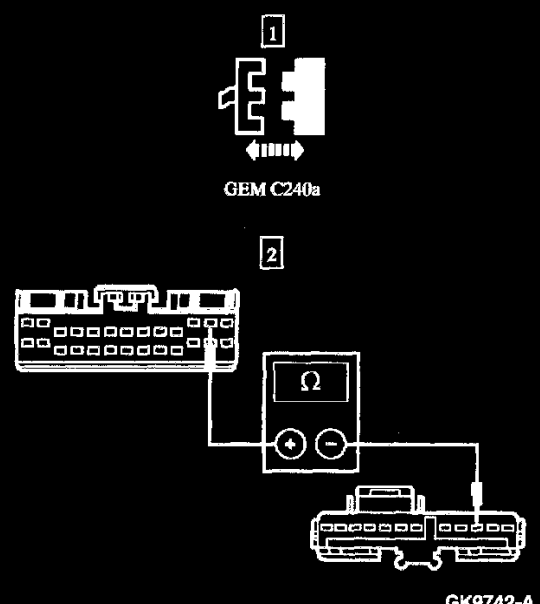
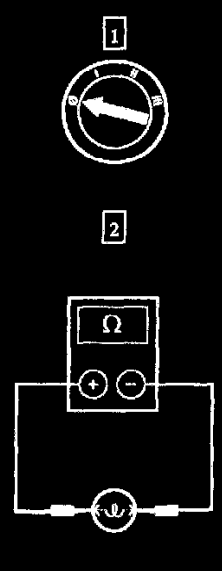
L14 - L15

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L16 CHECK CIRCUIT 977 (VT/WH) FOR SHORT TO POWER</p>  <p>GEM C240a Instrument Cluster</p> <p>GK7987-A</p>	<p>5 Measure the voltage between GEM C240a pin 12, circuit 977 (VT/WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes REPAIR the circuit. CLEAR the DTCs. TEST the system for normal operation.</p> <p>→ No GO to L20.</p>
<p>L17 CHECK CIRCUIT 977 (VT/WH) FOR SHORT TO GROUND</p>  <p>GEM C240a</p> <p>GK7986-A</p>	<p>2 Measure the resistance between GEM C240a pin 12, circuit 977 (VT/WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes GO to L18.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>L18 CHECK CIRCUIT 977 (VT/WH) FOR OPEN CIRCUIT</p>  <p style="text-align: center;">GEM C240a</p> <p style="text-align: center;">2</p> <p style="text-align: center;">GK9742-A</p>	<p>2 Measure the resistance between GEM C240a pin 12, circuit 977 (VT/WH), harness side and instrument cluster C250c pin 3, circuit 977 (VT/WH), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes GO to L19.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>L19 CHECK THE BRAKE WARNING INDICATOR BULB</p>  <p style="text-align: center;">1</p> <p style="text-align: center;">2</p> <p style="text-align: center;">GK3486-A</p>	<p>2 Remove the BRAKE warning indicator bulb and measure the resistance between the terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.</p>

(Continued)

L18 - L19

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST L: THE BRAKE WARNING INDICATOR IS NEVER ON — RED BRAKE WARNING INDICATOR (EXCEPT MOTORHOME) (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
L20 CHECK FOR CORRECT GEM OPERATION	<ol style="list-style-type: none"> <li data-bbox="805 279 1386 401">1 Check: <ul style="list-style-type: none"> • for corrosion • for pushed-out pins • connector seated correctly <li data-bbox="805 436 1386 466">2 Connect any disconnected connectors. <li data-bbox="805 510 1386 564">3 Make sure all other system connectors are fully seated. <li data-bbox="805 604 1386 995">4 Operate the system and verify the concern is still present. <ul style="list-style-type: none"> • Is the concern still present? <ul style="list-style-type: none"> → Yes INSTALL a new GEM. REFER to Multifunction Electronic Control Module (General Module). CLEAR the DTCs. REPEAT the GEM self-test. → No The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

L20

Test M: Service Engine Soon Indicator Is Inoperative**PINPOINT TEST M: SERVICE ENGINE SOON INDICATOR IS INOPERATIVE**

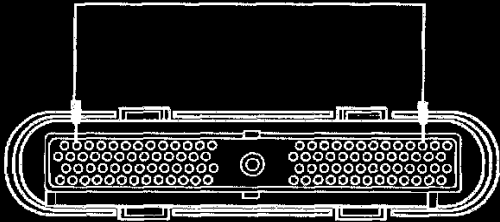

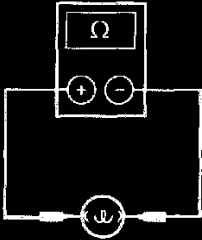

CONDITIONS	DETAILS/RESULTS/ACTIONS
M1 CHECK THE SERVICE ENGINE SOON WARNING INDICATOR CIRCUIT	<p data-bbox="277 1308 1370 1367">CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p> <div data-bbox="256 1398 737 1583"> <p data-bbox="444 1562 542 1583">PCM C1027</p> </div>

(Continued)

M1

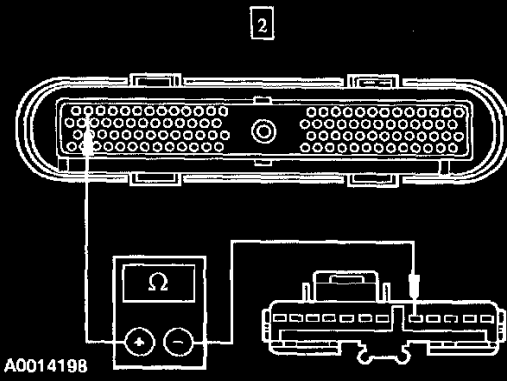
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST M: SERVICE ENGINE SOON INDICATOR IS INOPERATIVE (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>M1 CHECK THE SERVICE ENGINE SOON WARNING INDICATOR CIRCUIT (Continued)</p> <p style="text-align: center;">4</p>  <p>A0014197</p>	<p>4 Connect a fused (10A) jumper wire between PCM C1027 pin 2, circuit 658 (PK/LG), and PCM C1027 pin 24, circuit 570 (BK/WH).</p> <ul style="list-style-type: none"> • Does the indicator illuminate? → Yes RETRIEVE the DTCs from the PCM. REFER to Computers and Control Systems. → No GO to M2.
<p>M2 CHECK THE SERVICE ENGINE SOON INDICATOR BULB</p> <p style="text-align: center;">1</p>  <p style="text-align: center;">2</p>  <p>GK3486-A</p>	<p>2 Remove the SERVICE ENGINE SOON indicator bulb and measure the resistance between the terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? → Yes GO to M3. → No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.
<p>M3 CHECK CIRCUIT 658 (PK/LG) FOR OPEN</p>	
<p>⚠ CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p>	
<p style="text-align: center;">1</p>  <p style="text-align: center;">Instrument Cluster C250c</p>	<p style="text-align: right;">(Continued)</p>

DIAGNOSIS AND TESTING (Continued)

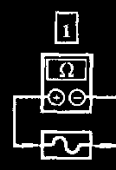

PINPOINT TEST M: SERVICE ENGINE SOON INDICATOR IS INOPERATIVE (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>M3 CHECK CIRCUIT 658 (PK/LG) FOR OPEN (Continued)</p>  <p>A0014198</p>	<p>2 Measure the resistance between PCM C1027 pin 2, harness side and instrument cluster C250c pin 5, circuit 658 (PK/LG), harness side (except Motorhome); or between PCM C1027 pin 2, harness side and instrument cluster C250c pin 8, circuit 658 (PK/LG), harness side (Motorhome only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No REPAIR the circuit. TEST the system for normal operation.

M3

Test N: Charge System Warning Indicator Is Never On

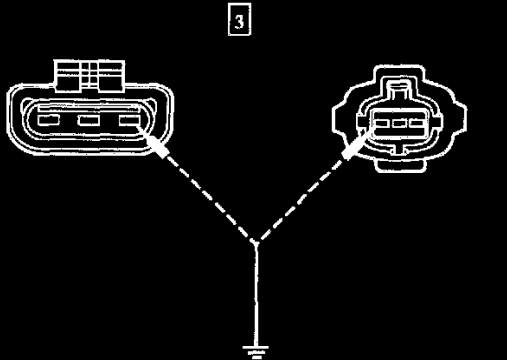


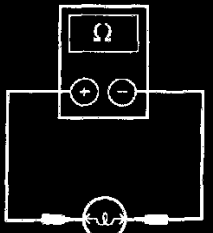
PINPOINT TEST N: THE CHARGE SYSTEM WARNING INDICATOR IS NEVER ON

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>N1 CHECK THE FUSE</p> 	<p>1 Check CJB Fuse 29 (5A) (except Motorhome); or battery junction box (BJB) Fuse 9 (5A) (Motorhome only).</p> <ul style="list-style-type: none"> • Is the fuse OK? → Yes GO to N2. → No INSTALL a new fuse as necessary. If the fuse fails again, REPAIR circuit 1044 (WH/YE) for short to ground. TEST the system for normal operation.
<p>N2 CHECK THE CHARGE WARNING INDICATOR CONTROL CIRCUIT</p>  <p>Generator C153a</p>	

(Continued)

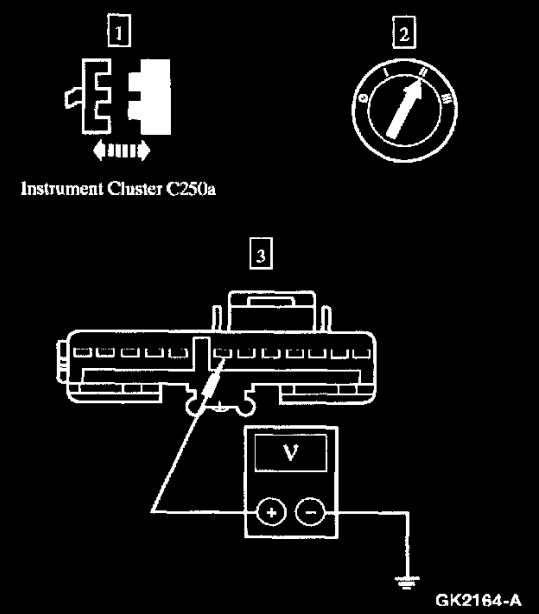
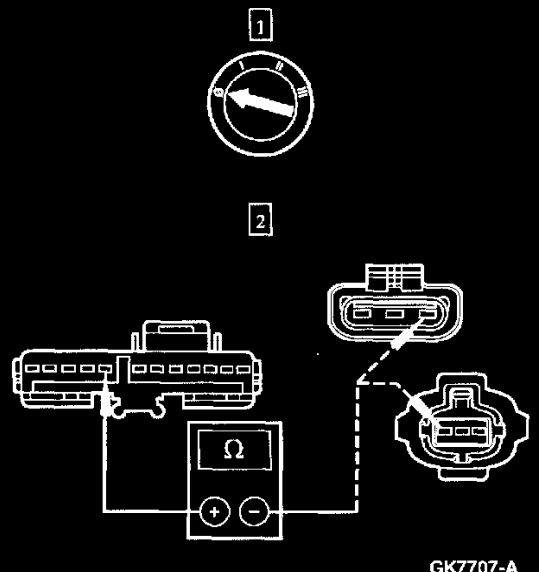
N1 - N2

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST N: THE CHARGE SYSTEM WARNING INDICATOR IS NEVER ON (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>N2 CHECK THE CHARGE WARNING INDICATOR CONTROL CIRCUIT (Continued)</p>  <p style="text-align: center;">3</p>  <p style="text-align: center;">4</p>	<p>3 Connect a fused (10A) jumper wire between generator C153a pin 3 or C185 pin 1, circuit 904 (LG/RD), harness side and ground (except Motorhome); or between generator C153a pin 3, circuit 904 (LG/RD), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Does the indicator illuminate? → Yes REFER to Charging System. → No GO to N3.
<p>N3 CHECK THE CHARGING SYSTEM INDICATOR BULB</p>  <p style="text-align: center;">1</p>  <p style="text-align: center;">2</p>	<p>2 Remove the charging system indicator bulb and measure the resistance between the terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? → Yes GO to N4. → No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.

(Continued)






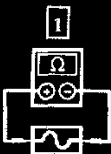
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST N: THE CHARGE SYSTEM WARNING INDICATOR IS NEVER ON (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>N4 CHECK THE POWER TO THE INSTRUMENT CLUSTER</p>  <p>Instrument Cluster C250a</p> <p>GK2164-A</p>	<p>3 Measure the voltage between instrument cluster C250a pin 7, circuit 1044 (WH/YE), harness side and ground (except Motorhome); or between instrument cluster C250a pin 6, circuit 1044 (WH/YE), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes GO to N5.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>N5 CHECK CIRCUIT 904 (LG/RD) FOR OPEN</p>  <p>GK7707-A</p>	<p>2 Measure the resistance between instrument cluster C250a pin 8, circuit 904 (LG/RD), harness side and generator C153a pin 3 or C185 pin 1, circuit 904 (LG/RD), harness side (except Motorhome); or between instrument cluster C250a pin 5, circuit 904 (LG/RD), harness side and generator C153a pin 3, circuit 904 (LG/RD), harness side (Motorhome only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

N4 - N5

Test O: Air Bag Indicator Is Inoperative/Always On

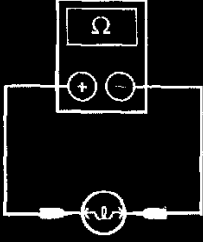

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST O: AIR BAG INDICATOR IS INOPERATIVE/ALWAYS ON**

CONDITIONS	DETAILS/RESULTS/ACTIONS
O1 VERIFY LAMP OPERATION	
 	<p>2 Observe the air bag indicator lamp prove out.</p> <ul style="list-style-type: none"> • Does the air bag indicator lamp prove out correctly? → Yes System is OK. → No If the air bag indicator is always on, GO to O2. <p>If the air bag indicator is inoperative, GO to O3.</p>
O2 CHECK CIRCUIT 608 (BK/YE)	
   <p>Air Bag Diagnostic Monitor</p>	<ul style="list-style-type: none"> • Does the air bag indicator lamp illuminate? → Yes REPAIR circuit 608 (BK/YE). TEST the system for normal operation. → No REFER to Air Bag Systems.
O3 CHECK CJB FUSE 29 (5A)	
 <p>CJB Fuse 29 (5A)</p>	<ul style="list-style-type: none"> • Is the fuse OK? → Yes GO to O4. → No INSTALL a new fuse. TEST the system for normal operation. If the fuse fails again, REPAIR circuit 1044 (WH/YE). TEST the system for normal operation.

(Continued)

DIAGNOSIS AND TESTING (Continued)

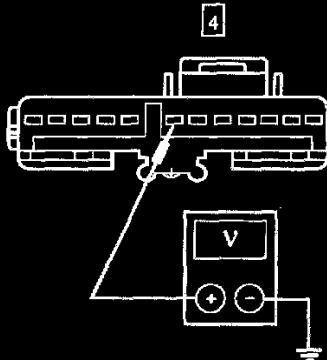
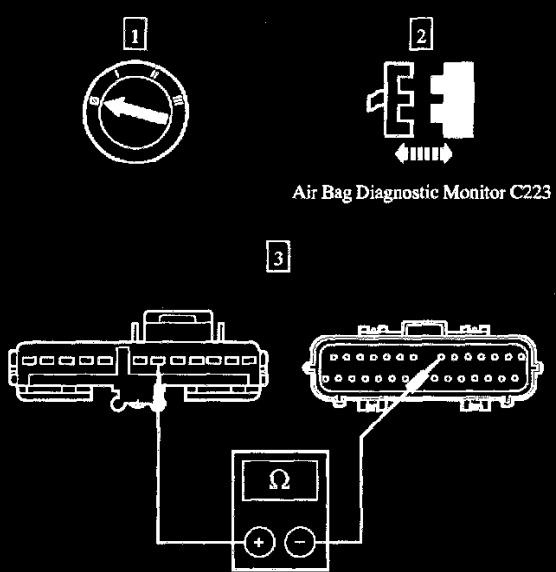

PINPOINT TEST O: AIR BAG INDICATOR IS INOPERATIVE/ALWAYS ON (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
O4 VERIFY CONNECTOR SEATING	
	<p>1 NOTE: Partial removal of the instrument cluster is necessary.</p> <p>Verify the instrument cluster connectors are connected correctly.</p> <ul style="list-style-type: none"> • Are the instrument cluster connectors connected correctly? <p>→ Yes GO to O5.</p> <p>→ No Fully CONNECT the instrument cluster connectors. TEST the system for normal operation.</p>
O5 CHECK THE AIR BAG INDICATOR BULB	
<p>1</p>  <p>GK3486-A</p>	<p>1 Remove the air bag indicator bulb and measure the resistance between the terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? <p>→ Yes GO to O6.</p> <p>→ No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.</p>
O6 CHECK CIRCUIT 1044 (WH/YE) FOR VOLTAGE	
 <p>Instrument Cluster C250a</p>	

(Continued)

DIAGNOSIS AND TESTING (Continued)

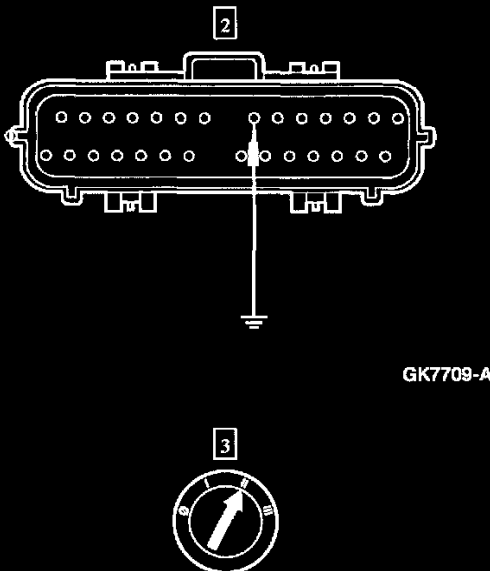
PINPOINT TEST O: AIR BAG INDICATOR IS INOPERATIVE/ALWAYS ON (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>O6 CHECK CIRCUIT 1044 (WH/YE) FOR VOLTAGE (Continued)</p>  <p style="text-align: right;">GK3510-A</p>	<p>4 Measure the voltage between instrument cluster C250a pin 7, circuit 1044 (WH/YE), harness side and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes GO to O7.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>O7 CHECK CIRCUIT 608 (BK/YE)</p>  <p style="text-align: center;">Air Bag Diagnostic Monitor C223</p> <p style="text-align: right;">GK7708-A</p>	<p>2 Refer to Air Bag Systems for the air bag diagnostic monitor disconnect procedure.</p> <p>3 Measure the resistance between instrument cluster C250a pin 6, circuit 608 (BK/YE), harness side and air bag diagnostic monitor C223 pin 7, circuit 608 (BK/YE), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes GO to O8.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>O8 ISOLATE AIR BAG DIAGNOSTIC MODULE</p>  <p style="text-align: center;">Instrument Cluster C250a</p>	

(Continued)

DIAGNOSIS AND TESTING (Continued)


PINPOINT TEST O: AIR BAG INDICATOR IS INOPERATIVE/ALWAYS ON (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>O8 ISOLATE AIR BAG DIAGNOSTIC MODULE (Continued)</p>  <p style="text-align: right;">GK7709-A</p>	<p>2 Connect a fused (10A) jumper wire between air bag diagnostic monitor C223 pin 7, circuit 608 (BK/YE), harness side and ground.</p> <ul style="list-style-type: none"> • Does the indicator illuminate? → Yes INSTALL a new air bag diagnostic monitor. REFER to Air Bag Systems. TEST the system for normal operation. → No INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.

O8

Test P: High Beam Indicator Is Inoperative

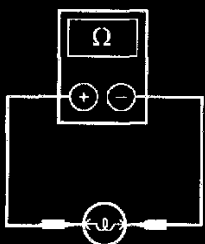

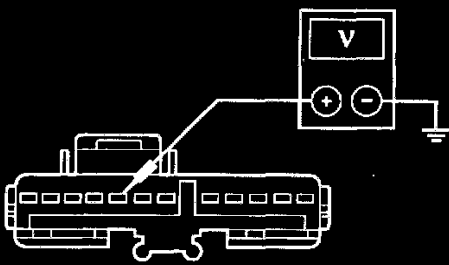
PINPOINT TEST P: HIGH BEAM INDICATOR IS INOPERATIVE

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>P1 CHECK THE HIGH BEAM INDICATOR BULB</p> 	

(Continued)

P1

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST P: HIGH BEAM INDICATOR IS INOPERATIVE (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>P1 CHECK THE HIGH BEAM INDICATOR BULB (Continued)</p> <p>2</p>  <p>GK3486-A</p>	<p>2 Remove the high beam indicator bulb and measure the resistance between the terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? <p>→ Yes GO to P2.</p> <p>→ No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.</p>
<p>P2 CHECK CIRCUIT 12 (LG/BK) FOR VOLTAGE</p> <p>1</p>  <p>Instrument Cluster</p> <p>3</p>  <p>GK7710-A</p>	<p>2 NOTE: Headlamps must be on for this test. Place the multifunction switch in the high beam position.</p> <p>3 Measure the voltage between instrument cluster C250c pin 8, circuit 12 (LG/BK), harness side and ground (except Motorhome); between instrument cluster C250a pin 5, circuit 12 (LG/BK), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No GO to P3.</p>

(Continued)


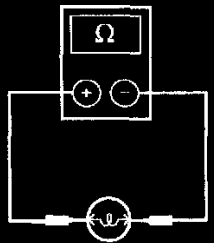


DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST P: HIGH BEAM INDICATOR IS INOPERATIVE (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>P3 VERIFY HIGH BEAM OPERATION</p>	<p>1 Verify the high beam headlamps operation.</p> <ul style="list-style-type: none"> • Do the high beam headlamps operate correctly? <p>→ Yes REPAIR the circuit. TEST the system for normal operation.</p> <p>→ No REFER to Lighting and Horns.</p>

P3

PINPOINT TEST Q: LH TURN INDICATOR IS INOPERATIVE

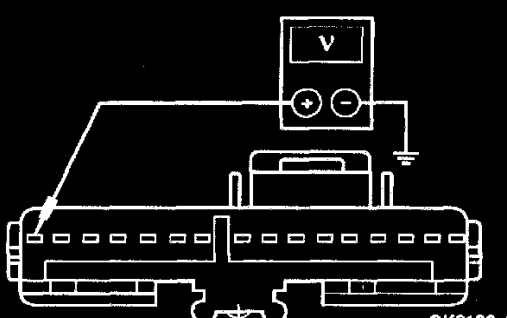

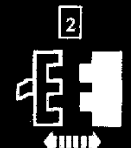
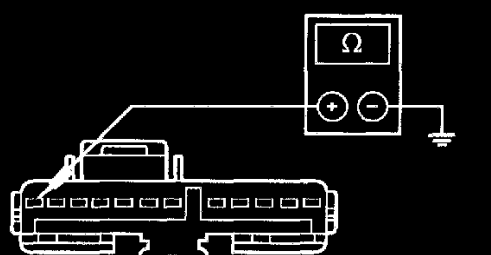
CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>Q1 CHECK THE LH TURN INDICATOR BULB</p> <div style="text-align: center;">  <p>1</p>  <p>2</p> <p>GK3486-A</p> </div>	<p>2 Remove the LH turn indicator bulb and measure the resistance between the terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? <p>→ Yes GO to Q2.</p> <p>→ No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.</p>
<p>Q2 CHECK CIRCUIT 3 (LG/WH) FOR VOLTAGE</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>1</p> <p>Instrument Cluster</p> </div> <div style="text-align: center;">  <p>2</p> </div> </div>	<p>3 Place the multifunction switch in the LH turn signal position.</p>

(Continued)

Q1 - Q2

DIAGNOSIS AND TESTING (Continued)


PINPOINT TEST Q: LH TURN INDICATOR IS INOPERATIVE (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>Q2 CHECK CIRCUIT 3 (LG/WH) FOR VOLTAGE (Continued)</p>	
<p style="text-align: center;">4</p>  <p style="text-align: right;">GK2182-A</p>	<p>4 Measure the voltage between instrument cluster C250b pin 16, circuit 3 (LG/WH), harness side and ground (except Motorhome); or between instrument cluster C250b pin 1, circuit 3 (LG/WH), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Does the voltage fluctuate between 0 and greater than 10 volts? <p>→ Yes GO to Q3.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>Q3 CHECK CIRCUIT 57 (BK) FOR OPEN</p>	
<p style="text-align: center;">1</p>  <p style="text-align: center;">2</p>  <p style="text-align: center;">Instrument Cluster</p> <p style="text-align: center;">3</p>  <p style="text-align: right;">GK7711-A</p>	<p>3 Measure the resistance between instrument cluster C250c pin 12, circuit 57 (BK), harness side and ground (except Motorhome); or between instrument cluster C250c pin 1, circuit 57 (BK), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

Q2 - Q3

Test R: RH Turn Indicator Is Inoperative

PINPOINT TEST R: RH TURN INDICATOR IS INOPERATIVE

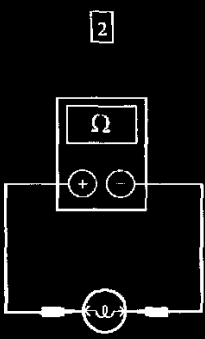


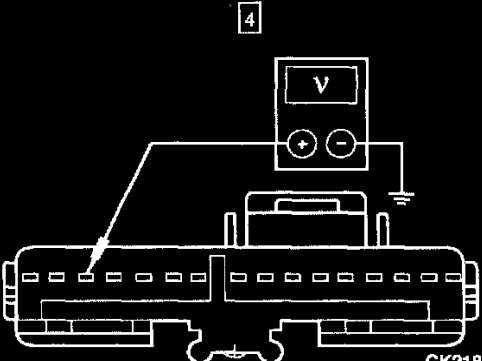


CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>R1 CHECK THE RH TURN INDICATOR BULB</p>	
<p style="text-align: center;">1</p> 	

(Continued)

R1

DIAGNOSIS AND TESTING (Continued)

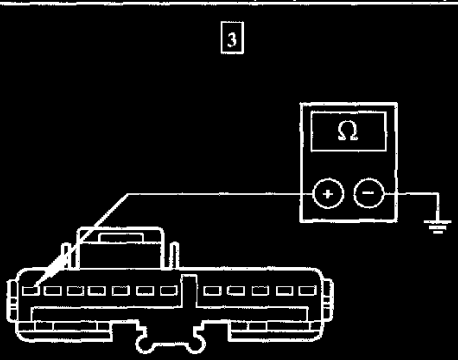
PINPOINT TEST R: RH TURN INDICATOR IS INOPERATIVE (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>R1 CHECK THE RH TURN INDICATOR BULB (Continued)</p> <div style="text-align: center;">  <p>GK3486-A</p> </div>	<p>2 Remove the RH turn indicator bulb and measure the resistance between the terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? → Yes GO to R2. → No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.
<p>R2 CHECK CIRCUIT 2 (WH/LB) FOR VOLTAGE</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Instrument Cluster C250b</p> </div> <div style="text-align: center;">  </div> </div> <div style="text-align: center; margin-top: 20px;">  <p>GK2185-A</p> </div>	<p>3 Place the multifunction switch in the RH turn signal position.</p> <p>4 Measure the voltage between instrument cluster C250b pin 14, circuit 2 (WH/LB), harness side and ground (except Motorhome); or between instrument cluster C250b pin 3, circuit 2 (WH/LB), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Does the voltage fluctuate between 0 and greater than 10 volts? → Yes GO to R3. → No REPAIR the circuit. TEST the system for normal operation.
<p>R3 CHECK CIRCUIT 57 (BK) FOR OPEN</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p>Instrument Cluster C250c</p> </div> </div>	

(Continued)

DIAGNOSIS AND TESTING (Continued)

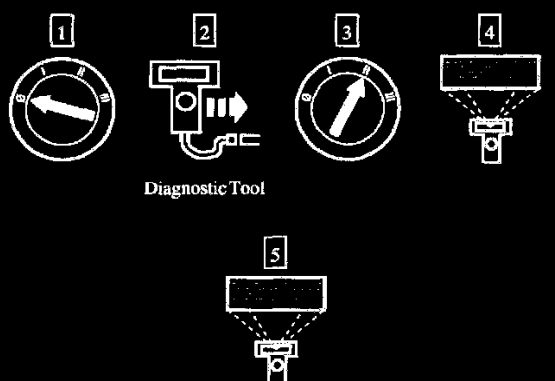
PINPOINT TEST R: RH TURN INDICATOR IS INOPERATIVE (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>R3 CHECK CIRCUIT 57 (BK) FOR OPEN (Continued)</p> <div style="text-align: center;">  <p>GK7711-A</p> </div>	<p>3 Measure the resistance between instrument cluster C250c pin 12, circuit 57 (BK), harness side and ground (except Motorhome); or between instrument cluster C250c pin 1, circuit 57 (BK), harness side and ground (Motorhome only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No REPAIR the circuit. TEST the system for normal operation.

R3

Test S: Door Ajar Indicator Does Not Work Correctly




PINPOINT TEST S: THE DOOR AJAR INDICATOR DOES NOT WORK CORRECTLY — EXCEPT MOTORHOME

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>S1 RETRIEVE THE DIAGNOSTIC TROUBLE CODES (DTCs)</p> <div style="text-align: center;">  <p>Diagnostic Tool</p> </div>	<p>4 Retrieve and record GEM continuous DTCs.</p> <p>5 Clear continuous DTCs.</p> <p>6 Retrieve GEM on-demand DTCs.</p> <ul style="list-style-type: none"> • Are any DTCs recorded? → Yes If DTC B1323 or B1325, GO to S3. → No GO to S2. <p>If DTC B1355, GO to S9.</p> <p>If DTC B1342, GO to S12.</p>

(Continued)

S1


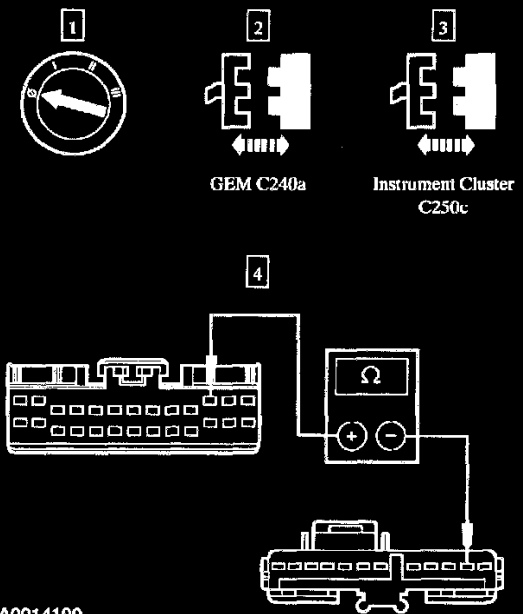

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST S: THE DOOR AJAR INDICATOR DOES NOT WORK CORRECTLY — EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>S2 CHECK DOOR AJAR INPUT</p> 	<p>1 Monitor the GEM PID DRAJRL.</p> <p>2 View the PID while opening and closing each door.</p> <ul style="list-style-type: none"> • Does the PID read correctly? <p>→ Yes GO to S3.</p> <p>→ No REFER to Lighting and Horns.</p>
<p>S3 CHECK INDICATOR CIRCUITS FOR SHORTS TO POWER</p> 	<ul style="list-style-type: none"> • Is the indicator illuminated? <p>→ Yes GO to S8.</p> <p>→ No GO to S4.</p>
<p>S4 ISOLATE INDICATOR CIRCUITS FOR SHORT TO GROUND</p> 	<ul style="list-style-type: none"> • Does the indicator remain on after the five second prove-out time? <p>→ Yes GO to S10.</p> <p>→ No GO to S5.</p>

(Continued)

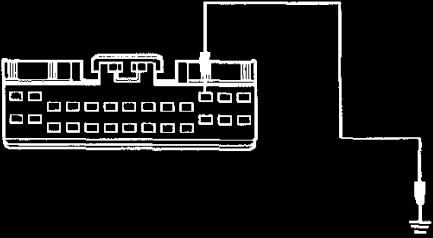


DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST S: THE DOOR AJAR INDICATOR DOES NOT WORK CORRECTLY — EXCEPT MOTORHOME (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>S5 CHECK GEM OUTPUT FUNCTION</p> 	<p>1 Select the GEM active command for the door ajar indicator lamp. Trigger and monitor the door ajar warning lamp active command to ON and OFF.</p> <ul style="list-style-type: none"> • Does the indicator operate correctly? <p>→ Yes GO to S12.</p> <p>→ No GO to S6.</p>
<p>S6 CHECK CIRCUIT 433 (DG/OG) FOR OPEN CIRCUIT</p>  <p>A0014199</p>	<p>4 Measure the resistance between GEM C240a pin 11, circuit 433 (DG/OG), harness side and instrument cluster C250c pin 2, circuit 433 (DG/OG), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes GO to S7.</p> <p>→ No REPAIR the circuit. CLEAR the DTCs. TEST the system for normal operation.</p>
<p>S7 CHECK CIRCUIT 433 (DG/OG) OPERATION</p>  <p>Instrument Cluster C250c</p>	


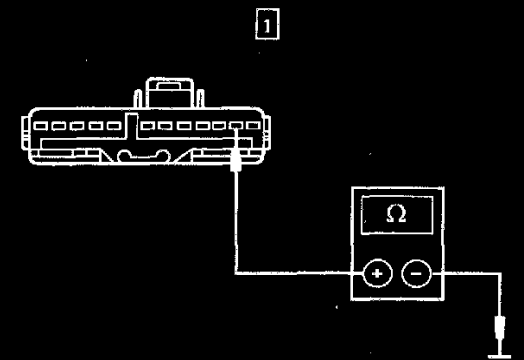

(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST S: THE DOOR AJAR INDICATOR DOES NOT WORK CORRECTLY — EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>S7 CHECK CIRCUIT 433 (DG/OG) OPERATION (Continued)</p> <p style="text-align: center;">2</p>  <p>A0014200</p>	<p>2 Install a fused (10A) jumper wire between GEM C240a pin 11, circuit 433 (DG/OG), harness side and ground.</p> <ul style="list-style-type: none"> • Does the indicator illuminate? → Yes RECONNECT all connectors. GO to S12. → No GO to S13.
<p>S8 CHECK CIRCUIT 433 (DG/OG) FOR VOLTAGE</p> <p style="text-align: center;">1</p>  <p style="text-align: center;">2</p>  <p style="text-align: center;">GEM C240c</p>	<p>3 Measure the voltage between GEM C240a pin 11, circuit 433 (DG/OG), harness side and ground.</p> <ul style="list-style-type: none"> • Is voltage present? → Yes GO to S9. → No GO to S12.

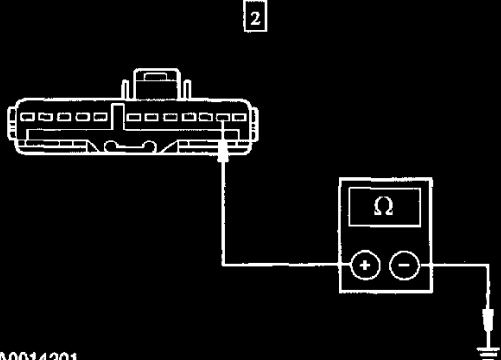

(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST S: THE DOOR AJAR INDICATOR DOES NOT WORK CORRECTLY — EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>S9 CHECK THE INSTRUMENT CLUSTER FOR SHORT TO POWER</p>  <p>Instrument Cluster C250c</p>	<p>2 Measure the voltage between GEM C240a pin 11, circuit 433 (DG/OG), harness side and ground.</p> <ul style="list-style-type: none"> • Is voltage present? → Yes REPAIR the circuit. TEST the system for normal operation. → No INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.
<p>S10 CHECK CIRCUIT 433 (DG/OG) FOR OPEN</p>  <p>A0014201</p>	<p>1 Measure the resistance between instrument cluster C250c pin 2, circuit 433 (DG/OG), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 10,000 ohms? → Yes GO to S13. → No GO to S11.
<p>S11 CHECK CIRCUIT 433 (DG/OG) FOR SHORT TO GROUND</p>  <p>GEM</p>	

(Continued)

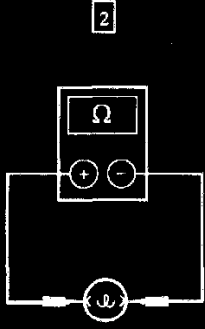
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST S: THE DOOR AJAR INDICATOR DOES NOT WORK CORRECTLY — EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>S11 CHECK CIRCUIT 433 (DG/OG) FOR SHORT TO GROUND (Continued)</p>  <p>A0014201</p>	<p>S11 CHECK CIRCUIT 433 (DG/OG) FOR SHORT TO GROUND (Continued)</p> <p>2 Measure the resistance between instrument cluster C250c pin 2, circuit 433 (DG/OG), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes GO to S12.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>S12 CHECK FOR CORRECT GEM OPERATION</p>	<p>1 Check:</p> <ul style="list-style-type: none"> • for corrosion • for pushed-out pins • connector seated correctly <p>2 Connect any disconnected connectors.</p> <p>3 Make sure all other system connectors are fully seated.</p> <p>4 Operate the system and verify the concern is still present.</p> <ul style="list-style-type: none"> • Is the concern still present? <p>→ Yes INSTALL a new GEM. REFER to Multifunction Electronic Control Module (General Module). CLEAR the DTCs. REPEAT the GEM self-test.</p> <p>→ No The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>
<p>S13 CHECK THE DOOR AJAR INDICATOR BULB</p> 	

(Continued)

DIAGNOSIS AND TESTING (Continued)

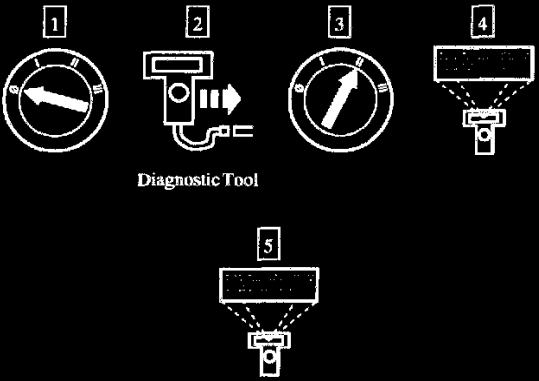
PINPOINT TEST S: THE DOOR AJAR INDICATOR DOES NOT WORK CORRECTLY — EXCEPT MOTORHOME (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>S13 CHECK THE DOOR AJAR INDICATOR BULB (Continued)</p> <div style="text-align: center;">  <p>GK3486-A</p> </div>	<p>2 Remove the door ajar indicator bulb and measure the resistance between the terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.

S13

Test T: Safety Belt Warning Indicator Does Not Work Correctly



PINPOINT TEST T: THE SAFETY BELT WARNING INDICATOR DOES NOT WORK CORRECTLY — EXCEPT MOTORHOME

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>T1 RETRIEVE THE DIAGNOSTIC TROUBLE CODES (DTCs)</p> <div style="text-align: center;">  <p>Diagnostic Tool</p> </div>	<p>4 Retrieve and record GEM continuous DTCs.</p> <p>5 Clear continuous DTCs.</p> <p>6 Retrieve GEM on-demand DTCs.</p> <ul style="list-style-type: none"> • Are any DTCs recorded? → Yes If DTC B1426 or B1428, GO to T3. If DTC B1342, GO to T16. → No GO to T2.
<p>T2 CHECK SAFETY BELT INPUT</p>	<p>1 Monitor the GEM PID D__SBELT.</p>

(Continued)

T1 - T2

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST T: THE SAFETY BELT WARNING INDICATOR DOES NOT WORK CORRECTLY
— EXCEPT MOTORHOME (Continued)**





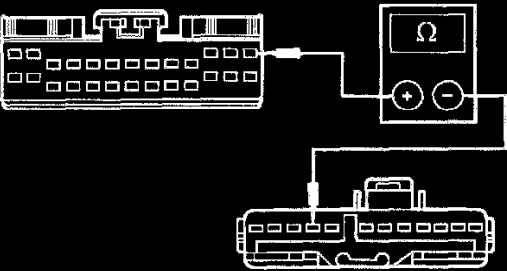

CONDITIONS	DETAILS/RESULTS/ACTIONS
T2 CHECK SAFETY BELT INPUT (Continued)	
	<p>2 View the PID while connecting and disconnecting the driver safety belt.</p> <ul style="list-style-type: none"> • Does the PID read correctly? <p>→ Yes GO to T3.</p> <p>→ No GO to T8.</p>
T3 CHECK INDICATOR CIRCUITS FOR SHORTS TO POWER	
<p>1</p> 	<ul style="list-style-type: none"> • Is the indicator illuminated? <p>→ Yes GO to T12.</p> <p>→ No GO to T4.</p>
T4 ISOLATE INDICATOR CIRCUITS FOR SHORT TO GROUND	
<p>1</p> 	<ul style="list-style-type: none"> • Does the indicator remain on after the 60-second prove-out time? <p>→ Yes GO to T14.</p> <p>→ No GO to T5.</p>

(Continued)

T2 - T4

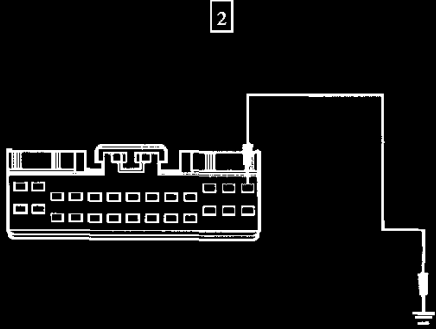
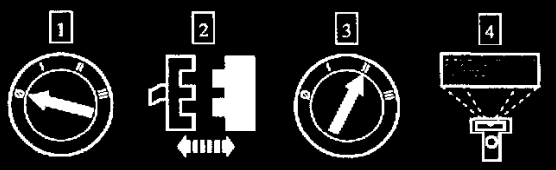
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST T: THE SAFETY BELT WARNING INDICATOR DOES NOT WORK CORRECTLY — EXCEPT MOTORHOME (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>T5 CHECK GEM OUTPUT FUNCTION</p>	
	<p>1 Select the GEM active command for the safety belt indicator lamp. Trigger and monitor the safety belt warning lamp active command to ON and OFF.</p> <ul style="list-style-type: none"> • Does the indicator operate correctly? <p>→ Yes GO to T16.</p> <p>→ No GO to T6.</p>
<p>T6 CHECK CIRCUIT 450 (DG/LG) FOR OPEN CIRCUIT</p>	
   <p>GEM C240a Instrument Cluster C250a</p> <p>4</p>  <p>GK7936-A</p>	<p>4 Measure the resistance between GEM C240a pin 13, circuit 450 (DG/LG), harness side and instrument cluster C250a pin 9, circuit 450 (DG/LG), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes GO to T7.</p> <p>→ No REPAIR the circuit. CLEAR the DTCs. TEST the system for normal operation.</p>
<p>T7 CHECK CIRCUIT 450 (DG/LG) OPERATION</p>	
 <p>Instrument Cluster C250a</p>	

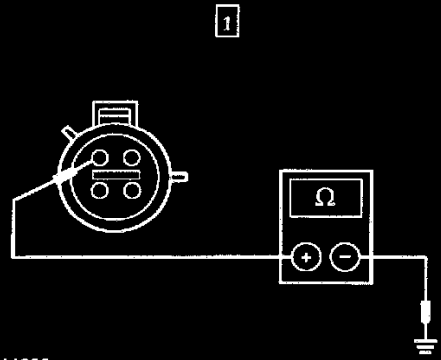


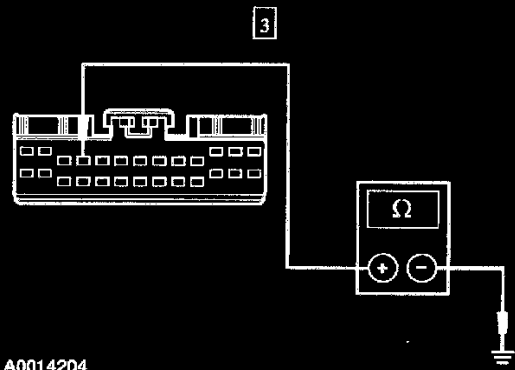
(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST T: THE SAFETY BELT WARNING INDICATOR DOES NOT WORK CORRECTLY
— EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>T7 CHECK CIRCUIT 450 (DG/LG) OPERATION (Continued)</p>  <p>A0014202</p>	<p>2 Install a fused (10A) jumper wire between GEM C240a pin 13, circuit 450 (DG/LG), harness side and ground.</p> <ul style="list-style-type: none"> • Does the indicator illuminate? <p>→ Yes RECONNECT all connectors. GO to T16.</p> <p>→ No GO to T17.</p>
<p>T8 CHECK THE SAFETY BELT SWITCH</p>  <p>Safety Belt Switch C302</p>	<p>4 Monitor the GEM PID D__SBELT.</p> <p>5 View the PID while connecting and disconnecting a fused (10A) jumper wire between safety belt switch C302 pin 1, circuit 85 (BR/LB), harness side and ground.</p> <ul style="list-style-type: none"> • Does the PID read correctly? <p>→ Yes GO to T9.</p> <p>→ No GO to T10.</p>

(Continued)

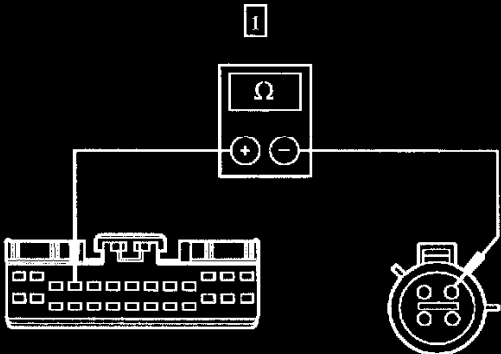

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST T: THE SAFETY BELT WARNING INDICATOR DOES NOT WORK CORRECTLY
— EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>T9 CHECK CIRCUIT 57 (BK) FOR OPEN CIRCUIT</p> <p>1</p>  <p>A0014203</p>	<p>1 Measure the resistance between safety belt switch C302 pin 2, circuit 57 (BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes INSTALL a new safety belt switch. TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>T10 CHECK CIRCUIT 85 (BR/LB) FOR SHORT TO GROUND</p> <p>1</p>  <p>2</p>  <p>GEM C240a</p> <p>3</p>  <p>A0014204</p>	<p>3 Measure the resistance between GEM C240a pin 4, circuit 85 (BR/LB), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes GO to T11.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

(Continued)

T9 - T10

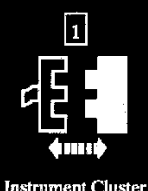
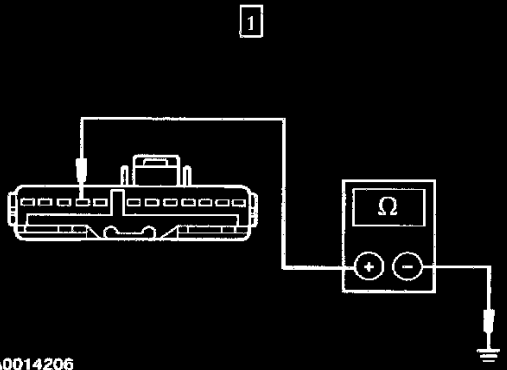

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST T: THE SAFETY BELT WARNING INDICATOR DOES NOT WORK CORRECTLY
— EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>T11 CHECK CIRCUIT 85 (BN/LB) FOR OPEN</p>  <p>A0014205</p>	<p>1 Measure the resistance between GEM C240a pin 4, circuit 85 (BN/LB), harness side and safety belt switch C302 pin 1, circuit 85 (BN/LB), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes RECONNECT all connectors. GO to T16. → No REPAIR the circuit. TEST the system for normal operation.
<p>T12 CHECK CIRCUIT 450 (DG/LG) FOR VOLTAGE</p>  <p>GEM C240a</p>	<p>3 Measure the voltage between GEM C240a pin 13, circuit 450 (DG/LG), harness side and ground.</p> <ul style="list-style-type: none"> • Is voltage present? → Yes GO to T13. → No GO to T16.

(Continued)

T11 - T12

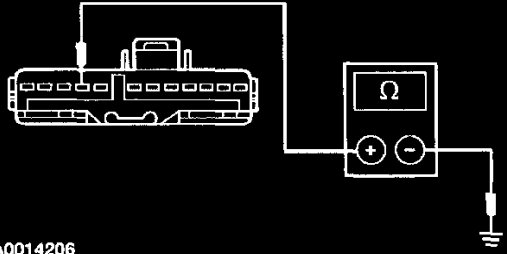

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST T: THE SAFETY BELT WARNING INDICATOR DOES NOT WORK CORRECTLY
— EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>T13 CHECK THE INSTRUMENT CLUSTER FOR SHORT TO POWER</p>  <p>Instrument Cluster</p>	<p>2 Measure the voltage between GEM C240a pin 13, circuit 450 (DG/LG), harness side and ground.</p> <ul style="list-style-type: none"> • Is voltage present? → Yes REPAIR the circuit. TEST the system for normal operation. → No INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.
<p>T14 CHECK CIRCUIT 450 (DG/LG) FOR OPEN</p>  <p>A0014206</p>	<p>1 Measure the resistance between instrument cluster C250a pin 9, circuit 450 (DG/LG), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 10,000 ohms? → Yes GO to T17. → No GO to T15.
<p>T15 CHECK CIRCUIT 450 (DG/LG) FOR SHORT TO GROUND</p>  <p>GEM</p>	

(Continued)

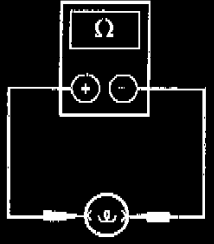
T13 - T15

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST T: THE SAFETY BELT WARNING INDICATOR DOES NOT WORK CORRECTLY
— EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
T15 CHECK CIRCUIT 450 (DG/LG) FOR SHORT TO GROUND (Continued)	
<p style="text-align: center;">2</p>  <p>A0014206</p>	<p>2 Measure the resistance between instrument cluster C250a pin 9, circuit 450 (DG/LG), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes GO to T16.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
T16 CHECK FOR CORRECT GEM OPERATION	
	<p>1 Check:</p> <ul style="list-style-type: none"> • for corrosion • for pushed-out pins • connector seated correctly <p>2 Connect any disconnected connectors.</p> <p>3 Make sure all other system connectors are fully seated.</p> <p>4 Operate the system and verify the concern is still present.</p> <ul style="list-style-type: none"> • Is the concern still present? <p>→ Yes INSTALL a new GEM. REFER to Multifunction Electronic Control Module (General Module). CLEAR the DTCs. REPEAT the GEM self-test.</p> <p>→ No The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>
T17 CHECK THE SAFETY BELT INDICATOR BULB	
<p style="text-align: center;">1</p> 	

(Continued)


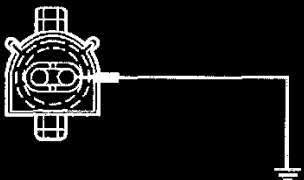
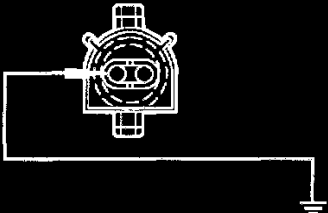

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST T: THE SAFETY BELT WARNING INDICATOR DOES NOT WORK CORRECTLY
— EXCEPT MOTORHOME (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p data-bbox="219 210 966 241">T17 CHECK THE SAFETY BELT INDICATOR BULB (Continued)</p> <p data-bbox="487 262 511 294">2</p>  <p data-bbox="657 598 747 630">GK3486-A</p>	<p data-bbox="812 262 1380 325">2 Remove the safety belt indicator bulb and measure the resistance between the terminals.</p> <ul data-bbox="860 346 1380 630" style="list-style-type: none">• Is the bulb OK?→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.→ No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.

T17

Test W: 4x4/4x4 Low Range Indicator Is Inoperative - Manual Shift

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST W: 4X4/4X4 LOW RANGE INDICATOR IS INOPERATIVE — MANUAL SHIFT**



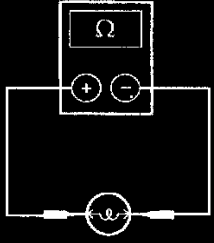
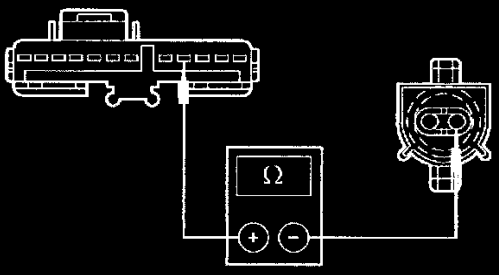
CONDITIONS	DETAILS/RESULTS/ACTIONS
W1 CHECK THE 4X4 RANGE SELECT SWITCH	
<p data-bbox="462 247 487 279">1</p>  <p data-bbox="358 415 592 436">4x4 Range Select Switch C161</p>	
<p data-bbox="462 478 487 510">2</p>  <p data-bbox="654 825 747 846">GK7992-A</p>	<p data-bbox="787 478 812 510">2</p> <p data-bbox="836 478 1367 583">If the 4x4 indicator is inoperative, connect a fused (10A) jumper wire between 4x4 range select switch C161 pin 2, circuit 210 (LB), harness side and ground.</p>
<p data-bbox="462 898 487 930">3</p>  <p data-bbox="654 1245 747 1266">GK7993-A</p>	<p data-bbox="787 898 812 930">3</p> <p data-bbox="836 898 1367 1003">If the 4x4 LOW RANGE indicator is inoperative, connect a fused (10A) jumper wire between 4x4 range select switch C161 pin 1, circuit 784 (LB/BK), harness side and ground.</p>
<p data-bbox="462 1318 487 1350">4</p> 	

(Continued)

W1

DIAGNOSIS AND TESTING (Continued)

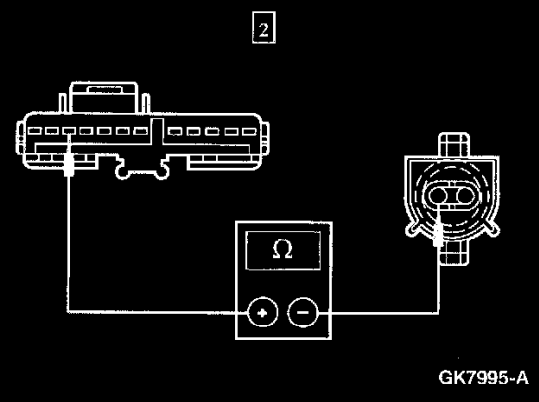
PINPOINT TEST W: 4X4/4X4 LOW RANGE INDICATOR IS INOPERATIVE — MANUAL SHIFT (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>W1 CHECK THE 4X4 RANGE SELECT SWITCH (Continued)</p>	<ul style="list-style-type: none"> • Does the indicator illuminate? → Yes INSTALL a new 4x4 range select switch. TEST the system for normal operation. → No GO to W2.
<p>W2 CHECK THE INDICATOR BULB</p>	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>1</p>  </div> <div style="text-align: center;"> <p>2</p>  </div> </div> <p style="text-align: center;">Instrument Cluster C250c</p> <div style="text-align: center; margin-top: 20px;"> <p>3</p>  <p>GK3487-A</p> </div>	<p>3 Remove the inoperative indicator bulb and measure the resistance between the bulb terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? → Yes GO to W3. → No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.
<p>W3 CHECK THE INDICATOR CONTROL CIRCUIT</p>	
<div style="text-align: center;"> <p>1</p>  <p>GK7994-A</p> </div>	<p>1 If the 4x4 indicator is inoperative, measure the resistance between instrument cluster C250c pin 4, circuit 210 (LB), harness side and 4x4 range select switch C161 pin 2, circuit 210 (LB), harness side.</p>

(Continued)

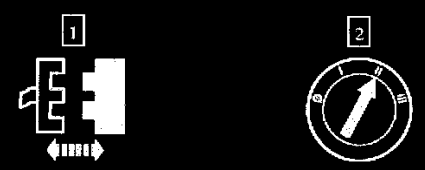
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST W: 4X4/4X4 LOW RANGE INDICATOR IS INOPERATIVE — MANUAL SHIFT (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>W3 CHECK THE INDICATOR CONTROL CIRCUIT (Continued)</p>  <p>GK7995-A</p>	<p>2 If the 4x4 LOW RANGE indicator is inoperative, measure the resistance between instrument cluster C250c pin 10, circuit 784 (LB/BK), harness side and 4x4 range select switch C161 pin 1, circuit 784 (LB/BK), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No REPAIR the circuit in question. TEST the system for normal operation.

W3

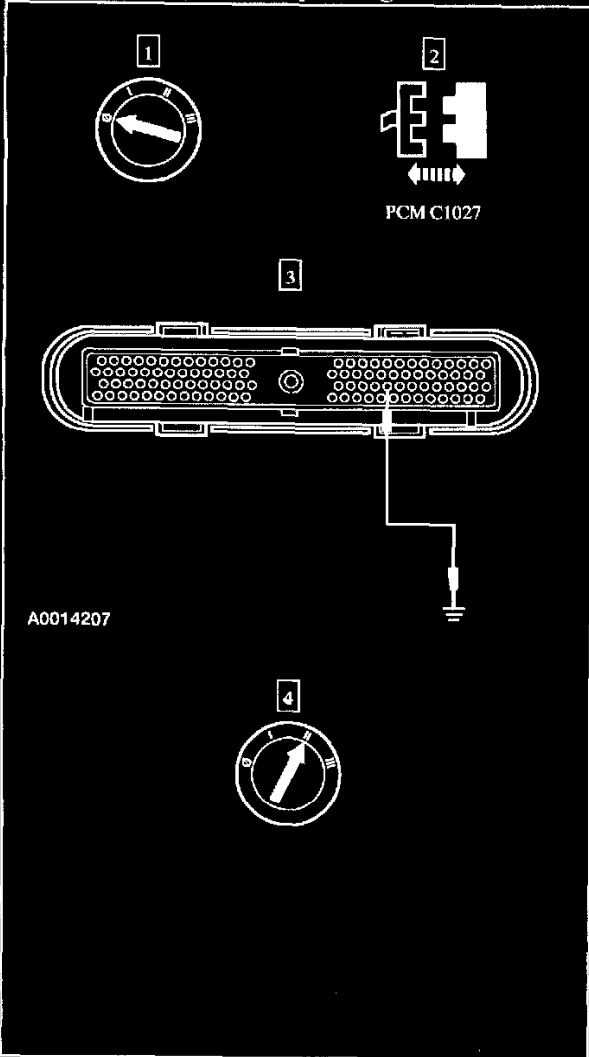
PINPOINT TEST X: 4X4/4X4 LOW RANGE INDICATOR IS ALWAYS ON — MANUAL SHIFT

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>X1 CHECK THE 4X4 RANGE SELECT SWITCH</p>  <p>4X4 Range Select Switch C161</p>	<ul style="list-style-type: none"> • Does either the 4x4 or the 4x4 LOW RANGE indicator illuminate? → Yes If the 4x4 indicator illuminates, REPAIR circuit 210 (LB). TEST the system for normal operation. If the 4x4 LOW RANGE indicator illuminates, REPAIR circuit 784 (LB/BK). TEST the system for normal operation. → No INSTALL a new 4x4 range select switch. TEST the system for normal operation.

X1

DIAGNOSIS AND TESTING (Continued)

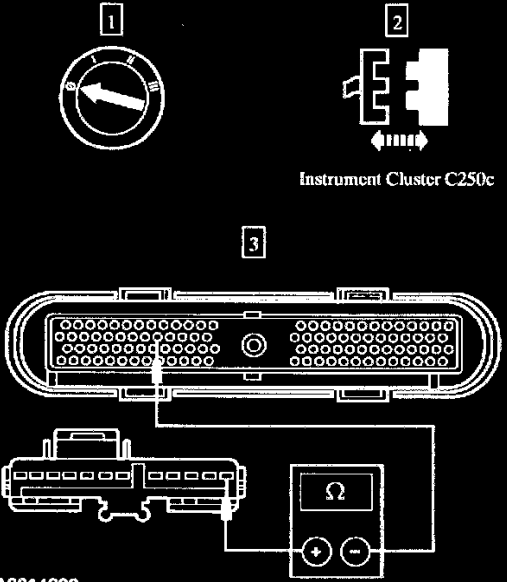
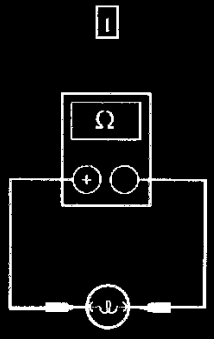
PINPOINT TEST Y: THE WAIT TO START INDICATOR IS INOPERATIVE — DIESEL ONLY

CONDITIONS	DETAILS/RESULTS/ACTIONS
Y1 CHECK WAIT TO START INDICATOR ILLUMINATION	
<p>⚠ CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p>	
	<p>3 Connect a fused (10A) jumper wire between power train control module (PCM) pin 70, circuit 464 (BK/PK), harness side and ground.</p> <ul style="list-style-type: none"> • Does the indicator illuminate? → Yes REFER to Computers and Control Systems. → No GO to Y2.

(Continued)

Y1

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST Y: THE WAIT TO START INDICATOR IS INOPERATIVE — DIESEL ONLY (Continued)**


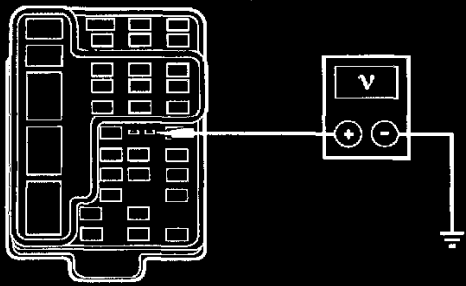



CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>Y2 CHECK CIRCUIT 464 (BK/PK) FOR OPEN</p> <p>⚠ CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p>  <p>Instrument Cluster C250c</p> <p>A0014208</p>	<p>3 Measure the resistance between instrument cluster C250c pin 1, circuit 464 (BK/PK), harness side and PCM pin 70, circuit 464 (BK/PK), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes GO to Y3. → No REPAIR the circuit. TEST the system for normal operation.
<p>Y3 CHECK THE WAIT TO START INDICATOR BULB</p>  <p>GK3486-A</p>	<p>1 Remove the WAIT TO START indicator bulb and measure the resistance between the bulb terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.

Y2 - Y3

Test Z: Water In Fuel Indicator Is Inoperative

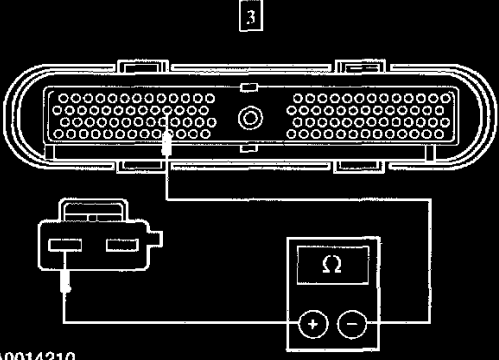
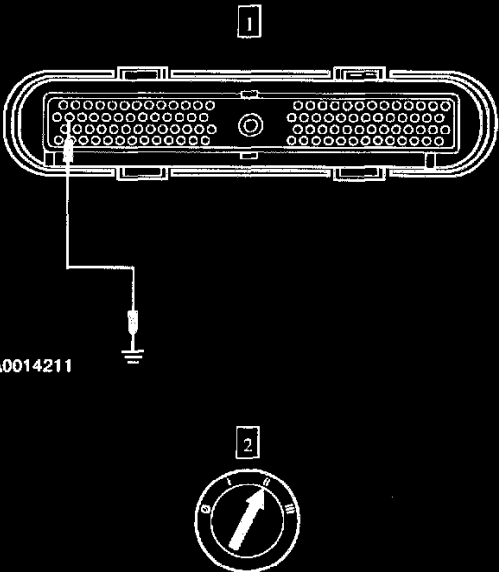
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST Z: THE WATER IN FUEL INDICATOR IS INOPERATIVE — DIESEL ONLY

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>Z1 CHECK WATER IN FUEL SWITCH</p>  <p>Water in Fuel Switch C158</p>  <p>A0010209</p> 	<p>2 Connect a fused (10A) jumper wire between water in fuel switch C158, circuit 1280 (GY/RD), harness side and ground.</p> <ul style="list-style-type: none"> • Does the indicator illuminate? → Yes INSTALL a new water in fuel switch (part of fuel heater). REFER to Fuel Delivery and Air Induction. TEST the system for normal operation. → No GO to Z2.
<p>Z2 CHECK CIRCUIT 1280 (GY/RD) FOR OPEN</p>	
<p>CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p>	
  <p>PCM C1027</p>	

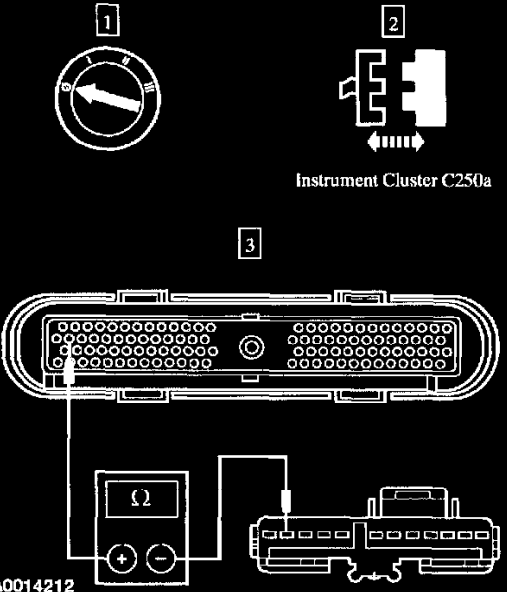
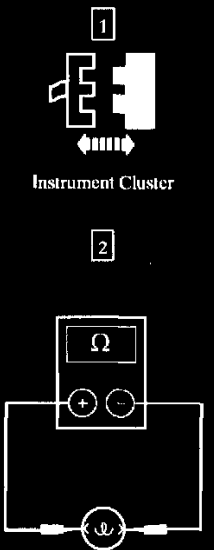
(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST Z: THE WATER IN FUEL INDICATOR IS INOPERATIVE — DIESEL ONLY (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>Z2 CHECK CIRCUIT 1280 (GY/RD) FOR OPEN (Continued)</p>  <p>A0014210</p>	<p>Z3 Measure the resistance between PCM C1027 pin 36, circuit 1280 (GY/RD), harness side and water in fuel switch C158, circuit 1280 (GY/RD), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes GO to Z3. → No REPAIR the circuit. TEST the system for normal operation.
<p>Z3 CHECK THE WATER IN FUEL INDICATOR ILLUMINATION</p>	
<p>CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p>	
 <p>A0014211</p>	<p>Z3 Connect a fused (10A) jumper wire between PCM C1027 pin 28, circuit 643 (RD), harness side and ground.</p> <ul style="list-style-type: none"> • Does the indicator illuminate? → Yes REFER to Computers and Control Systems. → No GO to Z4.

(Continued)

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST Z: THE WATER IN FUEL INDICATOR IS INOPERATIVE — DIESEL ONLY (Continued)**

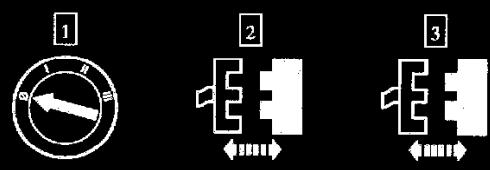
CONDITIONS	DETAILS/RESULTS/ACTIONS
Z4 CHECK CIRCUIT 643 (RD) FOR OPEN	
<p>⚠ CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p>	
 <p>Instrument Cluster C250a</p> <p>A0014212</p>	<p>3 Measure the resistance between PCM C1027 pin 28, circuit 643 (RD), harness side and instrument cluster C250a pin 11, circuit 643 (RD), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes GO to Z5. → No REPAIR the circuit. TEST the system for normal operation.
Z5 CHECK WATER IN FUEL INDICATOR BULB	
 <p>Instrument Cluster</p> <p>GK3486-A</p>	<p>2 Remove the WATER IN FUEL indicator bulb and measure the resistance between the bulb terminals.</p> <ul style="list-style-type: none"> • Is the bulb OK? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No INSTALL a new bulb. REFER to Instrument Panel Bulb. TEST the system for normal operation.

Z4 - Z5

Test AB: Speed Control Indicator Is Never/Always On

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST AB: THE SPEED CONTROL INDICATOR IS NEVER/ALWAYS ON — EXCEPT MOTORHOME

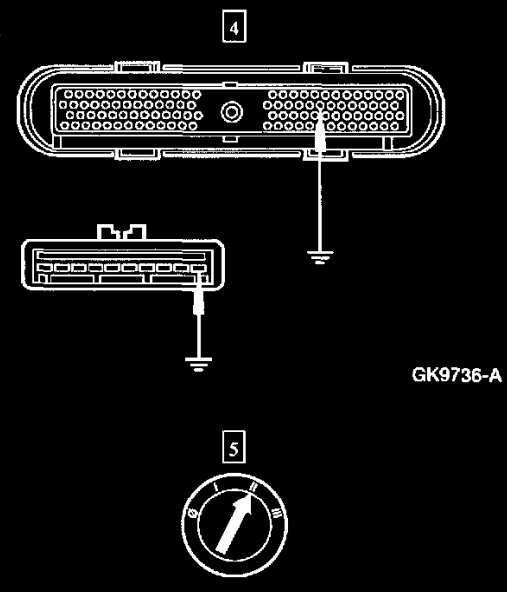
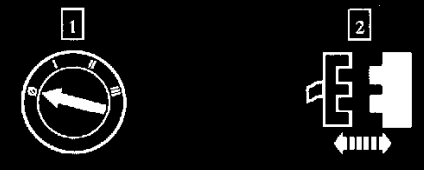
CONDITIONS	DETAILS/RESULTS/ACTIONS
AB1 CHECK SPEED CONTROL OPERATION	
<p>⚠ CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p>	
	<p>1 Test drive the vehicle and operate the speed control.</p> <ul style="list-style-type: none"> • Does the speed control operate correctly? <p>→ Yes If the speed control indicator is never on, GO to AB2.</p> <p>If the speed control indicator is always on, GO to AB4.</p> <p>→ No REFER to Cruise Control.</p>
AB2 CHECK THE SPEED CONTROL INDICATOR CIRCUIT	
<p>⚠ CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p>	
 <p>1 2 3</p> <p>Speed Control Servo (Gasoline Only) C1067</p> <p>PCM (Diesel Only) C1027</p>	

(Continued)

AB1 - AB2

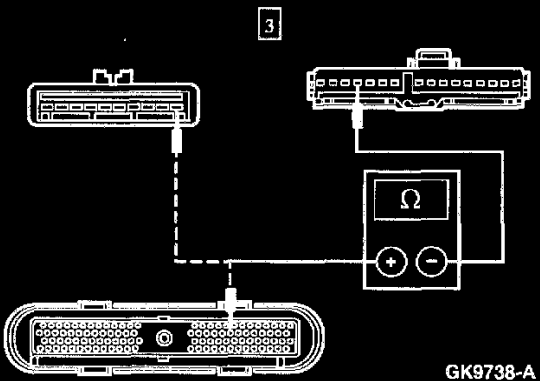
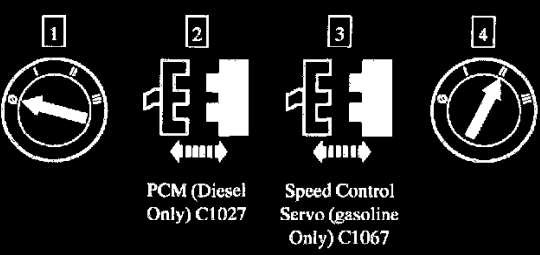

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST AB: THE SPEED CONTROL INDICATOR IS NEVER/ALWAYS ON — EXCEPT MOTORHOME (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AB2 CHECK THE SPEED CONTROL INDICATOR CIRCUIT (Continued)</p>  <p style="text-align: right;">GK9736-A</p>	<p>4 Connect a fused (10A) jumper wire between speed control servo C1067 pin 1, circuit 203 (OG/LB), harness side and ground (gasoline only); or between PCM C1027 pin 45, circuit 203 (OG/LB), harness side and ground (diesel only).</p> <ul style="list-style-type: none"> • Does the indicator illuminate? → Yes If gasoline, INSTALL a new speed control servo. REFER to Cruise Control. If diesel, INSTALL a new PCM. REFER to Computers and Control Systems. TEST the system for normal operation. → No GO to AB3.
<p>AB3 CHECK CIRCUIT 203 (OG/LB)</p>	
<p>⚠ CAUTION: Use correct probe adapter(s) when making measurements. Failure to use correct probe adapter(s) may damage the connector.</p>	
 <p style="text-align: center;">Instrument Cluster C250b</p>	<p style="text-align: right;">(Continued)</p>

DIAGNOSIS AND TESTING (Continued)

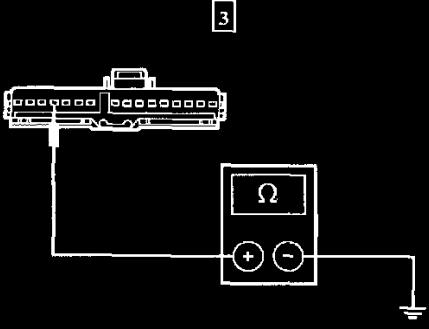
PINPOINT TEST AB: THE SPEED CONTROL INDICATOR IS NEVER/ALWAYS ON — EXCEPT MOTORHOME (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AB3 CHECK CIRCUIT 203 (OG/LB) (Continued)</p> 	<p>3 Measure the resistance between speed control servo C1067 pin 1, circuit 203 (OG/LB), harness side and instrument cluster C250b pin 13, circuit 203 (OG/LB), harness side (gasoline only); or between PCM C1027 pin 45, circuit 203 (OG/LB), harness side and instrument cluster C250b pin 13, circuit 203 (OG/LB), harness side (diesel only).</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No REPAIR the circuit. TEST the system for normal operation.
<p>AB4 CHECK SPEED CONTROL SERVO (gasoline ONLY) OR PCM (DIESEL ONLY)</p>  <p>PCM (Diesel Only) C1027 Speed Control Servo (gasoline Only) C1067</p>	<ul style="list-style-type: none"> • Does the indicator illuminate? → Yes GO to AB5. → No INSTALL a new PCM. REFER to Computers and Control Systems. <p>REFER to Cruise Control (gasoline only). TEST the system for normal operation.</p>
<p>AB5 CHECK THE SPEED CONTROL INDICATOR CIRCUIT FOR SHORT TO GROUND</p>  <p>Instrument Cluster C250b</p>	

(Continued)

DIAGNOSIS AND TESTING (Continued)


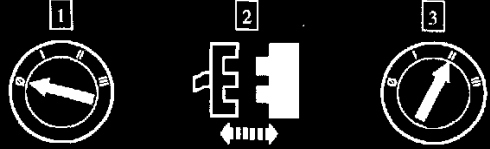
PINPOINT TEST AB: THE SPEED CONTROL INDICATOR IS NEVER/ALWAYS ON — EXCEPT MOTORHOME (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AB5 CHECK THE SPEED CONTROL INDICATOR CIRCUIT FOR SHORT TO GROUND (Continued)</p>  <p style="text-align: right;">GK9741-A</p>	<p>3 Measure the resistance between instrument cluster C250b pin 13, circuit 203 (OG/LB), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No REPAIR the circuit. TEST the system for normal operation.

AB5

Test AC: Theft Indicator Is Never/Always On

PINPOINT TEST AC: THE THEFT INDICATOR IS NEVER/ALWAYS ON — EXCEPT MOTORHOME

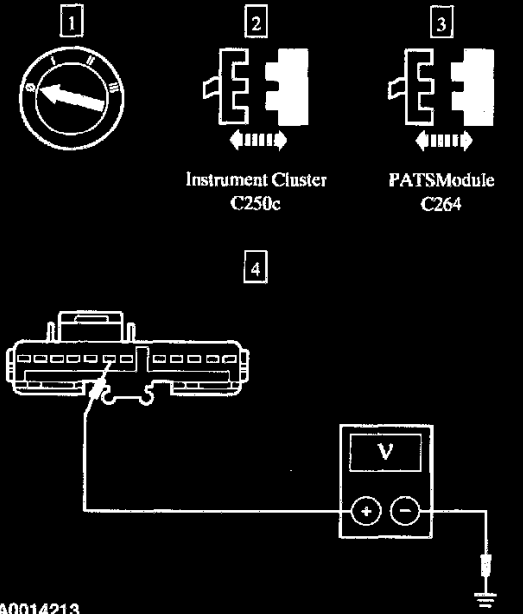

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AC1 CHECK THE THEFT INDICATOR OPERATION</p> 	<ul style="list-style-type: none"> • Is the indicator always on? → Yes GO to AC2. → No GO to AC3.
<p>AC2 CHECK THE PATS MODULE</p>  <p style="text-align: center;">PATS Module C264</p>	<ul style="list-style-type: none"> • Is the indicator illuminated? → Yes GO to AC4. → No INSTALL a new PATS module, GO to AC5.

(Continued)

AC1 - AC2

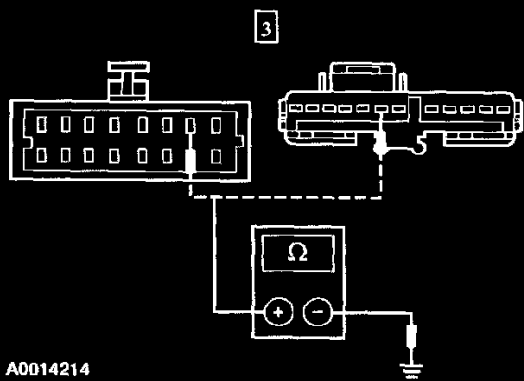
DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST AC: THE THEFT INDICATOR IS NEVER/ALWAYS ON — EXCEPT MOTORHOME (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AC3 CHECK CIRCUIT 1269 (OG/RD) FOR SHORT TO POWER</p>  <p>1</p> <p>2</p> <p>3</p> <p>Instrument Cluster C250c</p> <p>PATS Module C264</p> <p>4</p> <p>A0014213</p>	<p>4</p> <p>Measure the voltage between instrument cluster C250c pin 7, circuit 1269 (OG/RD), harness side and ground.</p> <ul style="list-style-type: none"> • Is voltage present? → Yes REPAIR the circuit. TEST the system for normal operation. → No GO to AC4.
<p>AC4 CHECK CIRCUIT 1269 (OG/RD) FOR OPEN OR SHORT TO GROUND</p>  <p>1</p> <p>2</p> <p>Instrument Cluster C250c</p>	<p>(Continued)</p>

AC3 - AC4

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST AC: THE THEFT INDICATOR IS NEVER/ALWAYS ON — EXCEPT MOTORHOME (Continued)**

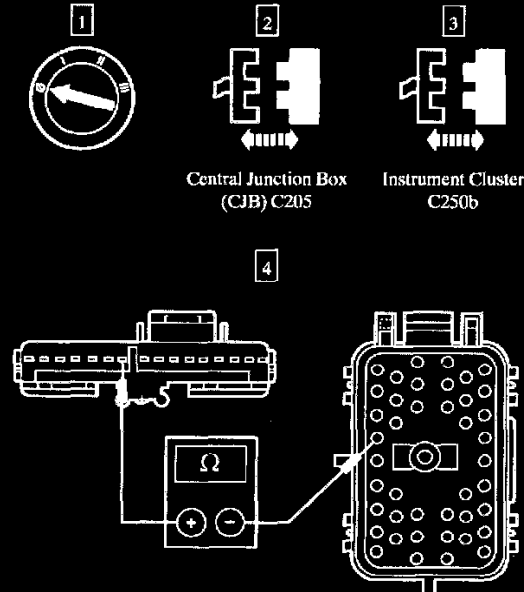



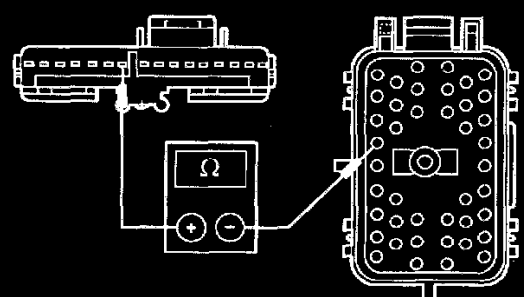
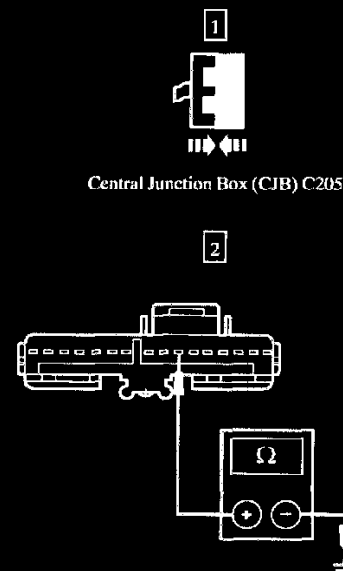

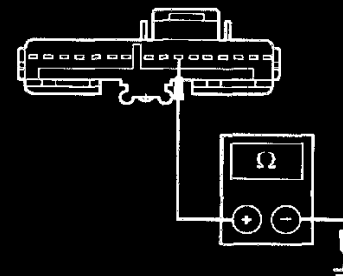
CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AC4 CHECK CIRCUIT 1269 (OG/RD) FOR OPEN OR SHORT TO GROUND (Continued)</p>  <p>A0014214</p>	<p>3 Measure the resistance between instrument cluster C250c pin 7, circuit 1269 (OG/RD), harness side and PATS module C264 pin 2, circuit 1269 (OG/RD), harness side; and between instrument cluster C250c pin 7, circuit 1269 (OG/RD), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms between the instrument cluster and the PATS module and greater than 10,000 ohms between the instrument cluster and ground? <p>→ Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>AC5 CHECK FOR CORRECT PATS MODULE OPERATION</p>	<p>1 Check:</p> <ul style="list-style-type: none"> • for corrosion • for pushed-out pins • connector seated correctly <p>2 Connect any disconnected connectors.</p> <p>3 Make sure all other system connectors are fully seated.</p> <p>4 Operate the system and verify the concern is still present.</p> <ul style="list-style-type: none"> • Is the concern still present? <p>→ Yes INSTALL a new PATS module. REFER to Multifunction Electronic Control Module (General Module). CLEAR the DTCs. REPEAT the PATS module self-test.</p> <p>→ No The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>

AC4 - AC5

Test AD: The Speedometer Is Inoperative - Motorhome

PINPOINT TEST AD: THE SPEEDOMETER IS INOPERATIVE - MOTORHOME

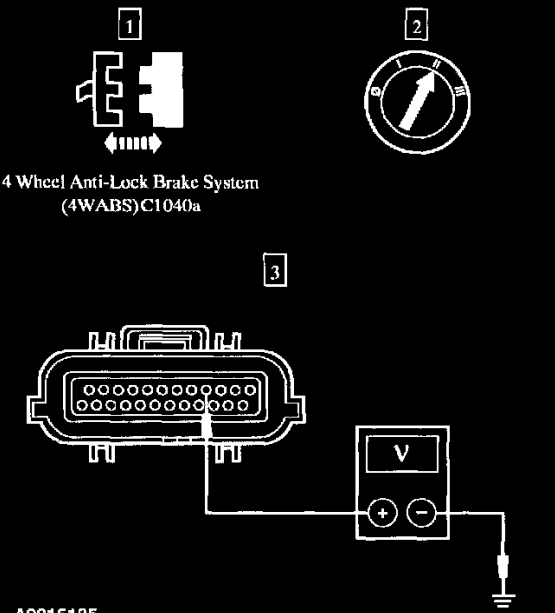
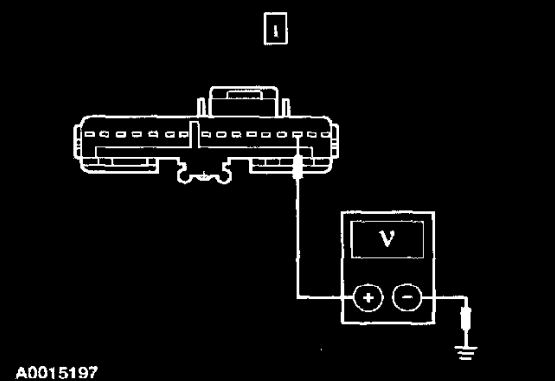
PINPOINT TEST AD: THE SPEEDOMETER IS INOPERATIVE—MOTORHOME

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AD1 CHECK CIRCUIT 679 (GY/BK) FOR OPEN</p>  <p>1 </p> <p>2 </p> <p>3 </p> <p>Central Junction Box (CJB) C205 Instrument Cluster C250b</p> <p>4 </p> <p>A0015195</p>	<p>4 Measure the resistance between central junction box (CJB) C205 pin 39, circuit 679 (GY/BK), harness side and instrument cluster C250b pin 10, circuit 679 (GY/BK), harness side.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes GO to AD2.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>AD2 CHECK CIRCUIT 679 (GY/BK) FOR SHORT TO GROUND</p>  <p>1 </p> <p>Central Junction Box (CJB) C205</p> <p>2 </p> <p>A0015196</p>	<p>2 Measure the resistance between instrument cluster C250b pin 10, circuit 679 (GY/BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance greater than 10,000 ohms? <p>→ Yes GO to AD3.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

(Continued)

AD1-AD2

PINPOINT TEST AD: THE SPEEDOMETER IS INOPERATIVE—MOTORHOME (Continued)

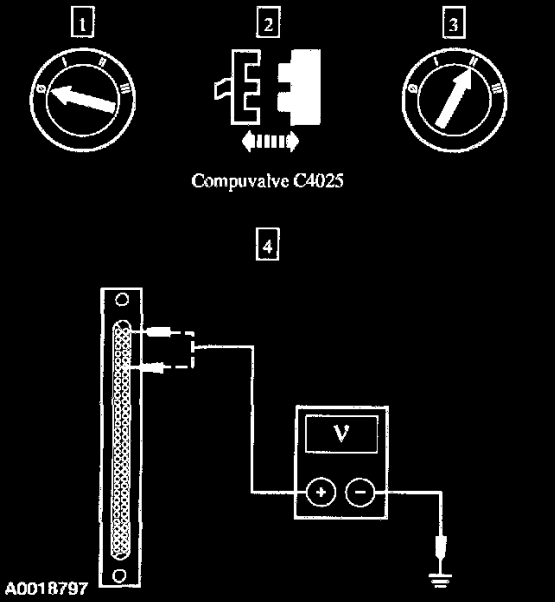

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AD3 CHECK CIRCUIT 679 (GY/BK) FOR SHORT TO POWER</p>  <p>4 Wheel Anti-Lock Brake System (4WABS) C1040a</p> <p>A0015185</p>	<p>3 Measure the voltage between 4 wheel anti-lock brake system (4WABS) C1040a pin 16, circuit 679 (GY/BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is voltage present? <p>→ Yes REPAIR the circuit. TEST the system for normal operation.</p> <p>→ No GO to AD4.</p>
<p>AD4 CHECK CIRCUIT 729 (RD/WH) FOR POWER</p>  <p>A0015197</p>	<p>1 Measure the voltage between instrument cluster C250b pin 14, circuit 729 (RD/WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? <p>→ Yes GO to AD5.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>AD5 CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION</p>	<p>1 Check:</p> <ul style="list-style-type: none"> • for corrosion • for pushed-out pins • connector seated correctly <p>2 Connect any disconnected connectors.</p> <p>3 Make sure all other system errors are fully seated.</p> <p style="text-align: right;">(Continued)</p>

PINPOINT TEST AD: THE SPEEDOMETER IS INOPERATIVE—MOTORHOME (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
AD5 CHECK FOR CORRECT INSTRUMENT CLUSTER OPERATION (Continued)	
	<p>4 Operate the system and verify the concern is still present.</p> <ul style="list-style-type: none"> • Is the concern still present? <p>→ Yes INSTALL a new instrument cluster. TEST the system for normal operation.</p> <p>→ No The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.</p>

AD5 (Continued)

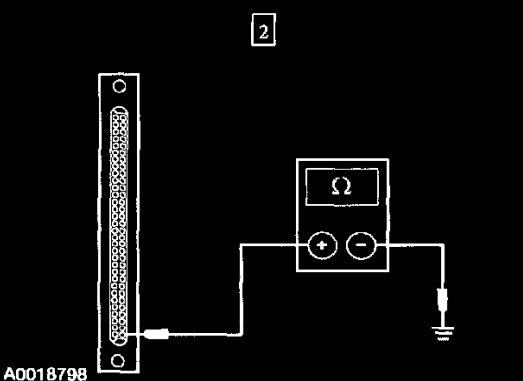
PINPOINT TEST AE: NO COMMUNICATION WITH THE COMPUVALVE—BI-FUEL ONLY

CONDITIONS	DETAILS/RESULTS/ACTIONS
AE1 CHECK POWER SUPPLY CIRCUIT(S) G002 (WH) AND G011 (WH)	
 <p>1 2 3</p> <p>Compuvalve C4025</p> <p>4</p> <p>A0018797</p>	<p>4 Measure the voltage between the compuvalve C4025 pin 2, circuit G002 (WH), harness side and ground; and between the compuvalve C4025 pin 11, circuit G011 (WH), harness side and ground.</p> <ul style="list-style-type: none"> • Are the voltages greater than 10 volts? <p>→ Yes GO to AE2.</p> <p>→ No REPAIR the circuit(s) in question. TEST the system for normal operation.</p>
AE2 CHECK GROUND CIRCUITS G064 (BK)	
 <p>1</p>	

(Continued)

AE1 - AE2

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST AE: NO COMMUNICATION WITH THE COMPUVALVE—BI-FUEL ONLY (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AE2 CHECK GROUND CIRCUITS G064 (BK) (Continued)</p>  <p>A0018798</p>	<p>2 Measure the resistance between the comp valve C4025 pin 64, circuit G064 (BK), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? <p>→ Yes REFER to Module Communications Network (Information Bus).</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>

AE2

PINPOINT TEST AF: INCORRECT FUEL GAUGE INDICATION—IN ALTERNATIVE FUEL MODE (BI-FUEL ONLY)





CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AF1 VERIFY FUEL GAUGE OPERATION</p>	<p>1 Validate the operation of the fuel gauge in both the alternative fuel and gasoline modes.</p> <ul style="list-style-type: none"> • Does the fuel gauge operate correctly in both modes? <p>→ Yes REFER to the symptom chart.</p> <p>→ No If the fuel gauge does not operate correctly in the gasoline mode only, GO to Pinpoint Test AG.</p> <p>If the fuel gauge does not operate correctly in alternative fuel mode only, INSTALL a new comp valve. REFER to Fuel Delivery and Air Induction.</p> <p>If the fuel gauge does not operate correctly in both alternative fuel and gasoline modes, GO to Pinpoint Test AH.</p>

AF1

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST AG: INCORRECT FUEL GAUGE INDICATION—IN GASOLINE MODE (BI-FUEL ONLY)

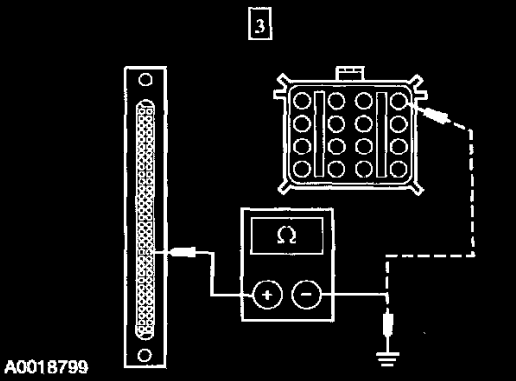
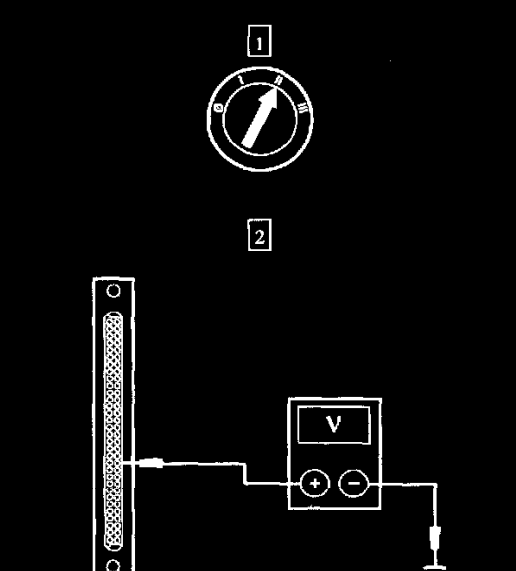
NOTE: Verify that gasoline mode is selected.

CONDITIONS	DETAILS/RESULTS/ACTIONS
AG1 DISCONNECT THE FUEL PUMP INTERCEPT HARNESS	
 	<p>2 Disconnect the (alternative) fuel pump intercept harness C4302 and C1045 and connect the gasoline fuel pump module C1045 to vehicle harness C4302.</p> <p>3 Toggle the alternative fuel mode select switch to gasoline mode.</p> <ul style="list-style-type: none"> • Does the fuel gauge function correctly? → Yes GO to AG2. → No REPAIR the circuit. TEST the system for normal operation.
AG2 CHECK CIRCUIT GO42 (WH) FOR AN OPEN OR SHORT TO GROUND	
  <p>Compuvalve C4025</p>	

(Continued)

AG1 - AG2

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST AG: INCORRECT FUEL GAUGE INDICATION—IN GASOLINE MODE (BI-FUEL ONLY) (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AG2 CHECK CIRCUIT G042 (WH) FOR AN OPEN OR SHORT TO GROUND (Continued)</p>  <p>A0018799</p>	<p>3 Measure the resistance between the compuvalve C4025 pin 42, circuit G042 (WH), harness side and the fuel pump intercept harness C1045 pin 4, circuit G042 (DB), harness side; and between the compuvalve C4025 pin 42, circuit G042 (WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms between the compuvalve and the fuel pump intercept harness; and greater than 10,000 ohms between the compuvalve and ground? <p>→ Yes GO to AG3.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>AG3 CHECK CIRCUIT G042 (WH) FOR A SHORT TO POWER</p>  <p>A0007025</p>	<p>2 Measure the voltage between the compuvalve C4025 pin 42, circuit G042 (WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is there voltage present? <p>→ Yes REPAIR the circuit. TEST the system for normal operation.</p> <p>→ No INSTALL a new compuvalve. REFER to Fuel Delivery and Air Induction. TEST the system for normal operation.</p>



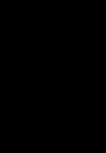



AG2 - AG3

Test AH: Incorrect Fuel Gauge Indication-In Alternative Fuel And Gasoline Mode

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST AH: INCORRECT FUEL GAUGE INDICATION—IN ALTERNATIVE FUEL AND GASOLINE MODE (BI-FUEL ONLY)

NOTE: Verify that gasoline mode is selected.

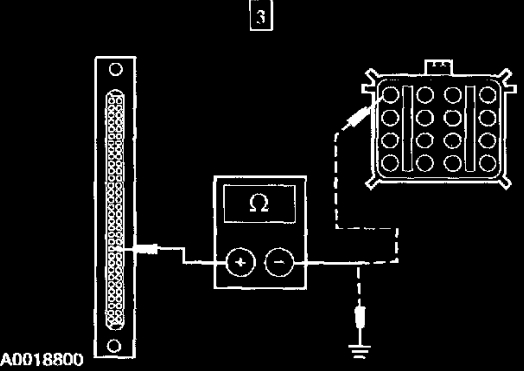
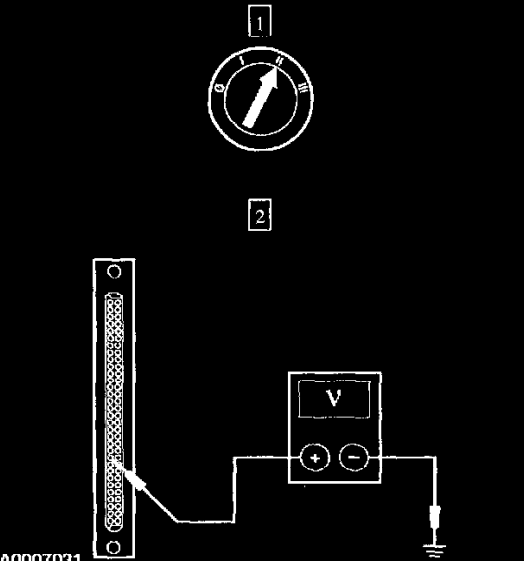
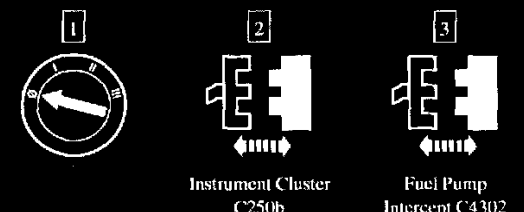
CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AH1 BYPASS THE FUEL PUMP INTERCEPT HARNESS</p> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div>	<div style="text-align: center;">  </div> <p>2 Disconnect the (alternative) fuel pump intercept harness C4302 and C1045 and connect the gasoline fuel pump module C1045 to vehicle harness C4302.</p> <div style="text-align: center;">  </div> <p>3 Toggle the alternative fuel mode switch to gasoline mode.</p> <ul style="list-style-type: none"> • Does the fuel gauge function correctly? → Yes GO to AH2. → No GO to AH4.
<p>AH2 CHECK CIRCUIT GO43 (WH) FOR AN OPEN OR SHORT TO GROUND</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  <p>Compuvalve C4025</p> </div> </div>	

(Continued)

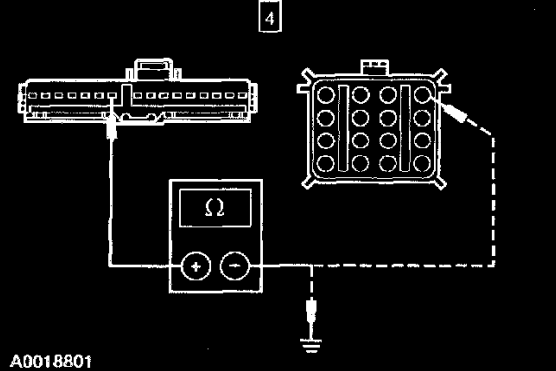
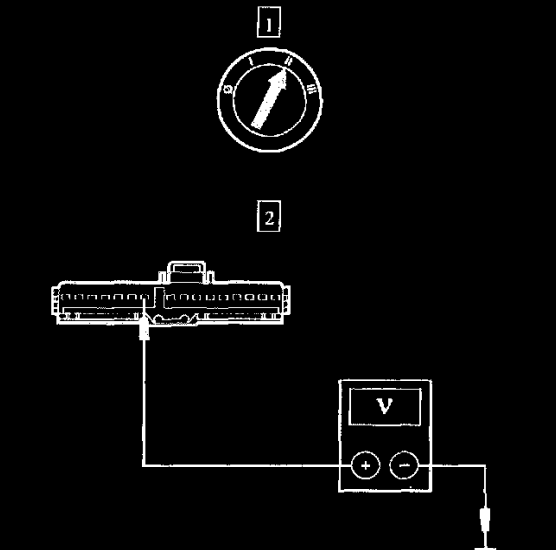
AH1 - AH2

DIAGNOSIS AND TESTING (Continued)

PINPOINT TEST AH: INCORRECT FUEL GAUGE INDICATION—IN ALTERNATIVE FUEL AND GASOLINE MODE (BI-FUEL ONLY) (Continued)

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AH2 CHECK CIRCUIT G043 (WH) FOR AN OPEN OR SHORT TO GROUND (Continued)</p>  <p>A0018800</p>	<p>3 Measure the resistance between the comp valve C4025 pin 43, circuit G043 (WH), harness side and the fuel pump intercept harness C4302 pin 4, circuit G043 (DB/YE), harness side; and between the comp valve C4025 pin 43, circuit G043 (WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms between the comp valve and the fuel pump intercept harness; and greater than 10,000 ohms between the comp valve and ground? <p>→ Yes GO to AH3.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>AH3 CHECK CIRCUIT G043 (WH) FOR A SHORT TO POWER</p>  <p>A0007031</p>	<p>2 Measure the voltage between the comp valve C4025 pin 43, circuit G043 (WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is there voltage present? <p>→ Yes REPAIR the circuit. TEST the system for normal operation.</p> <p>→ No INSTALL a new comp valve. REFER to Fuel Delivery and Air Induction. TEST the system for normal operation.</p>
<p>AH4 CHECK CIRCUIT 29 (YE/WH) FOR AN OPEN OR SHORT TO GROUND</p>  <p>Instrument Cluster C250b Fuel Pump Intercept C4302</p>	<p>(Continued)</p>





DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST AH: INCORRECT FUEL GAUGE INDICATION—IN ALTERNATIVE FUEL AND GASOLINE MODE (BI-FUEL ONLY) (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<p>AH4 CHECK CIRCUIT 29 (YE/WH) FOR AN OPEN OR SHORT TO GROUND (Continued)</p>  <p>A0018801</p>	<p>AH4 Measure the resistance between the instrument cluster C250b pin 10, circuit 29 (YE/WH), harness side and the fuel pump intercept C4302 pin 4, circuit 29 (YE/WH), harness side; and between the instrument cluster C250b pin 10, circuit 29 (YE/WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms between the instrument cluster and the fuel pump intercept; and greater than 10,000 ohms between the instrument cluster and ground? <p>→ Yes GO to AH5.</p> <p>→ No REPAIR the circuit. TEST the system for normal operation.</p>
<p>AH5 CHECK CIRCUIT 29 (YE/WH) FOR A SHORT TO POWER</p>  <p>A0007033</p>	<p>AH5 Measure the voltage between the instrument cluster C250b pin 10, circuit 29 (YE/WH), harness side and ground.</p> <ul style="list-style-type: none"> • Is there voltage present? <p>→ Yes REPAIR the circuit. TEST the system for normal operation.</p> <p>→ No INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation.</p>

AH4 - AH5


Test AI: Instrument Cluster Is Inoperative

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST AI: THE INSTRUMENT CLUSTER IS INOPERATIVE—BI-FUEL ONLY (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS															
<p>AI2 CHECK THE DASH RESET RELAY OPERATION</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>1</p> </div> <div style="text-align: center;">  <p>2</p> <p>Dash Reset Relay C4204</p> </div> </div>	<p>3 Carry out the relay component test. Refer to Instrument Reset Relay, Component Testing.</p> <ul style="list-style-type: none"> • Is the relay OK? <p>→ Yes GO to AI3.</p> <p>→ No INSTALL a new relay. TEST the system for normal operation.</p>															
<p>AI3 CHECK THE DASH RESET CIRCUITRY FOR OPENS AND SHORTS TO GROUND</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>1</p> </div> <div style="text-align: center;">  <p>2</p> <p>Compuvalve C4025</p> </div> </div>	<p>3 Measure the resistance between the following connector pins:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Compuvalve C4025, Pin</th> <th>Dash Reset Relay C4204, Pin</th> <th>In-line C4082, Pin</th> </tr> </thead> <tbody> <tr> <td>15, circuit G015 (WH)</td> <td>85, circuit G015 (WH)</td> <td>—</td> </tr> <tr> <td>9, circuit G009 (WH)</td> <td>86, circuit G009 (RD)</td> <td>—</td> </tr> <tr> <td>—</td> <td>87A, circuit G801-1 (RD/YE)</td> <td>1, circuit G801-1 (RD/YE)</td> </tr> <tr> <td>—</td> <td>30, circuit G801-2 (RD/YE)</td> <td>2, circuit G801-2 (RD/YE)</td> </tr> </tbody> </table>	Compuvalve C4025, Pin	Dash Reset Relay C4204, Pin	In-line C4082, Pin	15, circuit G015 (WH)	85, circuit G015 (WH)	—	9, circuit G009 (WH)	86, circuit G009 (RD)	—	—	87A, circuit G801-1 (RD/YE)	1, circuit G801-1 (RD/YE)	—	30, circuit G801-2 (RD/YE)	2, circuit G801-2 (RD/YE)
Compuvalve C4025, Pin	Dash Reset Relay C4204, Pin	In-line C4082, Pin														
15, circuit G015 (WH)	85, circuit G015 (WH)	—														
9, circuit G009 (WH)	86, circuit G009 (RD)	—														
—	87A, circuit G801-1 (RD/YE)	1, circuit G801-1 (RD/YE)														
—	30, circuit G801-2 (RD/YE)	2, circuit G801-2 (RD/YE)														

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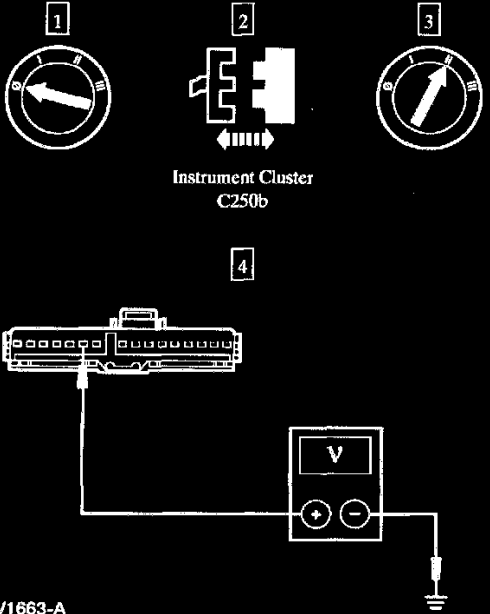
DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST AI: THE INSTRUMENT CLUSTER IS INOPERATIVE—BI-FUEL ONLY
(Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS						
AI3 CHECK THE DASH RESET CIRCUITRY FOR OPENS AND SHORTS TO GROUND (Continued)	<p data-bbox="797 268 1321 323">4 Measure the resistance between the following connector pins and ground:</p> <table border="1" data-bbox="849 380 1334 564"> <thead> <tr> <th data-bbox="849 380 1089 438">Compuvalve C4025, Pin</th> <th data-bbox="1089 380 1334 438">In-line C4082, Pin</th> </tr> </thead> <tbody> <tr> <td data-bbox="849 438 1089 499">15, circuit G015 (WH)</td> <td data-bbox="1089 438 1334 499">1, circuit G801-1 (RD/YE)</td> </tr> <tr> <td data-bbox="849 499 1089 564">9, circuit G009 (WH)</td> <td data-bbox="1089 499 1334 564">2, circuit G801-2 (RD/YE)</td> </tr> </tbody> </table> <ul data-bbox="849 583 1377 764" style="list-style-type: none"> • Are the resistances less than 5 ohms between the compuvalve and the dash reset relay, and between the dash reset relay and the in-line connector C4082; and greater than 10,000 ohms between the compuvalve and ground and between the in-line connector C4082 and ground? <p data-bbox="849 793 1024 842">→ Yes GO to AI4.</p> <p data-bbox="849 869 1365 947">→ No REPAIR the circuit(s) in question. TEST the system for normal operation.</p>	Compuvalve C4025, Pin	In-line C4082, Pin	15, circuit G015 (WH)	1, circuit G801-1 (RD/YE)	9, circuit G009 (WH)	2, circuit G801-2 (RD/YE)
Compuvalve C4025, Pin	In-line C4082, Pin						
15, circuit G015 (WH)	1, circuit G801-1 (RD/YE)						
9, circuit G009 (WH)	2, circuit G801-2 (RD/YE)						
AI4 CHECK THE DASH RESET RELAY FOR SHORTS TO POWER	<p data-bbox="435 1016 542 1163">1 </p> <p data-bbox="797 1213 1295 1268">2 Measure the voltage between the following connector pins and ground:</p> <table border="1" data-bbox="849 1325 1334 1509"> <thead> <tr> <th data-bbox="849 1325 1089 1383">Compuvalve C4025, Pin</th> <th data-bbox="1089 1325 1334 1383">In-line C4082, Pin</th> </tr> </thead> <tbody> <tr> <td data-bbox="849 1383 1089 1444">15, circuit G015 (WH)</td> <td data-bbox="1089 1383 1334 1444">1, circuit G810-1 (RD/YE)</td> </tr> <tr> <td data-bbox="849 1444 1089 1509">9, circuit G009 (WH)</td> <td data-bbox="1089 1444 1334 1509">2, circuit G801-2 (RD/YE)</td> </tr> </tbody> </table>	Compuvalve C4025, Pin	In-line C4082, Pin	15, circuit G015 (WH)	1, circuit G810-1 (RD/YE)	9, circuit G009 (WH)	2, circuit G801-2 (RD/YE)
Compuvalve C4025, Pin	In-line C4082, Pin						
15, circuit G015 (WH)	1, circuit G810-1 (RD/YE)						
9, circuit G009 (WH)	2, circuit G801-2 (RD/YE)						

(Continued)

AI3 - AI4

DIAGNOSIS AND TESTING (Continued)**PINPOINT TEST AI: THE INSTRUMENT CLUSTER IS INOPERATIVE—BI-FUEL ONLY (Continued)**

CONDITIONS	DETAILS/RESULTS/ACTIONS
AI4 CHECK THE DASH RESET RELAY FOR SHORTS TO POWER (Continued)	<ul style="list-style-type: none"> • Is there voltage present? → Yes REPAIR the circuit. TEST the system for normal operation. → No INSTALL a new comp valve. REFER to Fuel Delivery and Air Induction. TEST the system for normal operation.
AI5 CHECK CIRCUIT 640 (RD/YE) FOR POWER  <p>GV1663-A</p>	<p>4 With the fused (10A) jumper wire still connected, measure the voltage between the instrument cluster C250b pin 11, circuit 640 (RD/YE), harness side and ground.</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? → Yes INSTALL a new instrument cluster. REFER to Instrument Panel. TEST the system for normal operation. → No REPAIR the circuit. TEST the system for normal operation.

AI4 - AI5