

**Diagnosis and Testing**

**Refer to Wiring Diagrams Section 413-01, for schematic and connector information.**

**Inspection and Verification**

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

**Visual Inspection Chart**

<b>Mechanical</b>	<b>Electrical</b>
<ul style="list-style-type: none"> <li>• Engine oil filter</li> <li>• Engine oil level</li> <li>• Engine coolant temperature (ECT) sensor</li> <li>• Engine coolant level</li> <li>• Thermostat</li> <li>• Collapsed or damaged fuel tank</li> <li>• Door adjustment</li> </ul>	<ul style="list-style-type: none"> <li>• Fuse(s)</li> <li>• Wiring harness</li> <li>• Electrical connector(s)</li> <li>• Instrument cluster</li> <li>• Light emitting diode(s) (LED)(s)</li> </ul>

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.



4. **NOTE:**If none of the following warning indicators are operating correctly this may indicate a concern with the generic electronic module (GEM). If only one or two of the following warning indicators are not operating correctly this may indicate an instrument cluster concern.

Verify the following warning indicators are working correctly:

- Charging.
- Turn signals.
- Headlamps.

5. If the cause is not visually evident, verify the symptom and enter the instrument cluster Self-Diagnostic Mode.

**Self-Diagnostic Mode**



**NOTE:**The instrument cluster tripmeter reset button is located on the right-hand side of the instrument cluster lens.

1. To enter the instrument cluster Self-Diagnostic Mode simultaneously press and hold the tripmeter reset button and turn the ignition switch to position II.
2. When TEST is displayed in the LCD, release the tripmeter reset button.
3. To navigate through or skip any of the instrument cluster self-diagnostic mode tests press the tripmeter RESET button. If the reset button is depressed for more than 3 seconds between tests, the instrument cluster will exit the self-diagnostic mode.
4. The self-diagnostic mode is deactivated when the ignition switch is turned to the OFF position.
5. If the self-diagnostic mode cannot be accessed, use WDS to diagnose the instrument cluster.



**NOTE:**Additional tests are available after the following self-diagnostic mode tests, but are not applicable for this diagnostic.

**Self-Diagnostic Mode**

<b>Test</b>	<b>Odometer Display</b>	<b>Gauge/Indicator/Display Tested</b>	<b>Description</b>
1. Gauge drive and displays	GAGE	Tachometer, speedometer, temperature and fuel	Both pointers move from the rest position (zero) to below the rest position and then back to the rest position (the pointers will not carry

			out a full sweep as in previous vehicles). All segments of the engine temperature and fuel level liquid crystal displays (LCD) are illuminated.
2. Fill in all LCD	All segments illuminated	Odometer LCD	Fills in LCD of odometer.
3. Indicator LED(s)	bulb	Indicators and warning indicators	Illuminates all the warning indicators that are controlled by the instrument cluster.
4. ROM level	r XXXX FAIL	Instrument cluster read only memory (ROM)	Displays the instrument cluster ROM level and type.
5. Non-volatile memory level	nrXXXX	Instrument cluster non-volatile memory	Displays the instrument cluster ROM level and type as stored in the non-volatile memory.
6. Not required	EE XX FAIL	Checksum fault	Not required.
7. Not required	CF1 XX	Configuration	Not required.
8. Not required	CF2 XX	Configuration	Not required.
9. Not required	CF3 XX	Configuration	Not required.
10. Diagnostic trouble code (DTC)	dtc then XXXX NONE	DTCs	If any DTCs are displayed. REFER to WDS to diagnose the instrument cluster. A new DTC code will be displayed with each press of the reset button.
11. Vehicle speed m.p.h.	E XXXX	Speedometer	Displays the speed signal input in m.p.h. Dashes in odometer display if no signal received.
12. Vehicle speed km/h	XXXX	Speedometer	Displays the speed signal input in km/h. Dashes in odometer display if no signal received.
13. Not required	SGXXXX	Speedometer driver gauge count	Not required.
14. Engine speed	t XXXX	Tachometer	Displays the tachometer input signal (RPM). Dashes in odometer display if no signal received.
15. Not required	tGXXXX	Tachometer driver gauge count	Not required.
16. Fuel volume	F1 XXX	Fuel sender system	Displays the fuel volume signal input. 000 - 009 Short circuit. 010 - 254 Normal range. 255 open circuit
17. Not required	FP1 XXX	Input	Not required.
18. Not required	FPt XXX	Input	Not required.
19. Fuel level	FGXXXX	Fuel LCD	Displays the number of segments illuminated in the Fuel LCD.
20. Engine coolant temperature	XXX C	Engine coolant temperature	Displays the last engine coolant temperature signal input in 1/10 degree C.
21. Engine temperature	CGXXXX	Temperature LCD	Displays the number of segments illuminated in the temperature LCD.
22. Odometer input	odoXXX	Odometer display	Displays the odometer input received. 0 - 254 valid odometer input. 255 invalid odometer input.
23. Not required	trn -X	Input	Not required.
24. Not required	IUd XX	Input	Not required.

25. Battery voltage	bAtXXX	Battery Voltage	Displays battery voltage input.
26. Brake fluid switch	bf -X	Brake fluid level input	-O Good fluid level. -G Low fluid level.
27. Handbrake switch	hb -X	Handbrake input	-O Handbrake off. -G Handbrake on.
28. Illumination	SLP -X	Parking light input	-b Parking lights on. -O Parking lights off.
29. Not required	LCXXXX	LCD duty cycle	Not required.
30. Crank sense	Cr -X	Crank sense circuit	Displays the crankshaft sensor input to the instrument cluster. -b Input high. -O Input low.