Computer controls offer

- Injection/Governing of engine
- Engine Protection
- Diagnostics
- Data collection
Governing / Injection

- Controls timing, metering and delivery of fuel.
- Injection pressure is developed mechanically. All other functions are controlled using electronics driven by computer logic.
- “No more mechanical hardware, governors, linkage, or timing adjustments”
Series 900
Electronic Control System
Engine Protection

- Sensors monitor analog and binary values (gauges and switches).
- Information is sent to the engine computer for processing. This occurs many times per second.
- Values out of operational ranges are reported as faults or fault codes to operator.
Non Critical Warning

- Check engine light
- Continue operation until repairs can be made.
Critical Warning

- Stop engine light (red)
- Operation will stop if condition continues.
Hand held /Reader

- Convenient for underground mobile use.
- Durable (to a point!)
- Easy to navigate.
- Cards available for different manufactures
- Lower cost than laptop.
Program Card
What is Diagnostic Link?

- It is a maintenance and troubleshooting software program that performs all of the same functions as a hand-held reader;
  - View and Clear Active and Inactive Diagnostic Codes
  - View Fuel injector Response Times, Injector Calibrations and Cylinder Cut-Out Tests
  - View Total Engine Data and Engine Trip Data
- Diagnostic Link has many additional features that save time & money
- Current Version
  - Version 6.1: DDEC II/III/IV/V and MBE 900/4000
- Compatible with Windows 98/ME/NT/2000/XP
Calibration Template
## Fault Code Display

<table>
<thead>
<tr>
<th>Fault Description</th>
<th>Flash</th>
<th>ECM</th>
<th>ID</th>
<th>FMI</th>
<th>Start</th>
<th>End</th>
<th>Duration</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel temp sensor - input voltage</td>
<td>24</td>
<td>Mas</td>
<td>P 174</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel temperature high</td>
<td>77</td>
<td>Mas</td>
<td>P 174</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Play**
- **00:04:41**
- **Fuel temp sensor - input voltage low**
On-Line Troubleshooting Guide

FLASH CODE 23 - FUEL TEMP SENS

DESCRIPTION OF FLASH CODE 23

Flash Code 23 indicates that the engine Fuel Temperature Sensors, input to the ECM has exceeded 95 C supply voltage.

Note: This code will only be logged during warm engine.

This diagnostic condition is typically:

1. Open sensor signal circuit
2. Open sensor circuit return
3. Sensor signal circuit is shorted to the sensor +

SAE J1587 EQUIVALENT CODE FOR FLASH CODE 23

The SAE J1587 equivalent code for Flash Code 23 is p 174

TROUBLESHOOT FLASH CODE 23

Sensor Check

Perform the following steps to check the sensor:

1. Turn ignition OFF.
2. Disconnect the FTS connector.
3. Install a jumper wire between sockets A and B of the FTS harness connector. See Figure “Fuel Temperature Sensor”.
4. Turn ignition ON.
5. Read active codes.

   a. If code 174/4 and any other codes except code 174/3 are logged to “Check for Short to +5 Volt Line”.
   b. If any code except 174/4 is logged, refer to “Open Line Check”.

ECM Engine Harness Connector

1 2 3
LMNPR
STWXY
Customize the way you look at data
Snapshot is saved for future playback, it can be sent as an email attachment.
Questions