

Georgetown City Fire Department

Engine Diagnostic Codes

From the ATEC/DDEC Interface Diagnostic Manual

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Using the Check Engine Light (CLE) to Read Codes:

Logged codes can be read from the ECM by counting the flashes on the CEL. To get the CEL to flash out codes, follow this procedure:

1. Turn Ignition and Master switches on.
2. Place the transmission in a neutral position and depress the Check Engine switch.
3. Count the flashes on the CEL. An example of a code 16 and code 46 is as follows (F=Flash)

CODE 16 PAUSE CODE 46
F---F-F-F-F-F-F-----F-F-F-F-----F-F-F-F-F-F

Code 11 – Power Take-off speed adjust (PTOSA) – System on with low voltage at the PTOSA input to the ECM.

Code 12 – Power Take-off speed adjust (PTOSA) – System with voltage too high at the PTOSA input to the ECM

Code 13 – Coolant Level Sensor (CLS) – System running with voltage too low at the EMC input. Battery voltage at the ECM must be greater than 11 volts.

Code 14 – Oil or Coolant Temperature Sensor (OTS or CTS) – Engine running with voltage too high at the OTS or CTS input to the ECM.

Code 15 – Oil or Coolant Temperature Sensor (OTS or CTS) – Engine running with the voltage too low at the OTS or CTS input to the ECM.

Code 16 – Coolant Level Sensor (CLS) – Engine running with voltage too high at the ECM input. Battery voltage at the ECM must be greater than 11 volts.

Code 21 – Throttle Position Sensor (TPS) – Engine running with voltage too high at the TPS input to the ECM.

Code 22 – Throttle Position Sensor (TPS) – Engine running with voltage too low at the TPS input to the ECM.

Code 23 – Fuel Temperature Sensor (FTS) – Engine running with voltage too high at the FTS input to the ECM.

Code 24 – Fuel Temperature Sensor (FTS) – Engine running with voltage to low at the FTS input to the ECM.

Code 25 – No Codes – No faults have been detected by DDEC-II since the last time the codes were cleared.

Code 26 – Power Control Switch – Indicates that the power control switch has been used. This switch, when thrown, turns on both the “Stop Engine” and “Check Engine” lights. In addition, the engine will begin to power down (and eventually shutdown) the engine if the engine protection system is equipped with the shutdown feature. Emergency-One fire apparatus are not equipped with any shutdown features.

Code 31 (Note: Deleted 7/91) fault on auxiliary output: one of the following faults has been detected for more than 2 seconds:

Open in “Check Engine” or “Stop Engine” light circuit, or
Short to ground in “Check Engine”, “Stop Engine”, “Cruise Active” light
Circuits or in the Crank Position, Engine Brake or one of three auxiliary
Drive (labeled PWM or AUX) circuits. Battery voltage at the ECM must
Be greater than 8 volts.

Code 32 – (Note: Deleted 7/91) ECM failure – the backup system inside the ECM has failed.

Code 33 – Turbo Boost Sensor (TBS) – Engine running (at less than 800 RPM or less than 30% of maximum torque) for 5 seconds with voltage too high at the TBS input to the ECM.

Code 34 – Turbo Boost Sensor (TBS) – Engine running with voltage too low at the TBS input to the ECM.

Code 35 – Oil Pressure Sensor (OPS) – Engine running at less than 800 RPM with voltage too high at the OPS input to the ECM. Most also have greater than 50 degrees C oil temperature to log this code.

Code 36 – Oil Pressure Sensor (OPS) – Engine running with voltage too low at the OPS input to the ECM.

Code 41 – Timing Reference Sensor (TRS) Pulses Fault – The number of TRS pulses received per revolution was incorrect or completely missing. One pulse per cylinder per revolution is required.

Code 42 – Synchronous Reference Sensor (SRS) Pulses Fault – Did not receive an SRS pulse on every ping of the #1 cylinder.

Code 43 – Low Coolant – System running with low coolant. Battery voltage at the ECM must also be greater than 11 volts. This fault will cause both the “Stop Engine” and “Check Engine” lights to turn on, and will power down (and

eventually shutdown) the engine if the engine protection system is equipped with the shutdown procedures. Emergency One fire apparatus are not equipped with programmed shutdown features.

Code 44 – Oil or Coolant over Temperature – Engine running with the oil or coolant temperature greater than a calibrated limit. This fault will cause both the “Stop Engine” and “Check Engine” lights to turn on, and will power down (and eventually shutdown) the engine if the engine protection system is equipped with the shutdown feature. (NOTE: If the oil or coolant is only slightly over temperature, the following occurs: the “Check Engine” light comes on after 2 seconds and a code is logged. If equipped with the shutdown feature, the engine will be reduced in power as a function of degrees over temperature). Emergency One fire apparatus are not equipped with the programmed shutdown features.

Code 45 – Low oil Pressure – Engine running with the oil pressure less than the limit (different limits at different RPMs) for 7 seconds. This fault will cause both the “Stop Engine” and “Check Engine” lights to turn on, and will power down (and eventually shutdown) the engine if the engine protection system is equipped with the shutdown procedures. Emergency One fire apparatus are not equipped with programmed shutdown features.

Code 46 – Low battery voltage – Engine running with low battery voltage (less than 10 volts) for more than 30 seconds.

Code 47 – High Fuel Pressure – Engine running with high fuel pressure.

Code 48 – Low Fuel Pressure – Engine running with low fuel pressure.

Code 51 – EEPROM Error – An error has been detected in the EEPROM (Electrically Erasable Programmable Read Only Memory) inside the ECM.

Code 52 – ECM Failure – The ECM was unable to correctly convert sensor voltages into numbers for computer usage.

Code 54 – Vehicle Speed Sensor (VSS) Failure – The DDEC-II system has detected a fault with the DDEC-II VSS. This fault may have been either a short, open or an inconsistency between the VSS speed reading and the ECM calculated speed based on RPM and the injector pulse width.

Code 56 – ECM Failure – The ECM was unable to correctly convert sensor voltages into numbers for computer usage.

Code 58 – Cruise Inputs bad. An illegal cruise control switch combination has been detected. This can be due to either opens or shorts in the cruise control switch circuitry.

Codes 61 – 68 - Response time too long. The response time of the injectory was longer than the minimum limit or the injector never responded at all. Oil temperature must be greater than 30 degrees C and battery voltage must be between 11 volts and 16 volts to log this code. Also, the code is only logged at less than 2000 RPM.

Codes 71 – 78 - (NOTE: Deleted After 7/91) Response time too short. The response time of the injector was shorter than the minimum limit. Oil temperature must be greater than 30 degrees C and battery voltage must be between 11 volts and 16 volts to log this code. Also, the code is only logged at less than 2500 RPM.

Code 85 – The engine has been operating over 2500 RPM for at least 2 seconds.

Code 86 – Pressure control governor sensor. High Voltage.

Code 87 – Pressure control governor sensor. Low Voltage.

The DDEC ECM has two 30-way connectors. One is related to and connects to the engine sensors, and the other is related to and connects to the vehicle interface. The Emergency One vehicle interface is isolated from the engine sensor harness. There are codes that are specific to this harness and are not related to the E-One vehicle interface.

The following codes are not related to the E-One vehicle electrical interface:

Codes 14, 15, 23, 24, 32, 33, 34, 35, 36, 41, 42, 44, 45, 47, 48, 51, 52, 54, 55, 56, 61 through 85.

If you have logged any of these codes, you should check all connectors on the engine sensor harness, check battery voltage and then contact your engine repair service.