Displaying Fault Codes (DFC) From SECM Memory
To enter code display mode, you must turn OFF the ignition key. Now turn ON the key but do not start the engine. As soon as you turn the key to the ON position you must cycle the foot pedal by depressing it to the floor and then fully releasing the pedal (pedal maneuver). You must fully cycle the foot pedal three (3) times within five (5) seconds to enable the display codes feature of the SECM. Simply turn the key OFF to exit display mode. The code list will continue to repeat until the key is turned OFF. An automatic code display feature is activated if a foot pedal fault condition exists. This feature enables the service technician to view the fault codes by turning the key to the ON position, if a foot pedal malfunction is preventing the retrieval of the stored fault codes from the SECM.

Malfunction Indicator Light (MIL)
The Test Code = 12
Dash Light Over Tach will:
Blink – ON
OFF
Blink -ON
Blink -ON
OFF

Clearing Fault (DFC) Codes
To clear the stored fault codes from SECM memory you must complete the reset fault pedal maneuver.
CAUTION
Once the fault list is cleared it cannot be restored.
First turn OFF the ignition key. Now turn ON the key but do not start the engine. As soon as you turn the key to the ON position you must cycle the foot pedal by depressing it to the floor and then fully releasing the pedal (pedal maneuver). You must fully cycle the foot pedal ten (10) times within five (5) seconds to clear the fault code list of the SECM. Simply turn the key OFF to exit the reset mode. The code list is now clear and the SECM will begin storing new fault codes as they occur.

Fault Action Descriptions
Each fault detected by the SECM is stored in memory (FIFO) and has a specific action or result that takes place. Listed below are the descriptions of each fault action.
Engine Shutdown: The most severe action is an Engine Shutdown. The MIL will light and the engine will immediately shut down, stopping spark with the fuel lock-off closing.
Delayed Engine Shutdown: Some faults such as low oil pressure will cause the MIL to illuminate for 30 seconds and then shut down the engine.
Disable Throttle: The throttle moves to its default position. The engine will run at idle but will not accelerate.
Limp Home Mode: A “limp home” mode reduces the ice resurfacers power, and is provided to enable the operator to drive the lift truck in an unsafe situation but not use the truck for normal operation.
MIL ONLY: The MIL will light by an active low signal provided by the SECM, indicating a fault condition but no further action will take place.
Diagnostic Fault Codes (Flash Codes)

12 = NONE - Signifies the end of one pass through the fault list NONE
None, used as a beginning and end of the fault list identification

14 = ECTSensorInputLow - Stored Fault Code - (MIL Only)

15 = ECTSensorInputHigh - Stored Fault Code - (MIL Only)

16 = ECTRangeHigh - Delayed Engine Shutdown

22 = ThrottleSensorInputLow - (CODES: 22 - 24) Disable Throttle

23 = ThrottleSensorInputHi - Disable Throttle

24 = ThrottleSensorRangeLo - Stored Fault Code - (MIL Only)

25 = ThrottleSensorRangeHi - Stored Fault Code - (MIL Only)

26 = ETCSticking - Engine Shutdown

27 = PredictedTPSDifference - Engine Shutdown

28 = ETCSpringTestFailed - Power Limit

29 = ETCDriverFault - Disable Throttle

33 = MapSensorInputLow – (CODES: 33 & 38) - Disable Throttle

34 = MapSensorInputHigh - Disable Throttle

37 = IATSensorInputLow - Stored Fault Code - (MIL Only)

38 = IATSensorInputHigh - Stored Fault Code - (MIL Only)

42 = EST1Low - Stored Fault Code - (MIL Only)

43 = EST1High - Stored Fault Code - (MIL Only)

52 = LowOilPressure - Stored Fault Code - (MIL Only)

53 = BatterySensorInputLow - Stored Fault Code - (MIL Only)

54 = BatterySensorInputHigh - Stored Fault Code - (MIL Only)

55 = XDRPSensorInputLow - Engine Shutdown
(Excepted faults when Transducer power is lost
CODES: 22, 24, 33, 62, 64, 66, 68 & 69)

56 = XDRPSensorInputHigh - Engine Shutdown

57 = Engine OverSpeed - Engine Shutdown

61 = Pedal1SensorInputLo - (CODES: 61 & 66) - MIN Power Limit
Diagnostic Fault Codes (Flash Codes)

62 = Pedal1SensorInputHi - MIN Power Limit
63 = Pedal1SensorRangeLo - Stored Fault Code - (MIL Only)
64 = Pedal1SensorRangeHi - Stored Fault Code - (MIL Only)
65 = Pedal2SensorInputLo - MIN Power Limit
66 = Pedal2SensorInputHi – (CODES: 61 & 66) - MIN power Limit
67 = Pedal2SensorRangeLo - Stored Fault Code - (MIL Only)
68 = Pedal2SensorRangeHi - Stored Fault Code - (MIL Only)
69 = Pedal1ToPedal2Difference - MIN power Limit
Check foot pedal connector
71 = AFRTrimValveOutput - Stored Fault Code - (MIL Only)
72 = AFRTrimValveLowerDC - Stored Fault Code - (MIL, Disable Adaptive learns)
73 = AFRTrimValveUpperDC -- Stored Fault Code - (MIL Only)
74 = O2SensorSwitching - Stored Fault Code - (MIL Only)
77 = OxygenSensorInputHigh - Stored Fault Code - (MIL Only)

**DESCRIPTION:**

ECTSensorInputLow: (Engine Coolant Temperature Sensor Input is Low) normally set if the coolant sensor wire has shorted to chassis ground or the sensor has failed.

ECTSensorInputHigh: (Engine Coolant Temperature Sensor Input is High) normally set if the coolant sensor wire has been disconnected or the circuit has opened to the SECM.

ECTRangeHigh: (Engine Coolant Temperature Range is High) the sensor has measured an excessive coolant temperature typically due to the engine overheating.

ThrottleSensorInputLo: (Throttle Position Sensor (TPS1) Input is Low) is normally set if the TPS1 signal wire has been disconnected or the circuit has opened to the SECM.

ThrottleSensorInputHi: (Throttle Position Sensor (TPS1) Input is High) is normally set if the TPS1 signal wire has become shorted to power, the TPS1 has failed or the SECM has failed.

ThrottleSensorRangeLo: (Throttle Position Sensor (TPS1) Range has measured Low) the TPS1 potentiometer has malfunctioned. An improper TPS reading may be due to dirt or oxidation on the sensor traces. NOTE: The TPS is not a serviceable item and can only be repaired by replacing the DV-EV throttle assembly.
**DESCRIPTION:**

**ThrottleSensorRangeHi:** (Throttle Position Sensor (TPS1) Range has measured High) the TPS1 potentiometer has malfunctioned. An improper TPS reading may be due to dirt or oxidation on the sensor traces. NOTE: The TPS is not a serviceable item and can only be repaired by replacing the DV-EV throttle assembly.

**ETCSticking:** (Electronic Throttle Control is Sticking) is normally set if either of the ETC driver signals have opened or become disconnected. This can also occur if the throttle plate (butterfly valve) inside the throttle bore is sticking. The plate sticking can be due to some type of obstruction; a loose throttle plate or worn components shaft bearings. Certified technicians using the service tool software can perform a throttle motion test to confirm sticking problems. NOTE: The throttle assembly is not a serviceable item and can only be repaired by replacing the DV-EV throttle assembly.

**PredictedTPSDifference:** (Predicted Throttle Position Sensor Difference) measured TPS1 is different than SECM Calculated throttle position. Normally caused by intake leaks between the throttle assembly and the engine.

**ETCSpringTestFailed:** (Electronic Throttle Control Spring Return Test has Failed) upon the initial startup of the engine the SECM will perform a safety test of the throttle return spring. If this spring has become weak the throttle will fail the test and set the fault. NOTE: The throttle assembly is not a serviceable item and can only be repaired by replacing the DV-EV throttle assembly.

**ETCDriverFault:** (Electronic Throttle Control Driver has Failed) an over current condition has occurred on either ETC+ or ETC- driver signals.

**MapSensorInputLow:** (Manifold Air Pressure Sensor Input is Low) is normally set if the TMAP pressure signal wire has been disconnected or the circuit has opened to the SECM.

**MapSensorInputHigh:** (Manifold Air Pressure Sensor Input is High) is normally set if the TMAP pressure signal wire has become shorted to power, shorted to the IAT signal, the TMAP has failed or the SECM has failed.

**IATSensorInputLow:** (Intake Air Temperature Sensor Input is Low) is normally set if the TMAP temperature signal wire has become shorted to ground, shorted to the MAP signal, the TMAP has failed or the SECM has failed.

**IATSensorInputHigh:** (Intake Air Temperature Sensor Input is High) normally set if the TMAP temperature signal wire has become disconnected or the circuit is open to the SECM.

**EST1Low:** (Electronic Spark Trigger) is a current driver signal and normally set if the signal from the SECM is shorted to ground.

**EST1High:** (Electronic Spark Trigger) is a current driver signal and normally set if the signal from the SECM is open or lost.

**LowOilPressure:** (Low Oil Pressure) the oil pressure switch has opened or become disconnected, normally indicating a low oil condition in the engine.

**BatterySensorInputLow:** (Battery Voltage Sensor Input is Low) normally set if the power to the SECM drops below 8.5 VDC.

**BatterySensorInputHigh:** (Battery Voltage Sensor Input is High) normally set if the power to the SECM increases above 15.9 VDC.
DESCRIPTION:

**XDRPSensorInputLow:** (Transducer Voltage Sensor Input is Low) normally set if the sensor power from the SECM drops below 4.8 VDC.

**XDRPSensorInputHigh:** (Transducer Voltage Sensor Input is High) normally set if the sensor power from the SECM increases above 5.9 VDC.

**EngineOverspeed:** (Engine Over speed) is set when the engine RPM increases above the SECM maximum governing RPM. Typically this is in association with one or more throttle faults. This fault can be set without additional throttle faults if the operator motors the lift truck down a steep grade (hill).

**Pedal1SensorInputLo:** (Accelerator Pedal Position 1 Sensor Input is Low) normally set if the APP1 signal wire has become disconnected or the circuit is open to the SECM.

**Pedal1SensorInputHi:** (Accelerator Pedal Position 1 Sensor Input is High) normally set if the APP1 signal wire has become shorted to APP power, APP1 has failed or the SECM has failed.

**Pedal1SensorRangeLo:** (Accelerator Pedal Position 1 Sensor Range is Low) the APP1 potentiometer has malfunctioned. An improper APP1 reading may be due to dirt or oxidation on the sensor traces.

**Pedal1SensorRangeHi:** (Accelerator Pedal Position 1 Sensor Range is High) the APP1 potentiometer has malfunctioned. An improper APP1 reading may be due to dirt or oxidation on the sensor traces.

**Pedal2SensorInputLo:** (Accelerator Pedal Position 2 Sensor Input is Low) normally set if the APP2 signal wire has become shorted to APP power, APP2 has failed or the SECM has failed.

**Pedal2SensorInputHi:** (Accelerator Pedal Position 2 Sensor Input is High) normally set if the APP2 signal wire has become disconnected or the circuit is open to the SECM.

**Pedal2SensorRangeLo:** (Accelerator Pedal Position 2 Sensor Range is Low) the APP2 potentiometer has malfunctioned. An improper APP2 reading may be due to dirt or oxidation on the sensor traces.

**Pedal2SensorRangeHigh:** (Accelerator Pedal Position 2 Sensor Range is Low) the APP2 potentiometer has malfunctioned. An improper APP2 reading may be due to dirt or oxidation on the sensor traces.

**Pedal1ToPedal2Difference:** (Accelerator Pedal Position Sensor 1 and Accelerator Pedal Position Sensor 2 are Different) normally set when APP1 measured pedal position is different from APP2 measured pedal position.

**AFRTrimValveOutput:** (Air Fuel Ratio Trim Valve (FTV) Driver) is normally set when the FTV driver signal is open due to the connector becoming disconnected.

**AFRTrimValveLowerDC:** (Air Fuel Ratio Trim Valve (FTV) Lower Duty Cycle) normally set when the duty cycle of the FTV reaches the minimum limit (running too lean).

**AFRTrimValveUpperDC:** (Air Fuel Ratio Trim Valve (FTV) Upper Duty Cycle) normally set when the duty cycle of the FTV reaches the maximum limit (running too rich).

**O2SensorSwitching:** (Oxygen Sensor Switching) is set when the O2 sensor can no longer switch or be driven above and below 500mv by the SECM.

**OxygenSensorInputHigh:** (Oxygen Sensor Input is High)

**OxygenSensorInputLow:** (Oxygen Sensor Input is Low)