CATERPILLAR ENGINE FAULT CODE DIAGNOSTICS

ROADTEC MILLING MACHINES ARE EQUIPPED WITH ELECTRONICALLY CONTROLLED ENGINES. THESE ENGINES OPERATE SMOOTHER, PRODUCE MORE HORSE POWER AND ARE MORE FUEL EFFICIENT THAN THEIR PREDECESSORS. ANOTHER BENEFIT OF AN ELECTRONICALLY CONTROLLED ENGINE IS THE ABILITY TO DIAGNOSE ENGINE MALFUNCTIONS THROUGH A SYSTEM OF FAULT CODES. WHEN A CATEPILLAR ENGINE EXPERIENCES A MALFUNCTION, THERE WILL BE A SERIES OF FLASHES BY THE ENGINE DIAGNOSTIC LAMP (FIGURE 1). TO UNDERSTAND WHAT IS GOING ON WITH THE ENGINE, THE OPERATOR OR TECHNICIAN MUST BE ABLE TO INTERPRET THESE FAULT CODES WHEN THEY APPEAR. THE REMAINDER OF THIS PROCEDURE, ARE EXCERPTS TAKEN FROM THE CATEPILLAR ENGINE OPERATIONS MANUAL. READ THE FOLLOWING EXPLANATIONS AND FLASH CODE CHART WHEN ENGINE FAULTS OCCUR.

FIGURE 1

CATERPILLAR ENGINE FAULT CODE DIAGNOSTICS

Troubleshooting with a Diagnostic Code

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Flash Codes

SMCS Code: 1000; 1900

Flash codes are used to represent diagnostic codes in the electronic system in order to alert the operator that a problem exists. The flash codes are a two digit number. A series of flashes represents the flash code on the diagnostic lamp.

EXAMPLE

Note: Flash Code 27 would flash on the diagnostic lamp in the following manner.

- Two short flashes
- Hesitation
- Seven short flashes

Note: Flash codes can represent more than one diagnostic code. Make a note of all of the diagnostic codes that are represented by a particular flash code.

After the diagnostic codes have been determined, refer to Troubleshooting, "Table of Contents" in order to determine the page that represents the diagnostic code.

Table 20

Cross Reference for Flash Codes			
Flash Code	**CID/FMI Code**	**SPN/FMI Code**	**Description of Code**
N/A	545-05	545-05	Ether Start Relay open/short to +batt
	545-06	545-06	Ether Start Relay short to ground
13	174-03	174-03	Fuel Temperature open/short to +batt
	174-04	174-04	Fuel Temperature short to ground
21	262-03	620-03	5 Volt Sensor DC Power Supply short to +batt
	262-04	620-04	5 Volt Sensor DC Power Supply short to ground
	263-03	678-03	Digital Sensor Supply short to +batt
	263-04	678-04	Digital Sensor Supply short to ground
24	100-03	100-03	Engine Oil Pressure open/short to +batt
	100-04	100-04	Engine Oil Pressure short to ground

(continued)

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Cross Reference for Flash Codes			
Flash Code	**CID/FMI Code**	**SPN/FMI Code**	**Description of Code**
25	273-00	102-00	Turbo Outlet Pressure above normal
	273-03	102-03	Turbo Outlet Pressure open/short to +batt
	273-04	102-04	Turbo Outlet Pressure short to ground
26	274-03	108-03	Atmospheric Pressure open/short to +batt
	274-04	108-04	Atmospheric Pressure short to ground
27	110-03	110-03	Engine Coolant Temperature open/short to +batt
	110-04	110-04	Engine Coolant Temperature short to ground
28	91-13	91-13	Throttle Position calibration required
32	91-08	91-08	Throttle Position signal abnormal
34	320-02	190-02	Speed/Timing Sensor Loss of Signal
	320-11	190-11	Speed/Timing Sensor mechanical failure
	342-02	723-02	Loss of Secondary Engine Speed signal
	342-11	723-11	Secondary Engine Speed Sensor mechanical failure
37	94-03	94-03	Fuel Pressure open/short to +batt
	94-04	94-04	Fuel Pressure short to ground
38	172-03	172-03	Intake Manifold Air Temp open/short to +batt
	172-04	172-04	Intake Manifold Air Temp short to ground
42	261-13	228-13	Engine Timing calibration required
51	168-02	168-02	System Voltage intermittent/erratic
53	254-12	N/A	Electronic Control Module Error
56	253-02	234-02	Personality Module mismatch
	268-02	1111-02	Check Programmable Parameters
58	247-09	639-09	J1939 Data Link communications
72	1-11	651-11	Injector Cylinder #1 mechanical failure
	2-11	652-11	Injector Cylinder #2 mechanical failure
73	3-11	653-11	Injector Cylinder #3 mechanical failure
	4-11	654-11	Injector Cylinder #4 mechanical failure
74	5-11	655-11	Injector Cylinder #5 mechanical failure
	6-11	656-11	Injector Cylinder #6 mechanical failure

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Diagnostic Codes

SMCS Code: 1000; 1900

Diagnostic Codes

Diagnostic codes are used by the electronic system in order to alert the operator that a problem exists. A diagnostic code also indicates the nature of the problem to the service technician.

Diagnostic Codes may be viewed by using the ET. The Component Identifier (CID) identifies a specific component in the system that is described by the diagnostic code. The Failure Mode Identifier (FMI) indicates the failure mode.