1997 6.5L (L57) Diesel P-truck, Hummer H1, OEM engine
Heavy Duty (> 8500 GVW) - ENGINE DIAGNOSTIC PARAMETERS

97t65Y_HD_yE.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALFUNCTION DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	MONITORING METHOD	FAULT CODE STORAGE AND MIL ILLUMINATION
Intake Air Temperature Circuit Low Input	P0112	0.24 volt to 4.86 volts -40°C to 152°C Detects a sensor circuit short to ground	Air temperature sensor voltage < 0.24 volt - same as - Air temperature > 160°C	Coolant temperature < 42.5°C	Diagnostic set conditions true for 2 seconds Test performed continuously	Air temperature sensor	B
Intake Air Temperature Circuit High Input	P0113	0.24 volt to 4.86 volts -40°C to 152°C Detects a sensor circuit short to high voltage or a sensor circuit open	Air temperature sensor voltage > 4.86 volt - same as - Air temperature < -40°C	Engine has been running > 8 minutes	Diagnostic set conditions true for 2 seconds Test performed continuously	Air temperature sensor	B
Engine Coolant Temperature Circuit Low Input	P0117	0.24 volt to 4.76 volts -40°C to 152°C Detects a sensor circuit short to ground	Coolant temperature sensor voltage < 0.24 volt - same as - Coolant temperature > 160°C		Diagnostic set conditions true for 2 seconds Test performed continuously	Coolant temperature sensor	B
Engine Coolant Temperature Circuit High Input	P0118	0.24 volt to 4.76 volts -40°C to 152°C Detects a sensor circuit short to high high voltage or a sensor circuit open	Coolant temperature sensor voltage > 4.76 volt - same as - Coolant temperature < -40°C	Engine run timer > 8 minutes	Diagnostic set conditions true for 2 seconds Test performed continuously	Coolant temperature sensor	B
Insufficient Coolant Temp for Stable Operation	P0126	Engine Temperature > 56°C Detects engine not warm enough for stable operation	Engine run time >= 600s Engine temperature < 56°C Fuel burned since start >= 1,000,000cu.mm. Total idle time since start < 450s - OR - Engine run time >= 300s Engine Temperature < 56°C Fuel burned since start >= 468,120cu.mm. Total idle time since start < 225s	*Ambient air temperature < f(eng. startup temp); Ambient air temp > -7°C; -7°C < Engine start-up temp < 56°C; Engine is running; P0126 not yet passed; P0112, P0113, P0117 and P0118 not set. * See Table DGTCMIT *Ambient air temperature >= f(eng. startup temp); Ambient air temp > -7°C; -7°C < Engine start-up temp < 56°C; Engine is running; P0126 not yet passed; P0112, P0113, P0117 and P0118 not set. * See Table DGTCMIT	Diagnostic set conditions true for 2 seconds Test performed once from start-up until a pass/fail/disable condition exists.	Engine coolant temperature sensor.	B
Fuel Temperature Sensor Circuit Low Input	P0182	0.24 volts - 4.96 volts 17°C - 106°C Detects a sensor circuit short to ground	Fuel temperature < 0.24 volts - same as - Fuel temperature > 106°C	None	Diagnostic set conditions true for 2 seconds Test performed continuously	Fuel temperature sensor	B
Fuel Temperature	P0183	0.24 volts - 4.96 volts 17°C - 106°C	Fuel temperature > 4.96 volts - same as -	Engine running > 8 minutes	Diagnostic set conditions true for 2 seconds	Fuel temperature sensor	B

Sensor Circuit High Input		Detects a sensor short to high voltage or sensor circuit open	Fuel temperature < 18°C		Test performed continuously		
Fuel Injection Timing Circuit Malfunction	P0216	| Desired timing - actual timing | =< 5 engine degrees Detects a failure of timing control under steady state conditions	| Desired timing - actual timing | > 5 pump degrees	Codes P0251, P0335 and P0370 clear Engine not stalled No change in engine speed > 56 RPM for a minimum of 5 seconds	Diagnostic set conditions true for 2 seconds Test performed continuously	Crank Sensor Optical Sensors (HRS, Cam)	B

* Backup fueling mode occurs if any of the following codes are set: P0251, P0335, P0370

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Lift Pump Voltage Low	P0231	Lift pump voltage > Ignition voltage - 4 volts Detects a low voltage at the lift pump when the lift pump is commanded high	Lift pump voltage < Ignition voltage - 4 volts	Lift pump is commanded high	Lift pump commanded high > .5 second Diagnostic set conditions true for 2 seconds Test performed continuously	A/D voltage input of lift pump voltage	B
Fuel Injection Pump cam Position Sensor (CAM) Malfunction	P0251	Number of consecutive missing CAM pulses < 8 Number of CAM pulses per #1 cylinder event = 8. This must be true for 8 #1 cylinder events for RPM < 300 or 32 #1 cylinder events for RPM >= 300	Number of consecutive missing CAM pulses >= 8 Number of CAM pulses per #1 cylinder event <> 8 for 8 #1 cylinder events Number of CAM pulses per #1 cylinder event <> 8 for 32 #1 cylinder events	Ratio of CAM to HRS = 1:64 +/- 4 RPM < 300 RPM >= 300	Test performed continuously	Optical Sensors (HRS, Cam) Crank Sensor	A
Engine Crankshaft Position Sensor (CPS) Malfunction	P0335	Number of consecutive missing CPS pulses < 8 Number of CPS pulses per #1 cylinder event = 8. This must be true for 8 #1 cylinder events for RPM < 300 or 32 #1 cylinder events for RPM >= 300	Number of consecutive missing CPS pulses >= 8 Number of CPS pulses per #1 cylinder event <> 8 for 8 #1 cylinder events Number of CPS pulses per #1 cylinder event <> 8 for 32 #1 cylinder events	Ratio of CPS to HRS = 1:64 +/- 4 RPM < 300 RPM >= 300	Test performed continuously	Optical Sensors (HRS, Cam) Crank Sensor	A
Fuel Injection Pump High Resolution Angular Sensor (HRS) Malfunction	P0370	HRS pulses must be received by the PCM for every 8 CAM pulses	HRS free running pump counter = old count for > 8 consecutive CAM pulses	None	Test performed continuously	Optical Sensors (HRS, Cam)	A
Glow Plug Circuit Malfunction	P0380	| glowplug voltage - ignition voltage | =< 2.0 volts Detects a faulty glowplug relay circuit	Glowplugs commanded off & raw feedback > 4.0 v - OR - Glowplugs commanded on & raw feedback < 4.0 v - OR - Glowplugs commanded on and |glowplug voltage - ignition voltage| > 2 v	A/D inputs settled	Diagnostic set conditions true for 2 seconds Test performed continuously	A/D glowplug voltage input	B
Flash Memory Malfunction	P0601	Detects a Malfunction in the Flash Memory	Calculated checksum <> flashed calibration checksum		Test performed at power-up reset and continuously.	Software	A
Control	P0602		Calibration is not engine run compatible			Software	

Module Programming Error		Detects a calibration that is not engine compatible.			Test performed at power-up reset.		A
PCM Processor Fault	P0606	Detects a TIO malfunction	Advance angle read from TIO > 1102 HRS Counts CAM pulse edge detect counter > 6 slow CAM edge counts	Engine Speed > 38 RPM Malf counter >= 6 TIO faults P0606 code set OR TIO malf (P0606) detected	Diagnostic set conditions true for 2 seconds Test performed continuously	Software	A

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Injection Pump Timing Reference Offset Error	P1214	-23 HRS Counts < Cal - Filtered Advance < 23 Hi Res Cnts	Cal - Filtered Advance > 23 HRS Counts - OR - Cal - Filtered Advance < -23 HRS Counts	None	Test performed continuously	Software	B
Fuel Pump Calibration Resistor Fault	P1218	0.27 volt to 4.29 volt Detects an invalid fuel pump calibration resistor learn	Fuel pump calibration resistor voltage < 0.27 volt - OR - Fuel pump calibration resistor voltage > 4.29 volts	Fuel pump calibration resistor invalid flag set - OR - Selected fuel pump calibration resistor address invalid	Test performed at power-up and running reset initialization	Fuel pump calibration resistor	B
PCM A/D Intermittent On	P1627	Less than 5 consecutive A/D read errors Detects when 5 consecutive A/D read errors occur	5 consecutive A/D read errors occur	None	Diagnostic set conditions true for 2 seconds Test performed continuously	PCM A/D Convertor	B
Glow Plug Light Output Circuit Failed	P1643	No ODM 'Open' Faults or 'Short' Fault Glowplug light output voltage at PCM follows S/W command	ODM 'Open' or 'Short' Fault Detected Glowplug light output voltage at PCM does not follow S/W command	None	Diagnostic set conditions true for 2 seconds Test performed continuously	ODM chip internal open/short detection circuit	B

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*Tables

DGTCMIT	
Start-up Engine Temperature	Ambient Air Temperature
-40°C	149.75
-16°C	149.75
8°C	16.25
32°C	-1
56°C	-13
80°C	-13
104°C	-13
128°C	-13
152°C	-13

DGTLOEAP	
Ambient Air Pressure	Lowest Achieved EGR Absolute Pressure
64 kPa	51 kPa
80 kPa	51 kPa
96 kPa	61 kPa
112 kPa	71.5 kPa
128 kPa	127.5 kPa

DGTMFERE	
Ambient Air Pressure	Mass Air Flow Error Enable
64 kPa	0.4609 g/cyl
80 kPa	0.5078 g/cyl
96 kPa	0.5547 g/cyl
112 kPa	0.6016 g/cyl
128 kPa	0.6016 g/cyl

DGTNINEM	
Ambient Air Pressure	Nominal Idle No-EGR Mass Air Flow
64 kPa	0.4141 g/cyl
80 kPa	0.5781 g/cyl
96 kPa	0.7422 g/cyl
112 kPa	0.9063 g/cyl
128 kPa	1.0703 g/cyl

DGTNOIM	
Ambient Air Pressure	Nominal Off Idle No-EGR Mass Air Flow
64 kPa	0.5781 g/cyl
80 kPa	0.7148 g/cyl
96 kPa	0.8516 g/cyl
112 kPa	0.9883 g/cyl
128 kPa	1.1250 g/cyl

DGTNIFEM	
Ambient Air Pressure	Nominal Idle Full-EGR Mass Air Flow
48 kPa	0.2891 g/cyl
64 kPa	0.3008 g/cyl
80 kPa	0.3281 g/cyl
96 kPa	0.4844 g/cyl
112 kPa	0.6406 g/cyl
128 kPa	0.6406 g/cyl