2005 5.3L (LM7) PARALLEL HYBRID TRUCK
Starter Generator Control Module (SGCM)

DIAGNOSTIC PARAMETERS

2005file11_SGCM.doc

SENSED PARAMETER	FAULT CODE	MONITOR STRATEGY	MALFUNCTION CRITERIA AND THRESHOLD VALUES	SECONDARY PARAMETERS AND ENABLE CONDITIONS	TIME LENGTH AND FREQUENCY	MIL ILLUM. TYPE
Engine Speed Circuit	**P0725**	This DTC indicates that the engine speed signals are within range of each other	The 12X input and GM LAN bus differ from each other by more than 10% (KE_RationalCheck12XCAN_Percent)	The speed is between 500 rpm (KE_12XCANMinThreshold_Speed) and 2500 rpm (KE_12XCANMaxThreshold_Speed)AND the rate of change is less than 1000 rpm/sec (KE_12XCANMinThreshold_RateOfChange)	3348 test failures in a 4464 test samples Frequency: 1 sample/1.12 ms	DTC Type B
Starter/Generator Control Module Coolant Temperature Sensor 1 Performance	**P0A01**	This DTC determines if Temperature sensor 1 is within the average of the sensors	If sensor 1 is > 15 deg C (KE_TempOutOfRangeRationality_Delta) from the average of the three sensors	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Temperature Sensor 1 Circuit Low Voltage	**P0A02**	This DTC determines if Temperature sensor 1 is reading low voltage	SGCM_Temp1 > 1020 ADC counts (KE_TempOutOfRangeHigh_ADCTemp)	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Temperature Sensor 1 Circuit High Voltage	**P0A03**	This DTC determines if Temperature sensor 1 is reading high voltage	SGCM_Temp1 < 2 ADC counts (KE_TempOutOfRangeLow_ADCTemp)	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Pump Relay Control Circuit Low Voltage	**P0A06**	This DTC determines if the SGCM coolant pump circuit is reading low voltage	The LSD channel which is connected to the SGCM Pump Relay is indicating an OPEN	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	546 test failures in a 600 test samples Frequency: 1 sample/100 ms	DTC Type B
Starter/Generator Control Module Coolant Pump Relay Control Circuit High Voltage	**P0A07**	This DTC determines if the SGCM coolant pump circuit is reading high voltage	The LSD channel which is connected to the SGCM Pump Relay is indicating a SHORT	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	546 test failures in a 600 test samples Frequency: 1 sample/100 ms	DTC Type B
Starter/Generator Control Module Overtemperature	**P0A3E**	This DTC indicates the SGCM is overtemperature	SGCM_Temp is > 100 deg C (KE_OverTempFail_Temp)	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	25 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type B

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Starter/Generator Control Module Not Programmed	**P1A6C**	This DTC indicates the SGCM has not been programmed with the correct software	KE_SGCMProgramming_Flag = FALSE	N/A	1 test failure in a 1 test sample Frequency: 1 sample/100 ms	DTC Type A
Starter/Generator Control Module Coolant Temperature Sensor 2 Performance	**P1A75**	This DTC determines if Temperature sensor 2 is within the average of the sensors	If sensor 2 is > 15 deg C (KE_TempOutOfRangeRationality_Delta) from the average of the three sensors	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Temperature Sensor 2 Circuit Low Voltage	**P1A76**	This DTC determines if Temperature sensor 2 is reading low voltage	SGCM_Temp2 > 1020 ADC counts (KE_TempOutOfRangeHigh_ADCTemp)	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Temperature Sensor 2 Circuit High Voltage	**P1A77**	This DTC determines if Temperature sensor 2 is reading high voltage	SGCM_Temp2 < 2 ADC counts (KE_TempOutOfRangeLow_ADCTemp)O	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Temperature Sensor 3 Performance	**P1A78**	This DTC determines if Temperature sensor 3 is within the average of the sensors	If sensor 3 is > 15 deg C (KE_TempOutOfRangeRationality_Delta) from the average of the three sensors	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Temperature Sensor 3 Circuit Low Voltage	**P1A79**	This DTC determines if Temperature sensor 3 is reading low voltage	SGCM_Temp3 > 1020 ADC counts (KE_TempOutOfRangeHigh_ADCTemp)	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Temperature Sensor 3 Circuit High Voltage	**P1A7A**	This DTC determines if Temperature sensor 3 is reading high voltage	SGCM_Temp3 < 2 counts (KE_TempOutOfRangeLow_ADCTemp)	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C

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Starter/Generator Control Module Overtemperature - High Voltage System Disabled	**P1A7E**	This DTC indicates the SGCM is severely overtemperature	SGCM_Temp is > 110 deg C (KE_SevereOverTempFail_Temp)	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	25 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Level Sensor 1 Low Voltage	**P1A7F**	This DTC determines if coolant level sensor 1 is reading low voltage	Fluid level sensor X indicates a temperature that is lower than its normal operating range	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Level Sensor 1 High Voltage	**P1A80**	This DTC determines if coolant level sensor 1 is reading high voltage	Fluid level sensor X indicates a temperature that is higher than its normal operating range	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Level Sensor 2 Low Voltage	**P1A81**	This DTC determines if coolant level sensor 2 is reading low voltage	Fluid level sensor X indicates a temperature that is lower than its normal operating range	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Level Sensor 2 High Voltage	**P1A82**	This DTC determines if coolant level sensor 2 is reading high voltage	Fluid level sensor X indicates a temperature that is higher than its normal operating range	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Level Sensor 3 Low Voltage	**P1A83**	This DTC determines if coolant level sensor 3 is reading low voltage	Fluid level sensor X indicates a temperature that is lower than its normal operating range	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Level Sensor 3 High Voltage	**P1A84**	This DTC determines if coolant level sensor 3 is reading high voltage	Fluid level sensor X indicates a temperature that is higher than its normal operating range	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Control Module Coolant Level Sensor 4 Low Voltage	**P1A85**	This DTC determines if coolant level sensor 4 is reading low voltage	Fluid level sensor X indicates a temperature that is lower than its normal operating range	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C

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Starter/Generator Control Module Coolant Level Sensor 4 High Voltage	**P1A86**	This DTC determines if coolant level sensor 4 is reading high voltage	Fluid level sensor X indicates a temperature that is higher than its normal operating range	Reference Voltage is Stable and Accurate AND Configuration has been initialized correctly and is stable	38 test failures in a 50 test samples Frequency: 1 sample/100 ms	DTC Type C
Starter/Generator Phase U Current Sensor Performance	**P1AA9**	This DTC determines phase U is offset	Value of Phase U Current is indicating an offset condition (not equal magnitudes on each side of zero)	N/A	3348 test failures in a 4464 test samples Frequency: 1 sample/1.12 ms	DTC Type C
Starter/Generator Phase W Current Sensor Performance	**P1AAA**	This DTC determines phase W is offset	Value of Phase W Current is indicating an offset condition (not equal magnitudes on each side of zero)	N/A	3348 test failures in a 4464 test samples Frequency: 1 sample/1.12 ms	DTC Type C
Starter/Generator Phase U-V-W Correlation	**P1AAE**	This DTC indicates that the 3 phases are unbalanced	An unbalanced operating condition is present during steady state operation	N/A	3348 test failures in a 4464 test samples Frequency: 1 sample/1.12 ms	DTC Type C
Hybrid System Voltage	**P1AB2**	This DTC indicates that the 42 V bus power is equivalent to the loads being drawn from the bus	SGCM42VBus_Current * SGCM42VBus_Voltage does not equal ((APM_Loads * 90 (KE_APMEfficencyInPercentage)) + (APO_Loads * 80 (KE_APOEfficencyInPercentage))) +/- KE_42VBusCorrelation_Percentage	APMLoads_Valid AND APOLoads_Valid AND StarterGeneratorLoads_Valid AND SGCM42VBusVoltage_Valid AND SGCM42VBusCurrent_Valid = VALID, and CONVERTER_ASM_STATE ==OFF	4870 test failures in a 5352 test samples Frequency: 1 sample/11.2 ms	DTC Type C
Crankshaft Position Signal Output Circuit	**P2617**	This DTC indicates that the crankshaft position signals are within range of each other	The 12X and 2X signals differ from each other by more than 6% (KE_RationalCheck12X2X_Percent)	The speed is between 800 rpm (KE_12X2XMinThreshold_Speed) and 2500 rpm (KE_12X2XMaxThreshold_Speed)	3348 test failures in a 4464 test samples Frequency: 1 sample/1.12 ms	DTC Type B
Starter/Generator Control Module Lost Communication With Hybrid Powertrain Control Module	**U1898**	This DTC indicates that the SGCM lost communication with the HCM	When the HCM is not present on the GM LAN bus, or the HCM_RollingCounter becomes stale	N/A	100 test failures in a 200 test samples Frequency: 1 sample/100 ms	DTC Type B