2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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
Camshaft Position [CMP] Sensor Correlation	**P0016**	CAM edges in one crank revolution =3	0 < CAM edges in one crank revolution < 3	Ignition On Not in powerdown mode In Syncro_Mode Powerup time>=0.5sec	15 failures out of 35 samples	Check number of CAM edges	B
Variable Nozzle Turbo(VNT) Solenoid Circuit Fault	**P0045**	ECM reports no faults on the output driver or 170 a/d counts < measured current < 1000 a/d counts	ECM reports faults on the output driver or measured current <170 a/d counts measured current > 1000 a/d counts	Engine Run Time > 30 sec	Diagnostic set conditions true for for 2 seconds Test performed continuously	VNT Solenoid	B
Variable Nozzle Turbo(VNT) Open/Close Performancet	**P0046**	Value for VNT Position sensor when vanes are open: 58 < ad counts <375 Value for VNT Position sensor when vanes are closed: 649 < ad counts < 961	Value for VNT Position sensor when vanes are open: ad counts < 58 or ad counts > 375 Value for VNT Position sensor when vanes are closed: ad counts < 649 or ad counts > 961	Ignition is on and VNT open/close position learning complete Device control=Not active P2563, P2564, P2565 are not set.	Diagnostic set conditions true for for .016 seconds Once per ignition cycle	VNT Position when ECM is commanding vanes open or vanes closed.	B
Fuel Rail Pressure [FRP] Too Low	**P0087**	Rail pressure should be higher than minimum commanded rail pressure minus possible transitional undershoot	rp < 0.0MPa :0-400rpm 22.5MPa:600-4000RPM 30.0MPa :over 4000RPM	No related malfunction (RPS_LO P0192 RPS_HI P0193, 5VB1_circuit_LO P0642 5VB1_circuit_HI P0643 Rail Pressure Feedback Mode Key_on_time>0.125 Sec. Fuel_Mode Rail Pressure>0MPa Device control=Not active	99 Failure out of 100 sample	Rail Pressure sensor	
Fuel Rail Pressure [FRP] Too High	**P0088**	Rail pressure should be higher than minimum commanded rail pressure minus possible transitional undershoot	Case.1 rp > 167MPa Case.2 rp > 190MPa	No related malfunction RPS_LO P0192 RPS_HI P0193, 5VB1_circuit_LO P0642 5VB1_circuit_HI P0643) not in Power_Down_Mode Rail Pressure Feedback Mode Key_on_time>0.125 Sec. Device control=Not active	Case.1 49 Failure out of 50 sample Case.2 49 Failure out of 50 sample	Rail Pressure sensor	A
Fuel Pressure Regulator Performance	**P0089**	Positive rail pressure error should be within 20MPa, Commande pump fuel flow>100mm3/sec	rp -Drp > 20MPa and cmdpumpflow <= 100mm3/sec	No related malfunction (RPS_LO P0192 RPS_HI P0193 5VB1_circuit_LO P0642 5VB1_circuit_HI P0643) Rail Pressure Feedback Mode Key_on_time>0.125 Sec. Fuel_Mode Not in Bank shutoff Mode Device control=Not active	110 Failure out of 120 sample	Rail Pressure sensor and Commanded Pump Fuel Flow	A
Fuel Pressure Regulator Control Circuit	**P0090**	50mA<RPCV_Current<1600mA	|rpcv_current_error| > 500 mA Counts or rpcv_current > 480 AD Counts or rpcv_current < 13 AD	IGNITION ON EDU/RPCV Relay on Not in Powerdown_Mode Key_on_time>0.125 Sec. Cmd_RPCV_Current<=1500mA Cmd_RPCV_Current>=400mA	49 Failure out of 50 sample	RPCV current	A

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Fuel Rail Pressure Low During Power Enrichment	**P1093**	Negative rail pressure error should be within 20MPa Commanded pump flow should be lower than pump capability	Drp - rp > 20MPa:0-2200rpm 30MPa:2400rpm-5000rpm and cmdpumpflow >= 10000:0-400rpm 11030:400rpm 15000:600rpm 19200:800rpm 23400:1000rpm 27600:1200rpm 31800:1400rpm 36000:1600rpm 40200:1800rpm 44400:2000rpm 48600:2200rpm 54000:2400rpm 54000	No related malfunction (RPS_LO P0192 RPS_HI P0193 5VB1_circuit_LO P0642 5VB1_circuit_HI P0643) Rail pressure Feedback Mode Key_on_time>0.125Sec. Fuel_Mode Device control=Not active	49 Failure out of 50 sample	Rail Pressure sensor and Commanded Fuel flow to pump	A
Fuel Rail Pressure [FRP] Sensor Circuit Low Voltage	**P0192**	0.1 Volt to 4.9 Volt	rp_ad <= 42 AD Counts	No related malfunction (5VB1_circuit_LO P0642 5VB1_circuit_HI P0643) IGNITION is ON not in Power_Down_Mode Key_on_time>0.125 Sec.	19 Failure out of 20 sample	Piezo Pressure Sensor	A
Fuel Rail Pressure [FRP] Sensor Circuit High Voltage	**P0193**	0.1 Volt to 4.9 Volt	rp_ad >= 963 AD Counts	No related malfunction 5VB1_circuit_LO P0642 5VB1_circuit_HI P0643I IGNITION is ON not in Power_Down_Mode Key_on_time>0.125 Sec.	19 Failure out of 20 sample	Piezo Pressure Sensor	A
Injector 1 Control Circuit	**P0201**	No Error Message from EDU	"#1 Load Drop" or "#1 HSD Over current" or "#1 LSD Overcurrent" or "Bank1 Booster Low"	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A
Injector 2 Control Circuit	**P0202**	No Error Message from EDU	"#2 Load Drop" or "#2 HSD Over current" or "#2 LSD Overcurrent" or "Bank2 Booster Low"	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A
Injector 3 Control Circuit	**P0203**	No Error Message from EDU	"#3 Load Drop" or "#3 HSD Over current" or "#3 LSD Overcurrent" or "Bank2 Booster Low"	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A
Injector 4 Control Circuit	**P0204**	No Error Message from EDU	"#4 Load Drop" or "#4 HSD Over current" or "#4 LSD Overcurrent" or Bank1 Booster Low"	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Injector 5 Control Circuit	**P0205**	No Error Message from EDU	"#5 Load Drop" or "#5 HSD Over current" or "#5 LSD Overcurrent" or "Bank2 Booster Low"	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A
Injector 6 Control Circuit	**P0206**	No Error Message from EDU	"#6 Load Drop" or "#6 HSD Over current" or "#6 LSD Overcurrent" or "Bank1 Booster Low"	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A
Injector 7 Control Circuit	**P0207**	No Error Message from EDU	"#7 Load Drop" or "#7 HSD Over current" or "#7 LSD Overcurrent" or "Bank1 Booster Low"	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A
Injector 8 Control Circuit	**P0208**	No Error Message from EDU	"#8 Load Drop" or "#8 HSD over current" or "#8 LSD Overcurrent" or "Bank2 Booster Low"	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A
Injector 1 Output Circuit (R/C)	**P1223**	No Error Message from EDU	Signal from TFD	IGN on Poweruptime>0.5sec rpm>300rpm Fuel Mode	130 out of 150 (Every 32ms)	OUTD Mornitoring in ECM	B
		1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)" or "wrong segment Req. " or "simultaneous Req. " or "number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st and bpw>60us and blankshot not active	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode rpm>300rpm	130 out of 150 (Every 32ms)	Mornitoring in EDU and message transferred via CAN	
Injector 2 Output Circuit (R/C)	**P1226**	No Error Message from EDU	Signal from TFD	IGN on Poweruptime>0.5sec rpm>300rpm Fuel Mode	130 out of 150 (Every 32ms)	OUTD Mornitoring in ECM	B
		1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)" or "wrong segment Req. " or "simultaneous Req. " or "number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st and bpw>60us and blankshot not active	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode rpm>300rpm	130 out of 150 (Every 32ms)	Mornitoring in EDU and message transferred via CAN	
Injector 3 Output Circuit (R/C)	**P1229**	No Error Message from EDU	Short High Signal from TFD	IGN on Poweruptime>0.5sec rpm>300rpm Fuel Mode	130 out of 150 (Every 32ms)	OUTD Mornitoring in ECM	B
		1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)" or "wrong segment Req. " or "simultaneous Req. " or "number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st and bpw>60us and blankshot not active	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode rpm>300rpm	130 out of 150 (Every 32ms)	Mornitoring in EDU and message transferred via CAN	

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Injector 4 Output Circuit (R/C)	**P1232**	No Error Message from EDU	Signal from TFD	IGN on Poweruptime>0.5sec rpm>300rpm Fuel Mode	130 out of 150 (Every 32ms)	OUTD Mornitoring in ECM	B
		1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)" or "wrong segment Req. " or "simultaneous Req. " or "number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st and bpw>60us and blankshot not active	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode rpm>300rpm	130 out of 150 (Every 32ms)	Mornitoring in EDU and message transferred via CAN	
Injector 5 Output Circuit (R/C)	**P1235**	No Error Message from EDU	Signal from TFD	IGN on Poweruptime>0.5sec rpm>300rpm Fuel Mode	130 out of 150 (Every 32ms)	OUTD Mornitoring in ECM	B
		1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)" or "wrong segment Req. " or "simultaneous Req. " or "number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st and bpw>60us and blankshot not active	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode rpm>300rpm	130 out of 150 (Every 32ms)	Mornitoring in EDU and message transferred via CAN	
Injector 6 Output Circuit (R/C)	**P1238**	No Error Message from EDU	Signal from TFD	IGN on Poweruptime>0.5sec rpm>300rpm Fuel Mode	130 out of 150 (Every 32ms)	OUTD Mornitoring in ECM	B
		1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)" or "wrong segment Req. " or "simultaneous Req. " or "number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st and bpw>60us and blankshot not active	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode rpm>300rpm	130 out of 150 (Every 32ms)	Mornitoring in EDU and message transferred via CAN	
Injector 7 Output Circuit (R/C)	**P1241**	No Error Message from EDU	Signal from TFD	IGN on Poweruptime>0.5sec rpm>300rpm Fuel Mode	130 out of 150 (Every 32ms)	OUTD Mornitoring in ECM	B
		1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)" or "wrong segment Req. " or "simultaneous Req. " or "number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st and bpw>60us and blankshot not active	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode rpm>300rpm	130 out of 150 (Every 32ms)	Mornitoring in EDU and message transferred via CAN	
Injector 8 Output Circuit (R/C)	**P1244**	No Error Message from EDU	Signal from TFD	IGN on Poweruptime>0.5sec rpm>300rpm Fuel Mode	130 out of 150 (Every 32ms)	OUTD Mornitoring in ECM	B

2005 6.6L (LLY) Duramax Diesel
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		1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)" or "wrong segment Req. " or "simultaneous Req. " or "number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st and bpw>60us and blankshot not active	IGN on Poweruptime>0.5sec CAN MSG from EDU is valid Not in Poweroff Mode rpm>300rpm	130 out of 150 (Every 32ms)	Mornitoring in EDU and message transferred via CAN	
Injector Positive Voltage Control Circuit Group 1	**P2146**	No Error Message from EDU	"HSOC #1 or #4 or #6 or #7" or "LSOC #1 or #4 or #6 or #7" or "Boost low EDU Bank 1" or "load drop #1 or #4 or #6 or #7"	CAN MSG from EDU is valid IGN on Power up time>0.5sec Not in Power off Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A
Injector Positive Voltage Control Circuit Group 2	**P2149**	No Error Message from EDU	"HSOC #2 or #3 or #5 or #8" or "LSOC #2 or #3 or #5 or #8" or "Boost low EDU Bank 2" or "load drop #2 or #3 or #5 or #8"	CAN MSG from EDU is valid IGN on Power up time>0.5sec Not in Power off Mode	20 out of 40 (32ms)	Mornitoring in EDU and message transferred via CAN	A
Engine Misfire Detected	**P0300**	# of detected misfire cylinders =< 1	Number of detected misfire cylinders > 1	Misfire Test Completed=TRUE	once per ignition cycle	Cylinder engine speed and cylinder fuel rate	B
Cylinder 1 Misfire Detected	**P0301**	Cylinder #1 fuel rate adjustment < 14.5 mm3/stroke	Cylinder #1 fuel rate greater than desired fuel rate by >= 14.5 mm3/stroke	P0335, P0336, P0116, P0117, P0118 are not set. Coolant temperature >= 55.5degC Engine mode =Idle mode: rpm<=930rpm and vehicle speed<=100MPH Cylinder Balancing=Enable 104degC>Coolant temp>=-30degC and APS <1% and 200rpm< =rpm <=1000rpm and vhecle speed <=1MPH and fuel >=3 mm^3/st Device control=Not active	Each Test performed for10 seconds if pending fail counter>=2 Report Diagnostic Failed if Pending Passed Counter>=2 ReportDiagnostic Passed Max thtee test performed per	Cylinder engine speed and cylinder fuel rate	B
Cylinder 2 Misfire Detected	**P0302**	Cylinder #2 fuel rate adjustment < 14.5 mm3/stroke	Cylinder 2 fuel rate greater than desired fuel rate by >= 14.5 mm3/stroke	P0335, P0336, P0116, P0117, P0118 are not set. Coolant temperature >= 55.5degC Engine mode =Idle mode: rpm<=930rpm and vehicle speed<=100MPH Cylinder Balancing=Enable 104degC>Coolant temp>=-30degC and APS <1% and 200rpm< =rpm <=1000rpm and vhecle speed <=1MPH and fuel >=3 mm^3/st Device control=Not active	Each Test performed for10 seconds if pending fail counter>=2 Report Diagnostic Failed if Pending Passed Counter>=2 ReportDiagnostic Passed Max thtee test performed per	Cylinder engine speed and cylinder fuel rate	B

2005 6.6L (LLY) Duramax Diesel
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Cylinder 3 Misfire Detected	**P0303**	Cylinder #3 fuel rate adjustment < 14.5 mm3/stroke	Cylinder #3 fuel rate greater than desired fuel rate by >= 14.5 mm3/stroke	P0335, P0336, P0116, P0117, P0118 are not set. Coolant temperature >= 55.5degC Engine mode =Idle mode: rpm<=930rpm and vehicle speed<=100MPH Cylinder Balancing=Enable 104degC>Coolant temp>=-30degC and APS <1% and 200rpm< =rpm <=1000rpm and vhecle speed <=1MPH and fuel >=3 mm^3/st Device control=Not active	Each Test performed for10 seconds if pending fail counter>=2 Report Diagnostic Failed if Pending Passed Counter>=2 ReportDiagnostic Passed Max thtee test performed per	Cylinder engine speed and cylinder fuel rate	B
Cylinder 4 Misfire Detected	**P0304**	Cylinder #4 fuel rate adjustment < 14.5 mm3/stroke	Cylinder #4 fuel rate greater than desired fuel rate by >= 14.5 mm3/stroke	P0335, P0336, P0116, P0117, P0118 are not set. Coolant temperature >= 55.5degC Engine mode =Idle mode: rpm<=930rpm and vehicle speed<=100MPH Cylinder Balancing=Enable 104degC>Coolant temp>=-30degC and APS <1% and 200rpm< =rpm <=1000rpm and vhecle speed <=1MPH and fuel >=3 mm^3/st Device control=Not active	Each Test performed for10 seconds if pending fail counter>=2 Report Diagnostic Failed if Pending Passed Counter>=2 ReportDiagnostic Passed Max thtee test performed per	Cylinder engine speed and cylinder fuel rate	B
Cylinder 5 Misfire Detected	**P0305**	Cylinder #5 fuel rate adjustment < 14.5 mm3/stroke	Cylinder #5 fuel rate greater than desired fuel rate by >= 14.5 mm3/stroke	P0335, P0336, P0116, P0117, P0118 are not set. Coolant temperature >= 55.5degC Engine mode =Idle mode: rpm<=930rpm and vehicle speed<=100MPH Cylinder Balancing=Enable 104degC>Coolant temp>=-30degC and APS <1% and 200rpm< =rpm <=1000rpm and vhecle speed <=1MPH and fuel >=3 mm^3/st Device control=Not active	Each Test performed for10 seconds if pending fail counter>=2 Report Diagnostic Failed if Pending Passed Counter>=2 ReportDiagnostic Passed Max thtee test performed per	Cylinder engine speed and cylinder fuel rate	B

2005 6.6L (LLY) Duramax Diesel
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Cylinder 6 Misfire Detected	**P0306**	Cylinder #6 fuel rate adjustment < 14.5 mm3/stroke	Cylinder #6 fuel rate greater than desired fuel rate by >= 14.5 mm3/stroke	P0335, P0336, P0116, P0117, P0118 are not set. Coolant temperature >= 55.5degC Engine mode =Idle mode: rpm<=930rpm and vehicle speed<=100MPH Cylinder Balancing=Enable 104degC>Coolant temp>=-30degC and APS <1% and 200rpm< =rpm <=1000rpm and vhecle speed <=1MPH and fuel >=3 mm^3/st Device control=Not active	Each Test performed for10 seconds if pending fail counter>=2 Report Diagnostic Failed if Pending Passed Counter>=2 ReportDiagnostic Passed Max thtee test performed per	Cylinder engine speed and cylinder fuel rate	B
Cylinder 7 Misfire Detected	**P0307**	Cylinder #7 fuel rate adjustment < 14.5 mm3/stroke	Cylinder #7 fuel rate greater than desired fuel rate by >= 14.5 mm3/stroke	P0335, P0336, P0116, P0117, P0118 are not set. Coolant temperature >= 55.5degC Engine mode =Idle mode: rpm<=930rpm and vehicle speed<=100MPH Cylinder Balancing=Enable 104degC>Coolant temp>=-30degC and APS <1% and 200rpm< =rpm <=1000rpm and vhecle speed <=1MPH and fuel >=3 mm^3/st Device control=Not active	Each Test performed for10 seconds if pending fail counter>=2 Report Diagnostic Failed if Pending Passed Counter>=2 ReportDiagnostic Passed Max thtee test performed per	Cylinder engine speed and cylinder fuel rate	B
Cylinder 8 Misfire Detected	**P0308**	Cylinder #8 fuel rate adjustment < 14.5 mm3/stroke	Cylinder #8 fuel rate greater than desired fuel rate by >= 14.5 mm3/stroke	P0335, P0336, P0116, P0117, P0118 are not set. Coolant temperature >= 55.5degC Engine mode =Idle mode: rpm<=930rpm and vehicle speed<=100MPH Cylinder Balancing=Enable 104degC>Coolant temp>=-30degC and APS <1% and 200rpm< =rpm <=1000rpm and vhecle speed <=1MPH and fuel >=3 mm^3/st Device control=Not active	Each Test performed for10 seconds if pending fail counter>=2 Report Diagnostic Failed if Pending Passed Counter>=2 ReportDiagnostic Passed Max thtee test performed per	Cylinder engine speed and cylinder fuel rate	B
Crankshaft Position [CKP] Sensor Circuit	**P0335**	Hall Effect Sensor	No Crank Edge counter >=5	CAM is rotating Ignition ON Key_on_time>0.5sec Not in powerdown mode	60 failures out of 80 samples. Samples are taken every 31.6 ms.	Checks the number of Crank pulses every 7.8 ms	B
Crankshaft Position [CKP] Sensor Performance	**P0336**	Hall Effect Sensor 57 pulses and gap per 1 crank revolution	Number of teeth between gap and gap is not equal to 57 but not equal to 0	Ignition ON Key_on_time>0.5sec Not in powerdown mode As soon as a synch tooth is detected	15 failures out of 20 samples	Checks the number of Crank pulses between the last synch event and the current	B

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Camshaft Position [CMP] Sensor Circuit	**P0340**	Hall Effect Sensor	No CAM interrupts received in 2 seconds.	Engine speed > 60rpm Ignition ON Not in Power down mode Key_on_time>0.5sec	60 failures out of 80 samples. Samples are taken every 31.6 ms.	Checks CAM interrupts every 7.8 ms	A
Camshaft Position [CMP] Sensor Performance	**P0341**	10 <= Crank tooth at CAM edge <= 14	14 < Crank tooth at CAM edge or Crank tooth at CAM edge < 10	Ignition On Not in powerdown mode Keyontime>0.5sec Engine speed > 60rpm No related malfunction In Syncro Mode	15 failures out of 20 samples Every crank revolution	Check crank tooth number at CAM edge	B
High Resolution Circuit	**P0370**	Buffered Signal of Hall Effect Sensor	Message has the 'No crank signal' bit on.	Engine speed >= 60rpm Ignition ON Key_on_time>0.5sec Not in Power down mode	100 failures out of 120 samples. Samples are taken every 31.6 ms.	Monitored by EDU and message transferred by CAN	A
High Resolution System Performance	**P0374**	Buffered Signal of Hall Effect Sensor	Message has the '57X Signal Implausible' bit on.	Engine speed >= 60rpm Ignition ON Key_on_time>0.5sec Not in Power down mode	100 failures out of 120 samples. Samples are taken every 31.6 ms.	Monitored by EDU and message transferred by CAN	A
Fuel Injector Control Module System Voltage	**P1550**		EDU battery voltage out of range	Ignition on Initialization complete Poweruptime > 0 Not in Poweroff Mode CAN MSG is Valid Engine Speed > 60rpm 11 <= Battery voltage <= 16	30 out of 50 (Every 125ms)	CAN Message from EDU	C
Wait to Start Lamp (WTS) Control Circuit	**P0381**	Ignition voltage between 6 and 18 volts	WTS Output WTS fail counter incremented if WTS output driver indicates a fault condition (open/short ckt)	Ignition on Ignition voltage between 6 and 18 volts	Greater than or equal to 5 fail counts WTS Output monitored at least every 500		B
Fuel Injector Control Module Performance	**P0611**	No Error Message from EDU	Micro.C or MM defective" or "A/D conversion SRC violation" or Monitoring HW defect. if 10 <= battery voltage <= 18 or "A/D conversion Timeout	Ignition on J1939 Initialization is done Key_on_time > 0.5sec Not in Poweroff Mode CAN MSG is Valid Engine Speed >= 0rpm	30 out of 50 (Every 125ms)	Monitored by EDU and message transferred by CAN	B
Fuel Injector Control Module Relay Control Circuit	**P0612**	No ODM faulure flag flom hardware I/O	OUTD state and F/B voltage does not match	IGNITION ON J1939 Initialization is done Not in Powerdown_Mode Key_on_time>0.5 sec.	30 out of 50 (Every 125ms)	Discrete flag from hardware I/O	B
Glow Plug ControlModule(GPCM) Performance	**P0670**	No Error Message from GPCM	Kl 30 Battery line not connected or Any of the 8 glow plug switches is defective or System is in standby because of overvoltage.	Ignition on J1939 Initialization is done Not in Poweroff Mode CAN MSG is Valid	50 out of 100 (Every 125ms)	Monitored by GPCM and message transferred by CAN	B

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Cylinder #1 Glow Plug Control Circuit	**P0671**	No Error Message from GPCM on status of Cyl #1 Glow Plug	Glow Plug line is open or Glow Plug line is shorted	Ignition on J1939 Initialization is done Not in Poweroff Mode CAN MSG is Valid Code U0073 or U0106 not set	50 out of 100 (Every 125ms)	Monitored by GPCM and message transferred by CAN	B
Cylinder #2 Glow Plug Control Circuit	**P0672**	No Error Message from GPCM on status of Cyl #2 Glow Plug	Glow Plug line is open or Glow Plug line is shorted	Ignition on J1939 Initialization is done Not in Poweroff Mode CAN MSG is Valid Code U0073 or U0106 not set	50 out of 100 (Every 125ms)	Monitored by GPCM and message transferred by CAN	B
Cylinder #3 Glow Plug Control Circuit	**P0673**	No Error Message from GPCM on status of Cyl #3 Glow Plug	Glow Plug line is open or Glow Plug line is shorted	Ignition on J1939 Initialization is done Not in Poweroff Mode CAN MSG is Valid Code U0073 or U0106 not set	50 out of 100 (Every 125ms)	Monitored by GPCM and message transferred by CAN	B
Cylinder #4 Glow Plug Control Circuit	**P0674**	No Error Message from GPCM on status of Cyl #4 Glow Plug	Glow Plug line is open or Glow Plug line is shorted	Ignition on J1939 Initialization is done Not in Poweroff Mode CAN MSG is Valid Code U0073 or U0106 not set	50 out of 100 (Every 125ms)	Monitored by GPCM and message transferred by CAN	B
Cylinder #5 Glow Plug Control Circuit	**P0675**	No Error Message from GPCM on status of Cyl #5 Glow Plug	Glow Plug line is open or Glow Plug line is shorted	Ignition on J1939 Initialization is done Not in Poweroff Mode CAN MSG is Valid Code U0073 or U0106 not set	50 out of 100 (Every 125ms)	Monitored by GPCM and message transferred by CAN	B
Cylinder #6 Glow Plug Control Circuit	**P0676**	No Error Message from GPCM on status of Cyl #6 Glow Plug	Glow Plug line is open or Glow Plug line is shorted	Ignition on J1939 Initialization is done Not in Poweroff Mode CAN MSG is Valid Code U0073 or U0106 not set	50 out of 100 (Every 125ms)	Monitored by GPCM and message transferred by CAN	B
Cylinder #7 Glow Plug Control Circuit	**P0677**	No Error Message from GPCM on status of Cyl #7 Glow Plug	Glow Plug line is open or Glow Plug line is shorted	Ignition on J1939 Initialization is done Not in Poweroff Mode CAN MSG is Valid Code U0073 or U0106 not set	50 out of 100 (Every 125ms)	Monitored by GPCM and message transferred by CAN	B
Cylinder #8 Glow Plug Control Circuit	**P0678**	No Error Message from GPCM on status of Cyl #8 Glow Plug	Glow Plug line is open or Glow Plug line is shorted	Ignition on J1939 Initialization is done Not in Poweroff Mode CAN MSG is Valid Code U0073 or U0106 not set	50 out of 100 (Every 125ms)	Monitored by GPCM and message transferred by CAN	B

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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
EDU Booster Current Fail A, Bank1	**P1293**	No Error Message from EDU	Any cylinder of "Current increase Error" (Injection Current is grater than 11.9A, if actual duration exceeds below, this is set. 0rpm:0deg 600:0.35 800:0.47 1000:0.61 1200:0.73 1800:1.1 2400:1.43 3600:2.16 4800:2.88	Ignition on J1939 Initialization is done Key_on_time > 0.5sec Not in Poweroff Mode CAN MSG is Valid	30 out of 50 (Every 125ms)	Monitored by EDU and message transferred by CAN	A
EDU Booster Current Fail A, Bank2	**P1294**	No Error Message from EDU	Any cylinder of "Current increase Error" (Injection Current is grater than 11.9A, if actual duration exceeds below, this is set. 0rpm:0deg 600:0.35 800:0.47 1000:0.61 1200:0.73 1800:1.1 2400:1.43 3600:2.16 4800:2.88	Ignition on J1939 Initialization is done Key_on_time > 0.5sec Not in Poweroff Mode CAN MSG is Valid	30 out of 50 (Every 125ms)	Monitored by EDU and message transferred by CAN	A
EDU Booster Current Fail B, Bank1	**P1295**	No Error Message from EDU	Any cylinder of "Current decrease Error" (-100us < Injector duration time <100us)	Ignition on J1939 Initialization is done Key_on_time > 0.5sec Not in Poweroff Mode CAN MSG is Valid	30 out of 50 (Every 125ms)	Monitored by EDU and message transferred by CAN	A
EDU Booster Current Fail B, Bank2	**P1296**	No Error Message from EDU	Any cylinder of "Current decrease Error" (-100us < Injector duration time <100us)	Ignition on J1939 Initialization is done Key_on_time > 0.5sec Not in Poweroff Mode CAN MSG is Valid	30 out of 50 (Every 125ms)	Monitored by EDU and message transferred by CAN	A
Fuel Injector control Module Driver Stuck On	**P1687**	No Error Message from EDU	Any cylinder of "Current permanently Error"	Ignition on J1939 Initialization is done Key_on_time > 0.5sec Not in Poweroff Mode CAN MSG is Valid	30 out of 50 (Every 125ms)	Monitored by EDU and message transferred by CAN	A
Control Module Ignition Off Timer Performance	**P2610**	ignition off time delta = 1sec AND ignition off timer >= 0 sec AND ignition off timer <= 10 sec AND timer is incrementing Detects a faulty Ignition off Timer circuit.	Ignition off timer reads < 0 sec OR Ignition off timer reads >10 sec OR timer unchanged for 60 sec OR timer increment not equal 1 sec	Ignition off timer is running Diagnostic has not yet run to completion	Test performed continuously	Ignition off timer	B

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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
Lost Communications with Fuel Injector Control Module	**U0105**	Toggring bit should be inverted every 20msec	Can Message is not updated for 3 count (By refering Toggling bit every 15.6ms)	Ignition on J1939 Initialization is done Key_on_time > 0.5sec Not in Poweroff Mode Device contorl is not active	30 out of 50 (Every 125ms)	Message from EDU via CAN (Monitor the status of Message B7, toggring bit)	B
Mass Air Flow (MAF) Sensor Performance	**P0101**	1.014v to 4.670 v 11 kg/hr to 1620 kg/hr Detects an in range sensor fault It can also detect an open circuit running engine rational stability = .15625 sec	The delta between expected MAF and measured MAF > 2d look-up see chart 1.	None of these DTCs set: P0102, P0103, P2227, P2228, P2229, P0116, P0117, P0118, P0112, P0113, P0234, P0299, P0237, P0238, P0335, P0336, P0016, P0340, P0341, P0370, P0374 9v < IGN volts <18v Engine rom<=3500rpm Idelta Engine rpmI<=50rpm Idelta desired QI<=10mm3/st Air temp>-20.25degC Coolant temp>-20.25degC stable time>=1.5sec	Diagnostic set conditions true for 12 seconds Test performed continuously	EGR Control Pressure Sensor Mass Air Flow Sensor	B
Mass Air Flow (MAF) Sensor Circuit Low Voltage	**P0102**	1.014v to 4.670 v 11 kg/hr to 1620 kg/hr Detects a sensor circuit low voltage	Mass Air Flow Input Voltage<0.42 volts - same as- Mass Air Flow<36 kg/hr	Engine Run Time > 2 secEngine Speed > 500 RPM Ignition Voltage >9v Above conditions have been met for >3.125secs	Diagnostic set conditions true for for6 seconds Test performed continuously	Mass Air Flow Sensor	B
Mass Air Flow (MAF) Sensor Circuit High Voltage	**P0103**	1.014v to 4.670 v 11 kg/hr to 1620 kg/hr Detects a sensor circuit High voltage	Mass Air Flow Input Voltage>4.5 volts - same as- Mass Air Flow>1600kg/hr	Engine Run Time > 2 sec 2500rpm>=Engine Speed > 500 RPM Ignition Voltage >9v Inlet Air Temp > -6.75 degC None of the following codes are set: P0112 and P0113 Above conditions have been met for >3secs	Diagnostic set conditions true for for6 seconds Test performed continuously	Mass Air Flow Sensor	B
Barometric Pressure Sensor Performance	**P2227**	0.78v to 4.86v 40kPa to 202kPa Detects in range fault of Baro sensor Baro diff =Barometric Pressure - MAP pressure.	Baro diff =Barometric Pressure- MAP pressure -15 kpa < Baro diff < 15 kpa	None of the following codes are set: P0101, P0102, P0103, P2228, P2229, P0116, P0117, P0118, P0299, P0237, P0238, P0335, P0336, P0404, P0405, P0406, P0500 Engine runtime>8 sec 580 < Engine Speed < 900 aps < 69% MAF < 50 grams/sec mph < 25 Coolant temp>20.25DegC PTO is not Active Stable time>=5sec	Diagnostic set conditions true for 6 seconds Test performed continuously	Baro Pressure Sensor	B
Barometric Pressure Circuit Low Input	**P2228**	0.78v to 4.86v 40kPa to 202kPa Detects baro sensor shorted to ground or open.	Baro Pressure < 0.114 v - same as - Baro Pressure < 40kPa	Engine runtime>1 sec Ignition voltage > 7v	Diagnostic set conditions true for for 10 seconds Test performed	Baro Pressure Sensor	B
Barometric Pressure Circuit High Input	**P2229**	0.78v to 4.86v 40kPa to 202kPa Detects baro sensor circuit short to high voltage	Baro Pressure >4.65 v - same as - Baro Pressure >110KPa	Engine runtime>1 sec	Diagnostic set conditions true for for 10 seconds Test performed	Baro Pressure Sensor	B

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Intake Air Temperature Circuit Low Input	**P0112**	0.24volt to 4.86 volts - 40degCto152 degC Detects a sensor circuit short to ground	Air temperature sensor voltage<0.24 volt -same as- Air temperature>160degC	Coolant temperature<50.25deg C Coolant min temperature = 20.25 degC Ignition voltage > 7v P0116, P0117, and P0118 are not set.	Diagnostic set conditions true for for10 seconds Test performed	Air temperature sensor	B
Intake Air Temperature Circuit High Input	**P0113**	0.24volt to 4.86 volts - 40degCto152degC Detects a sensor circuit short high voltage or a sensor circuit open	Air temperature sensor voltage>4.86 volt -same as- Air temperature<-40degC	Engine runtime > 15 minutes	Diagnostic set conditions true for10 seconds Test performed continuously	Air temperature sensor	B
Engine Coolant Temperature Performance	**P0116**	Coolant temp delta =(Startup coolant temperature - Startup Intake Air temperature). Acceptable, if Coolant Temp Delta < 5.25degC. Detects delta temp. due to block heater effect or faulty in-range coolant temp.sensor. Engine	Coolant temp delta = (Start-up coolant temperature - Start-up Intake Air temperature) Coolant temp delta > 5.25degC uneffected by block heater	None of the following codes are set: P0112, P0113, P0117, P0118, P2610, P0500 At Start-up IAT > 15degC Engine off timer>36000 sec VSS>15MPH for>400sec. Calculate diff air temp= (startup air temp - intake air temp). If diff air temp > 5.25 deg C, abort test due to block heater influence.	Performed once just after engine start and conditions are met.	Coolant temperature sensor Intake Air temperature sensor	B
Engine Coolant Temperature Circuit Low Input	**P0117**	0.24volt to 4.76 volts - 40degCto152degC Detects a sensor circuit short to ground	Coolant temperature sensor voltage<0.24volt -same as- Coolant temperature>160degC	None	Diagnostic set conditions true for -10 seconds Test performed continuously	Coolant temperature sensor	B
Engine Coolant Temperature Circuit High Input	**P0118**	0.24volt to 4.76 volts -40deg Cto152deg C Detects a sensor circuit short to high voltage or a sensor circuit open	Coolant temperature sensor voltage>4.76volt -same as- Coolant temperature<-40deg C	Engine run timer>8 minutes	Diagnostic set conditions true for -10 seconds Test performed continuously	coolant temperature sensor	B
Engine Coolant Temperature (ECT) Below Thermostat Regulating Temperature Rev.Date Mar/24/03	**P0128**	Acceptable if Engine Temperature > 72degC. Detects engine not warm enough for stable operation due to faulty thermostat.	Low Coolant temp range: Engine run time >= 925 secs, engine coolant temperature <72degC , Fuel burned since start >= 8.5million cu.mm., Total idle time since start < 300 sec.	None of the following codes are set: P0112, P0113, P0116, P0117, P0118, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0611, P0612, P1223, P1226, P1229, P1232, P1235, P1238, P1241, P1244 *Ambient air temperature < f(eng. startup temp) Ambient air temp > -7degC -40degC < Engine start-up temp < 51degC; Engine is running P0128 not yet passed * See Chart 2	Test performed once from start-up until a pass/fail/disable condition exists.	Engine coolant temperature sensor.	B
			High coolant temp range: Engine run time >= 500sec., engine coolant temperature <72degC , Fuel burned since start >=5 million cu.mm., Total idle time since start < 150sec.	None of the following codes are set: P0112, P0113, P0116, P0117, P0118, P0201, P0202, P0203, P0204, P0205, P0206, P0207, P0208, P0611, P0612, P1223, P1226, P1229, P1232, P1235, P1238, P1241, P1244 *Ambient air temperature >= f(eng. startup temp) Ambient air temp > -7degC 51degC < Engine start-up temp < 65degC Engine is running P0128 not yet passed * See Chart 2	Test performed once from start-up until a pass/fail/disable condition exists.		

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Fuel Circuit Sensor Performance	**P0181**	Fuel temp delta = (Start-up fuel temperature - Start-up coolant temperature); If -9.75degC< fuel temp delta < 9.75degC. Detects delta temp. due to block heater effect or faulty in-range fuel temp.sensor.	Fuel temp delta = (Start-up fuel temperature - Start-up coolant temperature) If -9.75degC> Fuel temp delta > 9.75degC uneffected by block heater.	None of the following codes are set: P0112, P0113, P0182, P0183, P0500, P2610 Start-up IAT > 15degC Engine off timer>36000 sec VSS>15MPH for>400sec diff air temp= (startup air temp - intake air temp) If diff air temp > 5degC, abort test due to block heater influence.	Performed once after engine start and conditions are met.	Fuel temperature sensor Intake Air temperature sensor.	B
Fuel Temperature Sensor Circuit Low Input	**P0182**	0.24v -4.96v -30degC to 129.75degC Detects a sensor circuit short to ground line off tim.Date 5/2	Fuel temperature<0.24 volts - same as - Fuel temperature> 129.75degC	P0116, P0117, P0118, are not set Coolant Temp < 60degC Ignition voltage > 7v	Diagnostic set conditions true for for2 seconds Test performed continuously	Fuel temperature sensor	B
Fuel Temperature Sensor Circuit High Input	**P0183**	0.24 v to 4.96 v -30degC to 129.75degC Detects a sensor short to high voltage or sensor circuit open	Fuel temperature > 4.96 v - same as - Fuel temperature < -30degC	Engine running > 4 minutes	Diagnostic set conditions true for for2 seconds Test performed continuously	Fuel temperature sensor	B
Turbochager Engine Overboost	**P0234**	Detects an Overboost condition and a biased high boost sensor by measuring the delta between a 3D lookup expected Boost table and measured Boost.	The delta between a 3D lookup expected Boost table and measured Boost. > 35 kpa when the measured boost is greater than the expected.	P0237, P0238 not set Engine running 500 <RPM < 3600 Idelta rpmI<=50rpm IDesierdQI<=10mm3/st Intake air temp>=-20degC Coolant temp>=20degC stable timer>=5sec EDC Diag Bank1 is not OFF EDU Diag Bank2 is not OFF runtime = 10sec 67AD-counts =< VNT open threshold =< 333 Ad-counts	Diagnostic set condition true for 12 second Test performed continuously	Boost Sensor	**A**
Turbochager Boost System Performance	**P0299**	Detects an underboost condition, a biased low sensor or an open circuit by measuring the delta between a 3D lookup expected Boost table and measured Boost.	The delta between a 3D lookup expected Boost table and measured Boost. > below by intake air temperature(IAT) when the measured boost is less than the expected. 35kpa:-40degC to 72degC(IAT) 40kpa:80degC 45kpa:88degC 50kpa:96degC 55kpa:104degC 60kpa:112degC 65kpa:120degC 70kpa:128degC 75kpa:136degC 80kpa:144degC 85kpa:152degC	P2227, P2228, P2229, P0237, P0238 not set Engine running 500< RPM < 3600 Idelta rpmI<=50rpm IDesierdQI<=10mm3/st Intake air temp>=-20degC Coolant temp>=20degC stable timer>=5sec EDC Diag Bank1 is not OFF EDU Diag Bank2 is not OFF runtime = 10sec 67AD-counts =< VNT open treshold =< 333 Ad-counts	Diagnostic set condition true for 12 second Test performed continuously	Boost Sensor	**A**
Turbochager Boost Sensor Circuit Low Input	**P0237**	1 volt to 4.75 volts 37kPa to 313kPa Detects boost sensor circuit open	Boost Sensor Signal <1.0 volts -same as- Boost Pressure <37kPa	Ignition voltage >7 volts Engine Run time>1sec	Diagnostic set condition true for 2 second Test performed continuously	Boost Sensor	**A**

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Turbochager Boost Sensor Circuit High Input	**P0238**	1 volt to 4.75 volts 37kPa to 313kPa Detects boost sensor circuit short to high voltage	Boost Sensor Signal >4.75 volts - same as- Boost Pressure >313kPa	Engien Run time>1sec	Diagnostic set condition true for 2 second Test performed continuously	Boost Sensor	**A**
Exhaust Gas Recirculation(EGR) Flow Insufficient	**P0401**	Detects reduction and increasing of EGR flow	Difference between No EGR and Full EGR at Idle MAFPCYL <= 0.22g/cyl	None of these DTCs set: MAF (P0101, P0102, P0103), Baro (P2227, P2228, P2229), IAT (P0112, P0113), Coolant Sensor (P0116, P0117, P0118), CrankCam Sensor (P0335, P0336, P0340, P0341, P0370, P0374), VSS (P0500), 5VRef (P0642, P0643) IGNITION is ON Engine Power Up Time > 0.5sec Not In Powerdown_Mode 11V <= Battery Voltage <= 18V 0degC <= Intake Air Temp <= 150.75degC 60degC <= Coolant Temp <=100degC 72KPa <= Baro Vehicle speed <=0.25mph 580rpm<= Engine Speed <= 880rpm 3mm3/st<= Qdesired <=25mm3/st TPS <= 1.17% Idle_feedback = TRUE dgegr_test_finish = TRUE PTO is not active Device contorl is not active Not Limp home mode	10 seconds/sample 1 sample per key cycle.	Delta Manifold Air Flow and Software	B
Exhaust Gas Recirculation(EGR) Control Circuit	**P0403**	-100% <= DC Motor Duty Signal <= 99.99695%	Short to Battery: 7.5A to 12.1A Short to Ground: (IgnitionVoltage) - (0.8V to 1.2V)	IGNITION is ON Engine Power Up Time > 0.5sec Not In Powerdown_Mode 11V <= Battery Voltage <= 18V 0degC <= Intake Air Temp <= 150.75degC 57degC <= Coolant Temp <=100 degC 72KPa <= Baro 0% < EGR Duty Cycle<100% RPCV_Relay is ON	78 Failure out of 80 samples. Samples are taken every 126.4ms. Continuous monitoring	DC Motor	B
Exhaust Gas Recirculation(EGR) Open Position Performance	**P0404**	Detects valve position error between desired and actual	Difference current position - desired position >= 6%	IGNITION is ON Engine Power Up Time > 0.5sec Not In Powerdown_Mode 11V <= Battery Voltage <= 18V 0degC <= Intake Air Temp <= 150.75degC 57degC <= Coolant Temp <=100degC 72KPa <= Baro Desired EGR Position > 0% Desired Delta EGR < =3% DTCs P0642 or P0643 are not set	60 Failure out of 80 samples. Samples are taken every 126.4ms. Continuous monitoring	Position Sensor	B

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Exhaust Gas Recirculation(EGR) Position Sensor Circuit Low	**P0405**	0.25 volt to 4.75volts - 12.38 % to 136.54% Detects a sensor circuit low voltage.	EGR Position <= 52RAW A/D counts	IGNITION is ON Engine Power Up Time > 0.5sec Not In Powerdown_Mode 11V <= Battery Voltage <= 18V 0degC <= Intake Air Temp <=150.75degC 57degC <= Coolant Temp <=100degC 72KPa <= Baro	78 Failure out of 80 samples. Samples are taken every 126.4ms. Continuous monitoring	Position Sensor	B
Exhaust Gas Recirculation(EGR) Position Sensor Circuit High	**P0406**	0.25 volt to 4.75 volts - 12.38 % to 136.54% Detects a sensor circuit high voltage.	EGR Position >= 972RAW A/D counts	IGNITION is ON Engine Power Up Time > 0.5sec Not In Powerdown_Mode 11V <= Battery Voltage <= 18V 0degC <= Intake Air Temp <= 150.75degC 57degC <= Coolant Temp <=100degC 72KPa <= Baro	78 Failure out of 80 samples. Samples are taken every 126.4ms. Continuous monitoring	Position Sensor	B
Exhaust Gas Recirculation(EGR) Closed Position Performance Revised Oct. 1, 2003	**P1404**	Detects close position error When EGR Target Lift<=0% EGR Actual Lift Learned<6% EGR_Offset > -12.4% \EGR_Offset< 18.5%	When EGR Target Lift<=0% EGR Actual Lift Learned>=6% or EGR_Offset <= -12.4% EGR_Offset>=18.5%	IGNITION is ON Engine Power Up Time > 0.5sec Not In Powerdown_Mode 11V <= Battery Voltage <= 18V 0degC <= Intake Air Temp <= 150.75degC 57degC <= Coolant Temp <=100degC 72KPa <= Baro Desired EGR Position<=0%DTCs P0642 or P0643 are not set	38 Failure out of 40 samples. Samples are taken every 126.4ms. Continuous monitoring	Position Sensor	B
Turbocharger Boost Control Position Sensor Performance	**P2563**	IActual Vane Position - Target Vane PositionValueI <=15%.	Actual Vane Position - Target Vane PositionValue >15%	Engine is running ECM is not commanding an open offset learn ECM is not commanding a closed offset learn Coolant temp >= degC EGR is not commanding the VNT to open Codes P0045, P2564 or P2565 are not set IDelta DesieredQI<=10mm3/st Delta rpmI<=50rpm DesierdQ<110mm3/st rpm>=500rpm rpm<=3600rpm Intake air temp>=-20 degC stable time>=5sec	Diagnostic set conditions true for for 12 seconds Test performed continuously	VNT Position	B
Turbocharger Position Sensor Circuit Low Input	**P2564**	1 volt to3.5 volts Detects VNT sensor circuit open and shorted to ground	VNT Sensor Signal < 0.26 volts	Engine Run time>3sec	Diagnostic set condition true for 6 seconds Test performed continuously	VNT Position	B
Turbocharger Position Sensor Circuit High Input	**P2565**	1 volt to 3.5 volts Detects VNT sensor circuit open and shorted to ground	VNT Sensor Signal > 4.7 volts	Engine Run time>3sec	Diagnostic set condition true for 6 seconds Test performed continuously	VNT Position	B
Vehicle Output Speed Sensor Circuit	**P0500**	Manual Transmission:	Manual Transmission: No detected vehicle speed pulses	Manual Trans: Engine speed > 1000 rpm and Engine Torque > 300 N-m Coolant Temperature > 25 degrees C. PTO is not Active P0116, P0117, P0118 are not set.	224 failures out of 240 (Every 125ms)	Monitor vehicle speed input signal.	B
		Automatic Transmission:	Automatic Transmission: Delta between ECM Vehicle Speed value and CAN Vehicle Speed value > 5	Engine Running PTO is not Active U0073, U0101 are not set.	32 failures out of 40 (Every 125ms)		

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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Control Module Read Only Memory Rev.Date 5/29/01	**P0601**		Calculated Checksum(s) not equal to imbedded Checksum(s)		Run one (1) time at powerup.		A
Control Module Not Programmed	**P0602**		K_Check_Service_Calibration = TRUE.		Run every 125 ms		A
Control Module Random Access Memory	**P0604**		Data read from RAM location not equal to data written to RAM location.		Run during ECM initialization.		A
Transmission Control Module (TCM) Requested MIL Illumination Rev.Date 5/29/01	**P0700**		MIL Request line active	Ignition 0 on time > 7 seconds P0802 monitering is finished P0802 Fault not set	Active for 32 samples (Every 125 ms)	Monitor MIL Request input	A
Transmission Control Module (TCM) MIL Request Circuit	**P0802**	Ignition 0 on time > 0.125 second but < 7 seconds	MIL Request line inactive		Monitored for 6 seconds after Ignition 0 transitions from off to on (Every 125 ms)	Monitor MIL Request input	B
Malfunction Indicator Lamp (MIL) Control Circuit Rev.Date 5/29/01	**P0650**	Ignition voltage between 6 and 18 volts	MIL Output MIL fail counter incremented if MIL output driver indicates a fault condition (open/short ckt)	Ignition on Ignition voltage between 6 and 18 volts	Greater than or equal to 5 fail counts MIL Output monitored at least every 500		A
CAN bus reset counter overrun	**U0073**	This test detects if the CAN (J1939) bus is off.	A CAN bus hardware error shall present for a calibrated amount of time. CAN bus is OFF >= 3 seconds.	Ignition on Ignition voltage <= 18 volts Ignition voltage >= 6 volts 200 RPM < Engine Speed < 7500 RPM for 5 seconds Components powered and 9 V < Ignition < 18 V	Monitor time is 3 seconds. Frequency is every 8msec. 3 sz 100 ms	Monitor CAN status register of CAN controller chip	B
Lost communications with Transmission Control System	**U0101**		The ECM fails to receive PGN 0 or PGN 61,445 from the TCM	Ignition on Ignition voltage <= 18 volts Ignition voltage >= 6 volts	Monitor time is 1000msec. Frequency is every 8msec.	CAN Message from the TCM	B
Lost Communications with Glow Plug Control Module	**U0106**	ECM reports no loss of communication with the GPCM or the GPCM reports no loss of communication with the ECM	ECM reportsa loss of communication with the GPCM or the GPCM reports a loss of communication with the ECM	Ignition on J1939 Initialization is done Code U0073 is not set	50 out of 100 (Every 125ms)	Message from GPCM and ECM signal indicating loss of GPCM message	B
5 Volt Reference 1 Circuit	**P0642**	5.2v >5 Volt Reference > 4.7V	5V Reference V5B1 < 4.7V	Ign ON	Failure detected for 2 seconds	Checks the 5 Volt Reference 0utput (V5B1) of the A/D converter	A
5 Volt Reference 1 Circuit	**P0643**	5.2v >5 Volt Reference > 4.7V	5 V Reference V5B1 > 5.2V	Ign ON	Failure detected for 2 seconds	Checks the 5 Volt Reference 0utput (V5B1) of the A/D converter	A
5 Volt Reference 2 Circuit	**P0652**	5.2v >5 Volt Reference > 4.7V	5V Reference V5B2 < 4.7V	Ign ON	Failure detected for 2 seconds	Checks the 5 Volt Reference 0utput (V5B2) of the A/D converter	A

2005 6.6L (LLY) Duramax Diesel
ENGINE DIAGNOSTIC PARAMETERS

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
5 Volt Reference 2 Circuit	**P0653**	5.2v >5 Volt Reference > 4.7V	5 V Reference V5B2 > 5.2V	Ign ON	Failure detected for 2 seconds	Checks the 5 Volt Reference 0utput (V5B2) of the A/D converter	A
5 Volt Reference 3 Circuit	**P0698**	5.2v >5 Volt Reference > 4.7V	5V Reference V5B3 < 4.7V	Ign ON	Failure detected for 2 seconds	Checks the 5 Volt Reference 0utput (V5B3) of the A/D converter	A
5 Volt Reference 3 Circuit	**P0699**	5.2v >5 Volt Reference > 4.7V	5 V Reference V5B3 > 5.2V	Ign ON	Failure detected for 2 seconds	Checks the 5 Volt Reference 0utput (V5B3) of the A/D converter	A
Idle Speed Too Low	**P0506**	Target Idle Speed - Actual Idle Speed <= 100rpm	Target Idle Speed - Actual Idle Speed > 100rpm	None of these fault codes set: P0016, P0112, P0113, P0116, P0117, P0118, P0335, P0336, P0340, P0341, P0500, P0700 Delta Engine Speed < 20 rpm Delta Fuel < 2.5 mm3/st Engine Coolant Temp > 50 degC Intake Air Temperature < 20 degC Vehicle Speed < 0.25 MPH Q Throttle < 2 mm3/st Idle time > 10 sec PTO disable Device control off	190 out of 240(Every 126msec)	Monitoring Engine Speed	B
Idle Speed Too High	**P0507**	Actual Idle Speed - Target Idle Speed <= 200rpm	Actual Idle Speed - Target Idle Speed > 200rpm	None of tense fault codes set: P0016, P0112, P0113, P0116, P0117, P0118, P0335, P0336, P0340, P0341, P0500, P0700 Delta Engine Speed < 20 rpm Delta Fuel < 2.5 mm3/st Engine Coolant Temp > 50 degC Intake Air Temperature < 20 degC Vehicle Speed < 0.25 MPH Q Throttle < 2 mm3/st Idle time > 10 sec PTO disable Device control off	190 out of 240(Every 126msec)	Monitoring Engine Speed	B

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TABLES

Chart 1

RPM	Value
0	10
200	10
400	10
600	10
800	20
1000	25
1200	30
1400	32
1600	34
1800	40
2000	45
2200	50
2400	55
2600	60
2800	65
3000	70
3200	70
3400	70
3600	70
3800	70
4000	70
4200	70
4400	70
4600	70
4800	70
5000	70

Chart 2

Start-up Engine Temperature	Ambient Air Temperature
-40 degrees C	150
-16 degrees C	150
8 degrees C	16
32 degrees C	-1
56 degrees C	-13
80 degrees C	-13
104 degrees C	-13
128 degrees C	-13
152 degrees C	-13