2002 6.6L Duramax Diesel (LB7)) C/K-truck ENGINE DIAGNOSTIC PARAMETERS

		SENSED PARAMETER	ACCEPTABLE	PRIMARY	SECONDARY	MONITORING	FAULT CODE
CODE	METHOD		OPERATING	MALFUNCTION	MONITORING	TIME LENGTH	STORAGE
			RANGE AND	DETECTION	PARAMETERS	AND FREQUENCY	AND MIL
			RATIONALITY	PARAMETERS	AND CONDITIONS	OF CHECK	ILLUMINATION
P0087	Rail Pressure sensor	Fuel Rail Pressure [FRP] Too Low	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, RPS_HI, 5VB_A, RPCV) Rail Pressure Feedback Mode Key_on_time>0.125 Sec. Fuel Mode	99 Failure out of 100 sample	A
					Rail Pressure>0MPa		
P0088	Rail Pressure sensor	Fuel Rail Pressure [FRP] Too High	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, RPS_HI, 5VB_A) not in Power_Down_Mode Rail Pressure Feedback Mode Key_on_time>0.125 Sec.	Case.1 49 Failure out of 50 sample Case.2 49 Failure out of 50 sample	A
P0089	Rail Pressure sensor and Commanded Pump Fuel Flow	Fuel Pressure Regulator Performance	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, RPS_HI, 5VB_A, RPCV) Rail Pressure Feedback Mode Key_on_time>0.125 Sec. Fuel_Mode Not in Bankshutoff Mode	110 Failure out of 120 sample	A
P0090	RPCV current	Fuel Pressure Regulator Control Circuit	50mA <rpcv_current<1600ma< td=""><td> rpcv_current_error > 500 mA Counts or rpcv_current > 480 AD Counts or rpcv_current < 13 AD Counts</td><td>IGNITION ON EDU/RPCV Relay on Not in Powerdown_Mode Key_on_time>0.125 Sec. Cmd_RPCV_Current<=1500mA Cmd_RPCV_Current>=400mA</td><td>49 Failure out of 50 sample</td><td>A</td></rpcv_current<1600ma<>	rpcv_current_error > 500 mA Counts or rpcv_current > 480 AD Counts or rpcv_current < 13 AD Counts	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	A
P0101	EGR Control Pressure Sensor Mass Air Flow Sensor	Mass Air Flow (MAF) Sensor Performance	1.014v to 4.670 v 11 kg/hr to 1620 kg/hr Detects an in range sensor fault lt can also detect an open circuit	The delta between expected MAF and measured MAF > 2d look-up see chart 1.	P0102,P0103,P2227,P2228,P2229,P0116,P0117 ,P0118P0112,P0113,P0234,P0236,P0237,P0238 , P0335,P0336,P1345 are not set. 9v < IGN volts >18	Diagnostic set conditions true for 12 seconds Test performed continuously	В
P0102	Mass Air Flow Sensor	Mass Air Flow (MAF) Sensor Circuit Low Voltage Rev.Date 11/27/01	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 sec Engine Speed > 500 RPM Ignition Voltage > 7v Above conditions have been met for >3secs	Diagnostic set conditions true for for6 seconds Test performed continuously	В
P0103	Mass Air Flow Sensor	Mass Air Flow (MAF) Sensor Circuit High Voltage	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 Engine Speed > 500 RPM Ignition Voltage > 7v Inlet Air Temp > -7 degC	Diagnostic set conditions true for for6 seconds Test performed continuously	В
P0112	Air temperature sensor	Intake Air Temperature Circuit Low Input	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 Ignition voltage > 7v	Diagnostic set conditions true for for10 seconds Test performed continuously	В
P0113	Air temperature sensor	Intake Air Temperature Circuit High Input	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 > 17 minutes	Diagnostic set conditions true for10 seconds Test performed continuously	В
P0116	Coolant temperature sensor Intake Air temperature sensor	Engine Coolant Temperature Performance	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.	Coolant temp delta = (Start-up coolant temperature - Start-up Intake Air temperature) Coolant temp delta > 5.25degC uneffected by block heater	P0112, P0113, P0117, P0118, P2610, P0500 not set, @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 do to block heater infl	Performed once just after engine start and conditions are met.	В
P0117	Coolant temperature sensor	Engine Coolant Temperature Circuit Low Input	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 for10 seconds Test performed continuously	В

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		SENSED PARAMETER	ACCEPTABLE	PRIMARY	SECONDARY	MONITORING	FAULT CODE
CODE	METHOD		OPERATING	MALFUNCTION	MONITORING	TIME LENGTH	STORAGE
			RANGE AND	DETECTION	PARAMETERS	AND FREQUENCY	AND MIL
			RATIONALITY	PARAMETERS	AND CONDITIONS	OF CHECK	ILLUMINATION
P0118	coolant	Engine Coolant	0.24volt to 4.76 volts -40deg	Coolant temperature sensor	Engine run timer>8 minutes	Diagnostic set conditions	В
	temperature	Temperature Circuit High	Cto152deg C Detects a sensor circuit	voltage>4.76volt		true for for10seconds	
	sensor	Input	short to high voltage or a sensor circuit	-same as-		Test performed	
D0120	Fasias sastant	Fraire Coalant	open	Coolant temperature<-40deg C	* A	continuously	В
P0128	Engine coolant temperature	Engine Coolant Temperature (ECT) Below	Acceptable if Engine Temperature > 72degC. Detects engine not warm enough	Low Coolant temp range: Engine run time >= 925 secs, engine	*Ambient air temperature < f(eng. startup temp); Ambient air temp > -7degC; -7degC < Engine	Test performed once from start-up until a	В
	sensor.	Thermostat Regulating	for stable operation due to faulty		start-up temp < 51degC; Engine is running;	pass/fail/disable condition	
	301301.	Temperature	thermostat.	burned since start >= 8.5million	P0128 not yet passed; P0112, P0113, P0117 and	exists.	
					P0118 not set. * See Chart 2		
				300 sec.			
				High coolant temp range: Engine	*Ambient air temperature >= f(eng. startup temp);	Test performed once fr	om start-up until a
				run time >= 500sec., engine coolant	Ambient air temp > -7degC; 51degC < Engine	pass/fail/disable co	ndition exists.
					start-up temp < 65degC; Engine is running;		
				since start >=5 million cu.mm.,	P0128 not yet passed;P0112, P0113, P0117 and		
D0404	F	F . 1 0' '1 0	Full contains (Obstacle)		P0118 not set. * See Chart 2	D. 6	ь .
P0181	Fuel temperature sensor	Fuel Circuit Sensor Performance	Fuel temp delta = (Start-up fuel temperature - Start-up coolant	Fuel temp delta = (Start-up fuel temperature - Start-up coolant	P0112, P0113, P0182, P0183, P0500, P2610 not set. @Start-up IAT > 15degC, Engine off	Performed once after engine start and	В
	Intake Air	Performance	temperature - Start-up coolant temperature); If -9.75degC< fuel temp	temperature)	timer>36000 sec, VSS>15MPH for>400sec, diff	conditions are met.	
	temperature		delta < 9.75degC. Detects delta temp. due	If -9.75degC> Fuel temp delta >	air temp= (startup air temp - intake air temp).	conditions are met.	
	sensor.		to block heater effect or faulty in-range fuel	9.75degC uneffected by block	If diff air temp > 5degC abort test do to block		
			temp.sensor.	heater.	heater influence.		
P0182	Fuel temperature	Fuel Temperature Sensor	0.24v -4.96v -30degC to 120degC	Fuel temperature<0.24 volts	P0116, P0117, P0118, P0126, P0128	Diagnostic set conditions	В
	sensor	Circuit Low Input	Detects a sensor circuit short to groundine	- same as -	are not set	true for for2 seconds	
			off tim.Date 5/2	Fuel temperature>120degC	Coolant Temp < 60degC	Test performed	
					Ignition voltage > 7v	continuously	
P0183	Fuel temperature	Fuel Temperature Sensor	0.24 v to 4.96 v -30degC to 120degC	Fuel temperature > 4.96 v	Engine running > 4 minutes	Diagnostic set conditions	В
	sensor	Circuit High Input	Detects a sensor short to high voltage or	- same as -		true for for2 seconds	
			sensor circuit open	Fuel temperature < -30degC		Test performed continuously	
P0192	Piezo Pressure	Fuel Rail Pressure [FRP]	0.1 Volt to 4.9 Volt	rp ad <= 42 AD Counts	No related malfunction	19 Failure out of 20	Α
1 0172	Sensor	Sensor Circuit Low Voltage	0.1 Volt to 1.0 Volt	15_dd	(5VB A)	sample	, ,
					IGNITION is ON		
					not in Power_Down_Mode		
					Key_on_time>0.125 Sec.		
P0193	Piezo Pressure	Fuel Rail Pressure [FRP]	0.1 Volt to 4.9 Volt	rp_ad >= 963 AD Counts	No related malfunction	19 Failure out of 20	Α
	Sensor	Sensor Circuit High Voltage			(5VB_A)	sample	
					IGNITION is ON		
					not in Power_Down_Mode		
P0201	Mornitoring in	Injector 1 Control Circuit	No Error Message from EDU	"#1 Load Drop" or	Key_on_time>0.125 Sec.	20 out of 40	A
r v201	EDU and	injector i control circuit	INO LITOI IVIESSAGE ITOTTI EDO	"#1 HSD Over current" or	Poweruptime>0.5sec	(32ms)	
	message			"#1 LSD Overcurrent" or	CAN MSG from EDU is valid	(OZIIIO)	
	transferred via			"Bank1 Booster Low"	Not in Poweroff Mode		
	CAN						
P0202	Mornitoring in	Injector 2 Control Circuit	No Error Message from EDU	"#2 Load Drop" or	IGN on	20 out of 40	Α
	EDU and			"#2 HSD Over current" or	Poweruptime>0.5sec	(32ms)	
	message			"#2 LSD Overcurrent" or	CAN MSG from EDU is valid		
	transferred via			"Bank2 Booster Low"	Not in Poweroff Mode		
	CAN	Inicator 2 Control Civilia	No Emp Massac from EDU	II#O L and Dunnil an	IONI	00 40	Δ
D0202	Mornitoring in	Injector 3 Control Circuit	No Error Message from EDU	"#3 Load Drop" or "#3 HSD Over current" or	IGN on Poweruptime>0.5sec	20 out of 40	Α
P0203	EDII and						
P0203	EDU and					(32ms)	
P0203	EDU and message transferred via			"#3 HSD Over current" or "#3 LSD Overcurrent" or "Bank2 Booster Low"	CAN MSG from EDU is valid Not in Poweroff Mode	(32118)	

CODE	METHOD	SENSED PARAMETER	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALFUNCTION DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	FAULT CODE STORAGE AND MIL ILLUMINATION
P0204	Mornitoring in EDU and message transferred via CAN	Injector 4 Control Circuit	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)	A
P0205	Mornitoring in EDU and message transferred via CAN	Injector 5 Control Circuit	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)	A
P0206	Mornitoring in EDU and message transferred via CAN	Injector 6 Control Circuit	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)	A
P0207	Mornitoring in EDU and message transferred via CAN	Injector 7 Control Circuit	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)	A
P0208	Mornitoring in EDU and message transferred via CAN	Injector 8 Control Circuit	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)	A
P0234	Boost Sensor	Turbochager Engine Overboost	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.		Diagnostic set condition true for 12 second Test performed continuously	В
P0236	Boost Sensor	Turbochager Boost System Performance	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. > 35 kpa when the measured boost is less than the expected.		Diagnostic set condition true for 12 second Test performed continuously	В
P0237	Boost Sensor	Turbochager Boost Sensor Circuit Low Input	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	None	Diagnostic set condition true for 2 second Test performed continuously	В
P0238	Boost Sensor	Turbochager Boost Sensor Circuit High Input	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	None	Diagnostic set condition true for 2 second Test performed continuously	В
P0300	Cylinder engine speed and cylinder fuel rate	Engine Misfire Detected	# of detected misfire cylinders =< 1	Number of detected misfire cylinders > 1	P0335,P0336,P0116,P0117,P0118,P0128 are not set. A)Coolant temperature >= 56degC	Test performed for 30 seconds once per ignition cycle	В
P0301	Cylinder engine speed and cylinder fuel rate	Cylinder 1 Misfire Detected	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,P0128 are not set. A)Coolant temperature >= 56degC	Test performed for 30 seconds once per ignition cycle	В
P0302	Cylinder engine speed and cylinder fuel rate	Cylinder 2 Misfire Detected	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,P0128 are not set. A)Coolant temperature >= 56degC	Test performed for 30 seconds once per ignition cycle	В
P0303	Cylinder engine speed and cylinder fuel rate	Cylinder 3 Misfire Detected	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,P0128 are not set. A)Coolant temperature >= 56degC	Test performed for 30 seconds once per ignition cycle	В
P0304	Cylinder engine speed and cylinder fuel rate	Cylinder 4 Misfire Detected	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,P0128 are not set. A)Coolant temperature >= 56degC	Test performed for 30 seconds once per ignition cycle	В

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_		SENSED PARAMETER	ACCEPTABLE	PRIMARY	SECONDARY MONITORING	MONITORING	FAULT CODE
CODE	METHOD		OPERATING DANGE AND	MALFUNCTION		TIME LENGTH	STORAGE
			RANGE AND	DETECTION	PARAMETERS	AND FREQUENCY	AND MIL
			RATIONALITY	PARAMETERS	AND CONDITIONS	OF CHECK	ILLUMINATION
P0305	Cylinder engine	Cylinder 5 Misfire Detected	Cylinder #5 fuel rate adjustment < 14.5	Cylinder #5 fuel rate greater than	P0335,P0336,P0116,P0117,P0118,P0128	Test performed for 30	В
	speed and		mm3/stroke	desired fuel rate by >= 14.5	are not set.	seconds once per ignition	
	cylinder fuel rate			mm3/stroke	A)Coolant temperature >= 56degC	cycle	
P0306	Cylinder engine	Cylinder 6 Misfire Detected	Cylinder #6 fuel rate adjustment < 14.5	Cylinder #6 fuel rate greater than	P0335,P0336,P0116,P0117,P0118,P0128	Test performed for 30	В
	speed and		mm3/stroke	desired fuel rate by >= 14.5	are not set.	seconds once per ignition	
	cylinder fuel rate			mm3/stroke	A)Coolant temperature >= 56degC	cycle	_
P0307	Cylinder engine	Cylinder 7 Misfire Detected	Cylinder #7 fuel rate adjustment < 14.5	Cylinder #7 fuel rate greater than	P0335,P0336,P0116,P0117,P0118,P0128	Test performed for 30	В
	speed and		mm3/stroke	desired fuel rate by >= 14.5	are not set.	seconds once per ignition	
	cylinder fuel rate			mm3/stroke	A)Coolant temperature >= 56degC	cycle	_
P0308	Cylinder engine	Cylinder 8 Misfire Detected	Cylinder #8 fuel rate adjustment < 14.5	Cylinder #8 fuel rate greater than	P0335,P0336,P0116,P0117,P0118,P0128	Test performed for 30	В
	speed and		mm3/stroke	desired fuel rate by >= 14.5	are not set.	seconds once per ignition	
	cylinder fuel rate			mm3/stroke	A)Coolant temperature >= 56degC	cycle	_
P0335	Checks the	Crankshaft Position [CKP]	Hall Effect Sensor	No Crank Edge counter >=5	CAM is rotating Ignition ON	60 failures out of 80	В
	number of Crank	Sensor Circuit			Key_on_time>0.5sec	samples. Samples are	
	pulses every 7.8				Not in powerdown mode	taken every 31.6 ms.	
	ms					1 2 2 11 2 2 2 2	
P0336	Checks the	Crankshaft Position [CKP]	Hall Effect Sensor	Number of teeth between gap and	Ignition ON Key_on_time>0.5sec	15 failures out of 20	В
	number of Crank	Sensor Performance	57 pulses and gap	gap is not equal to 57	Not in powerdown mode	samples	
	pulses between		per 1 crank revolution	but not equal to 0	As soon as a synch tooth is detected		
	the last synch						
	event and the						
D02.40	current	O I . M D I C M DI	11-11-5%1-0	No CAMATAL CONTROL OF THE CONTROL OF THE CAMATAL CONTROL OF THE CAMATAC CONTROL OF THE CAMA	Estimate On the Control of the Contr	00.531	
P0340	Checks CAM	Camshaft Position [CMP]	Hall Effect Sensor	No CAM interrupts received in 2	Engine speed > 60rpm Ignition ON	60 failures out of 80	A
	interrupts every	Sensor Circuit		seconds.	Not in Power down mode	samples. Samples are	
D02.44	7.8 ms	O I . M D I C I C I C	40 - 0 - 1 1 - 1 0 1 1 1 1 1 1 1 1 1 1 1	44 - 0 - 1 1 - 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Key_on_time>0.5sec	taken every 31.6 ms.	<u> </u>
P0341	Check crank	Camshaft Position [CMP]	10 <= Crank tooth at CAM edge <= 14	14 < Crank tooth at CAM edge or	Ignition On Not in powerdown mode	15 failures out of 20	В
	tooth number at	Sensor Performance		Crank tooth at CAM edge < 10	Keyontime>0.5sec Engine speed > 60rpm No related malfunction	samples Every crank	
	CAM edge				In Syncro Mode	revolution	
D0270	Monitored by	High Resolution Circuit	Buffered Signal of Hall Effect Sensor	Message has the 'No crank signal'	Engine speed >= 60rpm Ignition ON	100 failures out of 120	A
P0370	EDU	High Resolution Circuit	Bulleted Signal of Hall Effect Sensor	bit on.	Key on time>0.5sec	samples. Samples are	A
	and message			DIL OII.	Not in Power down mode	taken every 31.6 ms.	
	transferred by				Not in Power down mode	taken every 51.6 ms.	
	CAN						
D0274	Monitored by	High Resolution System	Buffered Signal of Hall Effect Sensor	Message has the '57X Signal	Engine speed >= 60rpm Ignition ON	100 failures out of 120	A
P0374	EDU	Performance	Bulleted Signal of Hall Effect Serisor	Implausible' bit on.	Key on time>0.5sec	samples. Samples are	A
	and message	Periormance		implausible bit on.	Not in Power down mode	taken every 31.6 ms.	
	transferred by				Not in Fower down mode	taken every 51.0 ms.	
	CAN						
P1550	CAN Message	Fuel Injector C	l ontrol Module System Voltage	"'EDU battery voltage out of range"	Ignition on	30 out of 50	С
P1550	from EDU	Fuer injector C	ontroi Module System Voltage	EDO battery voitage out of range	Initialization complete	(Every 125ms)	
	IIOIII EDO				Poweruptime > 0	(Every 125ilis)	
					Not in Poweroff Mode		
					CAN MSG is Valid		
					Engine Speed > 60rpm		
					11 <= Battery voltage <= 16		
P0380	A/D glowplug	Glow Plug Circuit	Glowplugs commanded off & raw feedback	Glowplugs commanded off & raw	Ignition Voltage > 9v	Diagnostic set conditions	В
FU38U	voltage input	Malfunction (CALIFORNIA)	< 2.0 v Glowplugs commanded on & 5.0 v	feedback >2.0 v	Glow plug feedback stable for 1.25 sec.	true for 2 seconds	D
	voitage iriput	Manufiction (CALIFORNIA)	< raw feedback < 6.2 v	-OR-	Glow plug reedback stable for 1.25 Sec.	Test performed	
			Detects a faulty glowplug relay circuit	Glowplugs commanded on & raw		continuously	
			Detects a faulty glowplug relay circuit	feedback > 6		Continuously	
						ļ	
D0201	ODM chin internal	Wait to Start Lamp Control	No ODM 'Open'Equit or 'short' faults	ODM'Open'or'Short'Equit Detected	None	Diagnostic set conditions	D
P0381	ODM chip internal open/short	Wait to Start Lamp Control Circuit	No ODM 'Open'Fault or 'short' faults Glowplug light output voltage at PCM	ODM'Open'or'Short'Fault Detected Glowplug light output voltage at	None	Diagnostic set conditions true for 2 seconds	В

FAULT	MONITORING	SENSED PARAMETER	ACCEPTABLE	PRIMARY	SECONDARY	MONITORING	FAULT CODE
CODE	METHOD		OPERATING	MALFUNCTION	MONITORING	TIME LENGTH	STORAGE
			RANGE AND	DETECTION	PARAMETERS	AND FREQUENCY	AND MIL
			RATIONALITY	PARAMETERS	AND CONDITIONS	OF CHECK	ILLUMINATION
P0401	EGR Control	Exhaust Gas	Detects a reduction of EGR flow	Must fail test7,9and pass test8 of	P0102,P0103,P2141,P2142,P0405	118 Failure out of 120	В
	Pressure Sensor	Recirculation(EGR) Flow		the EGR Diagnostic Tests	P0406,P0489,P0490,P2144,P2145 P0651	samples. Samples are	
	Mass Air Flow	Insufficient Rev.Date			are not set.	taken every 31.6ms. Test	
	Sensor	1/22/01			IGNITION is ON Engine Power Up Time>0.5sec Engine runtime>=5sec	performed continuously	
P0404	EGR Control	Exhaust Gas	Detects a reduction of EGR flow caused by	Must fail test 7,8,9 and pass test	P0102,P0103,P2141,P2142,P0405	248 Failure out of 250	В
10.0.	Pressure Sensor	Recirculation(EGR) Open	a reduction of vacuum flow	1,2,5,6 of the EGR Diagnostic Tests		samples. Samples are	
	Mass Air Flow	Position Performance			are not set.	taken every 31.6ms.	
	Sensor	Rev.Date 11/13/01			IGNITION is ON Engine Power Up Time>0.5sec		
					Engine runtime>=5sec Baro>=7		
P0405	EGR Control	Exhaust Gas	0.26 volt to 3.75 volts 18kPa to	EGR control pressure Input Voltage		158 Failure out of 160	В
	Pressure Sensor	Recirculation(EGR) Position		<=0.26 volts	IGNITION is ON	samples. Samples are	
		Sensor Circuit Low Voltage	voltage.	-same as- EGR control pressure<=18kPa	Engine Power Up Time > 0.5sec Not In Powerdown Mode	taken every 31.6ms. Test performed continuously	
D0406	EGR Control	Exhaust Gas	0.26 volt to 3.75 volts 18kPa to	EGR control pressure Input Voltage		158 Failure out of 160	В
P0406	Pressure Sensor	Recirculation(EGR) Position	158kPa C4	>=3.75 volts -same as-	IGNITION is ON	samples. Samples are	В
	i lessure serisor	Sensor Circuit High Voltage	130Ki a 04	EGR control pressure>=158kPa	Engine Power Up Time > 0.5sec	taken every 31.6ms. Test	
		Conson Chroan Fingh Follage		Zerr deriki er procedire i reekii u		performed continuously	
P0489	ODM chip internal	Exhaust Gas	No ODM 'Open'Fault or 'short' faults	ODM'Open'or'Short to Ground'Fault	IGNITION is ON	Diagnostic set conditions	В
10.00	open/short	Recirculation(EGR)	EGR Solenoid output voltage at PCM	Detected EGR	Engine Power Up Time > 0.5sec	true for 2 seconds	
	detection circuit	Solenoid Control Circuit	follows S/W command	Solenoid output voltage at PCM	Not In Powerdown_Mode	Test performed	
		Low Voltage		does not follow S/W command	11V<=Battery voltage<=18V	continuously	
					EGR_Duty < 71%		
P0490	ODM chip internal	Exhaust Gas	No ODM 'Open'Fault or 'short' faults	ODM 'Short to Battery' Fault	IGNITION is ON	Diagnostic set conditions	В
	open/short detection circuit	Recirculation(EGR) Solenoid Control Circuit	EGR Solenoid output voltage at PCM follows S/W command	Detected EGR Solenoid output voltage at PCM does not	Engine Power Up Time > 0.5sec Not In Powerdown Mode	true for 2 seconds Test performed	
	detection circuit	High Voltage	Ioliows 5/W Command	follow S/W command	11V<=Battery voltage<=18V	continuously	
		Tilgii Voltage		Ioliow 3/W command	EGR Duty > 10%	Continuously	
P0500	Monitor vehicle	Vehicle Output Speed	Manual Transmission:	Manual Transmission:	Manual Trans: Engine speed > 1000 rpm and	32 failures out of 40	В
	speed input	Sensor Circuit	Coolant Temperature > 25 degrees C.	No detected vehicle speed pulses	Engine Torque > 300 N-m	(Every 125ms)	
	signal.						
			Automatic Transmission:	Automatic Transmission:			
			Engine Running	Delta between ECM Vehicle Speed value and CAN Vehicle Speed value			
				> 5 mph			
P0540	Checks the	Intake Heater System	Heater line voltage<3.8V	CaseA:	10V<=Battery voltage<=18V and	Diagnostic condition true	В
1 0340	voltage of heater	intake Heater Cyclem	@ relay off	Heater line voltage>=8.1V@relay	IAT<=23deqC or	for 1 second relay off	
	line		and	off CaseB:	Coolant <=49.5deg C	mode and on mode for 3	
			Reference line voltage is low@relay off and	3.8V<=Heater line		seconds	
			Heater line voltage	voltage<8.1@relay off and		(once per key cycle)	
			>=1.0V @ relay on	Battery voltag			
			and Reference line voltage is High @ relay on				
D0542	Checks the	Intake Heater Open	Heater line voltage is high @ relay on	3.8V<=Heater line voltage<8.1V @	10V<=Battery voltage<=18V and	Diagnostic condition true	В
P0543	voltage of heater	ilitake Heatel Open	@ relay off	relay off	IAT<=23degC or	for 1 second relay off	
	line		and	and	Coolant <=49.5deg C	mode and on mode for 3	
			Reference line voltage is low@relay off and	Battery voltage - 0.5V <heater line<="" td=""><td></td><td>seconds</td><td></td></heater>		seconds	
			Heater line voltage	voltage @relay on		(once per key cycle)	
			>=1.0V @ relay on				
			and				
D0/01		Control Modula Danad Cul	Reference line voltage is High @ relay on	Colordata d Obsasta and	a) not occupi to imboddod (Charles and Ch	Dun ana (4) #:	Α
P0601		Control Module Read Only Memory		Galculated Checksum(s	s) not equal to imbedded Checksum(s)	Run one (1) time at powerup.	Α
P0602		Control Module Not		K Check Service Calibration =		Run every 125 ms	Α
1 0002		Programmed		TRUE.			· · ·
P0604			ule Random Access Memory		n not equal to data written to RAM location.	Run during ECM	Α
						initialization.	1

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_		SENSED PARAMETER	ACCEPTABLE	PRIMARY	SECONDARY	MONITORING	FAULT CODE
CODE	METHOD		OPERATING	MALFUNCTION	MONITORING	TIME LENGTH	STORAGE
			RANGE AND	DETECTION	PARAMETERS	AND FREQUENCY	AND MIL
			RATIONALITY	PARAMETERS	AND CONDITIONS	OF CHECK	ILLUMINATION
P0611	Monitored by	Fuel Injector Control	No Error Message from EDU	Micro.C or MM defective" or	Ignition on	30 out of 50	В
	EDU	Module Performance		"A/D conversion SRC violation"	J1939 Initialization is done	(Every 125ms)	
	and message			if 10 <= battery voltage <= 18 or	Key_on_time > 0.5sec		
	transferred by			"A/D conversion Timeout Error"	Not in Poweroff Mode		
	CAN				CAN MSG is Valid		
	D:	5 11 1 0 1 1	N 00146 1 8 8 1 1 10	OUTD 11 150 11	Engine Speed >= 0rpm	00 1 550	
P0612	Discrete flag from hardware	Fuel Injector Control Module Relay Control	No ODM faulure flag flom hardware I/O	OUTD state and F/B voltage does not match	IGNITION ON J1939 Initialization is done	30 out of 50 (Every 125ms)	В
	I/O	Circuit		not match	Not in Powerdown Mode	(Every 125ms)	
	1/0	Circuit			Key on time>0.5 sec.		
					rtey_on_time=0.5 sec.		
P0641	Checks the 5 Volt	5 Volt Reference 1 Circuit	5 Volt Reference V5B1 does not exceed 5v	5 Volt Reference V5B1 > 5V	Ign ON	Failure detected for 2	Α
	Reference Output		and does not fall below 4.4V	5 Volt Reference V5B1 < 4.4V		seconds	
	(V5B1) of the						
D0 (70	A/D converter	Malford Control Control	Leaving and the second of the	MIL O L. I	19	0	
P0650		Malfunction Indicator Lamp (MIL) Control Circuit	Ignition voltage between 6 and 18 volts	MIL Output MIL fail counter incremented if MIL	Ignition on Ignition voltage between 6 and 18 volts	Greater than or equal to 5 fail counts	Α
		(MIL) Cortifol Circuit		output driver indicates a fault	ignition voitage between 6 and 16 voits	MIL Output monitored at	
				condition (open/short ckt)		least every 500 msec	
P0651	Checks the 5 Volt	5 Volt Reference 2 Circuit	5 Volt Reference V5B2 does not exceed 5v	5 Volt Reference V5B2 > 5V	Ian ON	Failure detected for 2	В
1 0001	Reference Output		and does not fall below 4.4V	5 Volt Reference V5B2 < 4.4V	-g	seconds	_
	(V5B2) of the						
	A/D converter						
P0700	Monitor MIL Request input	Transmission Control M	odule (TCM) Requested MIL Illumination	MIL Request line active	Ignition 0 on time > 7 seconds P0802 Fault not set	Active for 32 samples (Every 125 ms)	Α
P0802	Monitor MIL	Transmission Control	Ignition 0 on time > 0.125 second but < 7	MIL Request line inactive		Monitored for 6 seconds	В
	Request input	Module (TCM) MIL Request	seconds			after Ignition 0 transitions	
		Circuit				from off to on (Every 125	
7100	D. 11 D	5 d 0 d d d	No. of the lates	D	No object of collection	ms)	
P1093	Rail Pressure sensor and	Fuel System Large Leakage Detected	Negative rail pressure error should be within 20MPa Commanded pump flow	Drp - rp > 20MPa:0-2200rpm	No related malfunction (RPS LO,RPS HI,5VB A) Rail pressure	49 Failure out of 50 sample	Α
	Commanded Fuel	Leakage Delected	should be lower than pump capability	30MPa:2400rpm-5000rpm	Feedback Mode Key on time>0.125Sec.	Sample	
	flow to pump		Should be lower than pump capability	and	Fuel_Mode		
	non to pamp			cmdpumpflow >=	. 46		
				10000:0-400rpm			
				11030:400rpm			
				14706:600rpm			
				18382:800rpm			
				22058:1000rpm			
				25736:1200rpm			
				29412:1400rpm			
				33088:1600rpm 36764:1800rpm			
				40442:2000rpm			1
				44118:2200rpm			1
				47700:2400rpm			1
				49500:2600rpm			
				49500:			
P1223	OUTD	Injector 1 Output Circuit	No Error Message from EDU	Signal from TFD	IGN on	130 out of 150	В
	Mornitoring in ECM	(R/C)			Poweruptime>0.5sec rpm>300rpm Fuel Mode	(Every 32ms)	

EATHT	MONITODING	SENSED PARAMETER	ACCEPTABLE	DDIM A DAY	SECONDADY	MONITODING	EALL T CODE
CODE	METHOD	SENSED PARAMETER	ACCEPTABLE OPERATING	PRIMARY MALFUNCTION	SECONDARY MONITORING	MONITORING TIME LENGTH	FAULT CODE STORAGE
CODE	METHOD		RANGE AND	DETECTION	PARAMETERS	AND FREQUENCY	AND MIL
			RATIONALITY	PARAMETERS	AND CONDITIONS	OF CHECK	ILLUMINATION
P1226	OUTD	Injector 2 Output Circuit	No Error Message from EDU	Signal from TFD	IGN on	130 out of 150	В
	Mornitoring in	(R/C)		S .	Poweruptime>0.5sec	(Every 32ms)	
	ECM				rpm>300rpm Fuel Mode		
	Mornitoring in ED	U and message transferred via CAN	1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)"	IGN on Poweruptime>0.5sec	130 out of 150 (Every 32ms)	
		VIA CAIN	ECIVITEQUEST INJECTION to EDO	"wrong segment Req. " or	CAN MSG from EDU is valid	(Every Szilis)	
				"simultaneous Req. " or	Not in Poweroff Mode		
				"number of pulse > 2 or < 1	rpm>300rpm		
				if rpm> 300rpm and bp>5mm3/st and bpw>60us and blankshot not			
				active			
P1229	OUTD	Injector 3 Output Circuit	No Error Message from EDU	Short High Signal from TFD	IGN on	130 out of 150	В
	Mornitoring in	(R/C)	_		Poweruptime>0.5sec	(Every 32ms)	
ļ	ECM		1<=Number of injection pulses<=2 when	IIII a sal Dan (tan lang) lang talang N	rpm>300rpm Fuel Mode	120 150	
	Mornitoring in ED	U and message transferred via CAN	1<=Number of injection pulses<=2 when ECM request injection to EDU	"Illegal Req.(too long/short/close)"	IGN on Poweruptime>0.5sec	130 out of 150 (Every 32ms)	
		VIA 07 (14	Eow request injection to Ebo	"wrong segment Reg. " or	CAN MSG from EDU is valid	(Every ozins)	
				"simultaneous Req. " or	Not in Poweroff Mode		
				"number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st	rpm>300rpm		
				and bpw>60us and blankshot not			
				active			
P1232	OUTD	Injector 4 Output Circuit	No Error Message from EDU	Signal from TFD	IGN on	130 out of 150	В
	Mornitoring in ECM	(R/C)			Poweruptime>0.5sec rpm>300rpm Fuel Mode	(Every 32ms)	
		U and message transferred	1<=Number of injection pulses<=2 when	"Illegal Reg.(too long/short/close)"	IGN on	130 out of 150	
	Monitoring in ED	via CAN	ECM request injection to EDU	or	Poweruptime>0.5sec	(Every 32ms)	
			, ,	"wrong segment Req. " or	CAN MSG from EDU is valid		
				"simultaneous Req. " or	Not in Poweroff Mode		
				"number of pulse > 2 or < 1 if rpm> 300rpm and bp>5mm3/st	rpm>300rpm		
				and bpw>60us and blankshot not			
				active			
P1235	OUTD	Injector 5 Output Circuit	No Error Message from EDU	Signal from TFD	IGN on	130 out of 150	В
	Mornitoring in ECM	(R/C)			Poweruptime>0.5sec rpm>300rpm Fuel Mode	(Every 32ms)	
		U and message transferred	1<=Number of injection pulses<=2 when	"Illegal Req.(too long/short/close)"	IGN on	130 out of 150	
		via CAN	ECM request injection to EDU	or	Poweruptime>0.5sec	(Every 32ms)	
				"wrong segment Req. " or	CAN MSG from EDU is valid		
				"simultaneous Req. " or "number of pulse > 2 or < 1	Not in Poweroff Mode rpm>300rpm		
				if rpm> 300rpm and bp>5mm3/st			
				and bpw>60us and blankshot not			
D1220	OUTD	Injector 6 Output Circ. "	No Error Moos	active	ICNLon	130 out of 150	В
P1238	Mornitoring in	Injector 6 Output Circuit (R/C)	No Error Message from EDU	Signal from TFD	IGN on Poweruptime>0.5sec	(Every 32ms)	В
	ECM	(1.00)			rpm>300rpm Fuel Mode	(2001y 021113)	
†	Mornitoring in ED	U and message transferred	1<=Number of injection pulses<=2 when	"Illegal Req.(too long/short/close)"	IGN on	130 out of 150	
		via CAN	ECM request injection to EDU	or	Poweruptime>0.5sec	(Every 32ms)	
				"wrong segment Req. " or "simultaneous Req. " or	CAN MSG from EDU is valid Not in Poweroff Mode		
				"number of pulse > 2 or < 1	rpm>300rpm		
				if rpm> 300rpm and bp>5mm3/st			
				and bpw>60us and blankshot not			
				active			

EAIII T	MONITODING	SENSED PARAMETER	ACCEPTABLE	DDIMADV	SECONDARY	MONITODING	FAULT CODE
CODE	METHOD	SENSED PARAMETER	ACCEPTABLE OPERATING	PRIMARY MALFUNCTION	MONITORING	MONITORING TIME LENGTH	STORAGE
CODE	METHOD		RANGE AND	DETECTION	PARAMETERS	AND FREQUENCY	AND MIL
			RATIONALITY	PARAMETERS	AND CONDITIONS	OF CHECK	ILLUMINATION
P1241	OUTD	Injector 7 Output Circuit	No Error Message from EDU	Signal from TFD	IGN on	130 out of 150	B
P1241	Mornitoring in ECM	(R/C)	Ů	Ü	Poweruptime>0.5sec rpm>300rpm Fuel Mode	(Every 32ms)	Б
	,	U and message transferred via CAN	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)	
P1244	OUTD Mornitoring in ECM	Injector 8 Output Circuit (R/C)	No Error Message from EDU	Signal from TFD	IGN on Poweruptime>0.5sec rpm>300rpm Fuel Mode	130 out of 150 (Every 32ms)	В
	Mornitoring in EDU and message transferred via CAN EGR Control pressure Sensor and Mass Air Flow Sensor		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)	
			Detects EVRV Solenoid Valve Open Stuck	Must fail test 12 of the EGR Diagnostic Tests	P0102,P0103,P2141,P2142,P0405 P0406,P0489,P0490,P2144,P2145 P0651 are not set. IGNITION is ON Engine Power Up Time>0.5sec Engine runtime>=5sec Baro>=72kPa TEST A,B,G are finished	118 Failure out of 120 samples. Samples are taken every 31.6ms.	В
	EGR Control pressure Sensor and Mass Air Flow Sensor		Detects VSV Solenoid Valve Close Stuck	Must fail test 13 of the EGR Diagnostic Tests	P0102,P0103,P2141,P2142,P0405 P0406,P0489,P0490,P2144,P2145 P0651 are not set. IGNITION is ON Engine Power Up Time>0.5sec Engine runtime>=5sec Baro>=72kPa TEST A,B,G are finished	118 Failure out of 120 samples. Samples are taken every 31.6ms.	В
P1261	Monitoring in EDU and message transferred via CAN	Injector Positive Voltage Control Circuit Group 1	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)	A
P1262	Monitoring in EDU and message transferred via CAN	Injector Positive Voltage Control Circuit Group 2	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)	A
P1404	EGR Control pressure Sensor and Mass Air Flow Sensor	Exhaust Gas Recirculation(EGR) Closed Position Performance Rev.Date 11/13/01	'Detects a increase of EGR flow	Must fail test 2,6,7 and pass test 1,5,8 of the EGR Diagnostic Tests	P0102,P0103,P2141,P2142,P0405 P0406,P0489,P0490,P2144,P2145 P0651 are not set. IGNITION is ON Engine Power Up Time>0.5sec Engine runtime>=5sec Baro>=72kPa TEST A,B,G are finished	118 Failure out of 120 samples. Samples are taken every 31.6ms.	В
P1635	Checks the 5 Volt Reference Output (V5B1) of the A/D converter	5 Volt Reference 1 Circuit	5 Volt Reference V5B1 does not exceed 5v and does not fall below 4.4V	5 Volt Reference V5B1 > 5V 5 Volt Reference V5B1 < 4.4V	Ign ON	Failure detected for 2 seconds	A

FAULT	MONITORING	SENSED PARAMETER	ACCEPTABLE	PRIMARY	SECONDARY	MONITORING	FAULT CODE
CODE	METHOD		OPERATING	MALFUNCTION	MONITORING	TIME LENGTH	STORAGE
			RANGE AND	DETECTION	PARAMETERS	AND FREQUENCY	AND MIL
			RATIONALITY	PARAMETERS	AND CONDITIONS	OF CHECK	ILLUMINATION
P1639	Checks the 5 Volt	5 Volt Reference 2 Circuit	5 Volt Reference V5B2 does not exceed 5v and	5 Volt Reference V5B2 > 5V	Ign ON	Failure detected for 2	В
	Reference Output (V5B2) of the A/D		does not fall below 4.4V	5 Volt Reference V5B2 < 4.4V		seconds	
P1643	converter ODM chip internal	Wait to Start Lamp Control	No ODM 'Open'Fault or 'short' faults	ODM'Open'or'Short'Fault Detected	None	Diagnostic set conditions true	В
P1043	open/short	Circuit	Glowplug light output voltage at PCM follows	Glowplug light output voltage at PCM	None	for 2 seconds	Б
	detection circuit	Circuit	S/W command	does not follow S/W command		Tor 2 seconds	
P1658	Monitored by	Fuel Injector Control	No Error Message from EDU	Any cylinder of	Ignition on	30 out of 50	Α
	EDU	Module Driver Performance		"Fast Current Decrease Errorr"	J1939 Initialization is done	(Every 125ms)	
	and message				Key_on_time > 0.5sec		
	transferred by			(Injection Current is grater than 3A	Not in Poweroff Mode		
P1683	CAN Ignition off timer	Control Module Ignition Off	((ignition off time delta >= min 0 sec) and	at 100usec from EOC) Delta between Ignition off timer reads	CAN MSG is Valid Ignition off timer is running diagnostic has not yet run	Test performed continuously	В
P1083	ignition on times	Timer Performance	(Ignition off time delta = max 5 sec)) AND	<= 0 sec	to completion	Test performed continuously	ь
		Timer Terrormance	timer is incrementing AND timer increment <	OR	to completion		
			2 delta sec Detects a faulty Ignition off Timer	Delta between Ignition off timer reads			
			circuit.	<= 5 sec			
				OR			
				timer unchanged for 60 sec OR			
				timer increment > 2 delta sec			
P2141	ODM chip internal	Exhaust Gas	No ODM 'Open'Fault or 'short' faults	ODM'Open'or'Short to Ground'Fault	IGNITION is ON	Diagnostic set conditions	В
	open/short	Recirculation(EGR) Throttle	EGR vent output voltage at PCM follows	Detected EGR Vent	Engine Power Up Time > 0.5sec	true for 4 seconds	
	detection circuit	Valve Solenoid Control	S/W command	Solenoid output voltage at PCM	Not In Powerdown_Mode	Test performed	
		Circuit Low Voltage		does not follow S/W command	11V<=Battery voltage<=18V	continuously	
D21.42	ODM ship internal	Fisherint Con-	No ODM IO and Facility and all and facility	ODM IOb and to Dotton I Facility	EGR Throttle Valve Solenoid = OFF	Diamentia ant annditions	D
P2142	ODM chip internal open/short	Exhaust Gas Recirculation(EGR) Throttle	No ODM 'Open'Fault or 'short' faults EGR vent output voltage at PCM follows	ODM 'Short to Battery' Fault Detected EGR Throttle	IGNITION is ON Engine Power Up Time > 0.5sec	Diagnostic set conditions true for 4 seconds	В
	detection circuit	Valve Solenoid Control	S/W command	Valve Solenoid output voltage at	Not In Powerdown Mode	Test performed	
	actorion on care	Circuit High Voltage	C/11 command	PCM does not follow S/W command		continuously	
		0			EGR Throttle Valve Solenoid = ON	,	
P2144	ODM chip internal	Exhaust Gas	No ODM 'Open'Fault or 'short' faults	ODM'Open'or'Short to Ground'Fault	IGNITION is ON	Diagnostic set conditions	В
	open/short detection circuit	Recirculation(EGR) Vent Solenoid Control Circuit	EGR vent output voltage at PCM follows S/W command	Detected EGR Vent Solenoid output voltage at PCM	Engine Power Up Time > 0.5sec Not In Powerdown Mode	true for 4 seconds	
	detection circuit	Low Voltage	5/vv command	does not follow S/W command	11V<=Battery voltage<=18V	Test performed continuously	
		Low Voltage		does not follow 3/W confinant	EGR Vent Solenoid = OFF	Continuously	
P2145	ODM chip internal	Exhaust Gas	No ODM 'Open'Fault or 'short' faults	ODM 'Short to Battery' Fault	IGNITION is ON	Diagnostic set conditions	В
	open/short	Recirculation(EGR) Vent	EGR vent output voltage at PCM follows	Detected EGR Vent	Engine Power Up Time > 0.5sec	true for 4 seconds	
	detection circuit	Solenoid Control Circuit	S/W command	Solenoid output voltage at PCM	Not In Powerdown_Mode	Test performed	
		High Voltage		does not follow S/W command	11V<=Battery voltage<=18V EGR Vent Solenoid = ON	continuously	
P2146	Mornitoring in	Injector Positive Voltage	No Error Message from EDU	"HSOC #1 or #4 or #6 or #7" or	CAN MSG from EDU is valid IGN on	20 out of 40	A
1 2140	EDU and	Control Circuit Group 1	No Ellor Wessage from EDO	"LSOC #1 or #4 or #6 or #7" or	Power up time>0.5sec Not in Power off	(32ms)	^
	message			"Boost low EDU Bank 1" or	Mode	(, , ,	
	transferred via			"load drop #1 or #4 or #6 or #7"			
	CAN						
P2149	Mornitoring in	Injector Positive Voltage	No Error Message from EDU	"HSOC #2 or #3 or #5 or #8" or	CAN MSG from EDU is valid IGN on	20 out of 40	Α
	EDU and message	Control Circuit Group 2		"LSOC #2 or #3 or #5 or #8" or "Boost low EDU Bank 2" or	Power up time>0.5sec Not in Power off Mode	(32ms)	
	transferred via			"load drop #2 or #3 or #5 or #8"	INIOGE		
	CAN			1000 0100 #2 01 #0 01 #0 01 #0			
P2227	Baro Pressure	Barometric Pressure	0.78v to 4.86v 40kPa to 202kPa Detects in	Baro diff =Barometric Pressure-	None of the following codes are set:	Diagnostic set conditions	В
	Sensor	Sensor Performance	range fault of Baro sensor Baro diff	EGR Vacuum Pressure.	P0101,P0102,P0103,P2228,P2229,P0116	true for for6 seconds	
			=Barometric Pressure -EGR Vacuum	-10 kpa < Baro diff < 10 kpa	P0117,P0118,P0236,P0237,P0238,P0335	Test performed	
			Pressure when EGR is disabled.		P0336, P0404, P0405, P0406, P0500	continuously	
				I	Engine runtime>8 sec		ı

_		SENSED PARAMETER	ACCEPTABLE	PRIMARY	SECONDARY	MONITORING	FAULT CODE
CODE	METHOD		OPERATING DANGE AND	MALFUNCTION	MONITORING	TIME LENGTH	STORAGE
			RANGE AND	DETECTION	PARAMETERS	AND FREQUENCY	AND MIL
			RATIONALITY	PARAMETERS	AND CONDITIONS	OF CHECK	ILLUMINATION
P2228	Baro Pressure	Barometric Pressure Circuit	0.78v to 4.86v 40kPa to 202kPa	Baro Pressure < 0.114 v	Engine runtime>1 sec	Diagnostic set conditions	В
	Sensor	Low Input	Detects baro sensor shorted to ground or	- same as -	Ignition voltage > 7v	true for for 10 seconds	
			open.	Baro Pressure < 40kPa		Test performed	
						continuously	
P2229	Baro Pressure	Barometric Pressure Circuit	0.78v to 4.86v 40kPa to 202kPa		Engine runtime>1 sec	Diagnostic set conditions	В
	Sensor	High Input	Detects baro sensor circuit short to high	as - Baro Pressure		true for for 10 seconds	
			voltage	>110KPa		Test performed	
7.000	505.0		B	** ***	D0400 D0400 D0444 D0440 D0405	continuously	_
P2279	EGR Cotrol	Intake Air Duct Leak	Detects a reduction of EGR flow caused by	Must fail test 2,4,6 and pass test	P0102,P0103,P2141,P2142,P0405	118 Failure out of 120	В
	pressure Sensor and Mass Air		a reduction of air flow	1,5,8 of the EGR Diagnostic Tests	P0406,P0489,P0490,P2144,P2145 P0651 are not set.	samples. Samples are taken every 31.6ms. Test	
	Flow Sensor				IGNITION is ON	performed continuously	
	Flow Selisoi				Engine Power Up Time>0.5sec	performed continuously	
					Engine rower of Time>0.5sec		
					Baro>=72kPa		
					TEST A.B.C are finished		
P2610	Ignition off timer	Control Module Ignition Off	((ignition off time delta >= min 0 sec) and	Delta between Ignition off timer	Ignition off timer is running diagnostic has not yet	Test performed	В
1 2010	iginaon on anno.	Timer Performance	(Ignition off time delta<= max 5 sec))	reads	run to completion	continuously	
			AND timer is incrementing AND timer	<= 0 sec OR	Tan to completion		
			increment < 2 delta sec Detects a faulty	Delta between Ignition off timer			
			Ignition off Timer circuit.	reads			
			ŭ	<= 5 sec OR			
				timer unchanged for 60 sec			
				OR			
				timer increment > 2 delta sec			
U1800	Message from	Lost Communications with	Toggring bit should be inverted every	Can Message is not updated for 3	Ignition on	30 out of 50	В
	EDU via CAN	Fuel Injector Control	20msec	count	J1939 Initialization is done	(Every 125ms)	
	(Monitor the	Module		(By refering Toggling bit every	Key_on_time > 0.5sec		
	status of			15.6ms)	Not in Poweroff Mode		
	Message B7,						
T12101	toggring bit) Monitor CAN	CAN bus reset counter		A CAN bus hardware error shall	lanition on	Monitor time is 3 seconds.	В
U2104				present for a calibrated amount of	Ignition on Ignition voltage <= 18 volts		В
	status register of CAN controller	overrun		time.	Ignition voltage <= 18 volts	Frequency is every 8msec.	
	chip			une.	ignition voitage >= 6 voits	onisec.	
U2104	GIIP	CAN Bus Reset Counter	This test detects if the CAN (J1939) bus is	CAN bus is OFF >= 3 seconds.	200 RPM < Engine Speed < 7500 RPM for 5	3 s	В
02104		O/ 114 Dus Reset Counter	off.	Chit bus is Of 1 7 = 0 seconds.	seconds	33	
l t		Overrun	OII.		Components powered and 9 V < Ignition < 18 V	100 ms	
112105		CAN Bus Error ECU – State	This test detects CAN (J1939) bus	Messages absent >= 3 seconds.	200 RPM < Engine Speed < 7500 RPM for 5	3 s	В
U2105		CAN bus Elloi ECO – State	message	wiessages absent >= 5 seconds.	seconds	38	В
†		of Health	failures.		Components powered and 9 V < Ignition < 18 V	100 ms	
T/2106	CAN Massa		s with Transmission Control System	The ECM fails to receive PGN 0 or		Monitor time is 1000msec.	В
U2106	CAN Message from the TCM	Lost communication	is with Transmission Control System	PGN 61,445 from the TCM	Ignition on		l R
	from the TCM			PGN 61,445 from the TCM	Ignition voltage <= 18 volts Ignition voltage >= 6 volts	Frequency is every 8msec.	
					riginilion voitage >= 6 voits	onisec.	

*TABLES

	CHART 1	
Value		RPM
10		0
10		200
10		400
10		600
20		800
25		1000
30		1200
32		1400
34		1600
40		1800
45		2000
50		2200
55		2400
60		2600
65		2800
70		3000
70		3200
70		3400
70		3600
70		3800
70		4000
70		4200
70		4400
70		4600
70		4800
70	_	5000

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				