1998 6.5L Diesel (L56) C/K-truck Light Duty < 8500 GVW
ENGINE DIAGNOSTIC PARAMETERS

98t65S_CK_yE.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALFUNCTION DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	FAULT CODE STORAGE AND MIL ILLUMINATION
Mass Air Flow Circuit Range/ Performance	P0101	1280 hz to 10496 hz 1.5 g/s to 342 g/s	Must fail test 1 and only one of the following tests: 4a, 4b, 4c or 4d of the EGR Diagnostic Tests	P0405, P0406, P0102 and P0103 must not be Set Baro > 75kPa	Test performed continuously	B
Mass Air Flow Sensor Circuit Low Frequency	P0102	1280 hz to 10496 hz 1.5 g/s to 342 g/s Detects a sensor circuit low frequency	Mass Air Flow Input Frequency < 1280hz - same as - Mass Air Flow < 1.5 g/s	Engine Speed > 0 RPM Ignition Voltage > 8.5v	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Mass Air Flow Sensor Circuit High Frequency	P0103	1280 hz to 10496 hz 1.5 g/s to 342 g/s Detects a sensor circuit high frequency	Mass Air Flow Input Frequency > 10496hz - same as - Mass Air Flow > 342 g/s	Engine Speed > 0 RPM Ignition Voltage > 8.5v P0102 Clear or Disabled	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Intake Air Temperature Circuit Low Input	P0112	0.24 volt to 4.86 volts -40°C to 152°C Detects a sensor circuit short to ground	Air temperature sensor voltage < 0.24 volt - same as - Air temperature > 160°C	Coolant temperature < 42.5°C	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Intake Air Temperature Circuit High Input	P0113	0.24 volt to 4.86 volts -40°C to 152°C Detects a sensor circuit short to high voltage or a sensor circuit open	Air temperature sensor voltage > 4.86 volt - same as - Air temperature < -40°C	Engine has been running > 8 minutes	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Engine Coolant Temperature Circuit Low Input	P0117	0.24 volt to 4.76 volts -40°C to 152°C Detects a sensor circuit short to ground	Coolant temperature sensor voltage < 0.24 volt - same as - Coolant temperature > 160°C		Diagnostic set conditions true for 2 seconds Test performed continuously	B
Engine Coolant Temperature Circuit High Input	P0118	0.24 volt to 4.76 volts -40°C to 152°C Detects a sensor circuit short to high high voltage or a sensor circuit open	Coolant temperature sensor voltage > 4.76 volt - same as - Coolant temperature < -40°C	Engine run timer > 8 minutes	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Insufficient Coolant Temp for Stable Operation	P0126	Engine Temperature > 56°C Detects engine not warm enough for stable operation	Engine run time >= 600s Engine temperature < 56°C Fuel burned since start >= 1,000,000cu.mm. Total idle time since start < 450s - OR - Engine run time >= 300s Engine Temperature < 56°C Fuel burned since start >= 468,120cu.mm. Total idle time since start < 225s	*Ambient air temperature < f(eng. startup temp); Ambient air temp > -7°C; -7°C < Engine start-up temp < 56°C; Engine is running; P0126 not yet passed; P0112, P0113, P0117 and P0118 not set. * See Table DGTCMIT *Ambient air temperature >= f(eng. startup temp); Ambient air temp > -7°C; -7°C < Engine start-up temp < 56°C; Engine is running; P0126 not yet passed; P0112, P0113, P0117 and P0118 not set. * See Table DGTCMIT	Diagnostic set conditions true for 2 seconds Test performed once from start-up until a pass/fail/disable condition exists.	B
Fuel Temperature Sensor Circuit Low Input	P0182	0.24 volts - 4.96 volts 17°C - 106°C Detects a sensor circuit short to ground	Fuel temperature < 0.24 volts - same as - Fuel temperature > 106°C	None	Diagnostic set conditions true for 2 seconds Test performed continuously	B

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

1998 6.5L Diesel (L56) C/K-truck Light Duty < 8500 GVW
ENGINE DIAGNOSTIC PARAMETERS

98t65S_CK_yE.doc

SENSED PARAMETER	FAULT CODE	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALFUNCTION DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	FAULT CODE STORAGE AND MIL ILLUMINATION
Fuel Temperature Sensor Circuit High Input	P0183	0.24 volts - 4.96 volts 17°C - 106°C Detects a sensor short to high voltage or sensor circuit open	Fuel temperature > 4.96 volts - same as - Fuel temperature < 18°C	Engine running > 8 minutes	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Fuel Injection Timing Circuit Malfunction	P0216	| Desired timing - actual timing | =< 5 engine degrees Detects a failure of timing control under steady state conditions	| Desired timing - actual timing | > 5 pump degrees	Codes P0251, P0335 and P0370 clear Engine not stalled No change in engine speed > 56 RPM for a minimum of 5 seconds	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Lift Pump Voltage Low	P0231	Lift pump voltage > Ignition voltage - 4 volts Detects a low voltage at the lift pump when the lift pump is commanded high	Lift pump voltage < Ignition voltage - 4 volts	Lift pump is commanded high	Lift pump commanded high > .5 second Diagnostic set conditions true for 2 seconds Test performed continuously	B
Wastegate Control Range/ Performance Failure	P0236	Detects a failure of wastegate control system under steady state boost conditions.	Final intake manifold pressure =< (Desired kPA - 20 kPa) - ((100kPa - Baro) /2) - OR -	Eng. speed > 2400 RPM; Fuel rate > 20 cu.mm. Final intake manifold pressure =< (Desired kPa + 20kPa) Condition 2 timer >= 10 seconds - OR - 1800 RPM < Eng. speed =< 2400 RPM; Fuel rate > 20 cu.mm Final intake manifold pressure =< (110kPa) - ((100kPa - Baro)/2) Condition 3 timer >= 12.8 seconds	Test performed continuously	B
			Final intake manifold pressure > (Desired kPa + 20 kPa)	Eng. speed > 2400 RPM Condition 1 timer > 10 seconds		
Intake Manifold Pressure Low Input	P0237	0.78 volt to 4.86 volts 40kPa to 202kPa Detects boost sensor circuit open	Boost Pressure < 0.78 volts - same as - Boost Pressure < 40kPa	None	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Intake Manifold Pressure High Input	P0238	0.78 volt to 4.86 volts 40kPa to 202kPa Detects boost sensor circuit short to high voltage	Boost Pressure > 4.86 volts - same as - Boost Pressure > 202kPa	Engine Speed < 3506 RPM	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Fuel Injection Pump cam Position Sensor (CAM) Malfunction	P0251	Number of consecutive missing CAM pulses < 8	Number of consecutive missing CAM pulses >= 8	Ratio of CAM to HRS = 1:64 ± 4		A
		Ratio of CAM to HRS = 1:64 ± 4 for 8 consecutive cylinders	Ratio of CPS to HRS < 60:1 for 240 cylinders if one bad ratio detected			
		Number of CAM pulses per #1 cylinder event = 8. This must be true for 8 #1 cylinder events for RPM < 300 or 32 #1 cylinder events for RPM >= 300 or 96 #1 cylinder events for RPT >= 300 depending on the ration of CPS to HRS	Number of CAM pulses per #1 cylinder event <> 8 for 8 #1 cylinder events	RPM < 300		
			Number of CAM pulses per #1 cylinder event <> 8 for 32 #1 cylinder events	RPM >= 300 Ratio of CPS to HRS > 60:1		
			Number of CAM pulses per #1 cylinder event <> 8 for 96 #1 cylinder events	RPM >= 300 Ratio of CPS to HRS < 60:1	Test performed continuously	
Multiple Misfire Detected	P0300	Number of detected misfire cylinders =< 1	Number of detected misfire cylinders > 1	56°C =< Coolant temperature < 104°C Engine Speed = Idle	Test performed for 90 seconds once per ignition cycle	B

Cylinder 1 Misfire Detected	P0301	Cylinder #1 fuel rate adjustment < +24mm³	Cylinder #1 fuel rate greater than desired fuel rate by >= 24mm³	56°C =< Coolant temperature < 104°C Engine Speed = Idle	Test performed for 90 seconds once per ignition cycle	B

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

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	FAULT CODE STORAGE AND MIL ILLUMINATION
Cylinder 2 Misfire Detected	P0302	Cylinder #2 fuel rate adjustment < +24mm³	Cylinder #2 fuel rate greater than desired fuel rate by >= 24mm³	56°C =< Coolant temperature < 104°C Engine Speed = Idle	Test performed for 90 seconds once per ignition cycle	B
Cylinder 3 Misfire Detected	P0303	Cylinder #3 fuel rate adjustment < +24mm³	Cylinder #3 fuel rate greater than desired fuel rate by >= 24mm³	56°C =< Coolant temperature < 104°C Engine Speed = Idle	Test performed for 90 seconds once per ignition cycle	B
Cylinder 4 Misfire Detected	P0304	Cylinder #4 fuel rate adjustment < +24mm³	Cylinder #4 fuel rate greater than desired fuel rate by >= 24mm³	56°C =< Coolant temperature < 104°C Engine Speed = Idle	Test performed for 90 seconds once per ignition cycle	B
Cylinder 5 Misfire Detected	P0305	Cylinder #5 fuel rate adjustment < +24mm³	Cylinder #5 fuel rate greater than desired fuel rate by >= 24mm³	56°C =< Coolant temperature < 104°C Engine Speed = Idle	Test performed for 90 seconds once per ignition cycle	B
Cylinder 6 Misfire Detected	P0306	Cylinder #6 fuel rate adjustment < +24mm³	Cylinder #6 fuel rate greater than desired fuel rate by >= 24mm³	56°C =< Coolant temperature < 104°C Engine Speed = Idle	Test performed for 90 seconds once per ignition cycle	B
Cylinder 7 Misfire Detected	P0307	Cylinder #7 fuel rate adjustment < +24mm³	Cylinder #7 fuel rate greater than desired fuel rate by >= 24mm³	56°C =< Coolant temperature < 104°C Engine Speed = Idle	Test performed for 90 seconds once per ignition cycle	B
Cylinder 8 Misfire Detected	P0308	Cylinder #8 fuel rate adjustment < +24mm³	Cylinder #8 fuel rate greater than desired fuel rate by >= 24mm³	56°C =< Coolant temperature < 104°C Engine Speed = Idle	Test performed for 90 seconds once per ignition cycle	B
Engine Crankshaft Position Sensor (CPS) Malfunction	P0335	Number of consecutive missing CPS pulses < 8	Number of consecutive missing CPS pulses >= 8	Ratio of CPS to HRS = 1:64 +/- 4	Test performed continuously	A
		Number of CPS pulses per #1 cylinder event = 8. This must be true for 8 #1 cylinder events for RPM < 300 or 32 #1 cylinder events for RPM >= 300	Number of CPS pulses per #1 cylinder event <> 8 for 8 #1 cylinder events	RPM < 300		
			Number of CPS pulses per #1 cylinder event <> 8 for 32 #1 cylinder events	RPM >= 300		
Fuel Injection Pump High Resolution Angular Sensor (HRS) Malfunction	P0370	HRS pulses must be received by the PCM for every 8 CAM pulses	HRS free running pump counter = old count for > 8 consecutive CAM pulses	None	Test performed continuously	A
Glow Plug Circuit Malfunction	P0380	| glowplug voltage - ignition voltage | =< 2.0 volts Detects a faulty glowplug relay circuit	Glowplugs commanded off & raw feedback > 4.0 v - OR - Glowplugs commanded on & raw feedback < 4.0 v - OR - Glowplugs commanded on and |glowplug voltage - ignition voltage| > 2 v	A/D inputs settled	Diagnostic set conditions true for 2 seconds Test performed continuously	B
EGR Flow Malfunction	P0400		Must fail test 01 and 03 and pass test 02. of the EGR Diagnostic Tests	P0405, P0406, P0102 and P0103 must not be Set		B

				Baro > 75kPa	Test performed continuously	
EGR Flow Insufficient	P0401		Must fail test 05 of the EGR Diagnostic Tests	P0405, P0406, P0102 and P0103 must not be Set Baro > 75kPa	Test performed continuously	B

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

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	FAULT CODE STORAGE AND MIL ILLUMINATION
EGR Flow Excessive	P0402		Must fail test 06 of the EGR Diagnostic Tests	P0405, P0406, P0102 and P0103 must not be Set Baro > 75kPa	Test performed continuously	B
EGR System Stuck EAP Sensor Mid-Range	P0404	0.24 volt to 3.96 volts 15 kPa to 85 kPa Detects EGR control pressure feedback sensor short to mid-range voltage.	Must Fail Test 09 and Pass Test 01 of the EGR Diagnostic Tests.	P0405, P0406, P0102 and P0103 must not be Set	Test performed continuously	B
EGR Control Pressure Low Input	P0405	0.24 volt to 3.96 volts 15 kPa to 85 kPa Detects EGR control pressure feedback sensor short to ground	EGR control pressure signal < .24 v. - same as - EGR control pressure < 15 kPa	None	Diagnostic set conditions true for 2 seconds Test performed continuously	B
EGR Control Pressure High Input	P0406	0.24 volt to 3.96 volts 15 kPa to 85 kPa Detects EGR feedback sensor open circuit or a short to high voltage	EGR control pressure signal > 3.96 v. - same as - EGR control pressure > 85 kPa	Desired EGR control pressure < 60kPa EGR vent is closed; Engine Speed > 0 Must fail Test 02 and pass Test 01 of the EGR Diagnostic Tests.	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Flash Memory Malfunction	P0601	Detects a Malfunction in the Flash Memory	Calculated checksum <> flashed calibration checksum		Test performed at power-up reset and continuously.	A
Control Module Programming Error	P0602	Detects a calibration that is not engine compatible.	Calibration is not engine run compatible		Test performed at power-up reset.	A
PCM Processor Fault	P0606	Detects a TIO malfunction	Advance angle read from TIO > 1102 HRS Counts CAM pulse edge detect counter > 6 slow CAM edge counts	Engine Speed > 38 RPM Malf counter >= 6 TIO faults P0606 code set OR TIO malf (P0606) detected	Diagnostic set conditions true for 2 seconds Test performed continuously	A
Intake Air Duct Leak	P1191		Must fail tests 4b, 4d and 11and Must pass tests 02, 4a and 4c of the EGR Diagnostic Tests	P0405, P0406, P0102 and P0103 must not be Set Baro > 75kPa	Test performed continuously	B
Injection Pump Timing Reference Offset Error	P1214	-23 HRS Counts < Cal - Filtered Advance < 23 Hi Res Cnts	Cal - Filtered Advance > 23 HRS Counts - OR - Cal - Filtered Advance < -23 HRS Counts	None	Test performed continuously	B
Fuel Pump Calibration	P1218	0.27 volt to 4.29 volt	Fuel pump calibration resistor voltage < 0.27 volt - OR -	Fuel pump calibration resistor invalid flag set - OR -	Test performed at power-up and running reset	B

Resistor Fault		Detects an invalid fuel pump calibration resistor learn	Fuel pump calibration resistor voltage > 4.29 volts	Selected fuel pump calibration resistor address invalid	initialization	
EGR Valve Position Error	P1406		Must fail tests 01, 4b, and 4d and Must pass tests 02, 4a and 4c of the EGR Diagnostic Tests	P0405, P0406, P0102 and P0103 must not be Set Baro > 75kPa	Test performed continuously	B
EGR Vacuum System Leak/Supply Low	P1409		Must fail tests 01, 02, and 03 and Must pass tests 4a, 4b, 4c and 4d of the EGR Diagnostic Tests	P0405, P0406, P0102 and P0103 must not be Set Baro > 75kPa	Test performed continuously	B

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

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	FAULT CODE STORAGE AND MIL ILLUMINATION
PCM A/D Intermittent On	P1627	Less than 5 consecutive A/D read errors Detects when 5 consecutive A/D read errors occur	5 consecutive A/D read errors occur	None	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Glow Plug Light Output Circuit Failed	P1643	No ODM 'Open' Faults or 'Short' Fault Glowplug light output voltage at PCM follows S/W command	ODM 'Open' or 'Short' Fault Detected Glowplug light output voltage at PCM does not follow S/W command	None	Diagnostic set conditions true for 2 seconds Test performed continuously	B
EGR Vent Driver Circuit Failed	P1653	No ODM 'Open' Faults or 'Short' Fault EGR vent output voltage at PCM follows S/W command	ODM 'Open' or 'Short' Fault Detected EGR vent output voltage at PCM does not follow S/W command	Ignition > 8.0 volts	Diagnostic set conditions true for 2 seconds Test performed continuously	B
EGR PWM Driver Circuit Failed	P1655	Number of ODM 'open' faults or 'short' faults < 2 EGR PWM output voltage at PCM follows S/W command	Number of ODM 'open' or 'short' faults detected >= 2 EGR PWM output voltage at PCM does not follow S/W command	Ignition > 8.0 volts	Diagnostic set conditions true for 2 seconds Test performed continuously	B
Wastegate PWM Solinoid Driver Circuit Failed	P1656	Number of ODM 'open' faults or 'short' faults < 2 Wastegate PWM output voltage at PCM follows S/W command	Number of ODM 'open' or 'short' faults detected >= 2 Wastegate PWM output voltage at PCM does not follow S/W command	Ignition > 8.0 volts	Diagnostic set conditions true for 2 seconds Test performed continuously	B

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

EGR DIAGNOSTIC TESTS (L56 only)

SENSED PARAMETER	TEST ID.	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALFUNCTION DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	
Full Mass Air Flow Range	**Test 1** **Part A**			No-EGR Mass Air Flow Measurement taken: - (Engine Speed =< 806RPM) - (20°C =< Intake Air Temperature =< 135°C) - (Engine Temperature >= 65°C) - (No-EGR requested for 3s)	Test is performed as soon as all the secondary monitoring conditions are met. Test is performed once per ignition cycle and is intrusive.	
	Part B			Full-EGR Mass Air Flow Measurement taken:		

		(No-EGR Mass Air Flow - Full-EGR Mass Air Flow) > .0820 g/cyl	(No-EGR Mass Air Flow - Full-EGR Mass Air Flow) < 0.0820 g/cyl	- Test 01, part A complete - (506 RPM < Engine Speed < 806 RPM) - (Pedal Position = 0%) - (Test 4a completed) - (Full-EGR requested for 3s)		
Lowest Achieved EGR Absolute Pressure	**Test 2**	Lowest Achieved EGR Absolute Pressure =< Calibration f(Ambient Air Pressure)	Lowest Achieved EGR Absolute Pressure > *Calibration f(Ambient Air Pressure) * See Table DGTLOEAP	Full Mass Air Flow Range (Test 01) complete - Lowest Achieved EGR Absolute Pressure collected when Test 01 is requesting Full-EGR	Test is performed as soon as all the secondary monitoring conditions are met. Test is performed once per ignition cycle and is intrusive.	
Greatest Positive Mass Air Flow Error	**Test 3**	(Measured Mass Air Flow - Target Mass Air Flow) =< 0.1484 g/cyl	(Measured Mass Air Flow - Target Mass Air Flow) > 0.1484 g/cyl	- Full-EGR Mass Air Flow not being requested - Vent is Closed - Closed Loop EGR Control Enabled - (20°C =< Intake Air Temperature =< 135°C) - Target Mass Air Flow < *Calibration f(Ambient Air Pressure) - Adaptive Learn Cell not changed for > 2s - Target Mass Air Flow changed by < 0.0195 g/cyl - Target Mass Air Flow stable for > 3s * See Table DGTMFERE	Test is performed continuously	
Above Nominal Idle No-EGR Mass Air Flow Test	**Test 4a**	(Idle No-EGR - Nominal) =< 0.0820 g/cyl Nominal = Calibration f(Amb. Air Pressure) See Table DGTNINEM	(Idle No-EGR - Nominal) > 0.0820 g/cyl Nominal = Calibration f(Amb. Air Pressure) See Table DGTNINEM	Full Mass Air Flow Range (Test 01, part A) complete	Test is performed as soon as all the secondary monitoring conditions are met. Test is performed once per ignition cycle and is intrusive.	
Below Nominal Idle No-EGR Mass Air Flow Test	**Test 4b**	(Nominal - Idle No-EGR) =< 0.0820 g/cyl Nominal = Calibration f(Amb. Air Pressure) See Table DGTNINEM	(Nominal - Idle No-EGR) > 0.0820 g/cyl Nominal = Calibration f(Amb. Air Pressure) See Table DGTNINEM	Full Mass Air Flow Range (Test 01, part A) complete	Test is performed as soon as all the secondary monitoring conditions are met. Test is performed once per ignition cycle and is intrusive.	
Above Nominal Off-Idle No-EGR Mass Air Flow Test	**Test 4c**	(Off-Idle No-EGR - Nominal) =< 0.1094 g/cyl Nominal = Calibration f(Amb. Air Pressure) See Table DGTNOIM	(Off Idle No-EGR - Nominal) > 0.1094 g/cyl Nominal = Calibration f(Amb. Air Pressure) See Table DGTNOIM	- Full Mass Air Flow Range (Test 01, part A) complete - (20°C =< Intake Air Temperature =< 135°C) - (Engine Temperature >= 65°C) - (7cu.mm. =< Fuel Rate =< 25cu.mm.) - 1500RPM =< Engine Speed =< 2100RPM - Engine Speed Stable - Request No-EGR for 3s	Test is performed as soon as all the secondary monitoring conditions are met. Test is performed once per ignition cycle and is intrusive.	

EGR DIAGNOSTIC TESTS (L56 only)

SENSED PARAMETER	TEST ID.	ACCEPTABLE OPERATING RANGE AND RATIONALITY	PRIMARY MALFUNCTION DETECTION PARAMETERS	SECONDARY MONITORING PARAMETERS AND CONDITIONS	MONITORING TIME LENGTH AND FREQUENCY OF CHECK	
Below Nominal Off-Idle	**Test 4d**	(Nominal - Off Idle No-EGR) =< 0.1094 g/cyl Nominal = Calibration f(Amb. Air Pressure)	(Nominal - Off Idle No-EGR) > 0.1094 g/cyl Nominal = Calibration f(Amb. Air Pressure)	- Full Mass Air Flow Range (Test 01, part A) complete - (20°C =< Intake Air Temperature =< 135°C)	Test is performed as soon as all the secondary monitoring conditions are met.	

No-EGR Mass Air Flow Test		See Table DGTNOIM	See Table DGTNOIM	- (Engine Temperature >= 65°C) - (7cu.mm. =< Fuel Rate =< 25cu.mm.) - 1500RPM =< Engine Speed =< 2100RPM - Engine Speed Stable - Request No-EGR for 3s	Test is performed once per ignition cycle and is intrusive.	
Adaptive Learn Matrix Cells Too Low	**Test 5**	(Number of ALM cells < 0.5) =< 4	(Number of ALM cells < 0.5) > 4	None	Test is performed continuously	
Adaptive Learn Matrix Cells Too High	**Test 6**	(Number of ALM cells > 1.5) =< 4	(Number of ALM cells > 1.5) > 4	None	Test is performed continuously	
Adaptive Learn Matrix Cells Too High and Low	**Test 7**	(Number of ALM cells > 1.5) + (Number of ALM cells < 0.5) =< 6	(Number of ALM cells > 1.5) + (Number of ALM cells < 0.5) > 6	None	Test is performed continuously	
EGR Control Pressure Sensor In-Range Fault	**Test 9**	0.24 volt to 3.96 volts 15 kPa to 85 kPa Detects EGR feedback sensor circuit malfunction. Stuck sensor mid-range.	|Ambient Air Pressure - Lowest Achieved EGR Absolute Pressure| < 15kPa - OR -	Lowest Achieved EGR Absolute Pressure Test (Test 02) complete	Test is performed as soon as secondary monitoring conditions are met.	
			Measure EGR Absolute Pressure < 56kPa	Vent Open	Test is performed continuously Set conditions true > 2s	
Below Nominal Idle Full-EGR Mass Air Flow Test	**Test 11**	(Nominal - Idle Full-EGR Mass Air Flow) =< 0.1172 g/cyl Nominal = Calibration f(Amb. Air Pressure) See Table DGTNIFEM	(Nominal - Idle Full-EGR Mass Air Flow) > 0.1172 g/cyl Nominal = Calibration f(Amb. Air Pressure) See Table DGTNIFEM	Full Mass Air Flow Range (Test 01, part B) complete	Test is performed as soon as all the secondary monitoring conditions are met. Test is performed once per ignition cycle and is intrusive.	

98t65S_CK_yE.doc

*Tables

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

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

DGTMFERE	
Ambient Air Pressure	Mass Air Flow Error Enable
64 kPa	0.4609 g/cyl
80 kPa	0.5430 g/cyl
96 kPa	0.5898 g/cyl
112 kPa	0.6367 g/cyl
128 kPa	0.6367 g/cyl

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

DGTNOIM	
Ambient Air Pressure	Nominal Off Idle No-EGR Mass Air Flow
64 kPa	0.5781 g/cyl
80 kPa	0.6757 g/cyl
96 kPa	0.8516 g/cyl
112 kPa	0.9883 g/cyl
128 kPa	1.1250 g/cyl

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