This document is intended to meet the requirements documented in section 1968.2 of Title 13, California Code of Regulations entitled Modifications to Malfunction and Diagnosis System Requirements for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II), paragraphs (i)(2.2) for a table detailing calibration parameter data for OBD II Group 11OBDG11.

Section 1 : S1-11OBDG11

Contains information that is common to all applications within 11OBDG11
GMT911 - Chevrolet Silverado HD
GMT912 - GMC Sierra HD

Section 2 : S2-11OBDG11_Glow Plug Module

Contains diagnostic information that performed within the Glow Plug Control Module and common to all applications within 11OBDG11

The diagnostic algorithms are contained within the Glow Plug Control Module, but the Fault Code storage handling and MIL Illumination are performed within the ECM

Section 3 : S3-11OBDG11-LGH_Specific

Contains information that is specific to the LGH applications within 11OBDG11
GMT911 - Chevrolet Silverado HD GMT610 - Chevrolet Express
GMT912 - GMC Sierra HD

Parameter Definition

Contains definitions of secondary parameters which are used in the parameter document.
These secondary parameters conditions are shown in the respective physical parameters which define each condition.

Calibration Look-Up Tables

Contains the calibration look-up tables from both the Section 1 and the Parameter Definitions

Inhibit Tables

Contains the matrix of diagnostics which are inhibited from being executed if an active DTC is stored in the ECM

Enable Tables

Contains the matrix of additional enable conditions which need to be satisfied for each diagnotic to be enabled

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Fuel Rail Pressure [FRP] Too High	P0088	Measured rail pressure is checked against desired rail pressure to detect high rail pressure conditions.	rail pressure deviation from setpoint calculated out of difference between desired and actual value (see Look-Up-Table #54)	< -80000 to -20000 kPa	Path 1:		fail conditions exists for 8 s monitor runs with 0.02 s rate whenever enable conditions are met	B
					setpoint volume flow of the metering unit out of rail pressure control	> 1310680 mm^3/rev		
					and			
					current injection quantity	> 8 mm^3/rev		
					and			
					fuel temperature	> -40.04 °C		
					and			
					state machine rail pressure control equal to metering unit control mode	= TRUE -		
					and			
					basic enable conditions met:	= see sheet enable tables -		
					and			
					metering unit actuator test active	= FALSE -		
					and			
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
			rail pressure deviation from setpoint calculated out of difference between desired and actual value	< -20000 kPa	(			
					state machine rail pressure control equal to pressure control valve	= TRUE -		
					or			
					state machine rail pressure control equal coupled pressure control (rail pressure is controlled by metering unit and pressure control valve)	= TRUE -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					)			
					and			
					pressure setpoint of rail pressure control	<= 327670 kPa		
					and			
					basic enable conditions met:	= see sheet enable tables -		
					and			
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
Engine Coolant Temperature (ECT)-Fuel Temperature Not Plausible	P008F	Detects a biased ECT or fuel temperature by comparing start-up temperatures between the two sensors.	Path 1:		engine-off time	>= 28800 sec	fail conditions exists for 0.2 s monitor runs once per trip with 0.2 s rate whenever enable conditions are met	B
			|(a) - (b)| (see Look-Up-Table #12)	> 100 to 999 °C	and			
			with		ambient temperature	> -60.04 °C		
			(		and			
			(a) captured engine coolant temperature at start	= measured parameter -	Engine Running	= TRUE rpm		
			and with		for			
			(b) captured fuel temperature at start	= measured parameter -	time	> 0 sec		
			)		and			
			or		engine post drive/ afterun	= FALSE -		
			Path 2:		and			
			(		diagnostic performed in current drive cycle	= FALSE -		
			|(a) - (b)| (see Look-Up-Table #12)	<= 100 to 999 °C	and			
			with		basic enable conditions met:	= see sheet enable tables -		
			(a) captured engine coolant temperature at start		and			
			and with		NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
			(b) captured fuel temperature at start					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE			SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			and							
			|(a) - (b)| (see Look-Up-Table #13)	>	20 to 999	°C				
			with							
			(a) captured engine coolant temperature at start	=	measured parameter	-				
			and with							
			(b) captured fuel temperature at start	=	measured parameter	-				
			and							
			(							
			status of block heater	=	FALSE					
			active under following condition							
			(							
			engine speed	>	500	rpm				
			for							
			time	>	60	sec				
			and							
			(a) - (b)	<	1.8	°C				
			with							
			(a) reference temperature (engine coolant temperature) captured during start	=	measured parameter	-				
			and with							
			(b) engine coolant temperature value for the comparision with the reference temperature	=	measured parameter	-				
			)							
			or							
			status of sun-load detection	=	FALSE					
			active under following condition							
			(							
			vehicle speed	>	14.92	mph				
			for							
			time	>	300	sec				
			and							
			Engine Running	=	TRUE	-				
			for							
			time	>	600	sec				
			and							

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			(a) - (b) with (a) captured intake air temperature at start and with (b) minimum intake air temperature value for the comparision with the reference temperature during driving cycle)))	< 4.5 °C = measured parameter - = measured parameter -				
Fuel Rail Pressure [FRP] Sensor Performance	P0191	Detects a drifted fuel rail pressure sensor by determining the adaptation factor of the fuel rail pressure regulator 2.	fuel pressure regulator 2 adaptation factor or fuel pressure regulator 2 adaptation factor	>= 1.25 factor <= 0.75 factor	fuel pressure regulator 2 in closed loop control = TRUE - and adaptation for fuel pressure regulator 2 active = TRUE - means (counter for successful adaptation > 0 counts or counter for the successful calculation of the adaptation > 9 counts and enable condition stability counter > 60 counts (((engine speed < 400 rpm and engine speed > 1000 rpm) and vehicle speed <= 1.86 mph and (fuel rail pressure control in fuel pressure regulator 2 mode = TRUE - or fuel rail pressure control in combined pressure control (CPC) mode = TRUE -	fail conditions exists for 0.01 s monitor runs with 0.01 s rate whenever enable conditions are met	A

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					)			
					))			
					and			
					basic enable conditions met:	= see sheet enable tables -		
		Detects a biased sensor by determining the FRP sensor voltage to be in the correct range for atmospheric pressure at engine off and with sufficient pressure bleed-off time.	(		engine post drive/ afterun	= TRUE -	fail conditions exists for more than 0.30 s monitor runs once per driving cycle with 0.01 s rate whenever enable conditions are met	
			rail pressure sensor voltage	< 0.352 V	and			
			or		fuel temperature	> -0.04 °C		
			rail pressure sensor voltage	> 0.65 V	and			
			)		engine has already run in this driving cycle	= TRUE -		
					and			
					rail pressure is reduced means	= TRUE -		
					rail pressure does not exceed	< 0 kPa		
					and			
					fuel pressure regulator 2 current	<= 1.7 Amps		
					and			
					engine off time	> 30.08 sec		
					or			
					number of measurements during engine postdrive/ afterun	> 10 counts		
					and			
					basic enable conditions met:	= see sheet enable tables -		
					and			
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
Turbocharger Engine Overboost	P0234	Detects an Overboost condition by comparing desired to measured boost values.	control deviation of the boost pressure calculated out of difference between desired and actual value (see Look-Up-Table #46)	< -35.0 to -11.5 kPa	injection quantity	>= 132 mm^3/rev	fail conditions exists for 10 s monitor runs with 0.02 s rate whenever enable	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					injection quantity	<=	480	mm^3/rev	conditions are met	
					engine speed	>=	1450	rpm		
					engine speed	<=	3200	rpm		
					turbo charger control deviation	>=	-100	%		
					turbo charger control deviation	<=	100	%		
					desired turbo charger position	<	100	%		
					(					
					injection quantity is stable means	=	TRUE	-		
					increase of injection quantity	<	60.00	(mm^3/rev)/sec		
					and					
					engine speed is stable means	=	TRUE	-		
					increase of engine speed	<	75	rpm/sec		
					and					
					turbo charger (VNT) wiping is active	=	FALSE	-		
					and					
					offset learning for turbo charger (VNT) actuator position sensor is active during idling	=	FALSE	-		
					- in order to compensate sensor drift and valve aging the valve is closed and opened fully once in a driving cycle during engine idling, the read positions for opening and closing are averaged and used for the calculation of offset drift of the valve					
					and					
					working range of boost pressure is in closed-loop means	=	TRUE	-		
					(					
					engine speed	>	1200	rpm		
					and					
					injection quantity	>	20	mm^3/rev		
					and					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					NO Pending or Confirmed DTCs:	see sheet inhibit tables -		
					) for			
					time	> 2 sec		
					and			
					basic enable conditions met:	see sheet enable tables -		
CAC Efficiency Below Threshold	P026A	Detects insufficient charge-air cooler. Actual cooler efficiency readings are compared to a threshold as an indication of cooling efficiency.	filtered charge-air cooler efficiency calculated out of temperature upstream of the cooler, temperature downstream of the cooler and ambient temperature	< (a) + (b) + (c) -	vehicle speed	>= 31.08 mph	fail conditions exists for 30 s monitor runs once per driving cycle with 100 ms rate whenever enable conditions are met	B
			with		and			
			(a) temperature correction of efficiency-threshold	= 0 -	(			
			and with		mass air flow	>= 13.89 g/sec		
			(b) threshold of charge-air cooler efficiency	= 0.150024 factor	and			
			and with		mass air flow (see Look-Up-Table #11)	<= 55.56 to 277.78 g/sec		
			(c) correction factor for efficiency threshold depending on temperature after charge air cooler	= 0 factor	)			
					and			
					(			
					engine coolant temperature	>= -3549.9 °C		
					and			
					engine coolant temperature	<= 122.96 °C		
					)			
					and			
					(			
					(maximum of (a) and (b)) / (b) with	>= 1.21997 -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					(a) boost pressure downstream compressor	=	measured parameter	-		
					and with					
					(b) ambient pressure	=	measured parameter	-		
					)					
					and					
					(					
					control value of the throttle valve	<=	5.0049	%		
					)					
					and					
					diagnostic performed in current drive cycle	=	FALSE	-		
					and					
					(a) - (b)	>=	40	°C		
					with					
					(a) temperature after compressor					
					(b) ambient air temperature					
					and					
					injection quantity	>=	80	mm^3/rev		
					injection quantity	<=	480	mm^3/rev		
					and					
					for					
					time	>	0	sec		
					and					
					ambient pressure	>	74.8	kPa		
					and					
					ambient temperature	>	-7.04	°C		
					and					
					basic enable conditions met:	=	see sheet enable tables	-		
					and					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
Turbochager Engine Underboost	P0299	Detects an Underboost condition by comparing desired to measured boost values.	control deviation of the boost pressure calculated out of the difference between desired and actual value (see Look-Up-Table #45)	> 17.5 to 40.0 kPa	engine speed engine speed injection quantity injection quantity (injection quantity is stable means increase of injection quantity and engine speed is stable means increase of engine speed and turbo charger (VNT) wiping is active and offset learning for turbo charger (VNT) actuator position sensor is active during idling - in order to compensate sensor drift and valve aging the valve is closed and opened fully once in a driving cycle during engine idling, the read positions for opening and closing are averaged and used for the calculation of offset drift of the valve and	>= 1450 rpm <= 2000 rpm >= 132 mm^3/rev <= 480 mm^3/rev = TRUE - < 60.00 (mm^3/rev)/s = TRUE - < 75 rpm/sec = FALSE - = FALSE -	fail conditions exists for 10 s monitor runs with 0.02 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					working range of boost pressure is in closed-loop means ((engine speed > 1200 rpm and injection quantity > 20 mm^3/rev and NO Pending or Confirmed DTCs: = see sheet inhibit tables -) for time > 2 sec and basic enable conditions met: = see sheet enable tables -			
Crankshaft Position System Variation Not Learned	P0315	Wheel Learn - Fuel Balance System - Tooth Wheel Variation and Crankshaft Dynamics not learned quickly enough Path 1: Low Speed Learn Range or Path 2: Mid Speed Learn Range	fuel balance wheel learn complete	= FALSE -	fuel system is in fuel cut off = TRUE - particulate filter regeneration = FALSE - engine speed > 900 rpm engine speed < 1450 rpm or engine speed >= 1450 rpm engine speed < 1900 rpm fuel balance wheel learn complete = FALSE - Inhibit Status (no inhibiting faults) = see sheet inhibit tables - (No pending or stored DTC)		fail conditions exists for 5000 s cumulative time monitor runs with 1 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Exhaust Gas Recirculation(EGR) Flow Excessive	P0400	Detects excessive EGR flow. Actual MAF readings are compared to desired MAF values as an indication of how much EGR is flowing.	controller deviation of the air mass = actual minus desired value	> 2 g/rev	(EGR controler is active and (change of injection quantity between current and last value) and (change of engine speed between currentl and last value) and maximum setpoint for air-mass flow with ((a) gas mass flow into the engine and with (b) pressure in the intake manifold and with (c) pressure in the induction volume and with (d) system constant and with (e) number of engine cylinders and with (f) number of cylinder banks and with (g) engine speed and with (h) correction factor)	 = TRUE < 80.00 (mm^3/rev)/s < 75 rpm/sec < (a) / (b) * (c) * (d) / ((e) / (f)) / (g) * (h) 33333 8 1 1	fail conditions exists for 10 s monitor runs 0.02 s rate whenever enable conditions are met	A

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and setpoint valve position of exhaust-gas recirculation and engine speed and engine speed and injection quantity and injection quantity and Desired value for mass flow through the EGR valve and not disabled during following conditions and NO Pending or Confirmed DTCs:) for time	> 5.0049 % >= 1150 rpm <= 1600 rpm >= 160 mm^3/rev <= 480 mm^3/rev <= 194.44 g/sec see sheet disable tables see sheet inhibit tables >= 1.5 sec		
Exhaust Gas Recirculation(EGR) Flow Insufficient	P0401	Detects insufficient EGR flow. Actual MAF readings are compared to desired MAF values as an indication of how much EGR is flowing.	controller deviation of the exhaust gas recirculation (EGR) - calculated out of desired and actual value (see Look-Up-Table #9)	< -2.4 to -0.5 g/rev	engine speed engine speed injection quantity injection quantity maximum EGR mass flow EGR valve position throttle valve position (	>= 625 rpm <= 2000 rpm >= 20 mm^3/rev <= 120 mm^3/rev > 1.00 g/rev > 5.01 % < 5.00 %	fail conditions exists for 10 s monitor runs 0.02 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					EGR controller is active = TRUE -			
					and			
					(			
					change of injection quantity between actual and previous value < 80.00 (mm^3/rev)/s			
					with			
					low-pass filter time = 0.25 sec			
					)			
					and			
					(			
					change of engine speed between actual and previous value < 75 rpm/sec			
					with			
					low-pass filter time = 1.00 sec			
					)			
					and			
					maximum setpoint for air-mass flow < (a) / (b) * (c) * (d) / ((e) / (f)) / (g) * (h) -			
					with			
					(			
					(a) gas mass flow into the engine = calculated parameter -			
					and with			
					(b) pressure in the intake manifold = measured parameter -			
					and with			
					(c) pressure in the induction volume = calculated parameter -			
					and with			
					(d) system constant = 33333 -			
					and with			
					(e) number of engine cylinders = 8 -			
					and with			
					(f) number of cylinder banks = 1 -			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and with (g) engine speed = measured parameter - and with (h) correction factor = 1 factor) and setpoint valve position of exhaust-gas recirculation > 5.0049 % and basic enable conditions met: = see sheet enable tables - and NO Pending or Confirmed DTCs: = see sheet inhibit tables -) for time >= 3 sec		
Exhaust Gas Recirculation(EGR) Flow Excessive	P0402	Detects excessive EGR flow. Actual MAF readings are compared to desired MAF values as an indication of how much EGR is flowing.	controller deviation of the exhaust gas recirculation (EGR) - calculated out of desired and actual value (see Look-Up-Table #8)	> 0.4 to 1.2 g/rev	engine speed >= 1150 rpm engine speed <= 1600 rpm injection quantity >= 160 mm^3/rev injection quantity <= 480 mm^3/rev maximum EGR mass flow < 0.96 g/rev (EGR controller is active = TRUE - and (change of injection quantity between actual and previous value < 80.00 (mm^3/rev)/sec with	fail conditions exists for 8 s monitor runs 0.02 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					low-pass filter time	=	0.25	sec		
					)					
					and					
					(					
					change of engine speed between actual and previous value	<	75	rpm/sec		
					with					
					low-pass filter time	=	1.00	sec		
					)					
					and					
					maximum setpoint for air-mass flow	<	(a) / (b) * (c) * (d) / ((e) / (f)) / (g) * (h)	-		
					with					
					(					
					(a) gas mass flow into the engine	=	calculated parameter	-		
					and with					
					(b) pressure in the intake manifold	=	measured parameter	-		
					and with					
					(c) pressure in the induction volume	=	calculated parameter	-		
					and with					
					(d) system constant	=	33333	-		
					and with					
					(e) number of engine cylinders	=	8	-		
					and with					
					(f) number of cylinder banks	=	1	-		
					and with					
					(g) engine speed	=	measured parameter	-		
					and with					
					(h) correction factor	=	1	factor		
					)					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and basic enable conditions met: = see sheet enable tables and NO Pending or Confirmed DTCs: = see sheet inhibit tables) for time >= 1.5 sec			
Exhaust Gas Recirculation(EGR) Temperature Sensor Correlation (EGR 1/ EGR 2)	P040F	Detects biased EGR temperature sensors by comparing the two EGR cooler temp sensor after an engine off soak time	Path 1: |(a) - (b)| (see Look-Up-Table #4) > 100 to 999 °C with (a) captured EGR sensor 2 temperature at start = measured parameter - and with (b) captured EGR sensor 1 temperature at start = measured parameter - or Path 2: (|(a) - (b)| (see Look-Up-Table #4) <= 100 to 999 °C with (a) captured EGR sensor 2 temperature at start = measured parameter - and with (b) captured EGR sensor 1 temperature at start = measured parameter - and	|(a) - (b)| <= 20 °C with (a) captured EGR sensor 2 temperature at start = measured parameter - and with (b) captured EGR sensor 1 temperature at start as reference temperature = measured parameter - and engine-off time >= 28800 sec and ambient temperature > -60.04 °C and Engine Running = TRUE - for time > 0 sec and engine post drive/ afterun = FALSE -	fail conditions exists for 0.1 s monitor runs with 0.1 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE			SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
			|(a) - (b)| (see Look-Up-Table #7)	>	20 to 999	°C	and					
			with				diagnostic performed in current drive cycle	=	FALSE	-		
			(a) captured EGR sensor 2 temperature at start	=	measured parameter	-	and					
			and with				basic enable conditions met:	=	see sheet enable tables	-		
			(b) captured EGR sensor 1 temperature at start	=	measured parameter	-	and					
			and				NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-		
			(									
			status of block heater	=	FALSE							
			active under following condition									
			(									
			engine speed	>	500	rpm						
			for									
			time	>	60	sec						
			and									
			(a) - (b)	<	1.8	°C						
			with									
			(a) reference temperature (engine coolant temperature) captured during start									
			and with									
			(b) engine coolant temperature value for the comparision with the reference temperature									
			)									
			or									
			status of sun-load detection	=	FALSE							
			active under following condition									
			(									
			vehicle speed	>	14.92	mph						
			for									
			time	>	300	sec						
			and									

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			Engine Running for time and (a) - (b) with (a) captured intake ait temperature at start and with (b) minimum intake air temperature value for the comparision with the reference temperature during driving cycle)))	= TRUE - > 600 sec < 4.5 °C				
NMHC Catalyst Efficiency Below Threshold Bank 1	P0420	Detects insufficient conversion rate in oxidation catalyst. Actual conversion rate is compared to a conversion rate threshold as an indication of how much HC is converted in the oxidation catalyst.	HC conversion rate	< 0.199951 factor	evaluation of the HC conversion rate for monitoring of the OxiCat is released means (HC mass converted in the oxidation catalyst since monitor start and average HC mass flow and simulated heat quantity in oxidation catalyst and particulate filter regeneration and no reset condition for evaluation is active therefore (regeneration was not aborted to assure that HC conversion was not disturbed and	= TRUE - > 140 g > 0.0009 g/sec > 0 kJ = TRUE - = TRUE -	fail conditions exists for more than 1 event monitor runs once per driving cycle with 0.1 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					evaluation took place one time step before	=	FALSE	-		
					)					
					and					
					monitoring evaluation scheduling condition from TRUE to FALSE in order to determine the end of HC conversion	=	TRUE	-		
					means					
					(					
					set condition					
					particulate filter regeneration	=	TRUE	-		
					measured temperature upstream of the oxidation catalyst	>	249.96	°C		
					and					
					(					
					engine speed	>	700	rpm		
					and					
					engine speed	<	3400	rpm		
					)					
					and					
					diagnostic performed in current drive cycle	=	FALSE	-		
					and					
					reset condition	=	FALSE	-		
					becomes FALSE under following conditions					
					(					
					converted HC mass in the oxidation catalyst during monitoring	<	140	g		
					or					
					particulate filter regeneration	=	FALSE	-		
					or					
					regeneration was not aborted to assure that HC converion was disturbed	=	TRUE	-		
					and					
					NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-		
					)					
					and					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					basic enable conditions met: = see sheet enable tables -			
Cooling Fan Speed High	P0495	Detects a locked fan. When fan speed control solenoid is off, the fan speed should follow accessory drive input speed plus some slip.	fan speed (see Look-Up-Table #34)	> 400 to 1500 rpm	indication that the fan clutch is pumped out means = TRUE - and fluid volume in Clutch (see Look-Up-Table #35) < 0.005 to 0.0115 liter and fan speed > 1500 rpm and PWM of fan driver output < 44.9951 % and ambient pressure > 55.5 kPa and intake air temperature > -40.04 °C and engine off time > 0 sec and (Engine Running = TRUE - for time > 0 sec) and number of failure events >= 800 counts and basic enable conditions met: = see sheet enable tables -	fail conditions exists for 0.02s monitor runs with 0.1 s rate whenever enable conditions are met	B
Cruise Control Resume Switch Circuit	P0567	Resume switch state indicates problem with the circuit	CAN message stays in high state too long	= TRUE -	ignition = on - and input circuit active = TRUE - and		fail conditions exists for 90 s monitor runs with 0.005 s rate whenever enable conditions are met	Special C

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					basic enable conditions met: = see sheet enable tables -		conditions are met	
					and			
					NO Pending or Confirmed DTCs: = see sheet inhibit tables -			
Cruise Control Set Switch Circuit	P0568	Set switch state indicates problem with the circuit	CAN message stays in high state too long	= TRUE -	ignition = on -		fail conditions exists for 90 s monitor runs with 0.005 s rate whenever enable conditions are met	Special C
					and			
					input circuit active = TRUE -			
					and			
					basic enable conditions met: = see sheet enable tables -			
					and			
					NO Pending or Confirmed DTCs: = see sheet inhibit tables -			
Cruise Control Input Circuit	P0575	Cruise control CAN communication monitoring	amount of errors in consecutive frames	>= 3 counts	ignition = on -		fail conditions exists for 0.005 ms monitor runs with 0.005 s rate whenever enable conditions are met	Special C
			with		and			
			number of consecutive frames	= 10 counts	input circuit active = TRUE -			
					and			
					basic enable conditions met: = see sheet enable tables -			
					and			
					NO Pending or Confirmed DTCs: = see sheet inhibit tables -			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Control Module Internal Performance	P0606	Monitors that ECM is operating correctly at proper voltage. All internal hardware modules are communicating correctly.	SPI communication, data transfer lost	= TRUE -	ignition and basic enable conditions met:	= on - = see sheet enable tables -	fail conditions exists for 0.5 s test performed continuously with 0.01 s rate	A
			faults detected in the SPI communication IC internal	> 184 counts	ignition and NO Pending or Confirmed DTCs:	= on - = see sheet inhibit tables -	fail conditions exists for at least 0.64 sec monitor runs once per trip during pre drive performed at 0.04 s rate whenever enable conditions are met	A
	P0606		internal supply voltage or internal supply voltage	< 4.2 V > 5.25 V	ignition and counter of reactivation attempt of power output stage and NO Pending or Confirmed DTCs:	= on - >= 2 counts = see sheet inhibit tables -	fail conditions exists for at least 0.08 sec monitor runs once per trip during pre drive performed at 0.04 s rate whenever enable conditions are met	A
	P0606		|(a) - (b)| with (a) measured energizing time for fuel injection and with	> 50 us	programmed energizing time for fuel injection has been read back means programmed energizing time for fuel injection and	= TRUE - >= 0 -	fail conditions exists for 0.15 s monitor runs with 0.01 s rate whenever enable conditions are met	A

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			(b) programmed energizing time for fuel injection		measured energizing time for fuel injection has been read back means measured energizing time for fuel injection and engine speed and rail pressure and engine test active via diagnostic tester	= TRUE - >= 0 - > 1200 rpm > 20000 kPa = FALSE -		
	P0606		Path 1: (angle for pre injection quantity or angle for pre injection quantity) or Path 2: (angle for main injection quantity or angle for main injection quantity) or Path 3: (angle for post injection quantity 1 or angle for post injection quantity 1) or Path 4: (angle for post injection quantity 2	< -32.983 degrees > 102.9921 degrees < -32.983 degrees > 45.0247 degrees < -360 degrees > -66.9987 degrees < -82.9958 degrees	engine speed and engine test active via diagnostic tester	> 1200 rpm = FALSE -	fail conditions exists for at least 0.5s monitor runs with 0.01 s rate whenever enable conditions are met	A

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			or angle for post injection quantity 2)	> 45.0247	degrees				
	P0606								A
			(energizing times of the correction value for pre injection quantity (see Look-Up-Table #43) or energizing times of the correction value for pre injection quantity (see Look-Up-Table #42))	 < -500 to -50 > 50 to 500	 us us	ignition and engine test active via diagnostic tester	= on - = FALSE -	fail conditions exists for at least 5 events monitor runs with 0.04 s rate whenever enable conditions are met	
	P0606								A
			Path 1: (efficiency factor for post injection 2 or efficiency factor for post injection 2) or Path 2: start angle of energising for post injection 2 with (a) earliest possible start angle for post injection 2 and with (b) measured base angle for post injection 2 or Path 3: time for exhaust gas system operation mode changes	 < 0 > 1 > (a) + (b) 9.9982 >= 2621.4	 factor factor - degrees sec	post injection 2 and engine test active via diagnostic tester	= ACTIVE - = FALSE -	fail conditions exists for at least 15s monitor runs with 0.04 s rate whenever enable conditions are met	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
	P0606		post injection quantity 2	> 130 mm^3	ignition and particulate filter regeneration and engine test active via diagnostic tester	= on - = FALSE - = FALSE -	fail conditions exists for at least 0.5s monitor runs with 0.04 s rate whenever enable conditions are met	A
	P0606		(efficiency factor of post injection 3 or efficiency factor of post injection 3)	 < -1 factor > 1 factor 	post injection 3 and engine test active via diagnostic tester	= ACTIVE - = FALSE -	fail conditions exists for at least 0.5s monitor runs with 0.04 s rate whenever enable conditions are met	A
	P0606		averaged wave correction quantity for pre injection or averaged wave correction quantity for main injection or averaged wave correction quantity for post injection 3 or averaged wave correction quantity for post injection 2	= 0 mm^3 = 0 mm^3 = 0 mm^3 = 0 mm^3	Engine Running and engine test is active via diagnostic tester	= TRUE - = FALSE -	fail conditions exists for at least 10 events monitor runs with 0.04 s rate whenever enable conditions are met	A
	P0606		rail pressure gradient	> 202400 kPa	(voltage of rail pressure sensor or voltage of rail pressure sensor) and delay time and engine test active via diagnostic tester	< 1.855 V > 4.8145 V > 2.1 sec = FALSE -	fail conditions exists for 2.67 s monitor runs with 0.01 s rate whenever enable conditions are met	A A

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
								A
	P0606		internal supply voltage or internal supply voltage	< 4.2 V > 5.25 V	ignition	= on -	fail conditions exists for 0.05 s test performed continuously with 0.01 s rate	A
								A
	P0606		WDA (watch dog) shut off due to undervoltage means internal supply voltage	= TRUE - < 4.2 V	shut off path test active and battery voltage for time and WDA (watch daog) line active	= FALSE - > 8 V > 1 sec = TRUE -	fail conditions exists for 0.01 s monitor runs with 0.01 s rate whenever enable conditions are met	A
								A
	P0606		WDA (watch dog) shut off due to overvoltage means internal supply voltage	= TRUE - > 5.25 V	shut off path test active and WDA (watch daog) line active	= FALSE - = TRUE -	fail conditions exists for 0.01 s monitor runs with 0.01 s rate whenever enable conditions are met	A
								A
	P0606		WDA (watch dog) shut off due to internal security error	= TRUE -	shut off path test active and WDA (watch dog) line active	= FALSE - = TRUE -	fail conditions exists for 0.01 s monitor runs with 0.01 s rate whenever enable conditions are met	A
			WDA (watch dog) shut off because of corrupt question-and-answer communication	= TRUE -	ignition and WDA (watch dog) line active and shut off path test active	= on - = TRUE - = FALSE -	fail conditions exists for 0.01 s monitor runs with 0.01 s rate whenever enable conditions are met	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			the actual response time from processor is not equal to the requested response-time	= TRUE -	ignition and NO Pending or Confirmed DTCs:	= on - = see sheet inhibit tables -	fail conditions exists for more than 2 events monitor runs 0.04 s rate whenever enable conditions are met	
			redudnant, independent algorithm for plausibility fault of accelerator pedal signal for safety reasons: Path 1: |(maximum (a) (b)) - 2 * (maximum (c) (b))| with (a) voltage accelerator pedal 1 and with (b) lower limit for accelerator pedal voltage and with (c) voltage accelerator pedal 2 and (voltage accelerator pedal 1 or voltage accelerator pedal 2) or Path 2: |(maximum (a) (b)) - 2 * (maximum (c) (b))| with (a) voltage accelerator pedal 1 and with	> 0.29 V = measured parameter - = 0.8 V = measured parameter - > 1.45 V > 1.45 V > 0.41 V = measured parameter -	ignition	= on -	fail conditions exists for 0.28 s monitor runs with 0.04 s rate whenever enable conditions are met	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			(b) lower limit for accelerator pedal voltage and with (c) voltage accelerator pedal 2 and (voltage accelerator pedal 1 or voltage accelerator pedal 2)	= 0.80 V = measured parameter - <= 1.45 V <= 1.45 V				
			no response to an injection request processor internal	= TRUE -	ignition and NO Pending or Confirmed DTCs:	= on - = see sheet inhibit tables -	fail conditions exists for more than 2 events monitor runs 0.04 s rate whenever enable conditions are met	
			no response to shut-off path test processor internal	= TRUE -	ignition and NO Pending or Confirmed DTCs:	= on - = see sheet inhibit tables -	fail conditions exists for more than 184 events monitor runs with 0.04 s rate whenever enable conditions are met	
			no response to hardware activation request processor internal	= TRUE -	ignition and NO Pending or Confirmed DTCs:	= on - = see sheet inhibit tables -	fail conditions exists for more than 98 events monitor runs with 0.04 s rate whenever enable conditions are met	
			no response from processor operative system	= TRUE -	ignition	= on -	fail conditions exists for more	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			processor internal		and NO Pending or Confirmed DTCs:	= see sheet inhibit tables -	than 2 events monitor runs with 0.04 s rate whenever enable conditions are met	
			Path 1: repetitions of injection shut-off path test or Path 2: (number of a powerstage test too few and number of cylinders)	 >= 184 counts < 2 counts >= 8 -	ignition and injection shut-off path test	= on - = ACTIVE -	fail conditions exists for more than 16 events monitor runs with 0.04 s rate whenever enable conditions are met	
			prevention of the execution of the shut-off path test	= TRUE -	ignition and injection shut-off path test	= on - = ACTIVE -	fail conditions exists for 0.08 s monitor runs with 0.04 s rate whenever enable conditions are met	
			too few bytes received by monitoring module from CPU means bytes received by monitoring module from CPU as response	= TRUE - < 4 bytes	ignition	= on -	fail conditions exists for more than 10 events monitor runs with 0.04 s rate whenever enable conditions are met	
			ECM detects interruption in the SPI communication processor internal	= TRUE -	ignition	= on - -	fail conditions exists for more than 2 events monitor runs with 0.04 s rate	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
							whenever enable conditions are met	
			ECM detects plausibility error of the communication between controller and the monitoring module (2 processors in ECU) processor internal	= TRUE -	ignition	= on -	fail conditions exists for more than 5 events monitor runs with 0.04 s rate whenever enable conditions are met	
			supply voltage to injector chip 1	< 3.10 V	ignition	= on -	fail conditions exists for 0.05 s monitor runs with 0.01 s rate whenever enable conditions are met	
			or		and			
			supply voltage to injector chip 1	> 3.50 V	battery voltage	> 8.00 V		
			supply voltage to injector chip 2	< 3.10 V	ignition	= on -	fail conditions exists for 0.05 s monitor runs with 0.01 s rate whenever enable conditions are met	
			or		and			
			supply voltage to injector chip 2	> 3.50 V	battery voltage	> 8.00 V		
			internal injector driver chip error	= TRUE -	Engine Running	= TRUE -	fail conditions exists for more than 10 events monitor runs with 0.01 s rate whenever enable conditions are met	
			IC internal		and basic enable conditions met:	= see sheet enable tables -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			piezo injector actuator internal feedback voltage or piezo injector actuator internal feedback voltage	< 0 V > 3.3 V	main injection	= ACTIVE -	fail conditions exists for more than 10 events monitor runs with 0.01 s rate whenever enable conditions are met	
			Path 1: engine speed or Path 2: engine speed	 > 1500 rpm > 1600 rpm	injection cut off demand from ECM internal monitoring	= TRUE -	fail conditions exists for 0.02 s monitor runs with 0.02 s rate whenever enable conditions are met	
			security torque limitation request by air system control due to implausible air system control requests	= TRUE -	ignition	= on -	fail conditions exists for more than 5sec runs with 0.01 s rate	
			security torque limitation request by rail pressure control due to implausible rail pressure request	= TRUE -	ignition	= on -	fail conditions exists for more than 5sec runs with 0.01 s rate	
			security torque limitation request by injection quantity setpoint control due to implausible quantity setpoint control requests	= TRUE -	ignition	= on -	fail conditions exists for more than 5sec runs with 0.01 s rate	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			indicated torque with (a) modeled inner engine torque and with (b) torque tolerance offset (see Look-Up-Table #41) and with (c) torque of engine speed controller and with (d) torque of surge damper control	> (a) + (b) + (c) + (d) - = calculated parameter - = 11.72 to 99.61 % = calculated parameter - = calculated parameter -	engine speed	> 600 to 850 rpm	fail conditions exists for more than 12 events monitor runs with 0.04 s rate whenever enable conditions are met	
			SW reset evaluation of SW reset after each reset	= TRUE -	ignition	= on -	fail conditions exists for 0.02 s test performed continuously with 0.02 s rate	
			voltage of charging switch or voltage of charging switch if buffer of a bank is not charged completely, or not at all	> 210 V > 100 V	ECM is in startup before injections are released	= TRUE -	fail conditions exists for more than 4 events monitor runs with 0.01 s rate whenever enable conditions are met	
			error at startup of DC/DC converter of one bank	= TRUE -	ignition and DC/DC converter is in startup and basic enable conditions met:	= on - = TRUE - = see sheet enable tables -	fail conditions exists for 0.01 ms monitor runs with 0.01 s rate whenever enable conditions are met	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			DC/DC converter cannot be switched off.	= TRUE -	ignition	= on -		
Traction Control Input Signal	P0856	Detects a failure when a certain number of Traction Control System torque request messages within a defined message group checksum or rolling count values are incorrect	Error counter for Traction Control torque request message group	>= 3 counts	Traction Control Torque Request CAN Message Received and NO Pending or Confirmed DTCs: and ignition on	= TRUE - = see sheet inhibit tables = TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	Special C
Internal Control Module Vehicle Performance Previously P062C in initial submission	P150A	Electronic ECM circuitry determines if faults related to the TPU chip used to calculate Vehicle speed exist.	difference of time periods of two consecutive pulses received from the tooth wheel and (number of deviations and number of deviations)	> 5 % > 2 counts < 40 counts	(sensed vehicle speed and sensed vehicle speed) and basic enable conditions met:	 > 12.43 mph < 93.23 mph = see sheet enable tables -	fail conditions exists for more than 30s monitor runs with 0.02 s rate whenever enable conditions are met	B
Park/Neutral Position (PNP) Switch Circuit High Voltage	P0851	Detects high voltage condition on the PNP circuit by comparing the ECM sensed input to the broadcasted state from the TCM over GMLAN serial data	ECM (on-board control unit) sensed position based on PNP switch inputs to ECM indicates park or neutral and the GMLAN message from the TCM disagrees	= TRUE -	(		fail conditions exist for more than 3s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					battery voltage and battery voltage) and engine speed and vehicle speed and engine torque and accelerator pedal position and (selected gear position is park or selected gear position is neutral) and no validation fault in the transmission shift lever position received via CAN from TCM and basic enable conditions met: and NO Pending or Confirmed DTCs:	> 11.00 V < 655.34 V >= 650 rpm >= 14.92 mph >= 120 Nm >= 0 % = FALSE - = FALSE - = TRUE - = see sheet enable tables - = see sheet inhibit tables -	conditions are met	
Park/Neutral Position (PNP) Switch Circuit Low Voltage	P0852	Detects low voltage condition on the PNP circuit by comparing the ECM sensed input to the broadcasted state from the TCM over GMLAN serial data	GMLAN Message for PNP position indicates park neutral and disagrees with ECM (on-board control unit) sensed position based on PNP switch inputs to ECM	= TRUE -	(battery voltage and battery voltage)	 > 11.00 V < 655.34 V	fail conditions exist for more than 3s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and engine speed <= 7000 rpm and (selected gear position is park = TRUE - or selected gear position is neutral = TRUE -) and no validation fault in the transmission shift lever position received via CAN from TCM = TRUE - and basic enable conditions met: = see sheet enable tables - and NO Pending or Confirmed DTCs: = see sheet inhibit tables -		
Charge Air Cooler Temperature Sensor Performance	P111C	Detects bias charge air cooler temperature sensor downstream or charge air cooler temperature sensor upstream by comparing the start-up values.	Path 1: |(a) - (b)| (see Look-Up-Table #3) > 100 to 999 °C with (a) captured charge air cooler downstream temperature at start and with = measured parameter - (b) captured charge air cooler upstream temperature at start = measured parameter - or Path 2: (|(a) - (b)| (see Look-Up-Table #3) <= 100 to 999 °C with		|(a) - (b)| <= 35 °C with (a) captured charge air cooler downstream temperature at start = measured parameter - and with (b) captured charge air cooler upstream temperature at start as reference temperature = measured parameter - and engine-off time >= 28800 sec and ambient temperature > -60.04 °C and Engine Running = TRUE -	fail conditions exists for 0.1 s monitor runs once per trip with 0.1 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE			SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
			(a) captured charge air cooler downstream temperature at start	=	measured parameter	-	for					
			and with				time	>	0	sec		
			(b) captured charge air cooler upstream temperature at start	=	measured parameter	-	and					
			and				engine post drive/ afterun	=	FALSE			
			|(a) - (b)| (see Look-Up-Table #6)	>	35 to 999	°C	and					
			with				diagnostic performed in current drive cycle	=	FALSE	-		
			(a) captured charge air cooler downstream temperature at start	=	measured parameter	-	and					
			and with				basic enable conditions met:	=	see sheet enable tables	-		
			(b) captured charge air cooler upstream temperature at start	=	measured parameter	-	and					
			and				NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-		
			(									
			status of block heater	=	FALSE	-						
			active under following condition									
			(									
			engine speed	>	500	rpm						
			for									
			time	>	60	sec						
			and									
			(a) - (b)	<	1.8	°C						
			with									
			(a) reference temperature (engine coolant temperature) captured during start	=	calculated parameter	-						
			and with									
			(b) engine coolant temperature value for the comparision with the reference temperature	=	measured parameter	-						
			)									
			or									
			status of sun-load detection	=	FALSE	-						
			active under following condition									

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			(vehicle speed for time and Engine Running for time and (a) - (b) with (a) captured intake ait temperature at start and with (b) minimum intake air temperature value for the comparision with the reference temperature during driving cycle)))	> 14.92 mph > 300 sec = TRUE - > 600 sec < 4.5 °C = measured parameter - = measured parameter -				
Fuel Temperature Sensor Performance	P111D	Detects bias Fuel Temperature Sensor or Intake Air Temperature Sensor by comparing thier start-up values.	Path 1: |(a) - (b)| (see Look-Up-Table #2) with (a) captured intake air temperature at start and with (b) captured fuel temperature at start or Path 2: (|(a) - (b)| (see Look-Up-Table #2) with	> 100 to 999 °C = measured parameter - = measured parameter - <= 100 to 999 °C	|(a) - (b)| <= 20 °C with (a) captured intake air temperature at start = measured parameter - and with (b) captured fuel temperature at start as reference temperature = measured parameter - and engine-off time >= 28800 sec and ambient temperature > -60.04 °C and Engine Running = TRUE -		fail conditions exists for 0.1 s monitor runs once per trip with 0.1 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE			SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
			(a) captured intake air temperature at start	=	measured parameter	-	for					
			and with				time	>	0	sec		
			(b) captured fuel temperature at start	=	measured parameter	-	and					
			and				engine post drive/ afterun	=	FALSE	-		
			|(a) - (b)| (see Look-Up-Table #5)	>	20 to 999	°C	and					
			with				diagnostic performed in current drive cycle	=	FALSE	-		
			(a) captured intake air temperature at start	=	measured parameter	-	and					
			and with				basic enable conditions met:	=	see sheet enable tables	-		
			(b) captured fuel temperature at start	=	measured parameter	-	and					
			and				NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-		
			(									
			status of block heater	=	FALSE	-						
			active under following condition									
			(									
			engine speed	>	500	rpm						
			for									
			time	>	60	sec						
			and									
			(a) - (b)	<	1.8	°C						
			with									
			(a) reference temperature (engine coolant temperature) captured during start	=	calculated parameter	-						
			and with									
			(b) engine coolant temperature value for the comparision with the reference temperature	=	measured parameter	-						
			)									
			or									
			status of sun-load detection	=	FALSE							
			active under following condition									

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			(vehicle speed for time and Engine Running for time and (a) - (b) with (a) captured intake air temperature at start and with (b) minimum intake air temperature value for the comparision with the reference temperature during driving cycle)))	> > = > > = =	14.92 mph 300 sec TRUE - 600 sec 4.5 °C measured parameter - measured parameter -				
HO2S Current Performance Bank 1 Sensor 2	P11B5	Compares the ratio of valid lambda signal time to total time with a threshold	(a) / (b) (a) The time for which lambda signal is valid, once the lambda feedback diagnosis is enabled (b) The time duration for which lambda feedback diagnosis is enabled	< = =	0.1 ratio calculated parameter - calculated parameter -	((NOx sensor's heater temperature has reached the set point for time) for time) and Enabling Downstream NOx sensor heater diagnosis (please see the definition) and (| (a) - (b)| (see Look-Up-Table #76)	= > > = <=	TRUE - 2 sec 120 sec TRUE - 0.1 to 22 -	fail conditions exists for more than 20 sec monitor runs with 0.02 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					(a) Reciprocal lambda signal after combustion	= measured parameter -		
					(b) Filtered reciprocal lambda signal after combustion	= measured parameter -		
					for time)	> 5 sec		
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
					basic enable conditions met:	= see sheet enable tables -		
NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CB	Detects a high deviation of the measured NOx sensor concentration from the modeled NOx concentration	Filtered NOx concentration deviation from model	> 0.699951 -	The signal of the NOx sensor is ready	= TRUE -	fault exists for more than 10s monitor runs once per trip with 0.1 s rate whenever enable conditions are met	B
					Normal Mode (Particulate Filter Regeneration not active)	= TRUE -		
					for time	15 sec		
					ambient pressure	>= 75 kPa		
					ambient pressure	<= 106 kPa		
					ambient temperature	>= -7.04 °C		
					ambient temperature	<= 37.96 °C		
					steady range upper delta of filtered modeled NOx-concentration upstream of the SCR (see Look-Up-Table #63)	<= 0.0500488 to 0.0749512 -		
					steady range lower delta of filtered modeled NOx-concentration upstream of the SCR (see Look-Up-Table #64)	<= 0.0500488 to 0.0749512 -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					dynamic ratio of filtered modeled NOx-concentration upstream of the SCR (see Look-Up-Table #65)	>=	0.512573 to 1.025024	-		
					for time	>	1	sec		
					OR					
					dynamic ratio of filtered modeled NOx-concentration upstream of the SCR	<=	0.974976	-		
					for time	>	1	sec		
					for time	>	2	sec		
					time since engine start	>	30	sec		
					engine coolant temperature	>=	68.96	°C		
					engine coolant temperature	<=	123.06	°C		
					Exhaust gas temperature enable range for the plausibility check of the NOx sensor upstream from the SCR (see Look-Up Table #75)	>0	0 to 1	-		
					Fuel Injection pattern (see Look-Up-Table #68)	=	0 to 58 24 = pilot 1 main 56 = pilot 2, pilot 1, main 58 = pilot 2, pilot 1, main, post 2 0 = all off (overrun)	-		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					Engine speed and injection quantity enable range for the plausibility check of the NOx sensor upstream from the SCR (see Look-Up-Table #66)	≠0 0 to 1 -		
					for time	> 0.5 sec		
					measured air mass per cylinder	>= 0.0 g/rev		
					measured air mass per cylinder	<= 4 g/rev		
					for time	> 5 sec		
					Diagnostic has not already completed this driving cycle	= FALSE -		
					NO Pending or Confirmed DTCs	= see sheet inhibit tables -		
					basic enable conditions met:	= see sheet enable tables -		
NOx Sensor Performance - Signal Low Bank 1 Sensor 1	P11CC	Detects a high deviation of the measured NOx sensor concentration from the modeled NOx concentration	Filtered NOx concentration deviation from model (see Look-Up-Table #77)	< -0.699951 to -0.36999 -	The signal of the NOx sensor is ready	= TRUE -	fault exists for more than 10s monitor runs once per trip with 0.1 s rate whenever enable conditions are met	B
					Normal Mode (Particulate Filter Regeneration not active)	= TRUE -		
					for time	> 15 sec		
					ambient pressure	>= 75.0 kPa		
					ambient pressure	<= 106 kPa		
					ambient temperature	>= -7.04 °C		
					ambient temperature	<= 37.96 °C		
					steady range upper delta of filtered modeled NOx-concentration upstream of the SCR (see Look-Up-Table #63)	<= 0.0500488 to 0.0749512 -		
					steady range lower delta of filtered modeled NOx-concentration upstream of the SCR (see Look-Up-Table #64)	<= 0.0500488 to 0.0749512 -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					dynamic ratio of filtered modeled NOx-concentration upstream of the SCR (see Look-Up-Table #65)	>= 0.512573 to 1.025024 -		
					for time	1 sec		
					OR			
					dynamic ratio of filtered modeled NOx-concentration upstream of the SCR	<= 0.974976 -		
					for time	1 sec		
					for time	2 sec		
					time since engine start	> 30 sec		
					engine coolant temperature	>= 68.96 °C		
					engine coolant temperature	<= 123.06 °C		
					Exhaust gas temperature enable range for the plausibility check of the NOx sensor upstream from the SCR (see Look-Up Table #75)	>0 0 to 1 -		
					Fuel Injection pattern (see Look-Up-Table #68)	0 to 58 24 = pilot 1 main 56 = pilot 2, pilot 1, main 58 = pilot 2, pilot 1, main, post 2 0 = all off (overrun)		
					Engine speed and injection quantity enable range for the plausibility check of the NOx sensor upstream from the SCR (see Look-Up-Table #67)	≠0 0 to 1 -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					for time = 0.5 sec measured air mass per cylinder >= 0.0 g/rev measured air mass per cylinder <= 6 g/rev for time > 5 sec Diagnostic has not already completed this driving cycle = FALSE - NO Pending or Confirmed DTCs = see sheet inhibit tables - basic enable conditions met: = see sheet enable tables -		
~~NOx Sensor Performance - Signal Insufficient Peak Value Bank 1 Sensor 2~~	~~P11CD~~	~~Compares the average NOx concentration of downstream NOx sensor with a threshold based on upstream NOx sensor signal~~	~~Average downstream NOx concentration during NOx peak NOxDs_State_3 (please see the definition)~~ ~~(~~ ~~(a) Minimum average downstream NOx concentration for activation Peak monitoring~~ ~~(b) = ((c) * (d)) + Min[(e), (f)]~~ ~~(~~ ~~(c) Weighting factor for calculating the peak limit value based on the SCR temperature and the NOx mass flow~~ ~~(d) Average upstream NOx concentration in NOxDs_State_3 (please see the definition)~~ ~~(e) Offset limitation within peak plausibility check~~ ~~(f) stored downstream NOx concentration at the end of NOxDs_State_1 (please see the definition)~~ ~~)~~	~~≤ Min [(a), (b)] -~~ ~~= 500 ppm~~ ~~= 0.1 factor~~ ~~= calculated parameter -~~ ~~= calculated parameter -~~ ~~0 ppm~~	~~Average SCR catalyst temperature~~ ~~(~~ ~~Current state of state machine of Downstream NOx sensor peak monitoring (please see the definition)~~ ~~Average upstream NOx mass flow in NOxDs_State_3 (please see the definition)~~ ~~Average upstream NOx concentration in NOxDs_State_3 (please see the definition)~~ ~~)~~ ~~and~~ ~~(~~ ~~Status of NOx signal of upstream NOx sensor (please see the definition)~~	~~≥ 199.96 °C~~ ~~= NOxDs_State_5 -~~ ~~>= 0.03 g/sec~~ ~~>= 120 ppm~~ ~~= TRUE -~~	~~fail conditions exists for more than 1 events monitor runs with 0.01 s rate whenever enable conditions are met~~	~~B~~

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					~~Status of NOx signal of downstream NOx sensor (please see the definition)~~	~~=~~	~~TRUE~~	-		
					~~exhaust gas massflow~~	~~>=~~	~~11.11~~	~~g/sec~~		
					~~and~~					
					~~(~~					
					~~for time~~	~~>~~	~~10~~	~~sec~~		
					~~with~~					
					~~engine speed~~	~~>~~	~~100~~	~~rpm~~		
					~~)~~					
					~~Filtered and estimated NOx conversion efficiency of SCR catalyst~~	~~<=~~	~~1~~	-		
					~~and~~					
					~~(~~					
					~~status of Reductant slip detection (please see the definition)~~	~~=~~	~~FALSE~~	-		
					~~for time~~	~~>~~	~~0.5~~	~~sec~~		
					~~)~~					
					~~and~~					
					~~(~~					
					~~Request for pre controlled dosing (please see the definition)~~	~~=~~	~~FALSE~~	-		
					~~for time~~	~~>~~	~~0.5~~	~~sec~~		
					~~)~~					
					~~and~~					
					~~DPF Regeneration inactive~~	~~=~~	~~TRUE~~	-		
					~~)~~					
					~~ambient pressure~~	~~>=~~	~~5.5~~	~~kPa~~		
					~~ambient temperature~~	~~>=~~	~~-40.04~~	~~°C~~		
					~~NO Pending or Confirmed DTCs:~~	~~=~~	~~See sheet inhibit table~~	-		
					~~basic enable conditions met:~~	~~=~~	~~see sheet enable tables~~	-		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Cylinder 1 Injection Timing Retarded	P12B3	Monitors the correction values for the energizing time of each cylinder. A correction value for the energizing time is learned for each cylinder at three different rail pressure operating point. Detects a fault when the corrected energizing time exceeds the allowed limit and the signal deviation is falling below a limit.	(corrected energising time for the rail pressure calibration points and cylinder 1 (with (a) maximum injection energizing time (see Look-Up-Table #17) and with (b) offset of the maximum filtered energizing time (see Look-Up-Table #18)) for rail pressure point (see Look-Up-Table #16)	> (a) - (b) - = 353.2 to 670.8 us = 10 to 16 us = 30000 to 90000 kPa	intake charge temperature entering cylinder - model and (fuel temperature and fuel temperature) and engine coolant temperature and battery voltage and combustion chamber is not cooled off means time since lst combustion (see Look-Up-Table #73) and limitation frequency and intake manifold pressure and accelerator pedal position and particulate filter regeneration and Fuel system status for time and (	> -7.04 °C >= 0.06 °C and <= 79.96 °C > 49.96 °C > 10 V >= 5 to 30 sec > 0 counts > 75 kPa < 0.04883 % = FALSE - = Fuel cut off > 0 ms	fail conditions exists for more than 1 s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					engine speed	>	(a) - (b)	-		
					and					
					engine speed	<	(a) + (c)	-		
					with					
					(a) value of engine speed	=	30	rpm		
					and with					
					(b) minimum engine speed	=	950	rpm		
					and with					
					(c) maximum engine speed	=	1850	rpm		
					)					
					and					
					clutch closed	=	TRUE	-		
					and					
					current gear (see Look-Up-Table #72)	=	0 to 1	-		
					and					
					vehicle speed	>	0	mph		
					and					
					rail pressure deviation from setpoint calculated out of difference between desired and actual value	<	2200	kPa		
					and					
					rail pressure is stable for at least	>	0.1	sec		
					and					
					no gear change is occurred	=	TRUE	-		
					and					
					lambda probes are adapted	=	TRUE	-		
					and					
					4 wheel mode	=	FALSE	-		
					and					
					exhaust brake is not active	=	TRUE	-		
					and					
					basic enable conditions met:	=	see sheet enable tables	-		
					and					
					NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Cylinder 2 Injection Timing Retarded	P12B5	Monitors the correction values for the energizing time of each cylinder. A correction value for the energizing time is learned for each cylinder at three different rail pressure operating point. Detects a fault when the corrected energizing time exceeds the allowed limit and the signal deviation is falling below a limit.	(corrected energising time for the rail pressure calibration points and cylinder 2 (with (a) maximum injection energizing time (see Look-Up-Table #17) and with (b) offset of the maximum filtered energizing time (see Look-Up-Table #18))) for rail pressure point (see Look-Up-Table #16)	> (a) - (b) - = 353.2 to 670.8 us = 10 to 16 us = 30000 to 90000 kPa	intake charge temperature entering cylinder - model and (fuel temperature and fuel temperature) and engine coolant temperature and battery voltage and combustion chamber is not cooled off means time since lst combustion (see Look-Up-Table #73) and limitation frequency and intake manifold pressure and accelerator pedal position and particulate filter regeneration and Fuel system status for time	> -7.04 °C >= 0.06 °C <= 79.96 °C > 49.96 °C > 10 V >= 5 to 30 sec > 0 counts > 75 kPa < 0.04883 % = FALSE - = Fuel cut off - > 0 sec	fail conditions exists for more than 1 s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					and					
					(					
					engine speed	>	(a) - (b)	-		
					and					
					engine speed	<	(a) + (c)	-		
					with					
					(a) value of engine speed	=	30	rpm		
					and with					
					(b) minimum engine speed	=	950	rpm		
					and with					
					(c) maximum engine speed	=	1850	rpm		
					)					
					and					
					clutch closed	=	TRUE	-		
					and					
					current gear (see Look-Up-Table #72)	=	0 to 1	-		
					and					
					vehicle speed	>	0	mph		
					and					
					rail pressure deviation from setpoint calculated out of difference between desired and actual value	<	2200.00	kPa		
					and					
					rail pressure is stable for at least	>	0.1	sec		
					and					
					no gear change is occurred	=	TRUE	-		
					and					
					lambda probes are adapted	=	TRUE	-		
					and					
					4 wheel mode	=	FALSE	-		
					and					
					exhaust brake is not active	=	TRUE	-		
					and					
					basic enable conditions met:	=	see sheet enable tables	-		
					and					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
Cylinder 7 Injection Timing Retarded	P12BF	Monitors the correction values for the energizing time of each cylinder. A correction value for the energizing time is learned for each cylinder at three different rail pressure operating point. Detects a fault when the corrected energizing time exceeds the allowed limit and the signal deviation is falling below a limit.	(corrected energising time for the rail pressure calibration points and cylinder 3 (with (a) maximum injection energizing time (see Look-Up-Table #17) and with (b) offset of the maximum filtered energizing time (see Look-Up-Table #18))) for rail pressure point (see Look-Up-Table #16)	> (a) - (b) - = 353.2 to 670.8 us = 10 to 16 us = 30000 to 90000 kPa	intake charge temperature entering cylinder - model and (fuel temperature and fuel temperature) and engine coolant temperature and battery voltage and combustion chamber is not cooled off means time since lst combustion (see Look-Up-Table #73) and limitation frequency and intake manifold pressure and accelerator pedal position and particulate filter regeneration and Fuel system status	> -7.04 °C >= 0.06 °C <= 79.96 °C > 49.96 °C > 10 V >= 5 to 30 sec > 0 counts > 75 kPa < 0.04883 % = FALSE - = Fuel cut off -	fail conditions exists for more than 1 s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					for					
					time	>	0	sec		
					and					
					(					
					engine speed	>	(a) - (b)	-		
					and					
					engine speed	<	(a) + (c)	-		
					with					
					(a) value of engine speed	=	30	rpm		
					and with					
					(b) minimum engine speed	=	950	rpm		
					and with					
					(c) maximum engine speed	=	1850	rpm		
					)					
					and					
					clutch closed	=	TRUE	-		
					and					
					current gear (see Look-Up-Table #72)	=	0 to 1	-		
					and					
					vehicle speed	>	0	mph		
					and					
					rail pressure deviation from setpoint calculated out of difference between desired and actual value	<	2200.00	kPa		
					and					
					rail pressure is stable for at least	>	0.1	sec		
					and					
					no gear change is occurred	=	TRUE	-		
					and					
					lambda probes are adapted	=	TRUE	-		
					and					
					4 wheel mode	=	FALSE	-		
					and					
					exhaust brake is not active	=	TRUE	-		
					and					
					basic enable conditions met:	=	see sheet enable tables	-		
					and					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
Cylinder 8 Injection Timing Retarded	P12C1	Monitors the correction values for the energizing time of each cylinder. A correction value for the energizing time is learned for each cylinder at three different rail pressure operating point. Detects a fault when the corrected energizing time exceeds the allowed limit and the signal deviation is falling below a limit.	(corrected energising time for the rail pressure calibration points and cylinder 4 (with (a) maximum injection energizing time (see Look-Up-Table #17) and with (b) offset of the maximum filtered energizing time (see Look-Up-Table #18))) for rail pressure point (see Look-Up-Table #16)	> (a) - (b) - = 353.2 to 670.8 us = 10 to 16 us = 30000 to 90000 kPa	intake charge temperature entering cylinder - model and (fuel temperature and fuel temperature) and engine coolant temperature and battery voltage and combustion chamber is not cooled off means time since lst combustion (see Look-Up-Table #73) and limitation frequency and intake manifold pressure and accelerator pedal position and	> -7.04 °C >= 0.06 °C <= 79.96 °C > 49.96 °C > 10 V >= 5 to 30 sec > 0 counts > 75 kPa < 0.04883 %	fail conditions exists for more than 1 s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					particulate filter regeneration = FALSE -			
					and			
					Fuel system status = Fuel cut off -			
					for			
					time > 0 sec			
					and			
					(			
					engine speed > (a) - (b) -			
					and			
					engine speed < (a) + (c) -			
					with			
					(a) value of engine speed = 30 rpm			
					and with			
					(b) minimum engine speed = 950 rpm			
					and with			
					(c) maximum engine speed = 1850 rpm			
					)			
					and			
					clutch closed = TRUE -			
					and			
					current gear (see Look-Up-Table #72) = 0 to 1 -			
					and			
					vehicle speed > 0 mph			
					and			
					rail pressure deviation from setpoint calculated out of difference between desired and actual value < 2200.00 kPa			
					and			
					rail pressure is stable for at least > 0.1 sec			
					and			
					no gear change is occurred = TRUE -			
					and			
					lambda probes are adapted = TRUE -			
					and			
					4 wheel mode = FALSE -			
					and			
					exhaust brake is not active = TRUE -			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and basic enable conditions met:	= see sheet enable tables -		
					and NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
Cylinder 4 Injection Timing Retarded	P12B9	Monitors the correction values for the energizing time of each cylinder. A correction value for the energizing time is learned for each cylinder at three different rail pressure operating point. Detects a fault when the corrected energizing time exceeds the allowed limit and the signal deviation is falling below a limit.	(corrected energising time for the rail pressure calibration points and cylinder 5 (with (a) maximum injection energizing time (see Look-Up-Table #17) and with (b) offset of the maximum filtered energizing time (see Look-Up-Table #18))) for rail pressure point (see Look-Up-Table #16)	> (a) - (b) - = 353.2 to 670.8 us = 10 to 16 us = 30000 to 90000 kPa	intake charge temperature entering cylinder - model and (fuel temperature and fuel temperature) and engine coolant temperature and battery voltage and combustion chamber is not cooled off means time since lst combustion (see and limitation frequency	> -7.04 °C >= 0.06 °C <= 79.96 °C > 49.96 °C > 10 V >= 5 to 30 sec > 0 counts	fail conditions exists for more than 1 s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					and					
					intake manifold pressure	>	75	kPa		
					and					
					accelerator pedal position	<	0.04883	%		
					and					
					particulate filter regeneration	=	FALSE	-		
					and					
					Fuel system status	=	Fuel cut off	-		
					for					
					time	>	0	sec		
					and					
					(					
					engine speed	>	(a) - (b)	-		
					and					
					engine speed	<	(a) + (c)	-		
					with					
					(a) value of engine speed	=	30	rpm		
					and with					
					(b) minimum engine speed	=	950	rpm		
					and with					
					(c) maximum engine speed	=	1850	rpm		
					)					
					and					
					clutch closed	=	TRUE	-		
					and					
					current gear (see Look-Up-Table #72)	=	0 to 1	-		
					and					
					vehicle speed	>	0	mph		
					and					
					rail pressure deviation from setpoint calculated out of difference between desired and actual value	<	2200.00	kPa		
					and					
					rail pressure is stable for at least	>	0.1	sec		
					and					
					no gear change is occurred	=	TRUE	-		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and lambda probes are adapted and 4 wheel mode and exhaust brake is not active and basic enable conditions met: and NO Pending or Confirmed DTCs:	= TRUE - = FALSE - = TRUE - = see sheet enable tables - = see sheet inhibit tables -		
Cylinder 5 Injection Timing Retarded	P12BB	Monitors the correction values for the energizing time of each cylinder. A correction value for the energizing time is learned for each cylinder at three different rail pressure operating point. Detects a fault when the corrected energizing time exceeds the allowed limit and the signal deviation is falling below a limit.	(corrected energising time for the rail pressure calibration points and cylinder 6 (with (a) maximum injection energizing time (see Look-Up-Table #17) and with (b) offset of the maximum filtered energizing time (see Look-Up-Table #18))) for rail pressure point (see Look-Up-Table #16) for	> (a) - (b) - = 353.2 to 670.8 us = 10 to 16 us = 30000 to 90000 kPa	intake charge temperature entering cylinder - model and (fuel temperature and fuel temperature) and engine coolant temperature and battery voltage and combustion chamber is not cooled off means	> -7.04 °C >= 0.06 °C <= 79.96 °C > 49.96 °C > 10 V	fail conditions exists for more than 1 s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					time since lst combustion (see Look-Up-Table #73)	>=	5 to 30	sec		
					and					
					limitation frequency	>	0	counts		
					and					
					intake manifold pressure	>	75	kPa		
					and					
					accelerator pedal position	<	0.04883	%		
					and					
					particulate filter regeneration	=	FALSE	-		
					and					
					Fuel system status	=	Fuel cut off	-		
					for					
					time	>	0	sec		
					and					
					(					
					engine speed	>	(a) - (b)	-		
					and					
					engine speed	<	(a) + (c)	-		
					with					
					(a) value of engine speed	=	30	rpm		
					and with					
					(b) minimum engine speed	=	950	rpm		
					and with					
					(c) maximum engine speed	=	1850	rpm		
					)					
					and					
					clutch closed	=	TRUE	-		
					and					
					current gear (see Look-Up-Table #72)	=	0 to 1	-		
					and					
					vehicle speed	>	0	mph		
					and					
					rail pressure deviation from setpoint calculated out of difference between desired and actual value	<	2200.00	kPa		
					and					
					rail pressure is stable for at least	>	0.1	sec		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and no gear change is occurred = TRUE - and lambda probes are adapted = TRUE - and 4 wheel mode = FALSE - and exhaust brake is not active = TRUE - and basic enable conditions met: = see sheet enable tables - and NO Pending or Confirmed DTCs: = see sheet inhibit tables -			
Cylinder 6 Injection Timing Retarded	P12BD	Monitors the correction values for the energizing time of each cylinder. A correction value for the energizing time is learned for each cylinder at three different rail pressure operating point. Detects a fault when the corrected energizing time exceeds the allowed limit and the signal deviation is falling below a limit.	(corrected energising time for the rail pressure calibration points and cylinder 7 (with (a) maximum injection energizing time (see Look-Up-Table #17) and with (b) offset of the maximum filtered energizing time (see Look-Up-Table #18))) for rail pressure point (see Look-Up-Table #16) for	> (a) - (b) - = 353.2 to 670.8 us = 10 to 16 us = 30000 to 90000 kPa	intake charge temperature entering cylinder - model and (fuel temperature and fuel temperature) and engine coolant temperature and battery voltage and combustion chamber is not cooled off	> -7.04 °C >= 0.06 °C <= 79.96 °C > 49.96 °C > 10 V	fail conditions exists for more than 1 s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					means					
					time since lst combustion (see Look-Up-Table #73)	>=	5 to 30	sec		
					and limitation frequency	>	0	counts		
					and intake manifold pressure	>	75	kPa		
					and accelerator pedal position	<	0.04883	%		
					and particulate filter regeneration	=	FALSE	-		
					and Fuel system status	=	Fuel cut off	-		
					for time	>	0	sec		
					and (engine speed	>	(a) - (b)	-		
					and engine speed	<	(a) + (c)	-		
					with (a) value of engine speed	=	30	rpm		
					and with (b) minimum engine speed	=	950	rpm		
					and with (c) maximum engine speed)	=	1850	rpm		
					and clutch closed	=	TRUE	-		
					and current gear (see Look-Up-Table #72)	=	0 to 1	-		
					and vehicle speed	>	0	mph		
					and rail pressure deviation from setpoint calculated out of difference between desired and actual value	<	2200.00	kPa		
					and rail pressure is stable for at least	>	0.1	sec		
					and					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					no gear change is occurred and lambda probes are adapted and 4 wheel mode and exhaust brake is not active and basic enable conditions met: and NO Pending or Confirmed DTCs:	= TRUE - = TRUE - = FALSE - = TRUE - = see sheet enable tables - = see sheet inhibit tables -		
Cylinder 3 Injection Timing Retarded	P12B7	Monitors the correction values for the energizing time of each cylinder. A correction value for the energizing time is learned for each cylinder at three different rail pressure operating point. Detects a fault when the corrected energizing time exceeds the allowed limit and the signal deviation is falling below a limit.	(corrected energising time for the rail pressure calibration points and cylinder 8 (with (a) maximum injection energizing time (see Look-Up-Table #17) and with (b) offset of the maximum filtered energizing time (see Look-Up-Table #18))) for rail pressure point (see Look-Up-Table #16)	> (a) - (b) - = 353.2 to 670.8 us = 10 to 16 us = 30000 to 90000 kPa	intake charge temperature entering cylinder - model and (fuel temperature and fuel temperature) and engine coolant temperature and battery voltage and combustion chamber is not cooled off means time since lst combustion (see Look-Up-Table #73)	> -7.04 °C >= 0.06 °C <= 79.96 °C > 49.96 °C > 10 V >= 5 to 30 sec	fail conditions exists for more than 1 s monitor runs with 0.01 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					and					
					limitation frequency	>	0	counts		
					and					
					intake manifold pressure	>	75	kPa		
					and					
					accelerator pedal position	<	0.04883	%		
					and					
					particulate filter regeneration	=	FALSE	-		
					and					
					Fuel system status	=	Fuel cut off	-		
					for					
					time	>	0	sec		
					and					
					(					
					engine speed	>	(a) - (b)	-		
					and					
					engine speed	<	(a) + (c)	-		
					with					
					(a) value of engine speed		30	rpm		
					and with					
					(b) minimum engine speed		950	rpm		
					and with					
					(c) maximum engine speed		1850	rpm		
					)					
					and					
					clutch closed	=	TRUE	-		
					and					
					current gear (see Look-Up-Table #72)	=	0 to 1	-		
					and					
					vehicle speed	>	0	mph		
					and					
					rail pressure deviation from setpoint calculated out of difference between desired and actual value	<	2200.00	kPa		
					and					
					rail pressure is stable for at least	>	0.1	sec		
					and					
					no gear change is occurred	=	TRUE	-		
					and					
					lambda probes are adapted	=	TRUE	-		
					and					
					4 wheel mode	=	FALSE	-		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and exhaust brake is not active = TRUE - and basic enable conditions met: = see sheet enable tables - and NO Pending or Confirmed DTCs: = see sheet inhibit tables -			
Power Take Off	P1591	If the number of communication errors in a calibrated number of frames exceeds a threshold a permanent error is detected	Number of errors in window	>= 4 counts	Number of frames received Can Bus Initialized consisting of: ignition = TRUE - for time 3.00 sec battery voltage > 11.00 V battery voltage < 655.34 V	>= 10.00 counts	immediately test performed continuously	Special C
Reductant Injector Performance	P202E	This diagnostic checks the Reductant Injector performance during operation.	Number of times the ECM detects that the commanded state of the Reductant Injector driver and the actual state of the control circuit do not match.	> 10 counts	Flag for successful measurement of current in opening phase of Reductant Injector = TRUE - (Reductant Dosing System sub-state metering control = TRUE - (Calculated Reductant Injector coil temperature >= -6.64 °C Calculated Reductant Injector coil temperature <= 99.96 °C)		fault exists for more than 80 events monitor runs with 0.1 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					(			
					battery voltage >= 11.00 V			
					battery voltage <= 655.34 V			
					)			
					(			
					Reductant Dosing System pump relative pressure >= 350.00 kPa			
					Reductant Dosing System pump relative pressure <= 650.00 kPa			
					)			
					(			
					ambient pressure >= 74.80 kPa			
					ambient pressure <= 130.00 kPa			
					)			
					NO Pending or Confirmed DTCs = see sheet inhibit tables -			
					)			
					(			
					ambient pressure > 74.80 kPa			
					ambient temperature > -6.64 °C			
					)			
					basic enable conditions met: = see sheet enable tables -			
Reductant Level Sensor 1 Performance	P203B	Path 1:						
		Reductant level plausibility check error from CAN	CAN message: Reductant Level Plausability Check Error from Reductant tank level evaluation module	= TRUE -	ignition = on -		fail conditions exists for more than 5 s monitor runs with 0.1 s rate whenever enable conditions are met	B
			which means		ambient pressure >= 50.0 kPa			
			(		ambient temperature >= -6.04 ºC			
			(measured tank level sensor 2 voltage after 1.5 ms since a test impulse was applied)	= (0.0 to 1.7) V	Reductant Tank Temperature from discrete level sensor >= -40.04 ºC			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			(measured tank level sensor 1 voltage after 1.5 ms since a test impulse was applied)	= (1.71 to 3.56) V	Reductant Tank Temperature from discrete level sensor	<= 69.96 °C		
			)		basic enable conditions met:	= see sheet enable tables -		
			or					
			(					
			(measured tank level sensor 3 voltage after 1.5 ms since a test impulse was applied)	= (0.0 to 1.7) V				
			(measured tank level sensor 1 voltage after 1.5 ms since a test impulse was applied)	= (1.71 to 3.56) V				
			)					
			or					
			(					
			(measured tank level sensor 3 voltage after 1.5 ms since a test impulse was applied)	= (0.0 to 1.7) V				
			(measured tank level sensor 2 voltage after 1.5 ms since a test impulse was applied)	= (1.71 to 3.56) V				
Reductant System Performance Bank 1	P204F	Path 1:						B
		Compare Reductant tank pressure with upper threshold under metering control	Reductant Pump Module Pressure	> 650 kPa	status of SCR control sub state (please see the defintion)	= Metering control -	fail conditions exists for more than 14 s monitor runs with 0.1 s rate whenever enable conditions are met	
					status byte in substate METERING CONTROL	= Running -		
					Dwell time in Metering control substate	> 1.00 sec		
					ambient pressure	>= 0 kPa		
					ambient temperature	>= -30.04 °C		
					NO Pending or Confirmed DTCs:	= see inhibit tables -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					basic enable conditions met:	= see sheet enable tables -		
		Path 2: Or Compare Reductant tank pressure with lower thresholds under metering control	Reductant Pump Module Pressure	< 400 kPa	status of SCR control sub state (please see the defintion)	= Metering control -	fail conditions exists for more than 60.0 s monitor runs with 0.1 s rate whenever enable conditions are met	
					status byte in substate METERING CONTROL	= Running -		
					Dwell time in Metering control substate	> 1.00 sec		
					ambient pressure	>= 0 kPa		
					ambient temperature	>= -30.04 °C		
					NO Pending or Confirmed DTCs:	= see inhibit tables -		
					basic enable conditions met:	= see sheet enable tables -		
		Path 3: Or Compare Reductant tank pressure with lower thresholds under metering control	Reductant Pump Module Pressure	< 300 kPa	status of SCR control sub state (please see the defintion)	= Metering control -	fail conditions exists for more than 11.0 s monitor runs with 0.1 s rate whenever enable conditions are met	
					status byte in substate METERING CONTROL	= Running		
					Dwell time in Metering control substate	> 1.00 sec		
					ambient pressure	>= 0 kPa		
					ambient temperature	>= -30.04 °C		
					NO Pending or Confirmed DTCs:	= see inhibit tables -		
					basic enable conditions met:	= see sheet enable tables -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
		Path 4:						
		Or						
		Reductant tank pressure high	Unfiltered Reductant Pump Module Pressure	> 795 kPa	ambient pressure	> 0 kPa	fail conditions exists for more than 2. 0 s monitor runs with 0.1 s rate whenever enable conditions are met	
			for time	> 1 sec	ambient temperature	> -30.04 °C		
					basic enable conditions met:	= see sheet enable tables -		
		Path 5:						
		Or						
		Unsuccessful reductant pressure build up	Reductant Pump Module Pressure	< 350 kPa	status of SCR control sub state (please see the defintion)	= PRESSURE BUILDUP -	fail conditions exists for more than 1 event monitor runs with 0.1 s rate whenever enable conditions are met	
					Reductant Defrost check (please see the definition)	= TRUE -		
					ambient pressure	> 0 hPa		
					ambient temperature	> -30.04 °C		
					and			
					(			
					number of pressure build-up attempts	>= 3 counts		
					(			
					system pressurizes in pressure buildup and ventilation states	> 10 counts		
					and			
					Dwell time in Pressure Build up substate	>= 10 sec		
					))			
					and			
					NO Pending or Confirmed DTCs:	= see inhibit tables -		
					basic enable conditions met:	= see sheet enable tables -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Reductant Tank Temperature Sensor Performance	P205B	Path 1:			(		fail conditions exists for more than 0.5 sec monitor runs with 0.1 s rate whenever enable conditions are met	B
		temperature difference between ambient temperature and Reductant tank temperature	(a) - (b) >	34.96 °C	ignition	= TRUE -		
			(a) Reductant tank temperature =	measured parameter -	status of SCR control state (please see the defintion)	= No Pressure control -		
			(b) Ambient Temperature =	calculated parameter -	the following temperature difference is met:			
					(			
					Max [(a), (b), (c)] - Min [(a), (b), (c)]	<= 6.96 °C		
					(a) ambient temperature	= calculated parameter -		
					(b) Reductant catalyst upstream Temperature	= calculated parameter -		
					(c) engine coolant temperature	= measured parameter -		
					)			
					NO Pending or Confirmed DTCs:	= See inhibit maxtrix table -		
					basic enable conditions met:	= see sheet enable tables -		
		Path 2:						
		OR			(			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
		temperature difference between ambient temperature and Reductant tank temperature	(a) - (b)	< -35.04 °C	ignition	= TRUE -	fail conditions exists for more than 0.5 sec monitor runs with 0.01 s rate whenever enable conditions are met	
			(a) Reductant tank temperature	measured parameter -	status of SCR control state (please see the defintion)	= No Pressure control -		
			(b) Ambient Temperature	calculated parameter -	the following temperature difference is met:			
					(			
					Max [(a), (b), (c)] - Min [(a), (b), (c)]	<= 6.96 °C		
					(a) ambient temperature	= calculated parameter -		
					(b) Reductant catalyst upstream Temperature	= calculated parameter -		
					(c) engine coolant temperature	= measured parameter -		
					)			
					NO Pending or Confirmed DTCs:	= See inhibit maxtrix table -		
					basic enable conditions met:	= see sheet enable tables -		
SCR NOx Catalyst Efficiency Below Threshold Bank 1	P20EE	Compare average measured NOx conversion efficiency over SCR converter with a threshold value	SCR Average NOx conversion efficiency	< offset-corrected modeled SCR converter efficiency (please see the general description for details)	NOx mass upstream SCR output of main integrator	> 2.5 g	fail conditions exists for more than 15s monitor runs with 0.01 s rate whenever enable conditions are met	B
					and			
					(			
					Up/down condition counter for state machine for temperature	= 0 -		
					)			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					and					
					(					
					for time	>	3	sec		
					(					
					time since the this monitor is released without the following inhibition conditions	>	420	sec		
					NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-		
					)					
					and					
					Status of NOx signal of upstream NOx sensor (please see the definition)	=	TRUE	-		
					for time	>	10	sec		
					and					
					Status of NOx signal of downstream NOx sensor (please see the definition)	=	TRUE	-		
					for time	>	10	sec		
					and					
					((					
					Release of the dosing strategy (please see the definition)	=	TRUE	-		
					for time	>=	(a)+(b)	-		
					(a) Turn on delay time 1 of status metering strategy	=	230	sec		
					(b) Turn on delay time 2 of status metering strategy	=	20	sec		
					)					
					or					
					(					
					Reductant dosing valve was activated at least once	=	TRUE	-		
					and					
					(					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					Status for disabling the SCR Efficiency monitor following an SCR Adaptation cycle completion (please see the definition)	=	FALSE	-		
					for time	>	(a) + (b)	-		
					(a) delay time of status of adaptation	=	0.5	sec		
					(b) delay time of status of adaptation	=	80	sec		
					)					
					and					
					(					
					Status of disabling the SCR efficiency monitor following a switch to pre contolled dosing (please see the defintion)	=	FALSE	-		
					for time	>	(a) + (b)	-		
					(a) Debounce time for low or high after pre controlled dosing	=	0.5	sec		
					(b) Delay time for status signal of pre controlled dosing	=	180	sec		
					)					
					and					
					(					
					Status fill level decrease (please see the definition)	=	FALSE	-		
					for time	>	200	sec		
					)					
					and					
					(					
					Average slow filtered NOx mass flow upstream SCR	<=	0.3	g/sec		
					for time	>	(a) + (b)	-		
					(a) Debouncing time of high NOx mass flow detection (1->0)	=	0.5	sec		
					(b) Delay time for disabling after high NOx mass flow detection	=	0.5	sec		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					Remaining disable time	=	0	sec		
					)					
					and					
					(					
					ambient pressure	>=	74.8	kPa		
					ambient temperature	>=	-7.04	°C		
					)					
					and					
					(					
					Status of the SCR adaptation plausibility check active (please see the definition)	=	FALSE	-		
					for time	>	600	sec		
					or					
					status of Reductant slip detection (please see the definition)	=	FALSE	-		
					or					
					(					
					Release of efficency monitoring with active adaptation but without Reductant slip (please see the definition)	=	TRUE	-		
					))					
					and					
					SCR NOx Catalyst Efficiency check was performed this drive cycle	=	FALSE	-		
					and					
					time since the following conditions were met	>	0	sec		
					(					
					engine speed	>=	600	rpm		
					engine speed	<=	3000	rpm		
					)					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					and					
					(					
					time since the following conditions are met	>	0.3	sec		
					(					
					Filtered and delayed upsteam NOx raw emission	<	800	ppm		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	<	0.25	g/sec		
					Filtered exhaust gas mass flow	<	152.78	g/sec		
					)					
					and					
					(					
					Average SCR Temperature	>=	249.96	°C		
					Average SCR Temperature	<=	289.96	°C		
					Filtered and delayed upsteam NOx raw emission	>=	0	ppm		
					Filtered and delayed upsteam NOx raw emission	<=	800	ppm		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	>=	0	g/sec		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	<=	0.25	g/sec		
					Filtered exhaust gas mass flow	>=	0	g/sec		
					Filtered exhaust gas mass flow	<=	152.78	g/sec		
					and					
					basic enable conditions met:	=	see sheet enable tables	-		
Incorrect Reductant Composition	P207F	Compare Measured NOx conversion efficiency over SCR converter with a threshold value	SCR Average NOx conversion efficiency	< (a) * (b) -						

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			(a) Efficiency threshold dependent on SCR temperature and NOx mass flow	= 0.2 factor	NOx mass upstream SCR output of main integrator	> 1 g	fail conditions exists for more than 1 event monitor runs with 0.01 s rate whenever enable conditions are met	B
			(b) Efficiency threshold dependent on SCR temperature and exhaust gas mass flow	= 1 factor	and			
					(			
					Up/down condition counter for state machine for temperature	= 0 -		
					)			
					and			
					(			
					for time	> 3 sec		
					(			
					time since the this monitor is released without the following inhibition conditions	> 420 sec		
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables		
					and			
					Status of NOx signal of upstream NOx sensor (please see the definition)	= True		
					for time	> 10 sec		
					and			
					Status of NOx signal of downstream NOx sensor (please see the definition)	= True		
					for time	> 10 sec		
					and			
					((			
					Release of dosing of the dosing strategy (please see the definition)	= true		
					for time	>= 30 sec		
					(a) Turn on delay time 1 of status metering strategy	= 300 sec		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					(b) Turn on delay time 2 of status metering strategy	= 20 sec		
					)			
					or			
					(			
					Reductant dosing valve was once activated	= True		
					Status for disabling the SCR Efficiency monitor following an SCR Adaptation cycle completion (Please see definition)	= False		
					for time	> 80.5 sec		
					(a) delay time of status of adaptation	= 0.5 sec		
					(b) delay time of status of adaptation	= 80 sec		
					)			
					and			
					(			
					Status of disabling the SCR efficiency monitor following a switch to pre contolled dosing (please see the defintion)	= False		
					for time	> 180.5 sec		
					(a) Debounce time for low or high after pre controlled dosing	= 0.5 sec		
					(b) Delay time for status signal of pre controlled dosing	= 180 sec		
					)			
					and			
					(			
					Status fill level decrease (please see the definition)	= False		
					for time	> 200 sec		
					)			
					and			
					(			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					Average slow filtered NOx mass flow upstream SCR	<=	0.300	g/sec		
					time	>	1.0	sec		
					for time	=	0.5	sec		
					(b)	=	0.5	sec		
					Remaining disable time	=	0	sec		
					)					
					and					
					(					
					ambient pressure	>=	74.8	kPa		
					ambient temperature	>=	-7.04	°C		
					)					
					and					
					(					
					Status of the SCR adaptation plausibility check active (please see the definition)	=	False			
					for time	>	600	sec		
					or					
					status of Reductant slip detection (please see the definition)	=	False			
					or					
					(					
					Release of efficency monitoring with active adaption but without Reductant slip (please see the definition)	=	True			
					))					
					and					
					SCR efficiency check was performed this drive cycle	=	False			
					and					
					time since the following conditions were met	>	0	sec		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					(					
					engine speed	>=	600	rpm		
					engine speed	<=	3000	rpm		
					)					
					and					
					(					
					time since the following conditions are met	>	0.3	sec		
					(					
					Filtered and delayed upsteam NOx raw emission	<	800	ppm		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	<	1.000	g/sec		
					Filtered exhaust gas mass flow	<	152.78	g/sec		
					)					
					and					
					(					
					Average SCR Temperature	>=	249.96	°C		
					Average SCR Temperature	<=	289.96	°C		
					Filtered and delayed upsteam NOx raw emission	>=	100	ppm		
					Filtered and delayed upsteam NOx raw emission	<=	800	ppm		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	>=	0.001	g/sec		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	<=	1.00	g/sec		
					Filtered exhaust gas mass flow	>=	69.44	g/sec		
					Filtered exhaust gas mass flow	<=	152.78	g/sec		
					and					
					((					
					Status of Reductant quality level information (please see the definition) (service only)	<	80	(status)		
					Average SCR Temperature	>=	249.96	°C		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					Average SCR Temperature	<=	289.96	°C		
					Filtered and delayed upsteam NOx raw emission	>=	100	ppm		
					Filtered and delayed upsteam NOx raw emission	<=	800	ppm		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	>=	0.001	g/sec		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	<=	1.00	g/sec		
					Filtered exhaust gas mass flow	>=	69.44	g/sec		
					Filtered exhaust gas mass flow	<=	152.78	g/sec		
					)					
					or					
					(					
					Status of Reductant quality level information (please see the definition)	=	80	(status)		
					Average SCR Temperature	>=	249.96	°C		
					Average SCR Temperature	<=	399.96	°C		
					Filtered and delayed upsteam NOx raw emission	>=	35	ppm		
					Filtered and delayed upsteam NOx raw emission	<=	800	ppm		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	>=	0.001	g/sec		
					Filtered and delayed NOx raw emission mass flow upstream of SCR	<=	1.00	g/sec		
					Filtered exhaust gas mass flow	>=	0.00	g/sec		
					Filtered exhaust gas mass flow	<=	222.22	g/sec		
					))					
					disabled during following conditions	=	see sheet disable tables			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Exhaust Temperature Sensor 1 Performance	P2080	Path 1:						B
		compares an accumulated heat quantity based on the temperature difference between the sensor value and the simulated value with a maximum threshold	Heat quantity value of Exahust temperature sensor 1	> Integration of [(a) * (b) * ((((c) /3600) * 1050) / 1000)] kJ	(		fail conditions exists for more than 5s monitor runs with 0.02 s rate whenever enable conditions are met	
			(a) Maximum permissible temperature deviation for sensor 1	= 100 °C	engine speed	> 100 rpm		
			(b) weighing factor on the heat flow quantity for sensor 1	= 1 factor	(			
			(c) Exhaust mass flow at Exhaust gas temperature sensor 1	= calculated value -	for time	>= 327 sec		
					or			
					(			
					for time	>= 1500 sec		
					when			
					engine off time	< 3600 sec		
					and			
					active regeneration when ignition switched off during previous drive cycle	= TRUE -		
					)))			
					and			
					(			
					exhaust gas temperature sensor 1	> -60.04 °C		
		Path 2:			exhaust gas temperature sensor 1	< 1999.96 °C		
		compares an accumulated heat quantity based on the temperature difference between the sensor value and the simulated value with a minimum threshold	Heat quantity value of Exahust temperature sensor 1	< Integration of [(a) * (b) * ((((c) /3600) * 1050) / 1000)] kJ	)			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			(a) Minimum permissible temperature deviation for sensor 1	= 100 °C	and			
			(b) weighing factor on the heat flow quantity for sensor 1	= 1 factor	(			
			(c) Exhaust mass flow at Exhaust gas temperature sensor 1	= calculated value -	exhaust gas temperature change over a time	<= 7 °C		
					for time	< 5 sec		
					)			
					engine speed	>= 700 rpm		
					engine speed	<= 3000 rpm		
					and			
					current injection quantity	>= 20 mm^3/rev		
					current injection quantity	<= 200 mm^3/rev		
					and			
					for time	> 0.05 sec		
					)			
					and			
					Detection of sufficient change of simulated temperature at sesnor 1 since the last monitoring cycle	> 4 °C		
					and			
					(			
					Integrated heat quantity of the exahust	> 10 kJ		
					)			
					and			
					(			
					for time since the following condition is met	> 1500 sec		
					DPF Regeneration inactive	= TRUE -		
					)			
					NO Pending or Confirmed DTCs:	= see inhibit tables -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					basic enable conditions met:	= see sheet enable tables -		
Exhaust Temperature Sensor 2 Performance	P2084	Path 1:						B
		compares an accumulated heat quantity based on the temperature difference between the sensor value and the simulated value with a maximum threshold	Heat quantity value of Exahust temperature sensor 2	> Integration of [(a) * (b) * ((((c) /3600) * 1050) / 1000)] kJ	(		fail conditions exists for more than 5s monitor runs with 0.02 s rate whenever enable conditions are met	
			(a) Maximum permissible temperature deviation for sensor 2	= 100 °C	engine speed	> 100 rpm		
			(b) weighing factor on the heat flow quantity for sensor 2	= 1 factor	(			
			(c) Exhaust mass flow at Exhaust gas temperature sensor 2	= calculated value -	for time	>= 327 sec		
					or (			
					for time	>= 1500 sec		
					when engine off time	< 3600 sec		
					and active regeneration when ignition switched off during previous drive cycle	= TRUE -		
					)))			
					and (			
		Path 2:			exhaust gas temperature at sensor 2	> -60.04 °C		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
		compares an accumulated heat quantity based on the temperature difference between the sensor value and the simulated value with a minimum threshold	Heat quantity value of Exahust temperature sensor 2	< Integration of [(a) * (b) * ((((c) /3600) * 1050) / 1000)] kJ	exhaust gas temperature at sensor 2	< 1999.96 °C		
			(a) Minimum permissible temperature deviation for sensor 2	= 100 °C	)			
			(b) weighing factor on the heat flow quantity for sensor 2	= 1 factor	and			
			(c) Exhaust mass flow at Exhaust gas temperature sensor 2	= calculated value -	)			
					and			
					(			
					exhaust gas temperature at sensor 2	> -60.04 °C		
					exhaust gas temperature at sensor 2	< 1999.96 °C		
					)			
					and			
					(			
					exhaust gas temperature change over a time	<= 7 °C		
					for time	< 5 sec		
					)			
					engine speed	>= 700 rpm		
					engine speed	<= 3000 rpm		
					and			
					current injection quantity	>= 20 mm^3/rev		
					current injection quantity	<= 200 mm^3/rev		
					and			
					for time	> 0.05 sec		
					)			
					and			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					Detection of sufficient change of simulated temperature at sesnor 2 since the last monitoring cycle	> 4 °C		
					and			
					(			
					Integrated heat quantity of the exahust	> 10 kJ		
					)			
					and			
					(			
					for time since the following condition is met	> 1500 sec		
					DPF Regeneration inactive	= TRUE -		
					)			
					NO Pending or Confirmed DTCs:	= see inhibit tables -		
					basic enable conditions met:	= see sheet enable tables -		
Turbo Boost System Performance	P2263	Detects if the Turbocharger is severely over or under boosting based on MAP sensor output	manifold air pressure sensor	> 350 kPa	ignition	= on -		A
					and			
					basic enable conditions met:	see sheet enable tables -	fail conditions exists for 15 s test performed continuously 0.01 s rate	
					and			
					NO Pending or Confirmed DTCs:	see sheet inhibit tables -		
			manifold air pressure sensor (see Look-Up-Table #78)	< 100 to 155 kPa	ignition	= on -		A
					and			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
						actuator position of throttle valve	>	2000	%		
						basic enable conditions met:		see sheet enable tables	-	fail conditions exists for 15 s test performed continuously 0.01 s rate	
						and					
						NO Pending or Confirmed DTCs:		see sheet inhibit tables	-		
Exhaust Temperature Sensor 3 Performance	P242B	Path 1:									B
		compares an accumulated heat quantity based on the temperature difference between the sensor value and the simulated value with a maximum threshold	Heat quantity value of Exahust temperature sensor 3	> Integration of [(a) * (b) * ((((c) /3600) * 1050) / 1000)]	kJ	(				fail conditions exists for more than 5s monitor runs with 0.02 s rate whenever enable conditions are met	
			(a) Maximum permissible temperature deviation for sensor 3	= 100	°C	engine speed	>	100	rpm		
			(b) weighing factor on the heat flow quantity for sensor 3	= 1	factor	(					
			(c) Exhaust mass flow at Exhaust gas temperature sensor 3	= calculated value	-	for time	>=	327	sec		
						or					
						(					
						for time	>=	1500	sec		
						when					
						engine off time	<	3600	sec		
						and					
						active regeneration when ignition switched off during previous drive cycle	=	TRUE	-		
						)))					
						and					
						(					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
		Path 2: compares an accumulated heat quantity based on the temperature difference between the sensor value and the simulated value with a minimum threshold	Heat quantity value of Exahust temperature sensor 3	< Integration of [(a) * (b) * ((((c) /3600) * 1050) / 1000)] kJ	exhaust gas temperature at sensor 3 exhaust gas temperature at sensor 3	> -60.04 °C < 1999.96 °C		
			(a) Minimum permissible temperature deviation for sensor 3	= 100 °C	)			
			(b) weighing factor on the heat flow quantity for sensor 3	= 1 factor	and			
			(c) Exhaust mass flow at Exhaust gas temperature sensor 3	= calculated value -	(			
					exhaust gas temperature change over a time for time) engine speed engine speed and current injection quantity current injection quantity and for time) and Detection of sufficient change of simulated temperature at sesnor 3 since the last monitoring cycle and (Integrated heat quantity of the exahust) and (	<= 7 °C < 5 sec >= 700 rpm <= 3000 rpm >= 20 mm^3/rev <= 200 mm^3/rev > 0.05 sec > 4 °C > 10 kJ		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					for time since the following condition is met	> 1500 sec		
					DPF Regeneration inactive	= TRUE -		
					)			
					NO Pending or Confirmed DTCs:	= see inhibit tables -		
					basic enable conditions met:	= see sheet enable tables -		
Exhaust Temperature Sensor 4 Performance	P246F	Path 1:						B
		compares an accumulated heat quantity based on the temperature difference between the sensor value and the simulated value with a maximum threshold	Heat quantity value of Exahust temperature sensor 4	> Integration of [(a) * (b) * ((((c) /3600) * 1050) / 1000)] kJ	(		fail conditions exists for more than 5s monitor runs with 0.02 s rate whenever enable conditions are met	
			(a) Maximum permissible temperature deviation for sensor 4	= 100 °C	engine speed	> 100 rpm		
			(b) weighing factor on the heat flow quantity for sensor 4	= 1 factor	(			
			(c) Exhaust mass flow at Exhaust gas temperature sensor 4	= calculated value -	for time	>= 327 sec		
					or			
					(			
					for time	>= 1500 sec		
					when			
					engine off time	< 3600 sec		
					and			
					active regeneration when ignition switched off during previous drive cycle	= TRUE -		
					)))			
					and			
					(			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
		Path 2: compares an accumulated heat quantity based on the temperature difference between the sensor value and the simulated value with a minimum threshold	Heat quantity value of Exahust temperature sensor 4	< Integration of [(a) * (b) * ((((c) /3600) * 1050) / 1000)] kJ	exhaust gas temperature at sensor 4	> -60.04 °C		
					exhaust gas temperature at sensor 4	< 1999.96 °C		
			(a) Minimum permissible temperature deviation for sensor 4	= 100 °C	)			
			(b) weighing factor on the heat flow quantity for sensor 4	= 1 factor	and			
			(c) Exhaust mass flow at Exhaust gas temperature sensor 4	= calculated value -	(			
					exhaust gas temperature change over a time	<= 7 °C		
					for time	< 5 sec		
					)			
					engine speed	>= 700 rpm		
					engine speed	<= 3000 rpm		
					and			
					current injection quantity	>= 20 mm^3/rev		
					current injection quantity	<= 200 mm^3/rev		
					and			
					for time	> 0.05 sec		
					)			
					and			
					Detection of sufficient change of simulated temperature at sesnor 4 since the last monitoring cycle	> 4 °C		
					and			
					(			
					Integrated heat quantity of the exahust	> 10 kJ		
					)			
					and			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					(			
					for time since the following condition is met > 1500 sec			
					DPF Regeneration inactive = TRUE -			
					)			
					NO Pending or Confirmed DTCs: = see inhibit tables -			
					basic enable conditions met: = see sheet enable tables -			
Reductant Heater 1 Performance	P20BA	Reductant tank temperature is used to verify heating has occurred	Tank temperature difference between current temperature and start temperature of the current monitoring cycle:		Reductant tank heating active = True -		fail conditions exists whenever enable conditions are met	B
			(a) - (b)	< 0.56 °C	for time > 0 sec			
			(a) filtered current tank temperature	= measured parameter -				
			(b) tank temperature captured at the beginning of current monitoring cycle	= measured parameter -	Remaining quantity of reducing agent in [%] percent of total tank volume >= 26.0 %			
					Reductant tank Temperature < -16.04 °C			
			The above functionality is the functionality which is primarily used to diagnose tank temperature response		Reductant tank Temperature > 14.96 °C			
					Vehicle speed >= 3.11 mph			
					for time > 1.00 sec			
					Tank heater activation time (see Look-Up-Table #74) >= 1000 to 32767 sec			
					continuation of previously started tank temperature performance monitoring cycle (see definition) = FALSE -			
					(			
					ignition on for time > 60 sec			
					or			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					ice detection by tank temperature difference: (a) - (b) (a) filtered current tank temperature (b) tank temperature captured at the beginning of current monitoring cycle) NO Pending or Confirmed DTCs: Basic enable conditions met	<= -0.14 °C = see sheet inhibit tables - = See sheet enable table -		
Exhaust Gas Temperature (EGT) Sensors 1-2 not plausible	P20E2	Detects biased exhaust temperature sensors by comparing the two oxidation catalyst temperature sensors after an engine off soak time	Path 1: |(a) - (b)| (see Look-Up-Table #28) with (a) captured oxidation catalyst downstream temperature at start and with (b) captured oxidation catalyst upstream temperature at start as reference temperature or Path 2: |(a) - (b)| (see Look-Up-Table #28) with (a) captured oxidation catalyst downstream temperature at start and with	> 100 to 999 °C = measured parameter - = measured parameter - <= 100 to 999 °C = measured parameter -	engine-off time and ambient temperature and Engine Running for time and engine post drive/ afterun and diagnostic performed in current drive cycle and basic enable conditions met:	>= 28800 sec > -60.04 °C = TRUE - > 0 sec = FALSE - = FALSE - = see sheet enable tables -	fail conditions exists for 0.05 s monitor runs with 0.05 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
			(b) captured oxidation catalyst upstream temperature at start as reference temperature	= measured parameter -	and			
			and		NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
			|(a) - (b)| (see Look-Up-Table #81)	> 30 to 9999 °C				
			and (					
			status of block heater or	= FALSE				
			sun load detection status	= FALSE				
NOx Sensor Performance Bank 1 Sensor 1	P2201	If when transitioning from engine load to overrun, the rate at which the NOx concentration falls is slower than a calibrated threshold a fault is set.	Time it takes for the NOx concentration level to fall from 70% to 40% of the initial NOx concentration value	> 2.3 sec	State of the NOx sensor dynamic monitoring state machine	= Evaluate falling edge of NOx concentration signal -	fail conditions exist for 7s test is performed in the 0.01 ms rate when enable conditions are met	B
			or					
			Upstream NOx concentration	> 40% of Initial NOx Concentration Level -	Injection quantity for current cylinder	< 2 mm^3/rev		
			for		for			
			time	> 5 sec	time	< 1.05 sec		
NOx Sensor Performance Bank 1 Sensor 2	P229F	Detection of sufficient downstream NOx sensor	NOx sensor response deviation from beginning to end of response test phase	< **Minimum of:**			7 sec minimum (depending on test conditions) for each test result, 2 tests minimum required - when enable conditions are met	B
		response during transient conditions		5 ppm	Average SCR catalyst temperature	> 199.96 °C		
					(			
					Current state of state machine of Downstream NOx sensor peak monitoring (please see the definition)	= NOxDs_State_5 -		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					Average upstream NOx mass flow in NOxDs_State_3 (please see the definition)	>=	0.03	g/sec		
					Average upstream NOx concentration in NOxDs_State_3 (please see the definition)	>=	500	ppm		
					)					
					and					
					(					
					Status of NOx signal of upstream NOx sensor (please see the definition)	=	TRUE	-		
					Status of NOx signal of downstream NOx sensor (please see the definition)	=	TRUE	-		
					exhaust gas massflow	>=	2.78	g/sec		
					and					
					(					
					for time	>	10	sec		
					with					
					engine speed	>	100	rpm		
					)					
					Filtered and estimated NOx conversion efficiency of SCR catalyst	<=	1	-		
					and					
					(					
					status of Reductant slip detection (please see the definition)	=	FALSE	-		
					for time	>	0.5	sec		
					)					
					and					
					(					
					Request for pre controlled dosing (please see the definition)	=	FALSE	-		
					for time	>	0.5	sec		
					)					
					and					
					DPF Regeneration inactive	=	TRUE	-		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					) ambient pressure >= 55 kPa ambient temperature >= -40.04 °C NO Pending or Confirmed DTCs: = See sheet inhibit table - basic enable conditions met: = see sheet enable tables -			
Exhaust Gas Recirculation (EGR) Flow Insufficient	P2413	Detects insufficient EGR flow. Actual MAF readings are compared to desired MAF values as an indication of how much EGR is flowing.	controller deviation of the air mass = actual minus desired value (see Look-Up-Table #79)	> -2.4 to -1.8 g/rev	(EGR controler is active = TRUE and (change of injection quantity between current and last value < 80.00 (mm^3/rev)/s) and (change of engine speed between currentl and last value < 75 rpm/sec) and maximum setpoint for air-mass flow < (a) / (b) * (c) * (d) / ((e) / (f)) / (g) * (h) with ((a) gas mass flow into the engine and with (b) pressure in the intake manifold and with		fail conditions exists for 10 s monitor runs 0.02 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					(c) pressure in the induction volume					
					and with					
					(d) system constant		33333			
					and with					
					(e) number of engine cylinders		8			
					and with					
					(f) number of cylinder banks		1			
					and with					
					(g) engine speed					
					and with					
					(h) correction factor		1			
					)					
					and					
					setpoint valve position of exhaust-gas recirculation	>	5.0049	%		
					and					
					engine speed	>=	625	rpm		
					and					
					engine speed	<=	950	rpm		
					and					
					injection quantity	>=	20	mm^3/rev		
					and					
					injection quantity	<=	72	mm^3/rev		
					and					
					Desired value for mass flow through the EGR valve	>	1.04	g/rev		
					and					
					EGR valve position	>	5.0049	%		
					and					
					throttle position	<	5	%		
					and					
					basic enable conditions met:		see sheet enableta bles	-		
					and					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
					) for time	>= 1.5 sec		
Diesel Particulate Filter Regeneration Frequency	P2459	Detects a DPF that is regeneration too frequency by comparing a threshold to a soot model.	soot mass in the particulate filter - soot mass in the particulate filter at the end of the last regeneration	> ((a) * (b) + (c)) + ((d) * (e)) -	particulate filter regeneration - transition FALSE to TRUE	= TRUE -	fail conditions exists for more than 1 event monitor runs 0.1 s rate whenever enable conditions are met	B
			with		and			
			(a) engine out soot mass flow in the exhaust-gas	= calculated value -	last particulate filter regeneration successful	= TRUE -		
			and with		or			
			(b) delta time step	= software loop rate -	particulate filter regeneration must have been completed	= TRUE -		
			and with		and			
			(c) simulated maximum base soot mass from previous time step - soot mass in the particulate filter at the end of the last regeneration	= calculated value -	soot mass in the particulate filter at the end of the last regeneration	<= 70 g		
			and with		and			
			(d) factor for calculation of a soot mass value offset depending on the simulated maximal base soot mass - soot mass in the particulate filter at the end of the last regeneration (see Look-Up-Table #80)	= 0 to 464 g	basic enable conditions met:	= see sheet enable tables -		
			and with		and			
			(e) factor for determination of correction factor for ash in the particulate filter	= 1 -	NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
Closed loop Reductant Injection	P249E	Detects an out of range low of the long term Reductant quantity	long term adaptation factor of Reductant quantity	< 0.41 factor	long term adaptation triggered	= TRUE -	fault exists for more than 0.1s	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Control at Limit-Flow too low		adaptation factor			NO Pending or Confirmed DTCs basic enable conditions met:	= see sheet inhibit tables - = see sheet enable tables -	monitor runs at 0.1 s whenever enable conditions are met	
Closed loop Reductant Injection Control at Limit-Flow too high	P249D	Detects an out of range high of the long term SCR adaptation factor	long term adaptation factor of Reductant quantity	> 1.69 factor	long term adaptation triggered NO Pending or Confirmed DTCs basic enable conditions met:	= TRUE - = see sheet inhibit tables - = see sheet enable tables -	fault exists for more than 0.1s monitor runs at 0.1 s whenever enable conditions are met	B
Reductant Control Module - Discrete level sensor CAN message	U010E	CAN frame not received after the specified number of times	counts up when message is not received in the base time interval (1.0 sec)	> 40 counts	CAN Bus is Active Can Bus Initialized (CAN Bus is Active) ignition for time battery voltage battery voltage	= TRUE - = TRUE - > 3.00 sec > 11.00 V < 27 V	1000 ms	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
		Detects a failure when a certain number of discrete level sensor switch 1 messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out discrete level sensor switch 1 message group	> 8 counts	Discrete level sensor switch 1 CAN Message Received and NO Pending or Confirmed DTCs: and Discrete level sensor switch 1 CAN Message Enabled and ignition on	= TRUE - = see sheet inhibit tables - = TRUE - = TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	
		Detects a failure when a certain number of discrete level sensor switch 2 messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out discrete level sensor switch 2 message group	> 8 counts	Discrete level sensor switch 2 CAN Message Received and NO Pending or Confirmed DTCs: and Discrete level sensor switch 2 CAN Message Enabled and ignition	= TRUE - = see sheet inhibit tables - = TRUE - = TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	
		Detects a failure when a certain number of discrete level sensor switch 3 messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out discrete level sensor switch 3 message group	> 8 counts	Discrete level sensor switch 3 CAN Message Received	= TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and NO Pending or Confirmed DTCs: and Discrete level sensor switch 3 CAN Message Enabled and ignition	= see sheet inhibit tables - = TRUE - = TRUE -		
Lost Communication with NOx Bank 1 Sensor 1	U029D	Detects a failure when a certain number of Engine Out NOx sensor relative NOx concentration messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out NOx relative NOx concentration message group	>= 8 counts	Engine out NOx sensor CAN Message 1 Received and NO Pending or Confirmed DTCs: and Engine out NOx sensor CAN Message 1 Enabled and ignition	= TRUE - = see sheet inhibit tables - = TRUE - = ON -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	B
		Detects a failure when a certain number of Engine Out NOx sensor linear lambda messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out NOx sensor status message group	>= 8 counts	Engine out NOx sensor CAN Message 1 Received and NO Pending or Confirmed DTCs: and Engine out NOx sensor CAN Message 1 Enabled and ignition	= TRUE - = see sheet inhibit tables - = TRUE - = ON -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
		Engine out NOx sensor CAN message #1 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 5 counts	Can Bus Initialized (CAN Bus is Active) consisting of: ignition for time battery voltage battery voltage	= TRUE - = TRUE - > 3 sec > 11 V < 27 V	fault exists for more than 20 seconds ; monitor runs every 0.05 s whenever enable conditions are met.	
		Detects a failure when a certain number of Engine Out NOx sensor error messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out NOx sensor error status message group	>= 8 counts	Engine out NOx sensor CAN Message 2 Received and NO Pending or Confirmed DTCs: and Engine out NOx sensor CAN Message 2 Enabled and ignition	= TRUE - = see sheet inhibit tables = TRUE - = on -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	
		Detects a failure when a certain number of Engine Out NOx sensor linear lambda messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out NOx linear lambda signal message group	>= 8 counts	Engine out NOx sensor CAN Message 2 Received and NO Pending or Confirmed DTCs: and Engine out NOx sensor CAN Message 2 Enabled	= TRUE - = see sheet inhibit tables = TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and ignition	= on -		
		NOx Sensor CAN Message #2 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 5 counts	Can Bus Initialized (CAN Bus is Active) consisting of: ignition for time battery voltage battery voltage	 = TRUE - 3.00 sec > 11.00 V < 27 V	fault exists for more than 20 seconds ; monitor runs every 0.005 s whenever enable conditions are met.	
		Engine out NOx sensor CAN message #3 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 5 counts	Can Bus Initialized (CAN Bus is Active) consisting of: ignition for time battery voltage battery voltage	 = TRUE - 3.00 sec > 11.00 V < 27 V	fault exists for more than 20 seconds ; monitor runs every 0.005 s whenever enable conditions are met.	
		Detects a failure when a certain number of Engine Out NOx sensor binary lambda messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out NOx binary lambda signal message group	>= 8 counts	Engine out NOx sensor CAN Message 3 Received and NO Pending or Confirmed DTCs: and Engine out NOx sensor CAN Message 3 Enabled	= TRUE - = see sheet inhibit tables - = TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and ignition on	= = TRUE -		
		Engine out NOx sensor CAN message #4 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 25 counts	Can Bus Initialized (CAN Bus is Active) consisting of: ignition for time battery voltage battery voltage	 = TRUE - 3.00 sec > 11.00 V < 27 V	fault exists for more than 20 seconds ; monitor runs every 0.005 s whenever enable conditions are met.	
		Detects a failure when a certain number of Engine Out NOx sensor oxygen concentration messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out NOx oxygen concentration signal message group	>= 8 counts	Engine out NOx sensor CAN Message 3 Received and NO Pending or Confirmed DTCs: and Engine out NOx sensor CAN Message 3 Enabled and ignition on	= TRUE - = see sheet inhibit tables = TRUE - = TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	
		Detects a failure when a certain number of Engine Out NOx sensor heater messages within a defined message group checksum or rolling count values are incorrect	Error count for engine out NOx heater signal message group	>= 8 counts	Engine out NOx sensor CAN Message 4 Received and	= TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
					and			
					Engine out NOx sensor CAN Message 4 Enabled	= TRUE -		
					and			
					ignition on	= TRUE -		
		Engine out NOx sensor CAN message #5 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 25 counts	Can Bus Initialized (CAN Bus is Active)		fault exists for more than 20 seconds ; monitor runs every 0.1 s whenever enable conditions are met.	
					consisting of:			
					ignition	= TRUE -		
					for			
					time	3.00 sec		
					battery voltage	> 11.00 V		
					battery voltage	< 27 V		
Lost Communication with NOx Bank 1 Sensor 2	U029E	Detects a failure when a certain number of Post Catalyst NOx sensor relative NOx concentration messages within a defined message group checksum or rolling count values are incorrect	Error count for post catalyst NOx sensor relative NOx concentration message group	>= 8 counts	Post Catalyst NOx sensor CAN Message 1 Received	= TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	B
					and			
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
					and			
					NOx sensor CAN Message 1 Enabled	= TRUE -		
					and			
					ignition	= TRUE -		
		Detects a failure when a certain number of Post Catalyst NOx sensor linear lambda messages within a defined message group checksum or rolling count values are incorrect	Error count for post catalyst NOx sensor status message group	>= 8 counts	Post Catalyst NOx sensor CAN Message 1 Received	= TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	
					and			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
					and			
					NOx sensor CAN Message 1 Enabled	= TRUE -		
					and			
					ignition	= TRUE -		
		Post Catalyst NOx sensor CAN message #1 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 5 counts	Can Bus Initialized (CAN Bus is Active)		fault exists for more than 21 seconds ; monitor runs every 0.005 s whenever enable conditions are met.	
					consisting of:			
					ignition	= TRUE -		
					for			
					time	>= 3.00 sec		
					battery voltage	> 11.00 V		
					battery voltage	< 27 V		
		Detects a failure when a certain number of Post Catalyst NOx sensor error messages within a defined message group checksum or rolling count values are incorrect	Error count for post catalyst NOx sensor error status message group	>= 8 counts	Post Catalyst NOx sensor CAN Message 2 Received	= TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	
					and			
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
					and			
					NOx sensor CAN Message 2 Enabled	= TRUE -		
					and			
					ignition	= TRUE -		
		Detects a failure when a certain number of Post Catalyst NOx sensor linear lambda messages within a defined message group	Error count for post catalyst NOx linear lambda signal message group	>= 8 counts	Post Catalyst NOx sensor CAN Message 2 Received	= TRUE -	fault exists for 1 message group ; monitor runs whenever enable	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
		~~within a defined message group~~ checksum or rolling count values are incorrect			and NO Pending or Confirmed DTCs: and NOx sensor CAN Message 2 Enabled and ignition	 = see sheet inhibit tables - = TRUE - = TRUE -	~~whenever enable~~ conditions are met.	
		NOx Sensor CAN Message #2 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 5 counts	Can Bus Initialized (CAN Bus is Active) consisting of: ignition for time battery voltage battery voltage	 = TRUE - 3.00 sec > 11.00 V < 27 V	fault exists for more than 21seconds ; monitor runs every 0.005 s whenever enable conditions are met.	
		Post Catalyst NOx sensor CAN message #3 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 5 counts	Can Bus Initialized (CAN Bus is Active) consisting of: ignition for time battery voltage battery voltage	 = TRUE - 3.00 sec > 11.00 V < 27 V	fault exists for more than 21 seconds ; monitor runs every 0.005 s whenever enable conditions are met.	
		Detects a failure when a certain number of Post Catalyst NOx sensor binary lambda messages within a defined message group checksum or rolling count values are incorrect	Error count for post catalyst NOx binary lambda signal message group	>= 8 counts	Post Catalyst NOx sensor CAN Message 3 Received	= TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					and NO Pending or Confirmed DTCs: and NOx sensor CAN Message 3 Enabled and ignition on	= see sheet inhibit tables - = TRUE - = TRUE -		
		Detects a failure when a certain number of Post Catalyst NOx sensor oxygen concentration messages within a defined message group checksum or rolling count values are incorrect	Error count for post catalyst NOx oxygen concentration signal message group	>= 8 counts	Post Catalyst NOx sensor CAN Message 3 Received and NO Pending or Confirmed DTCs: and NOx sensor CAN Message 3 Enabled and ignition on	= TRUE - = see sheet inhibit tables - = TRUE - = TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	
		Post Catalyst NOx sensor CAN message #4 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 25 counts	Can Bus Initialized (CAN Bus is Active) consisting of: ignition for time battery voltage battery voltage	= TRUE - 3.00 sec > 11.00 V < 27 V	fault exists for more than 21 seconds ; monitor runs every 0.005 s whenever enable conditions are met.	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
		Detects a failure when a certain number of Post Catalyst NOx sensor heater messages within a defined message group checksum or rolling count values are incorrect	Error count for post catalyst NOx heater signal message group	>= 8 counts	Post Catalyst NOx sensor CAN Message 4 Received and NO Pending or Confirmed DTCs: and NOx sensor CAN Message 4 Enabled and ignition on	= TRUE - = see sheet inhibit tables - = TRUE - = TRUE -	fault exists for 1 message group ; monitor runs whenever enable conditions are met.	
		Post Catalyst NOx sensor CAN message #5 frame not received after the specified number of times	counts up when message is not received in the base time interval	> 25 counts	Can Bus Initialized (CAN Bus is Active) consisting of: ignition for time battery voltage battery voltage	 = TRUE - 3.00 sec > 11.00 V < 27 V	fault exists for more than 21 seconds ; monitor runs every 0.1 s whenever enable conditions are met.	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Glow Plug switch defect and open	P064C	Electronic circuitry determines fault with GP switch	Glow Plug Current and Glow plug is commanded and voltage at glow plug	< 6.6 A = On = 0 volts	glow plugs are commanded on DTCs P163E, P163C, P0671-P0678	= True Not set	500ms (Internal) + 75% failure rate over 4 seconds. (Same as x out of y 75% failure out of 4 sec of sample time ie out of 8 samples 6 must fail to log a failure)	B
ROM error		Checksum error between calculated and stored values are compared	Checksums match	= NO -	Module power	= On	1.5 seconds (internal)+75% failure rate over 4 seconds.	B
RAM error		Compariarson of read write values	Read write values match	= NO -	Module power	= On	200ms (internal) + 75% failure rate over 4 seconds.	B
EEPROM error		Checksum error between calculated and stored values	Checksums match	= NO -	Module power	= On	200ms (internal) + 75% failure rate over 4 seconds.	B
Charge Pump Under Voltage		measured voltage of charge pump is determined to be out of tolerance	Charge Pump Voltage	<= Battery voltage at GPCM + 7 volts	Battery voltage at GPCM	> 6 volts	130ms (internal) + 75% failure rate over 4 seconds.	B
Charge Pump Over Voltage		measured voltage of charge pump is determined to be out of tolerance	Charge Pump Voltage	>= Battery voltage at GPCM + 18 volts	Battery	< 19.9 volts	160ms (internal) + 75% failure rate over 4 seconds.	B
GPCM reverse polarity switch "high voltage drop"		Elecrtonic circuitry determines that the reverse polarity protection voltage drop is in range	Path 1 [Battery voltage at GPCM - mean glow plug voltage value] Path 2 (Battery voltage at GPCM - mean glow plug voltage value with charge pump off) - (Battery - mean glow plug voltage value with charge pump on) ie. delta from charge pump on to charge p	> 2.3 volts < 300 mvolts	glow plugs are commanded Battery voltage at GPCM GP current GP current P0671,P0672, P0675, P0676 Battery voltage at GPCM stable for 30ms	= On > 6 volts > 6 amps < 60 amps = Not set < 2 volts	path1 6000ms, path2 10 seconds + 75% failure rate over 4 seconds.	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
GPCM running reset		Internal and external Watchdogs are monitored for interuption Monitor for undefined instruction code interupt Monitor for osolation stop detection	number of running resets or undefined instruction code detected or Osolation stop detection	> 9 events in a row	none		2 seconds (internal) + 75% failure rate over 4 seconds.	B
difference between internal and external value of battery voltage too high		GMLAN Battery voltage from ECM is compared to GPCM internal measured battery voltage	abs[GPCM internal measured battery voltage - GMLAN Battery voltage]	'> 3 volts	glow plugs are commanded GMLAN battery signal glow command message Battery voltage at GPCM RPM RPM	= On = valid = valid > 6 volts <= 10 <= 400	190ms (internal) + 75% failure rate over 4 seconds.	B
system basic chip VSUPLOW		monitor internal chip supply voltage	internal chip supply voltage	< = 5.8 volts	Intake Air Heater commanded Battery supply at GPCM	= On > 9 volts	130ms (internal) + 75% failure rate over 4 seconds.	B
system basic chip (SBC) over temperature		measure temperature of the SBC	temperature of the high side switch inside the SBC	> 155 degC	Internal GPCM temperature	< 100 deg C	130ms (internal) + 75% failure rate over 4 seconds.	B
NOx sensor power supply fault		Electronic circuitry detects a failure in the NOx sensor power supply	Path1: DC/DC booster current. For Path 2: DC/DC booster current. Path 3: Voltage at main switch Path 4: (DC/DC Booster voltage - GPCM battery voltage)	> 25 amps > 640 msec > > 60 amps by hardware protection (time varies with temperature) amps = volts = 0 volts ± 3	Battery voltage at the GPCM Battery voltage at the GPCM	> 6 volts = 8 to 14 volts	6 seconds (internal) + 75% failure rate over 4 seconds.	B
DEF heater current not calibrated.		Checksum error between calculated and stored values	Checksums match	= No	Ignition on		200ms (internal) + 75% failure rate over 4 seconds.	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
glow plug open	P0671-P0678	Electronic circuitry determines a fault exists on GP circuit	Glow Plug Current and Voltage at glow plug pin	< 4.25 A and > 6.0 Volt	Ignition - glow plugs are commanded on P163E,P163D,P163C Supply voltage	= On > 5 secs not set > 6 volts	130ms (internal) + 66% failure rate over 1.5 seconds.	B
glow plug short		Electronic circuitry determines a fault exists on GP circuit	Path 1: Glow Plug Current Path 2: Hardware over current	> 60 A > 80 A	Ignition glow plug command over temperature condition over voltage condition abs[Battery supply at GPCM - IGN voltage at GPCM]	= on = on = false = false < 6.0 Volts	Condition 1 : 130ms, Condition 2: 260ms (internal) + 66%failure over 1.5 seconds.	B
glow plug high resistance		Electronic circuitry determines a fault exists on GP circuit	Glow Plug Resistance AND Glow Plug Current	> 1.0 Ohm >= 4.25 A	Ignition on Battery voltage at GPCM glow plugs are commanded on over temperature condition over voltage condition abs[Battery supply at GPCM - IGN voltage at GPCM]	= on > 7.0 volts = on = false false < 7.0 volts	160ms (internal) + 66% failure over 1.5 seconds.	B
Glow plug low resistance		Electronic circuitry determines a fault exists on GP circuit	Glow Plug Resistance	< 250 mOhm	glow plugs are commanded on over temperature condition over voltage condition- abs[Battery supply at GPCM - IGN voltage at GPCM]	= on = false = false < 7.0 volts	160ms (internal) + 66% failure over 1.5 seconds.	B
Engine Calibration Information Not Programmed – GPCM	P160C	ECM monitors serial data from GPCM for P160C Error Message indicating GPCM is not programmed with injector trim values.	Glow Plug Control Module determines IQA data has not been programmed in the GPCM		Ignition	ON	200ms (internal) + 66% failure over 1.5 seconds.	A

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Intake Air (IA) Heater Feedback Circuit	P154A	Electronic GPCM circuitry determines if faults related to the IA heater feedback circuit exist.	PATH1: IAH indicates its state is AND IAH current OR PATH2: IAH indicates its state is	OFF > 20 A = ON	DTCs not active Path1 IAH Commanded and Battery Voltage at IAH OR Path2 IAH Commanded	P0640, P154B, P154D, = P154C, > P166B volts ON 8.6 = OFF	650ms (internal) + 75% failure over 4 seconds.	B
Intake Air (IA) Heater Voltage Signal Circuit	P154B	Electronic GPCM circuitry determines if faults related to the voltage level present at the IA heater exist.	PATH1: IAH Battery voltage AND GPCM Battery Voltage GPCM Battery Voltage OR PATH2: Voltage signal line IAH Battery voltage OR PATH3: IAH Battery voltage AND GPCM IGN voltage AND GPCM Battery Voltage IAH Battery voltage	> 16.0 Volt > 9.5 volts < 14.0 Volt > 1.5 Volt < 6.9 Volt > 6.9 Volt < 16.0 volt > 9.5 Volt	DTCs not active Path 1 IAH Commanded Path 2 IAH Commanded Path 3 DTCs not active IAH Commanded	P0640, P154D, = P154C, P166B ON = OFF for more then 65 msec = P064C, P154D, P154C, P166B ON	1s (internal) + 75% failure over 4 seconds.	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Intake Air (IA) Heater Current Signal Circuit	P154C	Electronic GPCM circuitry determines if faults related to the IA heater current signal circuit or heater grid exist.	PATH1: IAH current IAH voltage signal feedback to GPCM	< 20 Amps > 0.9 Volts	DTC's are not set IAH Commanded Battery Voltage at IAH GPCM Ignition voltage	P154B, P154D, = P0640, > P0154A Volt >= ON Volt 6.9	up to 5000ms (internal) + 75% failure over 4 seconds.	B
					or	6.9		
			or					
			PATH2: IAH current IAH voltage signal feedback to GPCM	< 20 Amps < 0.9 Volts	DTC's are not set IAH Commanded Battery Voltage at IAH GPCM Ignition voltage	= P154B, > P154D, Volt >= P0640, Volt P0154A		
					or	ON		
			or	> 4.96 Volts	IAH Command	= 6.9		
			PATH3:IAH current signal feedback to GPCM		or			
						off		
			or	> 20 A > 500 mOhm	DTC's are not set IAH Commanded Battery Voltage at IAH	= > Volt		
			PATH 4:IAH grid current IAH heater grid calculated resistance			P154B, P154D, P0640, P0154A ON		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Intake Air (IA) Heater Temperature Signal Circuit	P154D	Electronic GPCM circuitry determines if faults related to the temperature feedback circuit of the IA heater exist.	PATH1: IAH temperature signal feedback line	< 0.156 Volt	DTC's are not set	P154B, P0640, P0154A,	650ms (internal) + 75% failure over 4 seconds.	B
					IAH Commanded	= P154C,		
					Battery Voltage at IAH	> P166B Volts		
					PWM IAH	> ON %		
					IAH running time	> 11.0 minutes		
						90.0		
					or	2		
			or					
				< -20 °C	DTC's are not set			
			PATH2: IAH temperature					
			AND	> +20 °C		P154B,		
			GMLAN signal		IAH Commanded	= P0640,		
			"IntakeAirTemperature"		Battery Voltage at IAH	> P0154A, Volts		
					Engine General Status (engine	= P154C,		
					sensor info)	= P166B		
					IntakeAirtemperature message	ON		
					from ECM	11.0		
						valid		
						valid		
			or	= Open	or	=		
						=		
			PATH3:IAH temperature signal		IAH Commanded			
			feedback line		act			
				> 4.96 Volt		OFF		
			or			ON		
			PATH4: IAH temperature signal					
			feedback line			=		
						> P154B, Volts		
						< P0640, Volts		
						P0154A,		
						P154C,		
						P166B		
						ON		
						6.0		
Intake Air (IA) Heater Switch/Control Circuit	P0640	Electronic GPCM circuitry determines if faults related to the control circuit of the IA heater exist.	Activation Reply signal (digital response) from IAH	= high when heartbeat signal is activated	DTC's are not set	P154A	2000ms (internal) + 75% failure over 4 seconds.	B
					IAH Commanded	= OFF		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Intake Air (IA) Heater Over Temperature	P166B	ECM monitors serial data from GPCM for P166B Error Message indicating GPCM detects IAH overtemperature	Internal Temperature of IAH module	> 80 °C	DTC's are not set IAH Commanded engine run time Battery Voltage at IAH	P154B,P 154C, = P0640, > P154D sec < ON Volt 40 sec 6.9 Volt	650ms (internal) + 75% failure over 4 seconds.	B
Glow Plug Control Module Not Programed	P161A	ECM monitors serial data from GPCM for P161A. GPCM is configured as service part by calibration parameter	Glow Plug Control Module determines settings of configuration parameter located in calibration data set		IGNITION	= ON	200ms (internal) + 75% failure over 4.0 seconds.	B
Glow Plug Module Primary Circuit	P163C	Electronic GPCM circuitry determines the voltage supply to GPCM is out of range	PATH 1: Voltage supply to the GPCM or PATH 2: Voltage supply to GPCM or PATH 3: (IGN - Voltage supply to GPCM) or PATH 4: (ECM reported voltage via CAN - Voltage supply to GPCM)	> 16.5 Volt < 6.0 volts > +/-5 volts > +/-3 volts	GPCM Ignition voltage or GPCM Ignition voltage or GPCM Voltage supply GPCM Ignition Voltage or GPCM supply voltage Engine speed	> 9.0 Volts < 14 Volts > 9.0 Volts < 16 Volts > 6.0 Volt > 4.0 Volt > 6 volts 10< rpm >400	1000ms (internal) + 75% failure over 4.0 seconds.	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Glow Plug Module Secondary Circuit	P163D	Electronic GPCM circuitry determines serveral signal voltage levels to GPCM are out of range	Path 1 glow plug activation request from ECM or Path 2: Electronic circuitry determines voltage at glow plug pin or Path 3: [GPCM ground - GP ground]	= ON > 6.0 Volt > 1.5 Volts	Path 1: Key state (Ign 1) or Path 2 GP commanded or Path 3 GP commanded DTCs not set IAH dutycycle	= OFF or = Off or = ON P0671,P0675 = 0 or 100 %	1000ms (internal) + 75% failure over 4.0 seconds.	B
Glow Plug Module Overtemperature	P163E	ECM monitors serial data from GPCM for P163E Error Message indicating GPCM detects GPCM overtemperature	GPCM Temperature	> 85 °C	GMLAN signal "coolant temperature"	< 60 °C	650ms (internal) + 75% failure over 4.0 seconds.	B
Reductant Heater 1 Control Circuit	P20B9	ECM monitors serial data from GPCM for P20B9 Error Message indicating GPCM detects reductant heater not connected to GPCM or an interruption	Active test function; Connected heater must discharge internal capicitor. Voltage at capacitor checked by GPCM		DTCs not set: P220B reductan heater commanded: = ON GPCM temperature < 123 °C GPCM battery supply voltage > 7.0 Volts and < 16.0 Volts		3440ms (internal) + 50% failure over 1.0 seconds.	B
Reductant Heater 1 Control Circuit Low Voltage	P20BB	ECM monitors serial data from GPCM for P20BB Error Message indicating GPCM detects reductant heater output shorted to ground or an overload condition	Path 1: Glow Plug Current or Path 2: Hardware over current	> 25 A or > 80 A	reductan heater commanded: = ON GPCM temperature < 123 °C GPCM Battery supply voltage > 7.0 Volts < 16.5 Volts or or reductan heater commanded: = ON GPCM temperature < 123 °C GPCM Battery supply voltage > 7.0 Volts < 16.5 Volts		1000ms (internal) + 50% failure over 1.0 seconds.	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Reductant Heater 1 Control Circuit High Voltage	P20BC	ECM monitors serial data from GPCM for P20BC Error Message indicating GPCM detects reductant heater to be shorted to battery	Electronic circuitry determines voltage at reductant heater pin	> 3.5 volts	reductan heater commanded:	= OFF	2000ms (internal) + 50% failure over 1.0 seconds.	B
Reductant Heater 2 Control Circuit	P20BD	ECM monitors serial data from GPCM for P20BD Error Message indicating GPCM detects reductant heater not connected to GPCM or an interruption	Active test function; Connected heater must discharge internal capicitor. Voltage at capacitor checked by GPCM		DTCs not set: P20BF reductan heater commanded: = ON GPCM temperature < 123 °C GPCM battery supply voltage > 7.0 Volts and < 16.0 Volts		3440ms (internal) + 50% failure over 1.0 seconds.	B
Reductant Heater 2 Control Circuit Low Voltage	P20BF	ECM monitors serial data from GPCM for P20BF Error Message indicating GPCM detects reductant heater output shorted to ground or an overload condition	Path 1: Reductant Heater Plug Current or Path 2: Hardware over current	> 25 A or > 80 A	reductan heater commanded: = ON GPCM temperature < 123 °C GPCM supply voltage KL30 > 7.0 Volts < 16.5 Volts or reductan heater commanded: = ON GPCM temperature < 123 °C GPCM supply voltage KL30 > 7.0 Volts < 16.5 Volts	or or or	1000ms (internal) + 50% failure over 1.0 seconds.	B
Reductant Heater 2 Control Circuit High Voltage	P20C0	ECM monitors serial data from GPCM for P20C0 Error Message indicating GPCM detects reductant heater to be shorted to battery	Electronic circuitry determines voltage at reductant heater pin	> 3.5 volts	reductan heater commanded:	= OFF	2000ms (internal) + 50% failure over 1.0 seconds.	B
Reductant Heater 3 Control Circuit	P20C1	ECM monitors serial data from GPCM for P20C1 Error Message indicating GPCM detects reductant heater not connected to GPCM or an interruption	Active test function; Connected heater must discharge internal capicitor. Voltage at capacitor checked by GPCM		DTCs not set: P20C3 reductan heater commanded: = ON GPCM temperature < 123 °C GPCM battery supply voltage > 7.0 Volts and < 16.0 Volts		3440ms (internal) + 50% failure over 1.0 seconds.	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Reductant Heater 3 Control Circuit Low Voltage	P20C3	ECM monitors serial data from GPCM for P20C3 Error Message indicating GPCM detects reductant heater output shorted to ground or an overload condition	Path 1: Glow Plug Current or Path 2: Hardware over current	> 25 A or > 80 A	reductan heater commanded: GPCM temperature GPCM supply voltage KL30 or reductan heater commanded: GPCM temperature GPCM supply voltage KL30	= ON < 123 °C > 7.0 Volts < 16.5 Volts or or or = ON < 123 °C > 7.0 Volts < 16.5 Volts	1000ms (internal) + 50% failure over 1.0 seconds.	B
Reductant Heater 3 Control Circuit High Voltage	P20C4	ECM monitors serial data from GPCM for P20C4 Error Message indicating GPCM detects reductant heater to be shorted to battery	Electronic circuitry determines voltage at reductant heater pin	> 3.5 volts	reductan heater commanded:	= OFF	2000ms (internal) + 50% failure over 1.0 seconds.	B
Nox Sensor Supply Voltage Circuit Bank 1 Sensor 1	P220A	ECM monitors serial data from GPCM for P220A Error Message indicating GPCM detects DC/DC booster output shorted to ground or shorted to battery	PATH 1:GPCM Electronic circuitry determines voltage at DC/DC booster output pin or PATH 2: DC/DC booster output current duration or PATH 3: DC/DC booster output current duration	> 5.0 Volt or > 5.0 A > 10 ms or > 37.5 A > 20 µs	status DC/DC booster or status DC/DC booster or status Dc/DC booster	= OFF, power up procedur e has started after reset = ON = ON	5000ms (internal) + 50% failure over 1.0 seconds.	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Nox Sensor Supply Voltage Circuit Bank 1 Sensor 2	P220B	ECM monitors serial data from GPCM for P220B Error Message indicating GPCM detects DC/DC booster output shorted to ground or shorted to battery	PATH 1:Electronic circuitry determines voltage at DC/DC booster output pin or PATH 2: DC/DC booster output current duration or PATH 3: DC/DC booster output current duration	> 5.0 Volt > 5.0 A > 10 ms > 37.5 A > 20 µs	status DC/DC booster or status DC/DC booster or status Dc/DC booster	= OFF, power up procedur e has started after reset = or ON = or ON	5000ms (internal) + 50% failure over 1.0 seconds.	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Primary Fuel Sensor Performance	P0461	Detects an error in the primary fuel tank sensor performance by comparing the decrease of the fuel level for a certain driven mileage to a threshold.	(a) - (b) with (a) total vehicle distance and with (b) change in mileage and (c) - (d) with (c) maximum volume of fuel reached in primary tank during driving cycle and with (c) minimum volume of fuel reached in primary tank during driving cycle	>= 100 miles = measured parameter - = measured parameter - < 4.21 % = measured parameter - = measured parameter -	engine speed (see Look-Up-Table #1) for time and diagnosis tester and fuel transfer pump active means (filtered fuel volume in primary tank and filtered fuel volume in secondary tank for time and cumulative transfer pump on time in current ignition cycle) and fuel level zone 3 means (filtered fuel volume in primary tank and filtered fuel volume in secondary tank) or fuel level zone 4 means	> 475 to 830 rpm >= 60 sec = FALSE - = FALSE - > 83.16 % < 6.62 % >= 300 sec > 32767 sec = TRUE - < 93.58 % > 1.32 % = TRUE -	fail conditions exists for 0.02 s monitor runs 0.02 s rate whenever enable conditions are met	B

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					(			
					filtered fuel volume in primary tank	< 93.5789 %		
					and			
					filtered fuel volume in secondary tank	<= 1.3245 %		
					)			
					and			
					basic enable conditions met:	= see sheet enable tables -		
					and			
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
Secondary Fuel Sensor Performance	P2066	Detects an error in the secondary fuel tank sensor performance by comparing the decrease of the fuel level for a certain driven mileage to a threshold.	(a) - (b)	< 100 miles	engine speed (see Look-Up-Table #1)	> 475 to 830 rpm	fail conditions exists for 0.02 s monitor runs 0.02 s rate whenever enable conditions are met	B
			with		for			
			(a) total vehicle distance		time	>= 60 sec		
			and with		and			
			(b) change in mileage		diagnosis tester	= FALSE -		
			and		and			
			(c) - (d)	< 2.65 %	fuel transfer pump active	= FALSE -		
			with		means			
			(c) maximum volume of fuel reached in secondary tank during driving cycle		(			
			and with		(			
			(d) minimum volume of fuel reached in secondary tank during driving cycle		filtered fuel volume in primary tank	> 83.16 %		
			and		or			
			filtered fuel volume in secondary tank	> 0 %	filtered fuel volume in secondary tank	< 6.62 %		
					for			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					time > 300 sec and cumulative transfer pump on time in current ignition cycle > 32767 sec) and fuel level zone 1 means (filtered fuel volume in primary tank >= 93.58 % and filtered fuel volume in secondary tank >= 1.32 %) and basic enable conditions met: = see sheet enable tables - and NO Pending or Confirmed DTCs: = see sheet inhibit tables -		
Power Take Off CAN Communication	P1598	If the number of communication errors in a calibrated number of frames exceeds a threshold a permanent error is detected	Number of errors in window	>= 4 counts	Number of frames received >= 10 counts Can Bus Initialized consisting of: ignition = TRUE - for time > 3 sec battery voltage > 9.8 V battery voltage < 655.35 V		immediately test performed continuously	Special C

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE			SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
Turbocharger Vane Position Slow Response - Increasing Position	P168D	Detects slow responding turbo charger vanes. Actual positional readings are compared to desired values.	average negative gradient of the turbocharger vane commanded position - calculated by accumulating deviation between desired and actual value of vane position over a calibrated sampling time	>=	9.9976	%	(				fail conditions exists for 15 s monitor runs with 0.1 s rate whenever enable conditions are met	B
							turbocharger vane desired position gradient	>	-9.16	%/sec		
							and					
							turbocharger vane desired position gradient	<	-1.83	%/sec		
							)					
							and					
							control deviation of turbocharger vane position calculated out of difference between desired and actual value	<	0	%		
							)					
							)					
							for					
							time	>	0.05	sec		
							and					
							(					
							engine speed	>=	1000	rpm		
							and					
							engine speed	<=	3000	rpm		
							)					
							and					
							ambient pressure	>	74.8	kPa		
							and					
							engine temperature	>	69.96	°C		
							and					
							ambient air temperature	>	-7.04	°C		
							and					
							basic enable conditions met:	=	see sheet enable tables	-		
							and					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					NO Pending or Confirmed DTCs:	= see sheet inhibit tables -		
Turbocharger Vane Position Slow Response - Decreasing Position	P168C	Detects slow responding turbo charger vanes. Actual positional readings are compared to desired values.	average positive gradient of the turbocharger vane commanded position - calculated by accumulating deviation between desired and actual value of vane position over a calibrated sampling time	>= 9.9976 %	(		fail conditions exists for 15 s monitor runs with 0.1 s rate whenever enable conditions are met	B
					turbocharger vane desired position gradient	> 1.83 %/sec		
					and			
					turbocharger vane desired position gradient	< 9.16 %/sec		
					)			
					and			
					control deviation of turbocharger vane position calculated out of difference between desired and actual value	> 0 %		
					)			
					)			
					for			
					time	> 0.05 sec		
					and			
					(			
					engine speed	>= 1000 rpm		
					and			
					engine speed	<= 3000 rpm		
					)			
					and			
					ambient pressure	> 74.8 kPa		
					and			
					engine temperature	> 69.96 °C		
					and			
					ambient air temperature	> -7.04 °C		
					and			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					basic enable conditions met:	= see sheet enable tables -		
					and			
					NO Pending or Confirmed DTCs:	= see sheet enable tables -		
Fuel Transfer Pump Performance	P2636	Detects an error in the fuel tank transfer pump performance by comparing the decrease of the fuel level in both tanks.	Path 1:		(		fail conditions exists for 327 s monitor runs 0.02 s rate whenever enable conditions are met	B
			change in fuel volume in primary tank	< 0.8 l	engine speed (see Look-Up-Table #1)	> 475 to 830 rpm		
			and		and			
			change in fuel volume in secondary tank	< 0.8 l	fuel transfer pump active	= TRUE -		
			or		means			
			Path 2:		(			
			change in fuel volume in primary tank	< 0.8 l	(			
			and		filtered fuel volume in primary tank	< 72.63 %		
			change in fuel volume in secondary tank	>= 0.8 l	or			
			or		filtered fuel volume in secondary tank	> 6.62 %		
			Path 3:		and			
			change in fuel volume in primary tank	>= 0.8 l	time between activations of transfer pump	> 5 sec		
			and		and			
			change in fuel volume in secondary tank	< 0.8 l	fuel level zone 5			
					means			
					(			
					filtered fuel volume in primary tank	< 93.58 %		
					and			
					filtered fuel volume in secondary tank	> 2.11 %		
					)			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS			TIME REQUIRED	MIL ILLUM.
					)					
					vehicle speed	<=	0	mph		
					and					
					diagnosis tester	=	FALSE	-		
					and					
					NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-		
					)					
					for					
					time	>	20	sec		
					and					
					basic enable conditions met:	=	see sheet enable tables	-		

end of table

Parameter Definitions

Contains definitions of secondary parameters which are used in the parameter document.
These secondary parameters conditions are shown in the respective physical parameters which define each condition.

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
Battery Voltage		Battery Voltage Correction Factor	battery voltage correction factor = Nominal Declared Battery Voltage divided by measured battery voltage	=	13.6	V
Engine Cooling System States		Status of the Block Heater	active under following conditions (			
			engine speed	>	500	rpm
			for			
			time	>	60	sec
			and			
			(a) - (b)	<	1.8	°C
			with			
			(a) reference temperature (engine coolant temperature) captured during start	=	measured parameter	-
			and with			
			(b) engine coolant temperature value for the comparision with the reference temperature	=	measured parameter	-
			)			
		Status of Sun Load Detection	active under following condition (			
		(high thermal input from the sun which influences system behavior)	Vehicle speed	>	14.92	mph
			for			
			time	>	300	sec
			and			
			engine speed (see Look-Up-Table #15)	>	600 to 850	rpm
			for			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			time	>	600	sec
			and			
			(a) - (b)	<	4.5	°C
			with			
			(a) intake ait temperature at start	=	measured parameter	-
			and with			
			(b) minimum intake air temperature value for the comparision with the reference temperature during driving cycle	=	measured parameter	-
			)			
ECM Operating States		Engine Pre-Drive	processor operating normally	=	TRUE	-
			ignition	=	OFF	-
			processor powerup boot initialization	=	complete	-
			or			
			key off bookkeeping cleanup	=	complete	-
			(accessory, post-wake-up, pre-sleep)			
		Engine Running	ignition	=	ON	-
		(see Look-Up table #70)	engine speed	>=	100	rpm
			engine speed was at start	>	850	rpm
		Engine Post-Drive/ Afterun	processor operating normally	=	TRUE	-
		also includes	ignition	=	OFF	-
		"engine stopping"	key off bookkeeping cleanup	=	in process	-
		during engine spin down				
Engine Operating Modes	Exhaust Operating Mode focus		Normal Mode			
			Particulate Filter Regeneration Mode			
			Particulate Filter Regen Service Mode			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Exhaust Gas Temperature (Active) Management Mode	=	Warm Up or Maintain Temperature	-
			also known as			
			Engine Operating Mode	=	Exhaust Warm-up	
Exhaust Gas Recirculation (EGR)		Exhaust Gas Recirculation (EGR) Control is enabled	EGR controler is active			
			continuously with exceptions			
			for failures detected			
			EGR controler is active			
			Overrun			
			Long Idle			
			Transmission Gear Shift			
			Cold Start			
			extreme temperature or pressure			
			Critical Regeneration Modes			
			Overrun			
			Gear Shifting			
			Overlong Idle			
			permanent control deviation			
			Demand of the drift compensation			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			System error			
			Error exhaust gas recirculation valve			
			Error throttle valve			
			Engine Brake Status			
			Atmospheric pressure too low			
			Battery voltage too low			
			Switch-off coordinator			
			Environmental temperature too low			
			Environmental temperature too high			
			Engine temperature too low			
			Engine temperature too high			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Cold start			
			Injection quantity too large			
			Operating-mode coordinator			
			Rich Idle			
			External control intervention			
			Rich Idle Regen			
			Environmental Temperature too low in Regeneration			
			EGR Stroking			
			EGR controller is active in Overrun (warm exhaust system)			
			EGR controller is active in Overrun (Cold exhaust system)			
			AFS Faults			
			Request via SCR monitoring (NOx sensor plausibility check)			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Atmospheric Pressure too low in Regeneration			
			Engine Temperature too low in Regeneration			
			Engine Temperature too high in Regeneration			
Engine Position Management		Engine Position Sync Complete	synchronisation completed consisting of: crankshaft sensor pulses received camshaft sensor pulse received and aligned properly or sync via crank only invoked then crankshaft rotations	>=	4	counts
Fuel System		Fuel System is in Fuel Shut Off also known as Decel Fuel Shut Off or Over-Run	engine running required actual engine torque -	= < -	TRUE 1 -	- Nm -
		Status of Diesel Fuel Refill Detection	((			
			Filtered total fuel volume available	>	(a) + (b)	-
			(a) Amount of fuel volume change that indicates a refuelling event occurred	=	25.26	%
			(b) captured remaining diesel fuel volume under the following conditions	=	measured parameter	-
			(			
			Vehicle speed	<=	1.24	mph
			time	>	10	sec
			)			
			and			
			(			
			Vehicle speed	<=	1.24	mph
			time	>	30	sec

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			)) or at initialization of Diesel fuel level	=	TRUE	-
Idle Speed Control		Idle Speed Controller Active "normal" low idle speed governor	no overrides for: Gear-Shift Harmonization Intrusive Diagnosis Action Power Take Off or other working load handling			
		Engine Idling Time Ratio	= (time accumulated at idle divided by time since engine start)			
NOx Sensor		Status of NOx signal of upstream NOx sensor	(following condition met for time:	>	30	sec
			(Integrated heat quantity (see Look-Up-Table #1)	>=	375 to 500	kJ
			NOx status signal received via CAN message (Please see the definition)	=	TRUE	-
			for time	>	0.5	sec
			calculated lambda value based on air mass flow and injection quantity	>	0.90	-
			for time	>	0.5	sec
			engine speed	>	100	rpm
			for time	>	20	sec
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
			))			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
		Status of NOx signal of downstream NOx sensor	(			
			following condition met for time:	>	30	sec
			(			
			Integrated heat quantity (see Look-Up-Table #2)	>=	0 to 350	kJ
			NOx status signal received via CAN message (Please see the definition)	=	TRUE	-
			for time	>	0.5	sec
			calculated lambda value based on air mass flow and injection quantity	>	0.90	-
			for time	>	0.5	sec
			engine speed	>	100	rpm
			for time	>	20	sec
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
			))			
		Enabling Downstream NOx sensor heater diagnosis	(			
			SCR Catalyst downstream temperature	>=	94.96	°C
			SCR Catalyst downstream temperature	<=	3003.56	°C
			battery voltage	>=	12	V
			battery voltage	<=	655.34	V
			and			
			Integrated heat quantity (see Look-Up-Table #2)	>=	0 to 350	kJ
			for time	>	30	sec
			)			
			and			
			for time	>	1	sec
			NO Pending or Confirmed DTCs:	=	See inhibit tables	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
Rail Pressure Control System Operating States		Rail Control at ECM Start	reset condition	=	TRUE	-
			or			
			NO Pending or Confirmed DTCs:	=	See Inhibit Tables	-
		Rail Pre-Control (Just after start)	Rail Control at ECU Start	=	TRUE	
			and			
			engine speed	<=	300	rpm
			and			
			(			
			rail pressure	>=	15000	kPa
			or			
			(a) - (b)	<	5000	kPa
			(a)Fuel Rail Pressure Setpoint	=	measured paramter	-
			(b)Maximum Rail Pressure for last 10ms	=	measured paramter	-
			)			
		Rail Control - PCV Closed Loop Control Only	(			
			Rail Pressure Precontrol (Just after start)	=	TRUE	-
		PCV = Pressure Control Valve	and			
			Number of Crankshaft revolutions since entering Rail Pressure Precontrol	>=	10	revs
			)			
			or			
			(			
			state machine rail pressure control transitioning pressure control valve mode	=	TRUE	-
			and			
			setpoint volume flow of the metering unit out of rail pressure control (see Look-Up-Table #5)	>	15000 to 56000	mm^3/sec
			or			
			(			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Fuel system pressure and high pressure pump outlet	<	0	kPa
			and			
			engine status	=	RUNNING	-
			)			
		Rail Control - Metering Unit Closed Loop Control	state machine rail pressure control equal transitioning to metering unit pressure control mode	=	TRUE	-
			and			
			Controller for PCV not wound-up (large corrective control)	=	TRUE	-
		Rail Control - Metering Unit + PCV Closed Loop Control	state machine rail pressure control transitioning to coupled pressure control mode (rail pressure is controlled by metering unit and pressure control valve)	=	TRUE	-
			and			
			(a) + (b) (see Look-Up-Table #6)	<	12 to 400	mm^3/rev
			(a)Torque Generating fuel injection quantity	=	calculated parametet	-
			(b)Non-Torque generating fuel injection quantity	=	calculated parametet	-
		Switchover Between Metering Unit + PCV Closed Loop Control to Metering Unit Closed Loop Control only	(			
			state machine rail pressure control equal to pressure control valve			
			or			
			state machine rail pressure control transitioning pressure control valve mode			
			)			
			and			
			(a) + (b)	<	(c) + (d)	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			(a)Torque Generating fuel injection quantity	=	calculated parametet	-
			(b)Non-Torque generating fuel injection quantity	=	calculated parametet	-
			(c) (see Look-Up-Table #6)	=	12 to 400	mm^3/rev
			(d)	=	12	mm^3/rev
			and			
			NO Pending or Confirmed DTCs:	=	See Inhibit Tables	-
			or			
			(			
			state machine rail pressure control equal to metering unit control mode			
			or			
			state machine rail pressure control equal transitioning to metering unit pressure control mode			
			)			
			and			
			NO Pending or Confirmed DTCs:	=	See Inhibit Tables	-
			(			
			Fuel system pressure and high pressure pump outlet	<	0	kPa
			and			
			engine status	=	RUNNING	-
			)			
			)			
			and			
			NO Pending or Confirmed DTCs:	=	See Inhibit Tables	-
			)			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
		Switchover between PCV or Metering Unit closed loop control to Metering Unit + PCV Closed Loop Control	(			
			state machine rail pressure control equal to pressure control valve	=	TRUE	-
			or			
			state machine rail pressure control equal coupled pressure control (rail pressure is controlled by metering unit and pressure control valve)	=	TRUE	-
			or			
			state machine rail pressure control transitioning pressure control valve mode	=	TRUE	-
			or			
			state machine rail pressure control equal transitioning to metering unit pressure control mode	=	TRUE	-
			)			
			and			
			(			
			(			
			exhaust gas system regeneration mode	!=	REGEN	-
			)			
			and			
			NO Pending or Confirmed DTCs:	=	See Inhibit Tables	-
		Switchover Between Metering Unit + PCV Closed Loop Control to PCV Closed Loop Control only	(			
			state machine rail pressure control equals coupled pressure control (rail pressure is controlled by metering unit and pressure control valve)	=	TRUE	
			or			
			state machine rail pressure control transitioning to coupled pressure control mode (rail pressure is controlled by metering unit and pressure control valve)	=	TRUE	

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			)			
			and			
			(a) + (b) (see Look-Up-Table #6)	<	12 to 400	mm^3/rev
			(a)Torque Generating fuel injection quantity	=	calculated parametet	-
			(b)Non-Torque generating fuel injection quantity	=	calculated parametet	-
Regeneration of the Diesel Particulate Filter		Status thermal regeneration active				
			Reduced particle mass flow in simulation by thermal regeneration			
			(a) * (b) * (c)	>	0	-
			(a) Correction factor for thermical soot burn-out dependent on on lambda and oxygen mass flow (see Look-Up-Table #4)	=	0 to 2.662598	factor
			(b) Effect of temperature on regenerated particle mass	=	1	-
			(c) Basis value of produced soot mass flow dependent on actual soot mass (see Look-Up-Table #3)	=	0.020 to 0.240	g/s
SCR System	NOx Control System Reductant Dosing Strategy Active State	Release of dosing of the dosing strategy	status of SCR control state (please see the defintion)	=	Metering Control	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Reductant dosing is released	=	TRUE	-
			Deactivation of dosing to execute the NOx Offset test (Please see the definition)	=	FALSE	-
			since start for time	>=	0.02	sec
			gradient of exhaust gas temperature	<=	300	°C/s
			since start for time	>=	0.01	sec
			Average temperature inside the SCR catalyst:	>	179.96	°C
			SCR catalyst wall temperature	>	89.96	°C
			Vehicle speed	>=	-0.6215	mph
			engine speed	>	400	rpm
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
	NOx Control System Reductant Dosing Pressure Control System States	Standby state	ignition	=	on	-
			Dwell time in the state of standby	<	10	sec
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
		No Pressure control state	ignition	=	on	-
			Dwell time in the state of standby	>=	10	sec
			Dwell time in the state of no pressure control	<	2	sec
			state of SCR pressure build up (please see the definition)	=	Exited with no fault	-
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
		Pressure control state	ignition	=	on	-
			engine speed	>	550	rpm
			Dwell time in the state of no pressure control	>=	2	sec
			exhaust gas temperature Upstream SCR	>=	169.96	°C
			Reductant Defrost check (please see the definition)	=	TRUE	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			The component protection release of the heater control (please see the definition)	=	TRUE	-
			Preliminary release of the heater control for the main state machine (please see the definition)	=	TRUE	-
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
		Refill substate of Pressure control state	status of SCR control state (please see the defintion)	=	Pressure Control	-
			(			
			Reductant filling state in the pressure line	<	80	%
			and			
			Reductant Pump Module Pressure	<	200	kPa
			)			
			Set-point dutycycle for Reductant dosing valve	=	100	%
			Set-point dutycycle for the Reductant Pump pressure Motor actuator	=	80.0049	%
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
		Pressure build up substate of Pressure control state	status of SCR control state (please see the defintion)	=	Pressure Control	-
			(			
			Reductant filling state in the pressure line	>=	80	%
			or			
			Reductant Pump Module Pressure	>=	200	kPa
			)			
			Reductant Pump Module Pressure	<	350	kPa
			Set-point dutycycle for Reductant dosing valve	=	0	%
			Set-point dutycycle for the Reductant Pump pressure Motor actuator	=	80.0049	%
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
		Metering control substate of Pressure control state	status of SCR control state (please see the defintion)	=	Pressure Control	-
			Reductant Pump Module Pressure	>=	350	kPa
			Set-point dutycycle for Reductant dosing valve	=	0	%
			Set-point dutycycle for the Reductant Pump pressure Motor actuator	=	80.0049	%
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
		Ventilation substate of Pressure control state				
			status of SCR control state (please see the defintion)	=	Pressure Control	-
			Reductant Pump Module Pressure	<	350	kPa
			Dwell time in Pressure Build up substate	>	6	sec
			system pressurizes in pressure buildup and ventilation states	<	15.0	counts
			Set-point dutycycle for Reductant dosing valve	=	100	%
			Set-point dutycycle for the Reductant Pump pressure Motor actuator	=	80.0049	%
			Dwell time in the sub state ventilation	<	0.23	sec
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
		Pressure reduction state				
			ignition	=	off	-
			dwell time in the state of pressure reduction	<	5	sec
			Activation state of Reductant reverting valve power stage	=	On	-
			Set-point dutycycle for Reductant dosing valve	=	0	%
			Set-point dutycycle for the Reductant Pump pressure Motor actuator	=	15.0024	%
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
	SCR Engine State required for operation	SCR Engine State	Ignition	=	TRUE	-
			engine speed	>	550	rpm
	Reductant Dosing Strategy based on DPF Fload	Status fill level decrease (please see the definition)				
			Particulate Filter Regeneration demand on	=	TRUE	-
			or			
			Reductant fill level of the SCR catalyst lowed to the target value under Particle filter Regeneration request			
			(a) - (b)	>=	0	-
			(a) Nominal value of Reductant fill level in the catalyst			
			(b) Estimated current Reductant load			
			(c) Reductant Dosing quantity limitation	=	100	factor
			or			
			SCR catalyst temperature too high to convert Reductant under Particle filter Regeneration request			
			Average temperature inside the SCR catalyst:	>	999.96	°C
	NOx Reduction State Machine upstream of Reducing Catalyst	NOxDs_State_0 : starting state and waiting for low upstream NOx mass flow / concentration				
			for time	<	4.1	sec
			(			
			Release for Downstream NOx sensor peak monitoring	=	TRUE	-
			Filtered upstream NOx mass flow	<	0.0098	g/s
			Filtered NOx concentration	<	200	ppm
			Exhaust mass flow message	<	25	g/s
			)			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
		NOxDs_State_1 : low upstream NOx mass flow /concentration reached				
			for time	>	4.1	sec
			(			
			Old state of state machine of Downstream NOx sensor peak monitoring (please see the definition)	=	NOxDs_State_0	-
			Release for Downstream NOx sensor peak monitoring	=	TRUE	-
			Filtered upstream NOx mass flow	<	0.0098	g/s
			Filtered NOx concentration	<	200	ppm
			Exhaust mass flow message	<	25	g/s
			)			
		NOxDs_State_2 : start Upstream NOx peak				
			Old state of state machine of Downstream NOx sensor peak monitoring (please see the definition)	=	NOxDs_State_1	
			for time	<	1	sec
			(			
			Filtered upstream NOx mass flow	>=	0.0098	g/s
			or			
			Filtered NOx concentration	>=	200	ppm
			or			
			Exhaust mass flow message	>=	25	g/s
			)			
		NOxDs_State_3 : Upstream NOx peak detection				
			Old state of state machine of Downstream NOx sensor peak monitoring (please see the definition)	=	NOxDs_State_2	-
			for time	>	1	sec

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
		NOxDs_State_4 : delay for downstream NOx peak evaluation				
			Old state of state machine of Downstream NOx sensor peak monitoring (please see the definition)	=	NOxDs_State_3	-
			for time	>	3	sec
		NOxDs_State_5 : end of downstream NOx peak and evaluation				
			Old state of state machine of Downstream NOx sensor peak monitoring (please see the definition)	=	NOxDs_State_4	-
			for time	>	0.5	sec
	Reductant Heater and Defrost System Control States and Status					
		Reductant Defrost check	status of reductant tank heater temperature (please see the definition)	=	TRUE	-
			State of the defrosting check of pressure line (please see the definition)	=	TRUE	-
			State of the defrosting check of supply module (please see the definition)	=	TRUE	-
			(			
			duration, for which the conditions for a hydraulic release reset of pressure line heater circuit are satisfied	<=	1200	sec
			ambient temperature	>	-4.04	°C
			Release heater pressure line	=	FALSE	-
			and			
			duration, for which the conditions for a hydraulic release reset of supply module heater circuit are satisfied	<=	1200	sec
			ambient temperature	>	-4.04	°C
			Release heater supply module	=	FALSE	-
			)			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
		Status of reductant tank heater temperature	**status of reductant tank heater temperature (please see the definition)**			
			Reductant tank heat temperature at Standby state	>	4.96	°C
			or			
			Engine off Time	>	7200	sec
			Reductant tank heat temperature at Standby state	>	-9.04	°C
		State of the defrosting check of pressure line	**State of the defrosting check of pressure line (please see the definition)**			
			time since pressue line heating on under pressure line defrost mode	>=	0 to 300	sec
			or			
			status of SCR control state (please see the defintion)	=	No Pressure Control	-
			Pressure line defrost timer	=	0	sec
			or			
			ignition	=	on	sec
			engine speed	>	550	rpm
			(			
			Pressure line defrost check in last driving cycle	=	TRUE	-
			status of SCR control state (please see the defintion)	=	No Pressure Control	-
			Engine off Time	<	0	sec
			NO Pending or Confirmed DTCs:	=	TRUE	-
		State of the defrosting check of supply module	**State of the defrosting check of supply module (please see the definition)**			
			time since supply moduel heating on under supply module defrost mode	>=	0 to 300	sec
			or			
			status of SCR control state (please see the defintion)	=	No Pressure Control	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Supply module defrost timer	=	0	sec
			or			
			ignition	=	on	sec
			engine speed	>	550	rpm
			(			
			Pressure line defrost check in last driving cycle	=	TRUE	-
			status of SCR control state (please see the defintion)	=	No Pressure Control	-
			Engine off Time	<	0	sec
			NO Pending or Confirmed DTCs:	=	TRUE	-
		The component protection release of the heater control	Current time for heating / not heating of heater circuit 1 (tank)	>=	0 to 1500	sec
			Reductant Defrost check (please see the definition)	=	FALSE	-
		Preliminary release of the heater control for the main state machine	Preliminary release of the heater control for the main state machine (please see the definition)			
			(			
			Current time for heating / not heating of heater circuit 1 (tank)	>=	0 to 3276	sec
			status of reductant tank heater defrost	=	FALSE	-
			status of reductant tank heater temperature (please see the definition)	=	FALSE	-
			State of the defrosting check of pressure line (please see the definition)	=	TRUE	-
			State of the defrosting check of supply module (please see the definition)	=	TRUE	-
			)			
			or			
			(			
			ignition	=	on	sec
			engine speed	>	550	rpm
			Engine off Time	<=	0	sec

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			State of the defrosting check of pressure line (please see the definition)	=	TRUE	-
			State of the defrosting check of supply module (please see the definition)	=	TRUE	-
			and			
			if the following conditions were met in previous driving cycle	=	TRUE	-
			(			
			ignition	=	on	sec
			engine speed	>	550	rpm
			Engine off Time	<=	0	sec
			State of the defrosting check of pressure line (please see the definition)	=	TRUE	-
			State of the defrosting check of supply module (please see the definition)	=	TRUE	-
			))			
		Release of tank heater circuit	(			
			Requested defrosting time for Reductant tank heater (see Look-Up-Table #16)	>=	0 to 3900	sec
			or			
			Requested heating time for Reductant tank heater (see Look-Up-Table #17)	>=	0 to 3277	sec
			)			
			or			
			((			
			Requested defrosting time for Reductant tank heater (see Look-Up-Table #16)	>=	0 to 3900	sec
			or			
			Requested heating time for Reductant tank heater (see Look-Up-Table #17)	>=	0 to 3277	sec
			)			
			and			
			(			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Requested defrosting time for pressure line heater (see Look-Up-Table #18)	>=	0 to 300	sec
			or			
			Requested heating time for pressure line heater (see Look-Up-Table #20)	>=	0 to 3276.7	sec
			))			
			or			
			((			
			Requested defrosting time for Reductant tank heater (see Look-Up-Table #16)	>=	0 to 3900	sec
			or			
			Requested heating time for Reductant tank heater (see Look-Up-Table #17)	>=	0 to 3277	sec
			)			
			and			
			(			
			Requested defrosting time for supply module heater (see Look-Up-Table #19)	>=	0 to 300	sec
			or			
			Requested heating time for supply module heater (see Look-Up-Table #21)	>=	0 to 3276.7	sec
			))			
			or			
			((			
			Requested defrosting time for Reductant tank heater (see Look-Up-Table #16)	>=	0 to 3900	sec
			or			
			Requested heating time for Reductant tank heater (see Look-Up-Table #17)	>=	0 to 3277	sec
			)			
			and			
			(			
			Requested defrosting time for pressure line heater (see Look-Up-Table #18)	>=	0 to 300	sec

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			or			
			Requested heating time for pressure line heater (see Look-Up-Table #20)	>=	0 to 3276.7	sec
			)			
			and			
			(			
			Requested defrosting time for supply module heater (see Look-Up-Table #19)	>=	0 to 300	sec
			or			
			Requested heating time for supply module heater (see Look-Up-Table #21)	>=	0 to 3276.7	sec
			))			
			and			
			NO Pending or Confirmed DTCs:	=	TRUE	-
		Release of pressure line heater circuit	(			
			Requested defrosting time for pressure line heater (see Look-Up-Table #18)	>=	0 to 300	sec
			or			
			Requested heating time for pressure line heater (see Look-Up-Table #20)	>=	0 to 3276.7	sec
			)			
			or			
			((			
			Requested defrosting time for pressure line heater (see Look-Up-Table #18)	>=	0 to 300	sec
			or			
			Requested heating time for pressure line heater (see Look-Up-Table #20)	>=	0 to 3276.7	sec
			)			
			and			
			(			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Requested defrosting time for supply module heater (see Look-Up-Table #19)	>=	0 to 300	sec
			or			
			Requested heating time for supply module heater (see Look-Up-Table #21)	>=	0 to 3276.7	sec
			))			
			and			
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
		Release of tank heater circuit	(			
			Requested defrosting time for supply module heater (see Look-Up-Table #19)	>=	0 to 300	sec
			or			
			Requested heating time for supply module heater (see Look-Up-Table #21)	>=	0 to 3276.7	sec
			)			
			or			
			((			
			Requested defrosting time for Reductant tank heater (see Look-Up-Table #16)	>=	0 to 3900	sec
			or			
			Requested heating time for Reductant tank heater (see Look-Up-Table #17)	>=	0 to 3277	sec
			)			
			and			
			(			
			Requested defrosting time for supply module heater (see Look-Up-Table #19)	>=	0 to 300	sec
			or			
			Requested heating time for supply module heater (see Look-Up-Table #21)	>=	0 to 3276.7	sec
			))			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			or			
			((			
			Requested defrosting time for pressure line heater (see Look-Up-Table #18)	>=	0 to 300	sec
			or			
			Requested heating time for pressure line heater (see Look-Up-Table #20)	>=	0 to 3276.7	sec
			)			
			and			
			(			
			Requested defrosting time for supply module heater (see Look-Up-Table #19)	>=	0 to 300	sec
			or			
			Requested heating time for supply module heater (see Look-Up-Table #21)	>=	0 to 3276.7	sec
			))			
			or			
			((			
			Requested defrosting time for Reductant tank heater (see Look-Up-Table #16)	>=	0 to 3900	sec
			or			
			Requested heating time for Reductant tank heater (see Look-Up-Table #17)	>=	0 to 3277	sec
			)			
			and			
			(			
			Requested defrosting time for pressure line heater (see Look-Up-Table #18)	>=	0 to 300	sec
			or			
			Requested heating time for pressure line heater (see Look-Up-Table #20)	>=	0 to 3276.7	sec
			)			
			and			
			(			
			Requested defrosting time for supply module heater (see Look-Up-Table #19)	>=	0 to 300	sec

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			or			
			Requested heating time for supply module heater (see Look-Up-Table #21)	>=	0 to 3276.7	sec
			))			
			and			
			NO Pending or Confirmed DTCs:	=	see inhibit tables	-
		Status of the battery voltage being in the valid working range for Reductant tank heater				
			battery voltage	<	100	V
			battery voltage	>	11	V
			for time	>	2	sec
		Status of the battery voltage being in the valid working range for pressure line heater				
			battery voltage	<	100	V
			battery voltage	>	11	V
			for time	>	2	sec
		Status of Reductant Tank Heater Release	(			
			status of reductant tank heater temperature (please see the definition)	=	TRUE	-
			Waiting time after tank heater release expired	>	0	sec
			)			
			or			
			((			
			Waiting time before tank heater released	<	1800	sec
			started with			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			status of reductant tank heater temperature (please see the definition)	=	FALSE	-
			)			
			and			
			(			
			status of reductant tank heater temperature (please see the definition)	=	TRUE	-
			Waiting time after tank heater release expired	>	0	sec
			))			
			or			
			((			
			Waiting time before tank heater released started with	>	1800	sec
			status of reductant tank heater temperature (please see the definition)	=	FALSE	-
			)			
			and			
			(			
			status of reductant tank heater temperature (please see the definition)	=	TRUE	-
			Waiting time after tank heater release expired	>	61	sec
			))			
	Reductant Tank Level System States and Status	status of Reductant tank level	Tank level > full (100%)	=	Full	-
			Warning (66.67%) < tank level < full (100%)	=	OK	-
			Restriction (33.33%) < tank level < Warning (66.67%)	=	Warning	-
			Empty < tank level < Restriction (33.33%)	=	Restriction	-
			Tank level < = 0.1%	=	Empty	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
		Status of Reductant tank level reset when refilling is detected				
			(			
			time since the following conditions are met	>=	12	sec
			Derivation of the PT1 filtered level signal (DT1)	>=	1.00098	%/sec
			and			
			(			
			Engine on timer is expired (please see the defintion)	=	TRUE	-
				<	3600	sec
					12	sec
					20	-
			(			
			ignition	=	on	sec
			engine speed	>	550	rpm
			Vehicle speed	>=	6.2150404	mph
			))			
			or			
			time since the following conditions are met	>=	8	sec
			and			
			(			
			Derivation of the PT1 filtered level signal (DT1)	>=	1.00098	%/sec
			and			
			(			
			filter release for Reductant tank level calculation at T15 on (Please see the definition)	=	TRUE	-
			))			
			)			
			or			
			(			
			filter release for Reductant tank level calculation at T15 on (Please see the definition)	=	TRUE	-
			and			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			(			
			ignition	=	on	-
			time	>	1	sec
			(			
			Reductant low warning level (Please see the definition)	=	96	-
			or			
			status of Deisel fuel refill detection (please see the definition)	=	TRUE	-
			))			
		Status of Reductant Tank Level Release	status of reductant tank level release (please see the definition)			
			Status of Filter release for reductant tank level calculation (please see the defintion)	=	TRUE	-
			and			
			((			
			ambient temperature	>=	-9.04	°C
			((			
			status of reductant tank heater temperature (please see the definition)	=	FALSE	-
			Waiting time before tank heater released	<	1800	sec
			and			
			status of reductant tank heater temperature (please see the definition)	=	TRUE	-
			Waiting time after tank heater release expired	>	0	sec
			)			
			or			
			(			
			status of reductant tank heater temperature (please see the definition)	=	FALSE	-
			Waiting time before tank heater released	>=	1800	sec
			and			
			status of reductant tank heater temperature (please see the definition)	=	TRUE	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Waiting time after tank heater release expired	>=	61	sec
			))			
			or			
			Frozen state is active during a certain warning level (please see the defintion)	=	TRUE	-
			)			
			Vehicle speed	>=	6.2150404	mph
			)			
			or			
			filter release for Reductant tank level calculation at T15 on (Please see the definition)	=	TRUE	-
		Status of Filter release for reductant tank level calculation				
			Reductant tank Temperature	>=	-9.04	°C
			or			
			Reductant low warning level (Please see the definition)	>=	64	-
			NO Pending or Confirmed DTCs:	=	TRUE	-
			or			
			Frozen state is active during a certain warning level (please see the defintion)	=	TRUE	-
		Filter release for Reductant tank level calculation at Ignition on				
			(			
			Reductant low warning level (Please see the definition)	>=	**49**	-
			Vehicle speed	>=	0.62150404	mph
			Terminal 15 status after debouncing	=	on	-
			Engine on timer is expired (please see the defintion)	=	FALSE	-
			Raw Reductant tank level	>=	(a), or (b), or (c)	-
			(			
			(a) Raw Reductant tank level threshold	=	100	%

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			with			
			((			
			Remaing Reductant quantity (a) - (b):	>=	(a) - (b)	g
			(a) Tank level for reserve mode (Warning level) in [g]	=	3214	g
			(b) Tank level threshold range below WARNING threshold for T15 refill detection release	=	0	g
			And			
			Remaing Reductant quantity (a) - (b):	>=	(a) - (b)	g
			(a) Tank level for reserve mode (Restriction level) in [g]	=	700	g
			(b) Tank level threshold range below Restriction threshold for T15 refill detection release	=	0	g
			)			
			or			
			(b) Raw Reductant tank level threshold	=	66.667	%
			(			
			Remaing Reductant quantity (a) - (b):	<	(a) - (b)	g
			(a) Tank level for reserve mode (Warning level) in [g]	=	3214	g
			(b) Tank level threshold range below WARNING threshold for T15 refill detection release	=	0	g
			And			
			Remaing Reductant quantity (a) - (b):	>=	(a) - (b)	g
			(a) Tank level for reserve mode (Restriction level) in [g]	=	700	g
			(b) Tank level threshold range below Restriction threshold for T15 refill detection release	=	0	g
			)			
			or			
			(			
			(c) Raw Reductant tank level threshold	=	33.33	%

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Remaing Reductant quantity (a) - (b):	<	(a) - (b)	
			(a) Tank level for reserve mode (Restriction level) in [g]	=	700	g
			(b) Tank level threshold range below Restriction threshold for T15 refill detection release	=	0	g
			))			
		Status of Refill detection of Reductant tank	Status of Refill detection of Reductant tank (please see the definition)			
			Reductant tank level changed	=	TRUE	-
			((			
			Captured Reductant tank level at last tank level change	=	Empty	-
			or			
			Captured Reductant tank level at last tank level change	=	Restriction	-
			)			
			and			
			(			
			one or more of following conditions are met			
			status of Reductant tank level (please see the definition)	=	Warning	-
			or			
			status of Reductant tank level (please see the definition)	=	OK	-
			or			
			status of Reductant tank level (please see the definition)	=	Full	-
			))			
			or			
			((			
			Captured Reductant tank level at last tank level change	=	Warning	-
			or			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Captured Reductant tank level at last tank level change	=	OK	-
			)			
			and			
			(			
			status of Reductant tank level (please see the definition)	=	Full	-
			)			
			or			
			(			
			Captured Reductant tank level at last tank level change	=	OK	-
			status of Reductant tank level (please see the definition)	=	Full	-
			))			
		Engine on timer is expired	Engine on timer is expired (please see the defintion)			
			time since engine started	>=	(a) * (b)	sec
					12	sec
					20	-
			After			
			(			
			ignition	=	on	sec
			engine speed	>	550	rpm
			Vehicle speed	>=	6.22	mph
			)			
	Reducant Tank Level Low Warning States					
		Reductant low warning level 0		>=	100	%
			status of Reductant tank level (please see the definition)			
				=	TRUE	-
			Status of Refill detection of Reductant tank (please see the definition)			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
		Reductant low warning level 1 - Sub State : 0x01	status of Reductant tank level (please see the definition)	<	100	%
			or			
			(			
			status of Reductant tank level (please see the definition)	<	100	%
			Reductant remaining mileage	>	1106.4375	miles
				=	TRUE	-
			Status of Refill detection of Reductant tank (please see the definition)			
			)			
		Reductant low warning level 1 - Sub State : 0x02	Reductant remaining mileage Under Reductant warning level 1 - substate 0x01	<=	1106.44	miles
			or			
			(			
			Reductant remaining mileage	<=	1106.44	miles
			status of Reductant tank level (please see the definition)	<	100	%
			Status of Refill detection of Reductant tank (please see the definition)	=	TRUE	-
			)			
		Reductant low warning level 1 - Main State : 0x10	Reductant remaining mileage Under Reductant warning level 1 - substate 0x02	<=	402.5	miles
			or			
			key cycle Under Reductant warning level 1 - substate 0x02	=	TRUE	-
		Reductant low warning level 2 - Main State : 0x20	Reductant remaining mileage Under Reductant warning level 1 - main state 0x10	<=	402.5	miles
			or			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			(			
			Reductant remaining mileage	<=	402.5	miles
			Reductant remaining mileage	>	176.25	miles
			status of Reductant tank level (please see the definition)	<	100	%
			Status of Refill detection of Reductant tank (please see the definition)	=	TRUE	-
			)			
		Reductant low warning level 3 - Main State : 0x30	Reductant remaining mileage Under Reductant warning level 2 - Main state 0x20 or	<=	176.25	miles
			(			
			Reductant remaining mileage	<=	176.25	miles
			Reductant remaining mileage	>	100.63	miles
			status of Reductant tank level (please see the definition)	<	100	%
			Status of Refill detection of Reductant tank (please see the definition)	=	TRUE	-
			)			
		Reductant low warning level 4 - Sub State : 0x31	Reductant remaining mileage Under Reductant warning level 3 - Main state 0x30 or	<=	100.63	miles
			(			
			status of low Reductant pump pressure (please see the definition) Under Reductant warning level 3 - Main state 0x30	=	TRUE	-
			Reductant remaining mileage Under Reductant warning level 3 - Main state 0x30	<=	100.63	miles
			)			
		Reductant low warning level 4 - Main State : 0x40 (= 64 decimal)	key cycle Under Reductant warning level 4 - substate 0x31	=	TRUE	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			or			
			(			
			Reductant remaining mileage	<=	100.63	miles
			Status of Refill detection of Reductant tank (please see the definition)	=	TRUE	-
			)			
		Reductant low warning level 5 - Sub State : 0x41	Vehicle mileage exceeds in Reductant Warning level 4 - main state (0x40)	>	100.625	miles
		Reductant low warning level 5 - Main State : 0x50	key cycle Under Reductant warning level 5 - substate 0x41	=	TRUE	-
			or			
			(			
			status of low Reductant pump pressure (please see the definition) Under Reductant warning level 3 - Main state 0x30	=	TRUE	-
			status of Deisel fuel refill detection (please see the definition)	=	TRUE	-
			)			
		Reductant low warning level 6 - Sub State : 0x51	Vehicle mileage exceeds in Reductant Warning level 5 - main state (0x50)	>	450	miles
			status of low Reductant pump pressure (please see the definition) Under Reductant warning level 3 - Main state 0x30	=	TRUE	-
		Reductant low warning level 6 - Sub State : 0x60 (= 96 decimal)	key cycle Under Reductant warning level 5 - substate 0x41	=	TRUE	-
			status of Deisel fuel refill detection (please see the definition)	=	TRUE	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
	Reductant frozen System States	Frozen state is active during a certain warning level	Frozen state is active during a certain warning level (please see the defintion)			
			Reductant low warning level (Please see the definition)	>=	**49**	-
			and			
			(			
			Engine off Time	>	14400	sec
			Reductant tank Temperature	<	-11.04	°C
			)			
			or			
			(			
			Engine off Time	<=	7200	sec
			time since the following conditions are met	<=	7200	sec
			(			
			status of reductant tank heater defrost	=	On or Defrost	-
			Vehicle speed	>	6.2150404	mph
			Status of urea tank as frozen (please see the definition)	=	TRUE	-
			))			
		Status of Reductant tank as frozen				
			(			
			Engine off Time	>	14400	sec
			Reductant tank Temperature	<	-11.04	°C
			)			
			or			
			(			
			Engine off Time	<=	7200	sec
			time since the following conditions are met	<=	7200	sec
			(			
			status of reductant tank heater defrost	=	On or Defrost	
			Vehicle speed	>	6.2150404	mph
			Status of urea tank as frozen (please see the definition)	=	TRUE	

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			))			
	SCR System Pressure State	Status of Low Reductant Pump Pressure - Under Reductant warning level 3 - Main state 0x30				
			Reductant low warning level (Please see the definition)	>=	64	-
			number of pressure build-up attempts	>=	2	counts
			and			
			(			
			status of SCR control sub state (please see the defintion)	=	Pressure Build up	-
			Reductant Pump Module Pressure	<	3500	hPa
			Dwell time in Pressure Build up substate	>	6000	ms
			system pressurizes in pressure buildup and ventilation states	>=	15	counts
			Reductant Defrost check (please see the definition)	=	TRUE	-
			)			
SCR System Diagnosis	SCR System Long Term Adaptation Release States	Long-term Adaption Triggered				
			underdosing detected (please see the definition)	=	TRUE	-
			OR			
			overdosing detected (please see the definition)	=	TRUE	-
		Underdosing detected				
			Difference between the NOx mass of the sensor and of the model during first functional evaluation (see Look-Up-Table #9)	>=	3 to 6	g
			OR			
			Difference between the NOx mass of the sensor and of the model during second functional evaluation (see Look-Up-Table #10)	>=	3 to 6	g
			OR			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Difference between the NOx mass of the sensor and of the model during third functional evaluation (see Look-Up-Table #11)	>=	-0.2 to -0.08	g
		Overdosing detected				
			Difference between the NOx mass of the sensor and of the model during first functional evaluation	<=	-5	g
			OR			
			Difference between the NOx mass of the sensor and of the model during second functional evaluation	<=	-5	g
			OR			
			Difference between the NOx mass of the sensor and of the model during third functional evaluation (see Look-Up-Table #8)	<=	-0.36 to -0.18	g
		Status of the SCR adaptation plausibility check active				
			Difference between nominal and estimated Reductant	>=	-0.05	g
			Release plausibility of Reductant Load (Please see the definition)	=	TRUE	
			debounced Reductant mass flow (see Look-Up-Table #7)	>=	0 to 0.04	g
			Elapsed time of the fill level timer	>=	20	sec
		State of the NH3 (Ammonia) slip detection				
			Reductant concentration downstream SCR	<	32767	ppm
			and			
			(a) - (b)	<	0	g/s
			(a) Filtered NOx mass flow downstream SCR measured by the sensor	=	measured parameter	-
			(b) Filtered and delayed NOx raw emission mass flow upstream of SCR	=	measured parameter	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
		Deactivation of dosing to execute the NOx Offset test				
			SCR catalyst temperature	>	400.06	°C
			SCR catalyst temperature	<	999.96	°C
			time	>	60	sec
			and			
			Currently dosed Reductant mass flow	<=	0.005	g/s
			time	>	30	sec
			and			
			Feed ratio			
			(a) / ((b) * (c))	<=	0.1	ratio
			(a) Currently dosed Reductant mass flow	=	measured parameter	-
			(b) NOx raw emission mass flow	=	measured parameter	-
			(c) Stoichiometric conversion factor NOx to Reductant	=	calculated parameter	-
			time	>	10	sec
			and			
			Estimated current Reductant load	<=	0.3	g
			time	>	10	sec
		Release plausibility of Reductant Load				
			Release plausibility timer active	>=	600	sec
			or			
			(			
			Release plausibility timer active	>=	50	sec
			Integrated NOx raw emission since fill level adaptation and plausibility have been locked	>=	2	g
			)			
		Status for disabling the SCR Efficiency monitor following an SCR Adaptation cycle completion				

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			Maximum dosing quantity	<	0.6	g/s
			or			
			(a) - (b)	>	0	
			(a) Reductant Dosing quantity	=	measured parameter	-
			(b) Maximum Reductant Dosing quantity	=	calculated parameter	-
			or			
			(a) - (b)	>	0	
			(a) Reductant Desired value	=	calculated parameter	-
			(b) Reductant Dosing quantity limitation due to frozen tank	=	calculated parameter	-
		Request for pre controlled dosing				
			Filtered exhaust gas mass flow	>	(a) * (b)	-
			(a) Correction factor for the upper hysteresis threshold for filtered exhaust-gas mass flow, dependent on HC- contamination	=	1	factor
			(b) Upper hysteresis threshold for filtered exhaust-gas mass flow, dependent on thermal ageing	=	388.89	g/sec
			and			
			Filtered NOx mass flow upstream SCR	>	(a) * (b)	-
			(a) Correction factor for the upper hysteresis threshold for filtered exhaust-gas mass flow, dependent on HC- contamination SCR	=	1	factor
			(b) Upper hysteresis threshold for filtered exhaust-gas mass flow, dependent on thermal ageing SCR	=	69.44	g/sec
			and			
			Engine coolant temperature	<	(a) + (b)	

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			(a) Lower hysteresis threshold for engine temperature	=	105.06	°C
			(b) Offset for lower hysteresis switch on threshold for engine temperature	=		
			Engine coolant temperature	>	108.06	°C
			and			
			ambient pressure	>	(a) + (b)	
			(a) Upper hysteresis threshold for environment pressure	=	74.5	kPa
			(b) Offset for upper hysteresis switch on threshold for environment pressure	=	65	kPa
			or			
			ambient pressure	<	74	kPa
			and			
			Intake air temperature	>	(a) + (b)	
			(a) Lower hysteresis switch on threshold for inlet air temperature	=	-5.04	°C
			(b) Offset for upper hysteresis switch on threshold for inlet air temperature	=	48	°C
			or			
			Intake air temperature	<	-8.04	°C
			)			
			and			
			(			
			ambient temperature	>=	-7.04	°C
			ambient pressure	>=	75.0	kPa
			Selected temperature used for locking pre controlled mode	>=	209.96	°C
			Selected temperature used for locking pre controlled mode	<=	349.96	°C
			engine operationre in normal mode	=	TRUE	-

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			SCR Nox Catalyst Efficiency check was performed this drive cycle	=	FALSE	-
			Incorrect Reductant Composition check was performed this drive cycle	=	FALSE	-
			NO Pending or Confirmed DTCs:	=	TRUE	-
			)			
			((			
			(k) + (l) + (m)	>	75	-
			(k) = (a) * (b)			
			(a) entry condition for pre controlled dosing at sea level (see Look-Up-Table #14)	=	0 to 100	-
			(b) Altitude multiplier factor for sea level	=	measured paramter	-
			(l) = (c) * (d) * (e)			
			(c) entry condition for online dosing at Mid level (see Look-Up-Table #13)	=	0 to 100	-
			(d) Multiplier to Mid Level enable speed load map	=	1	factor
			(e) Altitude multiplier factor for medium altitude	=	measured paramter	-
			(m) = (f) * (g) * (h)			
			(f) Entry condition for online dosing at Hi level (see Look-Up-Table #12)	=	0 to 100	-
			(g) Multiplier to Hi Level enable speed load map	=	1	factor
			(h) Altitude multiplier factor for high altitude	=	measured paramter	-
			)			
			and			
			Low pass filtered rNOxNSCDs signal	>	2000	-
			)			

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
	Reductant Tank Heater Performance Diagnosis Status	start temperature is captured in EERPOM if monitoring is active over several driving cycles	continuation of previously started tank temperature performance monitoring cycle (see definition)	=	1.56	°C
		or				
		start temperature is captured in EERPOM if monitoring is not active over several driving cycles	(continuation of previously started tank temperature performance monitoring cycle (see definition) (ignition on for time or ice detection by tank temperature difference: (a) - (b) (a) filtered current tank temperature (b) tank temperature captured at the beginning of current monitoring cycle)) or (a) - (b) (a) filtered current tank temperature (b) tank temperature captured at the beginning of current monitoring cycle or monitoring was performed in previous driving cycle	= > = <= = = <= = =	FALSE 60 TRUE -0.14 measured paramter measured paramter -0.14 measured paramter measured paramter	- sec °C - - °C - -
		continuation of previously started tank temperature performance monitoring cycle	temperature difference: (a) - (b) (a) filtered current tank temperature (b) tank temperature of the previous driving cycle temperature difference: (a) - (b)	<= = = <=	1.56 measured paramter measured paramter 0	°C - - °C

COMPONENT / SYSTEM	STATE OR STATUS SUB-GROUPING	DESCRIPTION OF STATE OR STATUS FOUND IN 11OBDG11	DEFINED BY:	ENABLE LOGIC	ENABLE VALUES	ENABLE UNITS
			(a) tank temperature of the previous driving cycle	=	measured paramter	-
			(b) filtered current tank temperature	=	measured paramter	-
			temperature difference: (a) - (b)	>=	0	°C
			(a) tank temperature of the previous driving cycle	=	measured paramter	-
			start tank temperature of current monitoring cycle from EEPROM (see definition)	=	measured paramter	-
			Engine off Time	<=	2000	sec
			This monitor was complete in the last driving cycle	=	FALSE	
			ice detection by tank temperature difference:			
			(a) - (b)	>	-0.14	°C
			(a) filtered current tank temperature	=	measured paramter	-
			(b) tank temperature captured at the beginning of current monitoring cycle	=	measured paramter	-
Turbo Charger		Turbocharger (VNT) wiping active	The Variable Nozzle Turbocharger Control has an intrusive mode where: VNT wiping is a sweep of the vane position control throughout its range of motion which is used to: avoid a binding of the VNT vanes due to soot accumulation during long idle operation with a cold engine.			

S1-11OBDG11 - Calibration Tables

Calibration Look-Up Table Differences from Initial Submission are Highlighted

Table no.	Fault Codes	Label (Internal Manufacturer Reference)

2 **P111D** Air_tDiffMaxHiTAFS_CUR

Engine Off Time (sec)	600	700	800	900	1000	2000	3000	4000	5000	8000	17999	18000	28799	28800	30000	32000
Delta Temperature (°C)	999	999	999	999	999	999	999	999	999	999	999	999	999	100	100	100

3 **P111C** Air_tDiffMaxHiTCACDs_CUR

Engine Off Time (sec)	600	700	800	900	1000	2000	3000	4000	5000	8000	17999	18000	28799	28800	30000	32000
Delta Temperature (°C)	999	999	999	999	999	999	999	999	999	999	999	999	999	100	100	100

4 **P040F** Air_tDiffMaxHiTEGRClr2Ds_CUR

Engine Off Time (sec)	600	700	800	900	1000	2000	3000	4000	5000	8000	10000	18000	28799	28800	30000	32000
Delta Temperature (°C)	999	999	999	999	999	999	999	999	999	999	999	999	999	100	100	100

6 **P111C** Air_tDiffMaxLoTCACDs_CUR

Engine Off Time (sec)	600	700	800	900	1000	2000	3000	4000	5000	8000	17999	18000	28799	28800	30000	32000
Delta Temperature (°C)	999	999	999	999	999	999	999	999	999	999	999	999	999	35	35	35

8 **P0402** AirCtl_mMaxDvt_MAP

Inj. Qty (mm^3/rev) / Eng Speed (rpm)	1200	1300	1400	1500	1600	1800	1850	2000
0	0.48	0.50	0.40	0.50	0.50	0.50	0.49	0.49
160	0.48	0.50	0.44	0.60	0.50	0.50	0.49	0.49
180	0.50	0.50	0.44	0.60	0.50	0.50	0.49	0.49
200	0.80	0.80	0.70	0.60	0.50	0.50	0.49	0.49
220	0.86	0.80	0.80	0.80	0.60	0.60	0.49	0.49
240	0.92	0.87	0.87	0.90	0.70	0.70	0.49	0.49
280	1.03	1.00	1.00	1.02	1.02	0.90	0.51	0.51
340	1.20	1.20	1.20	1.20	1.20	1.20	0.51	0.51

9 **P0401** AirCtl_mMinDvt_MAP

Inj. Qty (mm^3/rev) / Eng Speed (rpm)	600	650	1000	1200	1300	1400	1500	1600	2000	2200	2400	2600	2800	3000	3200	3400	
0	-0.7	-0.7	-0.7	-0.72	-0.8584	-1.1604	-1.1604	-1.1604	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3	0.00
20	-0.7	-0.7	-0.7	-0.7	-0.9	-1.1604	-1.1604	-1.1604	-1.3	-1.35	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	80.00
40	-0.7	-0.7	-0.7	-0.7	-0.9	-1	-1	-1.2	-1.2	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	160.00
60	-0.7	-0.7	-0.7	-0.7	-0.9	-1	-0.9	-1.2	-1.2	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	240.00
80	-0.7	-0.7	-0.7	-0.7	-0.9	-1	-0.9	-1.2	-1.2	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	-1.4	320.00
120	-0.7	-0.7	-0.7	-0.7	-0.8	-1	-0.8	-0.9	-1.2	-1	-1	-1	-1	-1	-1	-1	480.00
160	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	640.00
200	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.7	-0.65	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	800.00
240	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.7	-0.65	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	960.00
280	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.7	-0.65	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	1120.00
320	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.7	-0.65	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	1280.00
360	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.7	-0.65	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	1440.00
380	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.7	-0.65	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	1520.00
400	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.7	-0.65	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	1600.00
440	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.7	-0.65	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	1760.00
480	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.7	-0.7	-0.7	-0.65	-0.6	-0.6	-0.6	-0.6	-0.6	-0.6	1920.00

12 **P008F** CEngDsT_tDiffMaxHi_CUR

Engine Off Time (sec)	600	700	800	900	1000	2000	3000	4000	5000	8000	17999	18000	28799	28800	30000	32767
Delta Temperature (°C)	999	999	999	999	999	999	999	999	999	999	999	999	999	100	100	100

17 **P12B3, P12B4, P12B5, P12B6, P12B7, P12B8, P12B9, P12BA, P12BB, P12BC, P12BD, P12BE, P12BF, P12C0, P12C1, P12C2** ETClb_tiET_MAX_CA

Energizing Time (us)	670.8	384.4	353.2

28 **P20E2** Exh_tDiffMaxHiTOxiCatDs_CUR

Engine Off Time (sec)	600	700	800	900	1000	2000	3000	4000	5000	8000	17999	18000	28799	28800	30000	32000
Delta Temperature (°C)	999	999	999	999	999	999	999	999	999	999	999	999	999	100	100	100

54 **P0088** Rail_pMeUnDvtMin_CUR

Engine Speed (rpm)	0	540	590	650	1000	1200	1400	1600	1800	2000	2300	2400	3200	3400	3800	4000
Rail Pressure (kPa)	-80000	-80000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000	-20000

63 **P11CB, P11CC** SCRChk_facMaxStyNOxUsPlaus_GMAP

Inj. Qty. (mm^3/rev) / Engine Speed (rpm)	1100	1200	1300	1350	1400	1450	1500	1600	1650	2000
60	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
80	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
100	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
120	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
140	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
160	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
180	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
200	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
220	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
240	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500

64 **P11CB, P11CC** SCRChk_facMinStyNOxUsPlaus_GMAP

Inj. Qty. (mm^3/rev) / Engine Speed (rpm)	1100	1200	1300	1350	1400	1450	1500	1600	1650	2000
60	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
80	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
100	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
120	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
140	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
160	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
180	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
200	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
220	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500
240	0.0750	0.0750	0.0750	0.0750	0.0750	0.0500	0.0500	0.0500	0.0500	0.0500

73 **P12B3, P12B4, P12B5, P12B6, P12B7, P12B8, P12B9, P12BA, P12BB, P12BC, P12BD, P12BE, P12BF, P12C0, P12C1, P12C2** ZFC_tiCldCham_CUR

IAT (°C)	0.06	9.96	16.86	26.86	36.86	46.86	56.86	66.86	76.86	86.86	96.86	106.86
Time (sec)	5000	15000	20000	27000	30000	30000	30000	30000	30000	30000	30000	30000

74 **P20BA** SCRPOD_tiUTnkTExpi_CUR

Reductant Tank Temp (°C)	-25.04	-20.04	-17.54	-15.94	-15.84	15.46	15.56	32.96
Tank Heater Activation Time (sec)	1000	1000	1200	1200	32767	32767	1200	1200

76 **P11B5** Hegn_facLamDiaFdbk_CUR

-	1	3	5	6	8	9	10	16
-	0.1	0.2	5	7.696	11	12.968	20	22

77 **P11CC** SCRChk_rNOxDiffThresBasMinUs_GMAP

Inj. Qty. (mm^3/rev) / Engine Speed (rpm)	1100	1200	1300	1350	1400	1450	1500	1600	1650	2000
60	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000
80	-0.7000	-0.7000	-0.7000	-0.7000	-0.4700	-0.4700	-0.4700	-0.7000	-0.7000	-0.7000
100	-0.3300	-0.3300	-0.4000	-0.4399	-0.4700	-0.4700	-0.4700	-0.7000	-0.7000	-0.7000
120	-0.3300	-0.3300	-0.4000	-0.4399	-0.4700	-0.4700	-0.4700	-0.7000	-0.7000	-0.7000
140	-0.3300	-0.3300	-0.3900	-0.4200	-0.4399	-0.4399	-0.4399	-0.7000	-0.7000	-0.7000
160	-0.3300	-0.3300	-0.3900	-0.4200	-0.4000	-0.4000	-0.4000	-0.7000	-0.7000	-0.7000
180	-0.7000	-0.7000	-0.7000	-0.7000	-0.3700	-0.3700	-0.3700	-0.7000	-0.7000	-0.7000
200	-0.7000	-0.7000	-0.7000	-0.7000	-0.3700	-0.3700	-0.3700	-0.7000	-0.7000	-0.7000
220	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000
240	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000	-0.7000

78 **P2263** Air_pPhysRngMinThresPIntkVUs_MAP

Inj. Qty. (mm^3/rev) / Ambient Air Press (kPa)	60	65	70	75	82	95	100	120	130	140	150	160	170	180	190	200
0	40	45	50	55	65	75	80	100	110	120	45	45	45	45	45	45
40	40	45	50	55	65	75	80	100	110	120	45	45	45	45	45	45
80	40	45	50	55	65	75	80	100	110	120	45	45	45	45	45	45
120	40	45	50	55	65	75	80	100	110	120	45	45	45	45	45	45
160	45	50	55	60	70	80	85	105	115	125	50	50	50	50	50	50
240	45	50	55	60	70	80	85	105	115	125	50	50	50	50	50	50
260	45	50	55	60	70	80	85	105	115	125	50	50	50	50	50	50
280	52.5	57.5	62.5	67.5	76.8	87.5	92.5	112.5	122.5	132.5	50	50	50	50	50	50
340	75	80	85	90	97	110	115	135	145	155	50	50	50	50	50	50
360	75	80	85	90	97	110	115	135	145	155	50	50	50	50	50	50
400	75	80	85	90	97	110	115	135	145	155	50	50	50	50	50	50
440	75	80	85	90	97	110	115	135	145	155	50	50	50	50	50	50
480	75	80	85	90	97	110	115	135	145	155	50	50	50	50	50	50
520	75	80	85	90	97	110	115	135	145	155	50	50	50	50	50	50
560	75	80	85	90	97	110	115	135	145	155	50	50	50	50	50	50
600	75	80	85	90	97	110	115	135	145	155	50	50	50	50	50	50

79 **P2413** AirCtl_mMinDvtPwr_MAP

Inj. Qty. (mm^3/rev) / Engine Speed (rpm)	0	250	500	750	850	950	1000	1750	2000	2250	2500	2750	3000	3250	3500	3750
0	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
10	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
20	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
30	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
40	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
50	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
60	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
70	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
80	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
90	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
100	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
110	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
120	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
130	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4
140	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4

150	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4	-2.4

80 **P2459** PFlt_mSotThresRgnFreq_CUR

Soot Mass (g)	0	5	10	20	30	45
g	0	52	103	206	309	464

81 **P20E2** Exh tDiffMaxLoTOxiCatDs CUR

Engine Off Time (sec)	600	700	800	900	1000	2000	3000	4000	5000	8000	17999	18000	28799	28800	30000	32767
Delta Temperature (°C)	999	999	999	999	999	999	999	999	999	999	999	999	999	20	20	20

This document is intended to meet the requirements documented in section 1968.2 of Title 13,
California Code of Regulations entitled Modifications to Malfunction and Diagnosis System Requirements
for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II),
paragraphs (i)(2.2) for a table detailing **supplemental** calibration parameter data for OBD II Group 11OBDG11.

Inhibit Matrix for Diagnostic System Manager

Revised 3/10/2010
SW Step V240

ACTIVE DTC	INHIBITED DTCs							
P0016 - Crankshaft to Camshaft Correlation	P0191 - Fuel Rail Pressure Sensor Performance	P0315 - Crankshaft Position System Variation Not Learned						
P0045 - Turbocharger Boost Control Circuit	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive				
P0047 - Turbocharger Boost Control Circuit Low Voltage	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive				
P0048 - Turbocharger Boost Control Circuit High Voltage	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive				
P006E - Turbocharger Boost High Control Circuit Low Voltage	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive				
P006F - Turbocharger Boost High Control Circuit High Voltage	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2510 - ECM Power Relay Circuit Performance			
P007C - CAC Temperature Sensor Circuit Low Voltage	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance

ACTIVE DTC	INHIBITED DTCs												
P007D - CAC Temperature Sensor Circuit High Voltage	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance					
P008F - Engine Coolant Temperature (ECT)-Fuel Temperature Not Plausible	P0101 - Mass Air Flow Sensor Performance												
P0097 - Intake Air Temperature Sensor 2 Circuit Low	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance									
P0098 - Intake Air Temperature Sensor 2 Circuit High	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance									
P0101 - Mass Air Flow Sensor Performance	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1	P2002 - Diesel Particulate Filter (DPF) Low Efficiency	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P2453 - Diesel Particulate Filter Differential Pressure Sensor Performance	P2459 - Diesel Particulate Filter Regeneration Frequency	P246F - Exhaust Temperature Sensor 4 Performance	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High
P0102 - Mass Air Flow Sensor Circuit Low	P0101 - Mass Air Flow Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance				
P0103 - Mass Air Flow Sensor Circuit High	P0101 - Mass Air Flow Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance				
P0106 - Manifold Absolute Pressure Sensor Performance	P0101 - Mass Air Flow Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive								
P0107 - Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	P0101 - Mass Air Flow Sensor Performance	P0106 - Manifold Absolute Pressure Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P2263 - Turbo Boost System Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance		

ACTIVE DTC	INHIBITED DTCs												
P0108 - Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	P0101 - Mass Air Flow Sensor Performance	P0106 - Manifold Absolute Pressure Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P2263 - Turbo Boost System Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance		
P0112 - Intake Air Temperature Sensor 1 Circuit Low	P0101 - Mass Air Flow Sensor Performance	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P040F - Exhaust Gas Recirculation(EGR) Temperature Sensor Correlation (EGR 1/ EGR 2)	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P20E2 - Exhaust Gas Temperature (EGT) Sensors 1-2 not plausible	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance				
P0113 - Intake Air Temperature Sensor 1 Circuit High	P0101 - Mass Air Flow Sensor Performance	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P040F - Exhaust Gas Recirculation(EGR) Temperature Sensor Correlation (EGR 1/ EGR 2)	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P20E2 - Exhaust Gas Temperature (EGT) Sensors 1-2 not plausible	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance				
P0117 - Engine Coolant Temperature Sensor Circuit Low	P0106 - Manifold Absolute Pressure Sensor Performance	P0191 - Fuel Rail Pressure Sensor Performance	P0234 - Turbocharger Engine Overboost	P0263 - Cly 1 Balance System	P0266 - Cly 2 Balance System	P0269 - Cly 3 Balance System	P0272 - Cly 4 Balance System	P0275 - Cly 5 Balance System	P0278 - Cly 6 Balance System	P0281 - Cly 7 Balance System	P0284 - Cly 8 Balance System	P0299 - Turbocharger Engine Underboost	P0300 - Engine Misfire Detected
	P0301 - Cylinder 1 Misfire Detected	P0302 - Cylinder 2 Misfire Detected	P0303 - Cylinder 3 Misfire Detected	P0304 - Cylinder 4 Misfire Detected	P0305 - Cylinder 5 Misfire Detected	P0306 - Cylinder 6 Misfire Detected	P0307 - Cylinder 7 Misfire Detected	P0308 - Cylinder 8 Misfire Detected	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P0506 - Idle Speed Low	P0507 - Idle Speed High	P2080 - Exhaust Temperature Sensor 1 Performance
	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance										
P0118 - Engine Coolant Temperature Sensor Circuit High	P0106 - Manifold Absolute Pressure Sensor Performance	P0191 - Fuel Rail Pressure Sensor Performance	P0234 - Turbocharger Engine Overboost	P0263 - Cly 1 Balance System	P0266 - Cly 2 Balance System	P0269 - Cly 3 Balance System	P0272 - Cly 4 Balance System	P0275 - Cly 5 Balance System	P0278 - Cly 6 Balance System	P0281 - Cly 7 Balance System	P0284 - Cly 8 Balance System	P0299 - Turbocharger Engine Underboost	P0300 - Engine Misfire Detected
	P0301 - Cylinder 1 Misfire Detected	P0302 - Cylinder 2 Misfire Detected	P0303 - Cylinder 3 Misfire Detected	P0304 - Cylinder 4 Misfire Detected	P0305 - Cylinder 5 Misfire Detected	P0306 - Cylinder 6 Misfire Detected	P0307 - Cylinder 7 Misfire Detected	P0308 - Cylinder 8 Misfire Detected	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P0506 - Idle Speed Low	P0507 - Idle Speed High	P2080 - Exhaust Temperature Sensor 1 Performance

ACTIVE DTC	INHIBITED DTCs					
	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance			
P0128 - Engine Coolant Temperature Below Thermostat Regulating Temperature	P0101 - Mass Air Flow Sensor Performance					
P0192 - Fuel Rail Pressure Sensor Circuit Low	P0191 - Fuel Rail Pressure Sensor Performance					
P0193 - Fuel Rail Pressure Sensor Circuit High	P0191 - Fuel Rail Pressure Sensor Performance					
P0234 - Turbocharger Engine Overboost	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1				
P0299 - Turbocharger Engine Underboost	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1				
P02E0 - Intake Air Flow Valve Control Circuit	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P122D - Diesel Intake Air Flow Position Sensor Exceeded Learning Limit	P2510 - ECM Power Relay Circuit Performance
P02E7 - Diesel Intake Air Flow Position Sensor Circuit Range Performance	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive				

ACTIVE DTC	INHIBITED DTCs								
P02E8 - Diesel Intake Air Flow Position Sensor Circuit Low	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance	
P02E9 - Diesel Intake Air Flow Position Sensor Circuit High	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance	
P02EB - Intake Air Flow Valve Control Motor Current Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P122D - Diesel Intake Air Flow Position Sensor Exceeded Learning Limit				
P0335 - Crankshaft Position Sensor Circuit	P0102 - Mass Air Flow Sensor Circuit Low	P0103 - Mass Air Flow Sensor Circuit High	P0191 - Fuel Rail Pressure Sensor Performance	P0315 - Crankshaft Position System Variation Not Learned	P0506 - Idle Speed Low	P0507 - Idle Speed High			
P0336 - Crankshaft Position Sensor Performance	P0102 - Mass Air Flow Sensor Circuit Low	P0103 - Mass Air Flow Sensor Circuit High	P0191 - Fuel Rail Pressure Sensor Performance	P0315 - Crankshaft Position System Variation Not Learned	P0506 - Idle Speed Low	P0507 - Idle Speed High			
P0340 - Camshaft Position Sensor Circuit	P0191 - Fuel Rail Pressure Sensor Performance	P0315 - Crankshaft Position System Variation Not Learned							
P0341 - Camshaft Position Sensor Performance	P0191 - Fuel Rail Pressure Sensor Performance	P0315 - Crankshaft Position System Variation Not Learned							
P0401 - Exhaust Gas Recirculation Flow Insufficient	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P2459 - Diesel Particulate Filter Regeneration Frequency	P246F - Exhaust Temperature Sensor 4 Performance	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High
P0402 - Exhaust Gas Recirculation Flow Excessive	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P2459 - Diesel Particulate Filter Regeneration Frequency	P246F - Exhaust Temperature Sensor 4 Performance	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High

ACTIVE DTC	INHIBITED DTCs										
P0403 - Exhaust Gas Recirculation (EGR) Motor Control Circuit	P0101 - Mass Air Flow Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P049D - EGR Control Position Not Learned	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance	P2510 - ECM Power Relay Circuit Performance
P0405 - Exhaust Gas Recirculation Position Sensor Circuit Low	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P049D - EGR Control Position Not Learned	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance				
P0406 - Exhaust Gas Recirculation Position Sensor Circuit High	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P049D - EGR Control Position Not Learned	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance				
P040C - Exhaust Gas Recirculation(EGR) Temperature Sensor 1 Circuit Low Voltage	P040F - Exhaust Gas Recirculation(EGR) Temperature Sensor Correlation (EGR 1/ EGR 2)										
P040D - Exhaust Gas Recirculation(EGR) Temperature Sensor 1Circuit High Voltage	P040F - Exhaust Gas Recirculation(EGR) Temperature Sensor Correlation (EGR 1/ EGR 2)										
P041C - Exhaust Gas Recirculation(EGR) Temperature Sensor 2 Circuit Low Voltage	P040F - Exhaust Gas Recirculation(EGR) Temperature Sensor Correlation (EGR 1/ EGR 2)										

ACTIVE DTC	INHIBITED DTCs												
P041D - Exhaust Gas Recirculation(EGR) Temperature Sensor 2 Circuit High Voltage	P040F - Exhaust Gas Recirculation(EGR) Temperature Sensor Correlation (EGR 1/ EGR 2)												
P0420 - NMHC Catalyst Efficiency Below Threshold Bank 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High											
P046C - Exhaust Gas Recirculation(EGR) Position Sensor Performance	P0101 - Mass Air Flow Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance						
P0545 - Exhaust Gas Temperature (EGT) Sensor 1 Circuit Low Voltage	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P20E2 - Exhaust Gas Temperature (EGT) Sensors 1-2 not plausible	P244D - Catalyst Temperature Too High During Regeneration									
P0546 - Exhaust Gas Temperature (EGT) Sensor 1 Circuit High Voltage	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P20E2 - Exhaust Gas Temperature (EGT) Sensors 1-2 not plausible	P244D - Catalyst Temperature Too High During Regeneration									
P0606 - Control Module Internal Performance	P2146 - Injector Positive Voltage Control Circuit Group 1	P2149 - Injector Positive Voltage Control Circuit Group 2	P2152 - Injector Positive Voltage Control Circuit Group 3	P2155 - Injector Positive Voltage Control Circuit Group 4									
P062C - TPU error on VSS signal	P0106 - Manifold Absolute Pressure Sensor Performance	P0300 - Engine Misfire Detected	P0301 - Cylinder 1 Misfire Detected	P0302 - Cylinder 2 Misfire Detected	P0303 - Cylinder 3 Misfire Detected	P0304 - Cylinder 4 Misfire Detected	P0305 - Cylinder 5 Misfire Detected	P0306 - Cylinder 6 Misfire Detected	P0307 - Cylinder 7 Misfire Detected	P0308 - Cylinder 8 Misfire Detected	P0506 - Idle Speed Low	P0507 - Idle Speed High	
P064C - Glow Plug Control Module Performance	P11DB - NOx Sensor Current Performance Bank 1 Sensor 1	P2209 - N0x Heater Performance Bank 1 Sensor 1											

ACTIVE DTC	INHIBITED DTCs				
P1045 - Reductant Purge Valve High Control Circuit Low Voltage	P20A1 - Reductant Purge Valve Performance				
P1048 - Reductant Injector High Control Circuit Low Voltage	P202E - Reductant Injector Performance				
P1049 - Reductant Injector High Control Circuit High Voltage	P202E - Reductant Injector Performance	P2510 - ECM Power Relay Circuit Performance			
P111C - Charge Air Cooler Temperature-Intake Air Temperature (IAT) Sensor 2 Not Plausible	P0101 - Mass Air Flow Sensor Performance	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance
P111D - Intake Air Temperature (IAT) Sensor 1 - Fuel Temperature Sensor 2 Not Plausible	P0101 - Mass Air Flow Sensor Performance	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance
P113A - Exhaust Gas Temperature Sensors 3-4 Not Plausible	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance			
P11DB - NOx Sensor Current Performance Bank 1 Sensor 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High			
P11DC - NOx Sensor Current Performance Bank 1 Sensor 2	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High			

ACTIVE DTC	INHIBITED DTCs			
P1224 - Injector 1 Control Circuit Shorted	P0201 - Injector 1 Control Circuit	P0606 - Control Module Internal Performance	P2146 - Injector Positive Voltage Control Circuit Group 1	
P1227 - Injector 2 Control Circuit Shorted	P0202 - Injector 2 Control Circuit	P0606 - Control Module Internal Performance	P2152 - Injector Positive Voltage Control Circuit Group 3	
P122A - Injector 3 Control Circuit Shorted	P0203 - Injector 3 Control Circuit	P0606 - Control Module Internal Performance	P2155 - Injector Positive Voltage Control Circuit Group 4	
P122D - Diesel Intake Air Flow Position Sensor Exceeded Learning Limit	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive
P1233 - Injector 4 Control Circuit Shorted	P0204 - Injector 4 Control Circuit	P0606 - Control Module Internal Performance	P2146 - Injector Positive Voltage Control Circuit Group 1	
P1236 - Injector 5 Control Circuit Shorted	P0205 - Injector 5 Control Circuit	P0606 - Control Module Internal Performance	P2152 - Injector Positive Voltage Control Circuit Group 3	
P1239 - Injector 6 Control Circuit Shorted	P0206 - Injector 6 Control Circuit	P0606 - Control Module Internal Performance	P2149 - Injector Positive Voltage Control Circuit Group 2	
P1242 - Injector 7 Control Circuit Shorted	P0207 - Injector 7 Control Circuit	P0606 - Control Module Internal Performance	P2149 - Injector Positive Voltage Control Circuit Group 2	
P1247 - Injector 8 Control Circuit Shorted	P0208 - Injector 8 Control Circuit	P0606 - Control Module Internal Performance	P2155 - Injector Positive Voltage Control Circuit Group 4	

ACTIVE DTC	INHIBITED DTCs					
P140B - Exhaust Gas Recirculation Slow Response-Increasing Flow	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High		
P140C - Exhaust Gas Recirculation Slow Response-Decreasing Flow	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High		
P140F - Exhaust Gas Recirculation (EGR) Motor Current Performance	P0101 - Mass Air Flow Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P049D - EGR Control Position Not Learned
P1414 - Exhaust Gas Recirculation (EGR) Cooler Bypass Valve Current Performance	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P140A - EGR Cooler BY Pass Position Sensor Exceded Learning Limit			
P163C - Glow Plug Control Module Primary Circuit	P11DB - NOx Sensor Current Performance Bank 1 Sensor 1	P2209 - N0x Heater Performance Bank 1 Sensor 1				
P16A0 - Throttle Sensor Communication Circuit Low Voltage	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive				
P16A1 - Throttle Sensor Communication Circuit High Voltage	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive				
P16A2 - Throttle Sensor Communication Circuit Performance	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive				

ACTIVE DTC	INHIBITED DTCs				
P2002 - Diesel Particulate Filter (DPF) Low Efficiency	P2459 - Diesel Particulate Filter Regeneration Frequency				
P2032 - Exhaust Gas Temperature (EGT) Sensor 2 Circuit Low Voltage	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P20E2 - Exhaust Gas Temperature (EGT) Sensors 1-2 not plausible	P242B - Exhaust Temperature Sensor 3 Performance	P244D - Catalyst Temperature Too High During Regeneration
P2033 - Exhaust Gas Temperature (EGT) Sensor 2 Circuit High Voltage	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P20E2 - Exhaust Gas Temperature (EGT) Sensors 1-2 not plausible	P242B - Exhaust Temperature Sensor 3 Performance	P244D - Catalyst Temperature Too High During Regeneration
P2047 - Reductant Injector Control Circuit	P202E - Reductant Injector Performance				
P2048 - Reductant Injector Control Circuit Low Voltage	P202E - Reductant Injector Performance				
P2049 - Reductant Injector Control Circuit High Voltage	P202E - Reductant Injector Performance	P2510 - ECM Power Relay Circuit Performance			
P204B - Reductant Pump Pressure Sensor Performance	P204F - Reductant System Performance Bank 1				
P204C - Reductant Pump Pressure Sensor Circuit Low	P204B - Reductant Pump Pressure Sensor Performance	P20A1 - Reductant Purge Valve Performance			
P204D - Reductant Pump Pressure Sensor Circuit High	P204B - Reductant Pump Pressure Sensor Performance	P20A1 - Reductant Purge Valve Performance			

ACTIVE DTC	INHIBITED DTCs				
P205C - Reductant Tank Temperature Sensor Circuit Low	P20BA - Reductant Heater 1 Performance				
P205D - Reductant Tank Temperature Sensor Circuit High	P205B - Reductant Tank Temperature Sensor Performance	P20BA - Reductant Heater 1 Performance			
P207F - Incorrect Reductant Composition	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High			
P208A - Reductant Pump Control Circuit	P204F - Reductant System Performance Bank 1	P20A1 - Reductant Purge Valve Performance			
P208D - Reductant Pump Control Circuit High Voltage	P204F - Reductant System Performance Bank 1	P20A1 - Reductant Purge Valve Performance	P2510 - ECM Power Relay Circuit Performance		
P20A0 - Reductant Purge Valve Control Circuit	P204F - Reductant System Performance Bank 1	P20A1 - Reductant Purge Valve Performance			
P20A2 - Reductant Purge Valve Control Circuit Low Voltage	P204F - Reductant System Performance Bank 1	P20A1 - Reductant Purge Valve Performance			
P20A3 - Reductant Purge Valve Control Circuit High Voltage	P204F - Reductant System Performance Bank 1	P20A1 - Reductant Purge Valve Performance	P2510 - ECM Power Relay Circuit Performance		
P20E2 - Exhaust Gas Temperature (EGT) Sensors 1-2 not plausible	P0101 - Mass Air Flow Sensor Performance	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance

ACTIVE DTC	INHIBITED DTCs			
P2122 - Accelerator Pedal Position Sensor 1 Circuit Low	P2138 - Accelerator Pedal Position (APP) Sensor 1-2 Correlation			
P2123 - Accelerator Pedal Position Sensor 1 Circuit High	P2138 - Accelerator Pedal Position (APP) Sensor 1-2 Correlation			
P2127 - Accelerator Pedal Position Sensor 2 Circuit Low	P2138 - Accelerator Pedal Position (APP) Sensor 1-2 Correlation			
P2128 - Accelerator Pedal Position (APP) Sensor 2 Circuit High Voltage	P2138 - Accelerator Pedal Position (APP) Sensor 1-2 Correlation			
P2146 - Injector Positive Voltage Control Circuit Group 1	P0606 - Control Module Internal Performance			
P2149 - Injector Positive Voltage Control Circuit Group 2	P0606 - Control Module Internal Performance			
P2152 - Injector Positive Voltage Control Circuit Group 3	P0606 - Control Module Internal Performance			
P2155 - Injector Positive Voltage Control Circuit Group 4	P0606 - Control Module Internal Performance	P2146 - Injector Positive Voltage Control Circuit Group 1	P2149 - Injector Positive Voltage Control Circuit Group 2	P2152 - Injector Positive Voltage Control Circuit Group 3

ACTIVE DTC	INHIBITED DTCs		
P2200 - N0x Sensor Circuit Bank 1 Sensor 1	P11DB - NOx Sensor Current Performance Bank 1 Sensor 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High
P2202 - N0x Sensor Circuit Low Bank 1 Sensor 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High	
P2203 - N0x Sensor Circuit High Bank 1 Sensor 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High	
P2205 - N0x Heater Control Circuit Bank 1 Sensor 1	P11DB - NOx Sensor Current Performance Bank 1 Sensor 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High
P2209 - N0x Heater Performance Bank 1 Sensor 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High	
P220A - N0x Sensor Supply Voltage Out Of Range Bank 1 Sensor 1	P11DB - NOx Sensor Current Performance Bank 1 Sensor 1	P2209 - N0x Heater Performance Bank 1 Sensor 1	
P220B - N0x Sensor Supply Voltage Out Of Range Bank 1 Sensor 2	P11DB - NOx Sensor Current Performance Bank 1 Sensor 1	P2209 - N0x Heater Performance Bank 1 Sensor 1	

ACTIVE DTC	INHIBITED DTCs												
P2228 - Barometric Pressure Sensor Circuit Low	P0106 - Manifold Absolute Pressure Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1	P2002 - Diesel Particulate Filter (DPF) Low Efficiency	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance	
P2229 - Barometric Pressure Sensor Circuit High	P0106 - Manifold Absolute Pressure Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1	P2002 - Diesel Particulate Filter (DPF) Low Efficiency	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P2459 - Diesel Particulate Filter Regeneration Frequency	P246F - Exhaust Temperature Sensor 4 Performance
P2263 - Turbo Boost System Performance	P0101 - Mass Air Flow Sensor Performance	P0106 - Manifold Absolute Pressure Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive							
P229E - NOx Sensor Circuit Bank 1 Sensor 2	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High											
P229F - NOx Sensor Performance Bank 1 Sensor 2	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High											
P22A3 - NOx Heater Control Circuit Bank 1 Sensor 2	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High											
P22A7 - NOx Heater Performance Bank 1 Sensor 2	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High											
P2413 - Exhaust Gas Recirculation System Performance	P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High									

ACTIVE DTC	INHIBITED DTCs								
P242C - Exhaust Gas Temperature (EGT) Sensor 3 Circuit Low Voltage	P242B - Exhaust Temperature Sensor 3 Performance	P244D - Catalyst Temperature Too High During Regeneration	P246F - Exhaust Temperature Sensor 4 Performance						
P242D - Exhaust Gas Temperature (EGT) Sensor 3 Circuit High Voltage	P242B - Exhaust Temperature Sensor 3 Performance	P244D - Catalyst Temperature Too High During Regeneration	P246F - Exhaust Temperature Sensor 4 Performance						
P2453 - Diesel Particulate Filter Differential Pressure Sensor Performance	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2002 - Diesel Particulate Filter (DPF) Low Efficiency	P2459 - Diesel Particulate Filter Regeneration Frequency			
P2454 - Diesel Particulate Filter Differential Pressure Sensor Circuit Low Voltage	P2002 - Diesel Particulate Filter (DPF) Low Efficiency	P2453 - Diesel Particulate Filter Differential Pressure Sensor Performance	P2455 - Diesel Particulate Filter Differential Pressure Sensor Circuit High Voltage	P2459 - Diesel Particulate Filter Regeneration Frequency					
P2455 - Diesel Particulate Filter Differential Pressure Sensor Circuit High Voltage	P2002 - Diesel Particulate Filter (DPF) Low Efficiency	P2453 - Diesel Particulate Filter Differential Pressure Sensor Performance	P2454 - Diesel Particulate Filter Differential Pressure Sensor Circuit Low Voltage	P2459 - Diesel Particulate Filter Regeneration Frequency					
P245A - Exhaust Gas Recirculation (EGR) Cooler Bypass Valve Control Circuit	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P140A - EGR Cooler BY Pass Position Sensor Exceded Learning Limit	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance	P2510 - ECM Power Relay Circuit Performance	
P2470 - Exhaust Gas Temperature (EGT) Sensor 4 Circuit Low Voltage	P244D - Catalyst Temperature Too High During Regeneration	P246F - Exhaust Temperature Sensor 4 Performance							
P2471 - Exhaust Gas Temperature (EGT) Sensor 4 Circuit High Voltage	P244D - Catalyst Temperature Too High During Regeneration	P246F - Exhaust Temperature Sensor 4 Performance							

ACTIVE DTC	INHIBITED DTCs								
P2493 - EGR Cooler BY Pass Position Sensor Performance	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance			
P2494 - EGR Cooler BY Pass Position Sensor Circuit Low	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P140A - EGR Cooler BY Pass Position Sensor Exceded Learning Limit	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance
P2495 - EGR Cooler BY Pass Position Sensor Circuit High	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P140A - EGR Cooler BY Pass Position Sensor Exceded Learning Limit	P2080 - Exhaust Temperature Sensor 1 Performance	P2084 - Exhaust Temperature Sensor 2 Performance	P242B - Exhaust Temperature Sensor 3 Performance	P246F - Exhaust Temperature Sensor 4 Performance
P2564 - Turbocharger Boost Control Position Sensor Circuit Low	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive	P2510 - ECM Power Relay Circuit Performance				
P2565 - Turbocharger Boost Control Position Sensor Circuit High	P0234 - Turbocharger Engine Overboost	P0299 - Turbocharger Engine Underboost	P0401 - Exhaust Gas Recirculation Flow Insufficient	P0402 - Exhaust Gas Recirculation Flow Excessive					
P2598 - Turbocharger Boost Control Position Sensor "A" Circuit Range / Performance - Stuck Low	P0101 - Mass Air Flow Sensor Performance								
P2599 - Turbocharger Boost Control Position Sensor "A" Circuit Range / Performance - Stuck High	P0101 - Mass Air Flow Sensor Performance								
U0073 - CAN A BUS OFF	P0851 - Park/Neutral Position (PNP) Switch Circuit Low Voltage	P0852 - Park/Neutral Position (PNP) Switch Circuit High Voltage							

ACTIVE DTC	INHIBITED DTCs	
U0101 - Lost Communications With Transmission Control System	P0851 - Park/Neutral Position (PNP) Switch Circuit Low Voltage	P0852 - Park/Neutral Position (PNP) Switch Circuit High Voltage
U029D - N0x Sensor Bank 1 Sensor 1 Loss of Communication	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High
U029E - N0x Sensor Bank 1 Sensor 2 Loss of Communication	P249D - Closed loop Reductant Injection Control at Limit-Flow too low	P249E - Closed Loop Reductant Injection Control at Limit-Flow too High

ACTIVE DTC	INHIBITED DTCs												
Fuel Level less than 15%	P0087 - Fuel Rail Pressure Too Low	P0088 - Fuel Rail Pressure Too High	P0191 - Fuel Rail Pressure Sensor Performance	P0263 - Cly 1 Balance System	P0266 - Cly 2 Balance System	P0269 - Cly 3 Balance System	P0272 - Cly 4 Balance System	P0275 - Cly 5 Balance System	P0278 - Cly 6 Balance System	P0281 - Cly 7 Balance System	P0284 - Cly 8 Balance System	P0300 - Engine Misfire Detected	P0301 - Cylinder 1 Misfire Detected
	P0302 - Cylinder 2 Misfire Detected	P0303 - Cylinder 3 Misfire Detected	P0304 - Cylinder 4 Misfire Detected	P0305 - Cylinder 5 Misfire Detected	P0306 - Cylinder 6 Misfire Detected	P0307 - Cylinder 7 Misfire Detected	P0308 - Cylinder 8 Misfire Detected	P11AF - HO2S Performance - Signal High During Moderate Load Bank 1 Sensor 2	P11B2 - HO2S Performance - Signal Low During Moderate Load Bank 1 Sensor 2	P128E - Fuel Rail Pressure Performance			

This document is intended to meet the requirements documented in section 1968.2 of Title 13,
California Code of Regulations entitled Modifications to Malfunction and Diagnosis System Requirements
for 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II),
paragraphs (i)(2.2) for a table detailing **supplemental** calibration parameter data for OBD II Group 11OBDG11.

Disable Matrix for Diagnostic System Manager

Revised 3/20/2010
SW Step V240

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0016 - Crankshaft to Camshaft Correlation	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P003A - Turbocharger Boost Control Position Not Learned	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P0045 - Turbocharger Boost Control Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P0047 - Turbocharger Boost Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P0048 - Turbocharger Boost Control Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P006E - Turbocharger Boost High Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P006F - Turbocharger Boost High Control Circuit High Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P007C - CAC Temperature Sensor Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P007D - CAC Temperature Sensor Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0087 - Fuel Rail Pressure Too Low	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P0088 - Fuel Rail Pressure Too High	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P008F - Engine Coolant Temperature (ECT)-Fuel Temperature Not Plausible	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0090 - Fuel Pressure Regulator 1 Control Circuit/Open	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P0091 - Fuel Pressure Regulator 1 Control Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P0092 - Fuel Pressure Regulator 1 Control Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P0097 - Intake Air Temperature Sensor 2 Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0098 - Intake Air Temperature Sensor 2 Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P00C9 - Fuel Pressure Regulator 1 High Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P00CA - Fuel Pressure Regulator 1 High Control Circuit High Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P0101 - Mass Air Flow Sensor Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	battery voltage is above 11 V for at least 3s	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P0102 - Mass Air Flow Sensor Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0103 - Mass Air Flow Sensor Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0106 - Manifold Absolute Pressure Sensor Performance	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	battery voltage is above 11 V for at least 3s	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0107 - Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0108 - Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0112 - Intake Air Temperature Sensor 1 Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0113 - Intake Air Temperature Sensor 1 Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0117 - Engine Coolant Temperature Sensor Circuit Low	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0118 - Engine Coolant Temperature Sensor Circuit High	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P0128 - Engine Coolant Temperature Below Thermostat Regulating Temperature	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P0137 - HO2S Bank 1 Sensor 2 circuit low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P0138 - HO2S Bank 1 Sensor 2 circuit high	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P0182 - Fuel Temperature Sensor 1 Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0183 - Fuel Temperature	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Sensor 1 Circuit High	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0187 - Fuel Temperature Sensor 2 Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0188 - Fuel Temperature Sensor 2 Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0191 - Fuel Rail Pressure Sensor Performance	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0192 - Fuel Rail Pressure Sensor Circuit Low	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P0193 - Fuel Rail Pressure Sensor Circuit High	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0234 - Turbocharger Engine Overboost	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P0263 - Cly 1 Balance System	Power Take-Off (PTO) is not engaged				
P0266 - Cly 2 Balance System	Power Take-Off (PTO) is not engaged				
P0269 - Cly 3 Balance System	Power Take-Off (PTO) is not engaged				
P026A - CAC Effiecientcy Below Threshold	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P0272 - Cly 4 Balance System	Power Take-Off (PTO) is not engaged				
P0275 - Cly 5 Balance System	Power Take-Off (PTO) is not engaged				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0278 - Cly 6 Balance System	Power Take-Off (PTO) is not engaged				
P0281 - Cly 7 Balance System	Power Take-Off (PTO) is not engaged				
P0284 - Cly 8 Balance System	Power Take-Off (PTO) is not engaged				
P0299 - Turbocharger Engine Underboost	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P02E0 - Intake Air Flow Valve Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P02E2 - Intake Air Flow Valve Control Circuit 1 Low Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P02E3 - Intake Air Flow Valve Control Circuit 1 High Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P02E7 - Diesel Intake Air Flow Position Sensor Circuit Range	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Position Sensor Circuit Range Performance	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P02E8 - Diesel Intake Air Flow Position Sensor Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P02E9 - Diesel Intake Air Flow Position Sensor Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P02EB - Intake Air Flow Valve Control Motor Current Performance	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P0300 - Engine Misfire Detected	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0301 - Cylinder 1 Misfire Detected	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS			
P0302 - Cylinder 2 Misfire Detected	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P0303 - Cylinder 3 Misfire Detected	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P0304 - Cylinder 4 Misfire Detected	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P0305 - Cylinder 5 Misfire Detected	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P0306 - Cylinder 6 Misfire Detected	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P0307 - Cylinder 7 Misfire Detected	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P0308 - Cylinder 8 Misfire Detected	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P0335 - Crankshaft Position Sensor Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P0336 - Crankshaft Position Sensor Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0340 - Camshaft Position Sensor Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P0341 - Camshaft Position Sensor Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P0381 - Wait to Start Lamp Control Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P0401 - Exhaust Gas Recirculation Flow Insufficient	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P0402 - Exhaust Gas Recirculation Flow Excessive	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P0403 - Exhaust Gas Recirculation (EGR) Motor Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P0405 - Exhaust Gas Recirculation Position Sensor	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Recirculation Position Sensor Circuit Low	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0406 - Exhaust Gas Recirculation Position Sensor Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P040C - Exhaust Gas Recirculation(EGR) Temperature Sensor 1 Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P040D - Exhaust Gas Recirculation(EGR) Temperature Sensor 1Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P040F - Exhaust Gas Recirculation(EGR) Temperature Sensor Correlation (EGR 1/ EGR 2)	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P041C - Exhaust Gas Recirculation(EGR) Temperature Sensor 2 Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P041D - Exhaust Gas Recirculation(EGR) Temperature Sensor 2 Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0420 - NMHC Catalyst Efficiency Below Threshold Bank 1	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P0461 - Fuel Level Sensor Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0462 - Fuel Level Sensor	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Circuit Low	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0463 - Fuel Level Sensor Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P046C - Exhaust Gas Recirculation(EGR) Position Sensor Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P0480 - Cooling Fan Speed Output Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P0483 - Cooling Fan System Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P0489 - Exhaust Gas Recirculation (EGR) Motor Control Circuit 1 Low Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0490 - Exhaust Gas Recirculation (EGR) Motor Control Circuit 1 High Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P0495 - Cooling Fan Speed High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)
	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P049D - EGR Control Position Not Learned	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P0506 - Idle Speed Low	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P0507 - Idle Speed High	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P0526 - Cooling Fan Speed Sensor Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0545 - Exhaust Gas Temperature (EGT) Sensor 1 Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	
P0546 - Exhaust Gas Temperature (EGT) Sensor 1 Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	
P0606 - Control Module Internal Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P0609 - Vehicle Speed Output Circuit 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)			
P062C - TPU error on VSS signal	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)		
P062F - Control Module Long Term Memory Performance	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P0640 - Intake Air (IA) Heater Switch/Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P0641 - 5 Volt Reference 1 Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS		
P0645 - Air Conditioning Clutch Relay Control Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	
P0646 - Air Conditioning Clutch Relay Control Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	
P0647 - Air Conditioning Clutch Relay Control Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	
P064C - Glow Plug Control Module Performance	engine is not in standby state (standby state occurs after ECM initialization or following after-run)		
P0650 - Malfunction Indicator Lamp Control Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm
P0651 - 5 Volt Reference 2 Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)		
P0671 - Glow Plug 1 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)		
P0672 - Glow Plug 2 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)		
P0673 - Glow Plug 3 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)		

DTC	ADDITIONAL BASIC ENABLE CONDITIONS
P0674 - Glow Plug 4 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)
P0675 - Glow Plug 5 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)
P0676 - Glow Plug 6 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)
P0677 - Glow Plug 7 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)
P0678 - Glow Plug 8 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)
P0697 - 5 Volt Reference 3 Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)
P06A3 - 5 Volt Reference 4 Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)
P06D2 - 5 Volt Reference 5 Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)
P0700 - Transmission Control Module Requested Malfunction Indicator Lamp Illumination	engine is not in standby state (standby state occurs after ECM initialization or following after-run)

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P0856 - Traction Control Torque Request Signal Message Counter Incorrect	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)		
P1043 - Reductant Pump High Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P1044 - Reductant Pump High Control Circuit High Voltage	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P1045 - Reductant Purge Valve High Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P1048 - Reductant Injector High Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P1049 - Reductant Injector High Control Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P10CC - Exhaust Aftertreatment Fuel Injector Control Circuit Shorted	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P10CD - Exhaust Aftertreatment Fuel Injector High Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P10CE - Exhaust Aftertreatment Fuel Injector High Control Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P111C - Charge Air Cooler Temperature-Intake Air Temperature (IAT) Sensor 2 Not Plausible	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P111D - Intake Air Temperature (IAT) Sensor 1 - Fuel Temperature Sensor 2 Not Plausible	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P113A - Exhaust Gas Temperature Sensors 3-4 Not Plausible	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P11AF - HO2S Performance - Signal High During Moderate	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Signal High During Moderate Load Bank 1 Sensor 2	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P11B2 - HO2S Performance - Signal Low During Moderate Load Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P11B5 - HO2S Current Performance Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P11CB - NOx Sensor Performance - Signal High Bank 1 Sensor 1	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	ambient air temperature is above -7 deg C
	ambient pressure is above 74.8kPa	battery voltage is above 11 V for at least 3s	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P11CC - NOx Sensor Performance - Signal Low Bank 1 Sensor 1	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	ambient air temperature is above -7 deg C
	ambient pressure is above 74.8kPa	battery voltage is above 11 V for at least 3s	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P11CD - NOx Sensor Performance - Signal Insufficient Peak Value Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	ambient air temperature is above -7 deg C
	ambient pressure is above 74.8kPa	battery voltage is above 11 V for at least 3s	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P11DB - NOx Sensor Current	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Performance Bank 1 Sensor 1	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P11DC - NOx Sensor Current Performance Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P122C - Intake Air Flow Valve Control Circuit Shorted	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P122D - Diesel Intake Air Flow Position Sensor Exceeded Learning Limit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P122E - Intake Air Flow Valve Control Circuit 2 Low Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P122F - Intake Air Flow Valve Control Circuit 2 High Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P125A - Fuel Pressure Regulator 2 High Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		

DTC	ADDITIONAL BASIC ENABLE CONDITIONS		
P125B - Fuel Pressure Regulator 2 High Control Circuit High Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)		
P128E - Fuel Rail Pressure Performance	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P12B3 - Cylinder 1 Injection Timing Retarded	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12B4 - Cylinder 1 Injection Timing Advanced	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12B5 - Cylinder 2 Injection Timing Retarded	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12B6 - Cylinder 2 Injection Timing Advanced	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12B7 - Cylinder 3 Injection Timing Retarded	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12B8 - Cylinder 3 Injection Timing Advanced	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12B9 - Cylinder 4 Injection Timing Retarded	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)

DTC	ADDITIONAL BASIC ENABLE CONDITIONS		
P12BA - Cylinder 4 Injection Timing Advanced	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12BB - Cylinder 5 Injection Timing Retarded	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12BC - Cylinder 5 Injection Timing Advanced	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12BD - Cylinder 6 Injection Timing Retarded	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12BE - Cylinder 6 Injection Timing Advanced	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12BF - Cylinder 7 Injection Timing Retarded	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12C0 - Cylinder 7 Injection Timing Advanced	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12C1 - Cylinder 8 Injection Timing Retarded	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P12C2 - Cylinder 8 Injection Timing Advanced	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P1400 - Cold Start Injection Monitor	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P1407 - Exhaust Gas Recirculation (EGR) Motor Control Circuit Shorted	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P140A - EGR Cooler BY Pass Position Sensor Exceded Learning Limit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P140B - Exhaust Gas Recirculation Slow Response-Increasing Flow	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P140C - Exhaust Gas Recirculation Slow Response-Decreasing Flow	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P140D - Exhaust Gas Recirculation (EGR) Motor Control Circuit 2 Low Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P140E - Exhaust Gas Recirculation (EGR) Motor Control Circuit 2 High Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P140F - Exhaust Gas Recirculation (EGR) Motor Current Performance	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P1411 - Exhaust Gas Recirculation (EGR) Cooler Bypass Valve Control Circuit 2 Low Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P1412 - Exhaust Gas Recirculation (EGR) Cooler Bypass Valve Control Circuit 2 High Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P1413 - Exhaust Gas Recirculation (EGR) Cooler Bypass Valve Control Circuit Shorted	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P1414 - Exhaust Gas Recirculation (EGR) Cooler Bypass Valve Current Performance	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P144B - Closed Loop Diesel Particulate Filter (DPF) Regeneration Control At Limit - Stage 1 Temperature Too Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P144C - Closed Loop Diesel Particulate Filter (DPF)	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Regeneration Control At Limit - Stage 1 Temperature Too High	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P144E - Closed Loop Diesel Particulate Filter (DPF) Regeneration Control At Limit - Stage 2 Temperature Too Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P144F - Closed Loop Diesel Particulate Filter (DPF) Regeneration Control At Limit - Stage 2 Temperature Too High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P150C - TCM Engine Speed Request Signal Message Counter Incorrect	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P154A - Intake Air (IA) Heater Feedback Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P154B - Intake Air (IA) Heater Voltage Signal Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P154C - Intake Air (IA) Heater Current Signal Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P154D - Intake Air (IA) Heater Temperature Signal Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P160C - Engine Calibration Information Not Programed In The Control Module	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				
P161A - Glow Plug Control Module Not Programed	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P1631 - Theft Deterrent Fuel Enable Signal Not Correct	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)		
P163C - Glow Plug Control Module Primary Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	battery voltage is above 11 V for at least 3s			
P163D - Glow Plug Control Module Secondary Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)			
P163E - Glow Plug Control ModuleOvertemperature	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P163F - Reductant Module	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Performance	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P166B - Intake Air (IA) Heater Over Temperature	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P16A0 - Throttle Sensor Communication Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P16A1 - Throttle Sensor Communication Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P16A2 - Throttle Sensor Communication Circuit Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2002 - Diesel Particulate Filter	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
(DPF) Low Efficiency	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P202E - Reductant Injector Performance	SCR Reductant Level not in restriction or empty level state (see reductant level warning definition)	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	battery voltage is above 11 V for at least 3s
	Status of the Reductant Tank is not Frozen which means ambient air temperature is >= -7°C and the reductatn tank temperature is >= -	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P2032 - Exhaust Gas Temperature (EGT) Sensor 2 Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	
P2033 - Exhaust Gas Temperature (EGT) Sensor 2 Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	
P203B - Reductant Level Sensor 1 Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Status of the Reductant Tank is not Frozen which means ambient air temperature is >= -7°C and the reductatn tank temperature is >= -	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P203C - Reductant Level	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Sensor 1 Circuit Low	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P203D - Reductant Level Sensor 1 Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P2047 - Reductant Injector Control Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2048 - Reductant Injector Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2049 - Reductant Injector	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Control Circuit High Voltage	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P204B - Reductant Pump Pressure Sensor Performance	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P204C - Reductant Pump Pressure Sensor Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	battery voltage is above 11 V for at least 3s	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)
	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P204D - Reductant Pump Pressure Sensor Circuit High	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P204F - Reductant System Performance Bank 1	SCR Reductant Level not in restriction or empty level state (see reductant level warning definition)	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P205B - Reductant Tank Temperature Sensor Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P205C - Reductant Tank Temperature Sensor Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	battery voltage is above 11 V for at least 3s	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)
	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P205D - Reductant Tank Temperature Sensor Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	battery voltage is above 11 V for at least 3s	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)
	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P207F - Incorrect Reductant Composition	SCR Reductant Level not in restriction or empty level state (see reductant level warning definition)	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)
	battery voltage is above 11 V for at least 3s	Status of the Reductant Tank is not Frozen which means ambient air temperature is >= -7°C and the reductatn tank temperature is >= -	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P2080 - Exhaust Temperature Sensor 1 Performance	Engine speed greater than 600 to 850 rpm	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P2084 - Exhaust Temperature Sensor 2 Performance	Engine speed greater than 600 to 850 rpm	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P208A - Reductant Pump	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Control Circuit	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P208B - Reductant Pump Performance	SCR Reductant Level not in restriction or empty level state (see reductant level warning definition)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	Status of the Reductant Tank is not Frozen which means ambient air temperature is >= -7°C and the reductatn tank temperature is >= -7°C	
P208D - Reductant Pump Control Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P20A0 - Reductant Purge Valve Control Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P20A1 - Reductant Purge Valve Performance	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Status of the Reductant Tank is not Frozen which means ambient air temperature is >= -7°C and the reductatn tank temperature is >= -7°C			
P20A2 - Reductant Purge Valve	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Control Circuit Low Voltage	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P20A3 - Reductant Purge Valve Control Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P20B9 - Reductant Heater 1 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P20BA - Reductant Heater 1 Performance	SCR Reductant Level not in restriction or empty level state (see reductant level warning definition)	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine is running which means the engine speed is greater than 600 to 850 rpm				
P20BB - Reductant Heater 1 Control Circuit Low	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P20BC - Reductant Heater 1 Control Circuit High	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P20BD - Reductant Heater 2 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P20BF - Reductant Heater 2 Control Circuit Low	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P20C0 - Reductant Heater 2 Control Circuit High	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P20C1 - Reductant Heater 3 Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P20C3 - Reductant Heater 3 Control Circuit Low	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P20C4 - Reductant Heater 3 Control Circuit High	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P20CB - Exhaust Aftertreatment Fuel Injector Control Circuit	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P20CC - Exhaust Aftertreatment Fuel Injector Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P20CD - Exhaust Aftertreatment Fuel Injector Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P20CE - Exhaust Aftertreatment Fuel Injector Control Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P20E2 - Exhaust Gas Temperature (EGT) Sensors 1-2 not plausible	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P20EE - SCR Nox Catalyst Efficiency Below Threshold Bank 1	SCR Reductant Level not in restriction or empty level state (see reductant level warning definition)	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)
	battery voltage is above 11 V for at least 3s	Status of the Reductant Tank is not Frozen which means ambient air temperature is >= -7°C and the reductatn tank temperature is >= -7°C	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P21AA - Reductant Level Sensor 2 Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P21AB - Reductant Level Sensor 2 Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P21AF - Reductant Level	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Sensor 3 Circuit Low	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P21B0 - Reductant Level Sensor 3 Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P2200 - N0x Sensor Circuit Bank 1 Sensor 1	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P2201 - N0x Sensor Performance Bank 1 Sensor 1	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)	
P2202 - N0x Sensor Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Bank 1 Sensor 1	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P2203 - N0x Sensor Circuit High Bank 1 Sensor 1	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P2205 - N0x Heater Control Circuit Bank 1 Sensor 1	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P2209 - N0x Heater Performance Bank 1 Sensor 1	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P220A - N0x Sensor Supply Voltage Out Of Range Bank 1 Sensor 1	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P220B - N0x Sensor Supply Voltage Out Of Range Bank 1 Sensor 2	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P2228 - Barometric Pressure Sensor Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2229 - Barometric Pressure Sensor Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2263 - Turbo Boost System Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	battery voltage is above 11 V for at least 3s	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)
	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)			
P2295 - Fuel Pressure Regulator 2 Control Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P2296 - Fuel Pressure Regulator 2 Control Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm		
P229E - NOx Sensor Circuit Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P229F - NOx Sensor Performance Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	ambient air temperature is above -7 deg C
	ambient pressure is above 74.8kPa	battery voltage is above 11 V for at least 3s	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	System is not in active regeneration mode	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P22A0 - NOx Sensor Circuit Low Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P22A1 - NOx Sensor Circuit High Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P22A3 - NOx Heater Control Circuit Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P22A7 - NOx Heater Performance Bank 1 Sensor 2	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P2413 - Exhaust Gas Recirculation System Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P242B - Exhaust Temperature Sensor 3 Performance	Engine speed greater than 600 to 850 rpm	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P242C - Exhaust Gas Temperature (EGT) Sensor 3 Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	
P242D - Exhaust Gas Temperature (EGT) Sensor 3 Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	
P244D - Catalyst Temperature Too High During Regeneration	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P2453 - Diesel Particulate Filter Differential Pressure Sensor Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P2454 - Diesel Particulate Filter Differential Pressure Sensor Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2455 - Diesel Particulate Filter Differential Pressure Sensor	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Differential Pressure Sensor Circuit High Voltage	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2457 - Exhaust Gas (EGR) Cooler Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
P2459 - Diesel Particulate Filter Regeneration Frequency	ambient air temperature is above -7 deg C	ambient pressure is above 74.8kPa			
P245A - Exhaust Gas Recirculation (EGR) Cooler Bypass Valve Control Circuit	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P245C - Exhaust Gas Recirculation (EGR) Cooler Bypass Valve Control Circuit 1 Low Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P245D - Exhaust Gas Recirculation (EGR) Cooler Bypass Valve Control Circuit 1 High Voltage	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P2463 - Diesel Particulate Filter - Soot Accumulation	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P246F - Exhaust Temperature Sensor 4 Performance	Engine speed greater than 600 to 850 rpm	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P2470 - Exhaust Gas Temperature (EGT) Sensor 4 Circuit Low Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	
P2471 - Exhaust Gas Temperature (EGT) Sensor 4 Circuit High Voltage	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	
P2493 - EGR Cooler BY Pass Position Sensor Performance	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2494 - EGR Cooler BY Pass Position Sensor Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2495 - EGR Cooler BY Pass	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Position Sensor Circuit High	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P249D - Closed loop Reductant Injection Control at Limit-Flow too low	SCR Reductant Level not in restriction or empty level state (see reductant level warning definition)	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)
	battery voltage is above 11 V for at least 3s	Status of the Reductant Tank is not Frozen which means ambient air temperature is >= -7°C and the reductatn tank temperature is >= -7°C	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P249E - Closed Loop Reductant Injection Control at Limit-Flow too High	SCR Reductant Level not in restriction or empty level state (see reductant level warning definition)	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)
	battery voltage is above 11 V for at least 3s	Status of the Reductant Tank is not Frozen which means ambient air temperature is >= -7°C and the reductatn tank temperature is >= -7°C	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P24A0 - Closed Loop Exhaust Aftertreatment Fuel Injector Diesel Particulate Filter (DPF) Regeneration Control At Limit - Temperature Too Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P24A1 - Closed Loop Exhaust Aftertreatment Fuel Injector Diesel Particulate Filter (DPF) Regeneration Control At Limit - Temperature Too High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2564 - Turbocharger Boost Control Position Sensor Circuit Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2565 - Turbocharger Boost Control Position Sensor Circuit High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm
	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)				
P2598 - Turbocharger Boost Control Position Sensor "A" Circuit Range / Performance - Stuck Low	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P2599 - Turbocharger Boost Control Position Sensor "A" Circuit Range / Performance - Stuck High	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)
P2610 - Control Module Ignition Off Timer Performance	engine is not in standby state (standby state occurs after ECM initialization or following after-run)				
P268A - Fuel Injector Calibration Not Programmed	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				
P268C - Cylinder 1 Injector Data Incorrect	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				
P268D - Cylinder 2 Injector Data Incorrect	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				
P268E - Cylinder 3 Injector Data Incorrect	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				
P268F - Cylinder 4 Injector Data Incorrect	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				
P2690 - Cylinder 5 Injector Data Incorrect	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				
P2691 - Cylinder 6 Injector Data Incorrect	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
P2692 - Cylinder 7 Injector Data Incorrect	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				
P2693 - Cylinder 8 Injector Data Incorrect	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)				
U0073 - CAN A BUS OFF	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)			
U0074 - CAN B BUS OFF	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)			
U0101 - Lost Communications With Transmission Control System	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)			
U0106 - Lost Communication With Glow Plug Control Module	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	engine is not in standby state (standby state occurs after ECM initialization or following after-run)			
U010E - Lost Communications With Reductant Control Module	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
U029D - N0x Sensor Bank 1 Sensor 1 Loss of	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s

DTC	ADDITIONAL BASIC ENABLE CONDITIONS				
Sensor 1 Loss of Communication	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		
U029E - N0x Sensor Bank 1 Sensor 2 Loss of Communication	Engine not in afterrun mode (defined as engine speed greater than 0 rpm)	Engine speed greater than 600 to 850 rpm	engine is not in standby state (standby state occurs after ECM initialization or following after-run)	Manufacturer Enable Counter is zero (value of 0 means ECM is locked and out of assembly plant mode)	battery voltage is above 11 V for at least 3s
	Engine Run Time greater than 10 seconds (engine speed greater than 600 to 850 rpm to indicate the engine is running)	Engine is running which means the engine speed is greater than 600 to 850 rpm	engine is not in ready state (which is active when the ignition is on or following a stall of the engine)		