COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
IVVT Intake	**P000A**	slow response	actual CMP - CMP at start of diagnosis	>= 4.125	[°CA]	Ignition	"on"		150	[s]	every 360° CA	2 DCY
						engine	"running"					
						Engine speed	> 736...1248 and < 6016	[rpm]			continuous	
						Oil Temp.	> -10 and < 130	[°C]				
						Battery voltage	> 10 and < 16	[V]				
				disable		No active DTC´s:						
				conditions:		No CRK error	P0335, P0336					
						No CAM error	P0340, P0341, P0365, P0366					
						No "one tooth off" error IVVT	P0016, P0017					
						No slow response IVVT	P000B					
						No target error IVVT	P0011, P0014					
						No SLV error IVVT	P2089, P2088, P0010, P2091, P2090, P0013					
IVVT Exhaust	**P000B**	slow response	actual CMP - CMP at start of diagnosis	>= 4.125	[°CA]	Ignition	"on"		150	[s]		2 DCY
						Engine	"running"					
						Engine speed	> 640...1248	[rpm]			every 360° CA	
						Oil Temp.	> -10 and < 130	[°C]			continuous	
						Battery voltage	> 10 and <	[V]				
				disable		No active DTC´s:						
				conditions:		No CRK error	P0335, P0336					
						No CAM error	P0340, P0341, P0365, P0366					
						No "one tooth off" error IVVT	P0016, P0017					
						No slow response IVVT	P000A					
						No target error IVVT	P0011, P0014					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No SLV error IVVT	P2089, P2088, P0010, P2091, P2090, P0013					
IVVT Intake	**P0010**		open circuit			Ignition	"on"		1,7	[s]	100 ms	2 DCY
						PWM signal	> 12.9 and < 91.8	[%]			continuous	
						Battery voltage	> 10 and < 16	[V]				
				disable		No active DTC´s:						
				conditions:		No SPI Bus conflict	P0606					
IVVT Intake	**P0011**	target error	Camshaft position deviation from commanted position	> table values+ 6...7.875 or < table values - 6...7.875	[°CA]				150	[s]	every 360° CA	2 DCY
						Engine speed	> 736....1248 < 6016	[rpm]			continuous	
						Oil Temp.	>-10 and < 130	[°C]				
						Commanded Camshaft Position	Stabilized	[-]				
						engine	"running"					
						Ignition	"on"					
						Battery voltage	> 10 and < 16	[V]				
				disable		No active DTC´s:						
				conditions:		No CRK error	P0335, P0336					
						No CAM error	P0340, P0341, P0365, P0366					
						No "one tooth off" error IVVT	P0016, P0017					
						No slow response IVVT	P000A, P000B					
						No target error IVVT	P0014					
						No SLV error IVVT	P2089, P2088, P0010, P2091, P2090, P0013					
						Ignition	"on"					
IVVT Exhaust	**P0013**		open circuit			PWM signal	> 12.9 and < 91.8	[%]	1,7	[s]	100 ms	2 DCY
						Battery voltage	> 10 and < 16	[V]			continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				disable		No active DTC´s:						
				conditions:		No SPI Bus conflict	P0606					
IVVT Exhaust	**P0014**	target error	Camshaft position	> (Camshaft setpoint + 6...7.875) or < (Camshaft setpoint - 6...7.875)	[°CA]				150	[s]		2 DCY
						Engine speed	> 736...1248 and < 6016	[rpm]			every 360° CA	
						Oil Temp.	> -10 and < 130	[°C]			continuous	
						Setpoint stable						
						Ignition	"on"					
						Battery voltage	> 10 and < 16	[V]				
						Engine	running					
				disable		No active DTC´s:						
				conditions:		No CRK error	P0335, P0336					
						No CAM error	P0340, P0341, P0365, P0366					
						No "one tooth off" error IVVT	P0016, P0017					
						No slow response IVVT	P000A, P000B					
						No target error IVVT	P0011					
						No SLV error IVVT	P2089, P2088, P0010, P2091, P2090, P0013					
IVVT Intake	**P0016**	reference position changed	Camshaft reference position;	> 135 < 148.875	[°CA]						every 360° CA	2 DCY
one tooth off						Engine speed	> 672 and < 4000	[rpm]	< 2	[s]	once / DCY	
						Oil Temp.	> -10	[°C]				
						ECT	> -9.8	[°C]				
						Ignition	"on"					
						engine	"running"					
						Battery voltage	> 10 and < 16	[V]				
				disable		No active DTC´s:						

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				conditions:		No CRK error	P0335, P0336					
						No CAM error	P0340, P0341, P0365, P0366					
						No "one tooth off" error IVVT	P0017					
						No slow response IVVT	P000A, P000B					
						No target error IVVT	P0014					
						No SLV error IVVT	P2089, P2088, P0010, P2091, P2090, P0013					
IVVT Exhaust	**P0017**	reference position changed	Camshaft reference position;	> -110.125 or < -96.25	[°CA]							2 DCY
one tooth off						Engine speed	> 672 and < 4000				every 360° CA	
						Oil Temp.	> -10	[°C]	< 2	[s]	once / DCY	
						ECT	> -9.8	[°C]				
						Ignition	"on"					
						Battery voltage	> 10 and < 16	[V]				
						Engine	"running"					
				disable		No active DTC´s:						
				conditions:		No CRK error	P0335, P0336					
						No CAM error	P0340, P0341, P0365, P0366					
						No "one tooth off" error IVVT	P0016					
						No slow response IVVT	P000A, P000B					
						No target error IVVT	P0011, P0014					
						No SLV error IVVT	P2089, P2088, P0010, P2091, P2090, P0013					
Oxygen Sensor Upstream	**P0030**	Open Circuit	done by the heater driver at the "ON" state			Ignition	"on"		2500	[ms]	200 ms	2 DCY

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
HO2S Heater Control						Battery voltage	> 9	[V]			continuous	
						PWM value	<= 99.609 and >= 4.297	[%]				
Oxygen Sensor Upstream	**P0031**	Short to Ground	done by the heater driver at the "OFF" state			Ignition	"ON"		2500	[ms]	200 ms	2 DCY
						Battery voltage	> 9	[V]			continuous	
						PWM value	<= 99.609	[%]				
Oxygen Sensor Upstream	**P0032**	Short to Battery	done by the heater driver at the "ON" state			Ignition	"ON"		2500	[ms]	200 ms	2 DCY
						Exhaust gas Temp. at lambda sensor up cat	>= 99.98	[°C]			continuous	
						Battery voltage	> 9	[V]				
						PWM value	>= 0.4	[%]				
Oxygen Sensor Downstream						Ignition	"on"					
HO2S Heater Control	**P0036**	Open Circuit	done by the heater driver at the "ON" state			Battery voltage	> 9	[V]	2500	[ms]	200 ms	2 DCY
						PWM value	4.3 <= PWM <=99.6	[%]			continuous	
Oxygen Sensor Downstream	**P0037**	Short to Ground	done by the heater driver at the "OFF" state			Battery voltage	> 9	[V]	2500		200 ms	2 DCY
HO2S Heater Control						PWM value	<=99.6	[%]			continuous	
Oxygen Sensor Downstream	**P0038**	Short to Battery	done by the heater driver at the "ON" state			exhaust gas Temp. at lambda sensor up cat	> 24.98	[°C]	2500		200 ms	2 DCY
HO2S Heater Control						Battery voltage	> 9	[V]			continuous	
						PWM value	>= 0.4	[%]				
Load TPS Rationality	**P0068**	deviation measured airflow to modeled airflow	meassured air flow - modeled air flow	> 15 ... 50	[%]	Ignition	"on"		1600	[ms]	20 ms	2 DCY
Throttle Body Airflow Performance		filtered active relative LAM correction	and			Battery voltage	> 10	[V]			continuous	
			filtered active relative LAM correction	> -11 and < 11	[%]	Engine	"running"					
			and									
			Close loop active			Time after engine start	> 5	[s]				
			or			Ambient pressure	> 69.999	[kPa]				
			meassured air flow - modeled air flow	> 15 ... 50	[%]	Ambient pressure	< 149.99	[kPa]				
			and			RPM	> 800	[rpm]				
			filtered active relative LAM correction	> 11	[%]	RPM	< 6496	[rpm]				
						Throttle position	< 4.996...10	[°]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
			or			Throttle position	> 84.999	[°]				
			measured air flow - modeled air flow	<-15 ... -50	[%]	Pressure quotient	> 0.3	[-]				
			and			Pressure quotient	< 0.99	[-]				
			filtered active relative LAM correction	> -11 and < 11	[%]	System is controlled by mass air flow sensor						
			and			No engine state "pull fuel cutoff"						
			Close loop active			Electronic throttle control power stage is on						
			or									
			measured air flow - modeled air flow	<-15 ... -50	[%]							
			and									
			filtered active relative LAM correction	< -11	[%]							
				disable		No active DTC's:						
				conditions:		No Mass Air Flow error	P0103, P0102					
						No IAT sensor error	P0113, P0112,					
						No Canister purge valve error	P0459, P0458					
						No Ambient pressure sensor error	P2229, P2228, P2227					
						No Throttle Position error	P0123, P0122, P0223, P0222, P0121, P0221					
						No Supply voltage error	P0643, P0642, P0653, P0652					
						No Camshaft error	P0340, P0341, P0365, P0366					
						No Variable valve timing error	P000A, P000B, P0016, P0017					
						No ECT error	P0118, P0117,					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No variable intake manifold error	P065E,					
AAT Sensor	**P0072**	short to ground	AAT raw value	< 0.498 (>110°C)	[V]	Ignition	"on"		2000	[ms]		2 DCY
						Battery voltage	> 9	[V]			100 ms	
				disable							continuous	
				conditions:		No active DTC's:						
						AAT	P009A, P0074					
AAT Sensor	**P0073**	short to battery plus	AAT raw value	> 4.976 (<-41°C)	[V]	Ignition	"on"		2000	[ms]		2 DCY
						Battery voltage	> 9	[V]			100 ms	
				disable							continuous	
				conditions:		No active DTC's:						
						AAT	P009A, P0074					
AAT Sensor	**P0074**	oscillation check	delta of I measured AAT - AAT_MMV I of moving vehicle	> 6	[°C]	Ignition	"on"		2000	[ms]		2 DCY
						Battery voltage	> 9	[V]			100 ms	
						and					continuous	
						Vehicle speed	> 12.5	[mph]				
						for						
						Timer	> 25.5	[s]				
				disable								
				conditions:		No active DTC's:						
						No AAT error	P0073, P0072, P009A					
AAT Sensor	**P009A**	plausibility check - for warm-start and normal driving conditions conditions only	delta of measured AAT - modled AAT	>= 20.3	[°C]	Ignition	"on"		immediately after error is detected		continuous	2 DCY
						Battery voltage	>= 10	[V]				
						ECT	> -30	[°C]				
						measured AAT variation during learning conditions	< 2,3	[°C]				
						Elapsed time after conditions for learning	>= 45	[s]				
						Vehicle speed	<= 100	[mph]				
						Vehicle speed	> 21.875	[mph]				
						Mass air flow	< 500.01	[kg/h]				
						Mass air flow	> 70.01	[kg/h]				
						Engine speed	> 928	[rpm]				
						Engine speed	< 6496	[rpm]				
						ECT	< 120	[°C]				
						ECT	> 69	[°C]				
						Intake manifold heat model	< 200	[-]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Elapsed time after conditions for learning	>= 15	[s]				
						No active DTC's:						
						No Ambient pressure sensor error	P2229, P2228, P2227					
						No Mass Air Flow sesnor error	P0103, P0102					
						No IAT error	P0113, P0112,					
						No VS error	P0501					
						No Camshaft error	P0340, P0341, P0365, P0366					
						No Crankshaft error	P0335, P0336					
						No ECT error	P0118, P0117,					
						No LOAD_TPS error	P0101, P1101, P0068					
						No Engine off timer error	P2610					
						No AAT error	P0073, P0072, P0074					
AAT Sensor	**P009A**	plausibility check - for warm-start and normal driving conditions conditions only	delta of measured AAT - modled AAT	<= -20.3	[°C]	Ignition	"on"		immediately after error is detected		continuous	2 DCY
						Battery voltage	>= 10	[V]				
						ECT	> -30	[°C]				
						measured AAT variation during learning conditions	< 2,3	[°C]				
						Elapsed time after conditions for learning	>= 45	[s]				
						Vehicle speed	<= 100	[mph]				
						Vehicle speed	> 21.875	[mph]				
						Mass air flow	< 500.01	[kg/h]				
						Mass air flow	> 70.01	[kg/h]				
						Engine speed	> 928	[rpm]				
						Engine speed	< 6496	[rpm]				
						ECT	< 120	[°C]				
						ECT	> 69	[°C]				
						Intake manifold heat model	< 200	[-]				
						Elapsed time after conditions for learning	>= 15	[s]				
				disable		No active DTC's:						

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				conditions:		No Ambient pressure sensor error	P2229, P2228, P2227					
						No Mass Air Flow sesnor error	P0103, P0102					
						No IAT error	P0113, P0112,					
						No VS error	P0501					
						No Camshaft error	P0340, P0341, P0365, P0366					
						No Crankshaft error	P0335, P0336					
						No ECT error	P0118, P0117,					
						No LOAD_TPS error	P0101, P1101, P0068					
						No Engine off timer error	P2610					
						No AAT error	P0073, P0072, P0074					
AAT Sensor	**P009A**	cold start plausibility check against IAT and ECT sensors	absolute minimum of IAT of moving vehicle- AAT at engine start	>= 20.25...95.25	[°C]	Ignition	"on"					2 DCY
			and			Battery voltage	> 10	[V]	immedeately after error is detected		100 ms	
			absolute minimum of AAT of moving vehicle - ECT at engine start	>= 20.25...95.25	[°C]	ECT	> -30	[°C]				
						absolute minimum of IAT of moving vehicle- AAT at engine start	<=9.8	[°C]			once / DCY	
						and						
						absolute minimum of AAT of moving vehicle - ECT at engine start	<=8.3	[°C]				
						Vehicle speed	=>9.375	[mph]				
						I AAT@engine start - AAT of moving vehicle I	<=2.25	[°C]				
						and						
						I IAT@engine start - IAT of moving vehicle I	<=3	[°C]				
						and						
						ECT @engine start- ECT of moving vehicle	<=3.75	[°C]				
						and						
						ECT @engine start- ECT of moving vehicle	=>9	[°C]				
						and						
						for						
						Time length	>20	[s]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						and						
						Time after engine start	=>60	[s]				
						and						
						Time after engine start	<120	[s]				
						and						
						Engine off timer	>460	[min]				
				disable		No active DTC's:						
				conditions:		No Ambient pressure sensor error	P2229, P2228, P2227					
						No Mass Air Flow sesnor error	P0103, P0102					
						No IAT error	P0113, P0112,					
						No VS error	P0501					
						No Camshaft error	P0340, P0341, P0365, P0366					
						No Crankshaft error	P0335, P0336					
						No ECT error	P0118, P0117,					
						No LOAD_TPS error	P0101, P1101, P0068					
						No AAT error	P0073, P0072, P0074					
						No engine off timer error	P2610					
Load TPS Rationality	**P0101**	deviation measured airflow to modeled airflow	meassured air flow - modeled air flow	> 15 ... 50	[%]	Ignition	"on"		1600	[ms]	20 ms	2 DCY
		filtered active relative LAM correction	and			Battery voltage	> 10	[V]			continuous	
Mass Air Flow (MAF) Sensor Performance			filtered active relative LAM correction	< -11	[%]	Engine	"running"					
			and									
			Close loop active			Time after engine start	> 5	[s]				
			or			Ambient pressure	> 69.999	[kPa]				
			meassured air flow - modeled air flow	> 15 ... 50	[%]	Ambient pressure	< 149.99	[kPa]				
			and			RPM	> 800	[rpm]				
			filtered active relative LAM correction	> -11 and < 11	[%]	RPM	< 6496	[rpm]				
			and			Throttle position	< 4.996...10	[°]				
			Close loop not active			Throttle position	> 84.999	[°]				
						Pressure quotient	> 0.3	[-]				
						Pressure quotient	< 0.99	[-]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
			meassured air flow - modeled air flow	<-15 ... -50	[%]	System is controlled by mass air flow sensor						
			and			No engine state "pull fuel cutoff"						
			filtered active relative LAM correction	> 11	[%]	Electronic throttle control power stage is on						
			and									
			Close loop active									
			or									
			meassured air flow - modeled air flow	<-15 ... -50	[%]							
			and									
			filtered active relative LAM correction	> -11 and < 11	[%]							
			and									
			Close loop not active									
						No active DTC's:						
				disable		No Mass Air Flow error	P0103, P0102					
				conditions:		No IAT sensor error	P0113, P0112,					
						No Canister purge valve error	P0459, P0458					
						No Ambient pressure sensor error	P2229, P2228, P2227					
						No Throttle Position error	P0123, P0122, P0223, P0222, P0121, P0221					
						No Supply voltage error	P0643, P0642, P0653, P0652					
						No Camshaft error	P0340, P0341, P0365, P0366					
						No Variable valve timing error	P000A, P000B, P0016, P0017					
						No ECT error	P0118, P0117,					
						No variable intake manifold error	P065E,					
						No variable intake manifold error	P065E,					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
MAF Sensor	**P0102**	short to ground	mass air flow	< 2.5 (<0.46V)	[kg/h]	Ignition	"on"		480	[ms]	10 ms	2 DCY
		or open circuit				Engine	"running"				continuous	
						Throttle position	> 0.9	[°]				
						RPM	> 736	[rpm]				
						Battery voltage	> 9	[V]				
						non confirmed crank sensor fault	not present					
				disable		No active DTC's:						
				conditions:								
						No CRK error	P0335, P0336					
MAF Sensor	**P0103**	short to battery plus	mass air flow	>= 490 (>=4,29V)	[kg/h]	Ignition	"on"		480	[ms]	10 ms	2 DCY
						Engine	"running"				continuous	
						Throttle position	> 0.9	[°]				
						RPM	> 736	[rpm]				
						Battery voltage	> 9	[V]				
						non confirmed crank sensor fault	not present					
				disable		No active DTC's:						
				conditions:								
						No CRK error	P0335, P0336					
IAT Sensor	**P0111**	stuck check	deviation of IAT since engine start	< 1.5	[°C]	Ignition	"on"		2000	[ms]	100 ms	2 DCY
IAT Sensor Rationality						Battery voltage	>9	[V]			once / DCY	
						Driven distance since engine start	>= 6.25	miles				
						ECT	>= 69	[°C]				
						Time after engine start	>= 600	[s]				
						AAT	>= -8.3	[°C]				
						Intake manifold heat model changes	>= 100					
				disable		No active DTC's:						
				conditions:		No VS error	P0501					
						No ECT error	P0118, P0117,					
						No IAT sensor error	P0113, P0112,					
						No LOAD_TPS error	P0101, P1101, P0068					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
IAT Sensor	**P0111**	cold start plausibility check against AAT and ECT sensors							immedeately after error is detected		100 ms	2 DCY
			absolute minimum of IAT of moving vehicle - ECT at engine start	>= 20.25...95.25	[°C]	Ignition	"on"				once / DCY	
			and			Battery voltage	> 10	[V]				
			absolute minimum of IAT of moving vehicle - AAT at engine start	>= 20.25...95.25	[°C]	absolute minimum of IAT of moving vehicle - ECT at engine start	<=8.3	[°C]				
						and						
						absolute minimum of IAT of moving vehicle - AAT at engine start	<=9.8	[°C]				
						I AAT@engine start - AAT of moving vehicle I	<=2.25	[°C]				
						and						
						I IAT@engine start - IAT of moving vehicle I	<=3	[°C]				
						and						
						ECT @engine start- ECT of moving vehicle	<=3.75	[°C]				
						and						
						ECT @engine start- ECT of moving vehicle	=>9	[°C]				
						and						
						Vehicle speed	=>9.375	[mph]				
						for						
						Time length	>20	[s]				
						and						
						Time after engine start	=>60	[s]				
						and						
						Time after engine start	<120	[s]				
						and						
						Engine off timer	>460	[min]				
				disable		No active DTC's:						
				conditions:		No Ambient pressure sensor error	P2229, P2228, P2227					
						No Mass Air Flow sesnor error	P0103, P0102					
						No IAT error	P0113, P0112,					
						No VS error	P0501					
						No Camshaft error	P0340, P0341, P0365, P0366					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No Crankshaft error	P0335, P0336					
						No ECT error	P0118, P0117,					
						No LOAD_TPS error	P0101, P1101, P0068					
						No AAT error	P0073, P0072, P0074					
						No engine off timer error	P2610					
IAT Sensor	**P0112**	short to ground	IAT raw value	< 0.151 (>126°C)	[V]	Ignition	"on"		1000	[ms]	100 ms	2 DCY
						Battery voltage	>9	[V]			continuous	
IAT Sensor	**P0113**	short to battery plus	IAT raw value	> 4.849 (< -50°C)	[V]	Ignition	"on"		1000	[ms]	100 ms	2 DCY
						Battery voltage	>9	[V]			continuous	
IAT Sensor	**P0114**	signal intermitten	IAT difference	> 9.8	[°C]	Ignition	"on"		2000	[ms]	100 ms	2 DCY
IAT Sensor Intermittent / Rationality						Battery voltage	>9	[V]			continuous	
				disable		No active DTC's:						
				conditions:		No IAT sensor error	P0113, P0112, P0111					
						Ignition	"on"					
ECT Sensor	**P0116**	signal range check	ECT at engine start - IAT at engine start	> table value 12...30	[°C]	Time after engine start	>2	[s]	immediately after error is detected		100 ms	2 DCY
ECT Sensor Rationality			ECT at engine start	> table value 50.25...90	[°C]	Battery voltage	>10	[V]			once / DCY	
						IAT at engine start	> -9.75 and < 50.25	[°C]				
						AAT at engine start	> -9.75	[°C]				
						IAT at engine staart - AAT at engine start	< 9.8	[°C]				
						Engine off timer for display	>= 420	[min]				
						Engine off timer signal	plausible					
				disable		No active DTC's:						
				conditions:		No ECT error	P0117, P0118, P0116 (stuck check)					
						No IAT error	P0111, P0112, P0113, P0114					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Ignition	"on"					
ECT Sensor	**P0116**	stuck check	ECT back up value - ECT back up value at engine start	> table value 6...39.8	[°C]	ECT @ start	<75.8	[°C]	immediately after error is detected		1 s	2 DCY
ECT Sensor Rationality			ECT raw value - ECT raw value at engine start	> table value 2.3...19.5	[°C]	battery voltage	<10	[V]			continuous	
				disable		No active DTC's:						
				conditions:		No ECT error	P0117, P0118, P0116 (signal range check)					
ECT Sensor	**P0117**	short to ground	ECT raw value	< 0.27 (136.50°C)	[V]	Ignition	"on"		1000	[ms]	100 ms	2 DCY
						Battery voltage	>9	[V]			continuous	
						IAT	>=-30 or	[°C]				
						IAT	(< -30 and	[°C]				
						Time after engine start	> 120)	[s]				
ECT Sensor	**P0118**	short to battery plus	ECT raw value	> 4.96 (-39.75°C)	[V]	Ignition	"on"		1000	[ms]	100 ms	2 DCY
		or open circuit				Battery voltage	>9	[V]			continuous	
						IAT	>=-30 or	[°C]				
						IAT	(< -30 and	[°C]				
						Time after engine start	> 120)	[s]				
ECT Sensor	**P0119**	intermitten / noisy	ECT_LIM - ECT_MES	> 5.3	[°C]	Ignition	"on"		1200	[ms]	100 ms	2 DCY
ECT Sensor Intermittant / Rationality						Battery voltage	>9	[V]			continuous	
				disable		No active DTC's:						
				conditions:		No ECT error	P0117,P0118					
Throttle Position												
						Ignition	"on"				10 ms	
TP Sensor 1	**P0121**	rationalty check	actual TPS 1 - calc. value	> 1	[-]	Engine	"running"		400	[ms]	continuous	1 DCY
						No adaption is requested						
				disable		No active DTC's:						
				conditions:		No supply voltage error	P0642, P0643					
TP Sensor 1	**P0122**	short to ground	TP Volts	< 0.197 (3,94 %)	[V]	Ignition	"on"		200	[ms]	10 ms	1 DCY
											continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				disable		No active DTC's:						
				conditions:		No supply voltage error	P0642, P0643					
TP Sensor 1	**P0123**	short to battery plus	TP Volts	> 4.815 (96,4 %)	[V]	Ignition	"on"		200	[ms]	10 ms	1 DCY
		or open circuit									continuous	
				disable		No active DTC's:						
				conditions:		No supply voltage error	P0642, P0643					
						Ignition	"on"					
Coolant System	**P0128**	functional check	ECT model value	> 91.5	[°C]	ECT @ start	> -9.75 and < 75	[°C]	immediately after error is detected		1 s	2 DCY
Thermostat Monitor		See description and flow-charts for more details	ECT	< 81	[°C]	IAT @ engine start	> -9.75	[°C]			once / DCY	
						Battery voltage	> 10	[V]				
						"Trailing throttle fuel cut off" activation time since engine start	< = 19.9	[%]				
						"Min. load" activation time since engine start	< = 50	[%]				
						"Max. VS" activation time since engine start	< = 89.8	[%]				
						Engine state "idle speed" activation time since engine start	< = 39.8	[%]				
						IAT deviation (decrease) after engine start	> -20.25	[°C]				
						Engine speed	not (> 4800	[rpm]				
						Timer	for 8	[s]				
						ECT deviaction (decrease)	and < -3)	[°C]				
				disable		No active DTC's:						
				conditions:		No ECT error	P0116, P0117,					
						No MAF error	P0103, P102					
						No VS error	P0501					
						No CKP error	P0335, P0336					
						No TPS Error	P0121,P0122, P0123, P0221, P0222, P0223					
						No IAT error	P0111, P0112,					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
HO2S Electrical Diagnosis	**P0130**	open circuit	resistance	< 60000	[Ohm]	Delay time	>= 10	[s]	2500	[ms]		2 DCY
			duration in which the conditions for diag are fulfilled	>= 3	[s]	Duration in which the conditions for diag are fulfilled	>= 3				100 ms	
						Ignition	"on"				continuous	
						Exhaust gas Temp. at lambda sensor upstream cat	> 599.98					
				disable		No active DTCs:						
				conditions:		No O2 sensor error	P0130, P0131, P0132, P0133, P0134, P2297, P2A00					
						No O2 sensor heater error	P0030, P0031, P0032, P0135					
						O2S front dewpoint	passed					
						O2SH state	active					
HO2S Electrical Diagnosis	**P0131**	Short to Ground	signal voltage up stream	< 0.024	[V]	Ignition	"on"		1000	[ms]		2 DCY
						Resistance	< 20 [700 °C at HO2S]	[Ohm]			100 ms	
						Signal voltage down stream	> 0.024 [lean mixture > 1.4]	[V]			continuous	
						Mass air flow	>=8	[kg/h]				
						Time for lambda controller at limit	>= 0	[s]				
						Mass air flow for diagnosis (after CPS closed)	>= 30	[g]				
						Time after lambda controller activated	> 20	[s]				
				disable		No active DTCs:						

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				conditions:		No O2 sensor error	P0130, P0132, P0133, P0134, P0137, P0138, P0139, P0140, P2270, P2271, P2297, P2A00, P2A01					
						No O2 sensor heater error	P0030, P0031, P0032, P0036, P0037, P0038, P0135, P0141					
						No Canister purge solenoid error	P0443, P0458, P0459					
						No mech. canister purge solenoid error	P0496					
						No MAF error	P0102, P0103					
HO2S Electrical Diagnosis	**P0132**	Short to Battery	signal voltage up stream	> 1.201	[V]	Ignition	"ON"		2500	[ms]		2 DCY
				disable		No active DTCs:					100 ms	
				conditions:		No O2 sensor error	P0130, P0131, P0133, P0134, P2297, P2A00				continuous	
						No O2 sensor heater error	P0030, P0031, P0032, P0135					
						Engine speed	1504 < rpm <3488	[rpm]				
HO2S Slow Response	**P0133**	O2 sensor period too long / rich to lean ratio out of range	number of rich to lean and lean to rich cycles	> 50		Exhaust gas Temp. at lambda sensor upstream cat	> 399.98	[°C]	260	[s]	10 ms	2 DCY
			total ratio between measured and max. allowed rich time,	>= 1		Mass air flow	> 27.5 and < 120	[kg/h]			once / DCY	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
			total ratio between measured and max. allowed lean time	>= 1		Setpoint stable						
			I ratio lean time - ratio rich time I	< -0.5 or > 0.5		ECT	> 50.25	[°C]				
						Ignition	"ON"					
				disable		No active DTCs:						
				conditions:		No MAF error	P0102, P0103					
						No TPS error	P0121, P0122, P0123, P0221, P0222, P0223, P2176, P0101, P0068, P1101					
						No TCO error	P0116, P0117,					
						No CMP error	P0340, P0341					
						No IVVT error	P0365, P0366, P000A, P000B, P0010, P0011, P0013, P0014, P0016, P0017, P2088, P2089, P2090, P2091					
						No CKP error	P0335, P0336					
						No misfire error	P0300, P0301, P0302, P0303, P0304, P0313					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No O2 sensor error	P0130, P0131, P0132, P0134, P2297, P2A00					
						No O2 sensor heater error	P0030, P0031, P0032, P0135					
						No MTC error	P2100, P2101					
						No canister purge solenoid error	P0443, P0458, P0459					
						No mech. canister purge solenoid error	P0496					
						No FSD error	P0171, P0172					
						Ignition	"ON"					2 DCY
Activity Check	**P0134**	sensor signal excursion	I max. moving mean value - min moving mean value I	< 0.22	[V]	Exhaust gas Temp. at lambda sensor upstream cat	> 599.98	[°C]	25		100 ms	
						Counter indicating the number of observed p jumps reported by the lambda controller	> 30				once / DCY	
						Lean mixture cycle time	< 2	[s]				
						Rich mixture cycle time	< 2	[s]				
						Lambda control	active					
						Time after start	> 300	[s]				
				disable		No active DTCs:						
				conditions:		No O2 sensor error	P0130, P0131, P0132, P0133, P0134, P2297, P2A00					
						No O2 sensor heater error	P0030, P0031, P0032, P0135					
				dep. on heater power&rpm		Ignition	"on"					
Oxygen Sensor Upstream	**P0135**	Resistance Out of Range	resistance	>= 1200	[Ohm]	Engine start			dep.on driver		1000 ms	2 DCY
						O2S front dewpoint	passed		shortest		once / DCY	
						Battery voltage	>= 9	[V]	about		triggered	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
			number of checks	>= 50	[-]	PWM signal	<= 99.6 and >= 4.3 [max. battery voltage... min. battery voltage]	[%]	50	[s]	resistance calc.	
			out of	>= 30	[-]	Timer	>= 0	[s]				
						exhaust gas Temp. at lambda sensor up cat	>= 799.98	[°C]				
						Setpointtemp. used to create power integral	=699.98	[°C]				
						Measure of cooling energy of exhaust gas at sensor location	>= 34256	[J]				
				disable		No active DTCs:						
				conditions:		No O2 sensor error	P0130, P0131,P0132, P0134					
						No O2 sensor heater error	P0030, P0031, P0032					
						No MAF error	P0102, P0103					
						No TPS Error	P0068, P0101, P1101					
HO2S Electrical Diagnosis	**P0136**	open circuit	resistance	>60000 [HO2S temp.< 300°C]	[Ohm]	Ignition	"on"		2500	[ms]	100 ms	2 DCY
						Engine	"running"				continuous	
						Exhaust gas Temp. at lambda sensor downstream cat	> 499.98	[°C]				
						Signal voltage	<= 0.474 and > 0.376	[V]				
						Detection time	>= 3	[s]				
						or						
						Delay time	>= 5	[s]				
				disable		No active DTCs:						
				conditions:		No O2 sensor error	P0136, P0137, P0138, P0139, P2270, P2271, P2A01					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No O2 sensor heater error	P0036, P0037, P0038, P0141					
						No MAF error	P0102, P0103					
HO2S Electrical Diagnosis	**P0137**	Short to Ground	signal voltage down stream	< 0.024	[V]				2500	[ms]	100 ms	2 DCY
						Mass air flow	> 8	[kg/h]			continuous	
						Engine	"running"					
						Resistance	< 25	[Ohm]				
						Detection time	> 0					
						Mass air flow integral outside of DFCO	> 80	[g]				
						Ignition	"on"					
				disable		No active DTCs:						
				conditions:		No O2 sensor error	P0136, P0137, P0138, P0139, P0140, P2270, P2271, P2A01					
						No O2 sensor heater error	P0036, P0037, P0038, P0141					
						No canister purge solenoid error	P0443, P0458, P0459					
						No mech. canister purge solenoid error	P0496					
						No MAF error	P0102, P0103					
HO2S Electrical Diagnosis	**P0138**	Short to Battery	signal voltage down stream	> 1.201	[V]	Ignition	"on"		2500	[ms]	100 ms	2 DCY
											continuous	
				disable		No active DTCs:						
				conditions:		No O2 sensor error	P0136, P0137, P0138, P0139, P0140, P2270, P2271, P2A01					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No O2 sensor heater error	P0036, P0037, P0038, P0141					
						Ignition	"on"					
HO2S Slow Response	**P0139**	Slow Response	Number of valid switching times from rich to lean	>=2	[-]	ECT	> 60	[°C]	dep.on driver		20 ms	2 DCY
			Average of weighted Cycle counter for switching time determination	>= 1	[-]	signal voltage	> 0.552	[V]			once / DCY	
						Mass air flow	5 < MAF <= 400	[kg/h]				
						Operative readiness of sensor	passed					
						Exhaust gas Temp. at lambda sensor downstream cat	> 499.98	[°C]				
						Time after dew point detection	>= 60	[s]				
						Vehicle speed	<= 93.195 and >= 12.426	[mph]				
						Dynamic catalyst monolith temperature	> 307	[°C]				
						Weighting factor for measured switching time rich2lean	500	[ms]				
				disable		No active DTCs:						
				conditions:		No FSD error	P0171, P0172					
						No O2 sensor error	P0136, P0137, P0138, P2270, P2271, P2A01					
						No O2 sensor heater error	P0036, P0037, P0038, P0141					
						No MAF error	P0102, P0103					
						No VS error	P0501					
						No TCO error	P0116, P0117,					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No Misfire error	P0300, P0301, P0302, P0303, P0304, P0313			
					No injection valve error	P0201, P0202, P0203, P0204, P0261, P0262, P0264, P0265, P0267, P0268, P0270, P0271			
					No CKP error	P0335, P0336			
					No CMP error	P0340, P0341			
					No IVVT error	P0365, P0366, P000A, P000B, P0010, P0011, P0013, P0014, P0016, P0017, P2088, P2089, P2090, P2091			
					No mech. canister purge solenoid error	P0496			
					No Canister purge solenoid error	P0443, P0458, P0459			
					No MTC error	P2100, P2101			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No TPS Error	P0121, P0122, P0123, P0221, P0222, P0223, P2176, P0101, P0068, P1101					
						Ignition	"on"					
Fuel Correction Diagnostic, Portion #2	**P0140**	no activity	signal voltage down stream	> 0.298	[V]	ECT	> 75	[°C]	50		100 ms	2 DCY
			and			O2SH state	active				once / DCY	
			signal voltage down stream	< 0.605	[V]							
						Time after engine start	> 720	[s]				
						Integrated MAF inegral after lambda closed loop	> 1000	[g]				
						Lambda set-point shifting	= 0.85	[-]				
						Mass air flow integrated within rich shift	> 80	[g]				
						Mass air flow integral in DFCO	< 10	[g]				
						Lambda set-point shifting	= 1.15	[-]				
						Mass air flow integrated within lean shift	> 80	[g]				
				disable		No active DTCs:						
				conditions:		No CKP error	P0335, P0336					
						No CMP error	P0340, P0341					
						No IVVT error	P0365, P0366, P000A, P000B, P0010, P0011, P0013, P0014, P0016, P0017, P2088, P2089, P2090, P2091					
						No MAF error	P0102, P0103					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No O2 sensor error	P0031, P0032, P0036, P0037, P0038, P0130, P0131, P0132, P0133, P0137, P0138, P0139, P0141, P2270, P2271, P2297, P2A00, P2A01					
						No Misfire error	P0300, P0301, P0302, P0303, P0304, P0313					
						No canister purge solenoid error	P0443, P0458, P0459					
						No mech. canister purge solenoid error	P0496					
						No TPS error	P0121, P0122, P0123, P0221, P0222, P0223, P2176, P0101, P0068, P1101					
						No TCO error	P0116, P0117,					
						No FSD error	P0171, P0172					
Oxygen Sensor Downstream	**P0141**	Resistance Out of Range	resistance	>= 7000	[Ohm]	Ignition	"on"				triggered	
			number of checks	>= 50		Timer	> 120	[s]	dep.on driver		resistance calc.	2 DCY
			out of	>= 30		Operative readiness of sensor	passed		shortest		once / DCY	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Exhaust gas Temp. at lambda sensor downstream cat	< 799.98	[°C]	about			
						Setpointtemp. used to create power integral	= 699.98	[°C]	50			
						Measure of cooling energy of exhaust gas at sensor location	> 27685	[J]				
						Battery voltage	> 10	[V]				
						PWM signal	4.297 < PWM < 99.609	[%]				
				disable		No active DTCs:						
				conditions:		No MAF error	P0102, P0103					
						No TPS Error	P0068, P0101, P1101					
						No O2 sensor heater error	P0036, P0037, P0038					
Fuel System	**P0171**	system to lean	additive adaptive value	> = 1.5	[ms]	Lambda control	closed loop	[-]	> = 25	[s]		2 DCY
						Evap canister load	< 0.2	[-]			20 ms	
						Engine speed	> 608	[rpm]			multiple	
						Engine load (mass air flow)	> 71	[mg/stk]				
						Engine coolant temperature	> 65.3	[°C]				
						Ambient pressure	> 69.999	[kPa]				
						Intake air temperature	> -9.8	[°C]				
						Ambient air temperature	> -9.8	[°C]				
						Ignition	"on"					
				disable		No active DTCs:						
				conditions:		No CPS error	P0459, P0458, P0443, P0496					
						No TCO error	P0118, P0117,					
						No MAF error	P0103, P0102					
						No misfire error	P0301, P0303, P0304, P0302					
						No IAT error	P0113, P0112,					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No TPS Error	P0123, P0122, P0223, P0222					
						No upstream error	P0130, P0134, P0133, P0135, P0132, P0131, P0032, P0031, P0030, P2297, P2A00					
						No CAM error	P0340, P0341, P0365, P0366					
						No TPS_PLAUS error	P0068, P0101, P1101					
						No CRK error	P0335, P0336					
						No injection valve error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204					
						No ambient pressure Error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074, P0071					
Fuel System	**P0171**	system to lean	multiplicative adaptive value	> = 17.999	[%]	Lambda control	closed loop	[-]	> = 22	[s]	20 ms	2 DCY
						Evap canister load	< 0.2	[-]			multiple	
						Engine speed	> 608	[rpm]				
						Engine load (mass air flow)	> 71	[mg/stk]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Engine coolant temperature	> 65.3	[°C]				
						Ambient pressure	> 69.999	[kPa]				
						Intake air temperature	> -9.8	[°C]				
						Ambient air temperature	> -9.8	[°C]				
						Ignition	"on"					
				disable		No active DTCs:						
				conditions:		No CPS error	P0459, P0458, P0443, P0496					
						No TCO error	P0118, P0117,					
						No MAF error	P0103, P0102					
						No misfire error	P0301, P0303, P0304, P0302					
						No IAT error	P0113, P0112,					
						No TPS Error	P0123, P0122, P0223, P0222					
						No upstream error	P0130, P0134, P0133, P0135, P0132, P0131, P0032, P0031, P0030, P2297, P2A00					
						No CAM error	P0340, P0341, P0365, P0366					
						No TPS_PLAUS error	P0068, P0101, P1101					
						No CRK error	P0335, P0336					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No injection valve error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204					
						No ambient pressure Error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074, P0071					
Fuel System	**P0171**	system to lean	lambda controller in dead stop	< -35.001...-5	[%]	Lambda control	closed loop	[-]	> = 35	[s]	20 ms	2 DCY
						Evap canister load	< 0.2	[-]			multiple	
						Engine speed	> 608	[rpm]				
						Engine load (mass air flow)	> 71	[mg/stk]				
						Engine coolant temperature	> 65.3	[°C]				
						Ambient pressure	> 69.999	[kPa]				
						Intake air temperature	> -9.8	[°C]				
						Ambient air temperature	> -9.8	[°C]				
						Ignition	"on"					
				disable		No active DTCs:						
				conditions:		No CPS error	P0459, P0458, P0443, P0496					
						No TCO error	P0118, P0117,					
						No MAF error	P0103, P0102					
						No misfire error	P0301, P0303, P0304, P0302					
						No IAT error	P0113, P0112,					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No TPS Error	P0123, P0122, P0223, P0222					
						No upstream error	P0130, P0134, P0133, P0135, P0132, P0131, P0032, P0031, P0030, P2297, P2A00					
						No CAM error	P0340, P0341, P0365, P0366					
						No TPS_PLAUS error	P0068, P0101, P1101					
						No CRK error	P0335, P0336					
						No injection valve error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204					
						No ambient pressure Error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074, P0071					
Fuel System	**P0172**	system to rich	additive adaptive value	> = -1.5	[ms]	Lambda control	closed loop	[-]	> = 25	[s]		2 DCY
						Evap canister load	< 0.2	[-]			20 ms	
						Engine speed	> 608	[rpm]			multiple	
						Engine load (mass air flow)	> 71	[mg/stk]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Engine coolant temperature	> 65.3	[°C]				
						Ambient pressure	> 69.999	[kPa]				
						Intake air temperature	> -9.8	[°C]				
						Ambient air temperature	> -9.8	[°C]				
						Ignition	"on"					
				disable		No active DTCs:						
				conditions:		No CPS error	P0459, P0458, P0443, P0496					
						No TCO error	P0118, P0117,					
						No MAF error	P0103, P0102					
						No misfire error	P0301, P0303, P0304, P0302					
						No IAT error	P0113, P0112,					
						No TPS Error	P0123, P0122, P0223, P0222					
						No upstream error	P0130, P0134, P0133, P0135, P0132, P0131, P0032, P0031, P0030, P2297, P2A00					
						No CAM error	P0340, P0341, P0365, P0366					
						No TPS_PLAUS error	P0068, P0101, P1101					
						No CRK error	P0335, P0336					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No injection valve error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204					
						No ambient pressure Error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074, P0071					
Fuel System	**P0172**	system to rich	multiplicative adaptive value	> = -17.0	[%]	Lambda control	closed loop	[-]	> = 22	[s]	20 ms	2 DCY
						Evap canister load	< 0.2	[-]			multiple	
						Engine speed	> 608	[rpm]				
						Engine load (mass air flow)	> 71	[mg/stk]				
						Engine coolant temperature	> 65.3	[°C]				
						Ambient pressure	> 69.999	[kPa]				
						Intake air temperature	> -9.8	[°C]				
						Ambient air temperature	> -9.8	[°C]				
						Ignition	"on"					
				disable		No active DTCs:						
				conditions:		No CPS error	P0459, P0458, P0443, P0496					
						No TCO error	P0118, P0117,					
						No MAF error	P0103, P0102					
						No misfire error	P0301, P0303, P0304, P0302					
						No IAT error	P0113, P0112,					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No TPS Error	P0123, P0122, P0223, P0222					
						No upstream error	P0130, P0134, P0133, P0135, P0132, P0131, P0032, P0031, P0030, P2297, P2A00					
						No CAM error	P0340, P0341, P0365, P0366					
						No TPS_PLAUS error	P0068, P0101, P1101					
						No CRK error	P0335, P0336					
						No injection valve error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204					
						No ambient pressure Error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074, P0071					
Fuel System	**P0172**	system to rich	lambda controller in dead stop	< 25...35.001	[%]	Lambda control	closed loop	[-]	> = 35	[s]	20 ms	2 DCY
						Evap canister load	< 0.2	[-]			multiple	
						Engine speed	> 608	[rpm]				
						Engine load (mass air flow)	> 71	[mg/stk]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Engine coolant temperature	> 65.3	[°C]				
						Ambient pressure	> 69.999	[kPa]				
						Intake air temperature	> -9.8	[°C]				
						Ambient air temperature	> -9.8	[°C]				
						Ignition	"on"					
				disable		No active DTCs:						
				conditions:		No CPS error	P0459, P0458, P0443, P0496					
						No TCO error	P0118, P0117,					
						No MAF error	P0103, P0102					
						No misfire error	P0301, P0303, P0304, P0302					
						No IAT error	P0113, P0112,					
						No TPS Error	P0123, P0122, P0223, P0222					
						No upstream error	P0130, P0134, P0133, P0135, P0132, P0131, P0032, P0031, P0030, P2297, P2A00					
						No CAM error	P0340, P0341, P0365, P0366					
						No TPS_PLAUS error	P0068, P0101, P1101					
						No CRK error	P0335, P0336					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No injection valve error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204					
						No ambient pressure Error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074, P0071					
Injector Control Circuits												
Cylinder #1						Logical variable for raw KEY_OFF	"off"		3200	[ms]	200 ms	2 DCY
	P0201	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.	open circuit			Ignition	"on"				continuous	
						Battery voltage	> 9	[V]				
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				
						No active DTC's:						
						No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
Injector Control Circuits												
Cylinder #2						Logical variable for raw KEY_OFF	"off"					
	P0202	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.	open circuit			Ignition	"on"		3200	[ms]	200 ms	2 DCY
						Battery voltage	> 9	[V]			continuous	
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				
						No active DTC's:						
						No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					
Injector Control Circuits												
Cylinder #3						Logical variable for raw KEY_OFF	"off"					
	P0203	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish	open circuit			Ignition	"on"		3200	[ms]	200 ms	2 DCY
						Battery voltage	> 9	[V]			continuous	
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.										
						No active DTC's:						
						No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					
Injector Control Circuits												
Cylinder #4						Logical variable for raw KEY_OFF	"off"					
	P0204	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.	open circuit			Ignition	"on"		3200	[ms]	200 ms	2 DCY
						Battery voltage	> 9	[V]			continuous	
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				
						No active DTC's:						
						No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					
TP Sensor 2	**P0221**	rationalty check	actaul TPS 2 - calc. value	> 1	[-]	Ignition	"on"				10 ms	1 DCY
						Engine	"running"		400		continuous	
						No adaption is requested						
				disable		No active DTC's:						

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				conditions:		No supply voltage error	P0642, P0643					
TP Sensor 2	**P0222**	short to ground	TP Volts	< 0.19 (3,8 %)	[V]	Ignition	"on"		200	[ms]	10 ms	1 DCY
		or open circuit									continuous	
				disable								
				conditions:		No active DTC's:						
						No supply voltage error	P0642, P0643					
TP Sensor 2	**P0223**	short to battery plus	TP Volts	> 4.823 (96,5 %)	[V]	Ignition	"on"		200	[ms]	10 ms	1 DCY
											continuous	
				disable		No active DTC's:						
				conditions:		No supply voltage error	P0642, P0643					
Injector Control Circuits Cylinder #1	**P0261**	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.	short to ground			Logical variable for raw KEY_OFF	"off"					
						Ignition	"on"		3200	[ms]	200 ms	2 DCY
						Battery voltage	> 9	[V]			continuous	
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				
				disable		No active DTC's:						
				conditions:		No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					
Injector Control Circuits Cylinder #1	**P0262**	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no	short to battery plus			Logical variable for raw KEY_OFF	"off"					
						Ignition	"on"		3200	[ms]	200 ms	2 DCY

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.				Battery voltage	> 9	[V]			continuous	
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				
				disable		No active DTC's:						
				conditions:		No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					
Injector Control Circuits Cylinder #2	**P0264**	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.	short to ground			Logical variable for raw KEY_OFF	"off"		3200	[ms]	200 ms	2 DCY
						Ignition	"on"				continuous	
						Battery voltage	> 9	[V]				
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				
				disable								
				conditions:		No active DTC's:						
						No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
Injector Control Circuits Cylinder #2	**P0265**	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.	short to battery plus			Logical variable for raw KEY_OFF	"off"					
						Ignition	"on"		3200	[ms]	200 ms	2 DCY
						Battery voltage	> 9	[V]			continuous	
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				
				disable		No active DTC's:						
				conditions:		No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					
Injector Control Circuits Cylinder #3	**P0267**	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally	short to ground			Logical variable for raw KEY_OFF	"off"					
						Ignition	"on"		3200	[ms]	200 ms	2 DCY
						Battery voltage	> 9	[V]			continuous	
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.		disable	No active DTC's:						
				conditions:	No Control Module Error	P0607					
					No fuel pump relay error	P0628, P0629					
Injector Control Circuits Cylinder #3	**P0268**	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.	short to battery plus		Logical variable for raw KEY_OFF	"off"					
					Ignition	"on"		3200	[ms]	200 ms	2 DCY
					Battery voltage	> 9	[V]			continuous	
					No cyl specific fuel cut off						
					Fuel pump is running						
					Engine	"running"					
					Engine speed	> 320	[rpm]				
					Engine speed	< 4000...6016	[rpm]				
				disable	No active DTC's:						
				conditions:	No Control Module Error	P0607					
					No fuel pump relay error	P0628, P0629					
Injector Control Circuits Cylinder #4	**P0270**	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish	short to ground		Logical variable for raw KEY_OFF	"off"					
					Ignition	"on"		3200	[ms]	200 ms	2 DCY
					Battery voltage	> 9	[V]			continuous	
					No cyl specific fuel cut off						
					Fuel pump is running						
					Engine	"running"					
					Engine speed	> 320	[rpm]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.				Engine speed	< 4000...6016	[rpm]				
				disable		No active DTC's:						
				conditions:		No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					
Injector Control Circuits Cylinder #4	**P0271**	This diagnostic detects the error via the ECM hardware (ATIC39). The diagnosis is only performed if there is no cylinder shut off and between a minimum (320 rpm) and maximum engine speed (worst case for diagnosis is a cold engine and high engine speed, then it is possible that all injectors are activated all the time without interruption). The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL also in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected.	short to battery plus			Logical variable for raw KEY_OFF	"off"					
						Ignition	"on"		3200	[ms]	200 ms	2 DCY
						Battery voltage	> 9	[V]			continuous	
						No cyl specific fuel cut off						
						Fuel pump is running						
						Engine	"running"					
						Engine speed	> 320	[rpm]				
						Engine speed	< 4000...6016	[rpm]				
				disable		No active DTC's:						
				conditions:		No Control Module Error	P0607					
						No fuel pump relay error	P0628, P0629					
Misfire	**P0300**	multiple cylinder misfire	multiple cylinder misfire				more than one single misfire					2 DCY
Cylinder # 1	**P0301**	single or multiple misfire	emission threshold	AT>2,04		Ignition	"on"		1000	[rev]	180°CA	2 DCY
			misfire rate (MR) 1st intervall	MT>2,70	%	Time after engine start	+2 crankshaft rev.		1000	[rev]	continuous	2 DCY

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
			emission threshold	AT>2,04	%	engine speed range	608 .. 6528	[rpm]	1000	[rev]	180°CA	2 DCY
			misfire rate (MR)	MT>2,7	%	Engine load	AT > 65...195	[mg/stk]	1000	[rev]	continuous	2 DCY
						Engine load	MT > 70...185	[mg/stk]				
			catalyst damage	> 8,5	%	rough road	not active		200	[rev]	180°CA	2 DCY
			misfire rate (MR)			Fuel cut off	not active				continuous	
						Throttle position gradient	503.8...949.0	[°TPS/s]				
						MAF difference	35...40	[mg/stk]				
						Engine	"running"					
				disable								
				conditions:		No active DTC's:						
						No MAF error	P0101, P1101, P0102, P0103					
						No Cam sensor error	P0016, P0340, P0341					
						No Crank sensor error	P0335, P0336					
						No TPS error	P0068, P0121, P0122, P0123, P0221, P0222, P0223,					
Cylinder # 2	**P0302**	single or multiple misfire	emission threshold	AT>2,04		Ignition	"on"		1000	[rev]	180°CA	2 DCY
			misfire rate (MR) 1st intervall	MT>2,70	%	Time after engine start	+2 crankshaft rev.		1000	[rev]	continuous	2 DCY
			emission threshold	AT>2,04	%	engine speed range	608 .. 6528	[rpm]	1000	[rev]	180°CA	2 DCY
			misfire rate (MR)	MT>2,7	%	Engine load	AT > 65...195	[mg/stk]	1000	[rev]	continuous	2 DCY
						Engine load	MT > 70...185	[mg/stk]				
			catalyst damage	> 8,5	%	rough road	not active		200	[rev]	180°CA	2 DCY
			misfire rate (MR)			Fuel cut off	not active				continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Throttle position gradient	503.8...949.0	[°TPS/s]				
						MAF difference	35...40	[mg/stk]				
						Engine	"running"					
				disable		No active DTC's:						
				conditions:		No MAF error	P0101, P1101, P0102, P0103					
						No Cam sensor error	P0016, P0340, P0341					
						No Crank sensor error	P0335, P0336					
						No TPS error	P0068, P0121, P0122, P0123, P0221, P0222, P0223,					
Cylinder # 3	**P0303**	single or multiple misfire	emission threshold	AT>2,04		Ignition	"on"		1000	[rev]	180°CA	2 DCY
			misfire rate (MR) 1st intervall	MT>2,70	%	Time after engine start	+2 crankshaft rev.		1000	[rev]	continuous	2 DCY
			emission threshold	AT>2,04	%	engine speed range	608 .. 6528	[rpm]	1000	[rev]	180°CA	2 DCY
			misfire rate (MR)	MT>2,7	%	Engine load	AT > 65...195	[mg/stk]	1000	[rev]	continuous	2 DCY
						Engine load	MT > 70...185	[mg/stk]				
			catalyst damage	> 8,5	%	rough road	not active		200	[rev]	180°CA	2 DCY
			misfire rate (MR)			Fuel cut off	not active				continuous	
						Throttle position gradient	503.8...949.0	[°TPS/s]				
						MAF difference	35...40	[mg/stk]				
						Engine	"running"					
				disable		No active DTC's:						

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				conditions:		No MAF error	P0101, P1101, P0102, P0103					
						No Cam sensor error	P0016, P0340, P0341					
						No Crank sensor error	P0335, P0336					
						No TPS error	P0068, P0121, P0122, P0123, P0221, P0222, P0223,					
Cylinder # 4	**P0304**	single or multiple misfire	emission threshold	AT>2,04		Ignition	"on"		1000	[rev]	180°CA	2 DCY
			misfire rate (MR) 1st intervall	MT>2,70	%	Time after engine start	+2 crankshaft rev.		1000	[rev]	continuous	2 DCY
			emission threshold	AT>2,04	%	engine speed range	608 .. 6528	[rpm]	1000	[rev]	180°CA	2 DCY
			misfire rate (MR)	MT>2,7	%	Engine load	AT > 65...195	[mg/stk]	1000	[rev]	continuous	2 DCY
						Engine load	MT > 70...185	[mg/stk]				
			catalyst damage	> 8,5	%	rough road	not active		200	[rev]	180°CA	2 DCY
			misfire rate (MR)			Fuel cut off	not active				continuous	
						Throttle position gradient	503.8...949.0	[°TPS/s]				
						MAF difference	35...40	[mg/stk]				
						Engine	"running"					
				disable		No active DTC's:						
				conditions:		No MAF error	P0101, P1101, P0102, P0103					
						No Cam sensor error	P0016, P0340, P0341					
						No Crank sensor error	P0335, P0336					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
							P0068, P0121, P0122, P0123, P0221, P0222,					
						No TPS error	P0223,					
Misfire	**P0313**	misfire with low fuel tank level	misfire with low fuel tank level			Ignition	"on"					2 DCY
						Time after engine start	+2 crankshaft rev.					
						engine speed range	608 .. 6528	[rpm]				
						Engine load	AT > 65...195	[mg/stk]				
						Engine load	MT > 70...185	[mg/stk]				
						rough road	not active					
						Fuel cut off	not active					
						Throttle position gradient	503.8...949.0	[°TPS/s]				
						MAF difference	35...40	[mg/stk]				
						Engine	"running"					
				disable		No active DTC's:						
				conditions:		No MAF error	P0101, P1101, P0102, P0103					
						No Cam sensor error	P0016, P0340, P0341					
						No Crank sensor error	P0335, P0336					
						No TPS error	P0068, P0121, P0122, P0123, P0221, P0222, P0223,					
Knock Control	**P0325**	Circuit Diagnosis	noise level	< 0.1 or > 4.8	[V]	Ignition	"on"		7200	[°CA]	180°CA	2 DCY
						Engine	"running"				continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		The purpose of this diagnostic is to observe the analog input signal (Knock signal) from the ATM40 device to the microcontroller. The signal is checked continuously by a range check of the signal and with two algorithms, which observe the signal bandwidth. A slave and a master algorithm is used. Both algorithms have to show the same state to increment the failure counter. The absolute noise value of the ATM40 device is checked if it is inside the normal operating range. The bandwidth of the signal is evaluated for cylinder 2 and 3. In case of short to ground, short to battery or open line the bandwidth is smaller than during normal operation. To monitor the bandwidth of the signal the magnitude is compared with a calibratable threshold. If the bandwidth magnitude of cylinder 2 and 3 does not exceed a value, the cycle counter is incremented by 1 every 360°. This cycle counter is reset as soon as the knock signal value of cylinder 2 or 3 exceeds the threshold. If the cycle counter reaches a max value, a knock sensor failure is detected as long as the slave algorithm confirms the failure also. The slave algorithm uses the bandwidth of the signal as well. The									

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		bandwidths of cylinder 2 and 3 are accumulated via an integration method. The accumulated voltage value is compared every revolution with the calibratable threshold. As soon as the threshold is reached the cycle counter is (incremented every 360°) is reset. After the failure has been detected and confirmed, the coresponding P-Code will be stored.				Not in decel fuel cut off						
						Not in decel mode						
						Mass air flow	> 220	[mg/stk]				
						Engine speed	> 2496	[rpm]				
						Mass air flow	> 185...272	[mg/stk]				
				disable		No active DTCs:						
				conditions:		No CAM error	P0340, P0341, P0365, P0366					
						No CRK error	P0335, P0336					
						No ECU error	P601, P602, P604					
Knock Control	**P0326**	plausibility check	master cycle counter	>= 150	[seg]	Ignition	"on"		7200	[°CA]	every 360° CA	2 DCY
			slave cycle counter	>= 150	[seg]	Engine	"running"				continuous	
						Not in decel fuel cut off						
						Not in decel mode						
						Mass air flow	> 220	[mg/stk]				
						Engine speed	> 2496	[rpm]				
						Mass air flow	> 185...272	[mg/stk]				
				disable		No active DTCs:						
				conditions:		No CAM error	P0340, P0341, P0365, P0366					
						No CRK error	P0335, P0336					
						No ECU error	P601, P602, P604					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
Crankshaft sensor circuit Electrical Diagnosis	**P0335**	signal missing	No signal		Ignition	"on"	1440	[°CA]	every 360° CA	1 DCY
					Engine	"running			continuous	
Crankshaft Position Sensor Performance Diagnosis	**P0336**	plausibility check	Signal available		Ignition	"on"	3600	[°CA]	every 360° CA	1 DCY
					Engine	"running			continuous	
					Limp Home Not Active	CRK error limp home not active				
		plausibility check	Signal available		Ignition	"on"	2160	[°CA]	every 360° CA	1 DCY
					Engine	"running			continuous	
					Limp Home Not Active	CRK error limp home not active				
		plausibility check	Signal available		Ignition	"on"	2520	[°CA]	every 360° CA	1 DCY
					Engine	"running			continuous	
		Missing tooth detection	one tooth to many or to few	<> one tooth	Fuel cut off	active	7200	[°CA]	720 °CA	1 DCY
					Ignition	"on"				
					Engine	"running				
									multiple	
				disable	No active DTC's:					
				conditions:	No CPS error	P0453, P0458, P0443				
					No Cam sensor error	P0016, P0340, P0341, P0365, P0366				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No IV error	P0262, P0261, P0201, P0265, P0264, P0202,					
						No IV error	P0268, P0267, P0203, P0271, P0270, P0204					
						No Crk sensor error	P0335					
						Ignition	"on"					
						Engine	"running					
		out of range	segment adaptation over limit	> 7.8	[‰]	Fuel cut off	active		8640	[°CA]	720 °CA	1 DCY
						Engine speed	> 1216 and < 4000	[rpm]			multiple	
				disable		No active DTC's:						
				conditions:		No CPS error	P0453, P0458, P0443					
						No Cam sensor error	P0016, P0340, P0341, P0365, P0366					
						No IV error	P0262, P0261, P0201, P0265, P0264, P0202,					
						No IV error	P0268, P0267, P0203, P0271, P0270, P0204					
						No Crk sensor error	P0335					
Intake Camshaft Position (CMP) Sensor	**P0340**	No Signal	No signal edge is detected for a max time between two camshaft signal edges			Ignition	"on"		2520	[°CA]	every 360° CA	2 DCY
						engine in synchronized mode	active				continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				disable		No active DTCs:						
				conditions:		No CKP error	P0335, P0336					
Intake Camshaft Position (CMP) Sensor	**P0341**	plausibility check	Crankshaft tooth number when camshaft 1 interrupt occurs	< 2 and > 22	[-]	Ignition	"on"		2520	[°CA]	every 360° CA	2 DCY
			Crankshaft tooth number when camshaft 1 interrupt occurs	< 62 and > 82	[-]	engine in synchronized mode	active				continuous	
				disable		No active DTCs:						
				conditions:		No CKP error	P0335, P0336					
Exhaust Camshaft Position (CMP) Sensor	**P0365**	No Signal	No signal edge is detected for a max time between two camshaft signal edges			Ignition	"on"		3240	[°CA]	every 360° CA	2 DCY
						engine in synchronized mode	active				continuous	
				disable		No active DTCs:						
				conditions:		No CKP error	P0335, P0336					
						No CMP Intake error	P0340, P0341					
Exhaust Camshaft Position (CMP) Sensor	**P0366**	plausibility check	Crankshaft tooth number when camshaft 2 interrupt occurs	< 40 and > 58	[-]	Ignition	"on"		3240	[°CA]	every 360° CA	2 DCY
			Crankshaft tooth number when camshaft 2 interrupt occurs			engine in synchronized mode	active				continuous	
				disable		No active DTCs:						
				conditions:		No CKP error	P0335, P0336					
						No CMP Intake error	P0340, P0341					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
Catalyst Monitor	**P0420**	CAT damaged	amplitude ratio O2S	> 1	[-]	engine speed	>= 1312; < 3392	[rpm]	90	[s]	20 ms	2 DCY
						Ignition	"on"					
						Engine	"running"					
						mass air flow	>= 130; < 350	[mg/stk]	(driver		once / DCY	
						Hysteresis for mass air flow	10.033	[mg/stk]	dependant)			
						Minimum catalyst temperature	>450	[°C]				
						Maximum catalyst temperature	<850	[°C]				
						Hysteresis for catalyst temperature	50	[°C]				
						ambient pressure	>=74.999	[kpa]				
						MAF integral to engage EGTR after DFCO, CL max purge, forced stimulation on, LS_DOWN ready	20	[g]				
						MAF integral for EGTR activation after MAX to NO_PURGE and back	5	[g]				
						Max. p-share from trimcontroller threshold	<190	[s]				
						evap canister load	<=0.8					
						ECT	>54.75	[°C]				
						evap purge valve	not active/wait ramp open/max purge/min purge/no purge					
						The test reporting and/or corresponding fault code is stored after the oxygen sensor monitors have completed with a pass						
				disable		No active DTCs:						
				conditions:		No camshaft error	P0340, P0341, P0365, P0366					
						No crankshaft error	P0335, P0336					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No injection valve error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204			
					No misfire error	P0301, P0302, P0303, P0304			
					No ignition coil error	P2301, P2304, P2307, P2310			
					No FSD error	P0171			
					Post Fuel trim Correction error	P2096, P2097			
					No MTC error	P2101, P2100			
					No VIM error	P065E, P0661, P0662			
					No PVS error	P2122, P2123, P2127, P2128, P2138			
					Heater Control downstream	P0036, P0037, P0038, P0141			
					Heater Control upstream	P0030, P0031, P0032, P0135			
					~~System voltage~~	~~P0562,~~ ~~P0563,~~			
					No ECT error	P0118, P0117,			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No TPS Error	P0101, P0068, P1101, P0121, P0221, P2176, P0123, P0122, P0223, P0222			
					No MAF error	P0102, P0103			
					No O2 sensor error upstream	P0132, P0131, P0134, P0130, P2A00, P2297, P0133			
					No O2 sensor error downstream	P0136, P0138, P0137, P0140, P2A01, P0139			
					Evaporative Emission Control Function	P0496, P0459, P0458, P0443			
					No EVAM error	P0446			
					No IVVT Error	P2089, P2088, P0010, P000A, P000B, P0016, P0017, P0013, P2090, P2091			
					No ambient pressure Error	P2227, P2228, P2229			
					Supply voltage	P0643, P0642, P0653, P0652			
					Ignition	"on"			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
EVAP System	**P0442**	Small leak detection	Reduced leakage diameter	>= 0.85	[mm]	Time delay	>= 4	[s]	30	[s]	50 ms	2 DCY
Small Leak (1mm)											once / DCY	
						Ambient pressure	> 74.999	[kPa]				
						Coolant temp	<= 110.25	[°C]				
						Time since engine start	70...600	[s]				
						Idle speed	"=active"					
						Fuel Tank Level between	>=1.584 and <= 10.428	[gal]				
						Degree of canister saturation	<= 1					
						Tank pressure	> -3 and <1	[kPa]				
						Vehicle speed	"=0"					
						IAT	> -8.25 and < 70	[°C]				
						Battery voltage	> 9.99	[V]				
						Lambda control	closed loop					
						Modeled Fuel Temperature	< 45	[°C]				
						Minimum purge time at partload	= 10	[s]				
				disable		No active DTCs:						
				conditions:		No DTP error	P0453, P0452, P0451, P0454					
						No shut of valve error	P0499, P0498					
						No CPS error	P0459, P0458, P0443, P0496, P0436					
						No EVAM error	P0446					
						No AMP error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074					
						No MAF error	P0103, P0102					
						No TPS error	P0122, P0121, P2101, P2100, P2119, P2176,P0068, P1101					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No Ignition coils error	P2301, P2304, P2307, P2310,			
					No Injectors error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204			
					No O2 sensor error	P0132, P0131, P0134, P2297, P0133, P0032, P0031, P0030, P0135			
					No IAT error	P0113, P0112,			
					No system voltage error	P0563, P0562			
					No VS error	P0501			
					No idle speed controler error	P0507, P0506			
					No CAM error	P0340, P0341, P0365, P0366			
					No IVVT error	P000A, P000B, P0016, P0017, 0, P2089, P2088, P0010, P2091, P2090, P0013			
					No CRK error	P0335, P0336			
					No ECT error	P0118, P0117,			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No supply voltage error	P0643, P0642					
						No control module error	P0605, P061A, P061B, P061C					
						No CAN error	U0073, U0002,					
						No FSD error	P0171, P0172					
						No misfire error	P0301, P0303, P0304, P0302					
						No EOT error	P2610					
						No EVAP error	P0456, P0442, P0455					
EVAP System	**P0443**	The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line(OL). SCB and OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected only.				Ignition	"on"					
(Canister Purge - CPS)			open circuit			Engine	"running"	[%]	3200	[ms]	200 ms	2 DCY
						Battery voltage	> 9				continuous	
						Logical variable for raw KEY_OFF	Off					
						PWM signal	>= 8.304 and <= 91.016 99	[%]				
				disable		No active DTCs:						
				conditions:		No SPI Bus conflict	P0606					
						No FP relay error	P0628, P0629					
EVAP System	**P0446**	stuck closed check	signal voltage	> 3.999	[V]	Start end			2000	[ms]	500 ms	2 DCY
(SOV - Stuck Closed)				< - 3kpa		Battery voltage	> 10	[V]			continuous	
						Mass flow through the CPS	> 0.015	[kg/h]				
				disable		No active DTCs:						
				conditions:		No supply voltage error	P0642, P0643					
						No shut off valve error	P0499, P0498, P0449					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No DTP error	P0453, P452, P0451, P0454					
						~~No system voltage error~~	~~P0562, P0563,~~					
EVAP DTP Sensor	**P0451**	plausibility check				Ignition	"on"		5	[s]	500 ms	2 DCY
			I max. Voltage - min. Voltage I	< 0.039	[V]	Engine	"running"				continuous	
						Signal voltage	> 0.2 and < 4.902	[V]				
						Time after start	>= 10	[s]				
						Vehicle speed once per DC	>= 12.426	[mph]				
						Moving mean value of the canister load	< 1	[-]				
						Mass flow through the CPS	> 0.6	[kg/h]				
						Uninterupted time	> 5	[s]				
						Evaporative Emission Control Function	= max. Purge					
						No purge and max purge reached once per DC						
				disable		No active DTCs:						
				conditions:		No supply voltage error	P0642, P0643					
						No DTP Error	P0452, P0453					
EVAP DTP Sensor	**P0452**	short to ground	signal voltage	< 0.2(> 1,25 kPa)	[V]	Ignition	"on"		1000	[ms]	100 ms	2 DCY
		or open circuit				Fuel tank level moving mean value	>= 0 or < = 10.428	[gal]			continuous	
				disable		No active DTCs:						
				conditions:		No supply voltage error	P0642, P0643					
EVAP DTP Sensor	**P0453**	short to battery plus	signal voltage	> 4.902(< -3,75 kPa)	[V]	Ignition	"on"		1000	[ms]	100 ms	2 DCY
						Fuel tank level moving mean value	>= 0 or < = 10.428	[gal]			continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				disable								
				conditions:		No active DTCs:						
						No supply voltage error	P0642, P0643					
						Ignition	"on"					
EVAP DTP Sensor	**P0454**	Signal Noisy	max fuel tank pressure - min fuel tank pressure	> 0.1	[kPa]	Statistic counter	> 10		5	[s]	500 ms	2 DCY
						Ambient pressure	> 74.999	[kPa]			once / DCY	
						Coolant temp	<= 110.25	[°C]				
						Time since engine start	70...600	[s]				
						Idle speed	"=active"					
						Fuel Tank Level between	>=1.584 and <= 10.428	[gal]				
						Degree of canister saturation	<= 1					
						Tank pressure	> -3 and <1	[kPa]				
						Vehicle speed	"=0"					
						IAT	> -8.25 and < 70	[°C]				
						Battery voltage	> 9.99	[V]				
						Lambda control	closed loop					
						Modeled Fuel Temperature	< 45	[°C]				
						Minimum purge time at partload	= 10	[s]				
				disable		No active DTCs:						
				conditions:		No DTP error	P0453, P0452, P0451, P0454					
						No shut of valve error	P0499, P0498					
						No CPS error	P0459, P0458, P0443, P0496, P0436					
						No EVAM error	P0446					
						No AMP error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074					
						No MAF error	P0103, P0102					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No TPS error	P0123, P0122, P0121, P2101, P2100, P2119, P2176,P0068, P1101			
					No Ignition coils error	P2301, P2304, P2307, P2310,			
					No Injectors error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204			
					No O2 sensor error	P0132, P0131, P0134, P2297, P0133, P0032, P0031, P0030, P0135			
					No IAT error	P0113, P0112,			
					No system voltage error	P0563, P0562			
					No VS error	P0501			
					No idle speed controler error	P0507, P0506			
					No CAM error	P0340, P0341, P0365, P0366			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No IVVT error	P000A, P000B, P0016, P0017, 0, P2089, P2088, P0010, P2091, P2090, P0013					
						No CRK error	P0335, P0336					
						No ECT error	P0118, P0117,					
						No supply voltage error	P0643, P0642					
						No control module error	P0605, P061A, P061B, P061C					
						No CAN error	U0073, U0002,					
						No FSD error	P0171, P0172					
						No misfire error	P0301, P0303, P0304, P0302					
						No EOT error	P2610					
						No EVAP error	P0456, P0442, P0455					
						Ignition	"on"					
EVAP System	**P0455**	Large Leak Detection	Pressure difference during evacuation	> -1.3	[kPa]	Time delay	>= 20	[s]	25	[s]	50 ms	2 DCY
Large Leak											once / DCY	
						Ambient pressure	> 74.999	[kPa]				
						Coolant temp	<= 110.25	[°C]				
						Time since engine start	70...600	[s]				
						Idle speed	"=active"					
						Fuel Tank Level between	>=1.584 and <= 10.428	[gal]				
						Degree of canister saturation	<= 1					
						Tank pressure	> -3 and <1	[kPa]				
						Vehicle speed	"=0"					
						IAT	> -8.25 and < 70	[°C]				
						Battery voltage	> 9.99	[V]				
						Lambda control	closed loop					
						Modeled Fuel Temperature	< 45	[°C]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Minimum purge time at partload	= 10	[s]				
				disable		No active DTCs:						
				conditions:		No DTP error	P0453, P0452, P0451, P0454					
						No shut of valve error	P0499, P0498					
						No CPS error	P0459, P0458, P0443, P0496, P0436					
						No EVAM error	P0446					
						No AMP error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074					
						No MAF error	P0103, P0102					
						No TPS error	P0122, P0121, P2101, P2100, P2119, P2176,P0068, P1101					
						No Ignition coils error	P2301, P2304, P2307, P2310,					
						No Injectors error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No O2 sensor error	P0132, P0131, P0134, P2297, P0133, P0032, P0031, P0030, P0135			
					No IAT error	P0113, P0112,			
					No system voltage error	P0563, P0562			
					No VS error	P0501			
					No idle speed controler error	P0507, P0506			
					No CAM error	P0340, P0341, P0365, P0366			
					No IVVT error	P000A, P000B, P0016, P0017, 0, P2089, P2088, P0010, P2091, P2090, P0013			
					No CRK error	P0335, P0336			
					No ECT error	P0118, P0117,			
					No supply voltage error	P0643, P0642			
					No control module error	P0605, P061A, P061B, P061C			
					No CAN error	U0073, U0002,			
					No FSD error	P0171, P0172			
					No misfire error	P0301, P0303, P0304, P0302			
					No EOT error	P2610			
					No EVAP error	P0456, P0442, P0455			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Ignition	"on"					
EVAP System	**P0456**	Small leak detection	Reduced leakage diameter	< 0.85 and >0.388	[mm]	Time delay	>= 4	[s]	30	[s]	50 ms	2 DCY
Very Small Leak (.5mm)											once / DCY	
						Ambient pressure	> 74.999	[kPa]				
						Coolant temp	<= 110.25	[°C]				
						Time since engine start	70...600	[s]				
						Idle speed	"=active"					
						Fuel Tank Level between	>=1.584 and <= 10.428	[gal]				
						Degree of canister saturation	<= 1					
						Tank pressure	> -3 and <1	[kPa]				
						Vehicle speed	"=0"					
						IAT	> -8.25 and < 70	[°C]				
						Battery voltage	> 9.99	[V]				
						Lambda control	closed loop					
						Modeled Fuel Temperature	< 45	[°C]				
						Minimum purge time at partload	= 10	[s]				
				disable		No active DTCs:						
				conditions:		No DTP error	P0453, P0452, P0451, P0454					
						No shut of valve error	P0499, P0498					
						No CPS error	P0459, P0458, P0443, P0496, P0436					
						No EVAM error	P0446					
						No AMP error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074					
						No MAF error	P0103, P0102					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No TPS error	P0123, P0122, P0121, P2101, P2100, P2119, P2176,P0068, P1101			
					No Ignition coils error	P2301, P2304, P2307, P2310,			
					No Injectors error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204			
					No O2 sensor error	P0132, P0131, P0134, P2297, P0133, P0032, P0031, P0030, P0135			
					No IAT error	P0113, P0112,			
					No system voltage error	P0563, P0562			
					No VS error	P0501			
					No idle speed controler error	P0507, P0506			
					No CAM error	P0340, P0341, P0365, P0366			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No IVVT error	P000A, P000B, P0016, P0017, 0, P2089, P2088, P0010, P2091, P2090, P0013					
						No CRK error	P0335, P0336					
						No ECT error	P0118, P0117,					
						No supply voltage error	P0643, P0642					
						No control module error	P0605, P061A, P061B, P061C					
						No CAN error	U0073, U0002,					
						No FSD error	P0171, P0172					
						No misfire error	P0301, P0303, P0304, P0302					
						No EOT error	P2610					
						No EVAP error	P0456, P0442, P0455					
EVAP System	**P0458**		short to ground			Ignition	"on"		3200	[ms]	200 ms	2 DCY
(Canister Purge - CPS)		The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line(OL). SCB and OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected only.				Engine	"running"				continuous	
						Battery voltage	> 9					
						Logical variable for raw KEY_OFF	Off					
						PWM signal	< 91.016	[%]				
				disable		No active DTCs:						
				conditions:		No SPI Bus conflict	P0606					
						No FP relay error	P0628, P0629					
EVAP System	**P0459**	The driver ATIC39 can	short to battery plus			Ignition	"on"		3200	[ms]	200 ms	2 DCY

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
(Canister Purge - CPS)		The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line(OL). SCB and OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected only.				Engine	"running"				continuous	
						Battery voltage	> 9					
						Logical variable for raw KEY_OFF	Off					
						PWM signal	> 0,3	[%]				
				disable		No active DTCs:						
				conditions:		No SPI Bus conflict	P0606					
						No FP relay error	P0628, P0629					
Fuel Level Sensor Diagnosis	**P0461**	stuck check	fuel tank level movement	< Fuel tank level initialisation+0.132	[gal]	Ignition	"on"		660	[s]	100 ms	2 DCY
			fuel tank level movement	> Fuel tank level initialisation-0.132	[gal]	Vehicle speed	> 12.426	[mph]			continuous	
						Moving mean value	>= 1.055736 and <= 10.428	[gal]				
						Fuel cut off	not active					
						Part load	active					
						Counter for rationality error	>= 110	[s]				
						Max. filtered VS gradient	>= 0.142899	[mph]				
				disable		No active DTCs:						
				conditions:		No VS error	P0501					
						No fuel level sensor error	P0461(gradient), P0462, P0463					
Fuel Level Sensor Diagnosis	**P0461**	Gradient	FTL initialidation - moving mean value	< 0.528 or	[gal]	Ignition	"on"		immediately		500 ms	2 DCY
			FTL initialidation - moving mean value	> 4.751736	[gal]	Moving mean value	>= 1.584 and <= 10.428	[gal]	after fuel		continuous	
						Fuel consumption	>= 2 x 2.64	[gal]	consumption			
				disable		No active DTCs:						
				conditions:		No fuel level sensor error	P0461(stuck), P0462, P0463					
Fuel Level Sensor Diagnosis	**P0462**	short to ground	signal voltage	< 0.498 (> 12,15 gal)	[V]	Ignition	"on"		2.5	[s]	100 ms	2 DCY
		or open circuit									continuous	
Fuel Level Sensor Diagnosis	**P0463**	short to battery plus	signal voltage	> 2.998 (< 0 gal)	[V]	Ignition	"on"					2 DCY

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
EVAP System						Ignition	"on"					
(Canister Purge - CPS)	**P0496**	stuck open check	DTP difference during the vapour generation phase	<= -0.2	[kPa]	States during evaporative system monitoring	= DTP correction		0,5	[s]	50 ms	2 DCY
						Ambient pressure	> 74.999	[kPa]			once / DCY	
						Coolant temp	<= 110.25	[°C]				
						Time since engine start	70...600	[s]				
						Idle speed	"=active"					
						Fuel Tank Level between	>=1.584 and <= 10.428	[gal]				
						Degree of canister saturation	<= 1					
						Tank pressure	> -3 and <1	[kPa]				
						Vehicle speed	"=0"					
						IAT	> -8.25 and < 70	[°C]				
						Battery voltage	> 9.99	[V]				
						Lambda control	closed loop					
						Modeled Fuel Temperature	< 45	[°C]				
						Minimum purge time at partload	= 10	[s]				
				disable		No active DTCs:						
				conditions:		No DTP error	P0453, P0452, P0451, P0454					
						No shut of valve error	P0499, P0498					
						No CPS error	P0459, P0458, P0443, ~~P0496~~, P0436					
						No EVAM error	P0446					
						No AMP error	P2229, P2228, P2227					
						No TAM error	P0073, P0072, P009A, P0074					
						No MAF error	P0103, P0102					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No TPS error	P0122, P0121, P2101, P2100, P2119, P2176,P0068, P1101			
					No Ignition coils error	P2301, P2304, P2307, P2310,			
					No Injectors error	P0262, P0261, P0201, P0265, P0264, P0202, P0268, P0267, P0203, P0271, P0270, P0204			
					No O2 sensor error	P0132, P0131, P0134, P2297, P0133, P0032, P0031, P0030, P0135			
					No IAT error	P0113, P0112,			
					No system voltage error	P0563, P0562			
					No VS error	P0501			
					No idle speed controler error	P0507, P0506			
					No CAM error	P0340, P0341, P0365, P0366			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No IVVT error	P000A, P000B, P0016, P0017, 0, P2089, P2088, P0010, P2091, P2090, P0013					
						No CRK error	P0335, P0336					
						No ECT error	P0118, P0117,					
						No supply voltage error	P0643, P0642					
						No control module error	P0605, P061A, P061B, P061C					
						No CAN error	U0073, U0002,					
						No FSD error	P0171, P0172					
						No misfire error	P0301, P0303, P0304, P0302					
						No EOT error	P2610					
						No EVAP error	P0456, P0442, P0455					
EVAP System - Shut off valve	**P0498**	The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line(OL). SCB and OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected only.	short to ground			Ignition	"on"		3200	[ms]	200 ms	2 DCY
											continuous	
						Battery voltage	> 10	[V]				
						Engine	"running"					
				disable								
				conditions:		No active DTCs:						
						No SPI Bus conflict	P0606					
EVAP System - Shut off valve	**P0498**	The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line(OL). SCB and OL	or open circuit			Ignition	"on"		3200	[ms]	200 ms	2 DCY
											continuous	
						Battery voltage	> 10	[V]				
						Engine	"running"					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected only.										
				disable								
				conditions:		No active DTCs:						
						No SPI Bus conflict	P0606					
EVAP System - Shut off valve	**P0499**	The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open line(OL). SCB and OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected only.	short to battery plus			Ignition	"on"		3200	[ms]	200 ms	2 DCY
											continuous	
						Battery voltage	> 10	[V]				
						Engine	"running"					
				disable								
				conditions:		No active DTCs:						
						No SPI Bus conflict	P0606					
Vehicle Speed	**P0501**	CAN signal check	CAN message	< 50	[/s]	counter	>= 5	[s]	8	[s]	500 ms	2 DCY
Idle Controller	**P0506**	out of range low	engine spped deviation between commanded and actual engine speed	< 100	[rpm]	Ignition	"on"		4	[s]	100 ms	2 DCY
						engine speed	= idle				continuous	
						Battery voltage	> 10	[V]				
						ECT	> 50.25	[°C]				
						Vehicle speed	= 0	[mph]				
						Mass air flow	< 220	[mg/stk]				
						PWM signal for canister purge solenoid opening	< 89.999	[%]				
				disable								
				conditions:		No active DTCs:						
						No CPS error	P0459, P0443, P0496, P0458					
						No Ambient pressure error	P2227, P2228, P2229					
						No Ambient Air Temperature error	P0072, P0073					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No Accelerator Pedal Position error	P2123, P2122, P2128, P2127, P2138			
					No Mass Airflow Sensor error	P0102, P0103			
					No Ignition Coils error	P2301, P2304, P2307, P2310			
					No Injectors error	P0201, P0202, P0203, P0204, P0261, P0262, P0264, P0265, P0267, P0268, P0270, P0271			
					No Camshaft error	P0340, P0341, P0365, P0366, P000A, P0016, P2089, P2088, P0010, P0011			
					No Crankshaft error	P0335, P0336			
					No Throttle Position error	P2100, P2101, P0121, P0222, P0123, P0122, P0221, P0223, P2108			
					No ECT error	P0116, P0117,			
					No Intake Air Flow Performance error	P0101, P1101, P0068			
					No Control Module Programming Read only Memory error	P061A			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No Fuel trim system error	P0171, P0172					
						No VS error	P0501					
Idle Controller	**P0507**	out of range high	engine spped deviation between commanded and actual engine speed	> 200	[rpm]	Ignition	"on"		4	[s]	100 ms	2 DCY
						engine speed	= idle				continuous	
						Battery voltage	> 10	[V]				
						ECT	> 50.25	[°C]				
						Vehicle speed	= 0	[mph]				
				disable		Mass air flow	< 220	[mg/stk]				
				conditions:		PWM signal for canister purge solenoid opening	< 89.999	[%]				
						No active DTCs:						
						No CPS error	P0459, P0443, P0496, P0458					
						No Ambient pressure error	P2227, P2228, P2229					
						No Ambient Air Temperature error	P0072, P0073					
						No Accelerator Pedal Position error	P2123, P2122, P2128, P2127, P2138					
						No Mass Airflow Sensor error	P0102, P0103					
						No Ignition Coils error	P2301, P2304, P2307, P2310					
						No Injectors error	P0201, P0202, P0203, P0204, P0261, P0262, P0264, P0265, P0267, P0268, P0270, P0271					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No Camshaft error	P0340, P0341, P0365, P0366, P000A, P0016, P2089, P2088, P0010, P0011					
						No Crankshaft error	P0335, P0336					
						No Throttle Position error	P2100, P2101, P0121, P0222, P0123, P0122, P0221, P0223, P2108					
						No ECT error	P0116, P0117,					
						No Intake Air Flow Performance error	P0101, P1101, P0068					
						No Control Module Programming Read only Memory error	P061A					
						No Fuel trim system error	P0171, P0172					
						No VS error	P0501					
Idle Controller	**P050A**	Cold start out of range low	engine spped deviation between commanded and actual engine speed	< 175	[rpm]				4	[s]	100 ms	2 DCY
						Ignition	"on"				once / DCY	
						Vehicle speed	= 0	[mph]				
						ECT	> -9.75	[°C]				
						Mass air flow	< 400.01	[mg/stk]				
						PWM signal for canister purge solenoid opening	< 89.999	[%]				
						Ignition	"on"					
						engine speed	= idle					
						Battery voltage	> 10	[V]				
						Time delay	> 3	[s]				
						Catalyst heating	= active					
				disable		No active DTCs:						

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
				conditions:	No CPS error	P0459, P0443, P0496, P0458			
					No Ambient pressure error	P2227, P2228, P2229			
					No Ambient Air Temperature error	P0072, P0073			
					No Accelerator Pedal Position error	P2123, P2122, P2128, P2127, P2138			
					No Mass Airflow Sensor error	P0102, P0103			
					No Ignition Coils error	P2301, P2304, P2307, P2310			
					No Injectors error	P0201, P0202, P0203, P0204, P0261, P0262, P0264, P0265, P0267, P0268, P0270, P0271			
					No Camshaft error	P0340, P0341, P0365, P0366, P000A, P0016, P2089, P2088, P0010, P0011			
					No Crankshaft error	P0335, P0336			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No Throttle Position error	P2100, P2101, P0121, P0222, P0123, P0122, P0221, P0223, P2108					
						No ECT error	P0116, P0117,					
						No Intake Air Flow Performance error	P0101, P1101, P0068					
						No Control Module Programming Read only Memory error	P061A					
						No Fuel trim system error	P0171, P0172					
						No VS error	P0501					
Idle Controller	**P050A**	Cold start out of range high	engine spped deviation between commanded and actual engine speed	> 175	[rpm]				4	[s]	100 ms	2 DCY
						Ignition	"on"				once / DCY	
						Vehicle speed	= 0	[mph]				
						ECT	> -9.75	[°C]				
						Mass air flow	< 400.01	[mg/stk]				
						PWM signal for canister purge solenoid opening	< 89.999	[%]				
				disable		Ignition	"on"					
				conditions:		engine speed	= idle					
						Battery voltage	> 10	[V]				
						Time delay	> 3	[s]				
						Catalyst heating	= active					
						No active DTCs:						
						No CPS error	P0459, P0443, P0496, P0458					
						No Ambient pressure error	P2227, P2228, P2229					
						No Ambient Air Temperature error	P0072, P0073					
						No Accelerator Pedal Position error	P2123, P2122, P2128, P2127, P2138					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No Mass Airflow Sensor error	P0102, P0103			
					No Ignition Coils error	P2301, P2304, P2307, P2310			
					No Injectors error	P0201, P0202, P0203, P0204, P0261, P0262, P0264, P0265, P0267, P0268, P0270, P0271			
					No Camshaft error	P0340, P0341, P0365, P0366, P000A, P0016, P2089, P2088, P0010, P0011			
					No Crankshaft error	P0335, P0336			
					No Throttle Position error	P2100, P2101, P0121, P0222, P0123, P0122, P0221, P0223, P2108			
					No ECT error	P0116, P0117,			
					No Intake Air Flow Performance error	P0101, P1101, P0068			
					No Control Module Programming Read only Memory error	P061A			
					No Fuel trim system error	P0171, P0172			
					No VS error	P0501			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
									1000	[ms]		(1)--see note below
System Voltage Diagnosis	**P0562**	out of range low	signal voltage	< 9	[V]	Ignition	"on"				100 ms	
						Battery voltage	>9 <16,1	[V]			continuous	
						Engine	"running"					
System Voltage Diagnosis	**P0563**	out of range high	signal voltage	> 16	[V]				1000	[ms]		Special type "C"
						Ignition	"on"				100 ms	
						Battery voltage	>9 <16,1	[V]			continuous	
						Engine	"running"					
(1) Mil will not illuminate for these diagnostics. Either the generator light will come on or the power to the instrument cluster will be lost--This has been discussed with CARB's Staff												
Brake Switch 1 Diagnosis	**P0572**	This diagnostic utilyzes three seperate functions to test the brake lamp switch circuit, faulty switch, and for a non mounted or misadjusted switch. A rationality test compares brake lamp switch to the brake test switch. A second test checks the brake lamp switch state during driving conditions with VS greater then a threashold. A third test checks the brake light switch during deceleration.	Short to ground / Open	Steady state failure Signal input = 1		Ignition	"on"				10 ms	
				Rationality failure = Implausible switch state		Engine	"running"		steady state = 5	(s)	steady state = once per trip	2 DCY
						VB	> 10	[V]	Rationality = 25 brake events		Rationality = continous	2 DCY
						Vehicle speed (only used for steady state diagnostic)	> 6 < 55	[mph]				
				disable		No active DTCs:						
				conditions:		Wheel Speed Sensors	C1232, C1207, C1221, C1225, C1233, C1208, C1222, C1226					
						BTS	P0719, P0724					
						VS	P0501					
Brake Switch 1 Diagnosis	**P0573**		Short to battery	Decel diagnostic failure Signal input = 0		Ignition	"on"			(s)	10 ms	
				Rationality failure = Implausible switch state		Engine	"running"		decel test = 2.5		continuous	2 DCY

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						VB	> 10		Rationality = 25 brake events		continuous	2 DCY
						vehicle speed (only used for decel diagnostic)	>31	[mph]				
						vehicle deceleration rate (only used for decel diagnostic)	> 5.6	(mi/(h*s))				
		This diagnostic utilyzes three										
		seperate functions to test the		disable		No active DTCs:						
		brake lamp switch circuit, faulty switch, and for a non mounted or misadjusted switch. A rationality test compares brake lamp switch to the brake test switch. A second test checks the brake lamp switch state during driving conditions with		conditions:		Wheel Speed Sensors	C1232, C1207, C1221, C1225, C1233, C1208, C1222, C1226					
		VS greater then a threashold. A third test checks the brake				BTS	P0719, P0724					
		light switch during deceleration.				Vehicle speed	P0501					
Engine Control Module Diagnosis	**P0601**	The self-test of the ECU is done once at initialization after key "ON" is detected and check-sum is recognised. There are 16 condition bits in ECU to determine the actual fault on ECU.	checksum error of code			Ignition	"on"				once after IGK on	1 DCY
											once / DCY	
									2000	[ms]		
Engine Control Module Diagnosis	**P0602**	No Program detected (Service ECU)	checksum error of application data			Ignition	"on"				once after IGK on	1 DCY
		The self-test of the ECU is done once at initialization after key "ON" is detected and check-sum is recognised. There are 16 condition bits in ECU to determine the actual fault on ECU.							2000	[ms]	once / DCY	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
Engine Control Module Diagnosis	**P0604**	The self-test of the ECU is done once at initialization after key "ON" is detected and check-sum is recognised. There are 16 condition bits in ECU to determine the actual fault on ECU.	RAM-check extern			Ignition	"on"				once after IGK on	1 DCY
			RAM check intern						2000	[ms]	once / DCY	
Control module programming ready only memory	**P0605**	ROM check	internal error			ECM power up			immediately		40 ms	1 DCY
											continuous	
		RAM-check	internal error			ECM power up			480		40 ms	1 DCY
											continuous	
		general level 3 error	internal error			ECM power up			480		40 ms	1 DCY
											continuous	
		FS-IST error on MU	internal error			ECM power up			480		40 ms	1 DCY
											continuous	
Engine Control Module Diagnosis	**P0606**	SPI (Serial peripheral interface) is a ECU-internal serial interface part of the microcontroller in order to control hardware componends (e.g. lowside driver ATIC39). This diagnosis is based on the supervision of the SPI by the microcontroller hardware	SPI - Bus conflict			Ignition	"on"		600	[ms]	200 ms	1 DCY
											continuous	
Control Module Performance	**P0607**	SPI (Serial peripheral interface) is a ECU-internal serial interface part of the microcontroller in order to control hardware componends (e.g. lowside driver ATIC39). This diagnosis is based on the supervision of the SPI by the microcontroller hardware	ECU Performance (Processor Frequency Error detection)			Ignition	"on"		10	[ms]	10 ms	1 DCY

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
											continuous	
											40 ms	
ECM	**P061A**	General level 2 error	MON			Ignition	"on"		480	[ms]	continuous	1 DCY
											40 ms	
ECM	**P061B**	Torque monitoring error	comparison of 2 values	TQI_SP_MON > TQI_AV_MON		Ignition	"on"		480	[ms]	continuous	1 DCY
			(real vs. model)	delta > characteristic maps		Electric throttle	active					
						Limp home mode	no limp home mode active				40 ms	
ECM	**P061C**	RPM-lim monitoring error	comparison of a value vs. limit	> 1760 rpm		Ignition key	on		480	[ms]	continuous	1 DCY
						Engine speed limitation	requested					
Fuel Pump Relay	**P0628**	The purpose is to diagnose electrical errors detected by high side driver hardware for static outputs. The information of the error symptom is delivered by the BSW (Basic software).	short to ground			Ignition	"on"		2600	[ms]	200 ms	2 DCY
						Fuel pump is running					continuous	
						Engine	"running"					
						Battery voltage	> 9					
Fuel Pump Relay	**P0629**	The purpose is to diagnose electrical errors detected by high side driver hardware for static outputs. The information of the error symptom is delivered by the BSW (Basic software).	short to battery or Open Circuit			Ignition	"on"		2600	[ms]	200 ms	2 DCY
						Fuel pump is running					continuous	
						Engine	"running"					
						Battery voltage	> 9					
									150	[ms]	10 ms	
5 Volt Reference 1 Diagnosis	**P0642**	short to ground	signal voltage	< 4.75	[V]	Ignition	"on"				continuous	1 DCY
						Delay time	>0.02	[s]				
									150	[ms]	10 ms	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
5 Volt Reference 1 Diagnosis	**P0643**	short to battery plus	signal voltage	> 5.25	[V]	Ignition	"on"				continuous	1 DCY
						Delay time	>0.02	[s]				
Malfunction Indicator Lamp (MIL) Control Circuit	**P0650**	The purpose is to diagnose electrical errors by the hardware for the MIL. The signals are controlled by the Lowside driver ATIC39. The driver ATIC39 can distinguish between three errors: Short to battery (SCB), Short to ground (SCG) and Open load (OL). SCB and real OL are detected by the driver only if the output is driven (ON-state), additionally SCG will be detected as OL in ON-state. If the output is non-driven (OFF-state) by the driver, SCG is detected only.	short to ground			Ignition	"on"		3.2	[s]		2 DCY
											200 ms	
			short to battery plus								continuous	2 DCY
			open circuit									2 DCY
				disable		No active DTCs:						
				conditions:		No control module errors	P0601, P0604, P0605, P0606, P0607, P2610					
									150	[ms]	10 ms	
5 Volt Reference 2 Diagnosis	**P0652**	short to ground	signal voltage	< 4.75	[V]	Ignition	"on"				continuous	1 DCY
						Delay time	>0.02	[s]				
5 Volt Reference 2 Diagnosis	**P0653**	short to battery plus	signal voltage	> 5.25	[V]	Ignition	"on"		150	[ms]	10 ms	1 DCY
						Delay time	>0.02	[s]			continuous	
Variable intake manifold	**P065E**	plaus off	Feedback sensor	< 1.001	[V]	Ignition	"on"		1.4	[s]	100 ms	2 DCY
Variable intake manifold Rationality			and			Time after engine start	> 3	[s]			continuous	
			Commanded position	0	[-]	IAT	> -9.8	[°C]				
			and			Engine speed	> 608	[/rev]				
			Commandet position stable	> 0.4	[s]	Engine speed	< 6208	[/rev]				
			or			Switching operations in high load engine state without refill the vacuum reservoir	< 1...3	[-]				
		plaus on	Feedback sensor	> 3.999	[V]							

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
			and									
			Commanded position	1								
			and									
			Commandet position stable	> 0.4	[s]							
				disable		No active DTC's:						
				conditions:		No ECT error	P0118, P0117,					
						No Ambient pressure sensor error	P2229, P2228, P2227					
						No IAT sensor error	P0113, P0112,					
						No Supply voltage error	P0643, P0642, P0653, P0652					
						No VIM actuator diagnosis error	P0662, P0661,					
Variable intake manifold	**P0661**	Variable intake manifold is a static driven power stage. This diagnosis detects an elctrical malfunction, short circuit battery (SCB), short circuit to ground (SCG) and open load (OL). The detection is based on the self diagnosis of the lowside drive.	short to ground			Ignition	"on"		1	[s]	200 ms	2 DCY
			or open circuit			Battery voltage	> 9	[V]			continuous	
				disable								
				conditions:								
						No active DTC's:						
						No ECU SPI error	P0606					
Variable intake manifold	**P0662**	Variable intake manifold is a static driven power stage. This diagnosis detects an elctrical malfunction, short circuit battery (SCB), short circuit to ground (SCG) and open load (OL). The detection is based on the self diagnosis of the lowside drive.	Short to Battery			Ignition	"on"		1	[s]	200 ms	2 DCY
						Battery voltage	> 9	[V]			continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No active DTC's:						
						No ECU SPI error	P0606					
Cooling Fan Electrical Diagnosis			The FAN is driven by the ECU via an output driver. The failure detection is done by the driver itself. The purpose is to perform the electrical diagnosis of the FAN actuator to detect electrical faults.									
						Ignition	"on"		3200	[ms]	200 ms	2 DCY
Relay # 1	**P0691**	short to ground	Fail Time	> 3200	[ms]	Engine	"running"				continuous	
		or open circuit				Battery voltage	> 9	[V]				
						FAN power stage	configured					
	P0692	short to battery plus	Fail Time	> 3200	[ms]				3200	[ms]		2 DCY
				disable		No active DTCs:						
				conditions:		No ECU SPI error	P0606					
			The FAN is driven by the ECU via an output driver. The failure detection is done by the driver itself. The purpose is to perform the electrical diagnosis of the FAN actuator to detect electrical faults.			Ignition	"on"		3200	[ms]	200 ms	2 DCY
Relay # 2	**P0693**	short to ground	Fail Time	> 3200	[ms]	Engine	"running"				continuous	
		or open circuit				Battery voltage	> 9	[V]				
						FAN power stage	configured					
	P0694	short to battery plus	Fail Time	> 3200	[ms]				3200	[ms]		2 DCY
				disable		No active DTCs:						
				conditions:		No ECU SPI error	P0606					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
			The FAN is driven by the ECU via an output driver. The failure detection is done by the driver itself. The purpose is to perform the electrical diagnosis of the FAN actuator to detect electrical faults.			Ignition	"on"		3200	[ms]	200 ms	2 DCY
Relay # 3	**P0695**	short to ground	Fail Time	> 3200	[ms]	Engine	"running"				continuous	
		or open circuit				Battery voltage	> 9	[V]				
						FAN power stage	configured					
						transmission	"automatic"					
						air condition	configured					
	P0696	short to battery plus	Fail Time	> 3200	[ms]				3200	[ms]		2 DCY
				disable		No active DTCs:						
				conditions:		No ECU SPI error	P0606					
Transmission control system	**P0700**	Transmission control system error	Transmission control system sends request for MIL and freeze frame parameters			Ignition	"on"		20	[ms]	10 ms	1 DCY
(MIL request)											continuous	
				disable		No active DTCs:						
				conditions:		No CAN errors	U0073,					
Brake Switch 2 Diagnosis	**P0719**		Short to ground / Open	Steady state failure Signal input = 1							10 ms	
				Rationality failure = Implausible switch state		Ignition	"on"		steady state = 5	(s)	steady state = once per trip	
						Engine	"running"		Rationality = 25 brake events		Rationality = continous	2 DCY
						VB	> 10					
						Vehicle speed (only used for steady state diagnostic)	> 6 < 55	[mph]				
		This diagnostic utilyzes three										
		seperate functions to test the				No active DTCs:						

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		brake lamp switch circuit, faulty switch, and for a non mounted or misadjusted switch. A rationality test compares brake lamp switch to the brake test switch. A second test checks the brake lamp switch state during driving conditions with VS greater then a threashold. A third test checks the brake light switch during deceleration.		disable		Wheel Speed Sensors	C1232, C1207, C1221, C1225, C1233, C1208, C1222, C1226					
				conditions:		BLS	P0572, P0573					
						VS	P0501					
Brake Switch 2 Diagnosis	**P0724**		Short to battery	Decel diagnostic failure Signal input = 0							10 ms	2 DCY
				Rationality failure = Implausible switch state		Ignition	"on"		decel test = 2.5	(s)	continuous	
						Engine	"running"		Rationality = 25 brake events		continuous	
						VB	> 10					
						vehicle speed (only used for decel diagnostic)	>31	[mph]				
						vehicle deceleration rate (only used for decel diagnostic)	> 5.6	(mi/(h*s))				
		This diagnostic utilyzes three seperate functions to test the brake lamp switch circuit, faulty switch, and for a non mounted or misadjusted switch. A rationality test compares brake lamp switch to the brake test switch. A second test checks the brake lamp switch state during driving conditions with VS greater then a threashold. A third test checks the brake light switch during deceleration.										
				disable		No active DTCs:						
				conditions:		Wheel Speed Sensors	C1232, C1207, C1221, C1225, C1233, C1208, C1222, C1226					
						BLS	P0572, P0573					
						Vehicle speed	P0501					
Traction Control (TCS)	**P0856**		Timer	>= 3	[ms]	Ignition	"on"		immediately		10 ms	2 DCY
		alive rolling count	alive rolling count	is decayed (3 Times wrong)		Traction control system on CAN configured					continuous	
		signal protection	torque request protection	is decayed								
						Ignition	"on"					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
Load TPS Rationality	**P1101**	deviation measured airflow to modeled airflow	meassured air flow - modeled air flow	> 15 ... 50	[%]	Battery voltage	> 10	[V]	1600	[ms]	20 ms	2 DCY
Intake Air Flow System Performance		filtered active relative LAM correction	and			Engine	"running"				continuous	
			Close loop not active			Time after engine start	> 5	[s]				
			and			Ambient pressure	> 69.999	[kPa]				
			filtered active relative LAM correction	> -11 and < 11	[%]	Ambient pressure	< 149.99	[kPa]				
						RPM	> 800	[rpm]				
						RPM	< 6496	[rpm]				
						Throttle position	< 4.996...10	[°]				
			meassured air flow - modeled air flow	< -15 ... -50	[%]	Throttle position	> 84.999	[°]				
			and			Pressure quotient	> 0.3	[-]				
			Close loop not active			Pressure quotient	< 0.99	[-]				
			and			System is controlled by mass air flow sensor						
			filtered active relative LAM correction	> -11 and < 11	[%]	No engine state "pull fuel cutoff"						
						Electronic throttle control power stage is on						
						Electronic throttle control power stage is on						
				disable								
				conditions:		No active DTC's:						
						No Mass Air Flow error	P0103, P0102					
						No IAT sensor error	P0113, P0112,					
						No Canister purge valve error	P0459, P0458					
						No Ambient pressure sensor error	P2229, P2228, P2227					
						No Throttle Position error	P0123, P0122, P0223, P0222, P0121, P0221					
						No Supply voltage error	P0643, P0642, P0653, P0652					
						No Camshaft error	P0340, P0341, P0365, P0366					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No Variable valve timing error	P000A, P000B, P0016, P0017					
						No ECT error	P0118, P0117,					
						No variable intake manifold error	P065E,					
											10 ms	2 DCY
									immediately		continuous	
CAN Bus	**P1793**	no signal	CAN message			Ignition	"on"					
						Ignition	"on"					
IVVT Intake	**P2088**		Short to Ground			PWM signal	< 91.8	[%]	1,7	[s]	100 ms	2 DCY
		The hardware is able to detect electrical failures in the IVVT solenoid valve circuit. Three symptoms can be distinguished: short circuit to battery, open circuit and short circuit to ground. Only one symptom can be active at the same time. At the time of the solenoid valve is energized, it always ensures that the duty cycle output signal is never 0 or 100 %. With calibration fulfilling proper IVVT performance, and, simultaneously, the output signal is not 0 and 100 % PWM. Not being near 0 % or 100 % is the condition for a				Battery voltage	> 10 and < 16	[V]			continuous	
				disable		No active DTC´s:						
				conditions:		No SPI Bus conflict	P0606					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		electrical diagnosis. An eventcounter of the electrical diagnosis counts the reccurrencies of this diagnosis. It is used for activation of diagnosis during thee applyed special energization with 0% or 100 % by the IVVT-controller. The counter runs independant of diagnosis activation and is used for detection of the failure.										
						Ignition	"on"		1,7	[s]	100 ms	
IVVT Intake	**P2089**		short to battery plus			PWM signal	> 2	[%]			continuous	2 DCY
		The hardware is able to detect electrical failures in the IVVT solenoid valve circuit. Three symptoms can be distinguished: short circuit to battery, open circuit and short circuit to ground. Only one symptom can be active at the same time. At the time of the solenoid valve is energized, it always ensures that the duty cycle output signal is never 0 or 100 %. With calibration fulfilling proper IVVT performance, and, simultaneously, the output signal is not 0 and 100 % PWM. Not being near 0 % or 100 % is the condition for a electrical diagnosis. An eventcounter of the electrical diagnosis counts the reccurrencies of this diagnosis. It is used for activation of diagnosis during thee applyed special energization with 0% or 100 % by the IVVT-controller. The counter runs independant of diagnosis activation and is used for detection of the failure.				Battery voltage	> 10 and < 16	[V]				
				disable		No active DTC´s:						
				conditions:		No SPI Bus conflict	P0606					
						Ignition	"on"					
IVVT Exhaust	**P2090**		Short to Ground			PWM signal	< 91.8	[%]	1,7	[s]	100 ms	2 DCY
						Battery voltage	> 10 and < 16	[V]			continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				disable		No active DTC´s:						
				conditions:		No SPI Bus conflict	P0606					
		The hardware is able to detect electrical failures in the IVVT solenoid valve circuit. Three symptoms can be distinguished: short circuit to battery, open circuit and short circuit to ground. Only one symptom can be active at the same time. At the time of the solenoid valve is energized, it always ensures that the duty cycle output signal is never 0 or 100 %. With calibration fulfilling proper IVVT performance, and, simultaneously, the output signal is not 0 and 100 % PWM. Not being near 0 % or 100 % is the condition for a electrical diagnosis. An eventcounter of the electrical diagnosis counts the reccurrencies of this diagnosis. It is used for activation of diagnosis during thee applyed special energization with 0% or 100 % by the IVVT-controller. The counter runs independant of diagnosis activation and is used for detection of the failure.									
IVVT Exhaust	**P2091**		short to battery plus			PWM signal	> 2	[%]	1,7	[s]	100 ms	2 DCY
						Battery voltage	> 10 and < 16	[V]			continuous	
				disable		No active DTC´s:						
				conditions:		No SPI Bus conflict	P0606					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		The hardware is able to detect electrical failures in the IVVT solenoid valve circuit. Three symptoms can be distinguished: short circuit to battery, open circuit and short circuit to ground. Only one symptom can be active at the same time. At the time of the solenoid valve is energized, it always ensures that the duty cycle output signal is never 0 or 100 %. With calibration fulfilling proper IVVT performance, and, simultaneously, the output signal is not 0 and 100 % PWM. Not being near 0 % or 100 % is the condition for a electrical diagnosis. An eventcounter of the electrical diagnosis counts the reccurrencies of this diagnosis. It is used for activation of diagnosis during thee applyed special energization with 0% or 100 % by the IVVT-controller. The counter runs independant of diagnosis activation and is used for detection of the failure.									
Fuel Correction Diagnostic, Portion #1	**P2096**	system too lean	LAM –P-jump delay time from I-share	> 315	[ms]	Ignition	"on"		2.5	[s]	100 ms	2 DCY
			or			Trim-controller I-share	= active				continuous	
			lambda set-point shifting	= active		Evaporative Emission Control Function	= canister purge not in adaptation					
			(O2 sensor downstream intrusive test)									
				disable		No active DTC's:						

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
				conditions:	No TCO error	P0116, P0117,			
					No MAF error	P0102, P0103			
					No FSD error	P0171, P0172			
					No O2 sensor error	P0031, P0032, P0036, P0037, P0038, P0131, P0132, P0133, P0130, P0137, P0138, P0139, P0140, P0141, P2270, P2271, P2297, P2A00, P2A01			
					No TPS Error	P0121, P0122, P0123, P0221, P0222, P0223, P2176, P0101, P0068, P1101			
					No ignition coil error	P2301, P2304, P2307, P2310			
					No CAT error	P0420			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No injection valve error	P0201, P0202, P0203, P0204, P0261, P0262, P0264, P0265, P0267, P0268, P0270, P0271					
						No Canister purge solenoid error	P0443, P0458, P0459					
						No MTC error	P2100, P2101					
						No misfire error	P0300, P0301, P0302, P0303, P0304, P0313					
						No CKP error	P0335, P0336					
						No IVVT error	P0365, P0366, P000A, P000B, P0010, P0011, P0013, P0014, P0016, P0017, P2088, P2089, P2090, P2091					
						No CMP error	P0340, P0341					
Fuel Correction Diagnostic, Portion #1	**P2097**	system too rich	LAM –P-jump delay time from I-share	< -380	[ms]	Ignition	"on"					
						Trim-controller I-share	= active		2.5	[s]	100 ms	2 DCY
						Evaporative Emission Control Function	= canister purge not in adaptation				continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
				disable					
				conditions:	No active DTC's:				
					No TCO error	P0116, P0117,			
					No MAF error	P0102, P0103			
					No FSD error	P0171, P0172			
					No O2 sensor error	P0031, P0032, P0036, P0037, P0038, P0131, P0132, P0133, P0130, P0137, P0138, P0139, P0140, P0141, P2270, P2271, P2297, P2A00, P2A01			
					No TPS Error	P0121, P0122, P0123, P0221, P0222, P0223, P2176, P0101, P0068, P1101			
					No ignition coil error	P2301, P2304, P2307, P2310			
					No CAT error	P0420			

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No injection valve error	P0201, P0202, P0203, P0204, P0261, P0262, P0264, P0265, P0267, P0268, P0270, P0271					
						No Canister purge solenoid error	P0443, P0458, P0459					
						No MTC error	P2100, P2101					
						No misfire error	P0300, P0301, P0302, P0303, P0304, P0313					
						No CKP error	P0335, P0336					
						No IVVT error	P0365, P0366, P000A, P000B, P0010, P0011, P0013, P0014, P0016, P0017, P2088, P2089, P2090, P2091					
						No CMP error	P0340, P0341					
Throttle Actuator Device	**P2100**	The MTC is checked by the MTC-powerstage IC. It can only be checked if the powerstage is active.	Power stage			Ignition	"on"					
						Engine	"running"		450	[ms]	5 ms	1 DCY
						Battery voltage	>7	[V]			continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
Throttle Actuator Device	**P2101**	plausibility check	1 Actual TPS - Commanded TPS	> 4.996	[°]	Ignition	"on"		0.5	[s]	10 ms	1 DCY
						Battery voltage	>7	[V]			continuous	
		short to battery plus	PWM value	> 98.001	[%]	No adaption is requested						
									2.0	[s]		
Throttle Actuator Position	**P2108**	Actuator malfunction (limp home position)	TPS position - Limp home position	>1.999	[°]	Ignition	"on"				10 ms	1 DCY
						No adaption is requested			1	[s]	triggered	
				disable		No active DTCs:						
				conditions:								
						No TPS error	P0121, P0122, P0123, P0221, P0222, P0223, P2176,					
TP Sensor Rationality	**P2119**	The throttle position is determined by a two-channeled sensor. Both channels deliver invers dispersing voltage signals. In order to reduce inaccuracy , the two signal voltages are referenced to their supply voltage. After initial engine start and compone	TPS by adaptation	>=24.997	[°]	Ignition	"on"		immediately		5 ms	1 DCY
		spring check - lower position not reached	and			Powerstage not disabled by processor monitoring					once / DCY	
			Diagnosis time	= 0								
											5 ms	
		spring check - upper position not reached	TPS by adaptation	>= 2.006	[°]				immediately		once / DCY	1 DCY
			and									
			Diagnosis time	= 0								
Pedal Value Sensor 1	**P2122**	short to ground	signal voltage	< 0.63	[V]				250	[ms]	10 ms	1 DCY

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		or open circuit				Ignition	"on"				continuous	
						No active DTCs:						
						No supply voltage error	P0642, P0643					
Pedal Value Sensor 1	**P2123**	short to battery plus	signal voltage	> 4.88	[V]	Ignition	"on"		250	[ms]	10 ms	1 DCY
											continuous	
				disable		No active DTCs:						
				conditions:		No supply voltage error	P0642, P0643					
Pedal Value Sensor 2	**P2127**	short to ground	signal voltage	< 0.12	[V]	Ignition	"on"		250	[ms]	10 ms	1 DCY
		or open circuit									continuous	
						No active DTCs:						
						No supply voltage error	P0652, P0653					
Pedal Value Sensor 2	**P2128**	short to battery plus	signal voltage	> 2.64	[V]	Ignition	"on"		250	[ms]	10 ms	1 DCY
											continuous	
				disable								
				conditions:		No active DTCs:						
						No supply voltage error	P0652, P0653					
						No active DTCs:						
Pedal Value Sensor	**P2138**	rationalty check	Voltage Deviation	> 0.420...1.387	[V]	Ignition	"on"		350	[ms]	10 ms	1 DCY
											continuous	
				disable		No active DTCs:						
				conditions:		No supply voltage error	P0642, P0643,P0652, P0653					
											5 ms	
TP Sensor Rationality	**P2176**	Adaptation conditions exceeded	Vehicle speed	> 0	[mph]	Ignition	"on"		immediately		continuous	1 DCY
			or			Powerstage not disabled by processor monitoring						
			engine speed	> 192	[rpm]							
			or									
			ECT	> 4.5 < 110.3	[°C]							
			or									
			Battery voltage	> 9	[V]							
			or									
			IAT	< 4.5	[°C]							

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		Spring and limp home position violation	TPS1 or TPS2 throttle position sensor voltage differs from the stored limp home position			Ignition	"on"		> 0.6	[s]	5 ms	1 DCY
						Powerstage not disabled by processor monitoring					continuous	
						Request for TPS adaptation						
												1 DCY
									> 0.6	[s]	5 ms	
		lower mechanical stop adaptation outside range	TPS1 or TPS2 sensor voltage does not reach the minimum lower mechanical position within specified time window.								continuous	
									> 0.6	[s]	5 ms	
		Limp home postion adaptation violation	TPS1 or TPS2 sensor voltage does not reach the Limp home position window (at least lower postion).								continuous	1 DCY
AMP Sensor	**P2227**	plausibility check	gradient	> 1.003	[kPa/s]				1	[s]	1 s	2 DCY
						Ignition	"on"				continuous	
			or			Engine	"running"					
			Ambient Pressure from last driving cycle- Ambient Pressure @engine start	> 20	(kpa)	Vehicle speed	<=0.625	[mph]	immediately after error is detected and the LOAD_TPS		1 s	2 DCY
			and			Idle					once / DCY	
			mass air flow mmv calc. from altitude sesnor - mass air flow mmv	> 1.13	[kg/h]	Mass air flow	<=18	[kg/h]				
						Intake manifold pressure	<=49.9993	[kPa]				
						ECT	>=39.75	[°C]				
						Duration in which the conditions for diag are fulfilled	>=13	[s]				

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						MAF integral out of DFCO since engine start	>=0.8	[kg]	diag is finished			
				disable		No active DTC's:						
				conditions:		No Throttle Position error	P0123, P0122, P0223, P0222, P0121, P0221					
						No Mass Air Flow error	P0103, P0102					
						No Camshaft error	P0340, P0341, P0365, P0366					
						No Crankshaft error	P0335, P0336					
						No Variable valve timing error	P000A, P000B, P0016, P0017					
						No ECT error	P0118, P0117,					
						No Ambient pressure sensor error	P2229, P2228					
						No Supply voltage error	P0643, P0642, P0653, P0652					
						No VS error	P0501					
AMP Sensor	**P2228**	short to ground	signal voltage	< 2.002 (50,9 kPa)	[V]	Ignition	"ON"		2500	[ms]	10 ms	2 DCY
		or open circuit				Battery voltage	>9	[V]			continuous	
				disable		No active DTC's:						
				conditions:		No Supply voltage error	P0643, P0642, P0653, P0652					
						No Ambient pressure sensor error	P2227					
AMP Sensor	**P2229**	short to battery plus	signal voltage	> 4.302 (109,4 kPa)	[V]	Ignition	"ON"		2500	[ms]	10 ms	2 DCY
						Battery voltage	>9	[V]			continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
				disable		No active DTC's:						
				conditions:		No Supply voltage error	P0643, P0642, P0653, P0652					
						No Ambient pressure sensor error	P2227					
Fuel Correction Diagnostic, Portion #2						Ignition	"on"					
O2 Sensor Signal Check	**P2270**	Rich voltage not reached (System Lean)	signal voltage down stream	< 0.605	[V]	ECT	> 75	[°C]	25	[s]	100 ms	2 DCY
						Time after engine start	>720	(s)			once / DCY	
						Integrated MAF inegral after lambda closed loop	> 1000	[g]				
						Mass air flow integrated within rich shift	> 80	[g]				
						Signal voltage down stream	< 0.679	[V]				
						Lambda set-point shifting	= 0.85	[-]				
						O2SH state	active					
				disable		No active DTCs:						
				conditions:		No CKP error	P0335, P0336					
						No CMP error	P0340, P0341					
						No IVVT error	P0365, P0366, P000A, P000B, P0010, P0011, P0013, P0014, P0016, P0017, P2088, P2089, P2090, P2091					
						No MAF error	P0102, P0103					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No O2 sensor error	P0031, P0032, P0036, P0037, P0038, P0130, P0131, P0132, P0133, P0137, P0138, P0139, P0141, P2270, P2271, P2297, P2A00, P2A01					
						No Misfire error	P0300, P0301, P0302, P0303, P0304, P0313					
						No canister purge solenoid error	P0443, P0458, P0459					
						No mech. canister purge solenoid error	P0496					
						No TPS error	P0121, P0122, P0123, P0221, P0222, P0223, P2176, P0101, P0068, P1101					
						No TCO error	P0116, P0117,					
						No FSD error	P0171, P0172					
						O2SH state	active					
Fuel Correction Diagnostic, Portion #2	**P2271**	Lean voltage not reached (System Rich)	signal voltage down stream	> 0.298	[V]				20	[s]	100 ms	2 DCY
						Ignition	"on"					
						Time after engine start	>720	[s]			once / DCY	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Integrated MAF inegral after lambda closed loop	> 1000	[g]				
						Mass air flow integrated within lean shift	> 60	[g]				
						Signal voltage down stream	< 0.2	[V]				
						Mass air flow integral in DFCO	< 10	[g]				
						Lambda set-point shifting	= 1.15	[-]				
						ECT	> 75	[°C]				
				disable		No active DTCs:						
				conditions:		No CKP error	P0335, P0336					
						No CMP error	P0340, P0341					
						No IVVT error	P0365, P0366, P000A, P000B, P0010, P0011, P0013, P0014, P0016, P0017, P2088, P2089, P2090, P2091					
						No MAF error	P0102, P0103					
						No O2 sensor error	P0031, P0032, P0036, P0037, P0038, P0130, P0131, P0132, P0133, P0137, P0138, P0139, P0141, P2270, P2271, P2297, P2A00, P2A01					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No Misfire error	P0300, P0301, P0302, P0303, P0304, P0313					
						No canister purge solenoid error	P0443, P0458, P0459					
						No mech. canister purge solenoid error	P0496					
						No TPS error	P0121, P0122, P0123, P0221, P0222, P0223, P2176, P0101, P0068, P1101					
						No TCO error	P0116, P0117,					
						No FSD error	P0171, P0172					
HO2S Performance during Decel Fuel Cut-Off (DFCO) Sensor 1	**P2297**	Signal Not Plausible in DFCO	signal voltage up stream	> 0.151	[V]	Ignition	"on"		200	[ms]	100 ms	2 DCY
						Operative readiness of sensor	"on"				triggered	
						Exhaust gas Temp. at lambda sensor upstream cat	> 599.98	[°C]				
						Air mass flow integral during pull cut off phase	8 < MAF < 500	[g]				
						Mass air flow	> 10	[kg/h]				
				disable		No active DTCs:						
				conditions:		No O2 sensor error	P0130, P0131, P0132, P0133, P0134, P2A00					
						No O2 sensor heater error	P0030, P0031, P0032, P0135					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						No canister purge solenoid error	P0443, P0458, P0459					
						No mech. canister purge solenoid error	P0496					
						No TPS Error	P0068, P0101, P1101					
						No Injection valve error	P0201, P0202, P0203, P0204, P0261, P0262, P0264, P0265, P0267, P0268, P0270, P0271					
						No Misfire error	P0300, P0301, P0302, P0303, P0304, P0313					
						No MAF error	P0102, P0103					
						No FSD error	P0171, P0172					
						Ignition	"on"					
Ignition Coils	**P2301**	Detection of errors are done by hardware diagnosis	short to battery plus			Engine	"running"		1800	[°CA]	180°CA	2 DCY
						ECT	> -30	[°C]			continuous	
						No cylinder shut off active						
						Spark duration detection valid (Bit15 (MSD) of V_DUR_IGC)						
						Battery voltage	>10					
						Time after engine start	>16					
						No raw key-off						
						Spark duration detection valid (Bit15 (MSD) of V_DUR_IGC)						
						No missing CRK-tooth detected						
						No active DTCs:						
						No CAM error	P0340, P0341, P0365, P0366					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						Ignition	"on"					
Ignition Coils	**P2304**	Detection of errors are done by hardware diagnosis	short to battery plus			Engine	"running"		1800	[°CA]	180°CA	2 DCY
						ECT	> -30	[°C]			continuous	
						No cylinder shut off active						
						Spark duration detection valid (Bit15 (MSD) of V_DUR_IGC)						
						Battery voltage	>10					
						Time after engine start	>16					
						No raw key-off						
						Spark duration detection valid (Bit15 (MSD) of V_DUR_IGC)						
						No missing CRK-tooth detected						
						No active DTCs:						
						No CAM error	P0340, P0341, P0365, P0366					
						Ignition	"on"					
Ignition Coils	**P2307**	Detection of errors are done by hardware diagnosis	short to battery plus			Engine	"running"		1800	[°CA]	180°CA	2 DCY
						ECT	> -30	[°C]			continuous	
						No cylinder shut off active						
						Spark duration detection valid (Bit15 (MSD) of V_DUR_IGC)						
						Battery voltage	>10					
						Time after engine start	>16					
						No raw key-off						
						Spark duration detection valid (Bit15 (MSD) of V_DUR_IGC)						
						No missing CRK-tooth detected						
						No active DTCs:						
						No CAM error	P0340, P0341, P0365, P0366					
						Ignition	"on"					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
Ignition Coils	**P2310**	Detection of errors are done by hardware diagnosis	short to battery plus			Engine	"running"		1800	[°CA]	180°CA	2 DCY
						ECT	> -30	[°C]			continuous	
				disable		No cylinder shut off active						
				conditions:		Spark duration detection valid (Bit15 (MSD) of V_DUR_IGC)						
						Battery voltage	>10					
						Time after engine start	>16					
						No raw key-off						
						Spark duration detection valid (Bit15 (MSD) of V_DUR_IGC)						
						No missing CRK-tooth detected						
						No active DTCs:						
						No CAM error	P0340, P0341, P0365, P0366					
Transmission Torque Request (ETCU)	**P2544**	This diagnosis is activated only if a variant coding is available and shall supervise the correct transmission system type coding by comparison of the received CAN signals.	alive rolling count			Ignition	"on"		50	[ms]	10 ms	2 DCY
			signal protection								continuous	
			out of range									
				disable		No active DTCs:						
				conditions:		No CAN error	U0073					
Engine OFF Timer (EOT) Diagnosis	**P2610**	engine off timer running too fast	comparison of pulse frequency from the EOT with the ECU internal timer	< 0.8	[s]	Hardware	available and programmed		2	[s]	100 ms	2 DCY
						and					continuous	
						Engine	"stop"					
		engine off timer running too slow	comparison of pulse frequency from the EOT with the ECU internal timer	> 1.2	[s]	or			2	[s]		
						Engine	"running"					
		engine off timer stucking	comparison of pulse frequency from the EOT with the ECU internal timer	> 4	[s]				2	[s]		
						no internal inhibit by timer detection						
						Enable bits for ES or AST	"TRUE"					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
		engine off timer unplausible too often	comparison of pulse frequency from the EOT with the ECU internal timer	> 5 in DC	[-]	or			2	[s]		
						(error re-or debouncing detected)						
						EOT init routine	"finished"					
HO2S Performance Bank 1 Sensor 1	**P2A00**	sensor not ready in time	Timer	> 30	[s]	O2S front dewpoint	passed					2 DCY
			or			Ignition	"on"				100 ms	
			O2 sensor heater plausibility error	active							once / DCY	
			or									
			Open cirquit O2 sensor upstream of catalyst	active								
				disable		No active DTCs:						
				conditions:		No O2 sensor error	P0130, P0131, P0132, P0133, P0134, P2297,					
						No O2 sensor heater error	P0030, P0031, P0032					
HO2S Performance Sensor 2	**P2A01**	Signal Not Plausible in DFCO				Ignition	"on"				100 ms	2 DCY
			signal voltage down stream	> 0.151	[V]	Signal voltage value before entering fuel cut phase	> 0.601	[V]	2500	[ms]	multiple	
						Trailing throttle fuel cut off	"ON"					
						Air mass flow during fuel cut off phase	10 < MAF < 500	[g]				
						Signal voltage	> 0.601	[V]				
				disable		No active DTCs:						
				conditions:		No MAF error	P0102, P0103					
						No Canister purge solenoid error	P0443, P0458, P0459					
						No mech. canister purge solenoid error	P0496					

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	FREQUENCY OF CHECKS	MIL ILLUM.
					No O2 sensor error	P0136, P0137, P0138, P0139, P0140, P2270, P2271			
					No O2 sensor heater error	P0036, P0037, P0038, P0141			
					No TPS Error	P0068, P0101, P1101			
					No Misfire error	P0300, P0301, P0302, P0303, P0304, P0313			
					No injection valve error	P0201, P0202, P0203, P0204, P0261, P0262, P0264, P0265, P0267, P0268, P0270, P0271			
					No FSD error	P0171, P0172			
CAN Bus	**U0073**	no signal	CAN Bus		Ignition	"on"		10 ms	2 DCY
							immetiately	continuous	
								10 ms	1 DCY
CAN Bus	**U0101**	no signal	CAN message		Ignition	"on"	immetiately	continuous	
								10 ms	2 DCY
CAN Bus	**U0122**	no signal	CAN message		Ignition	"on"	immetiately	continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
CAN Lost Communication with BCM	**U0140**	no signal	CAN message			Ignition	"on"		250	[ms]	10 ms	
						Battery voltage	>9.7 V and < 16.5	[V]			continuous	2 DCY
						Delay time	3	[s]				
Software Incompatibility with Transmission Control Module	**U0302**	software incompatibility with TCM	inappropriate ECU Dataset			Ignition	"on"		10	[ms]	10 ms	1 DCY
			(AT vehicle with MT dataset or MT vehicle with AT dataset)								continuous	
				disable		No active DTCs:						
				conditions:		No CAN errors	U0073					
Vehicle Speed	**C1207**	circuit high	CAN message via the Wheel Speed Sensors Signal	= true	[-]	Ignition	"on"		100	[ms]	100 ms	2 DCY
						CAN delay after ignition on					continuous	
						Traction control system on CAN configured						
						No active DTCs:						
						No CAN error	U0122, U0073					
Vehicle Speed	**C1208**	circuit high	CAN message via the Wheel Speed Sensors Signal	= true	[-]	Ignition	"on"		100	[ms]	100 ms	2 DCY
						CAN delay after ignition on					continuous	
						Traction control system on CAN configured						
						No active DTCs:						
						No CAN error	U0122, U0073					
Vehicle Speed	**C1221**	no input signal / irrational low	CAN message via the Wheel Speed Sensors Signal	= true	[-]	Ignition	"on"		100	[ms]	100 ms	2 DCY
						CAN delay after ignition on					continuous	
						Traction control system on CAN configured						
						No active DTCs:						
						No CAN error	U0122, U0073					
Vehicle Speed	**C1222**	no input signal / irrational low	CAN message via the Wheel Speed Sensors Signal	= true	[-]	Ignition	"on"		100	[ms]	100 ms	2 DCY

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THREASHOLD VALUE		SECONDARY PARAMETERS	ENABLE CONDITIONS		TIME REQUIRED		FREQUENCY OF CHECKS	MIL ILLUM.
						CAN delay after ignition on					continuous	
						Traction control system on CAN configured						
						No active DTCs:						
						No CAN error	U0122, U0073					
Vehicle Speed	**C1225**	input erratic / noise / irrational high	CAN message via the Wheel Speed Sensors Signal	= true	[-]	Ignition	"on"		100	[ms]	100 ms	2 DCY
						CAN delay after ignition on					continuous	
						Traction control system on CAN configured						
						No active DTCs:						
						No CAN error	U0122, U0073					
Vehicle Speed	**C1226**	input erratic / noise / irrational high	CAN message via the Wheel Speed Sensors Signal	= true	[-]	Ignition	"on"		100	[ms]	100 ms	2 DCY
						CAN delay after ignition on					continuous	
						Traction control system on CAN configured						
						No active DTCs:						
						No CAN error	U0122, U0073					
Vehicle Speed	**C1232**	circuit low	CAN message via the Wheel Speed Sensors Signal	= true	[-]	Ignition	"on"		100	[ms]	100 ms	2 DCY
						CAN delay after ignition on						
						Traction control system on CAN configured						
						No active DTCs:						
						No CAN error	U0122, U0073					
Vehicle Speed	**C1233**	circuit low	CAN message via the Wheel Speed Sensors Signal	= true	[-]	Ignition	"on"		100	[ms]	100 ms	2 DCY
						CAN delay after ignition on					continuous	
						Traction control system on CAN configured						
						No active DTCs:						
						No CAN error	U0122, U0073					