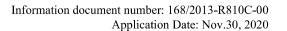| Component/ System	Fault code	CARB description	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	MIL activation	Pre-conditioning	Demonstration test
Fuel injector	P0262	ISO15031	Circuit check	short to battery plus	.	.	5 sec. after Fault	.	idle
	P0261			short to ground	.	.			idle
	P0201			open circuit	.	.			idle
Fuel pump	P0629	ISO15031	Circuit check	short to battery plus	.	.	5 sec. after Fault	.	idle
	P0628			short to ground	.	.			idle
	P0627			open circuit	.	.			idle
Idle air control system	P0511	ISO15031	Circuit check	short to battery plus	.	.	5 sec. after Fault	.	idle
	P0511			short to ground	.	.		.	
	P0511			open circuit	.	.		.	
Ignition Coil Bank1	P2300	ISO15031	Circuit check	short to ground	.	.	5 sec. after Fault	.	idle
Ignition Coil Bank2	P2303	ISO15031	Circuit check	short to ground	.	.	5 sec. after Fault	.	idle
MIL	P0650	ISO15031	Circuit check	short to battery plus	.	.	off	.	
				short to ground	.	.		.	
				open circuit	.	.		.	.
Manifold absolute pressure sensor	P0108	ISO15031	Circuit check, max limit exceeds	pressure sensor voltage > UADPSMX	> 4.80 V	time after start end >2sec	5 sec. after Fault	.	idle
	P0107		Circuit check, min limit exceeds	pressure sensor voltage > UADPSMN	< 0.2V		5 sec. after Fault	.	idle
	P0105		signal check: no pressure drop after start	pressure drop after start	<20 hpa	engine speed threshold value for SIG fault check >1200rpm	3 driving cycles	.	driving cycle
						idle or threshold value of throttle position<40%			
						no pressure sensor Circuit fault			
						time after start>2sec			
				pressure when engine speed =0	＜0	no engine speed			
						no pressure sensor Circuit fault			
	P0106		signal non_plausible	pressure indicated by pressure sensor exceed Max or Min plausibility Threshold pressure	Depending on working condition of engine (engine speed&throttle position)	no pressure sensor SIGfault	3 driving cycles	.	driving cycle
						no pressure sensor Circuit fault			

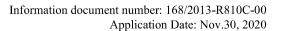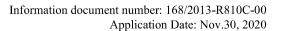|	
Vehicle Type	R810C
OBD Service $03	
Drawing No.	R810C-67-01

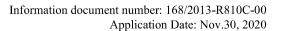| Component/ System	Fault code	CARB description	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	MIL activation	Pre-conditioning	Demonstration test
Engine speed sensor	P0322	ISO15031	Synchronisationdidn't take place by some certain phase sensor signals has been detected.	pressure indicated by pressure sensor	≥50hpa	engine speed	5 sec. after Fault		driving cycle
				battery voltage, scanned value from ADC (wub)	< 10V				
Idle speed control	P0507	ISO15031	actuator blocked at higher position	difference of idle speed precontrol (dns)	< -200r/min	high canister load	off		
				with idle speed control integrator reach lower limit		idle condition			
						Vehicle speed diagnosis completed, and no fault happened.			
						vehicle speed =0			
						altitude correction factor＞0.7			
	P0506		actuator blocked at lower position	difference of idle speed precontrol (dns)	>200 U/min	engine coolant temp. ＞60℃			
				with idle speed control integrator reach upper limit		intake air temperature＞19.5℃			
Engine coolant temperature sensor	P0118	ISO15031	Signal-voltage of the coolant temperature sensor lies above the permissible maximum threshold	signal voltage, engine coolant temperature sensor	>4.9023V		3 driving cycles		driving cycle
	P0117		Option1: Signal-voltage of the coolant temperature sensor lies below the permissible minimum threshold	signal voltage, engine coolant temperature sensor	<0.0977 V				
			Option2: Coolant temperature constantly lies below the threshold	the coolant temperature (tmotlin)	depends on running condition of engine				
	P0116		Jitter Check	The difference between the raw sensor value and low-pass filtered raw sensor value.	>4.9951 V		3 driving cycles		driving cycle
	P0126		engine temperature is stuck	The difference between the raw sensor value and low-pass filtered raw sensor value less than the threshold	<25℃		3 driving cycles		driving cycle

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Component/ System	Fault code	CARB description	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	MIL activation	Pre-conditioning	Demonstration test
Intake air temperature sensor	P0113	ISO15031	Option 1: The voltage value of intake manifold temperature sensor is above the permissible upper threshold	temperature value of characteristic curve	<-37.5℃	coolant temperature(tmot) ≤ 60℃; air mass flow(ml) ≤24 kg/h vehicle speed(vfzg) ≤10 km/h	3 driving cycles		idle
			Option 2: Jitter Check	The difference between the sensor raw value and the low-pass filtered sensor raw value	>4.9951 V				
	P0112		The voltage value of intake manifold temperature sensor is below the permissible lower threshold	ADC-value for intake air temperature (wtans)	>100.5℃		3 driving cycles		idle
			Option 1: intake manifold temperature exceeds plausible threshold	Difference between intake air temperature and engine temperature	>40℃	coolanttemperature(tmot)≥60 ℃ engine stop time >20s engine run time ≤120s ; Sensor is electrical valid			
	P0111		Option 2: intake manifold temperature is stuck	The difference between the maximum and minimum intake manifold temperature during driving cycle.	<2℃	Engine temperature at start >80 ℃ Sensor is electrical valid	3 driving cycles		driving cycle
			Option 3: intake manifold temperature exceeds plausible threshold	Measured intake manifold temperature(tfa1linf) which is continuously lower than a certain value after the engine is hot	<25℃	coolant temperature ≤60 ℃ air mass flow integrator output <4 kg/h			
System voltage (onboard)	P0563	ISO15031	rationality check max limit exceeds	battery voltage, scanned value from ADC (wub）	>17.021 V	vehicle speed (vfzg)>25 km/h time after start>30 s	off		
	P0562		rationality check min limit exceeds		<9.980V	time after start >30 s			
	P0560		implausibility check		<2.529 V				

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Component/ System	Fault code	CARB description	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	MIL activation	Pre-conditioning	Demonstration test
Vehicle speed	P0501	ISO15031	Option1: lower limit exceeded during fuel cut off	vehicle speed (vfzg)	<5 km/h	Coolant temperature & engine speed sensor are error free	3 driving cycles	.	driving cycle
						vehicle speed			
						vehicle speed			
						Fluctuation of quotient engine speed/vehicle speed is stable			
			Option 2: vehicle speed is absolutely constant (stuck)	Fluctuation of vehicle speed signal	=0	rel. driver request torque from cruise control and pedal		.	
			Option 3: vehicle speed sersor pulse non_plausible	sersor pulse	=0	engine speed			
				sersor pulse dalta	＞5	gear is stable		.	
Throttle position sensor	P0123	ISO15031	Circuit check, max limit exceeds	Throttle/Pedal Pos.Sensor	＜2%	engine speed ＞192rpm	3 driving cycles	.	idle
	P0122		Circuit check, min limit exceeds	Throttle/Pedal Pos.Sensor	＞99.2%	engine speed ＞192rpm	3 driving cycles	.	
Fuel system	P2177	ISO15031	fuel trim high limits exceded	multiplicative adaption value (frau_w) > FRAUDX	＞1.2	lambda adaption (B_lra)	3 driving cycles	.	driving cycle
	P2178		fuel trim low limits exceded	multiplicative adaption value (frau_w) < FRAUDN	＜0.85	engine speed and load in this adaption range		.	
	P2187		fuel trim high limits exceded at idle	additive adaption value reach upper limit	＞0.7			.	
	P2188		fuel trim high limits exceded at idle	additive adaption value reach lower limit	＜-0.4			.	
Misfire cyl. 0	P0301	ISO15031	misfire rate that harmful to catlyst (mx fault)	fault counter of catalyst damaging misfiring of all cylinders	>10misfires per interval	fuel cut off	MIL-blinking at present driving cycle & MIL-blinking off after ti-cutoff	2 Type I cycles	Type I
Misfire cyl. 0	P0301		misfire rate that deteriorate emission (mn fault)	fault counter of emission relevant misfiring of all cylinders	>6.0 %	engine load	3 driving cycles	2 Type I cycles	Type I
Misfire cyl. 0	P0301		implausible fault	fault counter of emission relevant misfiring of all cylinders at the first interval after start.	>6.0 %	.	3 driving cycles	2 Type I cycles	Type I

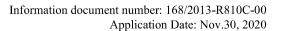| Vehicle Type	R810C
OBD Service $03	
Drawing No.	R810C-67-04

Component/ System	Fault code	CARB description	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	MIL activation	Pre-conditioning	Demonstration test
O2 sensor heater	P0032		Circuit check	short to battery plus	.	.	5 sec. after Fault	.	idle
	P0031	ISO15031	Circuit check	short to ground	.	.			idle
	P0030		Circuit check	open circuit	.	.			idle
	P0053	ISO15031	current sensor resistance is greater than threshold value	current lamda sensor resistance	exceed about 3,600 Ohm (depend on working condition)	exgaust temperature lie in active window（250℃～750℃）	3 driving cycles	2 Type I cycles	The exhaust temperature should not be too high
						engine stop time ＞120s			
						intake temperature ＞-7.5℃			
						exhaust flow integral＞1kg			
						no 1cyl O2 sensor resistence too large fault			
						engine stop time ＞120s			
						intake temperature ＞-7.5℃			
						exhaust flow integral＞1kg			
						no 1cyl O2 sensor resistence too large fault			
O2 sensor (slow response) Bank1	P0133	ISO15031	filtered cycle delay time of sensor signal upstream cat.is greater than threshold value	filtered cycle delay time of sensor signal upstream	＞0.6s	present cycle counter or ready flag of cycle duration monitoring＞1	3 driving cycles	2 Type I cycles	Type I
						lambda close loop active			
						basic mixture adaptation not disabled			
						engine speed lie in diagnosis window（1200~7000 rpm）			
						main load lie in active window（18~73%）			

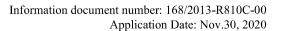|	
Vehicle Type	R810C
OBD Service $03	
Drawing No.	R810C-67-05

Component/ System	Fault code	CARB description	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	MIL activation	Pre-conditioning	Demonstration test
O2 sensor signal check (bank1)	P0132	ISO15031	O2 Sensor Circuit High Voltage	output voltage O2 sensor upstream catalyst	> 1.50 V	general disabling conditions for DLSV	5 sec. after Fault	.	idle
						ub battery voltage>11 V			
						1cyl O2 sensor reach the dew point and no O2 sensor heating fault			
						nmot engine speed＞25rpm			
						no fuel injector fault			
						lamson=1.0 required lambd are ferred to lambda sensor fitting location			
	P0131		O2 Sensor Circuit Low Voltage	output voltage O2 sensor upstream catalyst	< 0.06V	general disabling conditions for DLSV			
						ub battery voltage>11 V			
						1cyl O2 sensor reach the dew point and no O2 sensor heating fault			
						nmot engine speed＞25rpm			
	P0134		O2 Sensor Circuit No Activity Detected	output voltage O2 sensor upstream catalyst	0.40V-0.0.46V	general disabling conditions for DLSV			
						ub battery voltage>11 V			
						1cyl O2 sensor reach the dew point and no O2 sensor heating fault			
			Sensor res. Is high when exgaust temperature high	O2 Sensor resistance	>20000 Ohm	nmot engine speed			
						condition theoretical lambda sensor operation readyness withh heating ＞30s			

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Component/ System	Fault code	CARB description	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	MIL activation	Pre-conditioning	Demonstration test
O2 sensor signal check (bank1)	P0130	ISO15031	O2 Sensor Voltage has a restricted amplitude Signal	output voltage O2 sensor upstream catalyst	bank1: >0.06 V and < 0.40 V;	condition theoretical lambda sensor operation readyness withh heating	5 sec. after Fault		idle
			Sensor Voltage current has leakage to UB	output voltage O2 sensor upstream and downstr. Catalyst	bank1: >0.60 V and < 1.20 V ;				
			O2 Sensor Voltage coupled with heater line	delay output voltage O2 sensor upstream catalyst	> 2.0020V	general disabling conditions for DLSV			
						ub battery voltage			
						O2 sensor bank1 reach the dew point and no O2 sensor heating fault			
						nmot engine speed＞25rpm			
						no fuel injector fault			
						condition theoretical lambda sensor operation readyness withh heating> 90s			

Vehicle Type		R810C
OBD Service $03		
Drawing No.		R810C-67-07

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