

# ON-BOARD DIAGNOSTIC [ENGINE CONTROL SYSTEM (L3 WITH TC)]

## Warm up catalytic converter

### P0421 Warm up catalyst system efficiency below threshold

- The PCM compares the number of front HO2S and rear HO2S inversions for a predetermined time. The PCM monitors the number of inversions the rear side performs while the front side inverts for a specified number of times when the following monitoring conditions are met. The PCM detects the inversion ratio. If the inversion ratio is below the threshold, The PCM determines that the catalyst system has deteriorated.

#### MONITORING CONDITIONS

- Engine speed: **1,500—3,000 rpm**
- Calculated TWC temperature: **above 400 °C {752 °F}**
- LOAD: **15—48%** (at engine speed of **2,000 rpm**)

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## PCM

### P2610 PCM internal engine off timer performance

- PCM internal engine off timer is damaged.

## KOEO/KOER SELF-TEST [L3 WITH TC]

E6U01020000S08

- Differences between the 2006MY and 2005MY KOEO/KOER self-test items are shown below.

### KOEO/KOER self-test table

×: Applicable  
—: Not applicable

DTC No.		Condition	Test condition	
2006MY	2005MY		KOEO	KOER
P0011	←	CMP Timing over-advanced	—	×
P0012	←	CMP Timing over-retarded	—	×
P0016	—	CKP-CMP correlation	—	—
P0030	—	Front HO2S heater control circuit problem	×	×
P0031	←	Front HO2S heater circuit low input	×	×
P0032	←	Front HO2S heater circuit high input	×	×
P0037	←	Rear HO2S heater circuit low input	×	×
P0038	←	Rear HO2S heater circuit high input	×	×
P0069	—	Manifold absolute pressure/atmospheric pressure correlation	—	—
P0089	—	Fuel pressure regulator performance	×	×
P0091	—	Fuel pressure regulator control circuit low	×	×
P0092	—	Fuel pressure regulator control circuit high	×	×
P0096	—	IAT sensor 2 circuit range/performance problem	—	—
P0097	—	IAT sensor 2 circuit low	×	×
P0098	—	IAT sensor 2 circuit high	×	×
P0101	←	MAF circuit range/performance problem	—	—
P0102	←	MAF circuit low input	×	×
P0103	←	MAF circuit high input	×	×
—	P0106	MAP sensor performance problem	—	—
P0107	←	MAP sensor circuit low input	×	×
P0108	←	MAP sensor circuit high input	×	×
P0111	←	IAT circuit performance problem	—	—
P0112	←	IAT circuit low input	×	×
P0113	←	IAT circuit high input	×	×
P0116	—	ECT circuit range/performance problem	—	—
P0117	←	ECT circuit low input	×	×
P0118	←	ECT circuit high input	×	×
P0122	←	TP sensor No.1 circuit low input	×	×
P0123	←	TP sensor No.1 circuit high input	×	×
P0125	←	Excessive time to enter closed loop fuel control	—	—
P0126	←	Coolant thermostat stuck open	—	—
P0128	←	Coolant thermostat stuck open	—	—
P0131	—	Front HO2S circuit low input	×	×
P0132	←	Front HO2S circuit high input	×	×
P0133	←	Front HO2S circuit problem	—	—
P0134	←	Front HO2S circuit no activity detected	—	×
P0137	—	Rear HO2S circuit low input	×	×

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DTC No.		Condition	Test condition	
2006MY	2005MY		KOEO	KOER
P0138	←	Rear HO2S circuit high input	×	×
P0139	←	Rear HO2S circuit malfunction	—	—
P0140	←	Rear HO2S circuit no activity detected	—	×
P0192	—	Fuel rail pressure sensor circuit low input	×	×
P0193	—	Fuel rail pressure sensor circuit high input	×	×
P0201	—	Injector circuit/open cylinder No.1	—	×
P0202	—	Injector circuit/open cylinder No.2	—	×
P0203	—	Injector circuit/open cylinder No.3	—	×
P0204	—	Injector circuit/open cylinder No.4	—	×
P0222	←	TP sensor No.2 circuit low input	×	×
P0223	←	TP sensor No.2 circuit high input	×	×
P0234	—	Turbo/supercharger overboost condition	—	×
P0245	—	Turbocharger wastegate solenoid low	×	×
P0246	—	Turbocharger wastegate solenoid high	×	×
P0300	←	Random misfire detected	—	×
P0301	←	Cylinder No.1 misfire detected	—	×
P0302	←	Cylinder No.2 misfire detected	—	×
P0303	←	Cylinder No.3 misfire detected	—	×
P0304	←	Cylinder No.4 misfire detected	—	×
P0327	←	Knock sensor circuit low input	×	×
P0328	←	Knock sensor circuit high input	×	×
P0335	←	CKP sensor circuit malfunction	—	—
P0340	←	CMP sensor circuit malfunction	—	—
P0401	←	EGR flow insufficient detected	—	×
P0403	←	EGR valve (stepper motor) circuit malfunction	×	×
—	P0420	Catalyst system efficiency below threshold	—	—
P0421	—	Catalyst system efficiency below threshold	—	—
P0441	←	EVAP control system incorrect purge flow	—	×
P0442	←	EVAP control system leak detected (small leak)	—	×
P0443	←	EVAP control system purge control valve circuit malfunction	×	×
P0446	←	Change over valve (COV) (EVAP system leak detection pump) stuck close	—	×
P0455	←	EVAP control system leak detected (gross leak)	—	×
P0456*1	←	EVAP control system leak detected (very small leak)	—	×
P0461	←	Fuel gauge sender unit circuit range/performance	—	—
P0462	←	Fuel gauge sender unit circuit low input	×	×
P0463	←	Fuel gauge sender unit circuit high input	×	×
P0480	←	Fan relay No.1 control circuit malfunction	×	×
—	P0481	Fan relay No.2 and No.3 control circuit malfunction	×	×
—	P0482	Fan relay No.4 control circuit malfunction	×	×
P0500	←	Vehicle speed sensor (VSS) circuit malfunction	—	—
P0505	←	Idle control system malfunction	—	×
P0506	←	Idle control system RPM lower than expected	—	—
P0507	←	Idle control system RPM higher than expected	—	—
P0550	←	PSP switch circuit malfunction	—	—
P0564	←	Cruise control switch circuit malfunction	—	—
P0571	←	Brake switch circuit malfunction	—	—
P0601	←	Internal control module memory check sum error	×	×
P0602	←	PCM programming error	×	×
P0604	←	PCM RAM error	×	×
P0606	←	PCM processor	×	×
P0607	←	Control module performance	×	×
P0610	←	Control module vehicle options error	×	×
P0611	—	Fuel injector control module performance	×	×

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DTC No.		Condition	Test condition	
2006MY	2005MY		KOEO	KOER
P0638	←	Throttle actuator control range/performance	—	—
—	P0661	Variable intake-air system (VIS) control solenoid valve circuit low input	×	×
—	P0662	Variable intake-air system (VIS) control solenoid valve circuit high input	×	×
P0703	←	Brake switch No.1 circuit malfunction	—	—
P0704	←	Clutch switch circuit malfunction	—	—
P0850	←	Neutral switch circuit malfunction	—	—
P2004	←	Variable swirl control system shutter valve stuck open	—	×
P2006	←	Variable swirl control system shutter valve stuck closed	—	×
P2009	←	Variable swirl solenoid valve control circuit low	×	×
P2010	←	Variable swirl solenoid valve control circuit high	×	×
P2088	←	OCV actuator circuit low	×	×
P2089	←	OCV actuator circuit high	×	×
P2096	←	Target A/F feedback system too lean	—	—
P2097	←	Target A/F feedback system too rich	—	—
P2100	←	Throttle actuator circuit open	×	×
P2101	←	Throttle actuator circuit range/performance	—	×
P2102	←	Throttle actuator circuit low input	×	×
P2103	←	Throttle actuator circuit high input	×	×
P2107	←	Throttle actuator control module processor problem	—	×
P2108	←	Throttle actuator control module performance problem	—	×
P2119	←	Throttle actuator control throttle body range/performance	—	×
P2122	←	Accelerator pedal position (APP) sensor No.1 circuit low input	×	×
P2123	←	Accelerator pedal position (APP) sensor No.1 circuit high input	×	×
P2127	←	Accelerator pedal position (APP) sensor No.2 circuit low input	×	×
P2128	←	Accelerator pedal position (APP) sensor No.2 circuit high input	×	×
P2135	←	Throttle position sensor No.1/No.2 voltage correlation problem	×	×
P2138	←	Accelerator pedal position (APP) sensor No.1/No.2 voltage correlation problem	×	×
P2177	←	Fuel system too lean at off idle	—	×
P2178	←	Fuel system too rich at off idle	—	×
P2187	←	Fuel system too lean at idle	—	×
P2188	←	Fuel system too rich at idle	—	×
P2195	←	Front HO2S signal stuck lean	—	—
P2196	←	Front HO2S signal stuck rich	—	—
P2228	←	BARO sensor circuit low input	×	×
P2229	←	BARO sensor circuit high input	×	×
P2237	—	Front HO2S positive current control circuit open	×	×
P2245	—	Front HO2S sensor reference voltage circuit low input	×	×
P2246	—	Front HO2S sensor reference voltage circuit high input	×	×
P2251	—	Front HO2S negative current control circuit open	×	×
P2401	←	EVAP system leak detection pump motor circuit low	—	×
P2402	←	EVAP system leak detection pump motor circuit high	—	×
P2404	←	EVAP system leak detection pump sensor circuit malfunction	—	×
P2405	←	EVAP system leak detection pump sensor circuit low input	—	×
P2407	←	EVAP system leak detection pump sensor circuit intermittent	—	×
P2502	←	Generator terminal B circuit open	—	×
P2503	←	Generator output voltage signal no electricity	—	×
P2504	←	Battery overcharge	—	×
P2507	←	PCM +BB (back-up battery) voltage low	×	×
P2610	—	PCM internal engine off timer performance	—	—
—	P2676	Variable air duct (VAD) solenoid valve circuit low input	—	—
—	P2677	Variable air duct (VAD) solenoid valve circuit high input	—	—

\*1 : California emission regulation applicable model

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