

DTC P0133 [LF]

B3E010201084W20

DTC P0133	Front HO2S circuit problem
DETECTION CONDITION	<ul style="list-style-type: none"> The PCM monitors inversion cycle period, lean-to-rich response time and rich-to-lean response time of the sensor. The PCM calculates the average of the inversion cycle period-specified inversion cycles, average response time from lean-to-rich, and from rich-to-lean when following conditions are met. If any exceeds threshold, the PCM determines that circuit has malfunction. <p>MONITORING CONDITIONS</p> <ul style="list-style-type: none"> HO2S heater, HO2S, and TWC Repair Verification Drive Mode Following conditions are met: <ul style="list-style-type: none"> Calculation load is 14.8-59.4 % (at 2,000 rpm). Engine speed is 1,410- 4,000 rpm. Vehicle speed is above 3.76 km/h {2.33 mph}. Engine coolant temperature is above -10 °C {14 °F}. Front HO2S signal inversion cycle is above 10 cycles. <p>Diagnostic support note</p> <ul style="list-style-type: none"> This is an intermittent monitor. (HO2S) The MIL illuminates if the PCM detects the above malfunction condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. DIAGNOSTIC MONITORING TEST RESULTS is available. PENDING CODE is available if the PCM detects the above malfunction condition during first drive cycle. FREEZE FRAME DATA is available. DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> Front HO2S deterioration Front HO2S malfunction Looseness front HO2S Pressure regulator (built-in fuel pump unit) malfunction Fuel pump malfunction Fuel filter (built-in fuel pump unit) clogged or restricted Fuel leakage on fuel line from fuel distribution pipe and fuel pump Leakage exhaust system Purge solenoid valve malfunction Purge solenoid hoses improper connection Insufficient compression Engine malfunction (Leakage engine coolant)

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED • Has FREEZE FRAME DATA been recorded?	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Verify related service repair information availability. • Is any related repair information available?	Yes Perform repair or diagnosis according to the available repair information. • If vehicle is not repaired, go to the next step.
		No Go to the next step.
	VERIFY RELATED PENDING AND STORED DTC • Turn the ignition switch off, then to the ON	Yes Go to DTC P0443 troubleshooting procedures, then go to Step 13.

3	position (Engine off). • Verify pending and /or stored DTCs using the WDS or equivalent. • Is DTC P0443 also present?	No	Go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA • Is DTC P0133 on FREEZE FRAME DATA?	Yes	Go to the next step.
		No	Go to troubleshooting procedures for DTC on FREEZE FRAME DATA. (See DTC TABLE [LF] .)
5	VERIFY CURRENT INPUT SIGNAL STATUS • Warm up the engine. • Access O2S11 PID using WDS or equivalent. • Inspect PID under following accelerator pedal conditions in PARK or NEUTRAL. • Is PID normal? - More than 0.55 V when suddenly depress accelerator pedal (rich condition). - Less than 0.55 V just after release of accelerator pedal (lean condition).	Yes	Go to step 8.
		No	Go to the next step.
6	INSPECT INSTALLATION OF FRONT HO2S • Inspect if the front HO2S is loosely installed. • Is the sensor installed securely?	Yes	Go to the next step.
		No	Retighten the sensor, then go to Step 13.
7	INSPECT GAS LEAKAGE FROM EXHAUST SYSTEM • Visually inspect if there is any gas leakage is found between the exhaust manifold and front HO2S. • Is there gas leakage?	Yes	Repair or replace malfunctioning faulty exhaust part, then go to Step 13.
		No	Replace sensor, then go to Step 13.
8	INSPECT LONG TERM FUEL TRIM • Access LONGFT1 PIDs. • Compare it with FREEZE FRAME DATA recorded at Step 1. • Is it below FFD value?	Yes	Engine is driven under rich condition. Go to the next step.
		No	Engine is driven under lean condition. Go to step 10.
9	INSPECT FUEL LINE PRESSURE (Excessive fuel line pressure) • Turn the ignition switch off. • Inspect fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [ZJ, Z6, LF] .) • Is the fuel line pressure normal?	Yes	Go to step 12.
		No	Inspect fuel pump maximum pressure and fuel return pipe for clogging. (See FUEL PUMP UNIT INSPECTION [ZJ, Z6, LF] .) • If there is any problem, repair or replace the parts. • If all items above are normal, replace fuel pump unit. Then go to Step 13.
10	INSPECT FUEL LINE PRESSURE (Low fuel line pressure) • Turn the ignition switch off. • Inspect fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [ZJ, Z6, LF] .) • Is fuel line pressure normal?	Yes	Go to step 12.
		No	Go to the next step.
11	INSPECT FUEL LINE FROM FUEL PUMP TO FUEL DELIVERY PIPE • Visually inspect the fuel line for any leakage. • Is there any fuel leakage?	Yes	Replace the fuel line, then go to Step 13.
		No	Inspect the fuel filters for the following: • Foreign materials or stain inside fuel filter (low-pressure side) Perform the following actions according to the result. • If foreign material or stain is found inside fuel filter (low-pressure side), clean the fuel tank and

			filter. • If normal, replace fuel pump unit. Then go to Step 13.
12	INSPECT SEALING OF ENGINE COOLANT PASSAGE • Perform inspection engine coolant leakage. (See ENGINE COOLANT LEAKAGE INSPECTION.) • Is there any malfunction?	Yes	Go to the next step.
		No	Repair or replace the malfunctioning part according to inspection result. Then go to the next step.
13	VERIFY TROUBLESHOOTING OF DTC P0133 COMPLETED • Make sure to reconnect all disconnected connectors. • Turn the ignition switch to the ON position (Engine off). • Clear the DTC from the memory using WDS or equivalent. • Perform the HO2S heater, HO2S, and TWC Repair Verification Drive Mode. (See OBD DRIVE MODE [LF].) • Is the PENDING CODE for this DTC present?	Yes	Replace the PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [LF].)
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE • Perform the "After Repair Procedure". (See AFTER REPAIR PROCEDURE [LF].) • Are any DTC present?	Yes	Go to the applicable DTC troubleshooting. (See DTC TABLE [LF].)
		No	Troubleshooting completed.