

DTC P2178 [LF]

B3E010202100W02

DTC P2178	Fuel system too rich at off idle
DETECTION CONDITION	<ul style="list-style-type: none"> • PCM monitors short term fuel trim (SHRTFT), long term fuel trim (LONGFT) during closed loop fuel control at off-idle. If the LONGFT or the sum total of these fuel trims exceed preprogrammed criteria. PCM determines that fuel system is too rich at off-idle. <p>Diagnostic support note</p> <ul style="list-style-type: none"> • This is a continuous monitor. (FUEL SYSTEM) • MIL illuminates if PCM detects the above malfunctioning condition in two consecutive drive cycles or in one drive cycle while the DTC for the same malfunction has been stored in the PCM. • PENDING CODE is available if PCM detects the above malfunction conditions during first drive cycle. • FREEZE FRAME DATA is available. • DTC is stored in the PCM memory.
POSSIBLE CAUSE	<ul style="list-style-type: none"> • Misfire • Front HO2S deterioration • Front HO2S heater malfunction • MAF sensor malfunction • Pressure regulator (built-in fuel injection pump) malfunction • Fuel pump malfunction • EGR valve improper operation • VTCS improper operation • Purge solenoid valve improper operation • Purge solenoid valve malfunction (stuck open) • Purge solenoid hoses improper connection • PCV valve malfunction

Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED <ul style="list-style-type: none"> • Has FREEZE FRAME DATA been recorded? 	Yes Go to the next step.
		No Record the FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY <ul style="list-style-type: none"> • Verify related service repair information availability. • Is any related repair information available? 	Yes Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	VERIFY RELATED PENDING CODE OR STORED DTCs <ul style="list-style-type: none"> • Turn ignition switch to off, then the ON position (Engine off). • Verify related pending code or stored DTCs. • Is other DTC present? 	Yes If misfire DTC is present, go to Step 8. If other DTC is present, go to appropriate DTC troubleshooting procedure. (See DTC TABLE [LF] .)
		No If drivability concern is present, go to Step 8. If not, go to the next step.
4	IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA <ul style="list-style-type: none"> • Is DTC P2178 on FREEZE FRAME DATA? 	Yes Go to the next step.
		No Go to troubleshooting procedures for DTC on FREEZE FRAME DATA.
5	VERIFY CURRENT INPUT SIGNAL STATUS (KEY TO ON/IDLE) <ul style="list-style-type: none"> • Access ECT, MAF, TP and VSS PIDs using WDS or equivalent.) • Is there any signal that is far out of 	Yes Inspect suspected sensor and excessive resistance in related wiring harnesses. Repair or if necessary. Then go to Step 15.

	specification when key is ON and engine runs?	No	Go to the next step.
6	VERIFY CURRENT INPUT SIGNAL STATUS UNDER TROUBLE CONDITION <ul style="list-style-type: none"> Inspect same PIDs as Step 5 while simulating FREEZE FRAME DATA condition. Is there any signal which causes drastic changes? 	Yes	Inspect suspected sensor and related wiring harnesses, repair or replace it. Then go to Step 15.
		No	Go to the next step.
7	VERIFY CURRENT INPUT SIGNAL STATUS OF FRONT HO2S <ul style="list-style-type: none"> Access O2S11 PID using WDS or equivalent. Check PID under following accelerator pedal condition (in PARK NEUTRAL). Is PID reading normal? <ul style="list-style-type: none"> - Above 0.45 V when accelerator pedal is suddenly depressed (rich condition). - Below 0.45 V just after release of accelerator pedal (lean condition) 	Yes	Go to the next step.
		No	Visually inspect for any gas leakage between exhaust manifold and front HO2S. Then go to Step 15.
8	VERIFY CURRENT INPUT SIGNAL STATUS OF MAF SENSOR <ul style="list-style-type: none"> Connect the WDS or equivalent to the DLC-2 Start the engine. Access the MAF PID. Verify that the MAF PID changes quickly according to engine speed. Is the PID normal? 	Yes	Go to the next step.
		No	Replace MAF/IAT sensor, then go to Step 15.
9	INSPECT PURGE SOLENOID OPERATION <ul style="list-style-type: none"> Carry out Purge Control System Inspection. (See Purge Control System Inspection.) Does purge control system work properly? 	Yes	Go to the next step.
		No	Repair or replace malfunctioning part according to inspection result, then go to Step 15.
10	INSPECT PCV VALVE OPERATION <ul style="list-style-type: none"> Inspect PCV valve operation. (See POSITIVE CRANKCASE VENTILATION (PCV) VALVE INSPECTION [ZJ, Z6, LF].) Is PCV valve normal? 	Yes	Go to the next step.
		No	Replace PCV valve, then go to Step 15.
11	INSPECT EGR VALVE OPERATION <ul style="list-style-type: none"> Carry out EGR Control System Inspection. (See EGR Control System Inspection.) Does EGR control system work properly? 	Yes	Go to the next step.
		No	Repair or replace malfunctioning part according to inspection result, then go to Step 15.
12	INSPECT VTCS OPERATION <ul style="list-style-type: none"> Carry out Variable Tumble Control System (VTCS) Operation Inspection. (See Variable Tumble Control Operation Inspection.) Does VTCS work properly? 	Yes	Go to the next step.
		No	Repair or replace malfunctioning part according to inspection result, then go to Step 15.
13	INSPECT FUEL LINE PRESSURE <ul style="list-style-type: none"> Turn ignition switch to off. Inspect fuel line pressure. (See FUEL LINE PRESSURE INSPECTION [ZJ, Z6, LF].) Is fuel line pressure normal? 	Yes	Go to the next step.
		No	If fuel pressure is too high, replace fuel pump nit, then go to Step 15. If fuel line pressure is low, go to the next step.
14	INSPECT FUEL LINE FROM FUEL PUMP TO FUEL DELIVERY PIPE <ul style="list-style-type: none"> Visually inspect fuel line for any leakage. 	Yes	Replace suspected fuel line, then go to the next step.
			Inspect for foreign materials or stain inside fuel filter (low-pressure).

	• Is any fuel leakage found?	No	If for foreign materials or stain inside fuel filter (low-pressure), clean of fuel tank and filter. Then go to the next step.
15	VERIFY TROUBLESHOOTING OF DTC P2178 COMPLETED <ul style="list-style-type: none"> • Make sure to reconnect all disconnected connectors. • Clear DTC from PCM memory using WDS or equivalent. • Perform the PCM Adaptive Memory Produce Drive Mode. (See OBD DRIVE MODE [LF].) • Is the PENDING CODE for this DTC present? 	Yes	Replace PCM, then go to the next step. (See PCM REMOVAL/INSTALLATION [LF] .)
		No	Go to the next step.
16	VERIFY AFTER REPAIR PROCEDURE <ul style="list-style-type: none"> • Perform "After Repair Procedure". (See AFTER REPAIR PROCEDURE [LF].) • Is there any DTC present? 	Yes	Go to the applicable DTC inspection. (See DTC TABLE [LF] .)
		No	Troubleshooting completed.