DTC	P0171/25	System too Lean (Fuel Trim)

CIRCUIT DESCRIPTION

Fuel trim refers to the feedback compensation value compared against the basic injection time. Fuel trim includes short–term fuel trim and long–term fuel trim.
Short–term fuel trim is the short–term fuel compensation used to maintain the air–fuel ratio at its ideal theoretical value. The signal from the heated oxygen sensor indicates whether the air–fuel ratio is RICH or LEAN compared to the ideal theoretical value, triggering a reduction in fuel volume if the air–fuel ratio is rich, and an increase in fuel volume if it is lean.
Long–term fuel trim is the overall fuel compensation carried out long–term to compensate for continual deviation of the short–term fuel trim form the central value due to individual engine differences, wear over time and changes in the usage environment.
If both the short–term fuel trim and long–term fuel trim are LEAN or RICH beyond a certain value, it is detected as a malfunction and the check engine warning (CHK ENG) lights up.

DTC No.	DTC Detecting Condition	Trouble Area
P0171/25	When the air fuel ratio feedback is stable after engine warming up, the fuel trim is considerably in error on the LEAN side (2 trip detection logic)	• Air intake (hose loose) • Fuel line pressure • Injector blockage • Oxygen sensor • Air flow meter • Water temp. sensor • Gas leakage on exhaust system

HINT:

- When DTC P0171/25 is recorded, the actual air–fuel ratio is on the LEAN side.
- If the vehicle runs out of fuel, the air–fuel ratio is LEAN and DTC P0171/25 is recorded.
- If the total of the short–term fuel trim value and the long–term fuel trim value is within ± 25 %, the system is functioning normally.

WIRING DIAGRAM

Refer to DTC P0130/21 on page DI–48.

When using hand–held tester

1	**Ask customer whether vehicles runs out of fuel.**

YES → **DTC P0171/25 was recorded because the vehicle runs out of fuel.**

NO

2	**Check air induction system (See Pub. No. RM519E, page EG–92).**

NG → **Repair or replace.**

OK

3	**Check for oxygen sensor (bank 1 sensor 1) data.**

PREPARATION:

(a) Connect the hand–held tester to the DLC3.

(b) Warm up the engine to normal operating temperature.

CHECK:

Read the oxygen sensor (bank 1 sensor 1) output voltage and the short–term fuel trim.

HINT:

Read the values for the same bank.

RESULT:

Pattern	Oxygen sensor output voltage	Short–term fuel trim
1	Lean condition (Changes at 0.55 V or less)	Changes at about +20 %
2	Rich condition (Changes at 0.35 V or more)	Changes at about –20 %
3	Except 1 and 2	

3 → **Check for oxygen sensor (bank 1 sensor 1) (See page DI–48).**

1, 2

4	**Check fuel pressure (See Pub. No. RM519E, page EG–130).**

NG → **Check and repair fuel pump, pressure regulator, fuel pipe line and filter (See Pub. No. RM519E, page EG–130).**

OK

5	Check injector injection (See page FI–3).

NG → Replace injector.

OK

6	Check air flow meter and water temp. sensor (See page FI–9 and see Pub. No. RM519E, page EG–155).

NG → Repair or replace.

OK

7	Check for spark and ignition (See Pub. No. RM519E, page IG–3).

NG → Repair or replace.

OK

8	Check gas leakage on exhaust system.

NG → Repair or replace.

OK

Check and replace engine (and ECT) ECU (See page IN–20).

When not using hand–held tester

1	Check air induction system (See Pub. No. RM519E, page EG–92).

NG → Repair or replace.

OK

2	Check fuel pressure (See Pub. No. RM519E, page EG–130).

NG → Check and repair fuel pump, fuel pipe line and filter (See Pub. No. RM519E, page EG–130).

OK

3	Check injector injection (See page FI–3).

NG → Replace injector.

OK

4	Check air flow meter and water temp. sensor (See page FI–9 and see Pub. No. RM519E, page EG–155).

NG → Repair or replace.

OK

5	Check for spark and ignition (See Pub. No. RM519E, page IG–3).

NG → Repair or replace.

OK

6	Check gas leakage on exhaust system.

NG → Repair or replace.

OK

7	Does malfunction disappear when a good oxygen sensor installed?

YES → Repair oxygen sensor.

NO

Check and replace engine (and ECT) ECU (See page IN–20).