DTC	P0088/49	FUEL RAIL/SYSTEM PRESSURE – TOO HIGH

DTC	P1229/78	FUEL PUMP SYSTEM

HINT:

- For more information on the fuel pressure sensor and common rail system, refer to the system description (see page 05–422).
- If P0087/49, P0190/49, P0192/49 and/or P0193/49 is present, refer to the ”Diagnostic Trouble Codes (DTCs) Table for Common Rail System” (see page 05–422).

CIRCUIT DESCRIPTION

Refer to the system description (see page 05–422).

DTC No.	DTC Detection Condition	Trouble Area
P0088/49	Internal fuel pressure of common rail is too high: Fuel pressure exceeds 200 MPa (2,039 kgf/cm^2, 29,007 psi) (1 trip detection logic)	• Supply pump (suction control valve) • Pressure discharge valve • Short in supply pump (suction control valve) circuit • ECM
P1229/78	Fuel over–feed: Internal fuel pressure continues exceeding target fuel pressure despite ECM closing suction control valve (1 trip detection logic)	• Short in supply pump (suction control valve) circuit • Supply pump (suction control valve) • ECM

HINT:

When DTC P0088/49 and/or P1229/78 is set, check the internal fuel pressure of the common rail by entering the following menu items on the intelligent tester II: Powertrain / Engine / Data List / Fuel Press.

Reference:

Engine Speed	Fuel Pressure
Idling	Approximately 30,000 to 40,000 kPa
3,000 rpm (No engine load)	Approximately 50,000 to 80,000 kPa

MONITOR DESCRIPTION

P0088/49 (Internal fuel pressure too high):

The ECM sets this DTC if the fuel pressure inside the common rail is beyond 200 MPa (2,039 kgf/cm^2, 29,007 psi). This DTC indicates that: 1) the suction control valve may be stuck open, 2) there may be short in its circuit, and/or 3) there may be open in its circuit.

If this DTC is set, the ECM enters fail–safe mode and limits the engine power. The fail–safe mode continues until the ignition switch is turned OFF.

P1229/78 (Fuel over–feed):

The ECM sets this DTC if the actual fuel pressure inside the common rail remains higher than the target fuel pressure, despite the ECM closing the suction control valve. This DTC represents that the suction control valve may be stuck open, or there may be a short in its circuit. Under this condition, the pressure discharge valve operates frequently.

If this DTC is set, the ECM enters fail–safe mode and limits the engine power. The fail–safe mode continues until the ignition switch is turned OFF.

MONITOR STRATEGY

P0088/49:

Required sensors	Fuel pressure sensor
Frequency of operation	Continuous
Duration	1 second
MIL operation	1 driving cycle

P1229/78:

Required sensors	Fuel pressure sensor
Frequency of operation	Continuous
Duration	1 minute
MIL operation	1 driving cycle

TYPICAL ENABLING CONDITIONS

P0088/49:

Specification
The monitor will not run if the fuel pressure sensor or suction control valve circuit is malfunctioning

P1229/78:

Item	Specification
Target fuel pressure variation	Small
The monitor will not run if the fuel pressure sensor or suction control valve circuit is malfunctioning	

TYPICAL MALFUNCTION THRESHOLDS

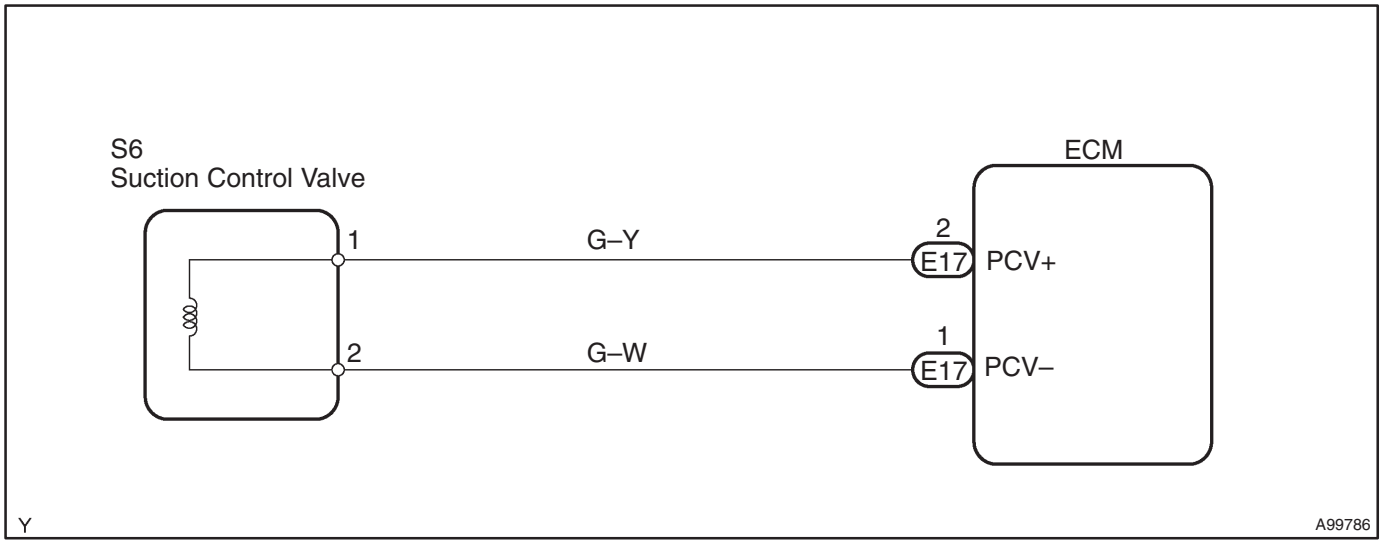
P0088/49:

Detection Criteria	Threshold
Fuel pressure sensor	200 MPa (2,039 kgf/cm^2, 29,007 psi) or more

P1229/78:

Item	Threshold
The internal fuel pressure of the common rail when the suction control valve is closed	Remains higher than target fuel pressure

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Read freeze frame data using the intelligent tester II. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, and other data from the time the malfunction occurred.

1	CHECK OTHER DTC OUTPUT (IN ADDITION TO DTC P0088/49 AND/OR P1229/78)

(a) Connect the intelligent tester II to the DLC3.
(b) Turn the ignition switch ON and turn the intelligent tester II ON.
(c) Enter the following menus: Powertrain / Engine / DTC.
(d) Read the DTCs.

Result:

Display (DTC Output)	Proceed to
P0088/49, or P0088/49 and P1229/78	A
P1229/78	B
P0190/49, P0192/49 and/or P0193/49	C

B	Go to step 3

C	Go to RELEVANT DTC CHART (See page 05–477)

A

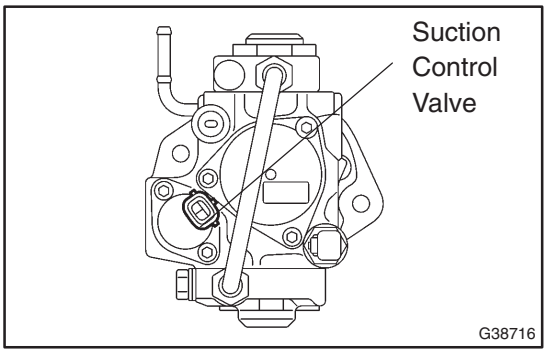
2	REPLACE COMMON RAIL ASSY (PRESSURE DISCHARGE VALVE) (See page 11–67)

NEXT

CHECK IF DTC OUTPUT RECURS (DTC P0088/49 OR P1229/78)

HINT:
After clearing the DTC(s), drive the vehicle at 50 km/h (31 mph) for 5 minutes, and then confirm that P0088/49 and/or P1229/78 is not present again.

3 INSPECT SUPPLY PUMP ASSY (SUCTION CONTROL VALVE)



(a) Disconnect the S6 suction control valve connector.
(b) Measure the resistance of the suction control valve.
Standard: 1.9 to 2.3 Ω at 20°C (68°F)

NG → **REPLACE SUPPLY PUMP ASSY (SUCTION CONTROL VALVE) (See page 11–63)**

OK

4 CHECK IF DTC OUTPUT RECURS (DTC P1229/78)

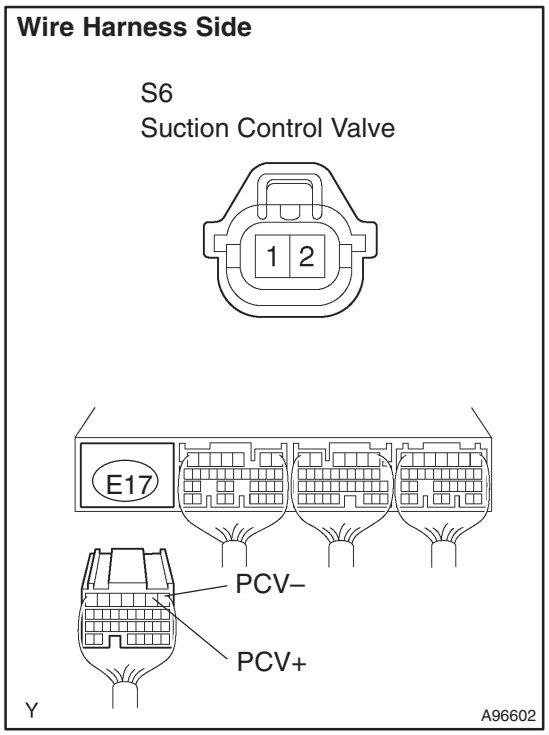
(a) Connect the intelligent tester II to the DLC3.
(b) Turn the ignition switch ON and turn the intelligent tester II ON.
(c) Enter the following menus: Powertrain / Engine / DTC / Clear.
(d) Clear the DTC(s).
(e) Disconnect the suction control valve connector and then start the engine. Wait for 1 minute.
HINT:
If the engine does not start, the suction control valve is normal. Proceed to step 6.
(f) Enter the following menus: Powertrain / Engine / DTC.
(g) Read the DTCs.
Result:

Display (DTC Output)	Proceed to
No output	A
P1229/78	B

B → **REPLACE SUPPLY PUMP ASSY (SUCTION CONTROL VALVE) (See page 11–63)**

A

5 CHECK WIRE HARNESS (SUCTION CONTROL VALVE – ECM)



(a) Disconnect the S6 suction control valve connector.
(b) Disconnect the E17 ECM connector.
(c) Measure the resistance of the wire harness side connectors.

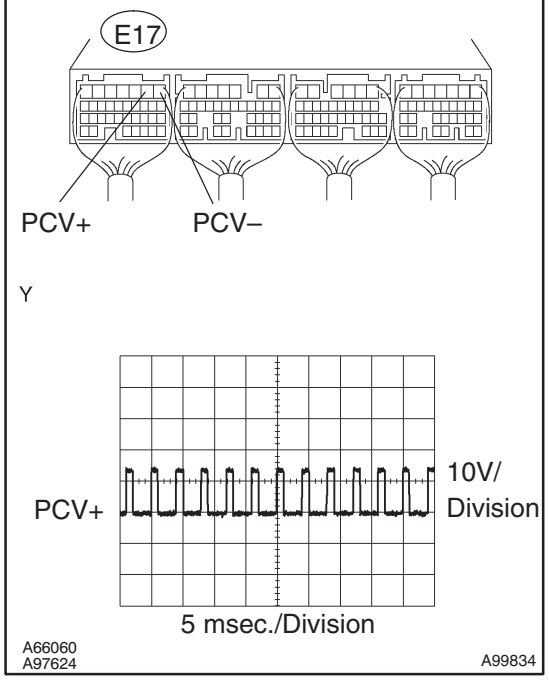
Standard:

Tester Connection	Specified Condition
S6–1 – E17–2 (PCV+)	Below 1 Ω
S6–2 – E17–1 (PCV–)	Below 1 Ω
S6–1 or E17–2 (PCV+) – Body ground	10 kΩ higher
S6–2 or E17–1 (PCV–) – Body ground	10 kΩ higher

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

6 CHECK ECM (PCV SIGNAL)



(a) While cranking or idling the engine, check the waveform of the ECM connector using an oscilloscope.

Standard:

Tester Connection	Specified Condition
E17–2 (PCV+) – E17–1 (PCV–)	Correct waveform shown

NG → **REPLACE ECM (See Pub. No. RM990E, page 10–34)**

NOTICE:
After replacing the ECM, allow for ECM learning start the engine and idle it until it is fully warmed up.

OK

CHECK IF DTC OUTPUT RECURS (DTC P0088/49 OR P1229/78)

HINT:
After clearing the DTC(s), drive the vehicle at 50 km/h (31 mph) for 5 minutes, and then confirm that P0088/49 or P1229/78 is not output again.