DTC	P0087/49	FUEL RAIL/SYSTEM PRESSURE – TOO LOW

DTC	P0190/49	FUEL RAIL PRESSURE SENSOR CIRCUIT

DTC	P0191/49	FUEL RAIL PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE

DTC	P0192/49	FUEL RAIL PRESSURE SENSOR CIRCUIT LOW INPUT

DTC	P0193/49	FUEL RAIL PRESSURE SENSOR CIRCUIT HIGH INPUT

CIRCUIT DESCRIPTION

The fuel pressure sensor, mounted on the common rail, converts the fuel pressure into an electric signal and outputs the signal to the ECM.

Based on the signal from the fuel pressure sensor, the ECM controls the injection (supply) pump (suction control valve) and keeps the internal fuel pressure of the common rail at the target fuel pressure.

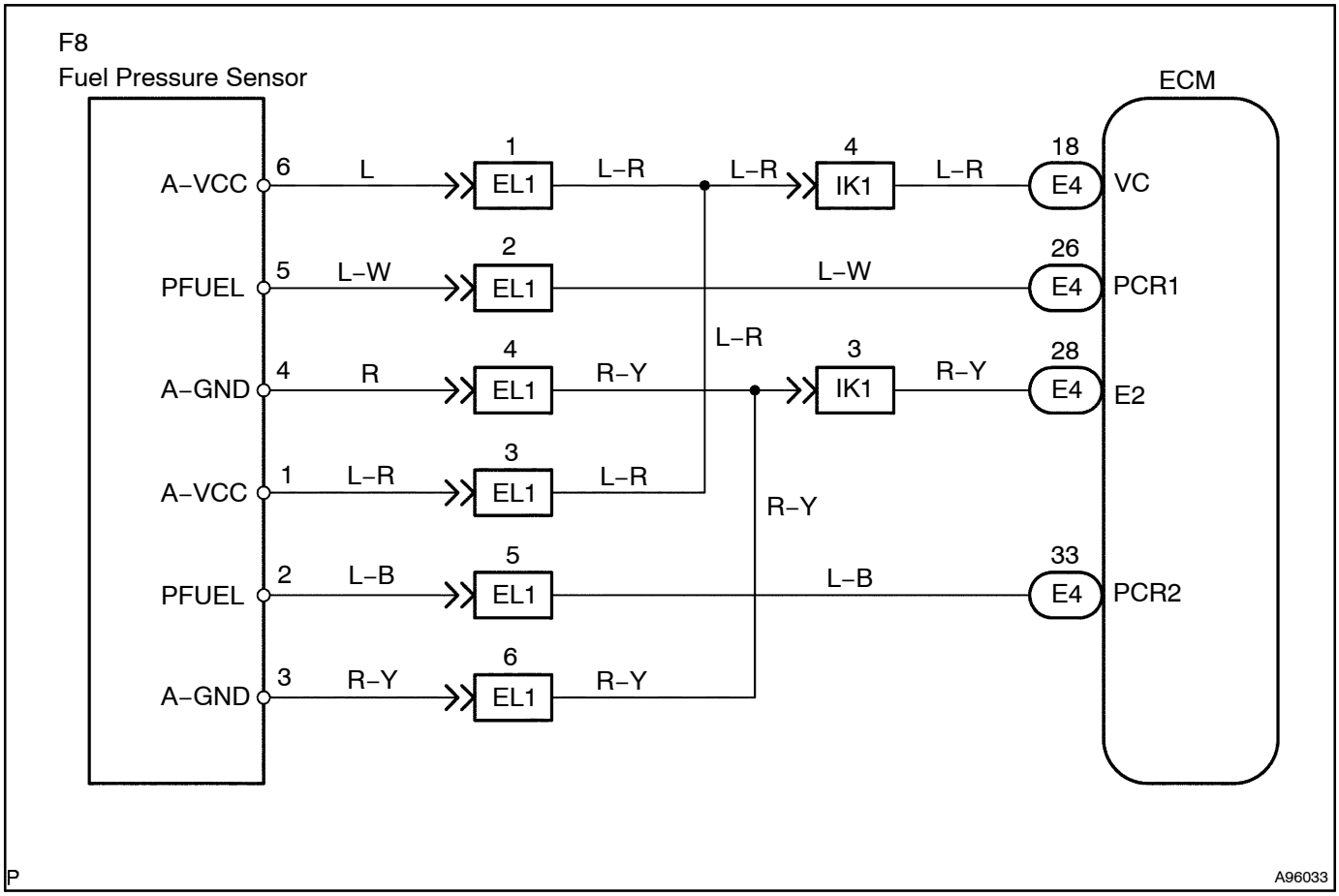
DTC No.	DTC Detection Condition	Trouble Area
P0087/49	Conditions (a), (b)and (c) continue 10 times with engine speed 600 rpm or more: (a) Battery voltage: 16 V or more (b) Fuel quantify: 5 mm^3/st or more (c) Amount of change in fuel pressure applied to common rail: 0.1MPa or less	• Open or short in fuel pressure sensor circuit • Fuel pressure sensor • ECM
P0190/49	Conditions (a) and (b) continue for 1 second or more: (a) Ignition switch ON (b) Open or short in fuel pressure sensor circuit	Same as DTC No. P0087/49
P0191/49	Conditions (a) and (b) continue for 1 second or more: (a) Ignition switch ON (b) Fuel pressure sensor out of range	Same as DTC No. P0087/49
P0192/49	Condition (a) continues for 1 second: (a) Fuel pressure sensor output voltage is 0.55 V or less	Same as DTC No. P0087/49
P0193/49	Condition (a) continues for 1 second: (a) Fuel pressure sensor output voltage is 4.9 V or more	Same as DTC No. P0087/49

HINT:

- If the vehicle runs out of fuel, the ECM determines the fuel pressure has decreased, and DTC P0192/49 may be output.
- After confirming DTC P0087/49, P0190/49, P0191/49, P0192/49 and P0193/49, use the hand–held tester to confirm the internal fuel pressure of the common rail from the COMMON RAIL menu (to reach the COMMON RAIL menu: DIAGNOSIS / OBD/MOBD / DATA LIST / ALL / COMN RAIL).

Fuel Pressure	Malfunction
Approx. 0 MPa (0 kg/cm^2, 0 psi) or more	• Short in PCR and E2 circuit • Open in VC circuit
Approx. 190 MPa (1,937 kg/cm^2, 27,556 psi) or more	• Short in PCR and VC circuit • Open in PCR circuit • Open in E2 circuit

WIRING DIAGRAM

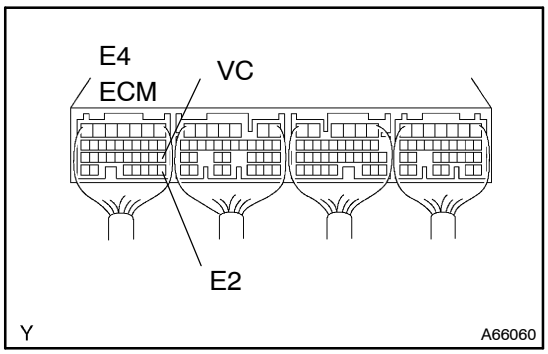


INSPECTION PROCEDURE

HINT:

- If DTCs that are related to different systems are output simultaneously while terminal E2 is used as a ground terminal, terminal E2 may have an open circuit.
- Read freeze frame data using the hand–held tester. 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, if the air–fuel ratio was lean or rich, and other data from the time the malfunction occurred.

1 CHECK ECM (VC VOLTAGE)



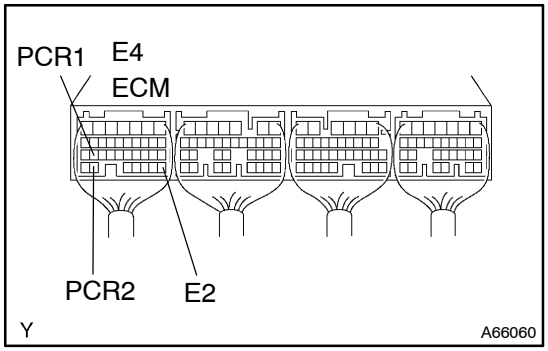
(a) Turn the ignition switch ON.
(b) Measure the voltage of the ECM connector.
Standard:

Tester Connection	Specified Condition
E4–18 (VC) – E4–28 (E2)	4.5 to 5.5 V

NG → **REPLACE ECM (See page 10–10)**

OK

2 CHECK ECM (PCR VOLTAGE)



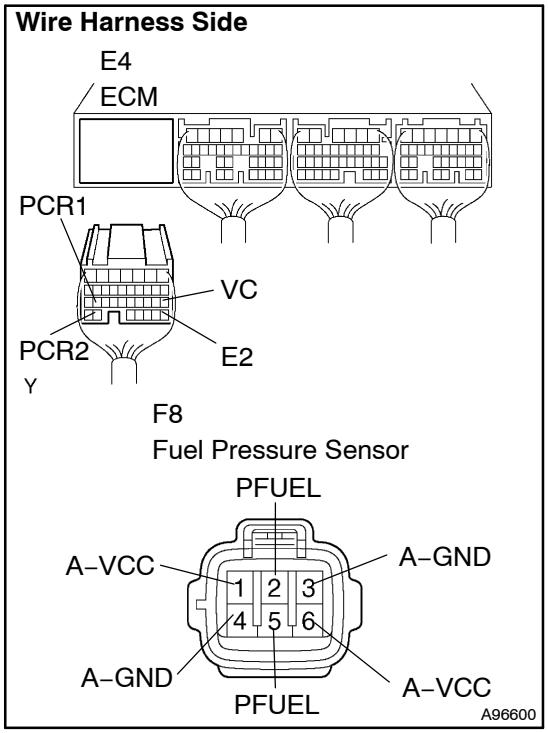
(a) Start the engine.
(b) Measure the voltage of the ECM connector.
Standard:

Tester Connection	Condition	Specified Condition
E4–26 (PCR1) – E4–28 (E2)	Engine is idling	1.7 to 2.2 V
E4–33 (PCR2) – E4–28 (E2)	Engine is idling	1.2 to 1.6 V

OK → **REPLACE ECM (See page 10–10)**

NG

3 CHECK WIRE HARNESS (FUEL PRESSURE SENSOR – ECM)



(a) Disconnect the E4 ECM connector.
(b) Disconnect the F8 fuel pressure sensor connector.
(c) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
E4–26 (PCR1) – F8–5 (PFUEL) E4–33 (PCR2) – F8–2 (PFUEL) E4–18 (VC) – F8–6 (A–VCC) E4–18 (VC) – F8–1 (A–VCC) E4–28 (E2) – F8–4 (A–GND) E4–28 (E2) – F8–3 (A–GND)	Below 1 Ω
E4–26 (PCR1) or F8–5 (RFUEL) – Body ground E4–33 (PCR2) or F8–2 (PFUEL) – Body ground E4–18 (VC) or F8–6 (A–VCC) – Body ground E4–18 (VC) or F8–1 (A–VCC) – Body ground E4–28 (E2) or F8–4 (A–GND) – Body ground E4–28 (E2) or F8–3 (A–GND) – Body ground	10 kΩ or higher

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

OK

REPLACE COMMON RAIL ASSY (FUEL PRESSURE SENSOR) (See page 11–15)