DI9G6–02

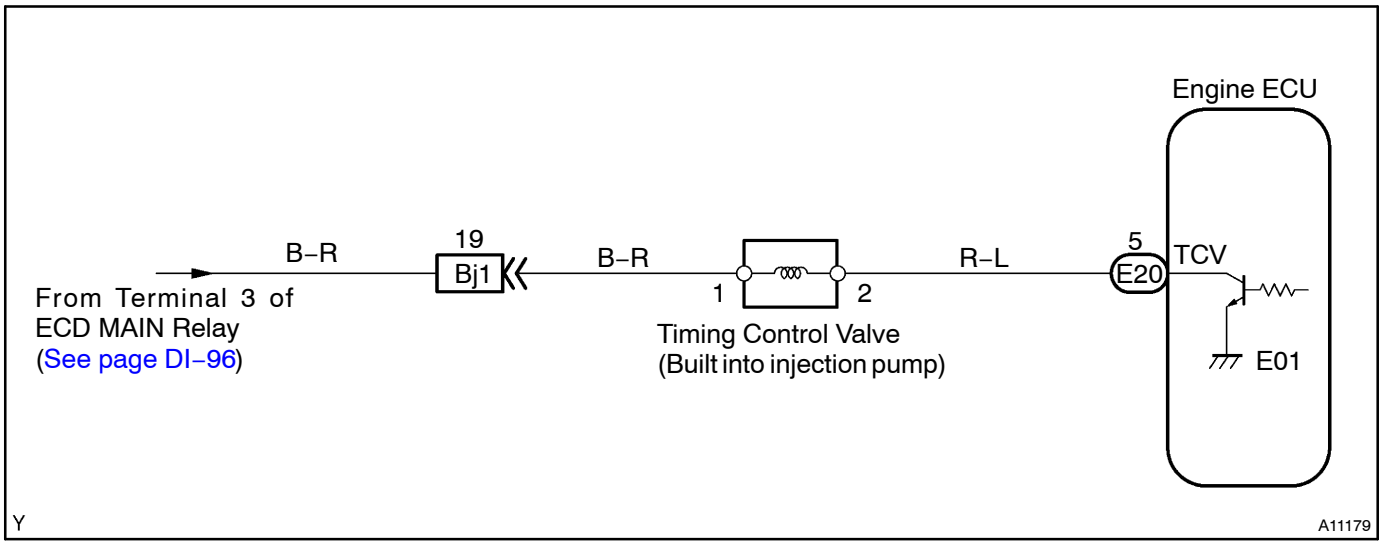
DTC	14	Timing Control System Malfunction

CIRCUIT DESCRIPTION

The engine ECU control the injection timing by actuating the timing control valve. The timing control valve is mounted on the injection pump and delay one by duty control of pump internal fuel pressure.
The engine ECU detects the injection advance angle by TDC and NE signals.

DTC No.	DTC Detecting Condition	Trouble Area
14	After engine warm up and during, actual injection timing is different from target value of engine ECU calculated for several sec.	• Open or short in timing control valve circuit • Fuel filter (Clogging) • Fuel (Freezing, Air in) • Injection pump (Internal pressure and timing control valve) • Engine ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

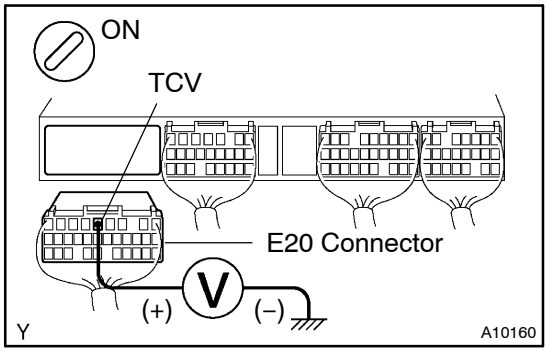
HINT:
Read freeze frame data using the hand–held tester. Because freeze frame records the engine conditions when the malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air–fuel ratio was lean or rich, etc. at the time of the malfunction.

1	**Check timing control valve (See Pub. No. RM464E FU section).**

NG → **Replace injection pump (See Pub. No. RM464E FU section).**

OK

2	**Check voltage between terminal TCV of engine ECU connector and body ground.**



PREPARATION:

(a) Disconnect the engine ECU from the body bracket (See page ED–30).

(b) Disconnect the E20 connector from the engine ECU.

(c) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminal TCV of the engine ECU connector and body ground.

OK:

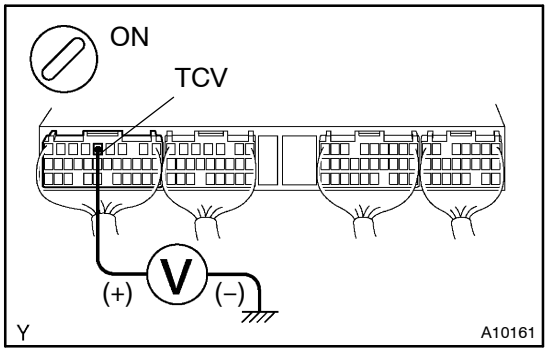
Voltage: 18 – 27 V

OK	**Go to step 3.**

NG

Check for open or short in harness and connector between timing control valve and engine ECU, timing control valve and ECD main relay (Marking: ECD MAIN) (See page IN–20).

3	**Check voltage between terminal TCV of engine ECU connector and body ground.**



PREPARATION:

(a) Disconnect the engine ECU from the body bracket (See page ED–30).

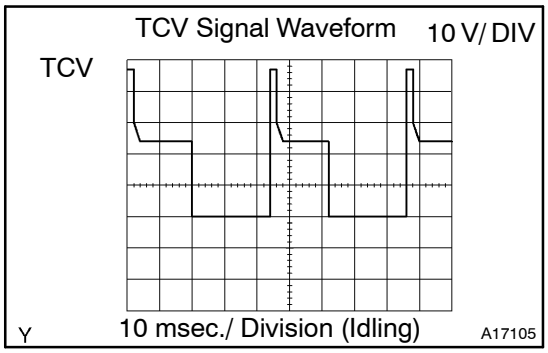
(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminal TCV of engine ECU and body ground.

OK:

Voltage: 18 – 27 V



Reference: INSPECTION USING OSCILLOSCOPE

During idling, check the waveform between terminals TCV and E1 of the engine ECU connector.

HINT:

The correct waveform is as shown.

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

OK

4	**Check fuel filter clogging, fuel freezing and fuel air in.**

NG → **Replace or repair.**

OK

Check and replace injection pump (See Pub. No. RM464E FU section).