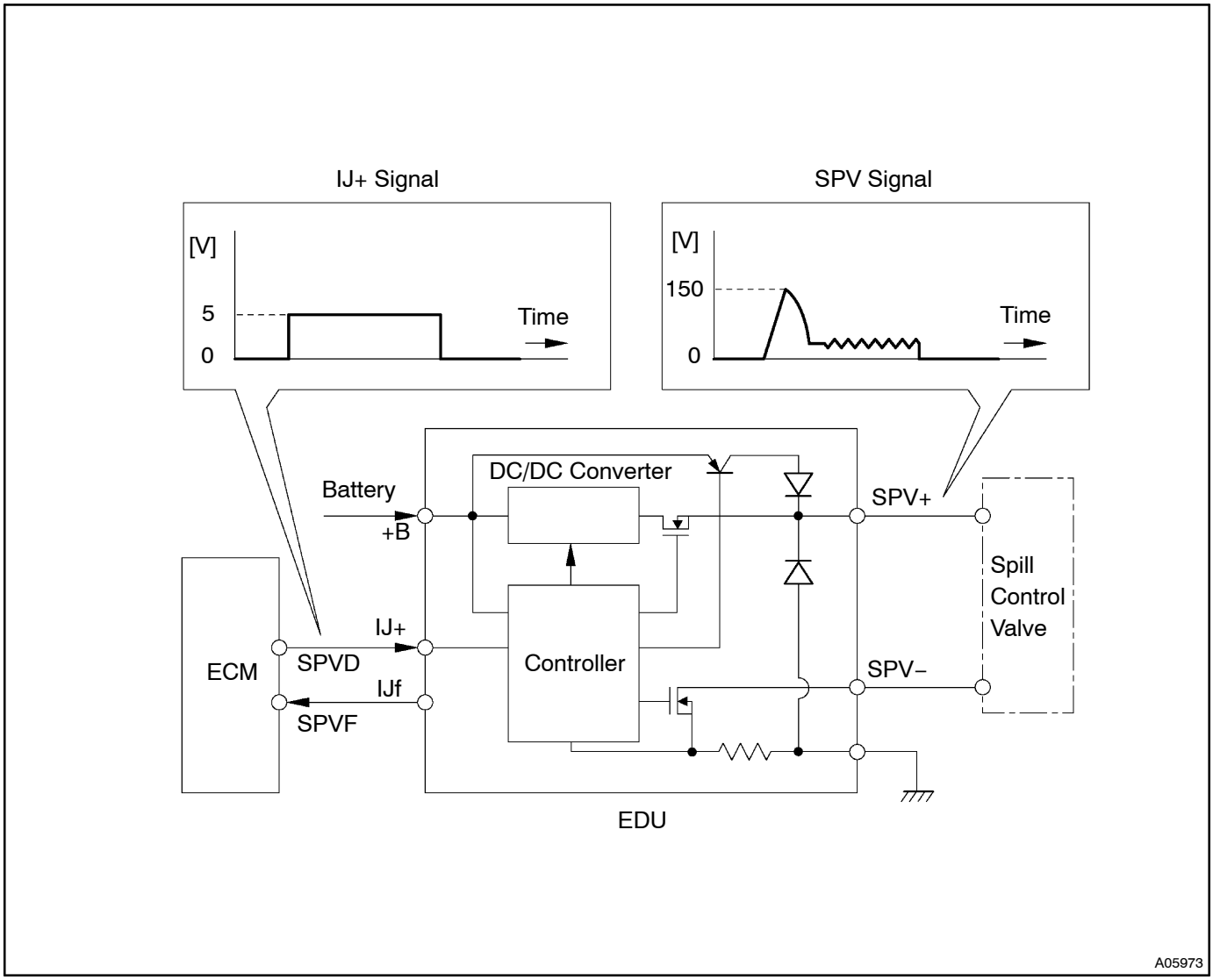
DTC 97 EDU CIRCUIT MALFUNCTION

CIRCUIT DESCRIPTION

The EDU has been adopted to drive the spill control valve at high speeds. The EDU has realized high–speed driving under high fuel pressure conditions through a use of a DC/DC converter that provides a high–voltage, quick–charging system.

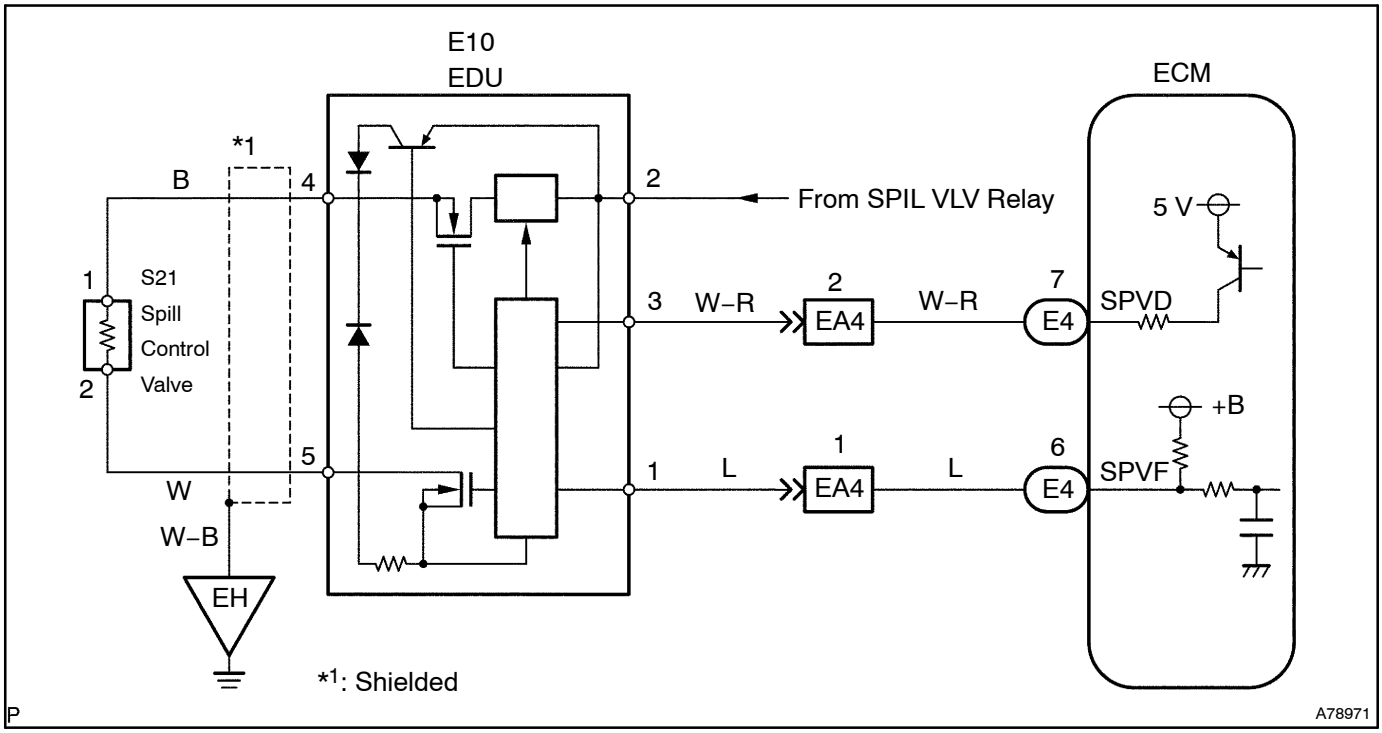
The ECM constantly monitors the EDU and stops the engine in the case that an abnormal condition is detected.

The battery voltage is increased by the DC/DC converter. A voltage of approximately 150 V is applied to the spill control valve in accordance with the IJ+ signal received from the ECM. Also at this time, the injection verification signal (IJf) is sent to the ECM.



DTC No.	DTC Detection condition	Trouble Area
97	Although SPVD is output to EDU with engine speed at 500 rpm or more, SPVF is not input continuously 5 times or more	• Open or short in EDU circuit • EDU • Spill control valve

WIRING DIAGRAM

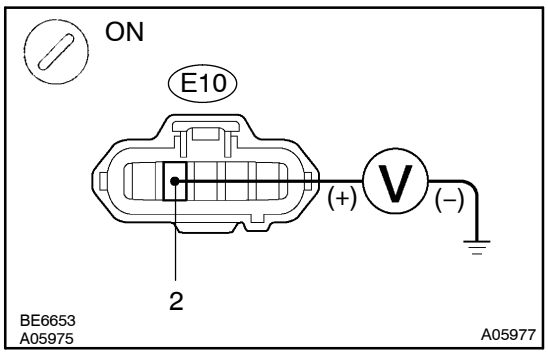


INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand–held tester, as freeze frame data records the engine conditions when a 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 EDU



(a) Disconnect the E10 EDU connector.
(b) Turn the ignition switch ON.
(c) Measure the voltage between terminal 2 of the E10 EDU connector and the body ground.
Voltage: 20 – 28 V

NG → **CHECK ECU POWER SOURCE CIRCUIT (See page 05–94)**

OK

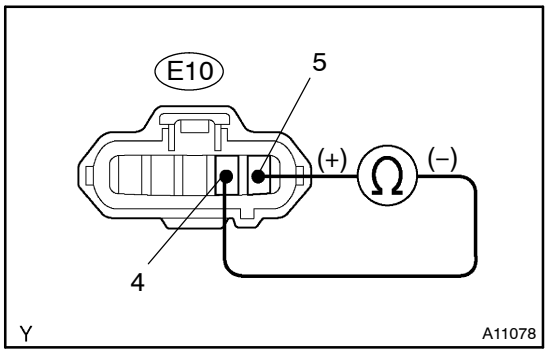
2	CHECK EDU

(a) Check the continuity between EDU ground bolt and body ground.

NG → CHECK EDU (TIGHTEN EDU GROUND BOLT)

OK

3	CHECK EDU



(a) Disconnect the E10 EDU connector.
(b) Measure the resistance between terminals 4 and 5 of the E10 EDU connector.
Voltage: Approx. 1.7 Ω

OK → Go to step 6

NG

4	CHECK SPILL CONTROL VALVE (See page 10–1)

NG → REPLACE INJECTION PUMP ASSY

OK

5	CHECK WIRE HARNESS (EDU ⇔ SPILL CONTROL VALVE) (See page 01–27)

NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

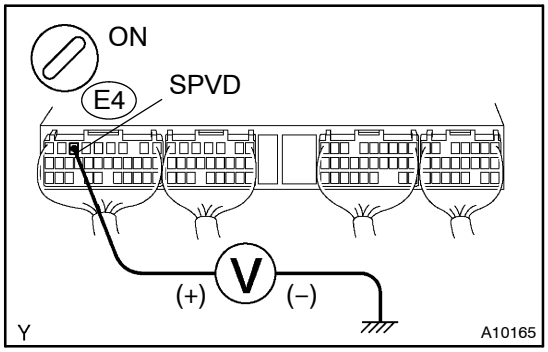
OK

6	CHECK WIRE HARNESS (ECM ⇔ EDU) (See page 01–27)

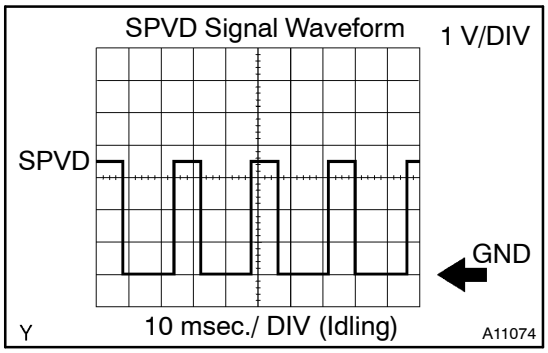
NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

7	**CHECK ECM**



(a) Turn the ignition switch ON.
(b) Measure the voltage between terminal SPVD of the E4 ECM connector and the body ground.
Standard: 4.5 – 5.5 V



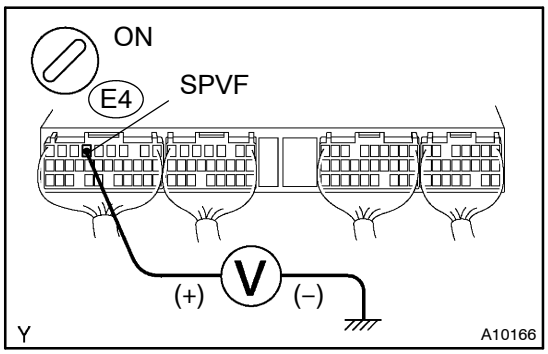
Reference: Inspection using oscilloscope
(c) While idling, check the waveform between terminals SPVD and E1 of the E4 ECM connector.

HINT:
The correct waveform is as shown in the illustration.

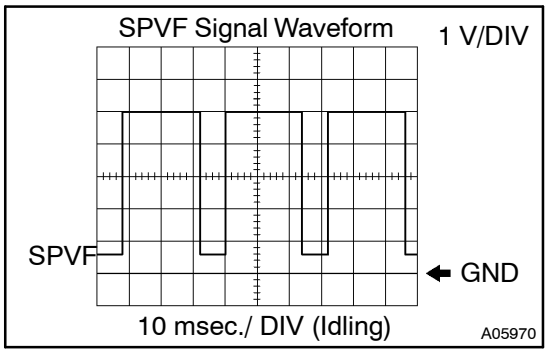
NG → **CHECK AND REPLACE ECM**

OK

8	CHECK ECM



(a) Turn the ignition switch ON.
(b) Measure the voltage between terminal SPVF of the E4 ECM and the body ground.
Standard: 18 – 27 V



Reference: Inspection using oscilloscope
(c) While idling, check the waveform between terminals SPVF and E1 of the E4 ECM connector.

HINT:
The correct waveform is as shown in the illustration.

OK → **CHECK AND REPLACE ECM (See page 01–27)**

NG

CHECK AND REPLACE ECM (See page 01–27)