DI9SC–01

DTC	97	EDU Circuit Malfunction

CIRCUIT DESCRIPTION

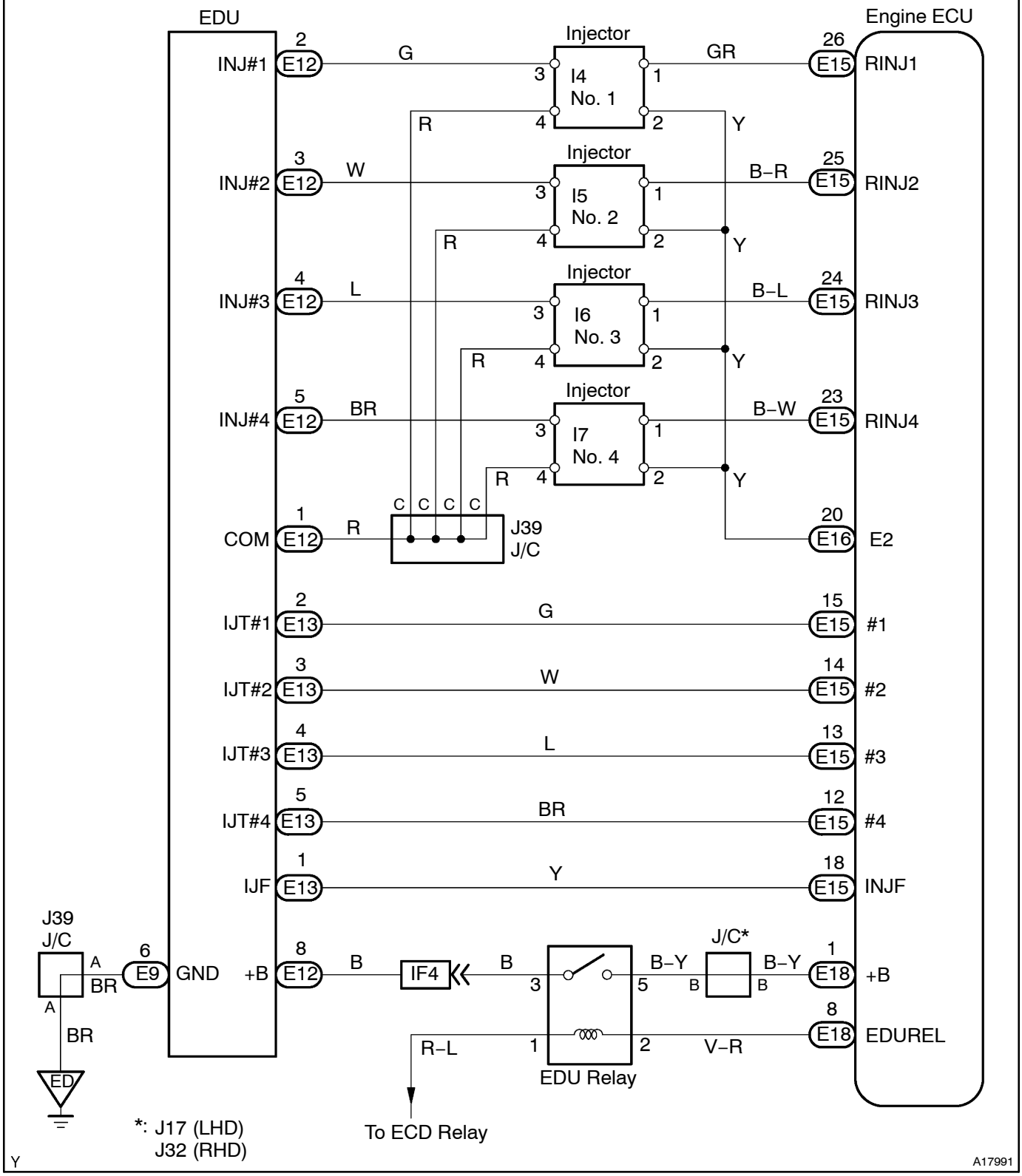
The EDU has been adopted to drive the injector at high speeds. The EDU has realized high–speed driving under high fuel pressure conditions through the use of a DC/DC converter that provides a high–voltage and quick–charging system.

The engine ECU constantly monitors the EDU and stops the engine if an abnormal condition is detected.

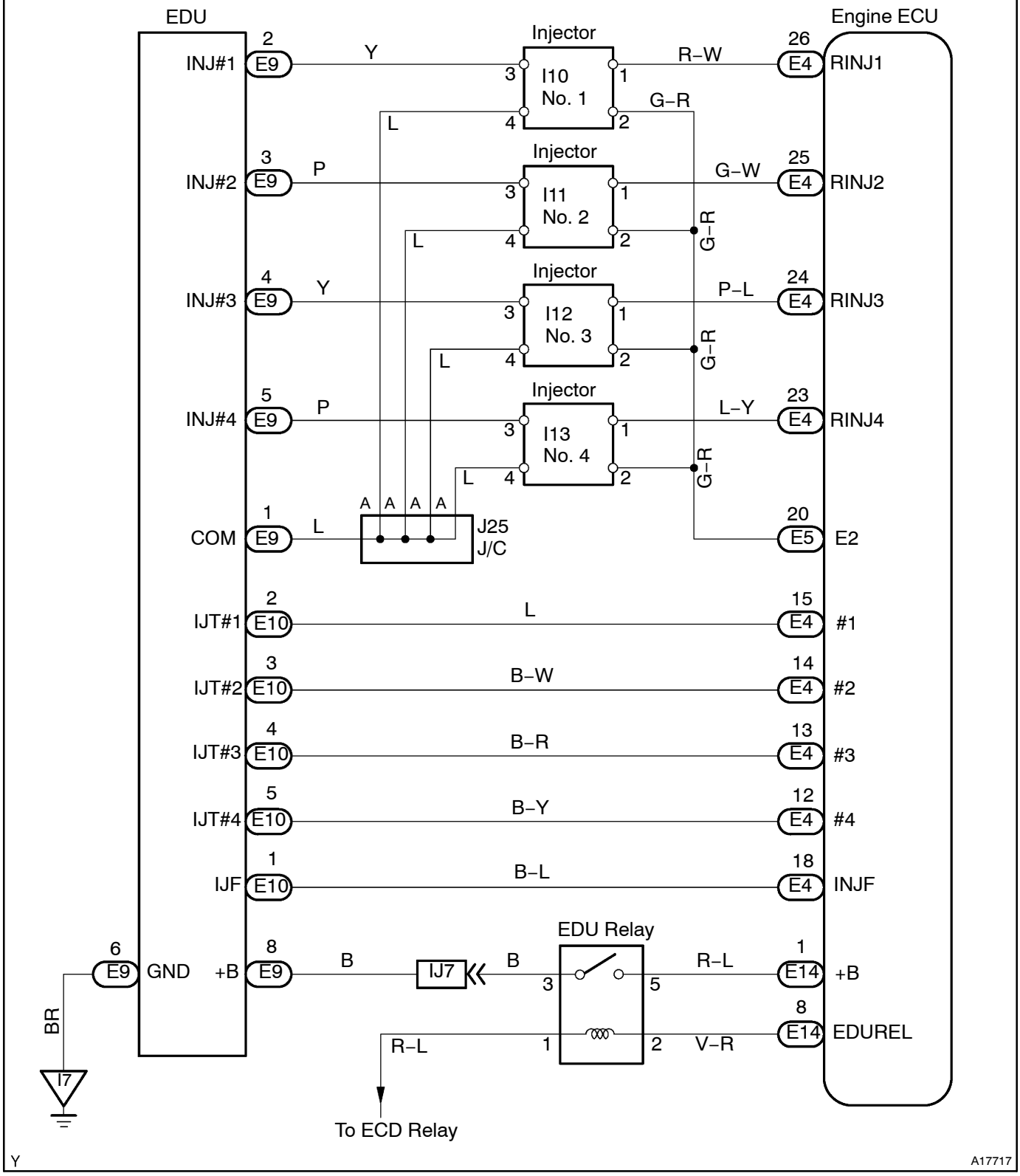
DTC No.	DTC Detecting condition	Trouble Area
97	Open or short in EDU circuit	• Open or short in EDU circuit • EDU • Open or short in SCV circuit • SCV • Injector • Engine ECU

WIRING DIAGRAM

KLH



KDN

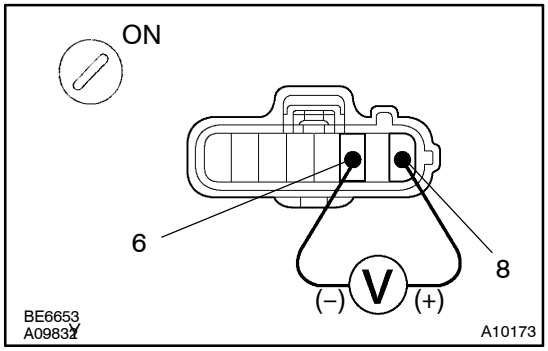

EDU
Engine ECU
INJ#1
E9
2
Y
Injector
I10
No. 1
3
1
4
2
R–W
26
E4
RINJ1
G–R
L
INJ#2
E9
3
P
I11
No. 2
G–W
25
RINJ2
INJ#3
E9
4
Y
I12
No. 3
P–L
24
RINJ3
INJ#4
E9
5
P
I13
No. 4
L–Y
23
RINJ4
COM
E9
1
L
A A A A
J25
J/C
20
E5
E2
IJT#1
E10
2
L
15
E4
#1
IJT#2
E10
3
B–W
14
#2
IJT#3
E10
4
B–R
13
#3
IJT#4
E10
5
B–Y
12
#4
IJF
E10
1
B–L
18
INJF
EDU Relay
6
E9
GND
+B
E9
8
B
IJ7
B
3
5
R–L
1
E14
+B
BR
I7
8
E14
EDUREL
R–L
1
2
V–R
To ECD Relay
Y
A17717

INSPECTION PROCEDURE

HINT:

Read freeze frame data on the hand–held tester. Because freeze frame data 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, etc. at the time of the malfunction.

1	**Check voltage of EDU power source.**



PREPARATION:

(a) KLH.:
Disconnect the E12 EDU connector.

(b) KDN:
Disconnect the E9 EDU connector.

(c) Turn the ignition switch ON.

CHECK:

Measure the voltage between terminals 6 and 8 of the wire harness side connector.

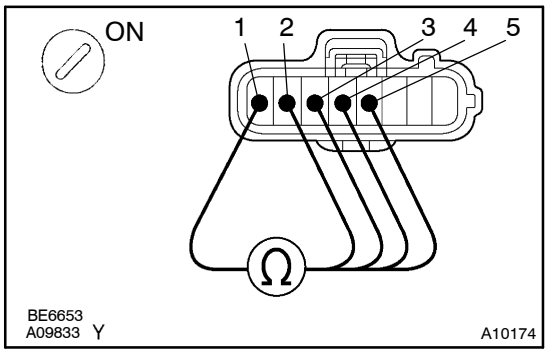
OK:

Voltage: 9 – 14 V

NG	**Check EDU power source circuit (See page DI–115).**

OK

2	**Check resistance between terminals 1 and 2 – 5 of wire harness side connector.**



PREPARATION:

(a) KLH.:
Disconnect the E12 EDU connector.

(b) KDN:
Disconnect the E9 EDU connector.

(c) Turn the ignition switch ON.

CHECK:

Measure the resistance between terminals 1 and 2 – 5 of the wire harness side connector.

OK:

Resistance: 2.5 – 3.1 Ω at 20°C (68°F)

OK	**Go to step 4.**

NG

3	Check injector (See page FU–4).

NG → Replace injector.

OK →

Repair or replace harness or connector.

4	Check SCV (See page FU–13).

NG → Replace supply pump (See page FU–15).

OK →

5	Check fuel pressure limiter (See page FU–23).

NG → Replace common rail (See page FU–21).

OK →

6	Check wire harness and connector between SCV and engine ECU.

NG → Repair or replace harness or connector.

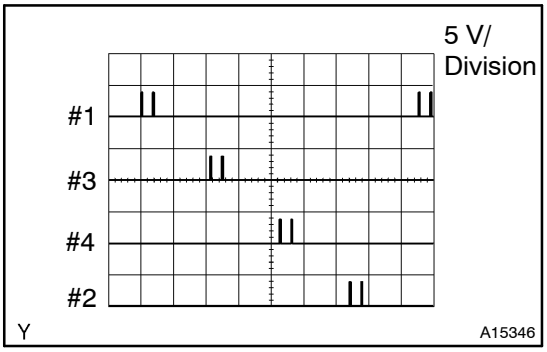
OK →

7	Check wire harness and connector between fuel relief valve and engine ECU.

NG → Repair or replace harness or connector.

OK

8	**Check voltage between terminals #1 – #4 and E01 of engine ECU connector.**



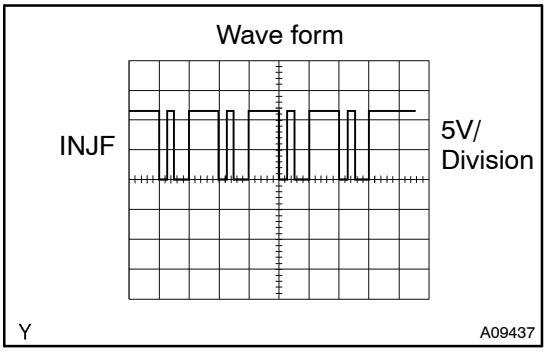
PREPARATION:
Remove the glove compartment box.
CHECK:
During cranking or idling, check the waveform between terminals #1 – #4 and E01 of the engine ECU connector with an oscilloscope.
OK:

Voltage: The correct waveform are as shown in the illustration.

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

OK

9	**Check voltage between terminals INJF and E01 of engine ECU connector.**



PREPARATION:
Remove the glove compartment box.
CHECK:
During cranking or idling, check the waveform between terminals INJF and E01 of the engine ECU connector with oscilloscope.
OK:

Voltage: The correct waveform are as shown in the illustration.

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

NG

10	**Check for open and short in harness and connector between EDU and engine ECU (See page IN–20).**

NG	**Repair or replace harness or connector.**

OK

Replace EDU.