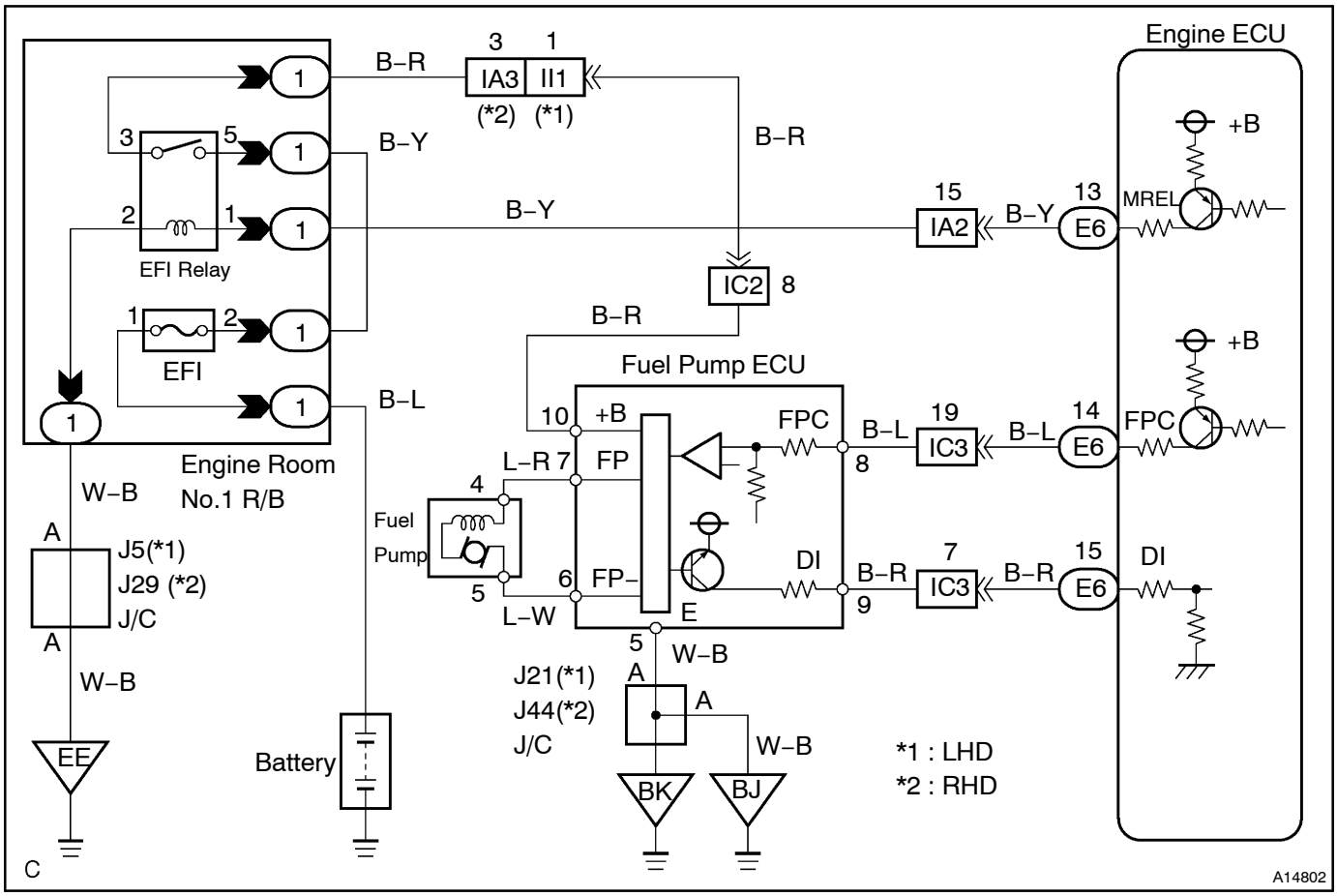
DI2SK–04

Fuel Pump Relay/ECU Circuit Malfunction

CIRCUIT DESCRIPTION

The fuel pump speed is controlled at 3 steps (high speed, medium speed, low speed) by the condition of the engine (starting, idling, light load, heavy load), when the engine starts (STA ON) or heavy loads with engine high speed, the engine ECU sends a Hi signal (about 3.8 V) to the fuel pump ECU (FPC terminal). The fuel pump ECU then outputs Hi voltage (battery positive voltage) to the fuel pump so that the fuel pump operates at high speed. When the heavy loads with engine low spped, the engine ECU sends a Mid signal (about 2.5 V) to the fuel pump ECU (FPC terminal). The fuel pump ECU then outputs Mid voltage (about 10 V) to the fuel pump so that the fuel pump operates at medium speed.
When the idling or light loads, the engine ECU sends a Low signal (about 1.3 V) to the fuel pump ECU (FPC terminal). The fuel pump ECU then outputs Low voltage (about 8.5 V) to the fuel pump so that the fuel pump operates at low speed.

WIRING DIAGRAM



INSPECTION PROCEDURE

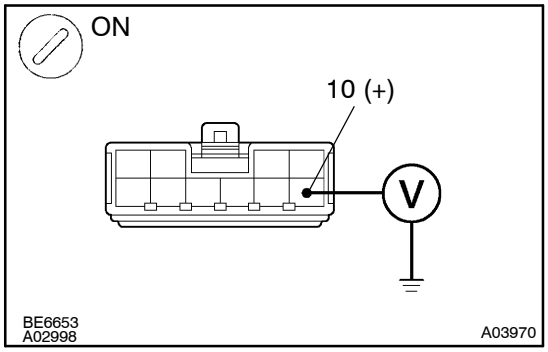
HINT:
Read freeze frame data using OBD scan tool or hand–held tester. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air–fuel ratio lean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

1	**Connect OBD scan tool or hand–held tester and check operation of fuel pump (See page FI–6).**

OK → **Go to step 7.**

NG

2	**Check voltage of fuel pump ECU power source.**



PREPARATION:
(a) Remove the fuel pump ECU (See page FI–72).
(b) Disconnect the fuel pump ECU connector.
(c) Turn the ignition switch ON.

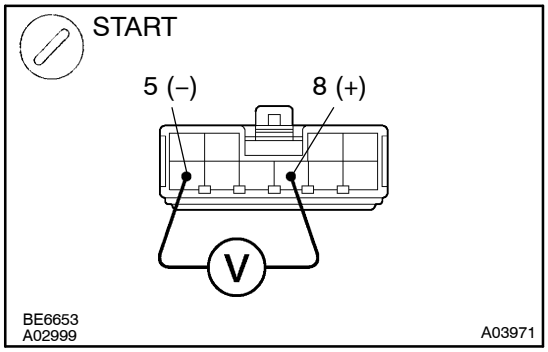
CHECK:
Measure voltage between terminal 10 of fuel pump ECU connector and body ground.

OK:
Voltage: 9 – 14 V

NG → **Check for open and short in harness and connector between EFI main relay and fuel pump engine ECU (See page IN–30).**

OK

3	**Check voltage between terminals 5 and 8 of fuel pump ECU connector.**



PREPARATION:
(a) Remove the fuel pump ECU (See page FI–72).
(b) Disconnect the fuel pump ECU connector.

CHECK:
Measure voltage between terminals 5 and 8 of fuel pump ECU connector when ignition switch is turned to start.

OK:
Voltage: 3.3 – 4.3 V

OK → **Go to step 5.**

NG

4	Check for open and short in harness and connector between terminals FPC of engine ECU and 8 of fuel pump ECU, terminal 5 of fuel pump ECU and body ground (See page IN–30).

NG → Repair or replace harness or connector.

OK →

Check and replace engine ECU (See page IN–30).

5	Check fuel pump (See page FI–6).

NG → Repair or replace fuel pump.

OK →

6	Check for open and short in harness and connector between terminal 7 of fuel pump ECU and fuel pump and terminal 6 of fuel pump ECU and fuel pump (See page IN–30).

NG → Repair or replace harness or connector.

OK →

7	Check for open and short in harness and connector between terminals DI of engine ECU and 9 of fuel pump ECU (See page IN–30).

NG → Repair or replace harness or connector.

OK →

Check and replace engine ECU (See page IN–30).