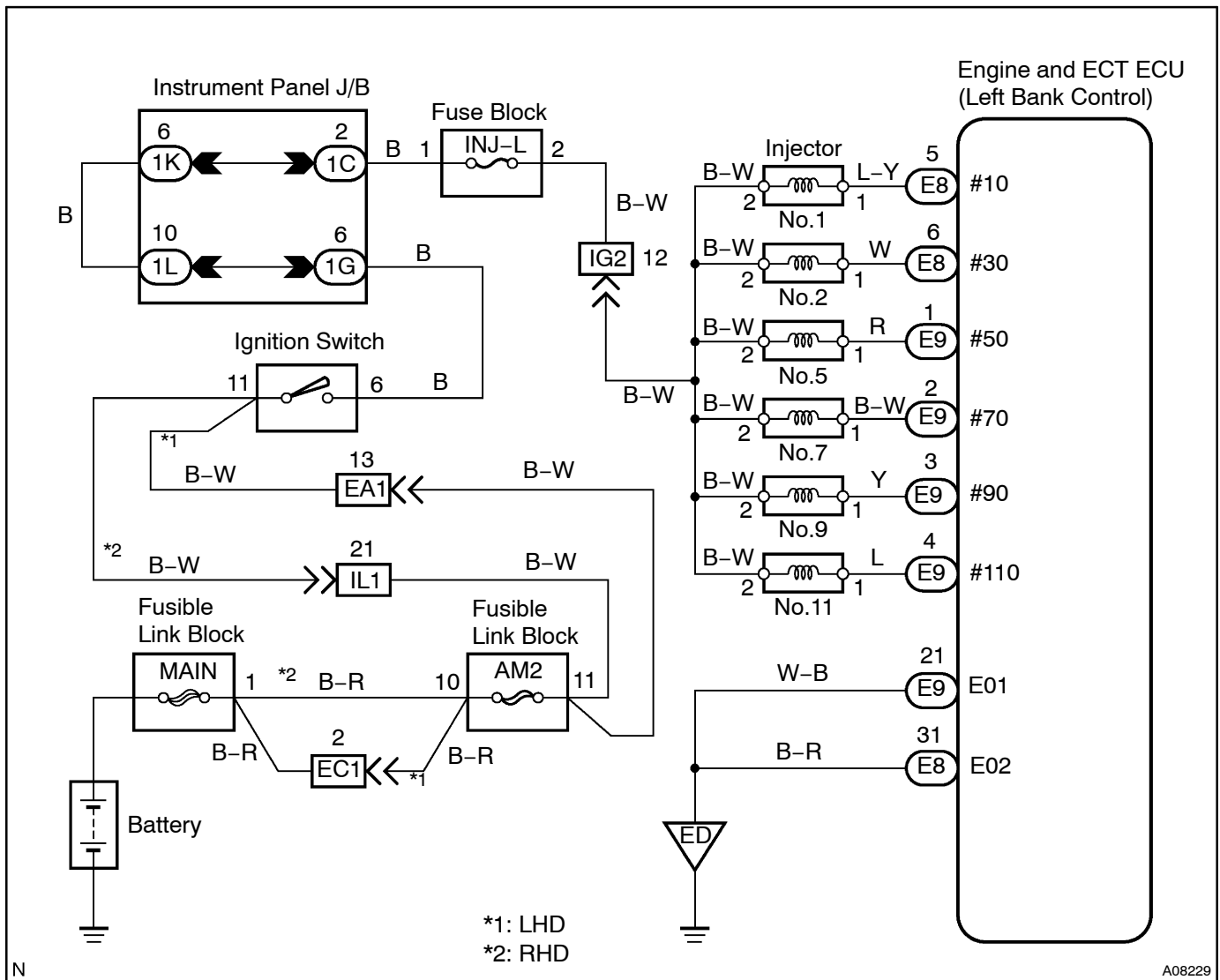


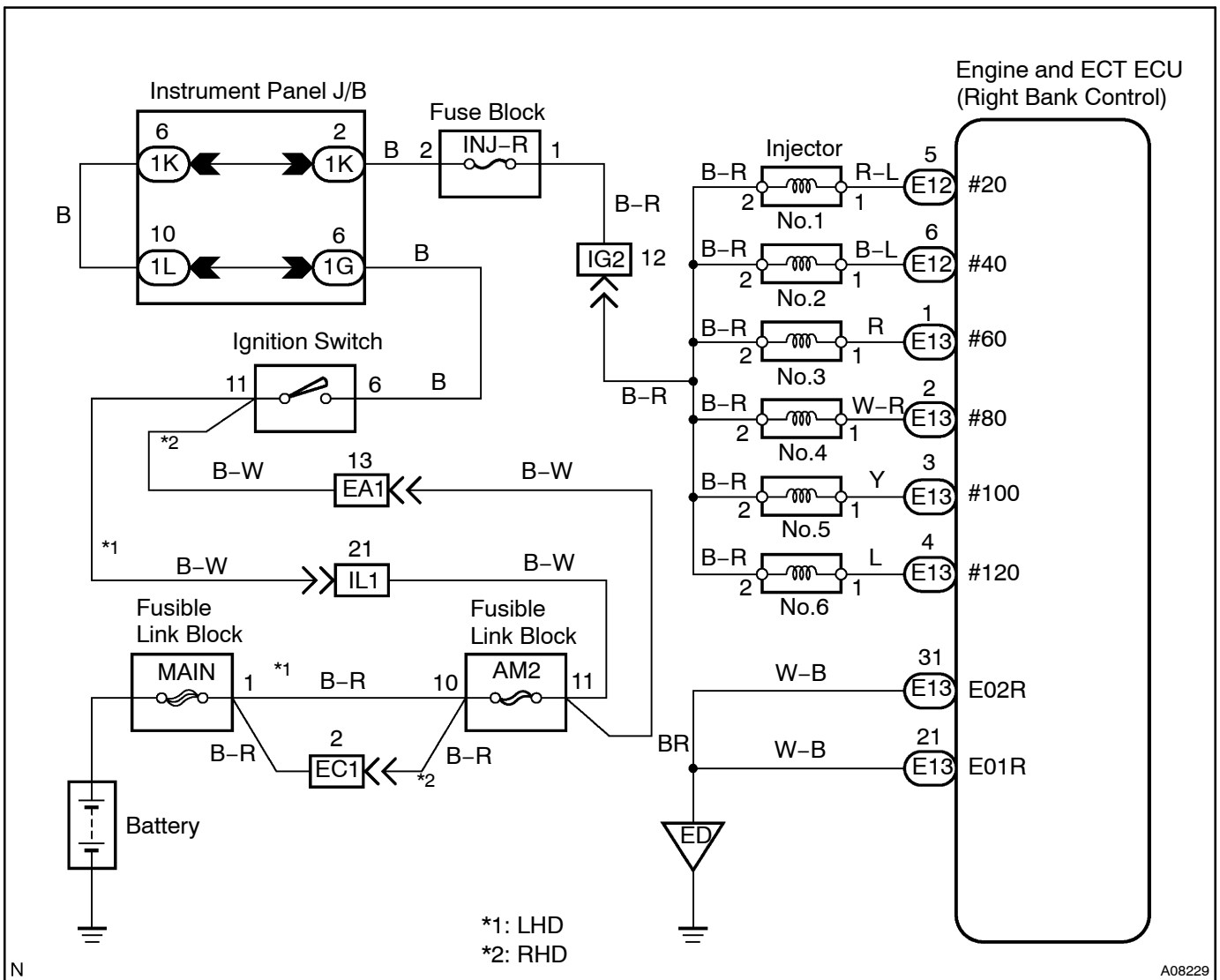
# Injector Circuit

## CIRCUIT DESCRIPTION

The injectors are provided to the intake manifold. They inject fuel into the cylinders based on the signals from engine ECU.

## WIRING DIAGRAM





N

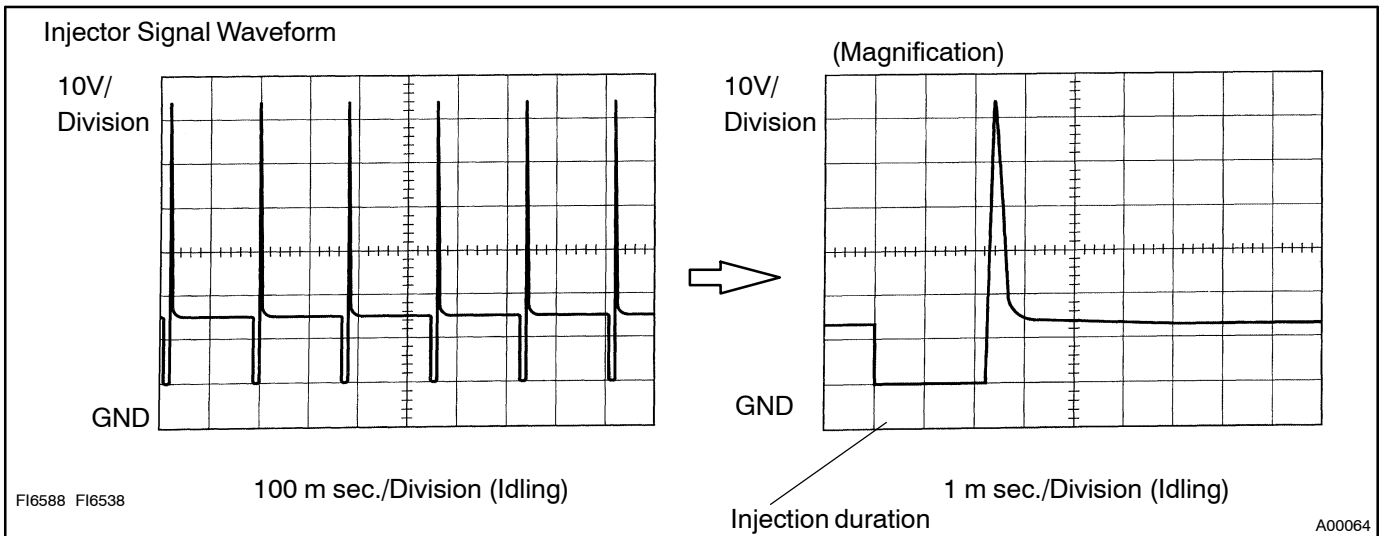
A08229

**Reference INSPECTION USING OSCILLOSCOPE**

With the engine idling, measure between terminals #1 ~ #6 and E01 of the engine ECU connector.

HINT:

The correct waveforms are as shown.

**INSPECTION PROCEDURE**

HINT:

The inspection procedures are same for both LH and RH bank engine ECU and described in this manual. Even though terminal name and part name on the side of RH bank are described in parenthesis, perform the inspection for only defective ECU.

- |          |  |
|----------|--|
| <b>1</b> | <b>Check wire harness, connector and vacuum hose in engine room.</b> |
|----------|--|

**CHECK:**

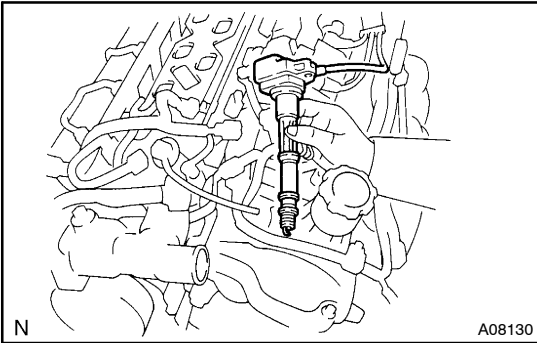
- (a) Check the connection conditions of wire harness and connector.
- (b) Check the disconnection, piping and break of vacuum hose.

**NG**

**Repair or replace, then confirm that there is no misfire (See confirmation driving pattern).**

**OK**

## 2 Check spark plug and spark of misfiring cylinder.



### PREPARATION:

- Disconnect the high-tension cord or ignition coil  
(See page G-6)
- Remove the spark plug.

### CHECK:

- Check the spark plug type.
- Check the carbon deposits electrode.
- Check electrode gap.

### OK:

(a) Twin ground electrodes type

Recommended spark plug:

DENSO Made SK16R-P11

(b) No large carbon deposit present

Not wet with gasoline or oil

(c) Electrode gap: 1.1 – 1.2 mm (0.043 – 0.051 in.)

### PREPARATION:

- Install the spark plug to the high-tension cord or ignition coil.
- Disconnect the injector connector.
- Hold the end about 12.5 mm (0.5 in.) from the ground.

### CHECK:

Check if spark occurs while the engine is being cranked.

### NOTICE:

To prevent excess fuel being injected from the injectors during this test, don't crank the engine for more than 5 – 10 seconds at a time.

### OK:

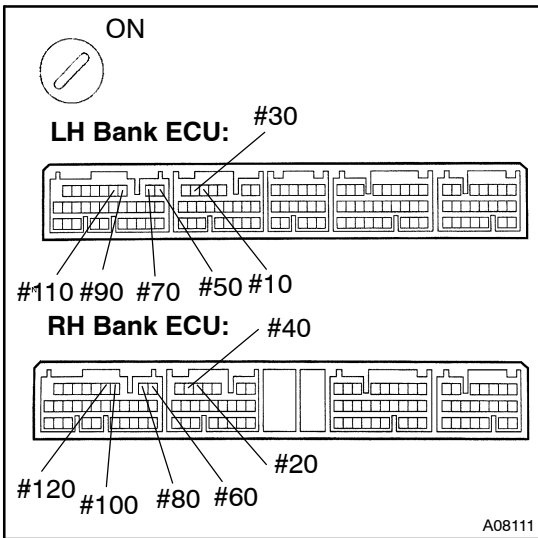
Spark jumps across electrode gap.

NG

Replace or check ignition system  
(See page G-1).

OK

**3 Check voltage of engine ECU terminal for injector of failed cylinder.**



**PREPARATION:**

- (a) Remove the engine ECU with connectors still connected.
- (b) Turn the ignition switch ON.

**CHECK:**

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

**OK:**

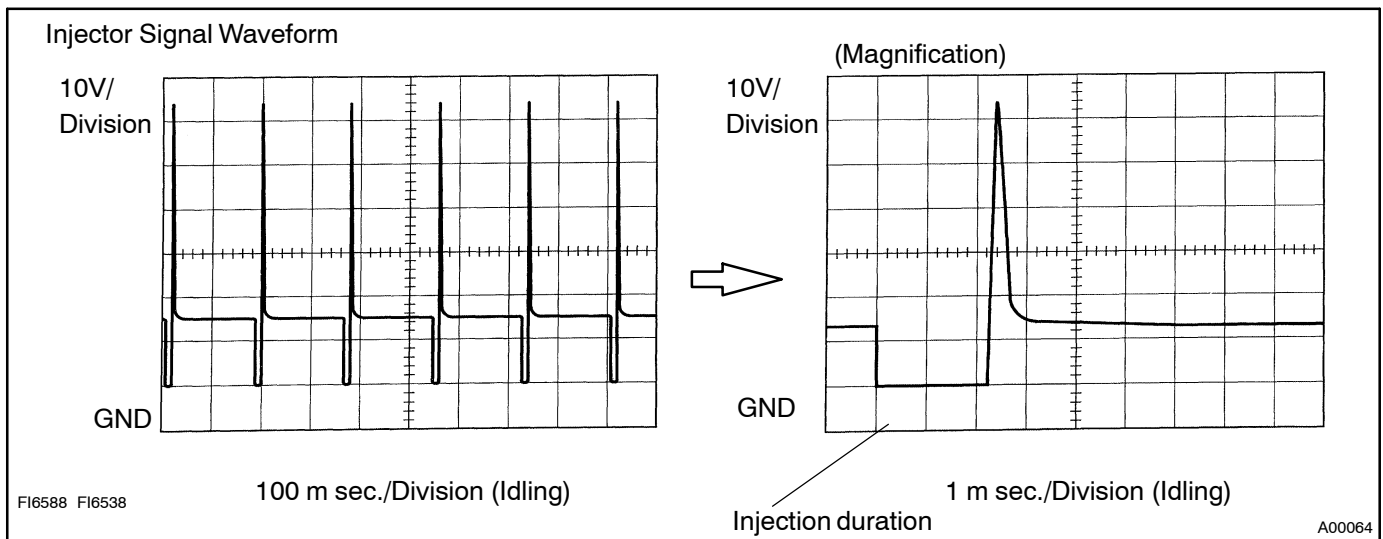
**Voltage: 9 - 14 V**

**Reference INSPECTION USING OSCILLOSCOPE**

With the engine idling, measure between terminals #10 - #120 and E01 (E01R) of the engine ECU connector.

**HINT:**

The correct waveforms are as shown.



**OK** → **Go to step 5.**

**NG**

4 Check resistance of injector of misfiring cylinder (see page FI-18).

NG

Replace injector.

OK

Check for open and short in harness and connector between injector and engine ECU (See page IN-20).

5 Check fuel pressure (See page FI-6).

NG

Check and repair fuel pump, pressure regulator, fuel pipe line and filter (See page FI-6).

OK

6 Check injector injection (See page FI-18).

NG

Replace injector.

OK

7 Check mass air flow meter and engine coolant temp. sensor (See page FI-28 and FI-56).

NG

Repair or replace.

OK

Check compression pressure (See page EM-3), valve clearance (See page EM-4) and valve timing (See page EM-18).