

Diag. Code 14, 15 Ignition Signal Circuit

— CIRCUIT DESCRIPTION —

The ECU determines the ignition timing, turns on Tr1 at a predetermined angle ($^{\circ}$ CA) before the desired ignition timing and outputs an ignition signal (IGT) "1" to the igniter.

Since the width of the IGT signal is constant, the dwell angle control circuit in the igniter determines the time the control circuit starts primary current flow to the ignition coil based on the engine rpm and ignition timing one revolution ago, that is, the time the Tr2 turns on.

When it reaches the ignition timing, the ECU turns Tr1 off and outputs the IGT signal "O".

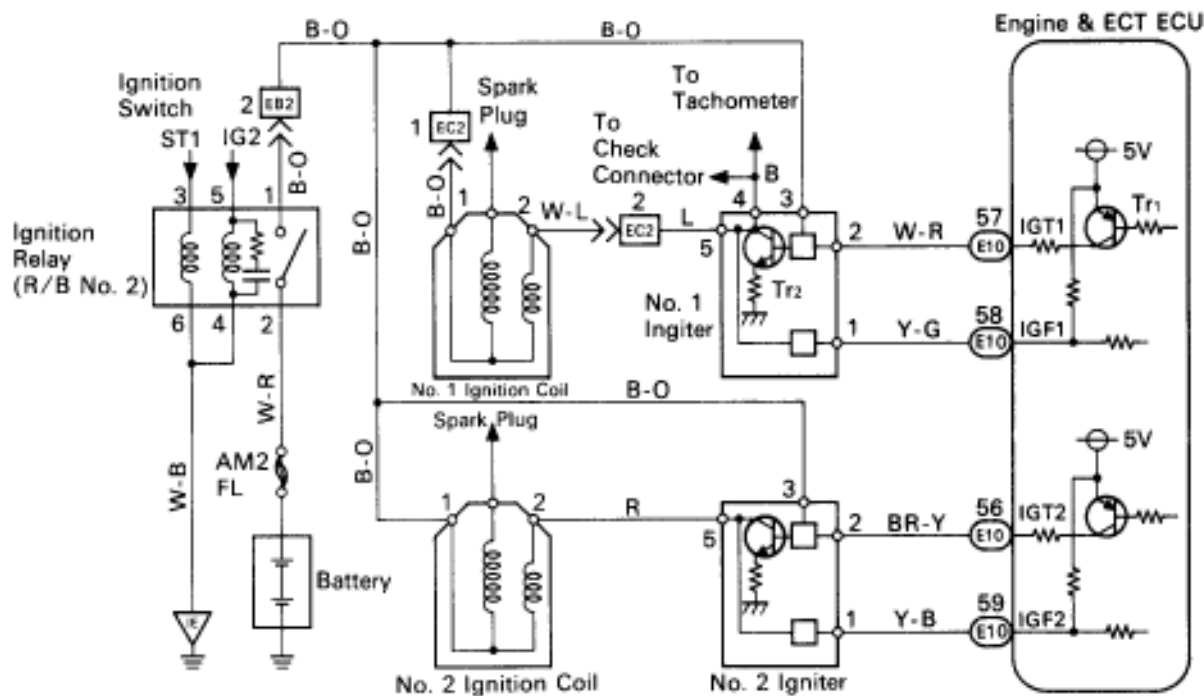
This turns Tr2 off, interrupting the primary current flow and generating a high voltage in the secondary coil which causes the spark plug to spark. Also, by the counter electromotive force generated when the primary current is interrupted, the igniter sends an ignition confirmation signal (IGF) to the ECU.

The ECU stops fuel injection as a fail safe function when the IGF signal is not input to the ECU.

Code No.	Diagnostic Code Detecting Condition	Trouble Area
14	No IGF1 signal to ECU for 8–11 consecutive IGT1 signal.	<ul style="list-style-type: none"> Open or short in IGF1 and IGT1 circuit from No. 1 igniter – ECU. No. 1 igniter ECU
15	No IGF2 signal to ECU for 8–11 consecutive IGT2 signal.	<ul style="list-style-type: none"> Open or short in IGF2 and IGT2 circuit from No. 2 igniter – ECU. No. 2 igniter ECU

HINT: No. 1 igniter is for left bank and No. 2 igniter is for right bank.

WIRING DIAGRAM

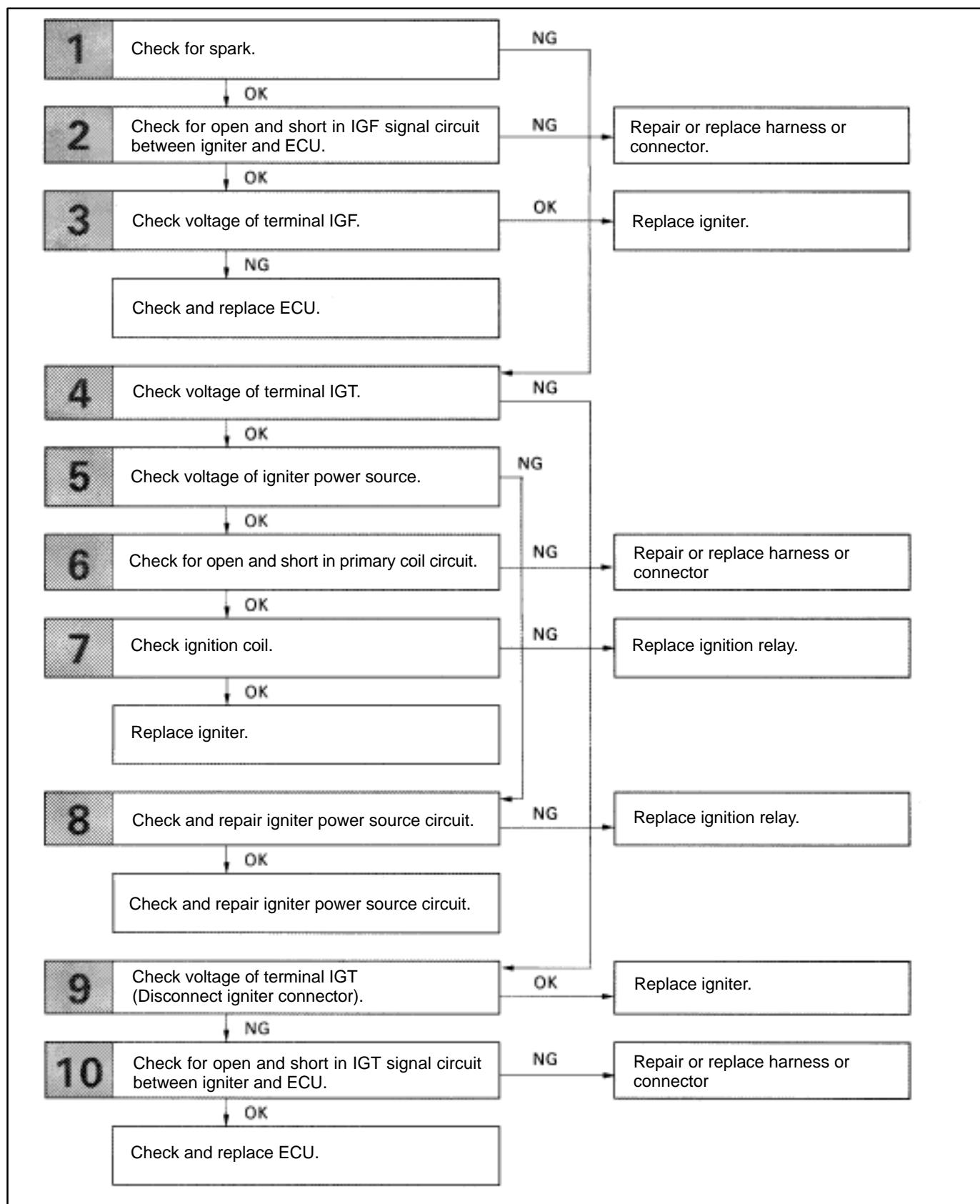


DIAGNOSTIC CHART

Refer to inspection procedure in details.

HINT: If diag. code 14 is displayed, check No. 1 igniter circuit.

If diag. code 15 is displayed, check No. 2 igniter circuit.

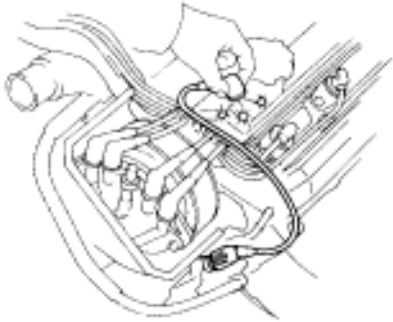


INSPECTION PROCEDURE

HINT: If diag. code 14 is displayed, check No. 1 igniter circuit.

If diag. code 15 is displayed, check No. 2 igniter circuit.

1 Check for Spark.



F14488

C Disconnect the high-tension cord from the distributor, hold its end about 12.5 mm (1/2") from the ground, see if spark occurs while the engine is being cranked.

OK Spark should be generated.

Hint To prevent excessive fuel injected from the injectors during the check. Don't crank the engine for more than 1–2 seconds at a time.

OK

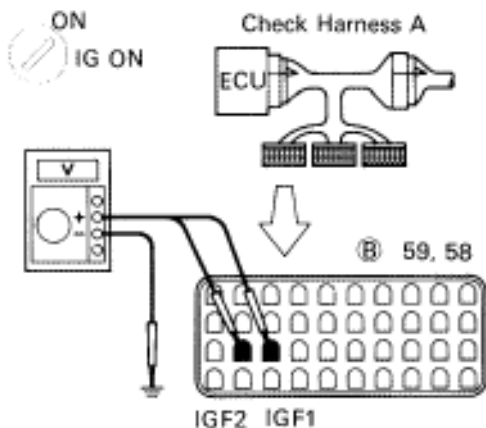
NG Go to step [4].

2 Check for open and short in harness and connector in the IGF and IGT signal circuit between engine & ECT ECU and igniter (See page IN-27)

OK

NG Repair or replace harness or connector.

Disconnect igniter sonnector and check voltage between terminals IGF1, 2 of engine & ECT ECU connector and body ground.

BE6653
F16501

P (2) Disconnect igniter connector.
(2) Connect the Check Harness A.
(See page TR-30).
(2) Turn ignition switch on.

C Measure Voltage between terminals IGF1, 2 or engine & ECT ECU connector and body ground.

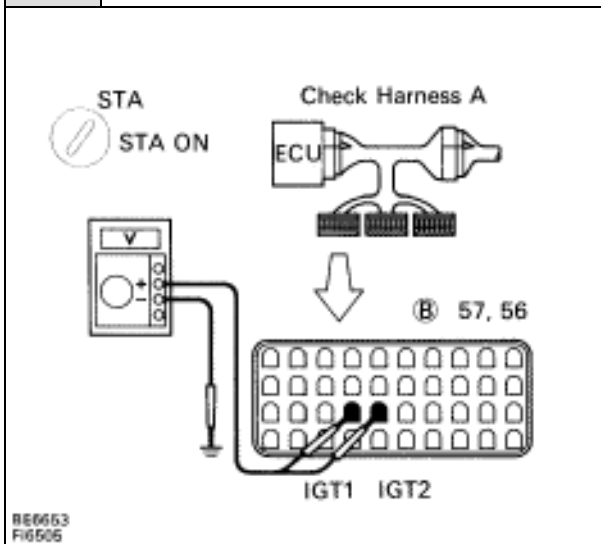
OK Voltage: 4 – 6 V

OK

NG Replace igniter.*1

Check and replace engine & ECT ECU.

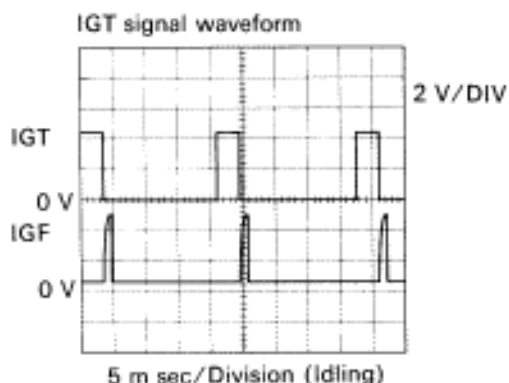
*1: When dia. code 14 is displayed, replace the igniter with 5 wire harness. (extra wire is for tachometer). When diag. code 15 is displayed, replace the igniter with 4 wire harness.

4 Check voltage between terminals IGT1, 2 of engine and & ECT ECU connector and body ground.

P Connect the Check Harness A.
(See page [TR-30](#)).

C Measure voltage between terminals IGT1, 2 of engine & ECT ECU connector and body ground when engine is cranked.

OK Voltage: 0.5 – 1.0 V
(Neither 0 V nor 5 V)

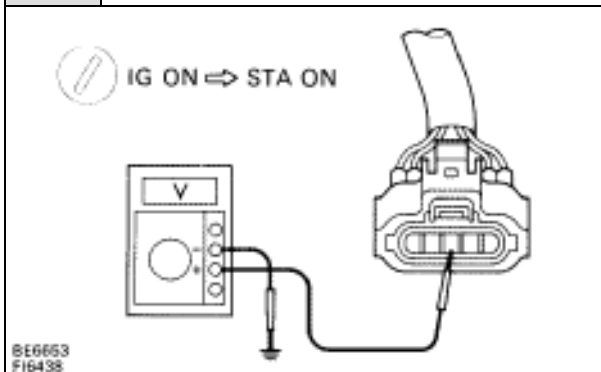
Reference**INSPECTION USING OSCILLOSCOPE**

• During cranking or idling, check waveform between terminals IGT1, IGT2 and E1 of engine & ECT ECU.

HINT: The correct waveform appears as shown in the illustration on the left, with rectangle waves.

OK**NG**

Go to step [9].

5 Check voltage between terminal 3 of No. 1, No. 2 igniter connectors and body ground.

P Disconnect igniter connector.

C Measure voltage between terminal 3 of No. 1, No. 2 igniter connectors and body ground, when ignition switch is turned to "ON" and "STA" position.

OK Voltage: 10 – 14 V

OK**NG**

Go to step [8].

6

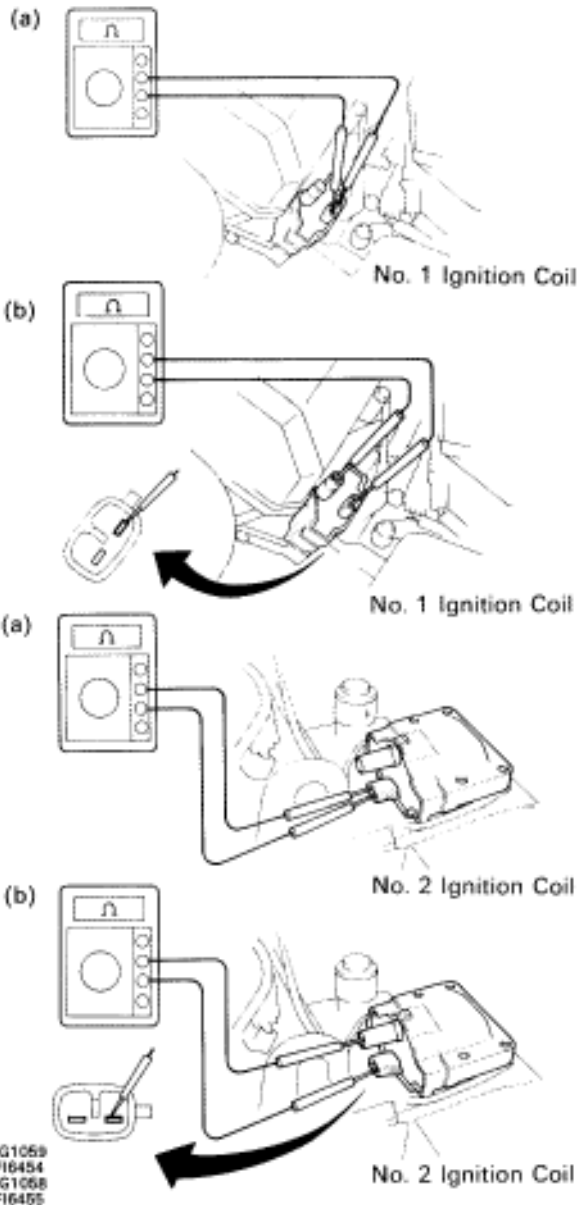
Check for open and short in harness and connector between ignition relay and ignition coil, ignition coil and igniter (See page IN-27).

OK**NG**

Repair or replace harness or connector

#

Check ignition coil.

**P**

Disconnect ignition coil connector.

(For No. 1 ignition coil (on left bank), remove the battery)

C

(2) Check primary coil.

Measure resistance between terminals of ignition coil connector.

(2) Check secondary coil.

Measure resistance between terminal 1 of ignition coil connector and high-tension terminal.

OK

	Resistance
(a) Primary Coil (Cold)	0.40 – 0.50 Ω
(b) Secondary Coil (Cold)	10.2 – 13.8 kΩ

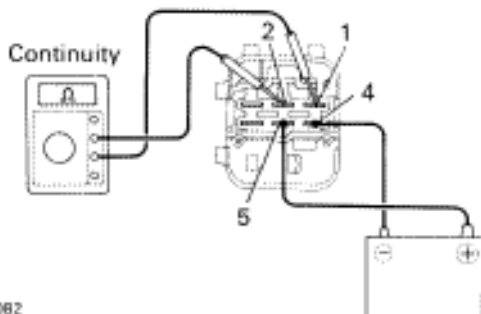
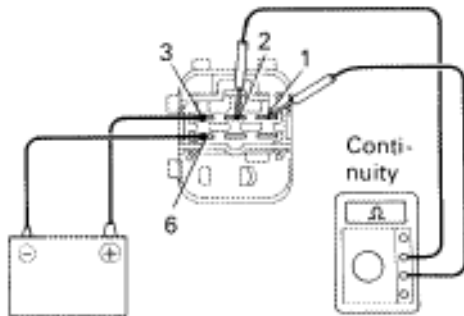
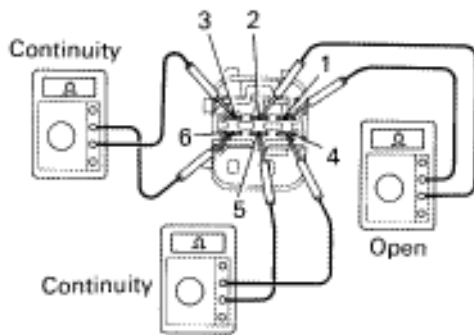
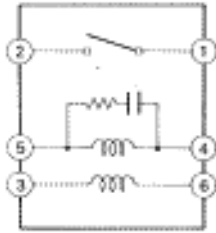
OK**NG**

Replace ignition coil.

Replace Igniter. *1

*1: When diag. code 14 is displayed, replace the igniter with 5 wire harness. (extra wire is for tachometer). When diag. code 15 is displayed, replace the igniter with 4 wire harness

8 Check Ignition Relay.



IG1082
FI4169
FI4170
FI4171

P Remove ignition relay.

C Check continuity between terminals of ignition relay shown below.

OK

Terminals 1 and 2	Open
Terminals 3 and 6	Continuity (Reference value 22 Ω)
Terminals 4 and 5	Continuity (Reference value 107 Ω)

C (2) Apply battery voltage between terminals 3 and 6, 4 and 5.

(2) Check continuity between terminals 1 and 2.

OK

Terminals 1 and 2	Continuity
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OK

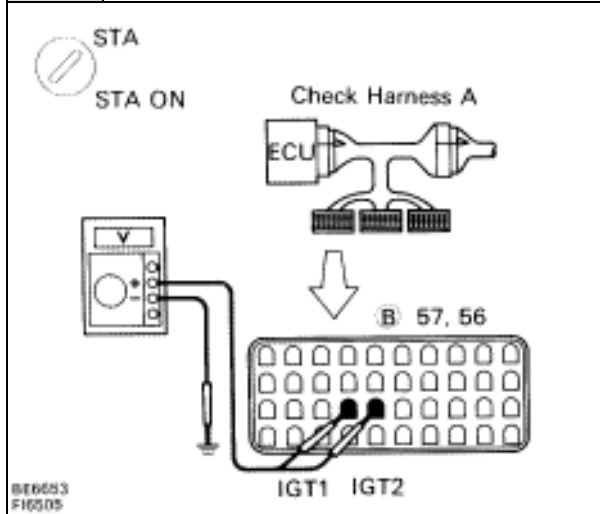
NG

Replace ignition relay.

Check and repair harness or connector between battery and ignition relay, ignition relay and igniter.

9

Disconnect igniter connector and check voltage between terminals IGT1, 2 of engine & ECT ECU connector and body ground.

**P**

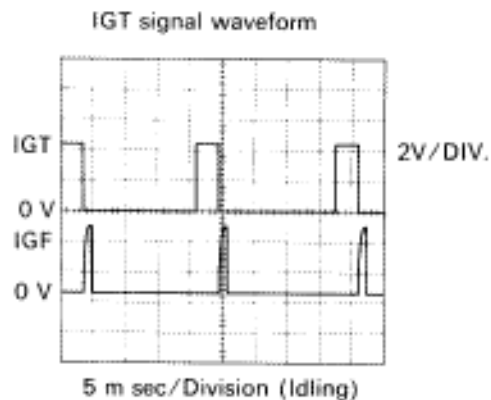
Disconnect igniter connector.
Connect engine & ECT ECU connector.

C

Measure voltage between terminals IGT1, 2 of engine & ECT ECU connector and body ground when engine is cranked.

OK

Voltage: 0.5 – 1.0 V
(Neither 0 V nor 5 V)

Reference**INSPECTION USING OSCILLOSCOPE**

- During cranking or idling, measure between terminals IGT1, IGT2 and E1 of engine & ECT ECU.

HINT: The correct waveform appears as shown in the illustration on the left, with rectangle waves.

NG**OK**

Replace igniter . *1

10

Check for Open and short in harness and connector in IGT signal circuit between engine & ECT ECU and igniter (See page IN-27).

OK**NG**

Repair or replace harness or connector.

Check and replace engine & ECT ECU.

*1: When diag. code 14 is displayed, replace the igniter with 5 wire harness. (extra wire is for tachometer). When diag. code 15 is displayed, replace the igniter with 4 wire harness