DTC	P1300	Igniter Circuit Malfunction (No.1)

DTC	P1305	Igniter Circuit Malfunction (No.2)

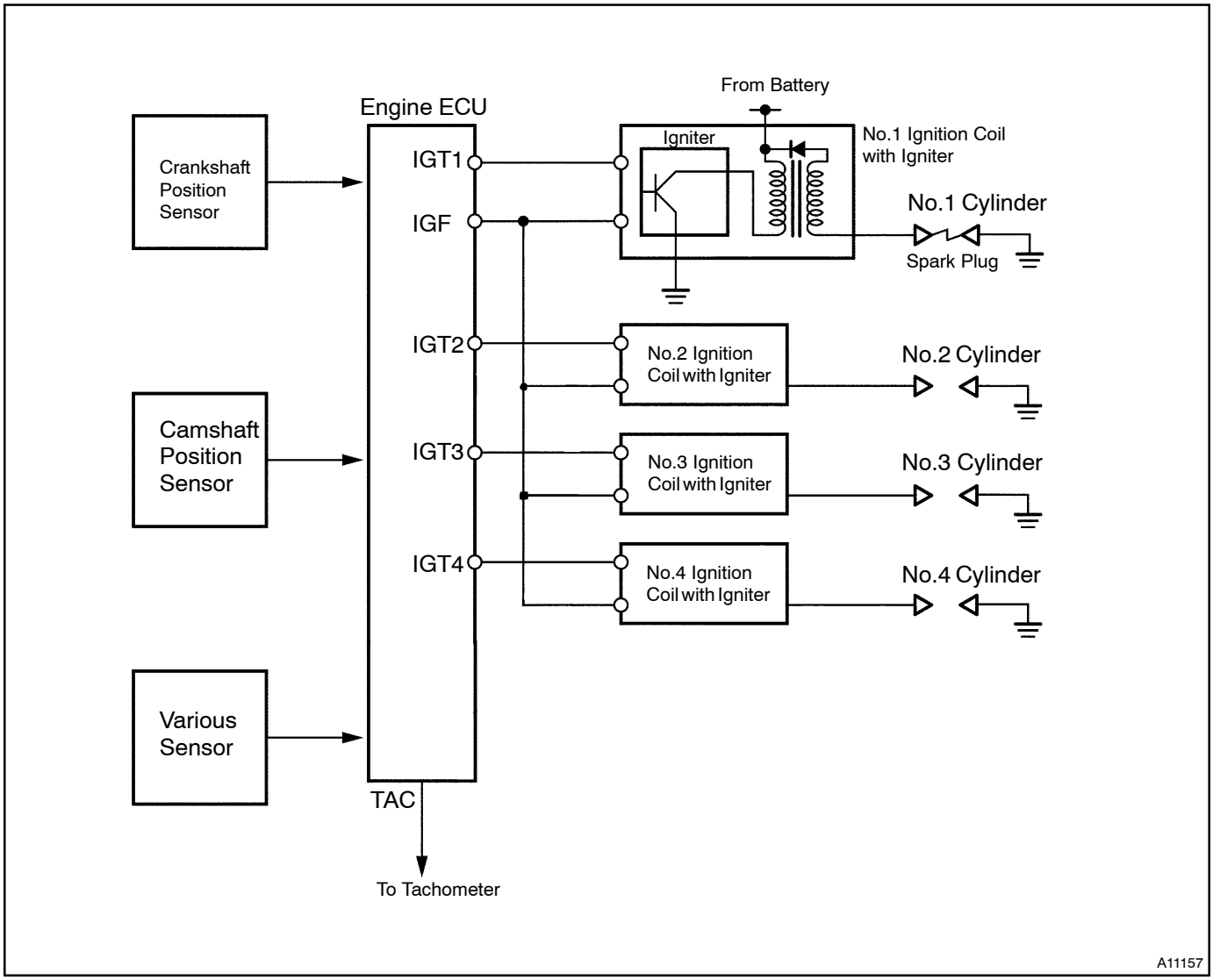
DTC	P1310	Igniter Circuit Malfunction (No.3)

DTC	P1315	Igniter Circuit Malfunction (No.4)

CIRCUIT DESCRIPTION

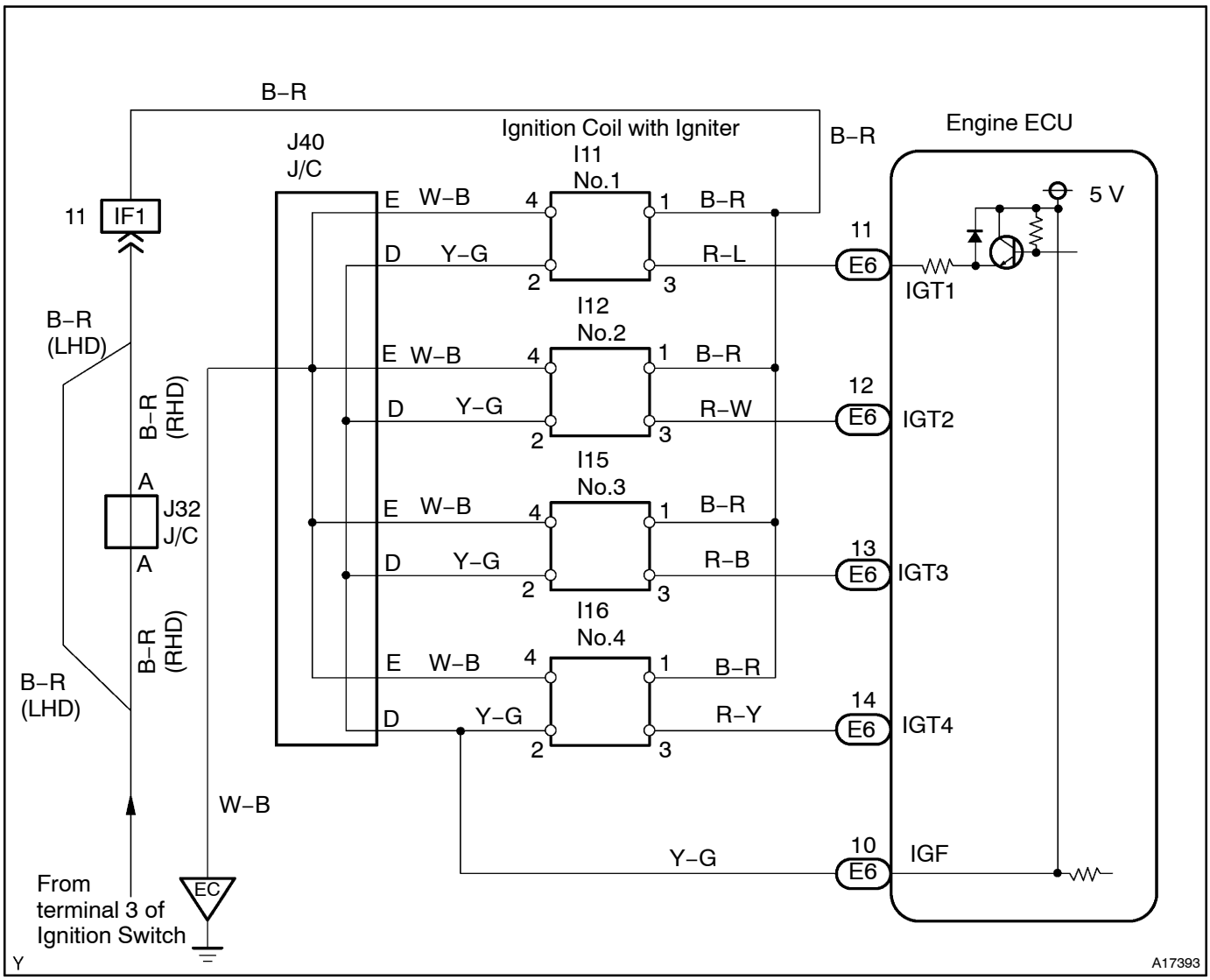
A Direct Ignition System (DIS) has been adopted. The DIS improves the ignition timing accuracy, reduces high–voltage loss, and enhances the the overall reliability of the ignition system by eliminating the distributor. The DIS is a 1–cylinder ignition system which ignites one cylinder with one ignition coil. In the 1–cylinder ignition system, the one spark plug is connected to the end of the secondary winding. High voltage generated in the secondary winding is applied directly to the spark plug. The spark of the spark plug passes from the center electrode to the ground electrode.

The engine ECU determines the ignition timing and outputs the ignition signal (IGT) for each cylinder. Based on the IGT signals, the power transistors in the igniter cuts off the current to the primary coil and high voltage in the ignition coil is supplied to the spark plug connected to the end of the secondary coil. At the same time, the igniter also sends an ignition confirmation signal (IGF) as a fail–safe measure to the engine ECU.



DTC No	DTC Detection Condition	Trouble Area
P1300 P1305 P1310 P1315	No IGF signal to engine ECU while engine is running (1 trip detection logic)	• Ignition system • Open or short in IGF or IGT circuit from ignition coil with igniter to engine ECU • Ignition coil with igniter • Engine ECU

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

- If DTC P1300 is displayed, check No.1 ignition coil with igniter circuit.
- If DTC P1305 is displayed, check No.2 ignition coil with igniter circuit.
- If DTC P1310 is displayed, check No.3 ignition coil with igniter circuit.
- If DTC P1315 is displayed, check No.4 ignition coil with igniter circuit.
- Read freeze frame data using the hand–held tester. Because 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 spark plug and spark of misfiring cylinder (See page DI–66).**

NG → **Go to step 4.**

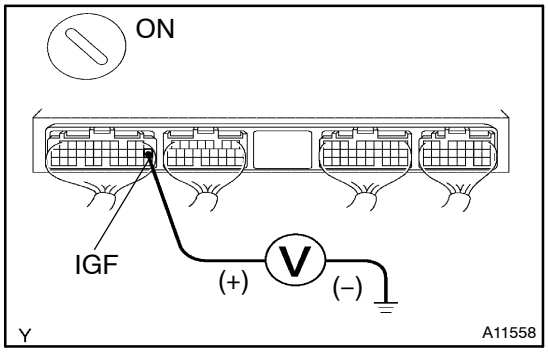
OK

2	**Check for open and short in harness and connector in IGF and IGT signal circuit between engine ECU and ignition coil with igniter (See page IN–19).**

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

OK

3	**Disconnect ignition coil with igniter connector, and check voltage between terminal IGF of engine ECU connector and body ground.**



PREPARATION:

(a) Disconnect the ignition coil with the igniter connector.
(b) Remove the glove compartment.
(c) Turn the ignition switch ON.

CHECK:

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

OK:

Voltage: 4.5 – 5.5 V

OK → **Replace ignition coil with igniter.**

NG

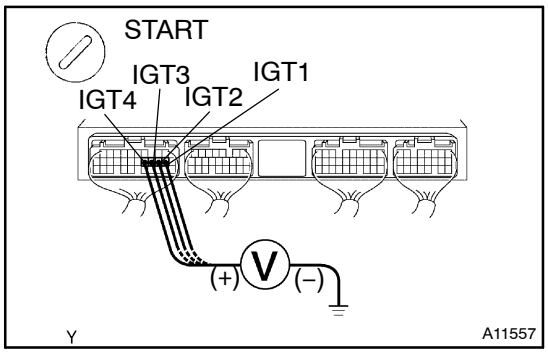
Check and replace engine ECU (See page IN–19).

4	**Check for open and short in harness and connector in IGT signal circuit between engine ECU and ignition coil with igniter (See page IN–19).**

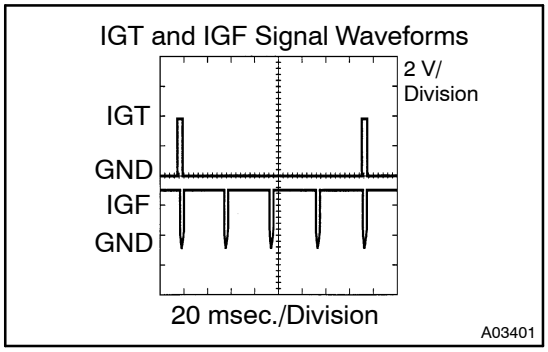
NG → Repair or replace harness or connector.

OK

5	Check voltage between terminals IGT1 – IGT4 of engine ECU connector and body ground.



PREPARATION:
Remove the grove compartment.
CHECK:
Measure the voltage between terminals IGT1 – IGT4 of the engine ECU connector and the body ground when the engine is cranked.
OK:
Voltage: More than 0.1 V and less than 4.5 V

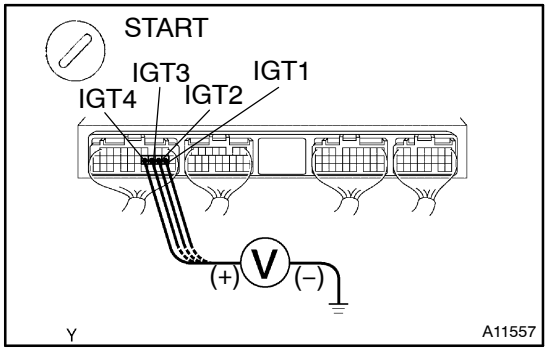


Reference: INSPECTION USING OSCILLOSCOPE
During idling, check the waveforms between terminals IGT1 – IGT4 and E1, IGF and E1 of the engine ECU connector.
HINT:
The correct waveforms are shown, in the illustration.

NG → **Check and replace engine ECU (See page IN–19).**

OK

6	Disconnect ignition coil with igniter connector, and check voltage between terminals IGT1 – IGT4 of engine ECU connector and body ground.

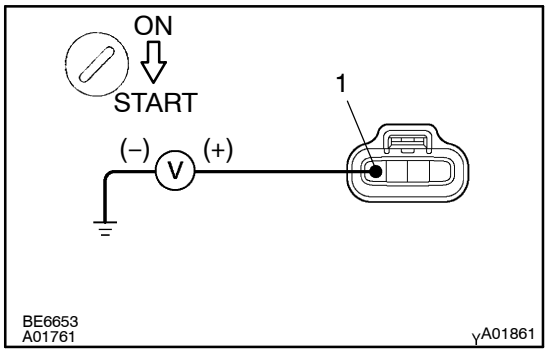


PREPARATION:
(a) Disconnect the ignition coil with the igniter connector.
(b) Remove the glove compartment.
CHECK:
Measure the voltage between terminals IGT1 – IGT4 of the engine ECU connector and the body ground when the engine is cranked.
OK:
Voltage: More than 0.1 V and less than 4.5 V

NG	Check and replace engine ECU (See page IN–19).

OK

7	Check ignition coil with igniter power source circuit.



PREPARATION:
Disconnect the ignition coil with the igniter connector.
CHECK:
Measure the voltage between terminal 1 of the ignition coil with the igniter connector and the body ground when the ignition switch is turned to ON and STA position.
OK:
Voltage: 9 – 14 V

NG	Repair ignition coil with igniter power source circuit.

OK

8	Check for open and short in harness and connector between ignition switch and ignition coil with igniter (See page IN–19).

NG	Repair or replace harness or connector.

OK

Replace ignition coil with igniter.