DTC	P1300/14	IGNITER CIRCUIT MALFUNCTION(NO.1)

DTC	P1305/15	IGNITER CIRCUIT MALFUNCTION(NO.2)

DTC	P1310/15	IGNITIER CIRCUIT MALFUNCTON(NO.3)

DTC	P1315/14	IGNITER CIRCUIT MALFUNCTION(No.4)

DTC	P1320/14	IGNITER CIRCUIT MALFUNCTION(NO.5)

DTC	P1325/15	IGNITER CIRCUIT MALFUNCTION(NO.6)

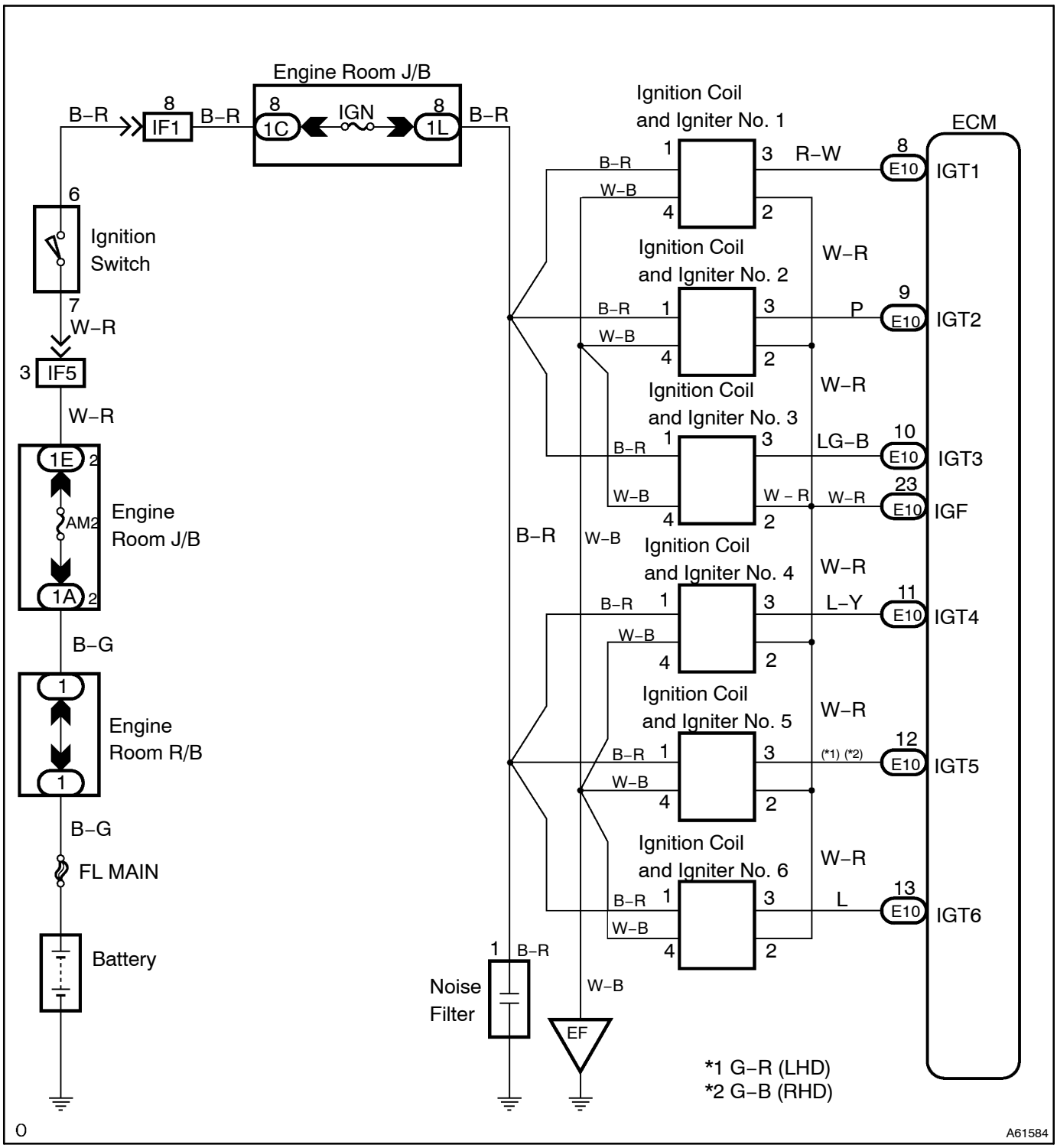
CIRCUIT DESCRIPTION

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 pass from the center electrode to the ground electrode.

The ECM determines ignition timing and outputs the ignition signals (IGT) for each cylinder. Based on IGT signals, the power transistors in the igniter cuts off the current to the primary coil in the ignition coil is supplied to the spark plug that are 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 ECM.

DTC No.	DTC Detecting Condition	Trouble Area
P1300/14 P1305/15 P1310/15 P1315/14 P1320/14 P1325/15	No IGF signal to engine ECM while engine is running	• Ignition system • Open or short in IGF and IGT1 – 6 circuit from ignition coil with igniter • No.1 – No.6 ignition coil with igniter • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

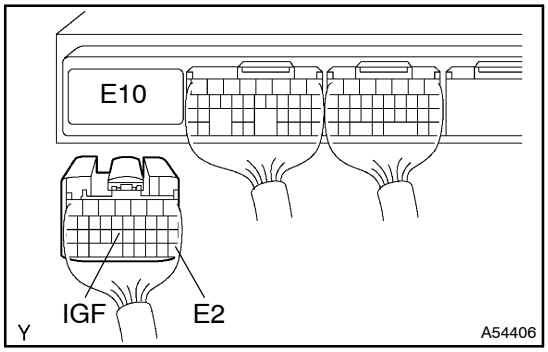
- If DTC P1300 is displayed, check No.1 ignition coil with igniter circuit.
- If DTC P1305 is displayed, check No.2 ignition coil with igniter circuit.
- If DTC P1310 is displayed, check No.3 ignition coil with igniter circuit.
- If DTC P1315 is displayed, check No.4 ignition coil with igniter circuit.
- If DTC P1320 is displayed, check No.5 ignition coil with igniter circuit.
- If DTC P1325 is displayed, check No.6 ignition coil with igniter circuit.
- Read freeze frame data using 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	CHECK SPARK PLUG (See page 18–6)

NG → Go to step 4

OK

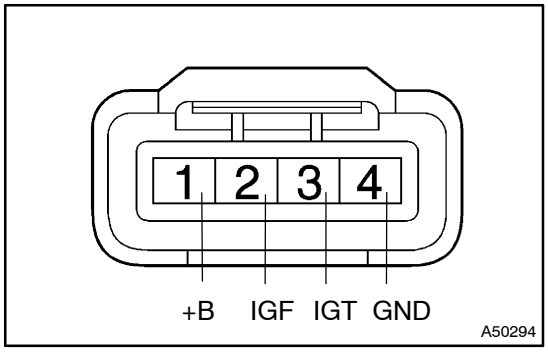
2	CHECK HARNESS AND CONNECTOR(ECM – IGNITION COIL)



HINT:

The procedure below is for No.1 cylinder. If a malfunction is found on the other cylinders, check the circuit for the cylinder with referring to this procedure.

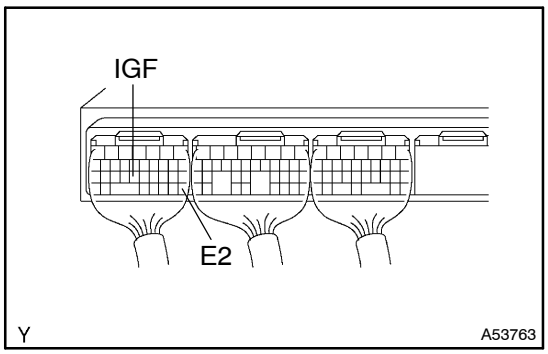
(a) Disconnect the ignition coil connector.
(b) Disconnect the ECM E10 connector.
(c) Check for open between the terminals IGF of the ECM connector and IGF of the ignition coil connector.
Resistance: 1 Ω or less
(d) Check for short between the terminals IGF and E2 of the ECM connector.
Resistance: 1 MΩ or less



NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

3	INSPECT ECM



(a) Disconnect the ignition coil connector.
(b) Turn the ignition switch ON
(c) Measure voltage between the terminals IGF and E2 of the ECM connector.
Voltage: 4.5 – 5.5 V

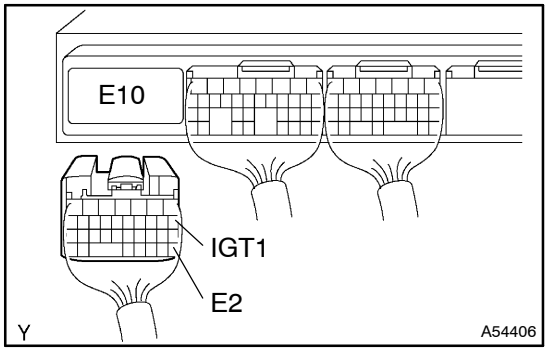
OK	REPLACE IGNITION COIL ASSY

NG

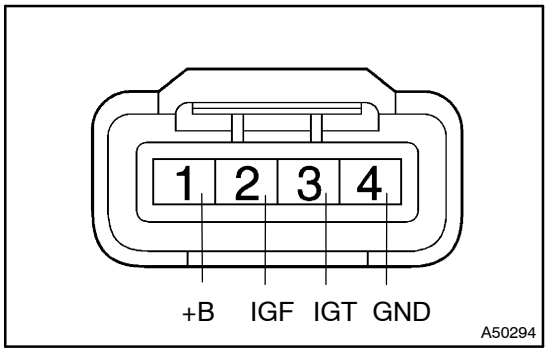
CHECK AND REPLACE ECM

4	CHECK HARNESS AND CONNECTOR(ECM – IGNITION COIL)

HINT:
The procedure below is for No.1 cylinder. If a malfunction is found on the other cylinders, check the circuit for the cylinder with referring to this procedure.



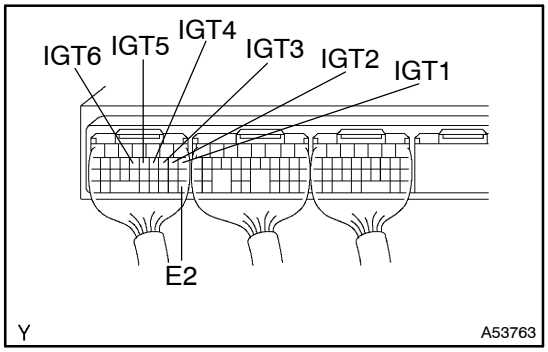
(a) Disconnect the ignition coil connector.
(b) Disconnect the ECM E10 connector.
(c) Check for open between the terminals IGT1 of the ECM connector and IGT of the ignition coil connector.
Resistance: 1 Ω or less
(d) Check for short between the terminals IGT1 and E2 of the ECM connector.
Resistance: 1 MΩ or less

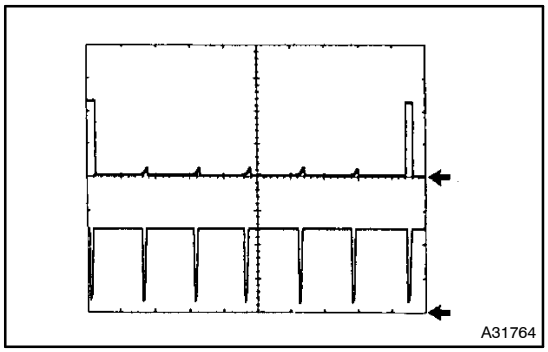


NG	REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

5 INSPECT ECM





(a) Turn the ignition switch ON.
(b) Measure the voltage between terminals IGT1 – IGT6 and E2 of the ECM connector when the engine is cranked.
Voltage: More than 0.1 V and less than 4.5 V

HINT:
During cranking or idling, check the waveform between terminals IGT1 – IGT6 and E2 of the ECM connector.

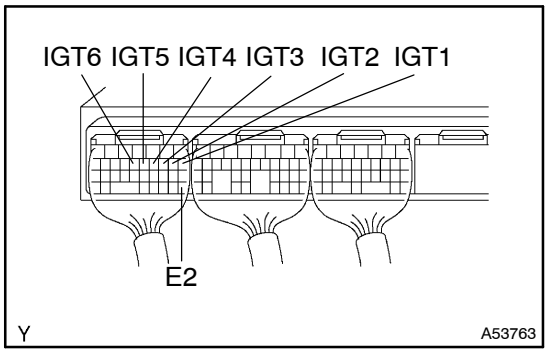
Item	Contents
Terminal	CH1: IGT1, IGT2, IGT3, IGT4, IGT5, IGT6 – E2 CH2: IGF – E2
Equipment Set	2V/DIV, 20ms/DIV
Condition	While the engine is cranking or idling

HINT:
Correct waveform appears as shown, with rectangle waves.

NG → **CHECK AND REPLACE ECM**

OK

6 INSPECT ECM

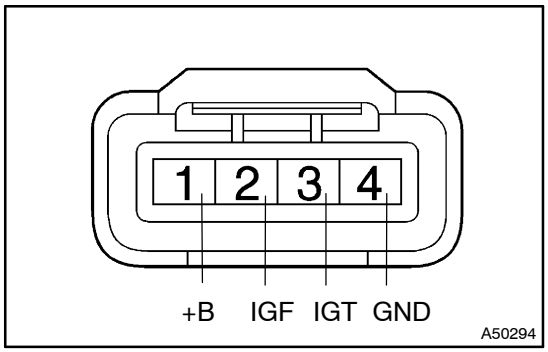


(a) Disconnect the ignition coil with the igniter connector.
(b) Turn the ignition switch ON.
(c) Measure the voltage between terminals IGT1 – IGT6 and E2 of the ECM connector when the engine is cranked.
Voltage: More than 0.1 V and less than 4.5 V

NG → **CHECK AND REPLACE ECM**

OK

7 CHECK IGNITION COIL ASSY(POWER SOUSE CIRCUIT)

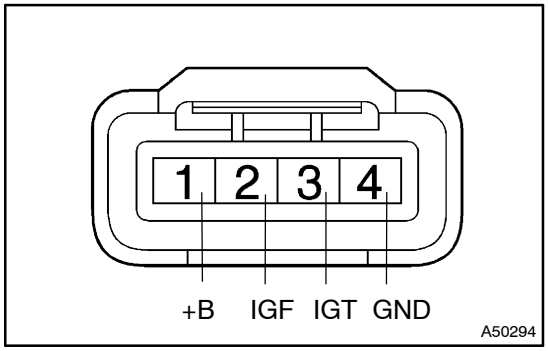


(a) Disconnect the ignition coil with the igniter connector.
(b) Turn the ignition switch ON.
(c) Measure voltage between terminals+B and GND of the ignition coil with the igniter connector.
Voltage: 9 – 14 V

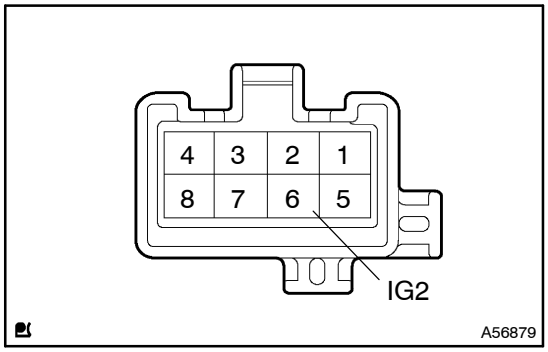
NG → REPAIR OR REPLACE POWER SOURCE

OK

8	CHECK HARNESS AND CONNECTOR(IGUNITION SWITCH – IGNITION COIL)



(a) Disconnect the ignition coil with the igniter connector.
(b) Disconnect the ignition switch connector.
(c) Check open between the terminals +B of the ignitioncoil with igniter connector and IG2 of the ignition switch.
Resistance: 1 Ω or less



NG → REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE IGNITION COIL ASSY