DI136–15

DTC	P0351	Ignition Coil ”A” Primary/Secondary Circuit

DTC	P0352	Ignition Coil ”B” Primary/Secondary Circuit

DTC	P0353	Ignition Coil ”C” Primary/Secondary Circuit

DTC	P0354	Ignition Coil ”D” Primary/Secondary Circuit

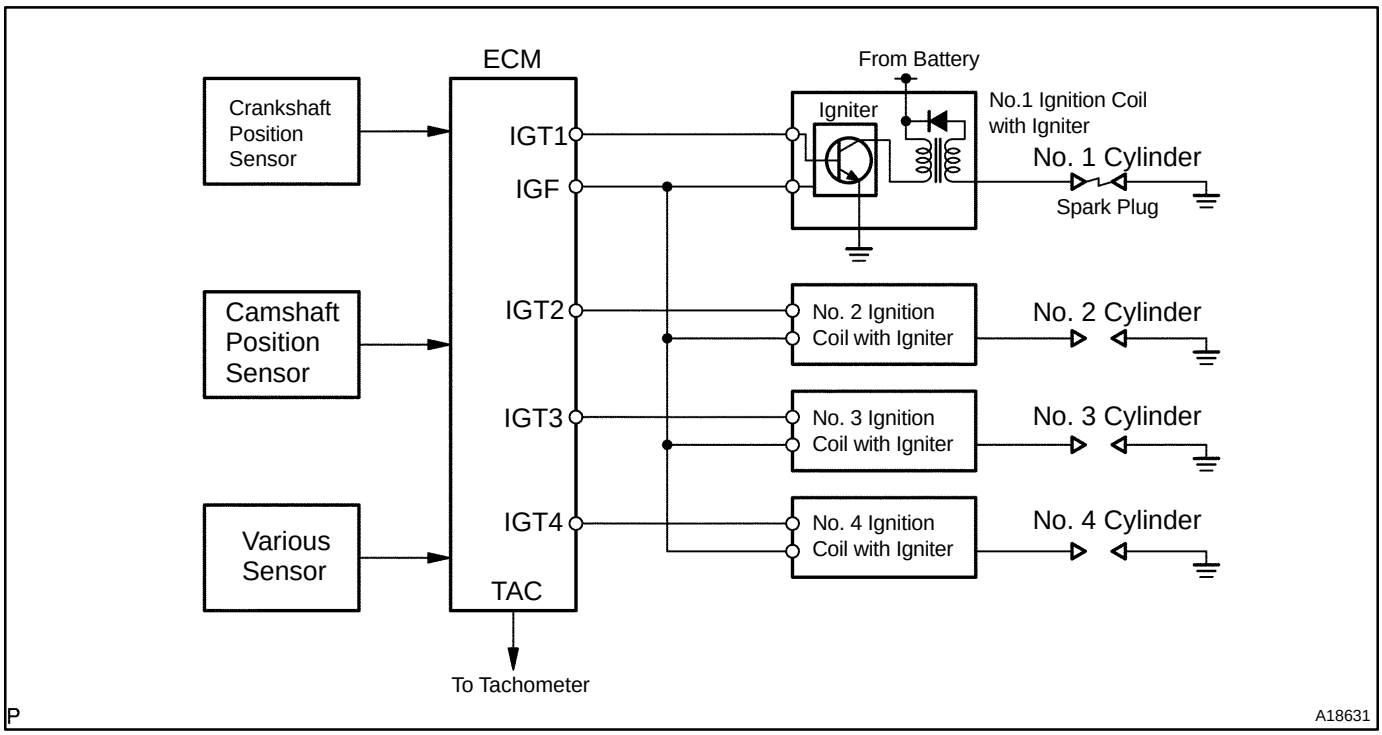
CIRCUIT DESCRIPTION

HINT:

- There DTCs indicate a malfunction related to primary circuit.
- If DTC P0351 is displayed, check No. 1 ignition coil with igniter circuit.
- If DTC P0352 is displayed, check No. 2 ignition coil with igniter circuit.
- If DTC P0353 is displayed, check No. 3 ignition coil with igniter circuit.
- If DTC P0354 is displayed, check No. 4 ignition coil with igniter circuit.

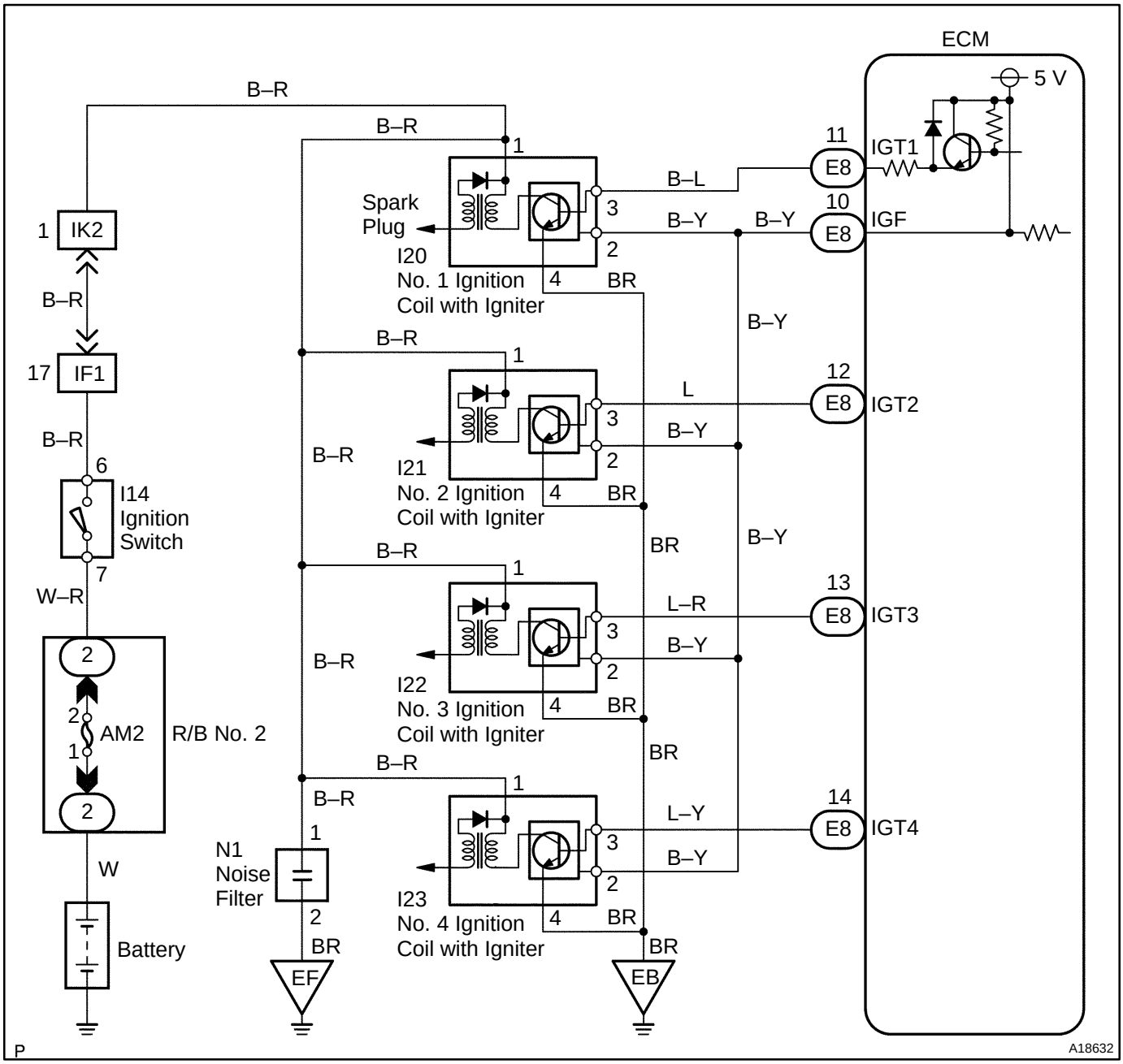
A Direct Ignition System (DIS) has been adopted. The DIS improves the ignition timing accuracy, reduces high–voltage loss, and enhances the the overall reliability of the ignition system by eliminating the distributor. The DIS is a 1–cylinder ignition system which ignites one cylinder with one ignition 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 signal (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 Detection Condition	Trouble Area
P0351 P0352 P0353 P0354	No IGF signal to ECM while engine is running	• Ignition system • Open or short in IGF and IGT circuit from ignition coil with igniter • Ignition coil with igniter • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand–held tester or the OBD II scan tool, as 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–77).**

NG → **Go to step 4.**

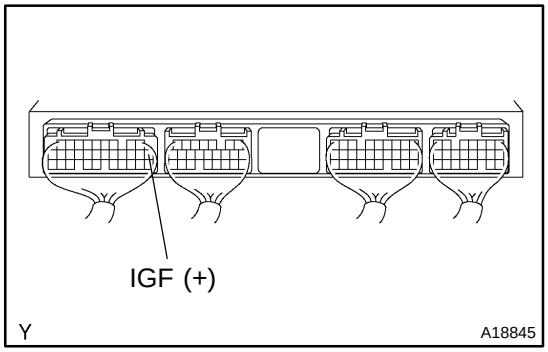
OK

2	**Check for open and short in harness and connector in IGF and IGT signal circuit between ECM and ignition coil with igniter (See page IN–28).**

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

OK

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



PREPARATION:

(a) Disconnect the ignition coil with the igniter connector.
(b) Remove the glove compartment (See page SF–55).
(c) Turn the ignition switch ON.

CHECK:

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

OK:

Voltage: 4.5 – 5.5 V

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

NG

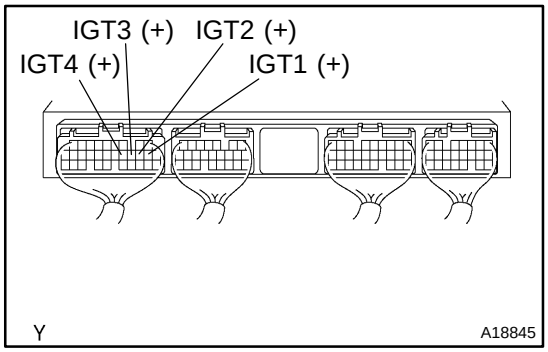
Check and replace ECM (See page IN–28).

4	**Check for open and short in harness and connector in IGT signal circuit between ECM and ignition coil with igniter (See page IN–28).**

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

OK

5	Disconnect ignition coil with igniter connector, and check voltage between terminals IGT1 – IGT4 of ECM connector and body ground.



PREPARATION:

(a) Disconnect the ignition coil with the igniter connector.

(b) Remove the glove compartment (See page SF–55).

CHECK:

Measure the voltage between terminals IGT1 – IGT4 of the ECM connector and the body ground when the engine is cranked.

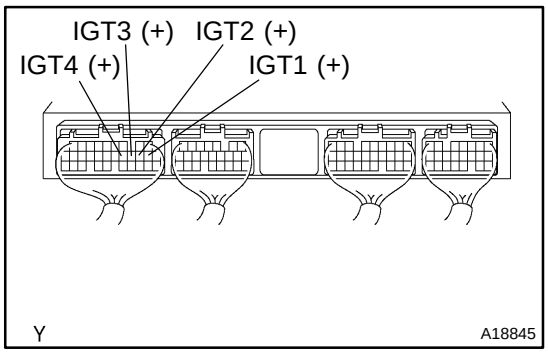
OK:

Voltage: More than 0.1 V and less than 4.5 V

NG	Check and replace ECM (See page IN–28).

OK

6	Check voltage between terminals IGT1 – IGT4 of ECM connector and body ground.



PREPARATION:

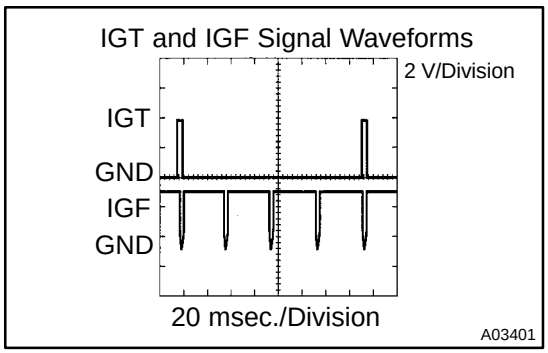
Remove the grove compartment (See page SF–55).

CHECK:

Measure the voltage between terminals IGT1 – IGT4 of the ECM 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, and IGF and E1 of the ECM connector.

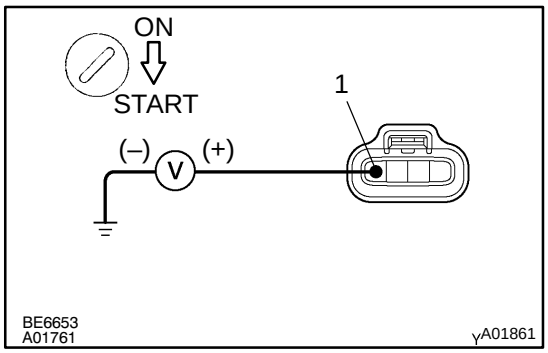
HINT:

The correct waveforms are as shown.

NG	Replace ignition coil with igniter.

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–28).

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

OK

Replace ignition coil with igniter.