

DTC	P0351	Igniter Coil "A" Primary/Secondary Circuit
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DTC	P0352	Igniter Coil "B" Primary/Secondary Circuit
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DTC	P0353	Igniter Coil "C" Primary/Secondary Circuit
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DTC	P0354	Igniter Coil "D" Primary/Secondary Circuit
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DTC	P0355	Igniter Coil "E" Primary/Secondary Circuit
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DTC	P0356	Igniter Coil "F" Primary/Secondary Circuit
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DTC	P0357	Igniter Coil "G" Primary/Secondary Circuit
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DTC	P0358	Igniter Coil "H" Primary/Secondary Circuit
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HINT:

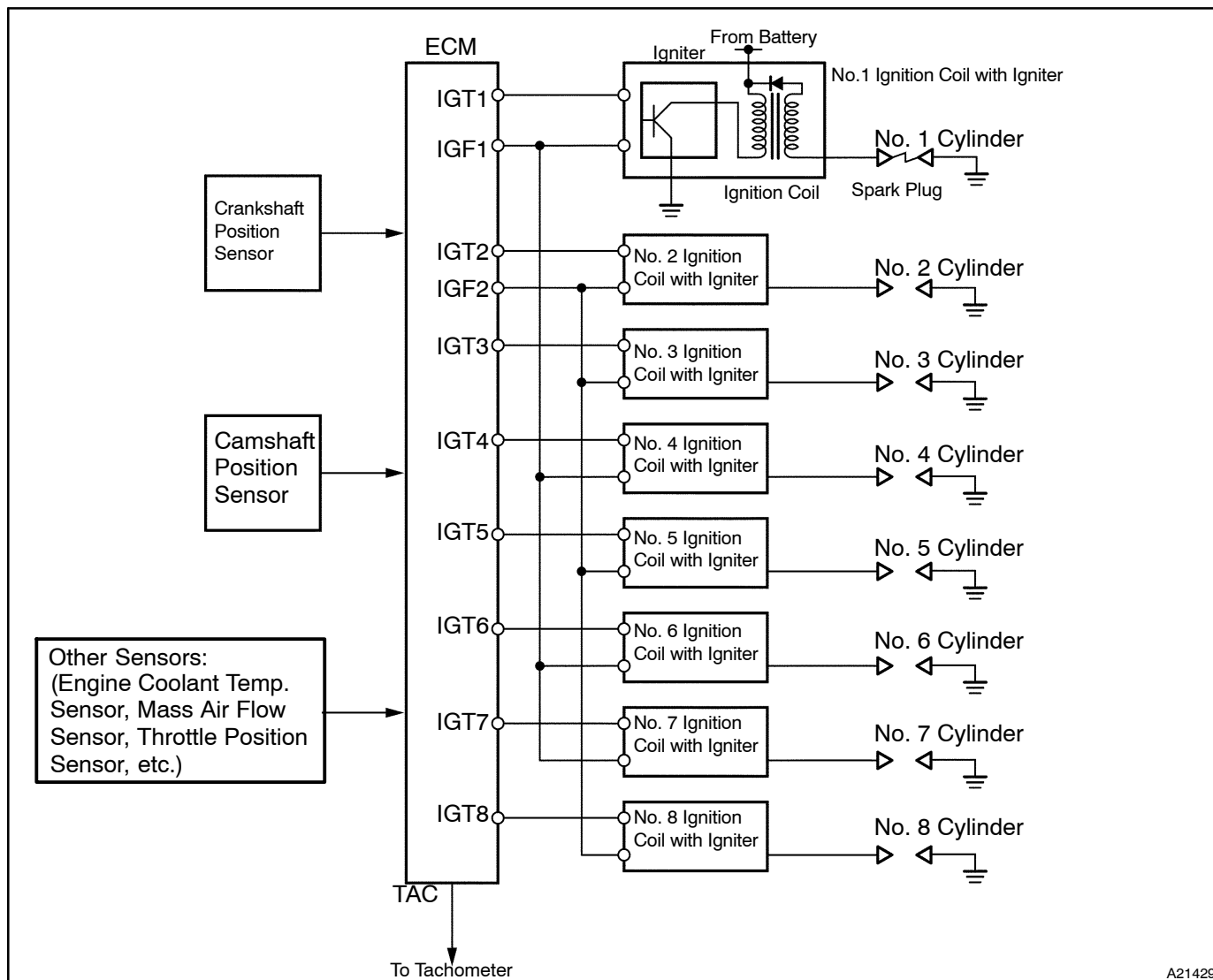
- These DTCs indicate a malfunction related to primary circuit.
- If DTC P0351 is displayed, check No. 1 ignition coil with igniter circuit.
- If DTC P0352 is displayed, check No. 2 ignition coil with igniter circuit.
- If DTC P0353 is displayed, check No. 3 ignition coil with igniter circuit.
- If DTC P0354 is displayed, check No. 4 ignition coil with igniter circuit.
- If DTC P0355 is displayed, check No. 5 ignition coil with igniter circuit.
- If DTC P0356 is displayed, check No. 6 ignition coil with igniter circuit.
- If DTC P0357 is displayed, check No. 7 ignition coil with igniter circuit.
- If DTC P0358 is displayed, check No. 8 ignition coil with igniter circuit.

CIRCUIT DESCRIPTION

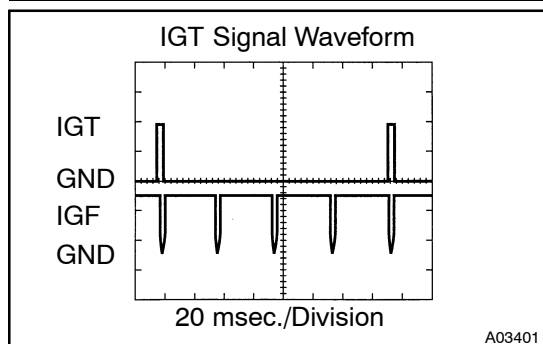
These DTCs indicate a malfunction related to primary circuit.

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 ECM determines the ignition timing and outputs the ignition signals (IGTs) for each cylinder. Using the IGT, the ECM turns on and off the power transistor inside the igniter and this switches on and off the current to the primary coil. When current to the primary coil is cut off, high-voltage is generated in the secondary coil and this voltage is applied to the spark plugs to create sparks inside the cylinders. As the ECM cuts the current to the primary coil, the igniter sends back the ignition confirmation signal (IGF) for each cylinder ignition to the ECM.

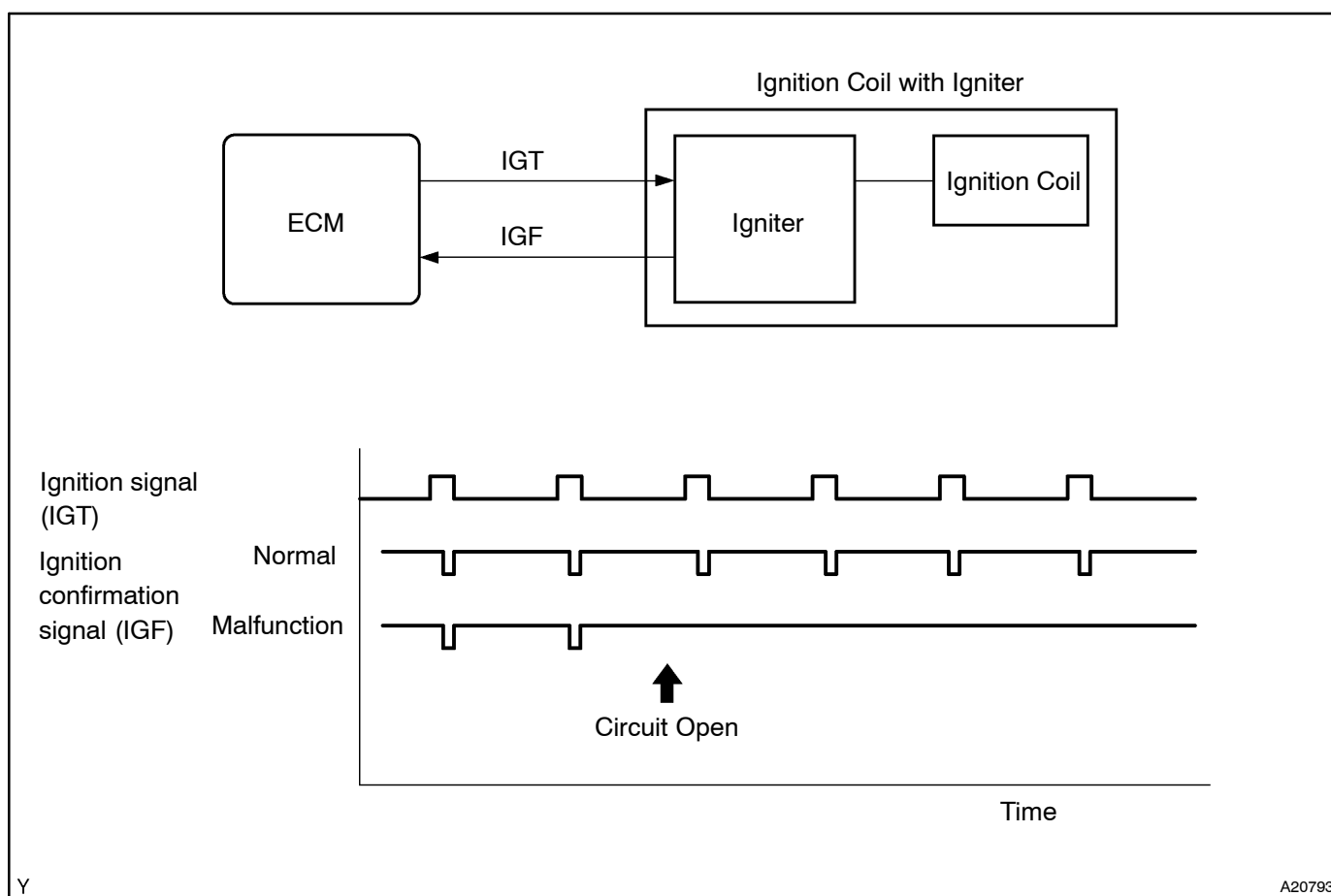


DTC No.	DTC Detecting Condition	Trouble Area
P0351 P0352 P0353 P0354 P0355 P0356 P0357 P0358	No IGF signal to ECM while engine is running	• Open or short in IGF1 or IGF2 and IGT1 to IGT8 circuit from ignition coil with igniter to ECM • No. 1 to No. 8 ignition coil with igniter • Ignition system • ECM


Reference: Inspection using the oscilloscope.

During cranking or idling, check the waveform between terminals IG1 to IG8 and E1, and IGF1, IGF2 and E1 of the E5 and E7 ECM connectors.

MONITOR DESCRIPTION



If the ECM does not receive the IGF after sending the IGT it interprets this as a fault in the igniter and sets a DTC.

MONITOR STRATEGY

Related DTCs	P0351	No. 1 ignition coil with igniter circuit malfunction
	P0352	No. 2 ignition coil with igniter circuit malfunction
	P0353	No. 3 ignition coil with igniter circuit malfunction
	P0354	No. 4 ignition coil with igniter circuit malfunction
	P0355	No. 5 ignition coil with igniter circuit malfunction
	P0356	No. 6 ignition coil with igniter circuit malfunction
	P0357	No. 7 ignition coil with igniter circuit malfunction
	P0358	No. 8 ignition coil with igniter circuit malfunction
Required sensors/components	Igniter	
Frequency of operation	Continuous	
Duration	0.256 sec.	
MIL operation	Immediate	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever the following DTCs are not present	See "List of disable a monitor" (on page DI-3)	
Engine speed	–	1,500 rpm
Either of the following conditions is met:	A or B	
A. Following conditions are met:	(a) and (b)	
(a) Engine speed	–	500 rpm
(b) Battery voltage	6 V	–
B. Following conditions are met:	(a) and (b)	
(a) Engine speed	500 rpm	–
(b) Battery voltage	10 V	–

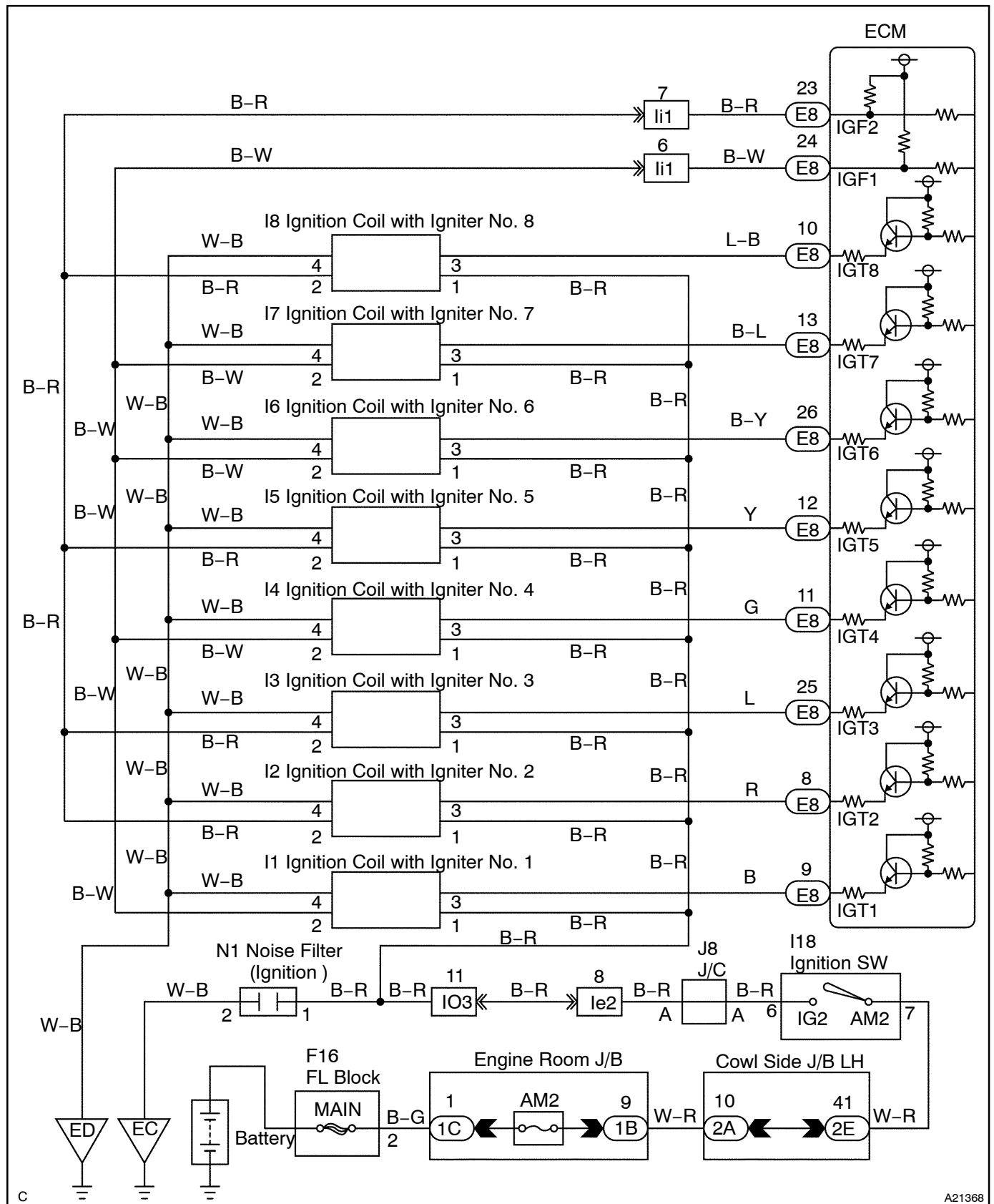
TYPICAL MALFUNCTION THRESHOLDS

Detection Criteria	Threshold
"Ignition signal fail count"	More than 2
"Ignition signal fail count" is as follows:	When IGF should have returned despite sending IGT.

COMPONENT OPERATING RANGE

Standard Value
Confirmed signal number = ignition signal number

WIRING DIAGRAM



A21368

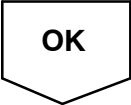
INSPECTION PROCEDURE

HINT:

- If DTCs P0351, P0354, P0356 and P0357 are output simultaneously, IGF1 circuit may be open or short.
- If DTCs P0352, P0353, P0355 and P0358 are output simultaneously, IGF2 circuit may be open or short.
- Read freeze frame data using the hand-held tester or the OBD II scan tool. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, as well as other data from the time when a malfunction occurred.

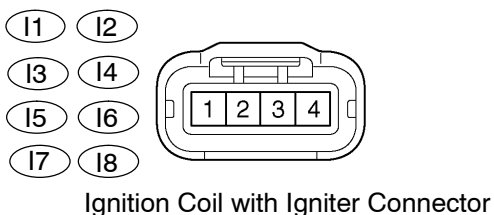
1	Check spark plug and spark (See page IG-1).
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NG	Go to step 4.
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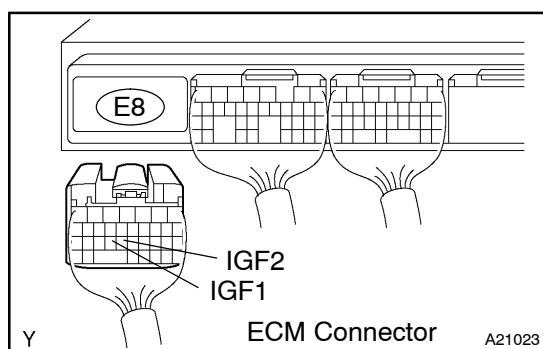
2 Check for open and short in harness and connector in IGF signal circuits between ECM and ignition coil with igniter.

Wire Harness Side:



Y

A21025



Y

A21023

PREPARATION:

- Disconnect the I1, I2, I3, I4, I5, I6, I7 or I8 ignition coil with igniter connector.
- Disconnect the E8 ECM connector.

CHECK:

Check the resistance between the wire harness side connectors.

OK:

Tester Connection	Specified Condition
Ignition coil (I1-2) - IGF1 (E8-24)	Below 1 Ω
Ignition coil (I2-2) - IGF2 (E8-23)	Below 1 Ω
Ignition coil (I3-2) - IGF1 (E8-24)	Below 1 Ω
Ignition coil (I4-2) - IGF2 (E8-23)	Below 1 Ω
Ignition coil (I5-2) - IGF1 (E8-24)	Below 1 Ω
Ignition coil (I6-2) - IGF2 (E8-23)	Below 1 Ω
Ignition coil (I7-2) - IGF1 (E8-24)	Below 1 Ω
Ignition coil (I8-2) - IGF2 (E8-23)	Below 1 Ω
Ignition coil (I1-2) or IGF1 (E8-24) - Body ground	10 k Ω or higher
Ignition coil (I2-2) or IGF2 (E8-23) - Body ground	10 k Ω or higher
Ignition coil (I3-2) or IGF1 (E8-24) - Body ground	10 k Ω or higher
Ignition coil (I4-2) or IGF2 (E8-23) - Body ground	10 k Ω or higher
Ignition coil (I5-2) or IGF1 (E8-24) - Body ground	10 k Ω or higher
Ignition coil (I6-2) or IGF2 (E8-23) - Body ground	10 k Ω or higher
Ignition coil (I7-2) or IGF1 (E8-24) - Body ground	10 k Ω or higher
Ignition coil (I8-2) or IGF2 (E8-23) - Body ground	10 k Ω or higher

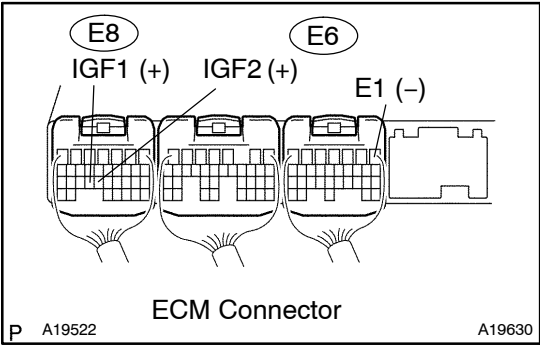
NG

Repair or replace harness or connector.

OK

3

Disconnect ignition coil with igniter connector, and check voltage between terminals IGF1, IGF2 and E1 of ECM connector.



- PREPARATION:**
- (a) Disconnect the I1, I2, I3, I4, I5, I6, I7 or I8 ignition coil with igniter connector.
 - (b) Turn the ignition switch ON.

CHECK:
Measure the voltage between the E6 and E8 ECM connectors.

Tester Connection	Specified Condition
IGF1 (E8-24) – E1 (E6-1)	4.5 to 5.5 V
IGF2 (E8-23) – E1 (E6-1)	4.5 to 5.5 V

OK

NG

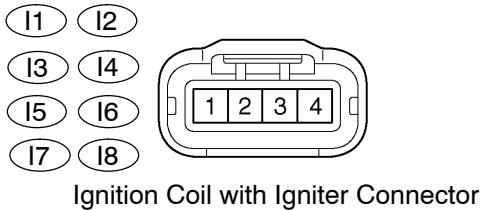
Replace ECM (See page [SF-60](#)).

Replace ignition coil with igniter.

4

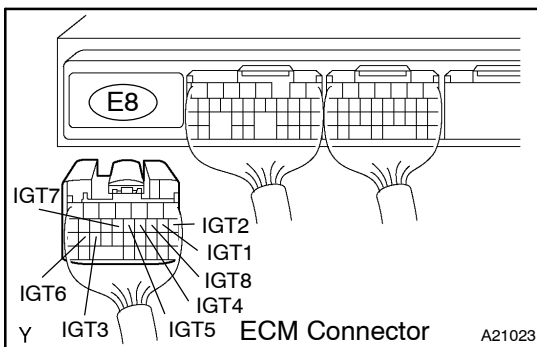
Check for open and short in harness and connector in IGT signal circuit between ECM and ignition coil with igniter.

Wire Harness Side:



Y

A21025



Y

A21023

PREPARATION:

- Disconnect the I1, I2, I3, I4, I5, I6, I7 or I8 ignition coil connector.
- Disconnect the E8 ECM connector.

CHECK:

Check the resistance between the wire harness side connectors.

OK:

Tester Connection	Specified Condition
Ignition coil (I1-2) - IGT1 (E8-9)	Below 1 Ω
Ignition coil (I2-2) - IGT2 (E8-8)	Below 1 Ω
Ignition coil (I3-2) - IGT3 (E8-25)	Below 1 Ω
Ignition coil (I4-2) - IGT4 (E8-11)	Below 1 Ω
Ignition coil (I5-2) - IGT5 (E8-12)	Below 1 Ω
Ignition coil (I6-2) - IGT6 (E8-26)	Below 1 Ω
Ignition coil (I7-2) - IGT7 (E8-13)	Below 1 Ω
Ignition coil (I8-2) - IGT8 (E8-10)	Below 1 Ω
Ignition coil (I1-2) or IGT1 (E8-9) - Body ground	10 k Ω or higher
Ignition coil (I2-2) or IGT2 (E8-8) - Body ground	10 k Ω or higher
Ignition coil (I3-2) or IGT3 (E8-25) - Body ground	10 k Ω or higher
Ignition coil (I4-2) or IGT4 (E8-11) - Body ground	10 k Ω or higher
Ignition coil (I5-2) or IGT5 (E8-12) - Body ground	10 k Ω or higher
Ignition coil (I6-2) or IGT6 (E8-26) - Body ground	10 k Ω or higher
Ignition coil (I7-2) or IGT7 (E8-13) - Body ground	10 k Ω or higher
Ignition coil (I8-2) or IGT8 (E8-10) - Body ground	10 k Ω or higher

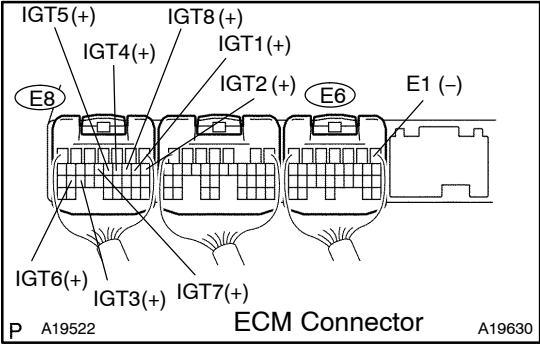
NG

Repair or replace harness or connector.

OK

5

Check voltage between terminals IGT1 – IGT8 and E1 of ECM connector.



CHECK:
Measure the voltage between terminals the E6 and E8 ECM connectors when the engine is cranked.

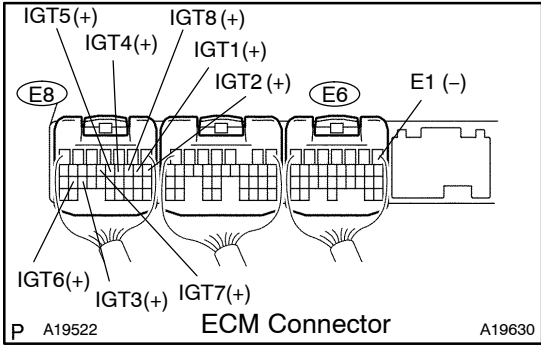
Tester Connection	Specified Condition
IGT1 (E8-9) – E1 (E6-1)	More than 0.1 V or less than 4.5 V
IGT2 (E8-8) – E1 (E6-1)	
IGT3 (E8-25) – E1 (E6-1)	
IGT4 (E8-11) – E1 (E6-1)	
IGT5 (E8-12) – E1 (E6-1)	
IGT6 (E8-26) – E1 (E6-1)	
IGT7 (E8-13) – E1 (E6-1)	
IGT8 (E8-10) – E1 (E6-1)	

NG

Replace ECM (See page [SF-60](#)).

OK

6 Disconnect ignition coil with igniter connector, and check voltage between terminals IGT1 - IGT8 of ECM connector.



PREPARATION:

Disconnect the I1, I2, I3, I4, I5, I6, I7 or I8 ignition coil with igniter connector.

CHECK:

Measure the voltage between terminals the E6 and E8 ECM connectors when the engine is cranked.

OK:

Tester Connection	Specified Condition
IGT1 (E8-9) - E1 (E6-1)	4.5 V or more
IGT2 (E8-8) - E1 (E6-1)	
IGT3 (E8-25) - E1 (E6-1)	
IGT4 (E8-11) - E1 (E6-1)	
IGT5 (E8-12) - E1 (E6-1)	
IGT6 (E8-26) - E1 (E6-1)	
IGT7 (E8-13) - E1 (E6-1)	
IGT8 (E8-10) - E1 (E6-1)	

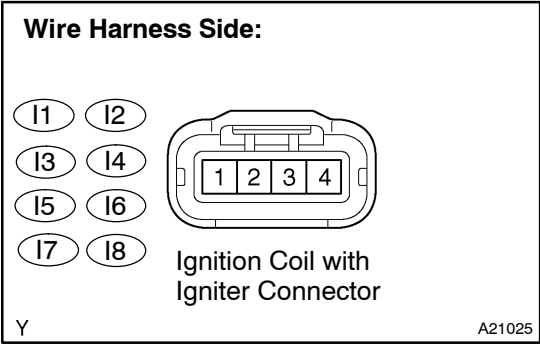
NG

Replace ECM (See page [SF-60](#)).

OK

7

Check ignition coil with igniter power source circuit.



PREPARATION:
Disconnect the I1, I2, I3, I4, I5, I6, I7 or I8 ignition coil with igniter connector.

CHECK:
Measure the voltage between the terminal of the wire harness side connector and body ground.

OK:

Tester Connection	Specified Condition
I1-1 - Body ground	9 to 14 V
I2-1 - Body ground	
I3-1 - Body ground	
I4-1 - Body ground	
I5-1 - Body ground	
I6-1 - Body ground	
I7-1 - Body ground	
I8-1 - Body ground	

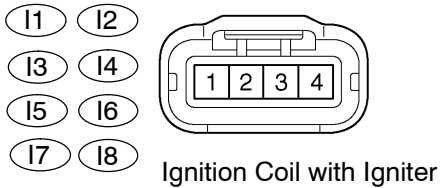
OK

Repair ignition coil with igniter.

NG

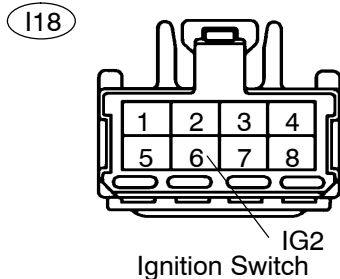
8

Check for open and short in harness and connector between ignition switch and ignition coil with igniter.

Wire Harness Side:

Y

A21025

Wire Harness Side:

A21030

PREPARATION:

- Disconnect the I1, 2, I3, I4, I5, I6, I7 or I8 ignition coil with igniter connector.
- Disconnect the I18 ignition switch connector.

CHECK:

Measure the resistance between the wire harness side connectors.

OK:

Tester Connection	Specified Condition
Ignition coil (I1-1) - IG2 (I18-6)	Below 1 Ω
Ignition coil (I2-1) - IG2 (I18-6)	Below 1 Ω
Ignition coil (I3-1) - IG2 (I18-6)	Below 1 Ω
Ignition coil (I4-1) - IG2 (I18-6)	Below 1 Ω
Ignition coil (I5-1) - IG2 (I18-6)	Below 1 Ω
Ignition coil (I6-1) - IG2 (I18-6)	Below 1 Ω
Ignition coil (I7-1) - IG2 (I18-6)	Below 1 Ω
Ignition coil (I8-1) - IG2 (I18-6)	Below 1 Ω
Ignition coil (I1-1) or IG2 (I18-6) - Body ground	10 k Ω or higher
Ignition coil (I2-1) or IG2 (I18-6) - Body ground	10 k Ω or higher
Ignition coil (I3-1) or IG2 (I18-6) - Body ground	10 k Ω or higher
Ignition coil (I4-1) or IG2 (I18-6) - Body ground	10 k Ω or higher
Ignition coil (I5-1) or IG2 (I18-6) - Body ground	10 k Ω or higher
Ignition coil (I6-1) or IG2 (I18-6) - Body ground	10 k Ω or higher
Ignition coil (I7-1) or IG2 (I18-6) - Body ground	10 k Ω or higher
Ignition coil (I8-1) or IG2 (I18-6) - Body ground	10 k Ω or higher

NG

Repair or replace harness or connector.

OK

Replace ignition coil with igniter.