DTC	P0300/93	RANDOM/MULTIPLE CYLINDER MISFIRE DETECTED

DTC	P0301/93	CYLINDER 1 MISFIRE DETECTED

DTC	P0302/93	CYLINDER 2 MISFIRE DETECTED

DTC	P0303/93	CYLINDER 3 MISFIRE DETECTED

DTC	P0304/93	CYLINDER 4 MISFIRE DETECTED

CIRCUIT DESCRIPTION

Misfire: The ECM uses the crankshaft position sensor and camshaft position sensor to monitor changes in the crankshaft rotation of each cylinder.

The ECM counts the number of times from the engine speed change rate, indicating that misfire has occurred. And when the misfire rate equals to or exceeds the count, indicating that the engine condition has deteriorated, the MIL lights up.

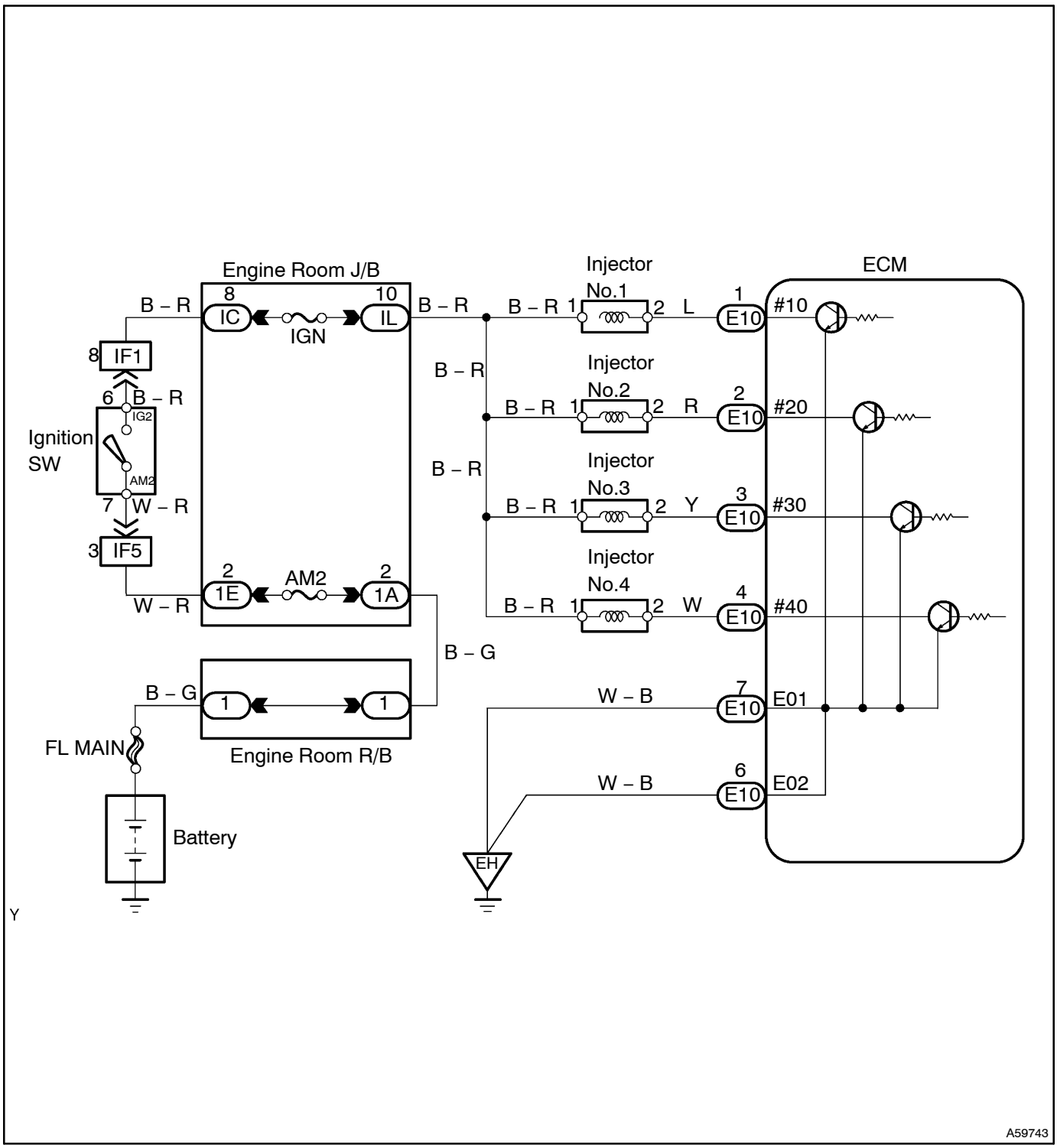
If the misfire rate is high enough and the driving conditions causes the catalyst to overheat, the MIL blinks when the misfire occurs.

DTC No.	DTC Detecting Condition	Trouble Area
P0300/93	Misfire of random cylinders is detected during any particular 200 or 1,000 revolutions	• Open or short in engine wire • Connector connection • Vacuum hose connection • Ignition system • Injector • Fuel pressure • Intake air flow meter • E.F.I. engine coolant temp. sensor • Compression pressure • Valve clearance • Valve timing • ECM
P0301/93 P0302/93 P0303/93 P0304/93	For any particular 200 revolutions of engine, misfire is detected which can cause catalyst to overheat (This causes MIL to blink)	
	For any particular 1,000 revolutions of engine, misfire is detected which causes a deterioration in emissions (2 trip detection logic)	

HINT:

When the 2 or more codes for a misfiring cylinder are recorded repeatedly but no random misfire code is recorded, it is indicated that the misfires were detected and recorded at different times.

WIRING DIAGRAM



CONFIRMATION DRIVING PATTERN

(a) Connect the hand–held tester to the DLC3.
(b) Record the DTC and freeze frame data.
(c) Use the hand–held tester to set to the check mode (See page 05–135).
(d) Drive the vehicle several times with the engine speed, load and its surrounding range shown with ENGINE SPD, CALC LOAD in the freeze frame data or MISFIRE RPM, MISFIRE LOAD in the data list. If you have no hand–held tester, turn the ignition switch OFF after the symptom is simulated once. Then repeat the simulation process again.

HINT:
In order to memorize the DTC of the misfire, it is necessary to drive around MISFIRE RPM, MISFIRE LOAD in the following data list.

Engine Speed	Time
Idling	5 minutes and 45 seconds or more
1000 rpm	4 minutes or more
2000 rpm	2 minutes and 30 seconds or more
3000 rpm	1 minute and 30 seconds or more

(e) Check whether there is misfire or not by monitoring the DTC and the freeze frame data, and then, record them.
(f) Turn the ignition switch OFF and wait at least 5 seconds.

INSPECTION PROCEDURE

HINT:
- If the other DTCs besides misfire are memorized simultaneously, first perform the troubleshooting for them.
- Read freeze frame data using the hand–held tester, as freeze frame data 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 was warmed up or not, the air–fuel ratio was lean or rich, etc. at the time of the malfunction.
- If the misfire is not occured when the vehicle is brought to the workshop, it can be confirmed by reproducing the condition of the freeze frame data. After finishing the repair, confirm that there is no misfire (See the confirmation driving pattern).
- When either of SHORT FT #1, LONG FT #1, SHORT FT #2 or LONG FT #2 in the freeze frame data is over the range of ±20%, there is a possibility that the air–fuel ratio is inclining either to ”RICH” (–20% or less) or ”LEAN” (+20% or more).
- When COOLANT TEMP in the freeze frame data is less than 80°C (176°F), there is a possibility of misfire only during warming up.
- In case that the misfire cannot be reproduced, this may be because of the driving with the shortage of fuel, the use of improper fuel, a stain of ignition plug and etc.

1	CHECK WIRE HERNESS, CONNECTOR AND VACUUM HOSE IN ENGINE ROOM

(a) Check the connection conditions of the wire harness and connector.
(b) Check the disconnection, piping and break in the vacuum hose.

NG → REPAIR OR REPLACE, THEM CONFIRM THAT THERE IS NO MISFIRE

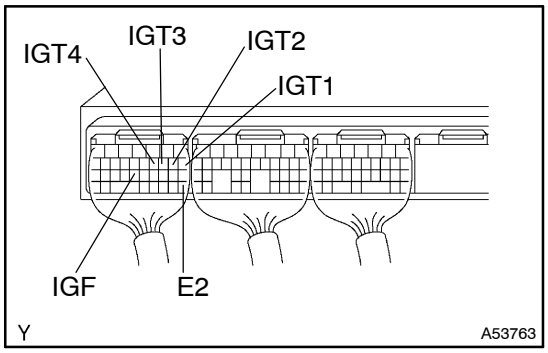
OK

2	INSPECT SPARK PLUG (See page 18–3)

NG → REPAIR OR REPLACE IGNITION SYSTEM

OK

3	INSPECT ECM(CHECK VOLTAGE)



(a) Turn the ignition switch ON.
(b) Measure the voltage between applicable terminal and E2 of the ECM connector.
Voltage: 9 – 14 V

OK → Go to step 5

NG

4	INSPECT FUEL INJECTOR ASSY (See page 11–29)

NG → REPLACE FUEL INJECTOR ASSY

OK

CHECK WIRE HARNESS OR CONNECTOR

5	CHECK FUEL PRESSURE (See page 11–29)

NG → REPAIR OR REPLACE FUEL PUMP, FUEL PIPE LINE AND FILTER

OK

6	INSPECT FUEL INJECTOR ASSY (See page 11–29)

NG → REPLACE FUEL INJECTOR ASSY

OK

7	INSPECT INTAKE AIR FLOW METER SUB–ASSY (See page 10–8)

NG → REPAIR OR REPLACE INTAKE AIR FLOW METER SUB–ASSY

OK

8	INSPECT E.F.I. ENGINE COOLANT TEMPERATURE SENSOR (See page 10–7)

NG → REPLACE E.F.I. ENGINE COOLANT TEMPERATURE SENSOR

OK

CHECK COMPRESSION PRESSURE, VALVE CLEARANCE AND VAIVE TIMING