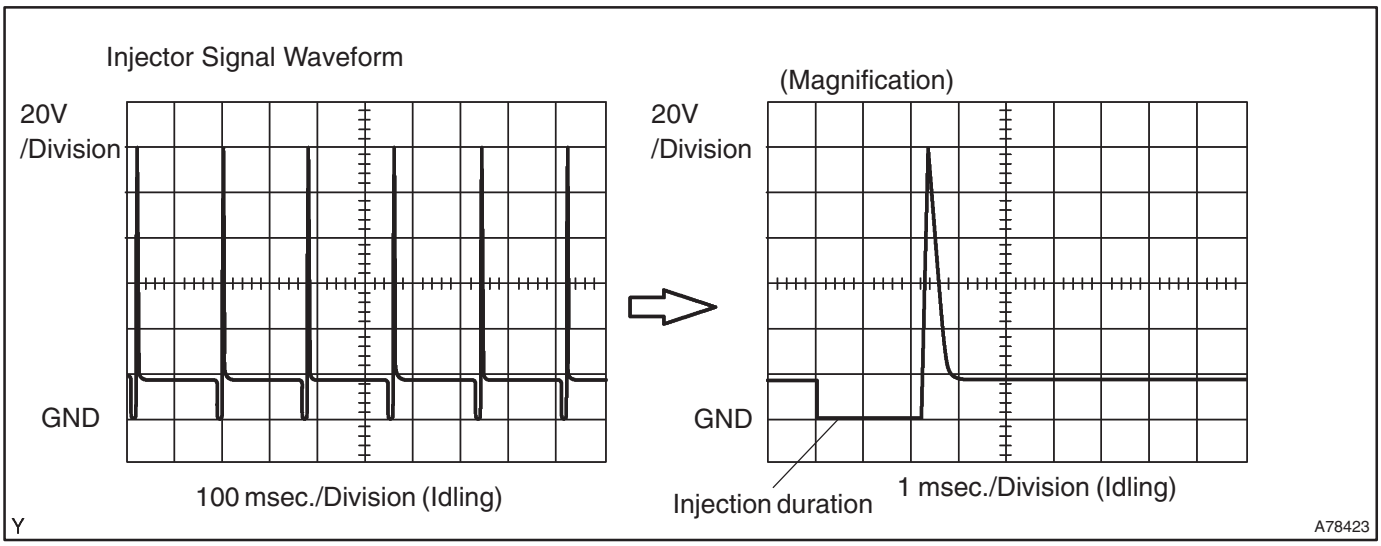
FUEL INJECTOR CIRCUIT

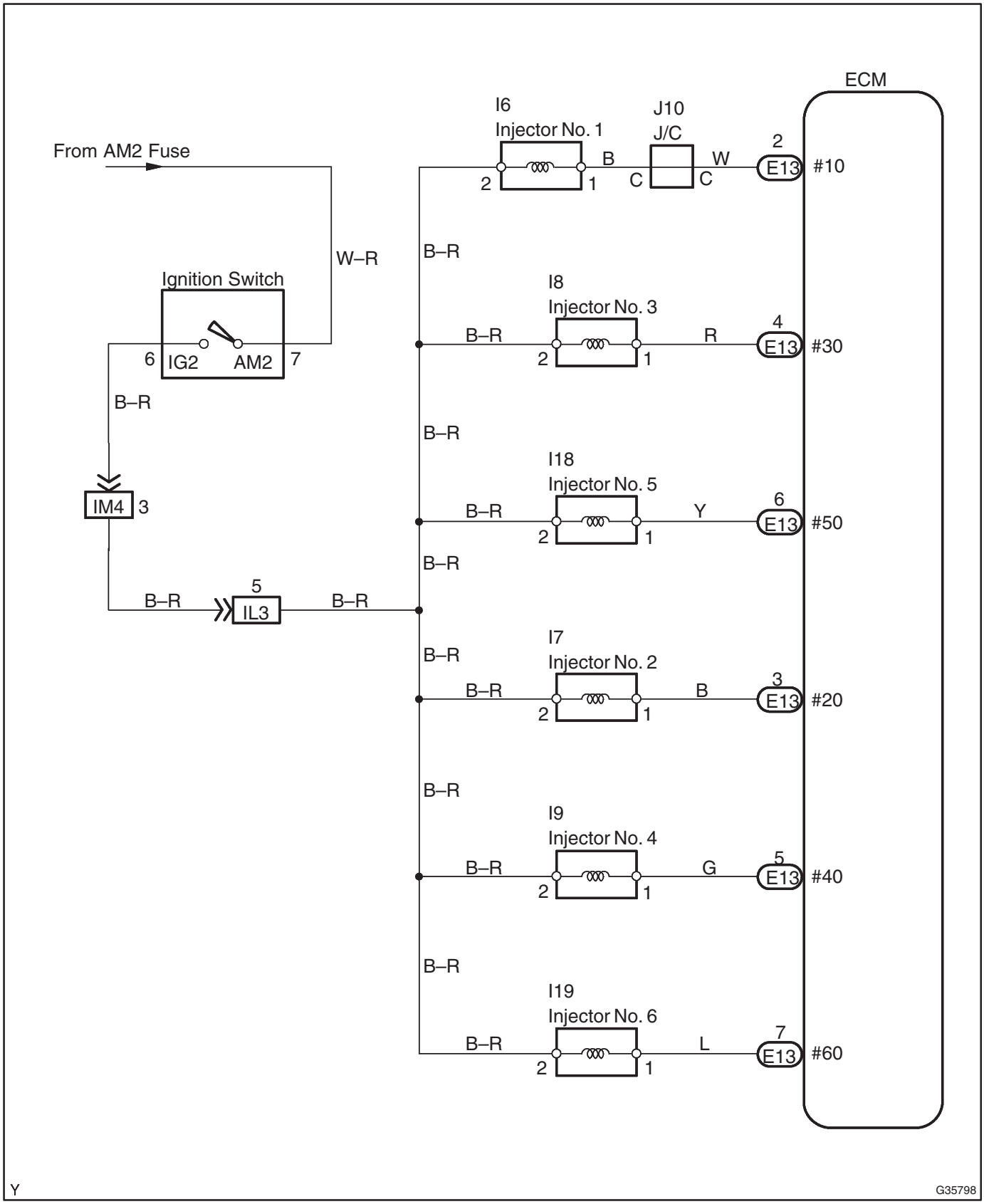
CIRCUIT DESCRIPTION

The fuel injectors are located on the intake manifold.
They inject fuel into the cylinders based on the signals from the ECM.
Reference: INSPECTION USING OSCILLOSCOPE
With the engine idling, check the waveform between terminals #10 to #60 and E01 of the ECM connectors.
HINT:

The correct waveform is as shown in the diagram below.

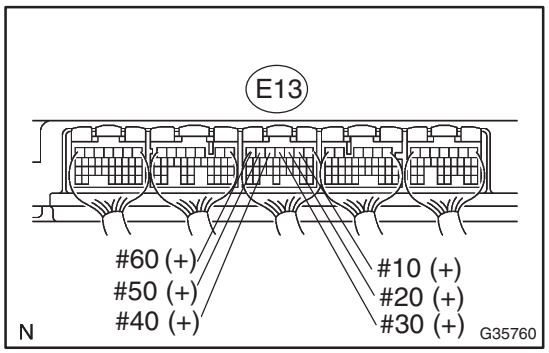


WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT ECM(#10, #20, #30, #40, #50 OR #60 VOLTAGE)



(a) Turn the ignition switch to ON.
(b) Measure the voltage between the applicable terminals of the E13 ECM connectors.

Standard:

Symbols (Terminal No.)	Specified condition
#10 (E13–2) – Body ground	9 to 14 V
#20 (E13–3) – Body ground	9 to 14 V
#30 (E13–4) – Body ground	9 to 14 V
#40 (E13–5) – Body ground	9 to 14 V
#50 (E13–6) – Body ground	9 to 14 V
#60 (E13–7) – Body ground	9 to 14 V

OK → **Go to step 4**

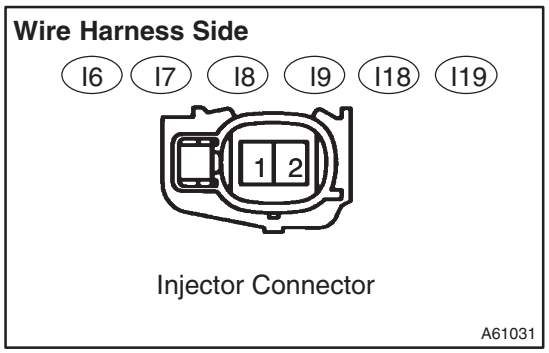
NG

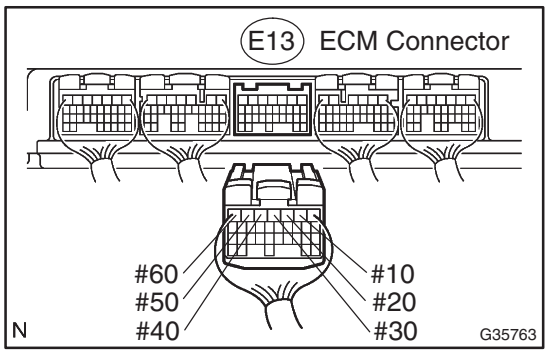
2	INSPECT FUEL INJECTOR ASSY(CHECK RESISTANCE) (See Pub. No. RM1017E, page 11–7)

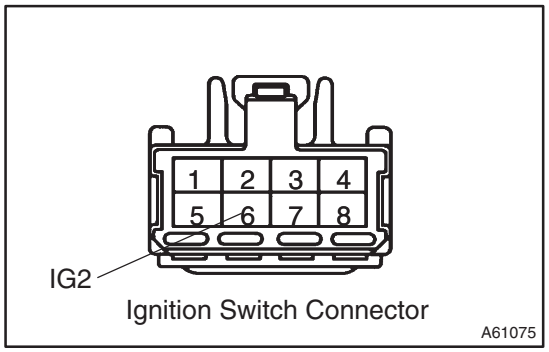
NG → **REPLACE FUEL INJECTOR ASSY**

OK

3 CHECK HARNESS AND CONNECTOR OF MISFIRING CYLINDER(INJECTOR – ECM, INJECTION – IGNITION SWITCH)







(a) Check the harness and the connector between the injector connector and the ECM connector.

(1) Disconnect the I6, I7, I8, I9, I18 or I19 injector connector.

(2) Disconnect the E13 ECM connector.

(3) Check for resistance ontinuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Injector (I6–1) – #10 (E13–2)	Below 1 Ω
Injector (I7–1) – #20 (E13–3)	Below 1 Ω
Injector (I8–1) – #30 (E13–4)	Below 1 Ω
Injector (I9–1) – #40 (E13–5)	Below 1 Ω
Injector (I18–1) – #50 (E13–6)	Below 1 Ω
Injector (I19–1) – #60 (E13–7)	Below 1 Ω

Standard (Check for short):

Symbols (Terminal No.)	Specified condition
Injector (I6–1) or #10 (E13–2) – Body ground	10 kΩ or higher
Injector (I7–1) or #20 (E13–3) – Body ground	10 kΩ or higher
Injector (I8–1) or #30 (E13–4) – Body ground	10 kΩ or higher
Injector (I9–1) or #40 (E13–5) – Body ground	10 kΩ or higher
Injector (I18–1) or #50 (E13–6) – Body ground	10 kΩ or higher
Injector (I19–1) or #60 (E13–7) – Body ground	10 kΩ or higher

(b) Check the harness and the connector between the injector connector and the ignition switch connector.

(1) Disconnect the I6, I7, I8, I9, I18 or I19 injector connector.

(2) Disconnect the ignition switch connector.

(3) Check for resistance between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
Injector (I6–2) – IG2 (6)	Below 1 Ω
Injector (I7–2) – IG2 (6)	Below 1 Ω
Injector (I8–2) – IG2 (6)	Below 1 Ω
Injector (I9–2) – IG2 (6)	Below 1 Ω
Injector (I18–2) – IG2 (6)	Below 1 Ω
Injector (I19–2) – IG2 (6)	Below 1 Ω

Standard (Check for short):

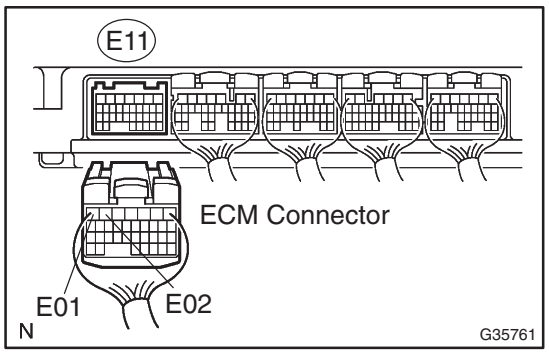
Symbols (Terminal No.)	Specified condition
Injector (I6–2) or IG2 (6) – Body ground	10 kΩ or higher
Injector (I7–2) or IG2 (6) – Body ground	10 kΩ or higher
Injector (I8–2) or IG2 (6) – Body ground	10 kΩ or higher
Injector (I9–2) or IG2 (6) – Body ground	10 kΩ or higher
Injector (I18–2) or IG2 (6) – Body ground	10 kΩ or higher
Injector (I19–2) or IG2 (6) – Body ground	10 kΩ or higher

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

INSPECT ECM POWER SOURCE CIRCUIT (See page 05–395)

4 INSPECT ECM



(a) Disconnect the ECM E11 connector.
(b) Check for resistance between the ECM connector and the body ground.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
E01 (E11–7) – Body ground	Below 1 Ω
E02 (E11–6) – Body ground	Below 1 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

5 INSPECT FUEL INJECTOR ASSY(CHECK INJECTION VOLUME) (See Pub. No. RM1017E, page 11–7)

NG → **REPLACE FUEL INJECTOR ASSY**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See page 05–202)