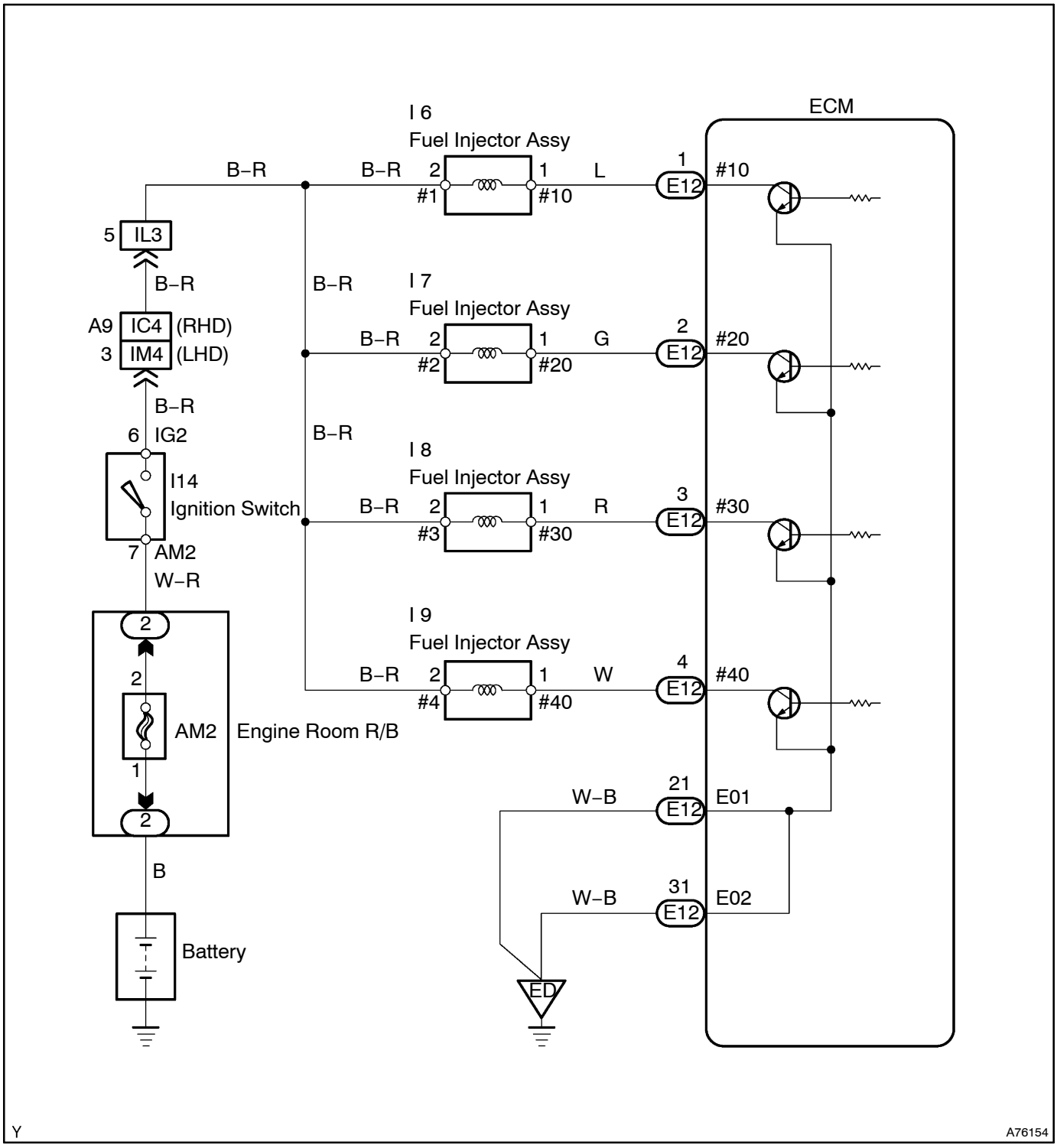
INJECTOR CIRCUIT

CIRCUIT DESCRIPTION

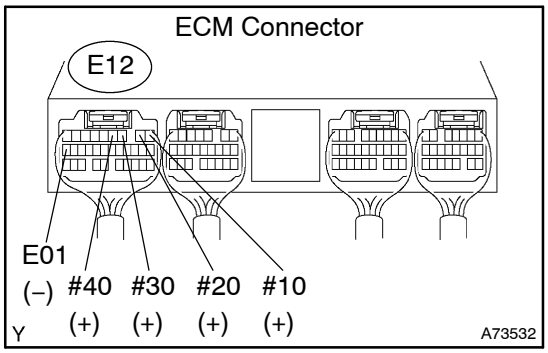
The fuel injectors are located in the intake manifold. They inject fuel into the cylinders based on the signals from the ECM.

WIRING DIAGRAM



INSPECTION PROCEDURE

1	CHECK ECM (#10, #20, #30 AND #40 VOLTAGE)



(a) Turn the ignition switch ON.

(b) Measure the voltage between the terminals of the E12 ECM connector.

Voltage:

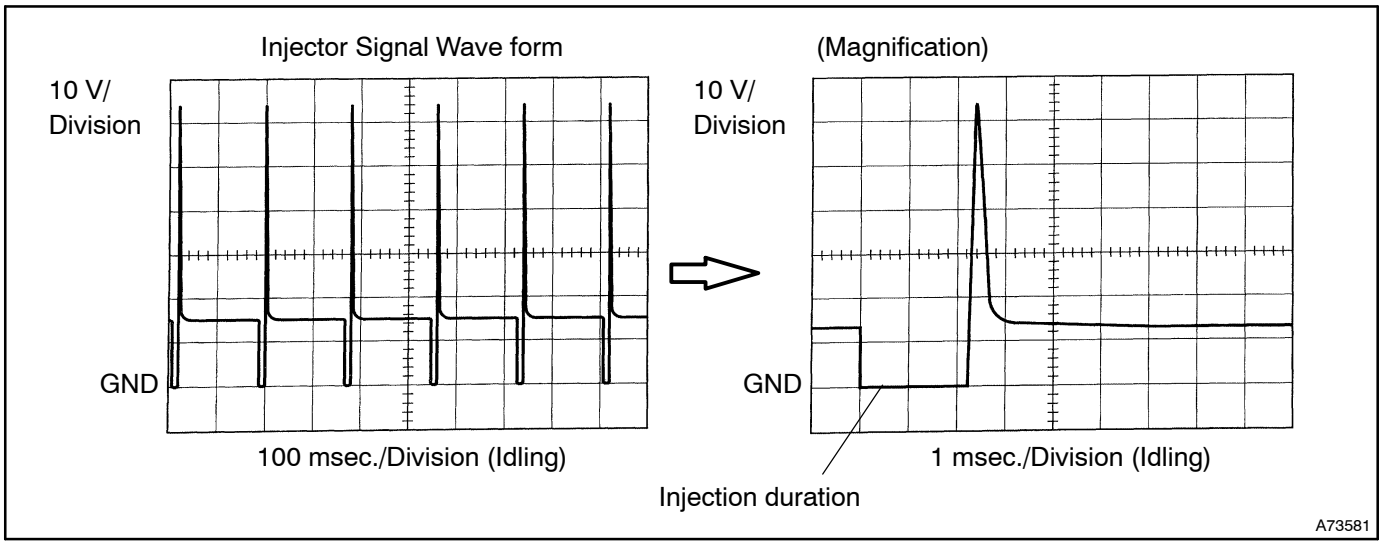
Symbols (Terminal No.)	Specified condition
#10 (E12–1) ⇔ E01 (E12–21)	9 – 14 V
#20 (E12–2) ⇔ E01 (E12–21)	
#30 (E12–3) ⇔ E01 (E12–21)	
#40 (E12–4) ⇔ E01 (E12–21)	

(c) Reference (using an osilloscope).

(1) During idling, check the waveform between the terminals of the E12 ECM connector.

Standard:

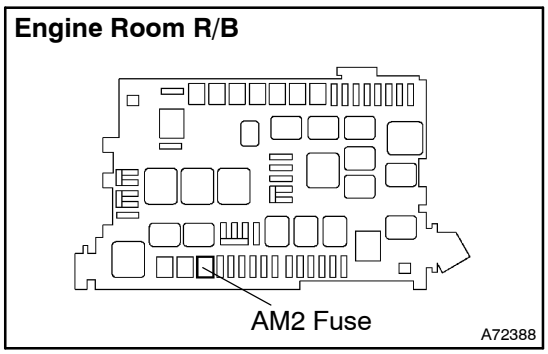
Symbols (Terminal No.)	Specified condition
#10 (E12–1) ⇔ E01 (E12–21)	Correct waveform is as shown
#20 (E12–2) ⇔ E01 (E12–21)	
#30 (E12–3) ⇔ E01 (E12–21)	
#40 (E12–4) ⇔ E01 (E12–21)	



OK → **Go to step 7**

NG

2 CHECK FUSE (AM2 FUSE)



(a) Remove the AM2 fuse.
(b) Check the continuity of the AM2 fuse.
Standard: Continuity

NG → **CHECK FOR SHORT IN ALL HARNESS AND COMPONENTS CONNECTED FUSE (AM2 FUSE)**

OK

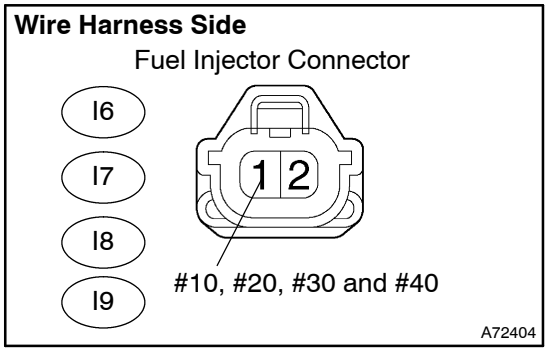
3 INSPECT FUEL INJECTOR ASSY (CHECK RESISTANCE)

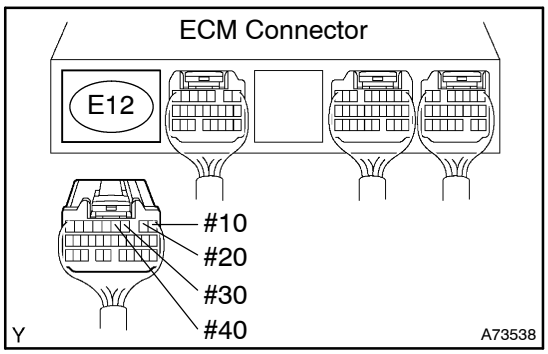
(a) Disconnect the fuel injector connector.
(b) Measure the resistance between the terminals.
Standard: 13.4 – 14.2 Ω at 20°C (68°F)

NG → **REPLACE FUEL INJECTOR ASSY**

OK

4 CHECK HARNESS AND CONNECTOR (FUEI INJECTOR ASSY ⇔ ECM)





(a) Disconnect the I6, I7, I8 and I9 fuel injector connectors.
(b) Disconnect the E12 ECM connector.
(c) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
#10 (I6–1) ⇔ #10 (E12–1)	Continuity
#20 (I7–1) ⇔ #10 (E12–2)	
#30 (I8–1) ⇔ #10 (E12–3)	
#40 (I9–4) ⇔ #10 (E12–4)	

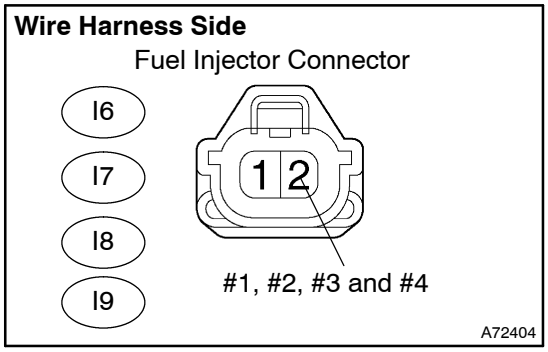
Standard (Check for short):

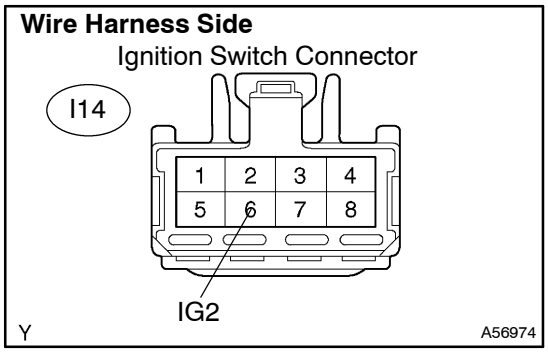
Symbols (Terminal No.)	Specified condition
#10 (I6–1) or #10 (E12–1) ⇔ Other terminals and body ground	No continuity
#20 (I7–1) or #10 (E12–2) ⇔ Other terminals and body ground	
#30 (I8–1) or #10 (E12–3) ⇔ Other terminals and body ground	
#40 (I9–1) or #10 (E12–4) ⇔ Other terminals and body ground	

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

OK

5 CHECK HARNESS AND CONNECTOR (FUEL INJECTOR ASSY ⇔ IGNITION SWITCH ASSY)





(a) Disconnect the I6, I7, I8 and I9 fuel injector connectors.
(b) Disconnect the I14 ignition switch connector.
(c) Check the continuity between the wire harness side connectors.

Standard (Check for open):

Symbols (Terminal No.)	Specified condition
#1 (I6–2) ⇔ IG2 (I14–6)	Continuity
#2 (I7–2) ⇔ IG2 (I14–6)	
#3 (I8–2) ⇔ IG2 (I14–6)	
#4 (I9–2) ⇔ IG2 (I14–6)	

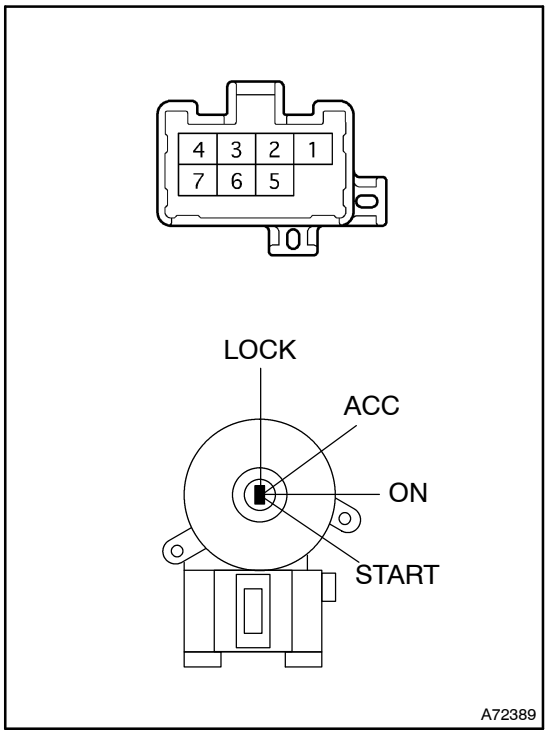
Standard (Check for short):

Symbols (Terminal No.)	Specified condition
#1 (I6–2) or IG2 (I14–6) ⇔ Other terminals and body ground	No continuity
#2 (I7–2) or IG2 (I14–6) ⇔ Other terminals and body ground	
#3 (I8–2) or IG2 (I14–6) ⇔ Other terminals and body ground	
#4 (I9–2) or IG2 (I14–6) ⇔ Other terminals and body ground	

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

OK

6 INSPECT IGNITION OR STARTER SWITCH ASSY



(a) Check the continuity between the terminals.

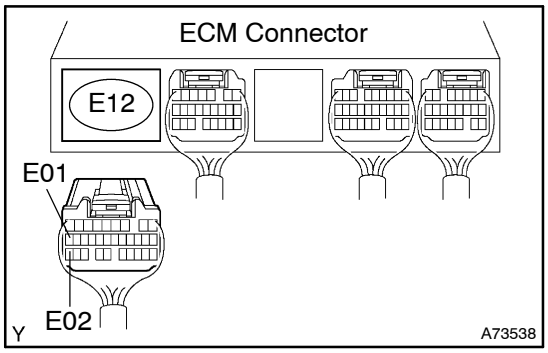
Switch position	Terminal No.	Specified condition
LOCK	All Terminals	No continuity
ACC	2 ⇔ 3	Continuity
ON	2 ⇔ 3 ⇔ 4 5 ⇔ 6	
START	1 ⇔ 2 ⇔ 3 5 ⇔ 7	

NG → **REPLACE IGNITION OR STARTER SWITCH ASSY**

OK

CHECK OR REPAIR HARNESS OR CONNECTOR (IGNITION SWITCH ASSY ⇔ BATTERY)

7 CHECK HARNESS AND CONNECTOR (ECM GROUND)



(a) Disconnect the E12 ECM connector.
(b) Check the continuity between the terminals E12 ECM connector and body ground.
Standard (Check for open):

Symbols (Terminal No.)	Specified condition
E01 (E12–21) ⇔ Body ground	Continuity
E02 (E12–31) ⇔ Body ground	

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

OK

8 INSPECT FUEL INJECTOR ASSY (CHECK INJECTION VOLUME) (See page 11–6)

NG → **REPLACE FUEL INJECTOR ASSY (See page 11–11)**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN ON PROBLEM SYMPTOMS TABLE (See page 05–99)