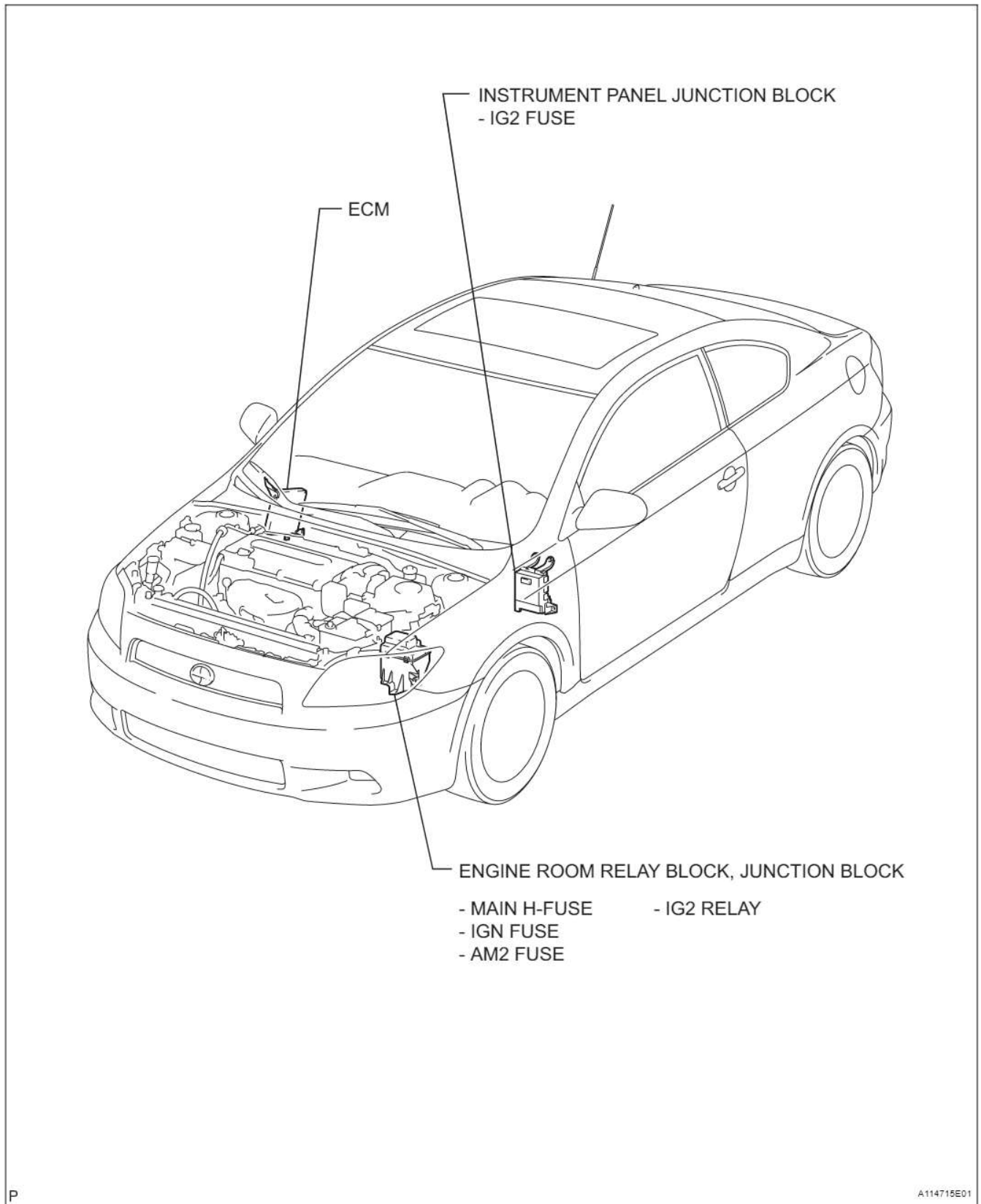


2AZ-FE IGNITION – IGNITION SYSTEM

IG-1

IGNITION SYSTEM

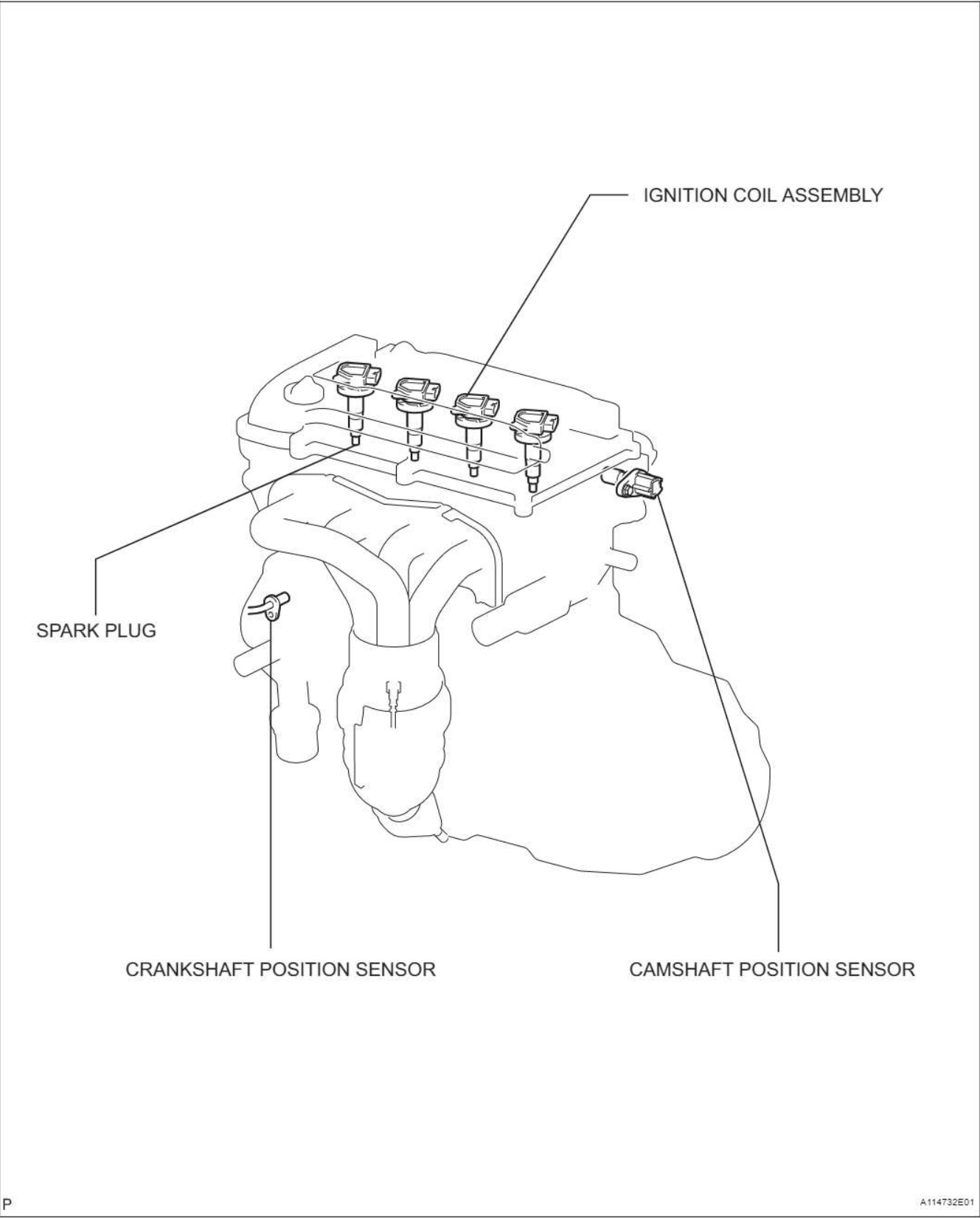
PARTS LOCATION



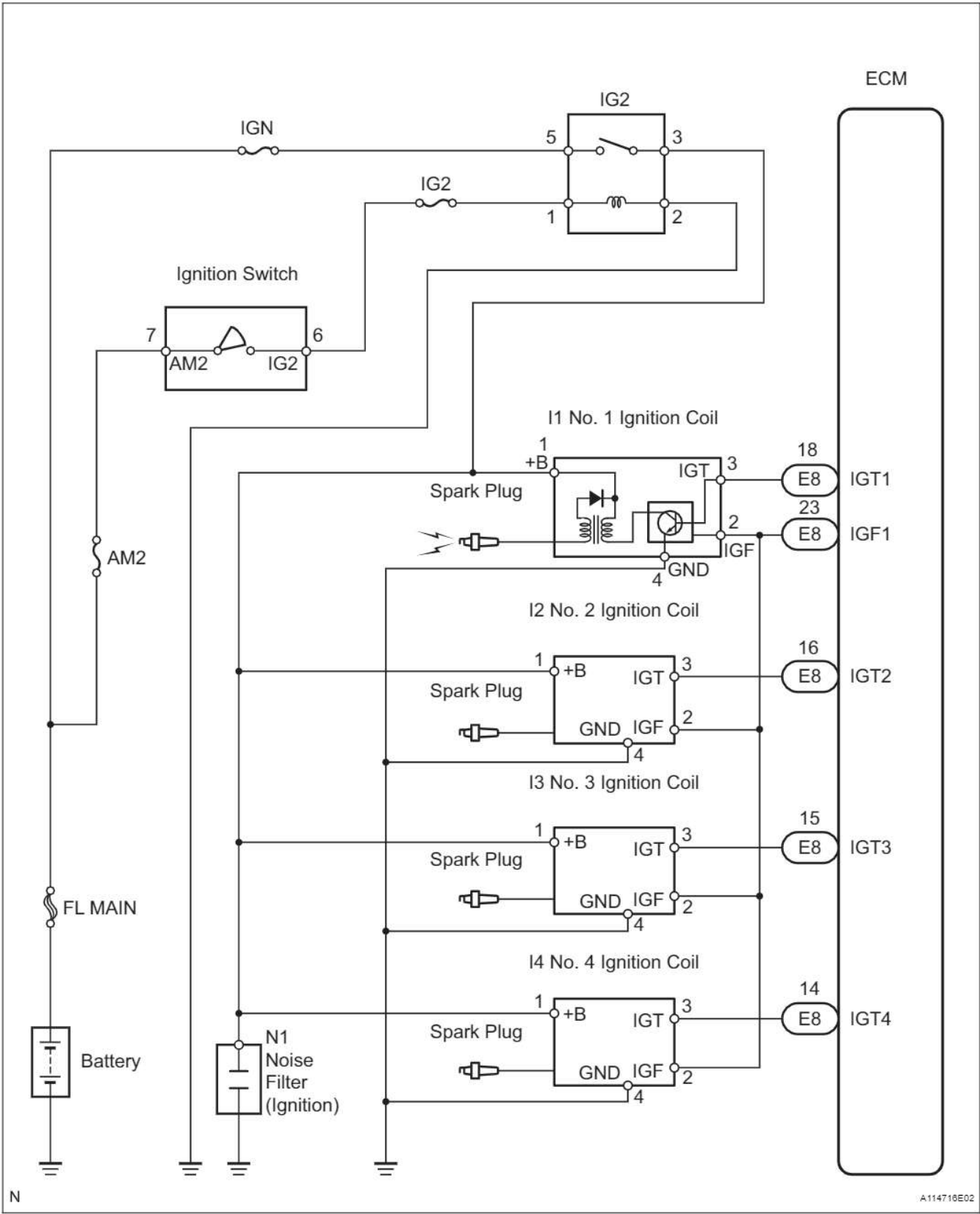
IG

IG-2

2AZ-FE IGNITION – IGNITION SYSTEM



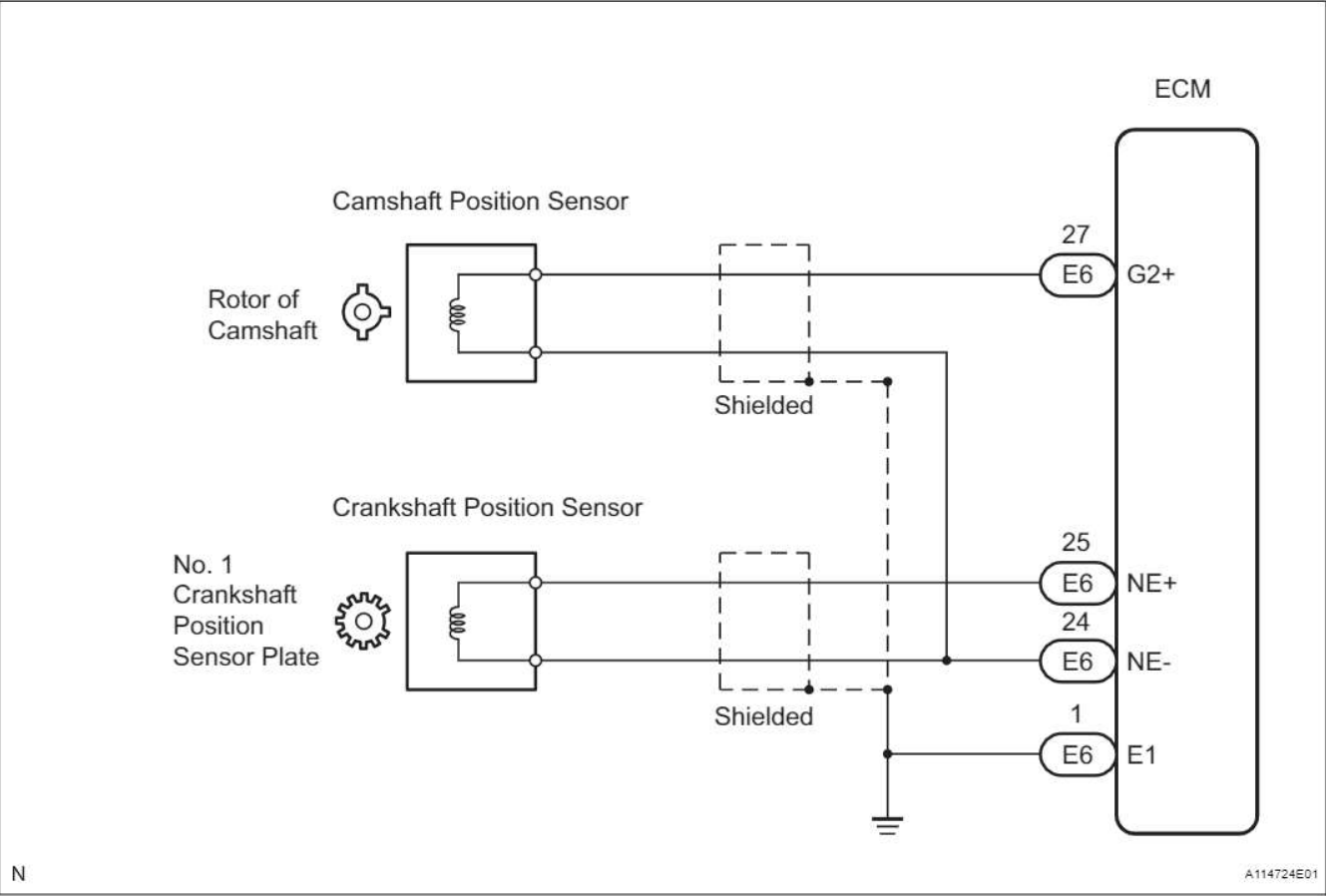
SYSTEM DIAGRAM



IG

IG-4

2AZ-FE IGNITION – IGNITION SYSTEM



ON-VEHICLE INSPECTION

1. INSPECT IGNITION COIL ASSEMBLY AND SPARK TEST

NOTICE:

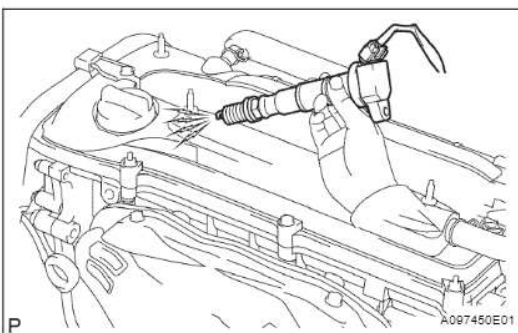
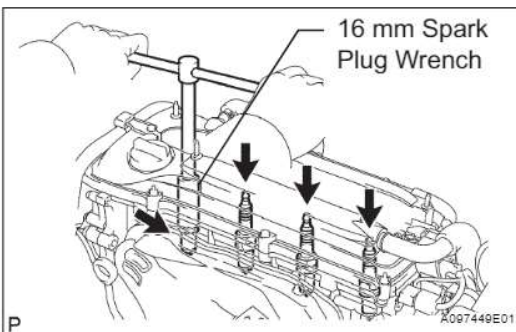
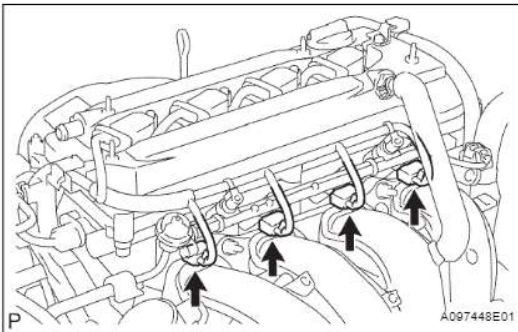
In this section, the terms "cold" and "hot" refer to the temperature of the coils. "Cold" means approximately -10 to 50°C (14 to 122°F). "Hot" means approximately 50 to 100°C (122 to 212°F).

- (a) Check the DTCs.

NOTICE:

If a DTC is present, perform troubleshooting in accordance with the procedure for that DTC.

- (b) Check that sparks occur.
- (1) Remove the No. 1 engine cover.
 - (2) Remove the ignition coil.
 - (3) Disconnect the 4 fuel injector connectors.



- (4) Using a 16 mm spark plug wrench, remove the 4 spark plugs.

Torque: 19 N*m (195 kgf*cm, 14 ft.*lbf)

- (5) Install each spark plug into an ignition coil, and then connect the ignition coil connectors.
- (6) Ground the spark plugs.
- (7) Check that a spark occurs at each spark plug while the engine is being cranked.

NOTICE:

- Be sure to ground the spark plugs when checking.
- Replace the ignition coil if a physical impact is felt while holding the spark plug.
- Do not crank the engine for more than 2 seconds.

If spark do not occur, perform the following procedures.

IG-6

2AZ-FE IGNITION – IGNITION SYSTEM

(c) Perform the spark test according to the flowchart below.

- (1) Perform spark test on each ignition coil.
 1. Replace the ignition coil with a normal one.
 2. Perform the spark test again.

Result

Result	Proceed to
OK	Replace ignition coil
NG	Go to next step

- (2) Check the power supply to the ignition coil.
 1. Disconnect the ignition coil connector.
 2. Turn the ignition switch ON.
 3. Measure the voltage of the wire harness side connector.

Standard resistance

Tester Connection	Specified Condition
1 (+B) - 4 (GND)	9.0 to 14 V

Result

Result	Proceed to
NG	Check wire harness and connector
OK	Go to next step

- (3) Measure the resistance of the camshaft position sensor.

Result

Temperature	Specified Condition
Cold	835 to 1,400 Ω
Hot	1,060 to 1,645 Ω

Result

Result	Proceed to
NG	Replace camshaft position sensor
OK	Go to next step

- (4) Measure the resistance of the crankshaft position sensor.

Result

Temperature	Specified Condition
Cold	985 to 1,600 Ω
Hot	1,265 to 1,890 Ω

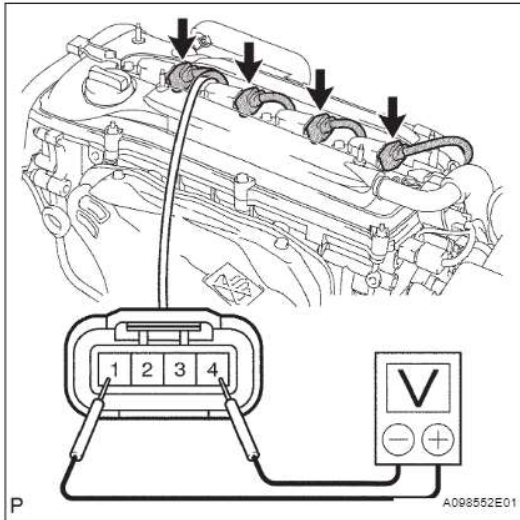
Result

Result	Proceed to
NG	Replace crankshaft position sensor
OK	Go to next step

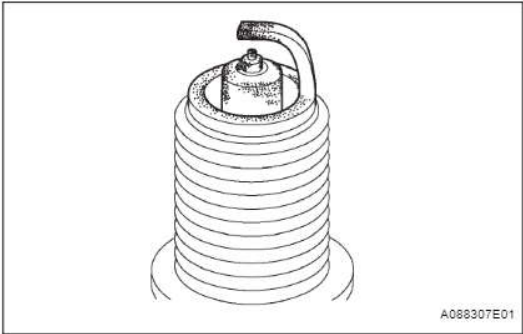
- (5) Check IGT signal from the ECM.

Result

Result	Proceed to
NG	Replace ECM
OK	Repair wire harness or connector



IG

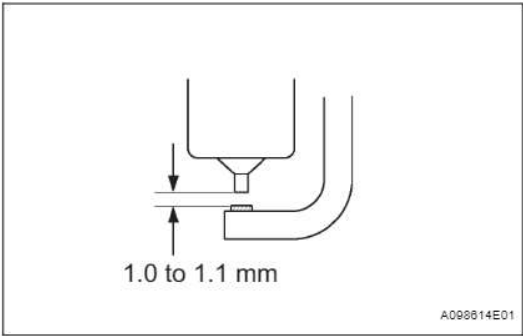


2. INSPECT SPARK PLUG

- (a) Check the appearance.
 - (1) Check the spark plug for any damage on its thread and insulator.
If there is any damage, replace the spark plug.

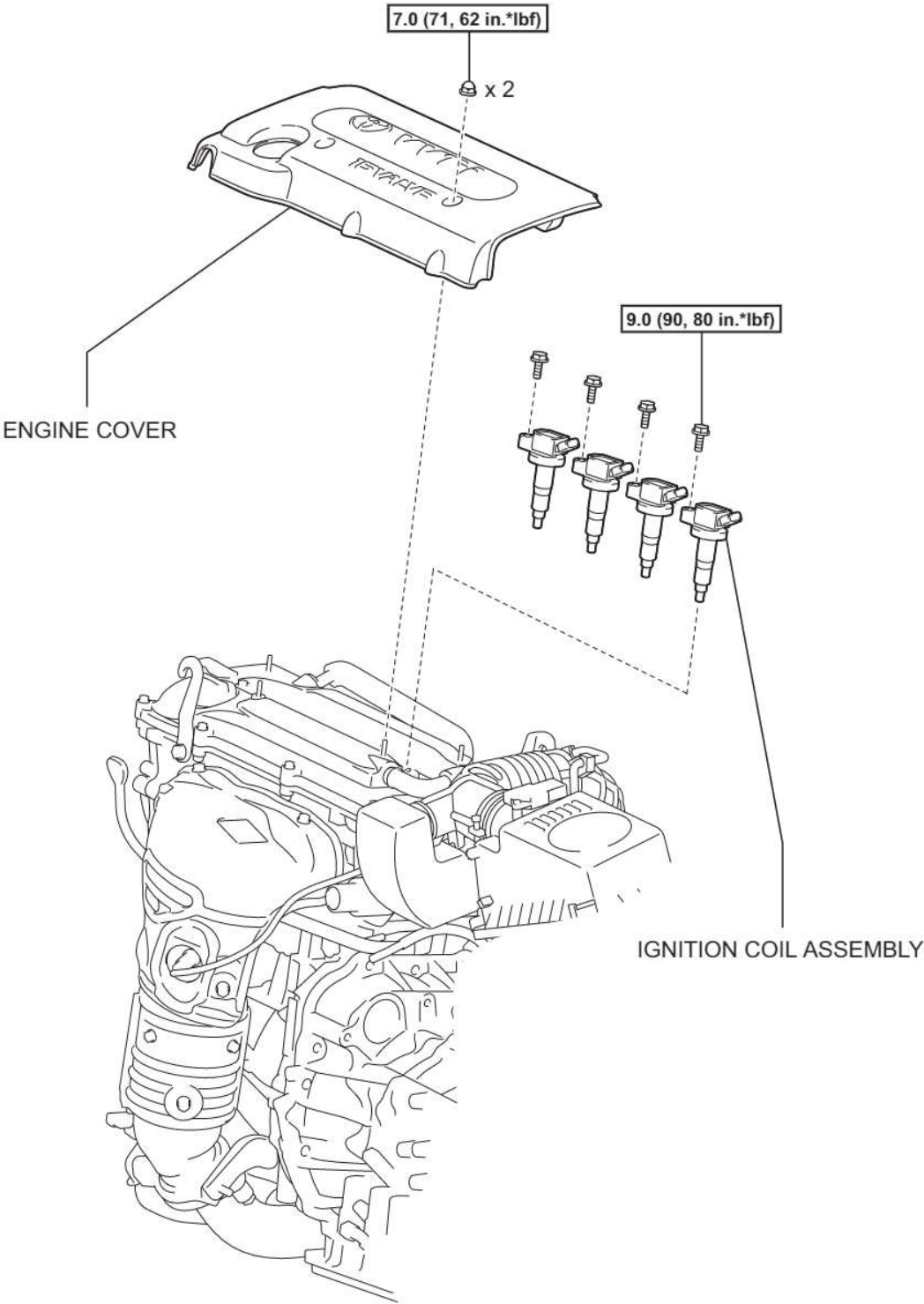
Recommended spark plug:

Manufacturer	Product
DENSO	SK20R11
NGK	IFR6A11



- (b) Check the electrode gap.
 - Standard electrode gap:**
1.0 to 1.1 mm (0.039 to 0.043 in.) for new spark plug
 - Maximum electrode gap:**
1.3 mm (0.051 in.) for used spark plug
 - If the electrode gap is greater than the maximum, replace the spark plug.

IGNITION COIL
COMPONENTS



N*m (kgf*cm, ft.*lbf) : Specified torque

2AZ-FE IGNITION – IGNITION COIL

REMOVAL

1. DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL

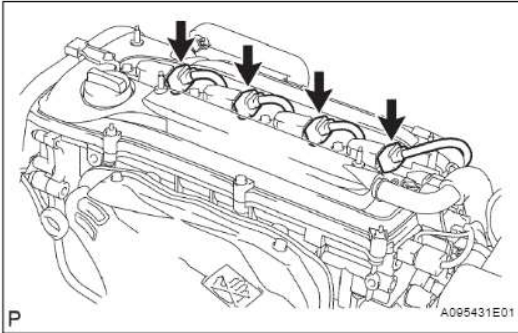
CAUTION:

Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

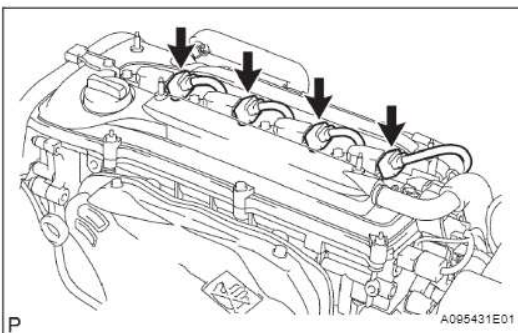
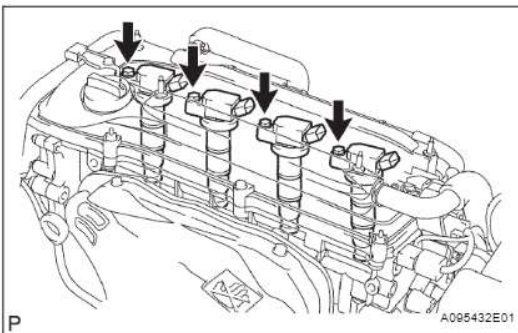
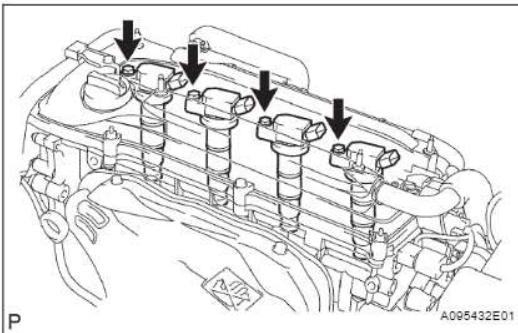
2. REMOVE ENGINE COVER (See page [ES-382](#))

3. REMOVE IGNITION COIL ASSEMBLY

(a) Disconnect the 4 ignition coil connectors.



(b) Remove the 4 bolts and 4 ignition coils.



INSTALLATION

1. INSTALL IGNITION COIL ASSEMBLY

(a) Install the 4 ignition coil with the 4 bolts.

Torque: 9.0 N*m (90 kgf*cm, 80 in.*lbf)

(b) Connect the 4 ignition coil connectors.

2. INSTALL ENGINE COVER (See page [ES-389](#))

3. CONNECT CABLE TO NEGATIVE BATTERY TERMINAL

4. PERFORM INITIALIZATION

(a) Perform initialization (see page [IN-23](#)).

NOTICE:

Certain systems need to be initialized after disconnecting and reconnecting the cable from the negative (-) battery terminal.