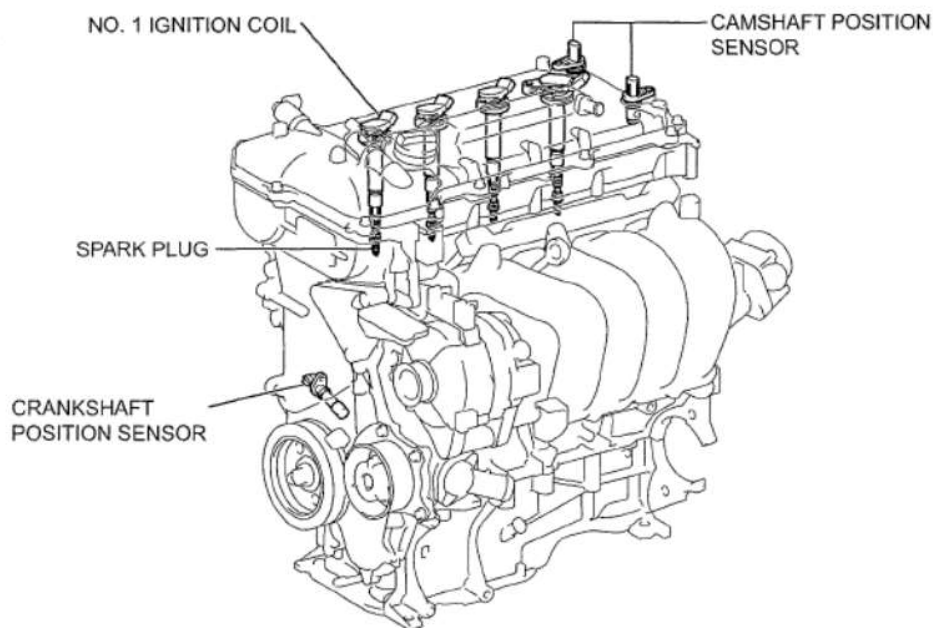
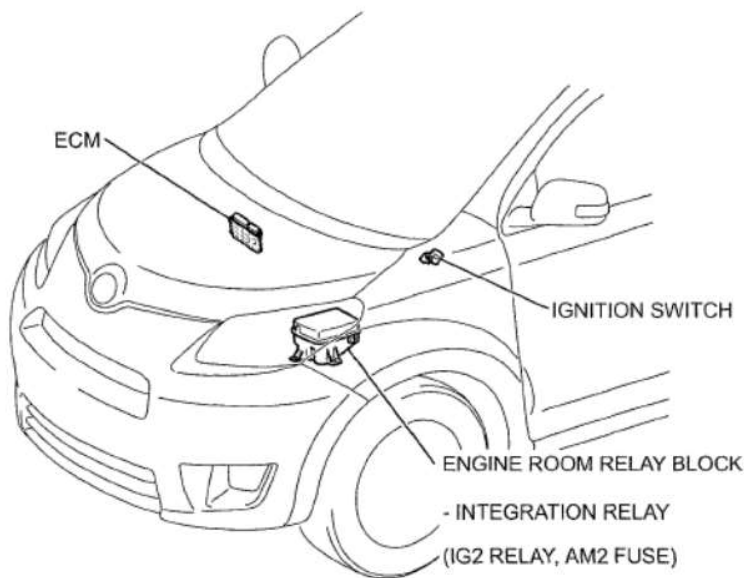


2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

2008 ENGINE**2ZR-FE Ignition - xD****IGNITION SYSTEM****PARTS LOCATION**

T

A156903E01

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

Fig. 1: Identifying Ignition System Parts Location
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

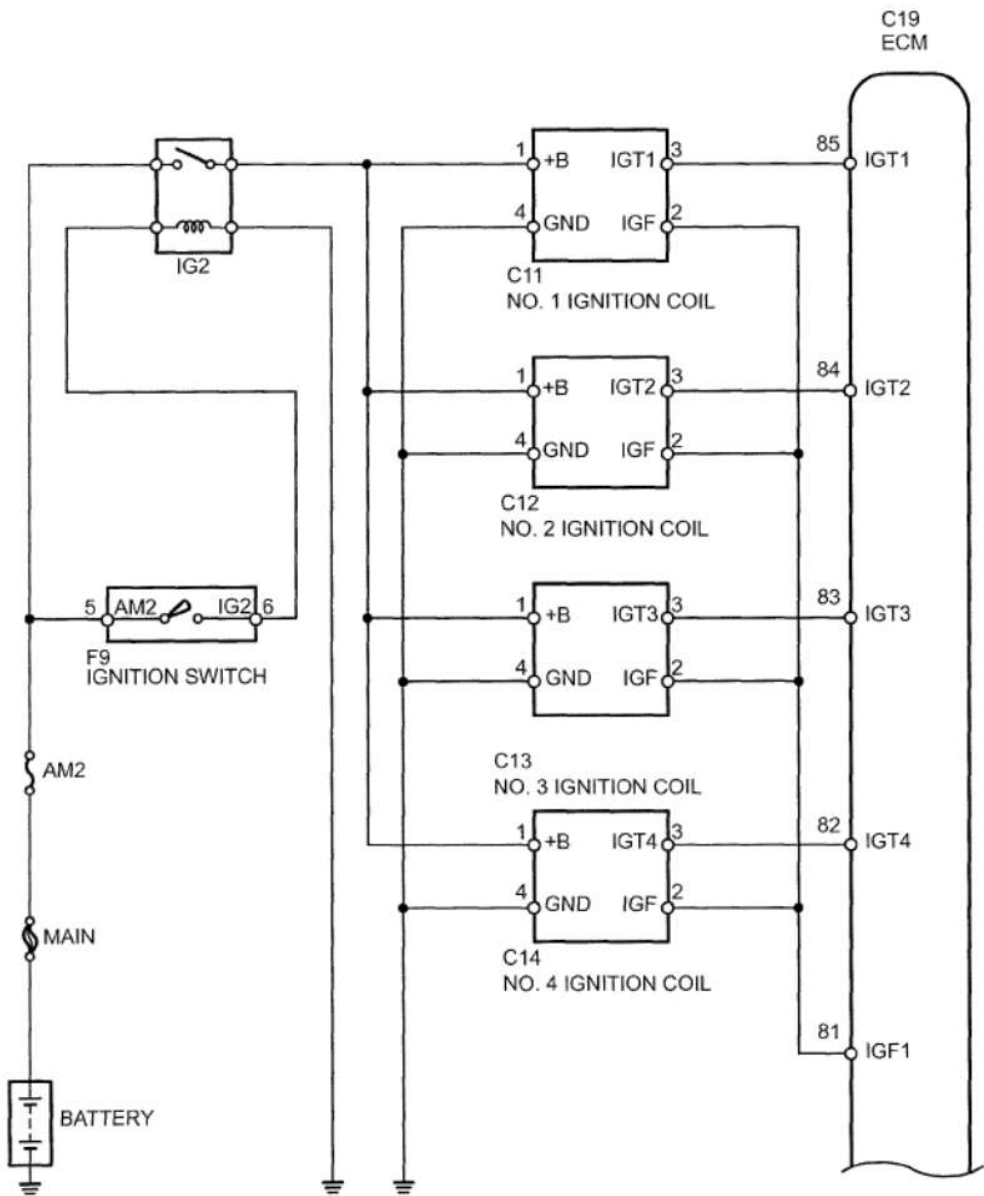
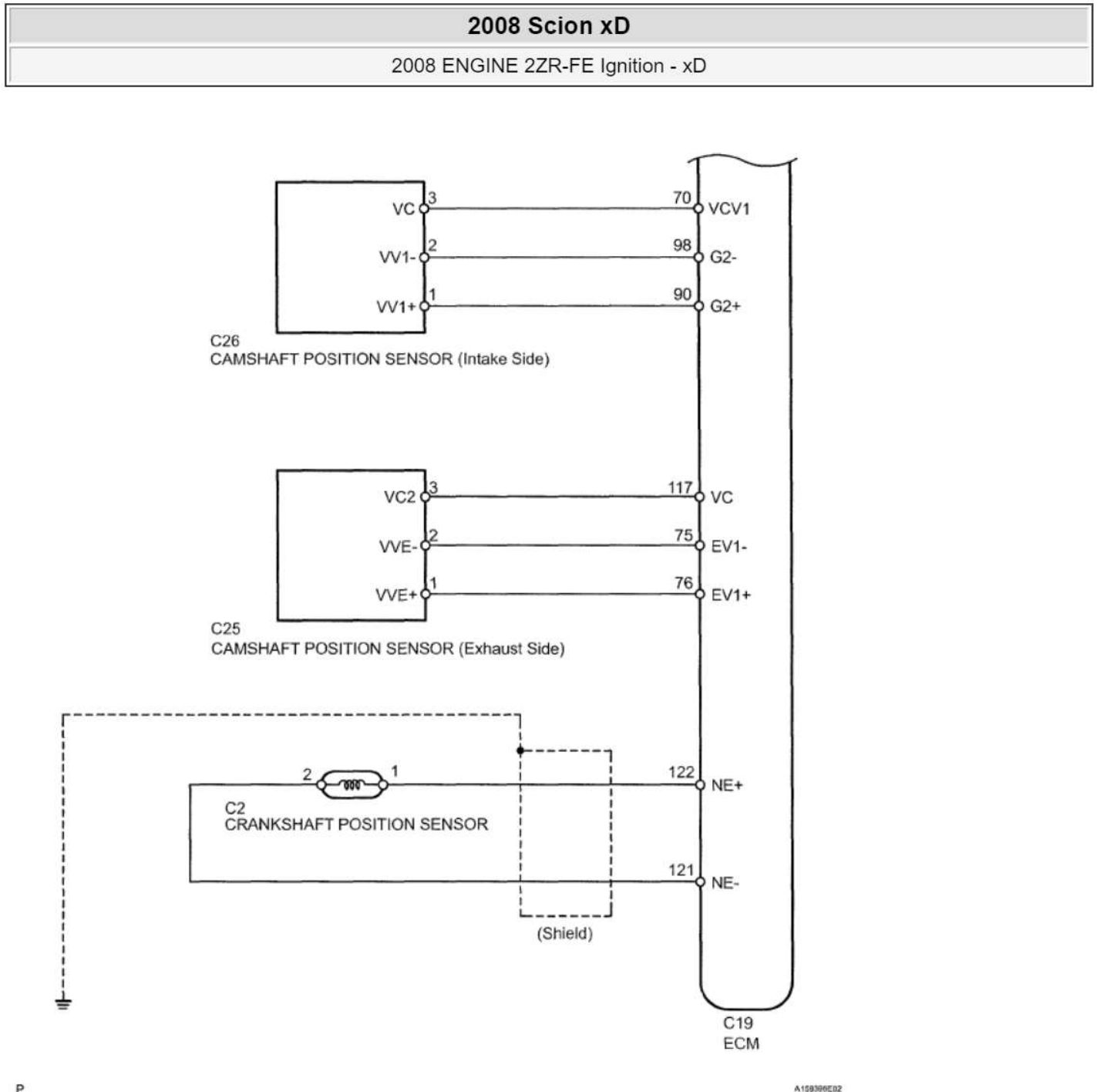


Fig. 2: Ignition System Diagram (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

**Fig. 3: Ignition System Diagram (2 Of 2)**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ON-VEHICLE INSPECTION**1. CHECK IGNITION COIL ASSEMBLY AND PERFORM SPARK TEST**

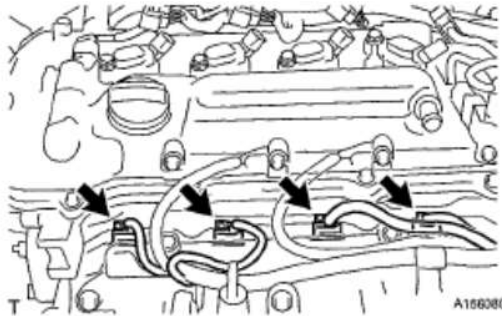
- a. Check the DTCs.

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

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

- b. Check that sparks occur.
1. Remove the ignition coil and spark plug. (See **REMOVAL**)
 2. Disconnect the 4 fuel injector connectors.

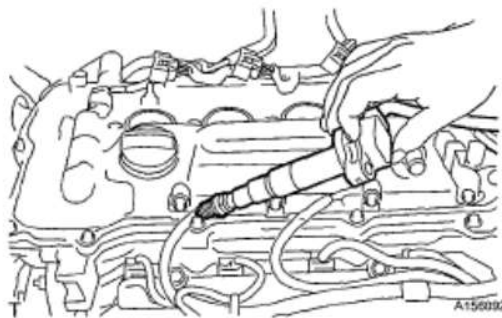
**Fig. 4: Locating Fuel Injector Connectors**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Install the spark plug into the ignition coil, and then connect the ignition coil connectors.
4. Ground the spark plug.
5. Check that sparks occur at the spark plug while the engine is being cranked.

NOTE:

- Be sure to ground the spark plugs when checking them.
- If the ignition coil has been struck or dropped, replace it.
- Do not crank the engine for more than 2 seconds.

**Fig. 5: Installing Spark Plug Into Ignition Coil**

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

If sparks do not occur, perform the following procedure.

- c. Spark test flow chart.
1. Check that the ignition coil connector is securely connected.

Result

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

RESULT REFERENCE

Result	Proceed to
NG	Connect securely
OK	Go to next step

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

Result**RESULT REFERENCE**

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

3. Perform the spark test.
 1. Replace the spark plug with a normal one.
 2. Perform the spark test again.

Result**RESULT REFERENCE**

Result	Proceed to
NG	Replace the spark plug
OK	Go to next step

4. Check the power supply to the ignition coil.
 1. Disconnect the ignition coil connector.
 2. Measure the resistance according to the value(s) in the table below.

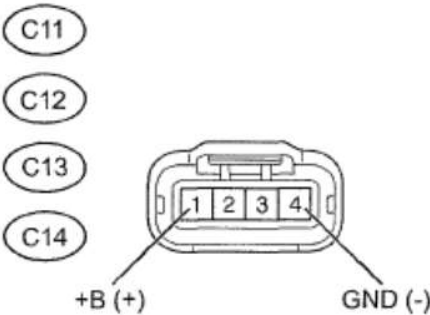
Standard resistance (Check for open)**RESISTANCE SPECIFICATION**

Tester Connection	Condition	Specified Condition
C11-4 (GND) - Body ground	Always	Below 1 ohms
C12-4 (GND) - Body ground	Always	Below 1 ohms
C13-4 (GND) - Body ground	Always	Below 1 ohms
C14-4 (GND) - Body ground	Always	Below 1 ohms

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

Front view of wire harness connector:
(to Ignition Coil)



A115989E08

Fig. 6: Identifying Front View Of Wire Harness Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. Turn the ignition switch to ON.
4. Measure the voltage according to the value(s) in the table below.

Standard voltage

VOLTAGE SPECIFICATION

Tester Connection	Condition	Specified Condition
C11-1 (+B) - C11-4 (GND)	Ignition switch ON	11 to 14 V
C12-1 (+B) - C12-4 (GND)	Ignition switch ON	11 to 14 V
C13-1 (+B) - C13-4 (GND)	Ignition switch ON	11 to 14 V
C14-1 (+B) - C14-4 (GND)	Ignition switch ON	11 to 14 V

Result

RESULT REFERENCE

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

5. Check the resistance of the camshaft position sensor. (See **DTC P0340 CAMSHAFT POSITION SENSOR CIRCUIT MALFUNCTION; DTC P0342 CAMSHAFT POSITION SENSOR "A" CIRCUIT LOW INPUT (BANK 1 OR SINGLE SENSOR); DTC P0343 CAMSHAFT POSITION SENSOR "A" CIRCUIT HIGH INPUT (BANK 1 OR SINGLE SENSOR)**)

Result

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

RESULT REFERENCE

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

6. Check the resistance of the crankshaft position sensor. (See **INSPECTION**)

Result**RESULT REFERENCE**

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

7. Check the IGT signal from the ECM.

Result**RESULT REFERENCE**

Result	Proceed to
NG	Check ECM (see <u>DTC P0351 IGNITION COIL "A" PRIMARY / SECONDARY CIRCUIT; DTC P0352 IGNITION COIL "B" PRIMARY / SECONDARY CIRCUIT; DTC P0353 IGNITION COIL "C" PRIMARY / SECONDARY CIRCUIT; DTC P0354 IGNITION COIL "D" PRIMARY / SECONDARY CIRCUIT</u>)
OK	Repair wiring between ignition coil and ECM

2. INSPECT SPARK PLUG

- a. Check the electrode.
- Using a megohmmeter, measure the resistance.

Standard resistance:**10 Mohms or more****HINT:**

- If a megohmmeter is not available, perform the following simple inspection instead.
- If the result is 10 Mohms or less, clean the plug and measure the resistance again.

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

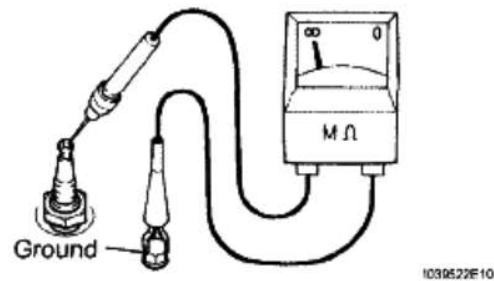


Fig. 7: Measuring Resistance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Alternative inspection method:
1. Quickly accelerate the engine to 4000 rpm 5 times.
 2. Remove the spark plug. (See **REMOVAL**)
 3. Visually check the spark plug.

If the electrode is dry, the spark plug is functioning properly. If the electrode is damp, proceed to the next step.

- c. Check the spark plug for any damage on its threads and insulator.

If there is damage, replace the spark plug.

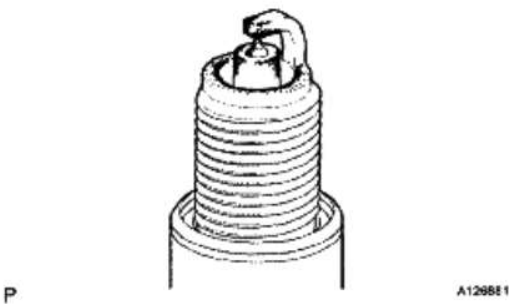


Fig. 8: Identifying Spark Plug
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Recommended spark plug

SPARK PLUG SPECIFICATION

Manufacturer	Spark plug type
DENSO	SC20HR11

- d. Spark plug electrode gap.

Maximum electrode gap for used spark plug:

2008 Scion xD

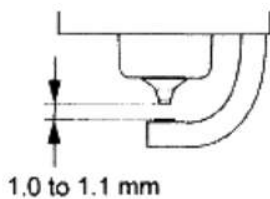
2008 ENGINE 2ZR-FE Ignition - xD

1.3 mm (0.051 in.)

If the gap is greater than the maximum, replace the spark plug.

Electrode gap for new spark plug:

1.0 to 1.1 mm (0.039 to 0.043 in.)



P

A126880E01

Fig. 9: Identifying Spark Plug Gap

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- e. Clean the spark plugs.

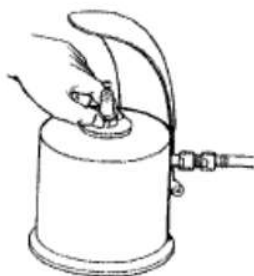
If the electrode has traces of wet carbon, clean the electrode with a spark plug cleaner and then dry it.

Standard air pressure:

588 kPa (6 kgf/cm² , 85 psi)

Standard duration:

20 seconds or less.



B062019E01

Fig. 10: Cleaning Spark Plugs

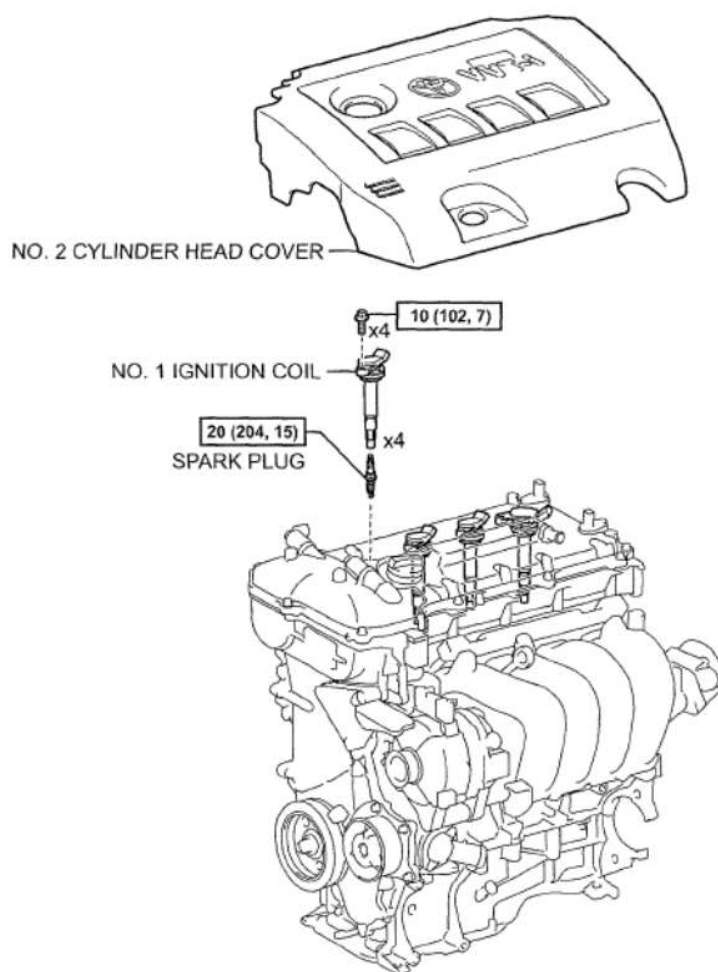
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

Only use the spark plug cleaner when the electrode is free of oil. If the electrode has traces of oil, use gasoline to clean off the oil before using the spark plug cleaner.

IGNITION COIL AND SPARK PLUG**COMPONENTS**

$\boxed{\text{N}^{\circ}\text{m (kgf}^{\circ}\text{cm, ft}^{\circ}\text{lbf)}}$: Specified torque

T

A171322E01

Fig. 11: Identifying Ignition Coil And Spark Plug Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL**1. REMOVE NO. 2 CYLINDER HEAD COVER**

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

- a. First, lift up the rear of the No. 2 cylinder head cover to disengage the 2 fittings shown in the illustration.

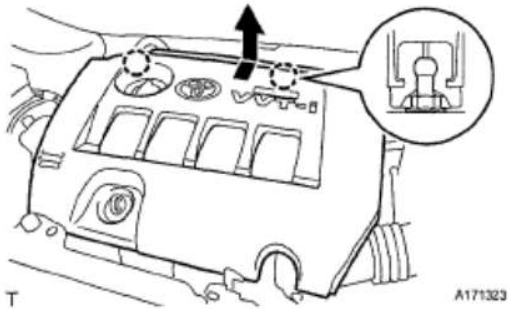


Fig. 12: Removing No. 2 Cylinder Head Cover

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Next, lift the front of the No. 2 cylinder head cover to disengage the 2 fittings shown in the illustration. Then remove the No. 2 cylinder head cover.

NOTE:

- Ensure that the rubber grommets remain attached to the No. 2 cylinder head cover.
- If any grommets are attached to the bolts, move them to the No. 2 cylinder head cover.

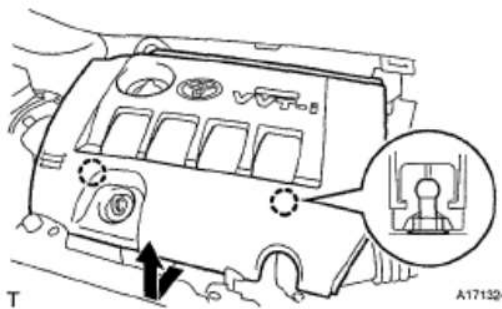


Fig. 13: Removing No. 2 Cylinder Head Cover

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. REMOVE IGNITION COIL ASSEMBLY

- a. Disconnect the camshaft timing oil control valve connector.

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

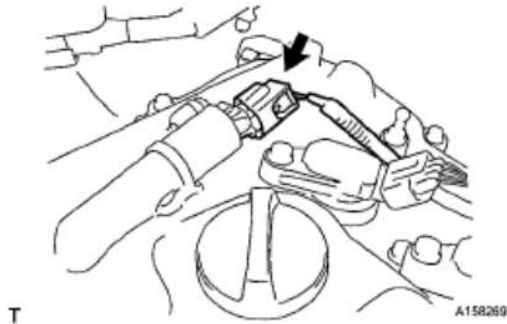


Fig. 14: Locating Camshaft Timing Oil Control Valve Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- b. Disconnect the 4 ignition coil connectors.
- c. Remove the 4 bolts and 4 ignition coils.

3. REMOVE SPARK PLUG

- a. Remove the 4 spark plugs.

INSTALLATION

1. INSTALL SPARK PLUG

- a. Install the 4 spark plugs.

Torque: 20 N*m (204 kgf*cm, 15 ft.*lbf)

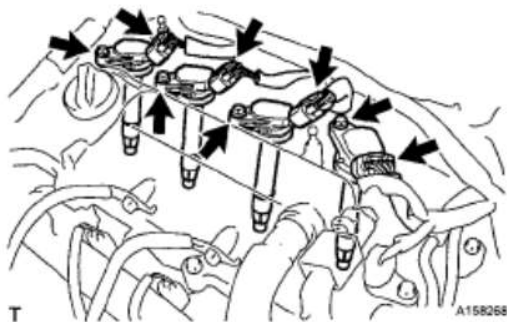


Fig. 15: Locating Ignition Coil Connectors Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. INSTALL IGNITION COIL ASSEMBLY

- a. Install the 4 ignition coils with the 4 bolts.

Torque: 10 N*m (102 kgf*cm, 7 ft.*lbf)

NOTE: Do not damage the rubber ignition coil tips when installing the ignition coils.

2008 Scion xD**2008 ENGINE 2ZR-FE Ignition - xD**

- b. Connect the 4 ignition coil connectors.

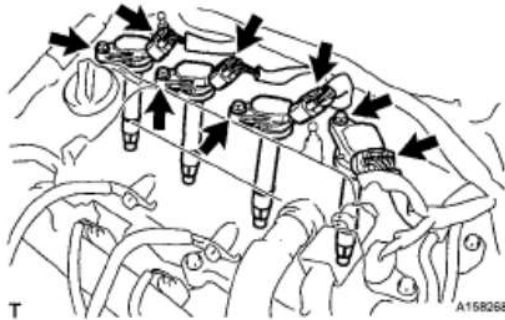


Fig. 16: Locating Ignition Coil Connectors Bolts
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- c. Connect the camshaft timing oil control valve connector.

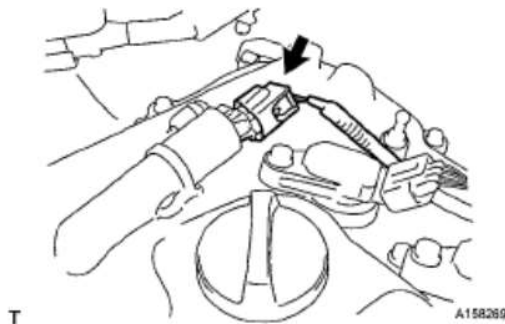


Fig. 17: Locating Camshaft Timing Oil Control Valve Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. INSTALL NO. 2 CYLINDER HEAD COVER

- a. Engage the 4 fittings shown and install the No. 2 cylinder head cover by applying pressure to it.

HINT:

Make sure that the oil filler cap and the engine oil level dipstick are correctly installed before installing the No. 2 cylinder head cover.

2008 Scion xD

2008 ENGINE 2ZR-FE Ignition - xD

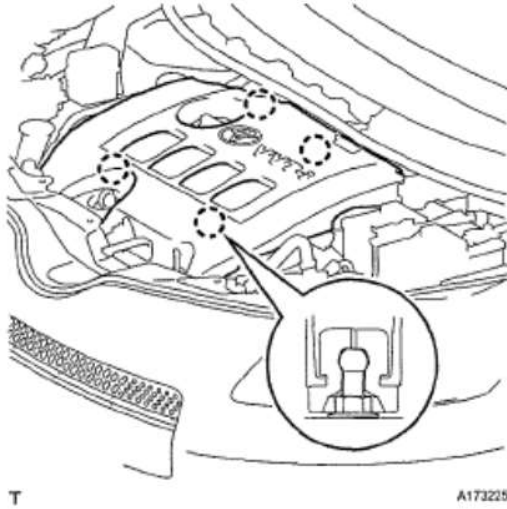


Fig. 18: Identifying No. 2 Cylinder Head Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.