

Last Modified: 01-14-2019

6.8:8.0.48

Doc ID: RM100000000SPQ1

Model Year Start: 2016

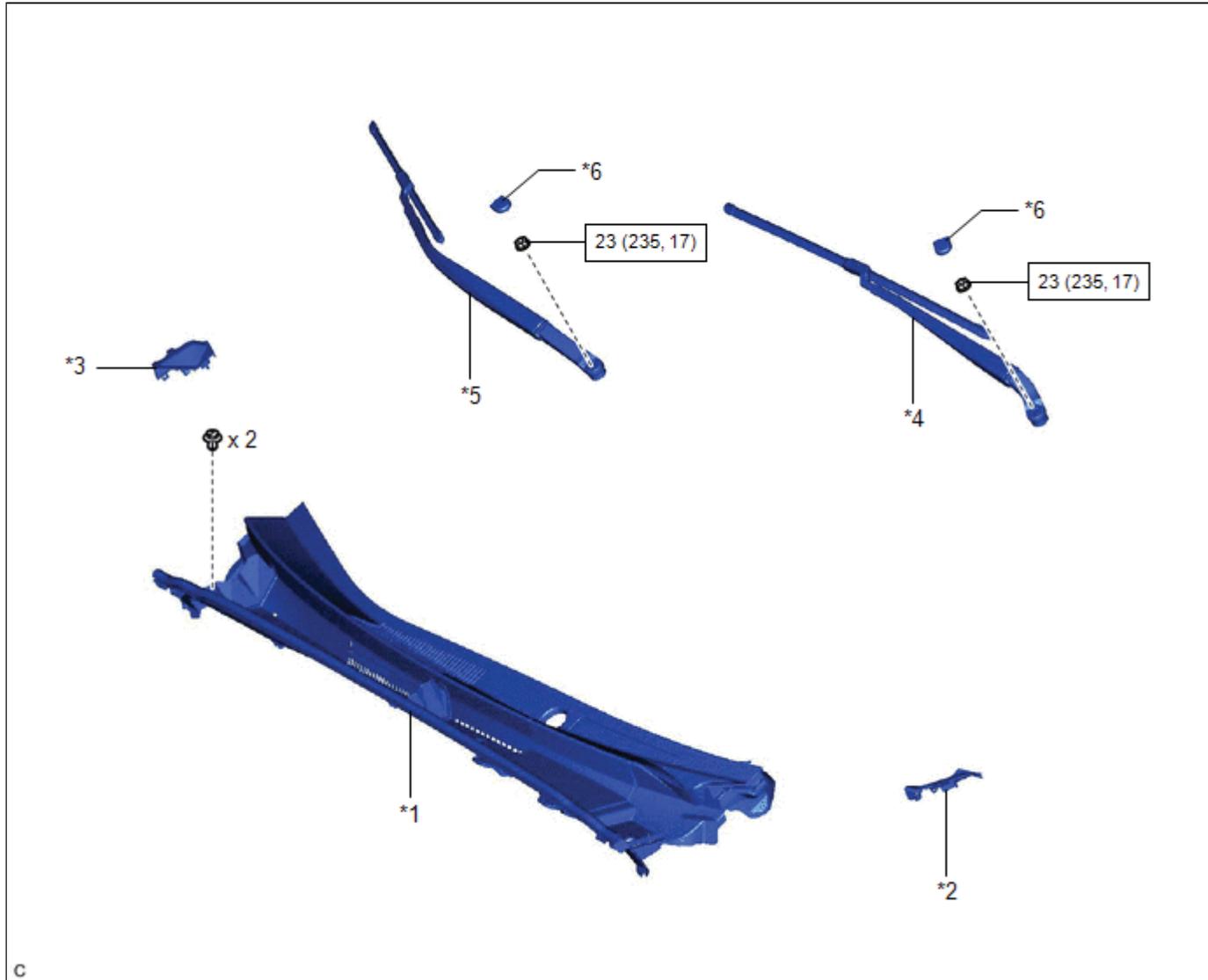
Model: Prius

Prod Date Range: [11/2015 - ]

Title: 2ZR-FXE (ENGINE CONTROL): IGNITION COIL AND SPARK PLUG: COMPONENTS; 2016 - 2019 MY Prius [11/2015 - ]

## COMPONENTS

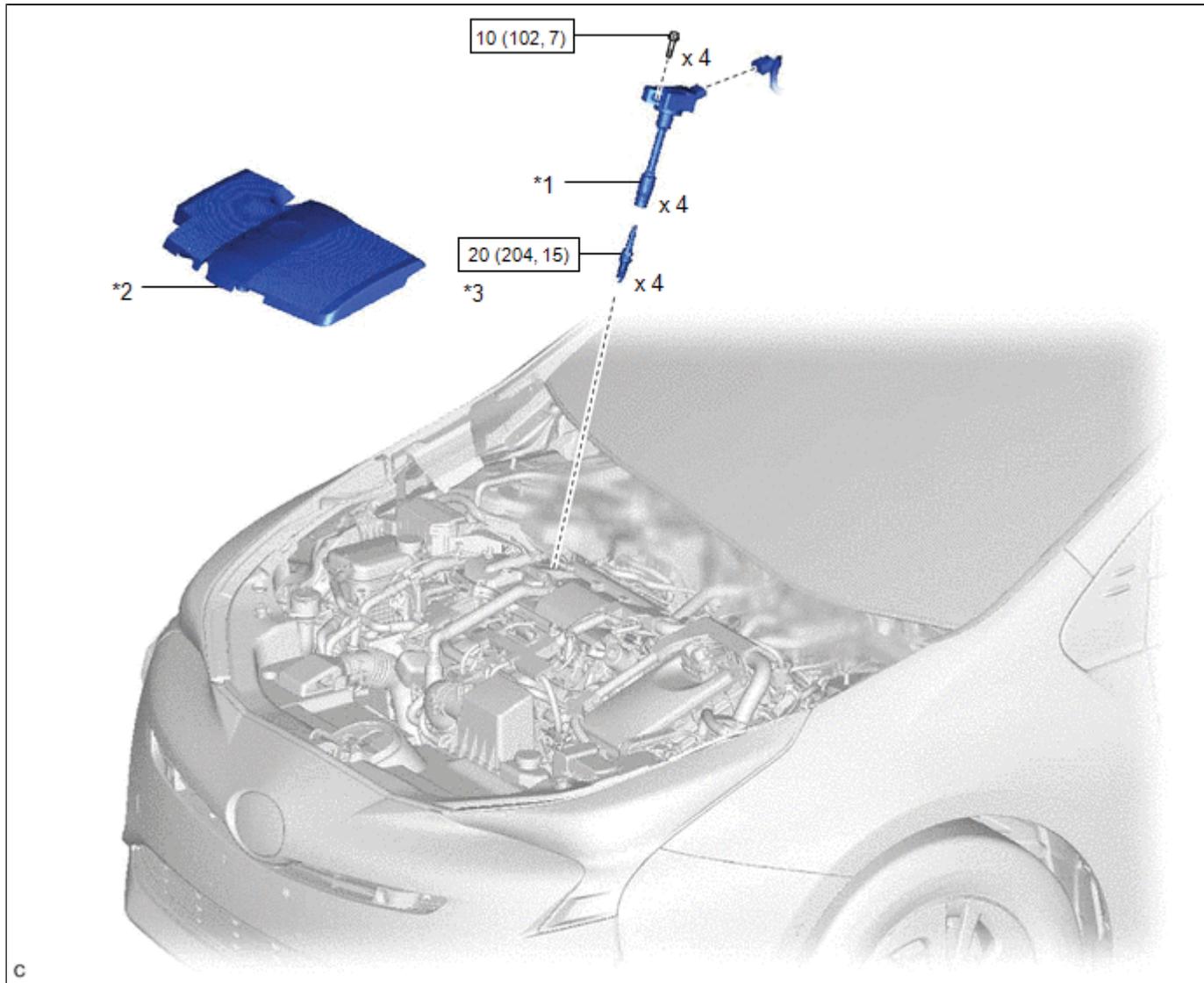
## ILLUSTRATION



*1	COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY	*2	COWL WATER EXTRACT SHIELD LH
*3	COWL WATER EXTRACT SHIELD RH	*4	FRONT WIPER ARM AND BLADE ASSEMBLY LH
*5	FRONT WIPER ARM AND BLADE ASSEMBLY RH	*6	FRONT WIPER ARM HEAD CAP

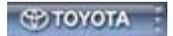
□	N*m (kgf*cm, ft.*lbf): Specified torque	-	-
---	---	---	---

## ILLUSTRATION



c

*1	IGNITION COIL ASSEMBLY	*2	NO. 1 ENGINE COVER SUB-ASSEMBLY
*3	SPARK PLUG	-	-
□	N*m (kgf*cm, ft.*lbf): Specified torque	-	-



<b>Last Modified:</b> 01-14-2019	6.8:8.0.48	<b>Doc ID:</b> RM100000000SPQ0
<b>Model Year Start:</b> 2016	<b>Model:</b> Prius	<b>Prod Date Range:</b> [11/2015 - ]
<b>Title:</b> 2ZR-FXE (ENGINE CONTROL): IGNITION COIL AND SPARK PLUG: INSTALLATION; 2016 - 2019 MY Prius [11/2015 - ]		

## INSTALLATION

### PROCEDURE

#### 1. INSTALL SPARK PLUG

**HINT:**

Perform "Inspection After Repair" after replacing a spark plug.

Click here [INFO](#)

- (a) Install the 4 spark plugs to the cylinder head sub-assembly.

**Torque:**

**20 N·m {204 kgf·cm, 15 ft·lbf}**

**NOTICE:**

If a spark plug has been struck or dropped, replace it.

**HINT:**

Install the same parts to their original positions.

#### 2. INSTALL IGNITION COIL ASSEMBLY

**HINT:**

Perform "Inspection After Repair" after replacing an ignition coil assembly.

Click here [INFO](#)

- (a) Install the 4 ignition coil assemblies to the cylinder head cover sub-assembly with the 4 bolts.

**Torque:**

**10 N·m {102 kgf·cm, 7 ft·lbf}**

**NOTICE:**

If an ignition coil assembly has been struck or dropped, replace it.

**HINT:**

Install the same parts to their original positions.

- (b) Connect the 4 ignition coil assembly connectors.

#### 3. INSTALL COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY

Click here [INFO](#)

#### 4. INSTALL COWL WATER EXTRACT SHIELD LH

Click here [INFO](#)

#### 5. INSTALL COWL WATER EXTRACT SHIELD RH

Click here [INFO](#)

#### 6. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY RH

Click here [INFO](#)

## **7. INSTALL FRONT WIPER ARM AND BLADE ASSEMBLY LH**

Click here [INFO](#)

## **8. INSTALL FRONT WIPER ARM HEAD CAP**

Click here [INFO](#)

## **9. INSTALL NO. 1 ENGINE COVER SUB-ASSEMBLY**

Click here [INFO](#) [INFO](#) [INFO](#)

## **10. PERFORM INITIALIZATION**

(a) Perform "Inspection After Repair" after replacing an ignition coil assembly and spark plug.

Click here [INFO](#)



<b>Last Modified:</b> 01-14-2019	6.8:8.0.48	<b>Doc ID:</b> RM100000000SPQ2
<b>Model Year Start:</b> 2016	<b>Model:</b> Prius	<b>Prod Date Range:</b> [11/2015 - ]
<b>Title:</b> 2ZR-FXE (ENGINE CONTROL): IGNITION COIL AND SPARK PLUG: REMOVAL; 2016 - 2019 MY Prius [11/2015 - ]		

## REMOVAL

## CAUTION / NOTICE / HINT

The necessary procedures (adjustment, calibration, initialization or registration) that must be performed after parts are removed and installed, or replaced during ignition coil assembly or spark plug removal/installation are shown below.

### Necessary Procedures After Parts Removed/Installed/Replaced

REPLACED PART OR PERFORMED PROCEDURE	NECESSARY PROCEDURE	EFFECT/INOPERATIVE FUNCTION WHEN NECESSARY PROCEDURE NOT PERFORMED	LINK
<ul style="list-style-type: none"> <li>Replacement of ignition coil assembly</li> <li>Replacement of spark plug</li> </ul>	Inspection After Repair	<ul style="list-style-type: none"> <li>Poor idle, etc.</li> <li>Engine start function, etc.</li> </ul>	<a href="#">INFO</a>

## PROCEDURE

### 1. REMOVE NO. 1 ENGINE COVER SUB-ASSEMBLY

Click here [INFO](#) [INFO](#) [INFO](#)

### 2. REMOVE FRONT WIPER ARM HEAD CAP

Click here [INFO](#)

### 3. REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY LH

Click here [INFO](#)

### 4. REMOVE FRONT WIPER ARM AND BLADE ASSEMBLY RH

Click here [INFO](#)

### 5. REMOVE COWL WATER EXTRACT SHIELD LH

Click here [INFO](#)

### 6. REMOVE COWL WATER EXTRACT SHIELD RH

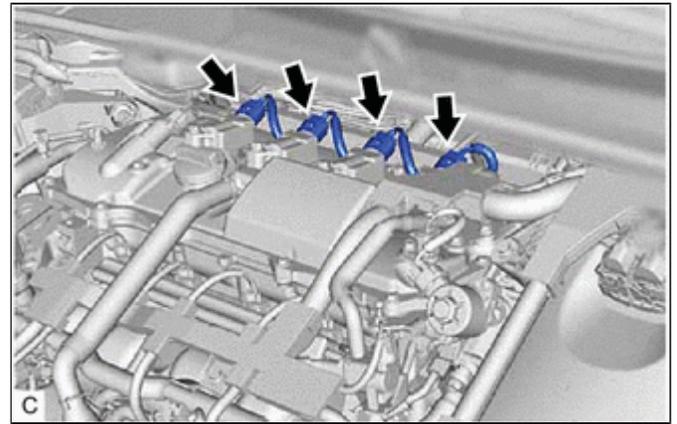
Click here [INFO](#)

### 7. REMOVE COWL TOP VENTILATOR LOUVER SUB-ASSEMBLY

Click here [INFO](#)

### 8. REMOVE IGNITION COIL ASSEMBLY

(a) Disconnect the 4 ignition coil assembly connectors.



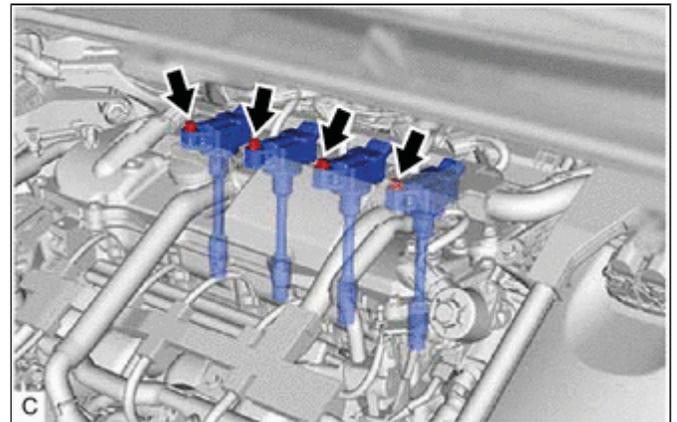
(b) Remove the 4 bolts and 4 ignition coil assemblies from the cylinder head cover sub-assembly.

**NOTICE:**

If an ignition coil assembly has been struck or dropped, replace it.

**HINT:**

Arrange the removed parts in the correct order.



## 9. REMOVE SPARK PLUG

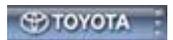
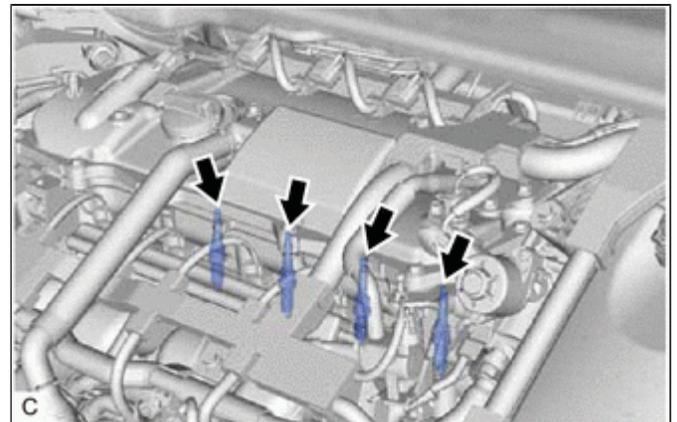
(a) Remove the 4 spark plugs from the cylinder head sub-assembly.

**NOTICE:**

If a spark plug has been struck or dropped, replace it.

**HINT:**

Arrange the removed parts in the correct order.



Last Modified: 01-14-2019	6.8:8.0.48	Doc ID: RM100000000SPQK
Model Year Start: 2016	Model: Prius	Prod Date Range: [11/2015 - ]
Title: 2ZR-FXE (ENGINE CONTROL): IGNITION SYSTEM: ON-VEHICLE INSPECTION; 2016 - 2019 MY Prius [11/2015 - ]		

## ON-VEHICLE INSPECTION

### PROCEDURE

#### 1. PERFORM SPARK TEST

**CAUTION:**

To prevent injury due to contact with an operating cooling fan, keep your hands and clothing away from the cooling fans when working in the engine compartment with the engine running or the power switch on (IG).



(a) Check for DTCs.

**NOTICE:**

If any DTCs are output, perform troubleshooting in accordance with the procedure for each DTC.

**HINT:**

Click here [INFO](#)

(b) Remove the 4 ignition coil assemblies and 4 spark plugs.

**NOTICE:**

If an ignition coil assembly or spark plug has been struck or dropped, replace it.

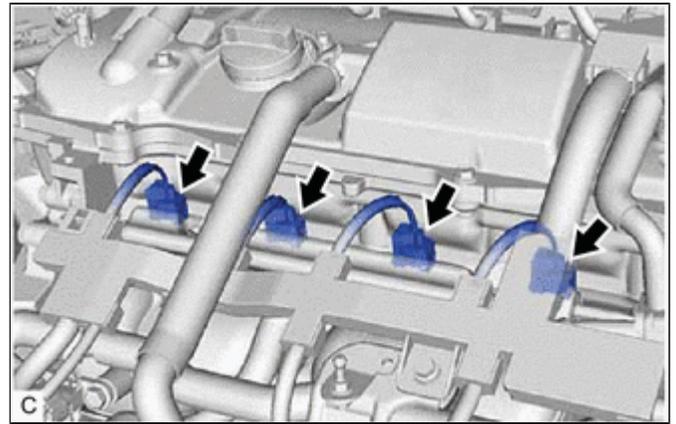
**HINT:**

- Click here [INFO](#)
- Arrange the removed parts in the correct order.

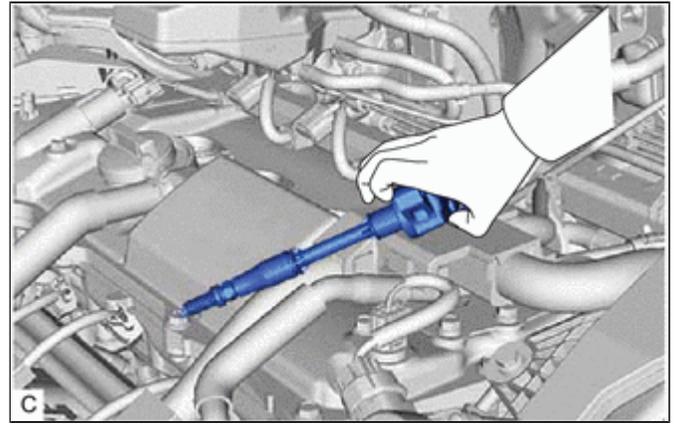
(c) Disconnect the 4 fuel injector assembly connectors.

**NOTICE:**

Perform this step in order to stop fuel injection to prevent damage to the catalyst due to unburned fuel.



(d) Install the spark plug to the ignition coil assembly, and then connect the ignition coil assembly connector.



(e) Put the engine in inspection mode (maintenance mode).

**Powertrain > Hybrid Control > Utility**



(f) Ground the spark plug.

(g) Check that spark occurs at each spark plug while the engine is being cranked.

**NOTICE:**

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

**HINT:**

If spark does not occur, perform the following procedure.

(h) Connect the 4 fuel injector assembly connectors.

(i) Install the 4 spark plugs and 4 ignition coil assemblies.

**NOTICE:**

If an ignition coil assembly or spark plug has been struck or dropped, replace it.

**HINT:**

- Click here [INFO](#)
- Install the same parts to their original positions.

(j) Check for DTCs.

**HINT:**

Click here [INFO](#)

(k) Clear the DTCs.

**HINT:**

Click here [INFO](#)

**2. INSPECT IGNITION COIL ASSEMBLY AND SPARK TEST**

**HINT:**

Perform "Inspection After Repair" after replacing a spark plug or ignition coil assembly.

Click here [INFO](#)

(a) Check that the ignition coil assembly connector is securely connected.

RESULT	ACTION
NG	Connect securely
OK	Go to next step

(b) Perform a spark test on each ignition coil assembly.

- (1) Replace the ignition coil assembly with a known good one.
- (2) Perform the spark test again.

RESULT	ACTION
NG	Go to next step
OK	Replace ignition coil assembly

**NOTICE:**

If an ignition coil assembly or spark plug has been struck or dropped, replace it.

(c) Perform a spark test on each spark plug.

- (1) Replace the spark plug with a known good one.
- (2) Perform the spark test again.

RESULT	ACTION
NG	Inspect the ignition system <b>HINT:</b> Click here <a href="#">INFO</a> <a href="#">INFO</a> <a href="#">INFO</a> <a href="#">INFO</a>
OK	Replace spark plug

**NOTICE:**

If an ignition coil assembly or spark plug has been struck or dropped, replace it.

- (d) Connect the 4 fuel injector assembly connectors.
- (e) Install the 4 spark plugs and 4 ignition coil assemblies.

**NOTICE:**

If an ignition coil assembly or spark plug has been struck or dropped, replace it.

**HINT:**

- Click here INFO
- Install the same parts to their original positions.

- (f) Check for DTCs.

**Powertrain > Engine > Trouble Codes**

- (g) Clear the DTCs.

**Powertrain > Engine > Clear DTCs**

**3. INSPECT SPARK PLUG**

**NOTICE:**

- Be careful not to damage the iridium tip or platinum tip of the spark plug.
- Check the iridium tip visually as it is easily damaged.
- Never attempt to adjust the electrode gap of a used spark plug.
- If a spark plug is extremely dirty with oil, etc., replace it.
- Replace a spark plug if it is damaged.
- If a spark plug has been struck or dropped, replace it.
- When installing a new spark plug, do not remove the protective cap from the spark plug tip until just before installing the spark plug to the engine.

**HINT:**

Perform "Inspection After Repair" after replacing a spark plug.

Click here INFO

- (a) Check the electrode.

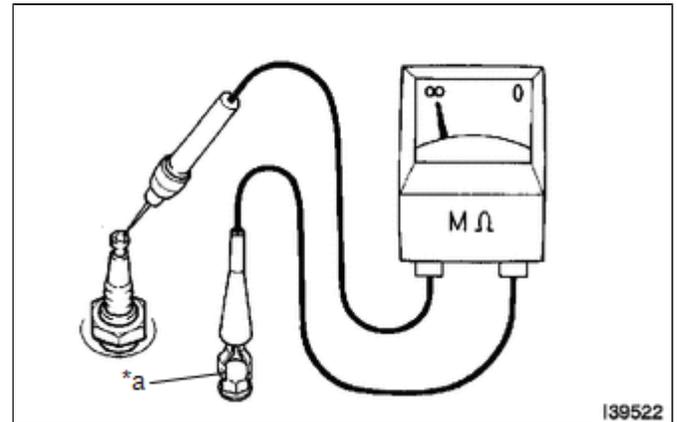
- (1) Using a megohmmeter, measure the insulation resistance.

Standard Insulation Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
Spark plug (terminal part) - Body ground	Always	10 MΩ or higher

**HINT:**

- If the result is not as specified, clean the spark plug with a spark plug cleaner and measure the resistance again.
- If a megohmmeter is not available, perform the following simple inspection instead.



*a	Body Ground
----	-------------

- (b) Alternative inspection method.

- (1) Put the engine in inspection mode (maintenance mode).

**Powertrain > Hybrid Control > Utility**



Inspection Mode

(2) Start the engine.

**NOTICE:**

Do not perform this step when any of the following DTCs are output: P030000, P030027, P030085, P030100, P030200, P030300, P030400 (Cylinder Misfire Detected).

(3) Quickly accelerate the engine to 2500 rpm 5 times.

**NOTICE:**

Do not perform this step when any of the following DTCs are output: P030000, P030027, P030085, P030100, P030200, P030300, P030400 (Cylinder Misfire Detected).

(4) Remove the spark plug.

**HINT:**

Click here [INFO](#)

(5) Visually check the spark plug.

**HINT:**

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 to its threads and insulator.

If there is any damage, replace the spark plug.

Recommended Spark Plug:

MANUFACTURER	SPARK PLUG TYPE
DENSO	FC16HR-C9 FC16HR-CY9

(d) Check the spark plug electrode gap.

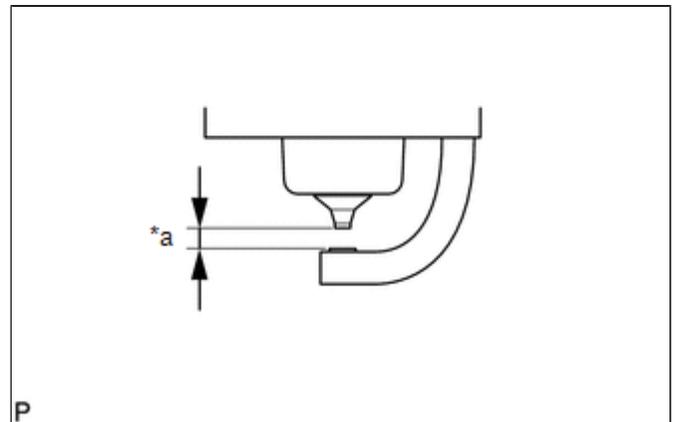
Maximum Electrode Gap for Used Spark Plug:  
1.1 mm (0.0433 in.)

**NOTICE:**

Never attempt to adjust the electrode gap of a used spark plug.

If the electrode gap is more than the maximum, replace the spark plug.

Standard Electrode Gap for New Spark Plug:  
0.8 to 0.9 mm (0.0315 to 0.0354 in.)



*a	Spark Plug Electrode Gap
----	--------------------------

(e) Install the spark plug.

**HINT:**

Click here [INFO](#)

**4. PERFORM INITIALIZATION**

(a) Perform "Inspection After Repair" after replacing a spark plug or ignition coil assembly.

**HINT:**

[Click here](#)

INFO

