

# **IGNITION**

# General Description

IGNITION

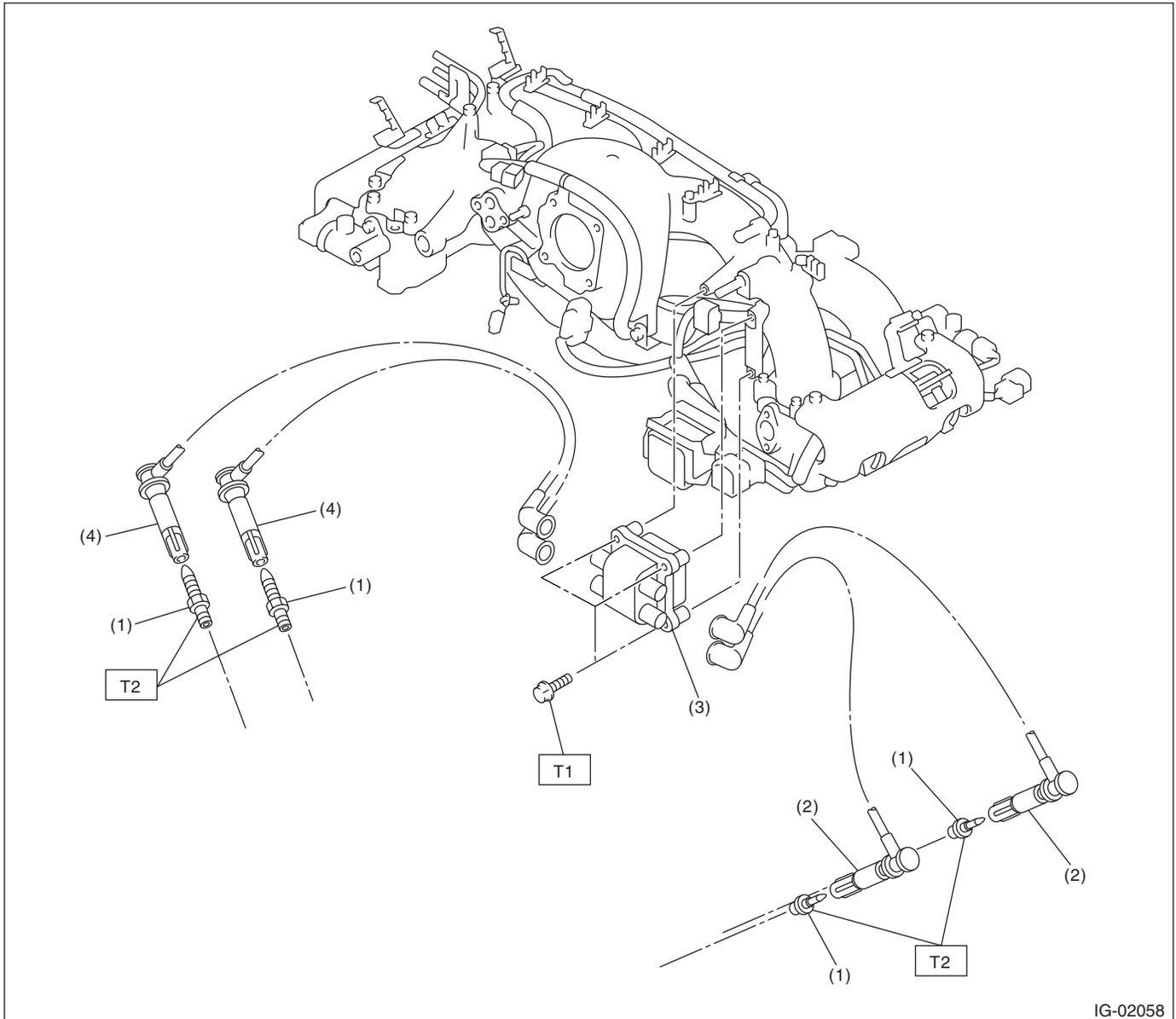
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## 1. General Description

### A: SPECIFICATION

	Item	Designation
Ignition coil and ignitor assembly	Model	FH 0286
	Manufacturer	DIAMOND
	Secondary coil resistance	11.7 k $\Omega$ ±15%
Spark plug	Manufacturer and Type	NGK: FR5AP-11
	Thread size (diameter, pitch, length) mm	14, 1.25, 19
	Spark plug gap mm (in)	1.0 — 1.1 (0.039 — 0.043)
	Electrode	Platinum

## B: COMPONENT



- (1) Spark plug
- (2) Spark plug cord (#1, #3)
- (3) Ignition coil and ignitor ASSY
- (4) Spark plug cord (#2, #4)

**Tightening torque: N-m (kgf-m, ft-lb)**

**T1: 6.4 (0.65, 4.7)**

**T2: 21 (2.1, 15.2)**

### C: CAUTION

- Wear work clothing, including a cap, protective goggles, and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Be careful not to burn yourself, because each part on the vehicle is hot after running.

- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Before disconnecting electrical connectors of sensors or units, be sure to disconnect the ground cable from battery.

# Spark Plug

IGNITION

## 2. Spark Plug

### A: REMOVAL

#### CAUTION:

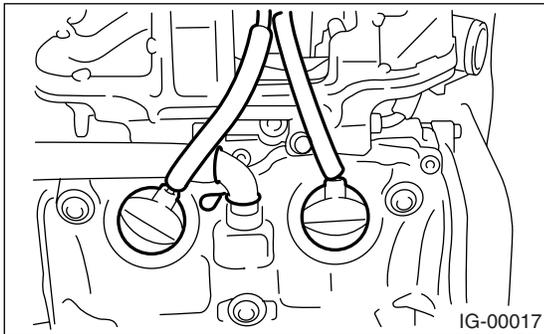
All spark plugs installed on an engine must be of the same heat range.

#### Spark plug:

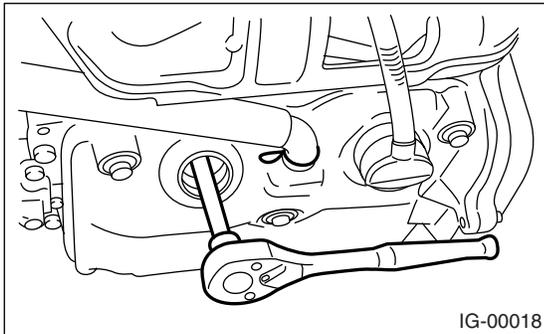
<Ref. to IG(H4SO)-2, SPECIFICATION, General Description.>

#### 1. RH SIDE

- 1) Disconnect the ground cable from battery.
- 2) Remove the air cleaner case. <Ref. to IN(H4SO)-5, REMOVAL, Air Cleaner Case.>
- 3) Remove the spark plug cords by pulling the boot. (Do not pull the cord itself.)

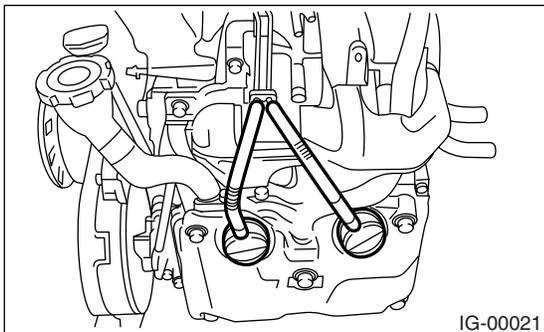


- 4) Remove the spark plug with a spark plug socket.

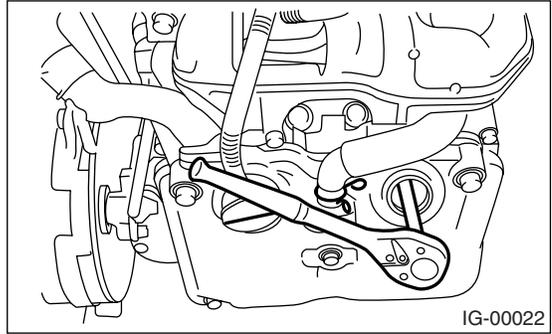


#### 2. LH SIDE

- 1) Remove the battery.
- 2) Remove the spark plug cords by pulling the boot. (Do not pull the cord itself.)



- 3) Remove the spark plug with a spark plug socket.



### B: INSTALLATION

#### 1. RH SIDE

Install in the reverse order of removal.

#### Tightening torque:

**21 N·m (2.1 kgf-m, 15.2 ft-lb)**

#### NOTE:

The above torque should be only applied to new spark plugs without oil on their threads. In case their threads are lubricated, the torque should be reduced by approx. 1/3 of the specified torque in order to avoid over-stressing.

#### 2. LH SIDE

Install in the reverse order of removal.

#### Tightening torque:

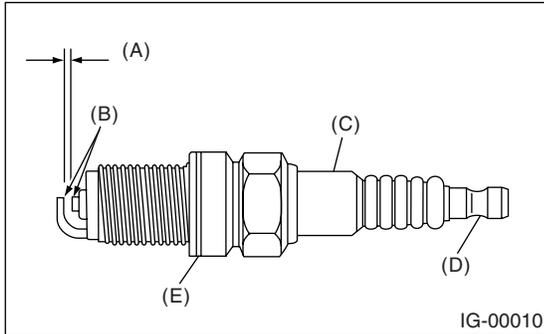
**21 N·m (2.1 kgf-m, 15.2 ft-lb)**

#### NOTE:

The above torque should be only applied to new spark plugs without oil on their threads. In case their threads are lubricated, the torque should be reduced by approx. 1/3 of the specified torque in order to avoid over-stressing.

## C: INSPECTION

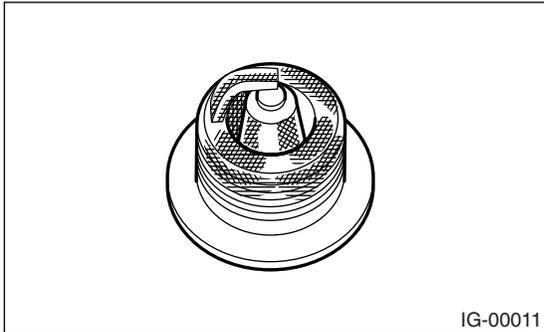
Check the electrodes and inner and outer ceramic insulator of plugs, noting the type of deposits and the degree of electrode erosion.



- (A) Spark plug gap
- (B) Carbon accumulation or wear
- (C) Crack
- (D) Damage
- (E) Damaged gasket

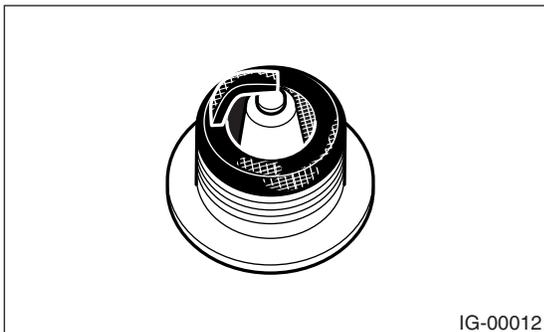
### 1) Normal:

Brown to grayish-tan deposits and slight electrode wear indicate correct spark plug heat range.



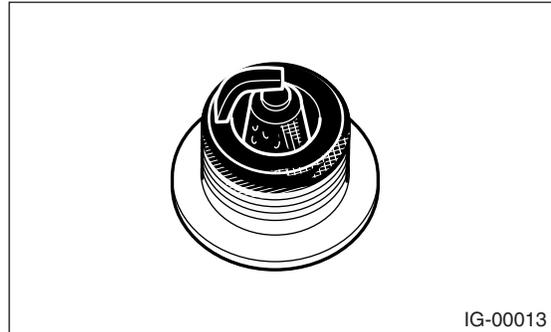
### 2) Carbon fouled:

Dry fluffy carbon deposits on insulator and electrode are mostly caused by slow speed driving in the city, weak ignition, too rich fuel mixture and dirty air cleaner.



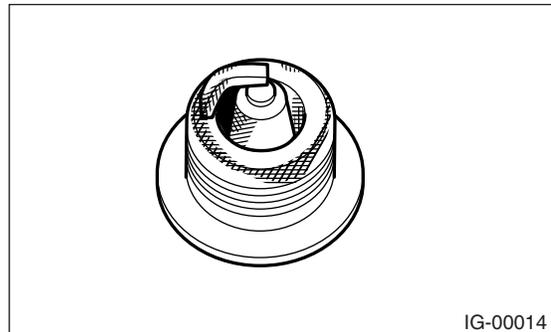
### 3) Oil fouled:

Wet black deposits show excessive oil entrance into combustion chamber through worn rings and pistons or excessive clearance between valve guides and stems.



### 4) Overheating:

White or light gray insulator with black or brown spots and bluish burnt electrodes indicate engine overheating. Moreover, the appearance results from incorrect ignition timing, loose spark plugs, wrong selection of fuel, etc.



## CAUTION:

**Avoid using a plug cleaner because of the spark plug with a platinum tip.**

## D: ADJUSTMENT

Clean the spark plugs with a wire brush. Clean and remove the carbon or oxide deposits, but do not wear away ceramic insulator.

If deposits are too stubborn, replace the plugs.

After cleaning the spark plugs, correct the spark plug gap using a gap gauge.

## NOTE:

Do not use spark plug cleaners, because the spark plugs are applied with platinum tips.

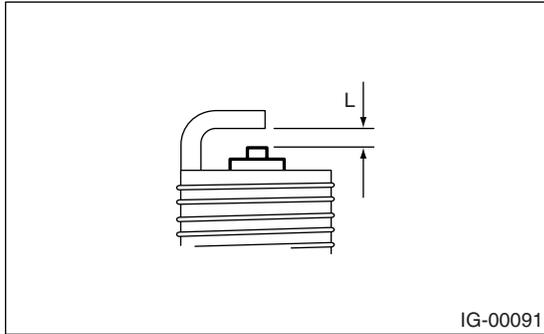
# Spark Plug

IGNITION

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**Spark plug gap L:**

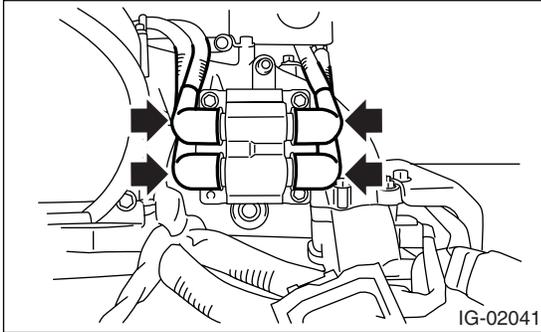
**1.0 — 1.1 mm (0.039 — 0.043 in)**



## 3. Ignition Coil and Ignitor Assembly

### A: REMOVAL

- 1) Disconnect the ground cable from battery.
- 2) Disconnect the spark plug cords from ignition coil and ignitor assembly.



*Specified resistance:*

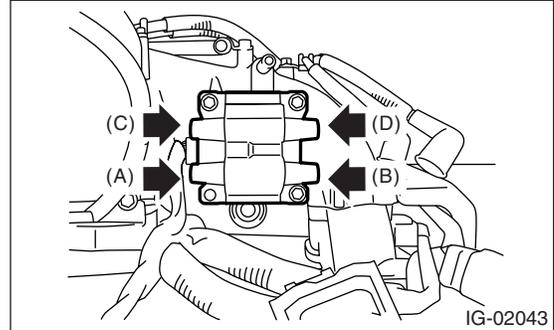
*[Secondary side]*

*Between (A) and (B)*

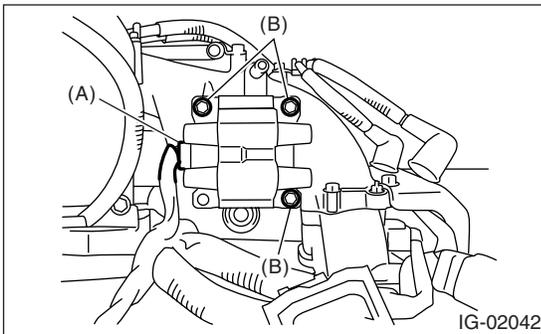
*11.7 kΩ±15%*

*Between (C) and (D)*

*11.7 kΩ±15%*



- 3) Disconnect the connector (A) from ignition coil and ignitor assembly.
- 4) Remove the bolt (B) which secures the ignition coil and ignitor assembly to intake manifold.



### B: INSTALLATION

Install in the reverse order of removal.

*Tightening torque:*

*6.4 N·m (0.65 kgf-m, 4.7 ft-lb)*

**CAUTION:**

Connect the spark plug cords to correct positions. Failure to do so will damage the unit.

### C: INSPECTION

Check the following using a tester. Replace if defective.

- Secondary coil resistance

**CAUTION:**

- If the resistance is extremely low, it indicates the presence of a short-circuit.
- Ignitor is integrated with the coil. Therefore the resistance of primary side coil cannot be measured.

## 4. Spark Plug Cord

### A: INSPECTION

Check the following items:

- Damage to cords, deformation, burning, or rust formation of terminals
- Resistance values of cords

#### **Resistance value:**

**#1 cord: 7.1 — 12.1 k $\Omega$**

**#2 cord: 12.1 — 19.9 k $\Omega$**

**#3 cord: 7.7 — 13.0 k $\Omega$**

**#4 cord: 12.3 — 20.2 k $\Omega$**

