

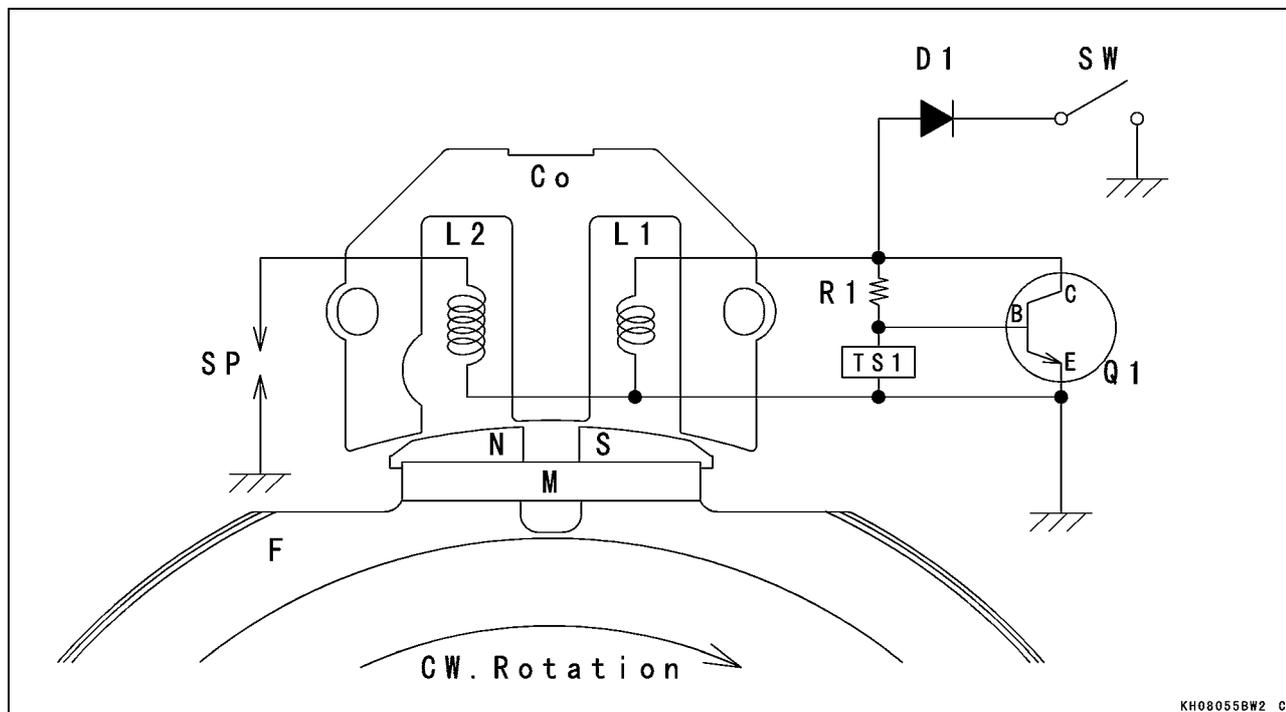
9-20 ELECTRICAL SYSTEM

Ignition System

This engine ignition is controlled by a solid state ignition assembly and requires no periodic maintenance except for the spark plugs.

The system consists of the following:

- Inductive Ignition Assemblies
- Permanent Magnet Flywheel
- Spark Plugs
- Stop Switch



KH08055BW2 C

Co: Core (Lamination)

D1: Diode

L1: Primary Coil

L2: Secondary Coil

Q1: Transistor

B: Base

C: Collector

E: Emitter

R1: Control Resistor

TS1: Trigger Sensor

SP: Spark Plug

SW: Stop Switch

F: Flywheel

M: Magnet

N: North Pole

S: South Pole

Ignition System Operation Theory

Permanent magnets are mounted around the edge area of a flywheel. As the flywheel (magnetic pole) rotates clockwise and passes the ignition module on a laminated core group, voltage is produced at the primary winding (L1), allowing a small bias current to flow from the control resistor (R1) to the transistor (Q1) base and thereby exciting the transistor base. Thus the transistor forms (turns ON) the primary circuit. This circuit current flows from the plus (+) side of the primary winding to ground through the transistor [Collector (C) to Emitter (E)].

When the base current is flowing, the trigger sensor (TS1) detects optimum time (peak current) to shut off the transistor base current. With the transistor rapidly shutting off the current at the primary coil, counter-electromotive force is generated and voltage in hundreds-volts is induced through the primary winding (L1), thereby producing extremely high voltage at the secondary winding (L2). When this secondary voltage steps up to k-volts, "ionization" meaning "ignition" occurs across the electrodes at the spark plug (SP).

The trigger sensor located internally in the ignition system is set to give constant ignition timing according to engine speed and temperature.

The diode (D1) located at the ignition shut-off circuit prevents misconnection of battery voltage, protecting the internal components of the ignition system. When the stop switch (SW) is set at the closed position, primary voltage is routed to ground, not allowing igniting operation.

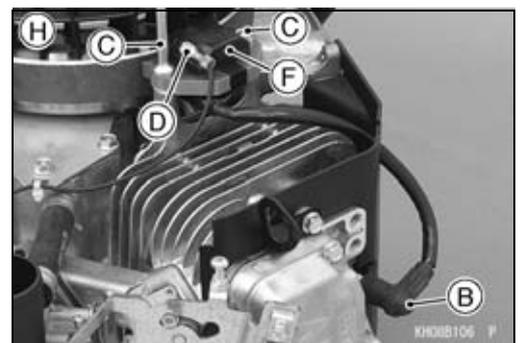
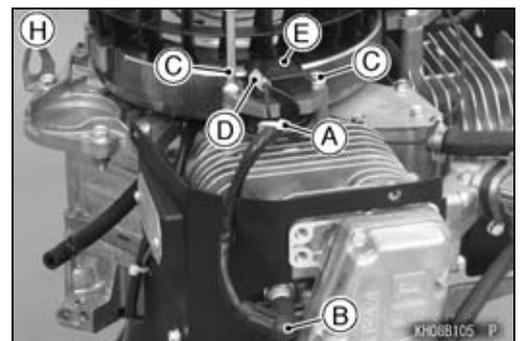
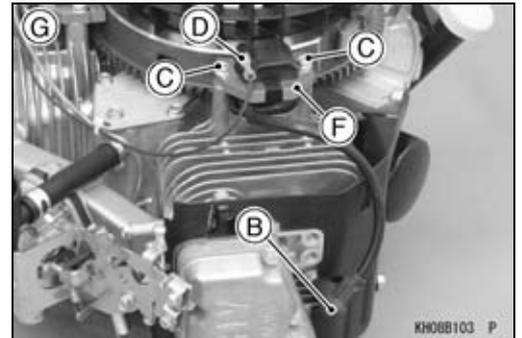
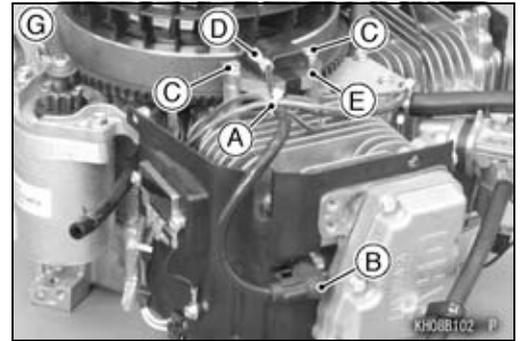
Ignition System

Ignition Coil Removal

- Remove the fan housing (see Flywheel and Stator Coil Removal).
- Cut off the band [A].
- Remove:
 - Spark Plug Cap [B]
 - Bolts [C]
 - Stop Switch Lead Connector [D]
 - Ignition Coil #1 [E]
 - Ignition Coil #2 [F]

Electric Starter Model [G]

Recoil Starter Model [H]



9-22 ELECTRICAL SYSTEM

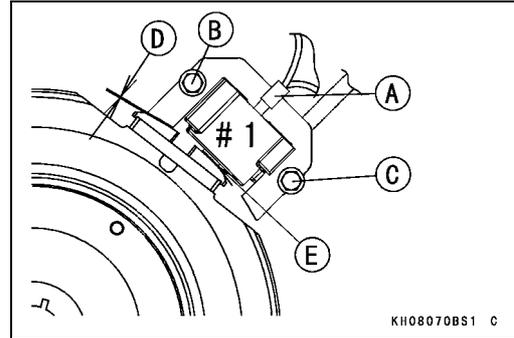
Ignition System

Ignition Coil Installation

- Install the ignition coil on the crankcase so that the stop switch lead connector [A] face the upward, and tighten bolt [B] first, then tighten bolt [C]. While tightening bolts, adjust the air gaps to specified gap value as shown.

[D]: between left leg of ignition coil and left pole-plate of magnet

[E]: between center of ignition coil and right pole-plate of magnet



Ignition Coil Air Gap

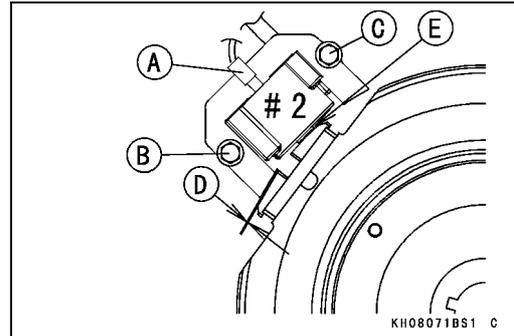
Standard: 0.2 ~ 0.4 mm (0.008 ~ 0.016 in.)

Torque - Ignition Coil Bolts: 5.9 N·m (0.60 kgf·m, 52 in·lb)

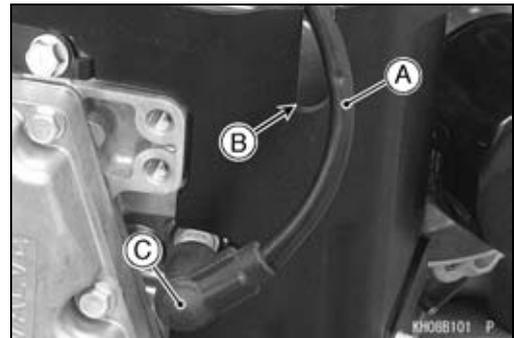
Ignition Coil Stud Bolts: 5.9 N·m (0.60 kgf·m, 52 in·lb) (Recoil Starter Model)

NOTE

○ Use the above procedure to insure proper coil air gap.

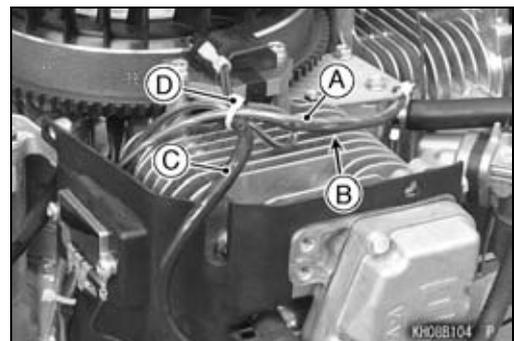


- Fit the ignition coil leads [A] to the each engine shroud groove [B].
- Install the spark plug cap [C].



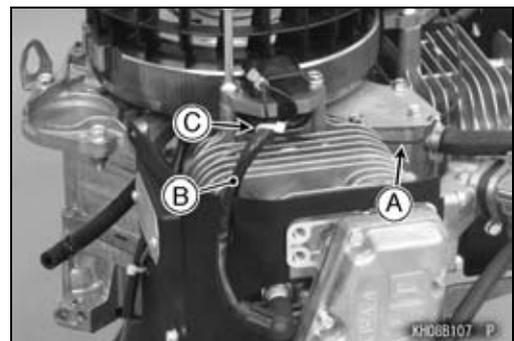
Electric Starter Model

- Attach the solenoid valve connector lead [A] and stop switch lead [B] to the ignition coil lead [C] with the band [D].



Recoil Starter Model

- Attach the stop switch lead [A] to the ignition coil lead [B] with the band [C].



Ignition System

Ignition Coil Inspection

- Remove the ignition coil (see Ignition Coil Removal).
- Measure the winding resistance as follows.
- Set the hand tester to the $R \times 1 \text{ k}\Omega$ range.

Special Tool - Hand Tester: 57001-1394

- Measure the ignition coil winding resistance as shown in the table.

Ignition Coil Winding Resistance

	+	A	B	C
-				
A	-		3 ~ 13 k Ω	10 ~ 20 k Ω
B	∞		-	∞
C	10 ~ 20 k Ω	18 ~ 28 k Ω		-

CAUTION

Use only Tester 57001-1394 with new battery at room temperature for this test. A tester other than the Kawasaki Hand Tester should show different readings.

If a megger or a meter with a large capacity battery is used, the ignition coil will be damaged.

- ★ If the tester does not read as specified, replace the coil with a new one.

Spark Plug Removal

- Carefully pull the plug caps from the spark plugs.
- Remove the spark plugs using a suitable plug wrench.

Spark Plug Installation

- Insert the spark plug vertically into the plug hole with the plug installed in the plug wrench.
- Tighten the plugs.

Torque - Spark Plugs: 22 N·m (2.2 kgf·m, 16 ft·lb)

- Fit the plug caps securely.
- Pull up the spark plug caps lightly to make sure of the installation of the spark plug caps.

Spark Plug Cleaning and Inspection

- Refer to the Spark Plug Cleaning and Inspection in the Periodic Maintenance chapter.

Spark Plug Gap Inspection

- Refer to the Spark Plug Gap Inspection in the Periodic Maintenance chapter.

