

750 H2 and 500 H1-D Ignition System

Last update: 2009-01-05

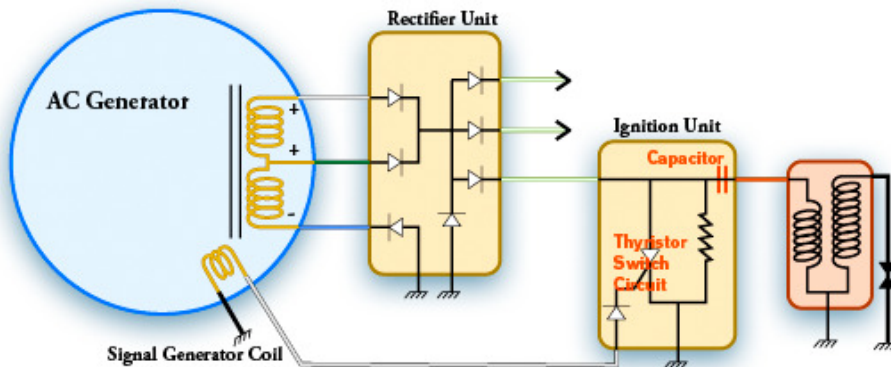
About Ignition System

Magneto CDI

The H2 has a Magneto CDI ignition system. This ignition system method has been developed for higher performance and greater reliability than battery CDI system.

Operation

This is a diagram of one of the three identical Magneto CDI Units, each unit produces the spark for one cylinder.



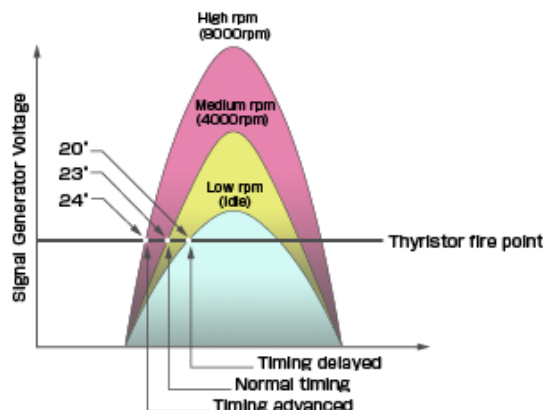
Capacitor charge current flows from the rectifier through ground, up through the primary winding of the ignition coil, and charge the capacitor - to + in the direction indicated. When the thyristor receives a signal at the gate lead sent from the signal generator, it begins to conduct. This completes a current path for capacitor discharge through the ignition coil primary, ground, and up through the thyristor. The sudden discharge in combination with the high run ratio of the ignition coil, cause a high voltage to be induced in the secondary winding of the coil, and consequently a spark jumps across the spark plug gap.

Spark Plug

Spark voltage ranges up to 36KV but a minimum of 24KV is always available, more than sufficient to supply the 13KV necessary to fire spark plug.

Ignition Timing

The SSM ignitor system also incorporates automatic timing advance. The thyristor is turned on at the same voltage level regardless of engine speed. But as speed increases, the voltage from the signal generator rise faster and the thyristor switch voltage point is reached sooner, thereby advancing ignition timing.



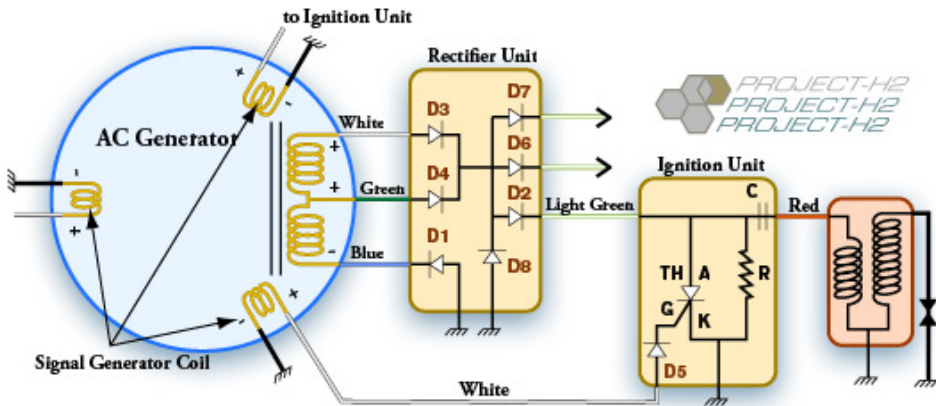
Detailed Operation

When the ignition winding voltage is at the polarity indicated in diagram below, capacitor charge current flows through D1, ground, up through the ignition coil primary, and to the capacitor (C).

Return current is from the other side of the capacitor, this is through D2 and through either D3 or D4 (depending on rpm) back to the generator.

When the signal generator winding is at the indicated polarity, signal voltage is felt at the gate of the thyristor and the thyristor starts conducting to discharge the capacitor. Signal current is from the signal generator winding through ground, from cathode (K) to gate (G) of the thyristor (TH), and via D5 back to the generator.

After the thyristor starts conducting, the capacitor discharges through the primary winding of the ignition coil to ground and up through the thyristor. In case the motorcycle is turned off just when the capacitor is charged, resistor (R) slowly discharges the capacitor. The resistance of R is high enough (390K Ohm) so that it has negligible effect on the ignition circuit while the engine is running.



Unit #2 and #3 operate in the same manner as above, when charge current flowing through D6 and D7 respectively.

Diode D8 is used to increase the effectiveness of the capacitor charge circuit. As the generator turn and charge voltage from the armature goes back to zero, the inductance of the primary winding of the ignition coil keeps charge current flowing into the capacitor for a short period. The charge path at this time is: Coil — C — D2 — D8 — ground — Coil.