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REF: Engine Control01

Aftermarket Ignitions

Typical options for Sportster Ignition Configurations (up to 2003):

1) Stock Older Ironhead Models - OEM
- Points to create spark
- Mechanical Advance to create an advance curve
- Coil is 5.0 ohms to match use with points

2) Stock EVO Configuration (Later model Ironheads & EVO up to 2003)
- Cam Sensor Plate (electronic trigger) - in place of points
- Ignition Control Module - rearward from battery (or other places)
- ICM has electronic curves for advance
- This module uses a VOES to switch between 2 curves - Vacuum Switch
- Coil should be 3.0 ohms

3) Some Only Eliminate Points (older Ironheads)
- Electronic Trigger - Dyna S - DS6-1 model
- Mechanical Advance is still used for advance curve
- Coil can be OEM 5.0 ohm

4) Most Eliminate Points & Mech Advance (and/or stock external ICM)
- Electronic Ignition Module - Ultima 53-644 - In nosecone
- This module includes electronic curves for spark advance
- This module uses a VOES to switch curves - Vacuum Switch
- Coil is 3.0 ohms

The 2004-later models all implemented the Crank Position Sensor which eliminated the Cam Sensor Plate.

The 2007-later models use Electronic Fuel Injection with a more complex ignition system.

Dyna S

The Dyna S Ignition is essentially an electronic version of the beaker points. It senses a magnet (on the rotating shaft) passing by its sensor & triggers the ignition coil.

The Dyna S Ignition relies on an external, mechanical advance for altering the timing in relation to engine RPM.

Dyna-S DS6-1 - Dual Fire Ignition - Has one coil trigger wire (Blue). It fires a dual-coil to produce two sparks at the same time. Therefore, it fires twice in each complete 4-cycle operation - once for the front cylinder (wasted spark to rear cylinder) and once for the rear cylinder (wasted spark to the front cylinder). Remember, it fires twice in each 4-cycle operation and it fires both spark plugs at the same time.

Dyna-S DS6-2 - Single Fire Ignition - Has two control wires (Black (F) & White (R)). It fires two independent coils to produce separate sparks at separate times (even when you use a combination coil with two built-in independent coils). It fires only once on each wire for each complete 4-cycle operation - once for the front cylinder on the compression stroke and then, using the other control wire, it fires the 2nd coil for the rear cylinder when it is in it's compression stroke.

Each type of Dyna-S Ignition uses a different rotor to be compatible with the control pickup plate (single-fire ROTOR is #32-9300 and dual-fire ROTOR is 32-9301). These parts cannot be mixed between the two types.

And, you can't mix a single-fire control with a dual-fire coil nor the other way. That's why they make two types of control modules and several types of coils.

You can set the Static Timing using a multimeter (or test light) connected between ground & the trigger point on the coil for the front cylinder. Rotate the engine until you are on the compression stroke for the front cylinder. Then open the timing hole and look for the FULL ADVANCE mark on the flywheel, placing it in the center of the timing hole. Turn on the ignition. Hold the center rotor in the FULL ADVANCE position, fully counter-clockwise so the weights are at their stops. Now loosen the mounting screws and rotate the Dyna-S timing plate clockwise & counter-clockwise to find the exact point where the meter shows full voltage (or the light is lit brightest). Lock down the mounting screws. The timing should be set very close to correct. (Using a timing light for Dynamic Timing at 2000 RPMs is more accurate.)

The install instructions are here:

Dyna-S DS6-1 Installation Instructions

Dyna-S DS6-2 Installation Instructions

- Also DS6-2 with wiring diagram here - https://www.wwag.com/step/pdf/104729.pdf

Ultima - Nosecone Ignition

The Ultima Ignition Unit (53-644) is very similar to the Dynatek 2000i product (although the programmed curves appear to be different). It is a self-contained ignition module meaning the timing sensors are built onto the same timing plate, located in the 'nosecone'. The timing rotor cup passes thru the sensors on the back of the timing plate to trigger the ignition module.

The Ultima unit triggers the coil primary circuit - either as a dual-fire system (one trigger) or a single-fire system (two trigger signals). It also has an output for a tachometer and also has an input for using a VOES to alter the spark timing during idle & cruising.

The install instructions are here:

Ultima 53-644 Installation Instructions (2012 version)

1)

See this thread: http://xlforum.net/forums/showthread.php?t=1747557

Daytona Twin Tech TC88A

Daytona Twin Tech TC88A is a popular replacement module on 2004-2006 models.

Here's an Overview of Ignition Technology on the Daytona Twin Tec page:
http://www.daytona-twintec.com/tech_ignition.html

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Pics by Blowby & Static of the XLForum.net