

# DYNA S ELECTRONIC IGNITION INSTALLATION INSTRUCTIONS

**Part No. DS6-2 for 1970 and later Harley-Davidsons**  
[The DS6-2 should be used with coils having 5 ohms primary resistance for street applications. For race applications, 3 ohm coils can be used. See application chart for part numbers.

## PROCEDURE

1. Remove the point cover.
2. Remove the two standoffs holding the point plate to the engine. Unplug the wire going to the points and remove point/plate assembly.
3. Remove the bolt holding the spark advance assembly to the engine and remove the assembly.
4. Remove the point cam from the advance assembly.
5. Coat the advance assembly shaft lightly with oil. Slip the magnetic rotor over the shaft. Push the rotor down until it engages the weights on the advance assembly (it will only go on one way). Ensure that the rotor rotates freely on the shaft as the advance weights move out and back.
6. Install the advance/rotor assembly on the engine making sure the pin on the advance assembly is engaged in the slot on the engine. Install the bolt and tighten. Ensure that the rotor is still free to rotate.
7. Remove the wire that connected the points and ignition coil.
8. Install the ignition assembly using the two standoffs previously removed; and tighten. The plate should be oriented so that the large power module is at 12 o'clock or 3 o'clock, depending on model.
9. Route the cable from the ignition assembly out the hole in the engine case and over to the ignition coils, being careful to avoid the exhaust system.
10. Crimp the connectors supplied with the kit on to the ignition wires.
11. One end of the primary of each coil should be connected together with the supplied jumper. The 12 volt wire from the ignition switch is also connected to that end of one of the coils. Connect the red wires from the DYNA S to that same end of one of the coils.
12. Connect the black wire to the other end of the coil for the front cylinder.
13. Connect the white wire to the other end of the coil for the rear cylinder.
14. This completes the wiring. Make sure that all connections are secure.

## TIMING

**Note: For engines with dual plugs, different timing specs. may be required.**

- A) The front to rear cylinder firing angle on this ignition has been precisely set at the factory. To set the engine timing, it is only necessary to time the front cylinder; the rear cylinder will then be timed automatically.
- B) All timing adjustments should be made using the advance timing marks on the flywheel. Refer to a factory shop manual to determine the timing mark for your particular engine.
- C) Rotating the ignition plate clockwise advances the timing and counterclockwise movement retards the timing.

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# DYNA S IGNITION SYSTEM TESTING

## INSPECTION

Check that the rotor is not rubbing the modules or the wiring. Turn the rotor to the advanced position and release. It should snap back crisply. Check when motor is cold and again when hot. Make a timing mark on the case and Dyna S plate. Remove the Dyna S and check that the advancer is not rubbing the plate.

Inspect the cable for burned or pinched sections. Firmly pull on all splices and crimp terminals. Check that coil connections are tight and clean. Install split lock washers on screws.

Remove spark plug wires and inspect for corroded terminals and cracked insulation. Connect an ohmmeter to each end and gently pull and twist the wire to check for breaks. Check the spark plugs. Replace if excessively fouled - do not clean.

## VOLTAGE TEST

First check the primary resistance of the ignition coils. They should be at least 3 ohms (remember to subtract the resistance of the meter leads). Replace coils that read an open or shorted primary before proceeding.

Rotate the motor so that the magnet in the rotor is pointing away from the modules. Turn on the ignition and measure the voltage between ground and coil (+). A reading of about 1 volt less than battery voltage is normal due to resistance in the wiring.

If the voltage is much lower, check for voltage drops across any switches, splices, connectors, circuit breakers, etc., that feed power to the coils. Do not leave the ignition on for more than about 5 min. when doing this test - the coils may overheat and become damaged.

Measure the voltage between each coil (-) terminal and ground. This should measure in the range of 0.8 to 1.4 volts when the magnet is pointed away from the modules.

Rotate the motor until the magnet points at the sensor (the sensor is located behind the raised rib on the face of the module). The voltage should go up to approx. battery voltage. This indicates the module is switching on and off and is probably OK.

If the voltage stays low, check that the gap between the rotor and sensor is in the range of 0.025" to 0.040". Gaps larger than 0.040" may cause the module not to switch. The voltage will also stay low if the output is shorted.

If the voltage stays high all the time, check that the mounting plate has a solid ground and that there is power going to the modules. If this is OK, the module may be bad.

## OHMMETER TEST

Disconnect the Dyna S wires from the coils. Connect the negative ohmmeter lead to the mounting plate and the positive lead to one of the coil (-) wires. This should read open (infinite ohms) on all ranges. Any other reading indicates a damaged output. If the meter has a diode test, the leads can be reversed and a diode drop of 0.5 to 0.6 volts will be read.

**Note:** Many low cost ohmmeters reverse the polarity of the leads inside the meter. This will cause a false bad reading due to the resistance of the reverse diode described above.

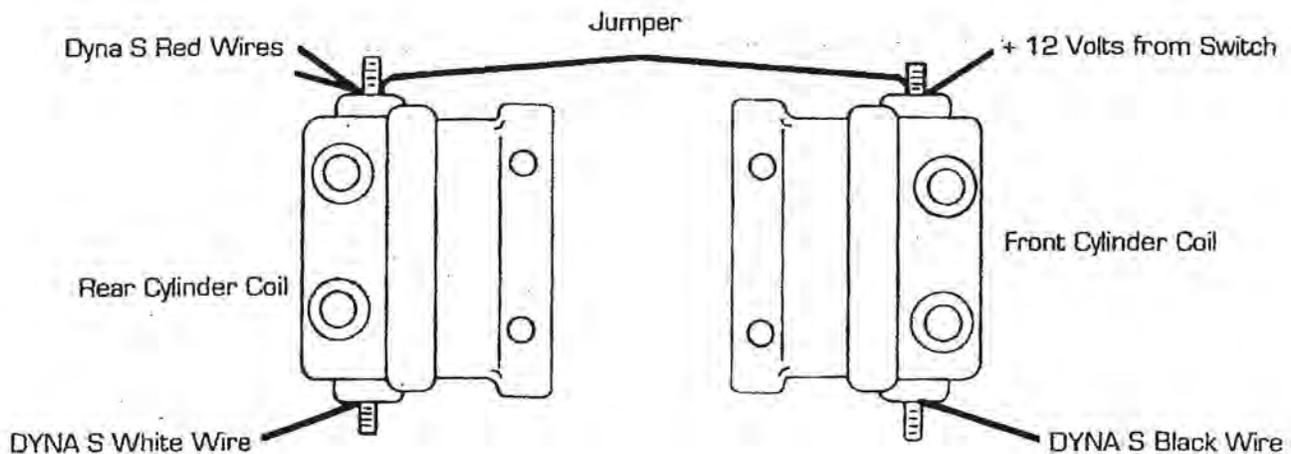
Do not attempt to ohm between any other points, or with power applied to the module. Due to component tolerances, differences in meters, etc., these readings will vary greatly and are not a reliable measurement.

## STATIC TIMING

1. Connect a 12 volt test light from the black coil wire to ground (engine case).
2. Rotate the engine until the front cylinder is on the compression stroke.
3. Remove the crank case timing hole plug.
4. Turn ignition on.
5. While holding the rotor in the advance position with the fly weights against their stops (counterclockwise), slowly rotate the engine in the forward direction until the test light becomes bright. The advance mark for the front cylinder should be in the center of the inspection hole. If it is, proceed to Step 7.
6. If the timing mark is not centered in Step 5, loosen the standoffs holding the ignition plate, and rotate the plate to advance or retard the timing as appropriate, and retighten the standoffs. Recheck timing as in Step 5.
7. Recheck timing and adjust as necessary using the above procedure until proper timing is verified.
8. Check to make sure that no wires are in contact with the rotor. Replace crank case hole plug and side cover.

## DYNAMIC TIMING

1. Timing can be set using a strobe timing light with a transparent timing mark view plug.
  - Use the same sequence of adjusting parts and timing marks as described in static timing. Run the engine at 2,000 RPM when checking the timing.



**Wire Connections for DS6-2  
DYNA S Ignition and DC6-1  
OR DC7-1 DYNA Coils**

## COIL TEST

Remove all wires from the coils. Measure the primary resistance between the screw terminals. Measure the secondary resistance between the high voltage outputs. For single output coils, measure the resistance between the high voltage output and either one of the screw terminals.

Accurate measurement of the primary resistance requires a good quality ohmmeter with a low ohms range. Readings will vary slightly from those listed below depending on the quality of the meter and the resistance of the meter leads. Damaged coils will typically have much different readings - open or shorted on the primary or secondary.

|        | <u>PRIMARY<br/>RESISTANCE</u> | <u>SECONDARY<br/>RESISTANCE</u> |
|--------|-------------------------------|---------------------------------|
| DC1-1  | 2.9 - 3.2 ohms                | 13.5K - 14.5K                   |
| DC3-1  | 2.9 - 3.2 ohms                | 13.5K - 14.5K                   |
| DC6-1  | 3.2 - 3.7 ohms                | 11.0K - 12.0K                   |
| DC7-1  | 4.8 - 5.2 ohms                | 17.0K - 18.0K                   |
| DC8-1  | 4.8 - 5.2 ohms                | 17.0K - 18.0K                   |
| DC10-1 | 4.8 - 5.2 ohms                | 13.5K - 14.5K                   |

## REPAIR

The Dyna S ignition is not user serviceable and must be returned to the factory for repair. Do not cut off the cable, remove the modules, or attempt to service as this may substantially increase the repair cost and/or void the warranty.

# DYNA HARLEY-DAVIDSON IGNITION/COIL APPLICATION CHART

### DS6-1 IGNITION

SINGLE PLUG HEADS (2 spark plugs)

Race (1) 3 ohm coils  
Street (1) 5 ohm coils

### COILS

DC1-1 or DC6-1  
DC7-1 or DC8-1

DUAL PLUG HEADS (4 spark plugs)

Race or Street (2) 1.5 ohm coils wired in series

DC2-1 or DC5-1

### DS6-2 IGNITION

SINGLE PLUG HEADS (2 spark plugs)

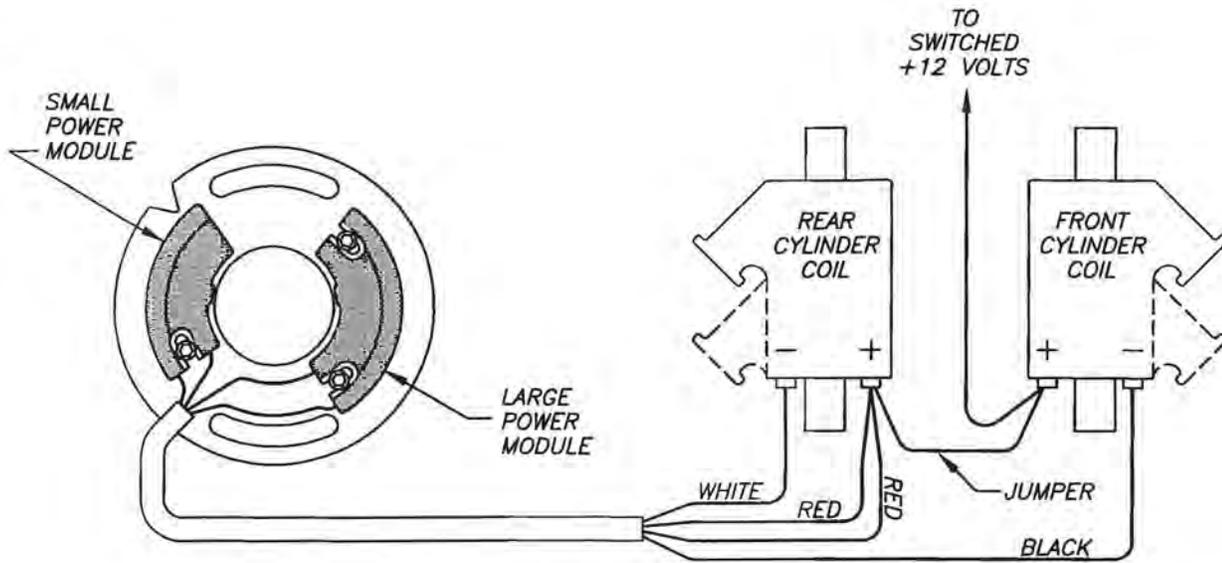
Race (2) 3 ohm coils, single output  
Street (2) 5 ohm coils, single output

DC3-1  
DC10-1

DUAL PLUG HEADS (4 spark plugs)

Race (2) 3 ohm coils  
Street (2) 5 ohm coils

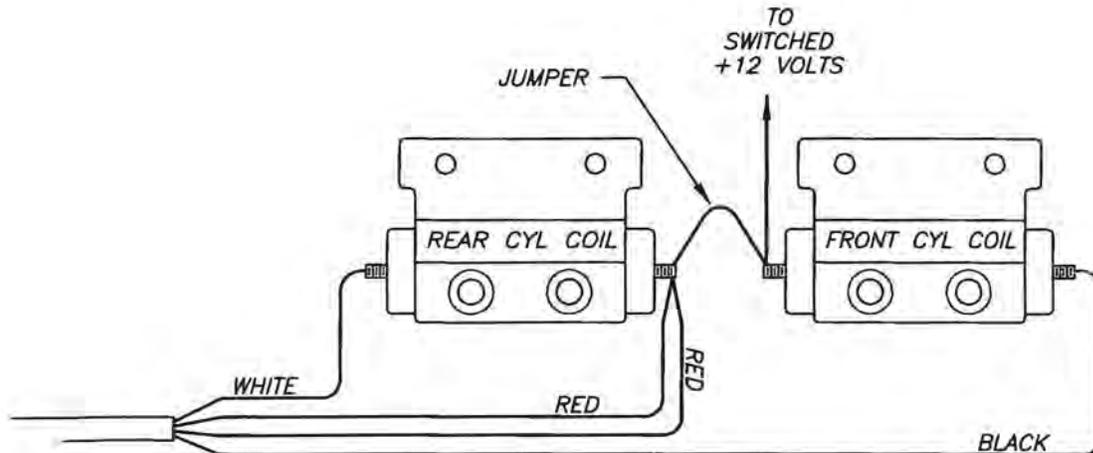
DC1-1 or DC6-1  
DC7-1 or DC8-1



COIL CONNECTION - ANGLED TOWER TYPES

SINGLE PLUG: DC3-1 (RACE) & DC10-1 (STREET)

DUAL PLUG: DC1-1 (RACE) & DC8-1 (STREET)



COIL CONNECTION - HARLEY TYPES

DUAL PLUG: DC6-1 (RACE) & DC7-1 (STREET)

NOTES:  
SINGLE OUTPUT COILS DC3-1 & DC10-1 ARE POLARITY SENSITIVE. +12 VOLTS MUST BE ATTACHED TO (+) TERMINAL AS SHOWN.

DUAL OUTPUT COILS ARE NOT POLARITY SENSITIVE AND DO NOT HAVE A (+) TERMINAL.

|   |     |       |          |
|---|-----|-------|----------|
| <b>DYNATEK</b>                          |     |       |          |
| 164 S. VALENCIA ST., GLENDORA, CA 91741 |     |       |          |
| DS6-2 SINGLE FIRE COIL CONNECTIONS      |     |       |          |
| DATE                                    | REV | DRAWN | FILE     |
| 6-20-06                                 | A   | LES   | 2801359A |