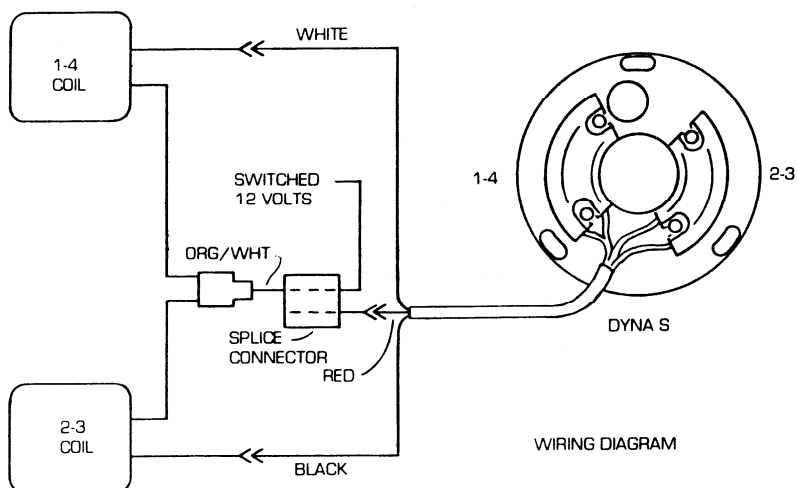


DYNA S ELECTRONIC IGNITION INSTALLATION INSTRUCTIONS

SUZUKI 550/750/850/1000 FOUR CYLINDER MOTORCYCLES

PART NO. DS3-1 FOR KOKUSAN DENKI IGNITION SYSTEMS
PART NO. DS3-2 FOR NIPPON DENSO IGNITION SYSTEMS

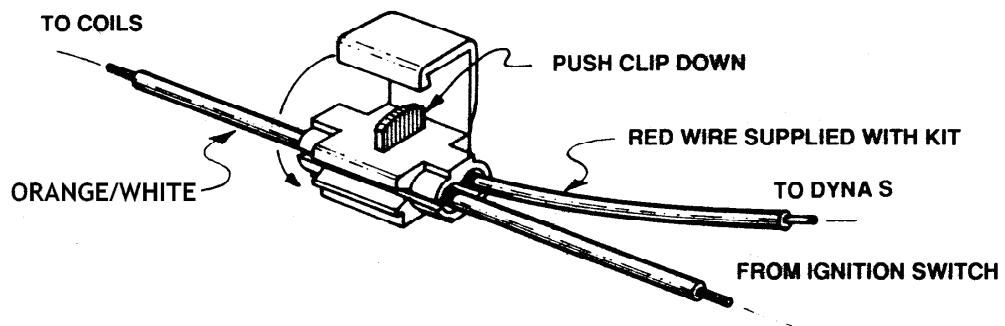
The DYNA S Electronic Ignition System was designed as a points replacement but can be used on many late model motorcycles with the addition of a mechanical advancer. It was designed for use with stock, or other coils that have at least THREE OHMS primary resistance.



INSTALLATION PROCEDURE

1. Remove the points cover.
2. Remove the bolt and hex washer holding the spark advance assembly to the engine.
3. Remove the three screws holding the points plate to the engine, disconnect the black and white point wires where they plug into the wire harness and remove the entire point/plate assembly.
4. Remove the spark advance assembly from the engine.

5. Remove the points cam from the advance assembly.
6. Coat the advance assembly shaft with oil. While holding it with the 1-4 side pointing up, slip the DYNA S rotor over the shaft. A magnet approximately ¼ inch in diameter will be noticed on one side of the rotor. This magnet must face to the left when the 1-4 side on the advance assembly is pointing up. Spread the weights and push the rotor down until it engages the weights. Ensure that the rotor rotates freely on the shaft as the advance weights move out and back.
7. Install the advance/rotor assembly on the engine making sure the pin on the advance assembly is engaged in the pin hole in the crankshaft. Reinstall the hex washer and bolt, and tighten. Ensure that the rotor is still free to rotate.
8. Install the DYNA S using the three screws previously removed, and tighten.
9. Route the cable over to where the points originally plugged in, being careful to avoid the exhaust system. The grommet from the point cable may be used by slitting it with a razor blade to remove it.
10. Connect the black and white wires to the receptacles where the original points connected, matching the colors.
11. Remove the fuel tank. Locate the two ignition coils. There is a orange/white wire coming from each coil to a common junction in the wire harness. These wires carry the switched 12 volts to the coils. Using the splice connector provided, attach the separate red wire included in the kit to the orange/white wire that goes to the coils, as shown below. Do not strip the wires.



NOTE: The location for obtaining switched 12 volts in Step 11 is one of several possible locations. If a more convenient source of switched 12 volts is available, it may be used, as long as it provides a sound connection. One such source is the 12 volt wire leading to the rear brake stop light switch, and in some cases, unused 12 volt receptacles can be found in the motorcycle's electrical system.

12. Plug the red wire coming from the DYNA S into the red wire installed in Step 11.
13. This completes the installation. Make sure that all connections are secure and that all colors match.

TIMING PROCEDURE

NOTE:

A] The left module fires cylinders 1-4, the right module fires cylinders 2-3, and each provides $\pm 10^\circ$ of adjustment. Moving them counterclockwise advances the timing and clockwise movement retards the timing.

B] All timing adjustments should be made using the advance timing marks which are approximately 1/2 inch to the right of the F marks on the advance assembly.

1. To time the engine statically, connect a 12 volt test light from the junction of the white coil wires to ground (engine case). Do not disconnect the wires. Use a wrench on the advance assembly hex washer to rotate the engine.
2. Turn ignition switch on. While holding the rotor in the fully advanced position (clockwise), slowly rotate engine forward until the test light turns on. The right hand advance mark for cylinders 1-4 should align with the fixed mark on the engine case.
3. If the marks do not align, loosen the screws holding the DYNA S plate to the engine, and rotate it clockwise or counterclockwise, as appropriate, and retighten the screws.
4. Rotate the engine backwards until the light goes out. and repeat Steps 2 and 3.
5. After 1-4 timing is verified, connect the test light to the black coil wire, and repeat Step 2, using the 2-3 timing marks. If it is necessary to adjust the 2-3 timing, loosen the cap screws holding the right module using alien wrench supplied with the kit; and move it clockwise or counterclockwise as appropriate, (.010 inch equals 1°) and retighten screws.
6. Recheck timing and adjust as necessary using the above procedure until proper timing is verified.
7. The engine can also be timed dynamically using a strobe light in the normal manner. Use the advance marks and an engine speed of about 2500 RPM (full advance).
8. Replace timing cover and fuel tank.

PROBLEM DIAGNOSIS

The DYNA S Electronic Ignition is manufactured from the highest quality parts and materials available, using the greatest care possible. Many times operational problems are due to improper installation or intermittent connections.

During timing, if the test light remains bright at all times, it indicates that there is a bad connection in the wiring. Ensure that there is +12 volts at the red wire.

The DYNA S uses two identical power modules, one for each pair of cylinders. If loss of ignition on four cylinders is experienced, it is not likely to be caused by the DYNA S. The probable cause would be loss of +12 volts to the coils or to the red wire on the DYNA S.

If loss of ignition on two cylinders is experienced, remove spark plugs, replace in caps, and lay them on cylinder head. Turn engine over and watch sparks to determine which are missing. Disconnect (key off) the DYNA S output wires and reconnect them in reverse. If sparks transfer to opposite plugs, it indicates a bad DYNA S power module. If they stay with the same plugs, it indicates a bad coil, or a problem somewhere in the wiring.

PLEASE NOTE

This kit contains a spacer that must be used when the system is installed on a late model Suzuki with factory electronic ignition. The rotor is first installed as specified and the spacer is then put in place prior to replacing the advancer on the engine. On late models that have factory electronic ignition with electronic advance, it will be necessary to install a mechanical advance assembly from an earlier model, such as a GS1000. The DYNA Ignition then replaces all of the factory ignition components, except the ignition coils.



DYNA-S IGNITION SYSTEM AND COIL 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. Some stock ignition systems use 1.5 ohm coils with a 1.5 ohm ballast resistor. Make sure the coils and resistor are in spec (consult shop manual for specifications).

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.

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 will have much different readings - open or shorted on the primary or secondary.

	<u>PRIMARY RESISTANCE</u>	<u>SECONDARY 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.

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