



ELECTRONIC IGNITION SYSTEM

Installation Guide

for twin cylinder models
positive or negative ground



KIT CONTENTS

Transistor box RJ51

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Stator plate 0112980

•

Magnetic rotor 0113030

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Fitting kit

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Locking spanner

These instructions are a general guide to fitting the system to various machines which may have the ignition coils & battery mounted in different positions. It may be necessary to modify wire lengths to complete the installation. We strongly recommend that all connections are crimped/soldered to ensure satisfactory operation

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6VOLT/12 VOLT IGNITION KIT TWIN CYLINDER MODELS

POSITIVE OR NEGATIVE GROUND WITH POINTS IN THE SIDE CASING

GENERAL DATA

This unit RJ51 works with 6v or 12v batteries but primarily it is designed for 6v application. It can run positive or negative earth as long as the ignition coils are fed from a positive supply. The working voltage is 5 to 8 volts with a 6v battery and 10 to 16 with a 12v battery. The maximum ignition coil current through the unit should not be more than 5A on each coil. This current is dependent on the coil used. Primary winding should not be less than 1.5 ohms (6 volt), 3.5 ohms (12 volt) and no less than 3.2 ohms with 12v twin coils.

The total supply range of this unit is 4 to 18 volts but at low supply voltage the spark weakens. With a 6v supply it is necessary to use two separate 6v ignition coils in parallel connection. For 12v application it is possible to use two 6v coils in series by using one black output wire (the second must be insulated and unused). Alternatively, use two 12v coils in parallel connection using both black output wires or a single twin lead 12v coil using one black output wire (the second insulated).

The resistance of the coil stator plate is 73 ohms per coil and the magnetic rotor has south geographic poles with magnets pointing outwards. This unit can be adapted to fit many engines if firing is required every 180 degrees of camshaft rotation and will operate two coils up to 10,000 sparks per minute. Typical working advance is 10 degrees at 2500 rpm. The camshaft unit draws 0.6A over normal coil consumption at 6v and 0.3A using a 12v battery. This unit must always be operated with the frame or chassis working as the earth return, whether positive or negative ground. A rubber mounted engine requires a suitable earth strap.

This unit will operate from an alternator with rectifier/zenor diode and capacitor as a battery-less system but kick starting may be more difficult. For 6v battery-less the capacitor needed is 0.1F or more. If the zenor diode disconnects when the engine is running it will damage the ignition.

The ignition pack generates a small amount of heat so we recommend mounting where air can circulate. Trigger wires are best run separately from the main loom but be sure these wires are connected to the correct colour code wires on the stator plate. HT leads can be swapped as both plugs are fired together.

6VOLT/12 VOLT IGNITION KIT TWIN CYLINDER MODELS

POSITIVE OR NEGATIVE GROUND WITH POINTS IN THE SIDE CASING

GENERAL DATA (cont.)

IGNITION TIMING FOR BRITISH TWINS

TRIUMPH UNIT TWIN	CLOCKWISE	38 degrees fully advanced
BSA UNIT TWIN	ANTI CLOCKWISE	34 degrees fully advanced
NORTON COMMANDO	ANTI CLOCKWISE	28/31 degrees fully advanced
NORTON ATLAS	CLOCKWISE	28/31 degrees fully advanced

RECOMMENDED IGNITION COILS

6v single output coil Lucas 47275 part number **WW19375L**

12v single output coil Lucas 47276 part number **WW19376L**

12v twin output coil part number **WW19371**

HT LEADS & SPARK PLUG CAPS

We recommend fitting a good quality 5k resistor type plug cap

Non-resistor caps can also be fitted

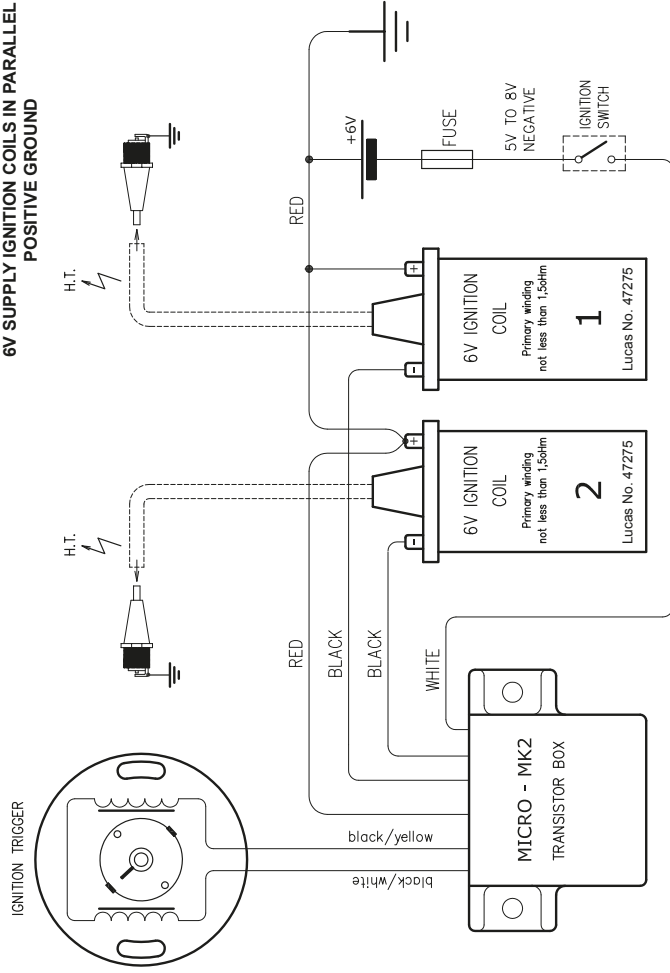
Warning: This unit can produce high voltages.

Always disconnect the battery before working on the system!

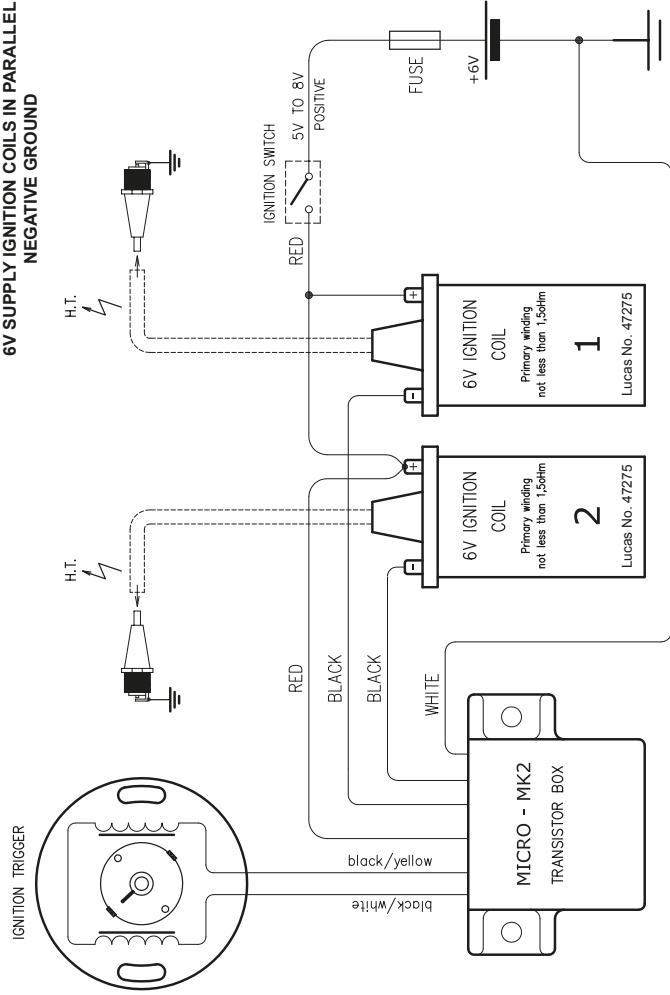
- 1 Disconnect the battery
- 2 Remove the petrol tank and/or seat to access the ignition coils
- 3 Remove the contact breaker plate and advance unit
- 4 Trace the contact breaker wires (normally black/white & black/yellow). Disconnect from the condenser pack and coils as these are no longer required
- 5 Remove the other wires from the ignition coil terminals. These will be feed wires from the ignition switch and may require insulation to isolate
- 6 Check ignition coils are the correct voltage for your installation and reconfigure the coil connections following the appropriate wiring diagram. Ensure all terminal connections are crimped/soldered
- 7 For positive ground systems, ensure the red coil supply wire is connected to a good chassis earth point or battery terminal. For negative ground systems ensure the white wire has a good connection to the chassis earth (see appropriate wiring diagram for your model)
- 8 Find a position to mount the transistor box. This is best in a location with some air flow as a small amount of heat is produced by the ignition pack
- 9 Connect the black wires from the transistor pack to the ignition coils following the appropriate diagram for your model
- 10 Connect the red wire from the transistor pack to the appropriate coil terminal following the appropriate wiring diagram for your model
- 11 Connect the white wire from the transistor pack to a suitable ground on NEGATIVE ground models and to the ignition switch feed on POSITIVE ground models (see the appropriate wiring diagram for your model)
- 12 Connect the black/yellow from the transistor box to the black/yellow on the stator plate. Both the black/yellow and black/white share a common sleeve. Cut this to the required length
- 13 Connect the black/white from the transistor box to the black/white on the stator. When making the connection ensure colour coding matches or the ignition timing will be incorrect

- 14 Insulate the ends of any unused wires and ensure all connections are good and tight fitting
- 15 Remove the timing inspection cover on the alternator side of the engine if available
- 16 Set the engine to the fully advanced timing position on the compression stroke. Some models can be locked (crankshaft) using a timing tool or check with a timing tool through the spark plug hole
- 17 Fit the ignition magnetic rotor into the end of the camshaft (ensure any ATD dowel pegs are removed first) using one of the bolts supplied (BSF/UNF depending on model/year). Check the thread does not bottom out in the hole. If it's too long remove a small amount of thread
- 18 Hold the stator plate in the contact housing. Centralise the adjustment slots and turn the magnetic rotor on its taper until the timing mark aligns with the appropriate timing mark. **A** for anti-clockwise rotation and **C** for clockwise rotation. This must be done without rotating the engine (a rotor spanner is provided in the kit). A good tip is to mark the stator timing position on the engine case with a pen and align rotor to this. The stator plate should be central in the adjustment slots with the rotor timing mark aligned
- 19 Tighten the rotor locating bolt and re-check the engine has not moved
- 20 Fit the stator plate with pillar bolts and connect the wiring to the transistor pack
- 21 Re-fit the tank and/or seat and re connect wiring to the battery
- 22 Start the engine and warm up to normal working temperature for 4-5 minutes. Connect a strobe lamp and set the ignition timing with the engine running at 4000-5000rpm. The timing can be adjusted by moving the stator plate on slotted holes. If the timing marks cannot be aligned it may be necessary to remove the magnetic rotor and re position
- 23 Re-fit the contact breaker cover and the alternator timing cover. Timing is now set and should require no further adjustment

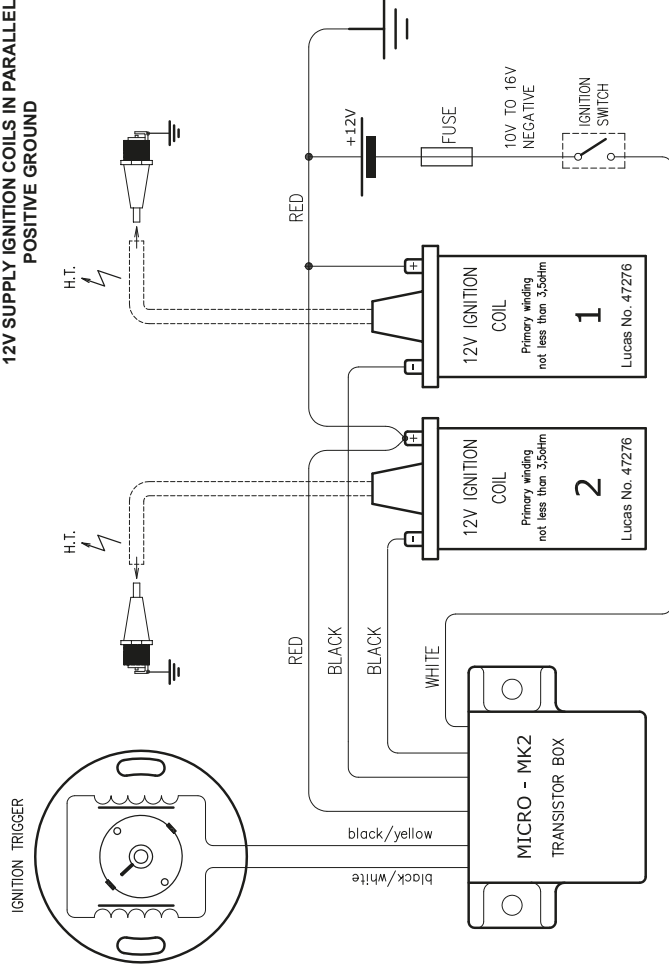
6V SUPPLY IGNITION COILS IN PARALLEL POSITIVE GROUND



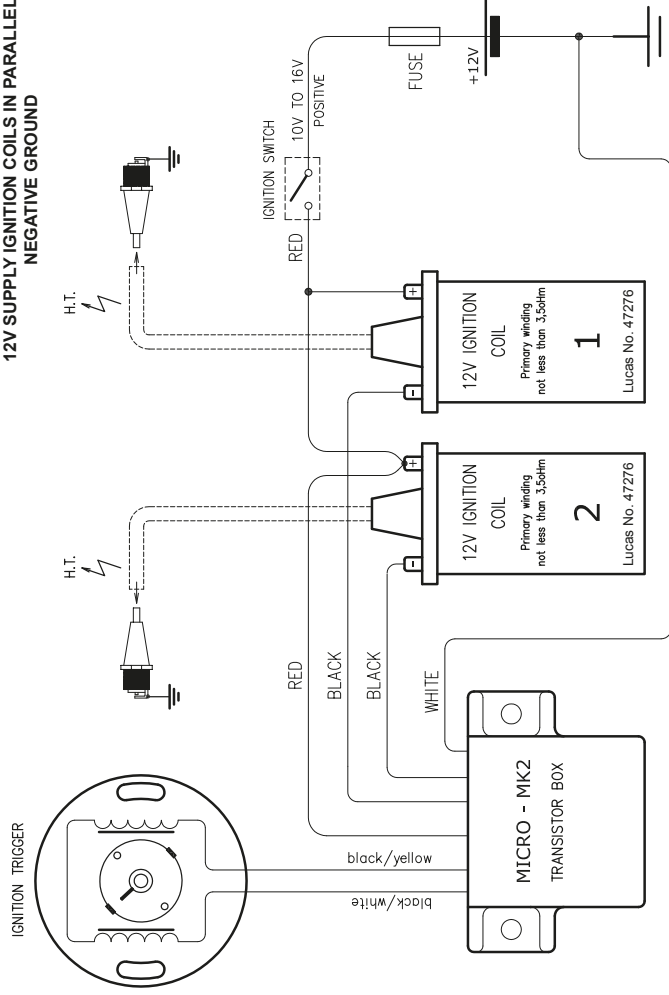
6V SUPPLY IGNITION COILS IN PARALLEL NEGATIVE GROUND



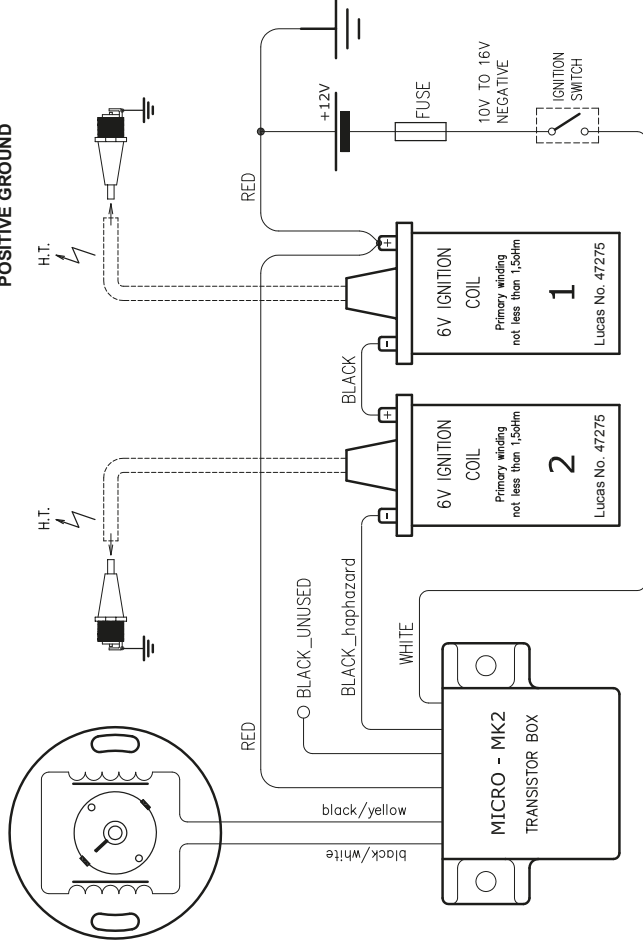
12V SUPPLY IGNITION COILS IN PARALLEL POSITIVE GROUND



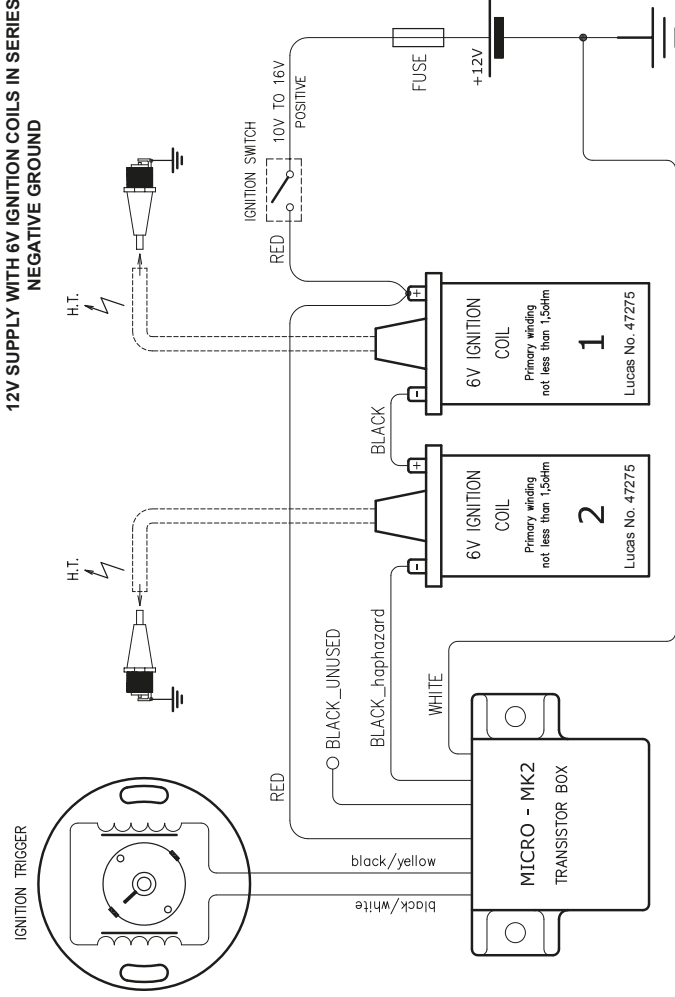
12V SUPPLY IGNITION COILS IN PARALLEL NEGATIVE GROUND



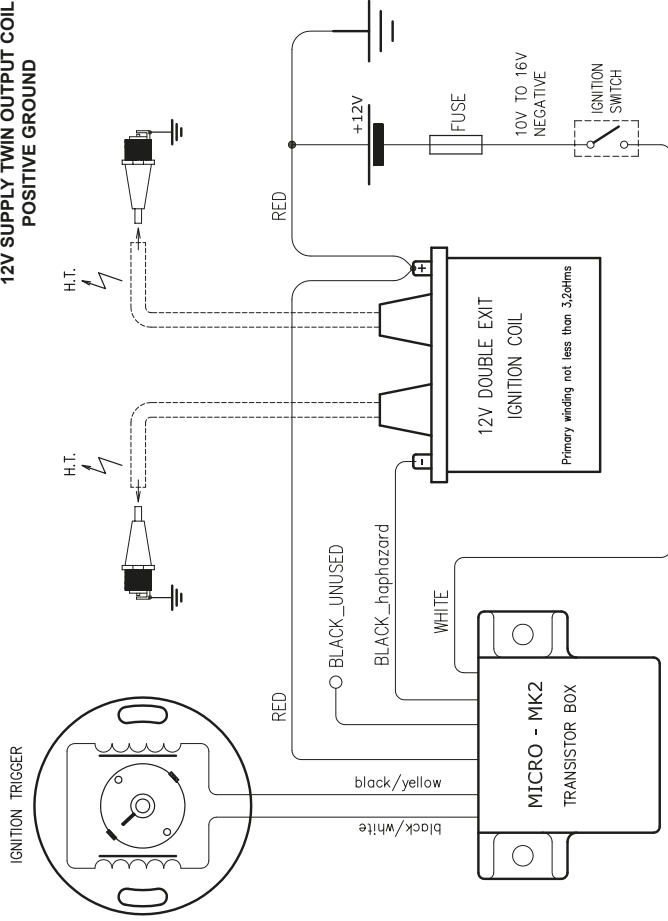
12V SUPPLY WITH 6V IGNITION COILS IN SERIES POSITIVE GROUND



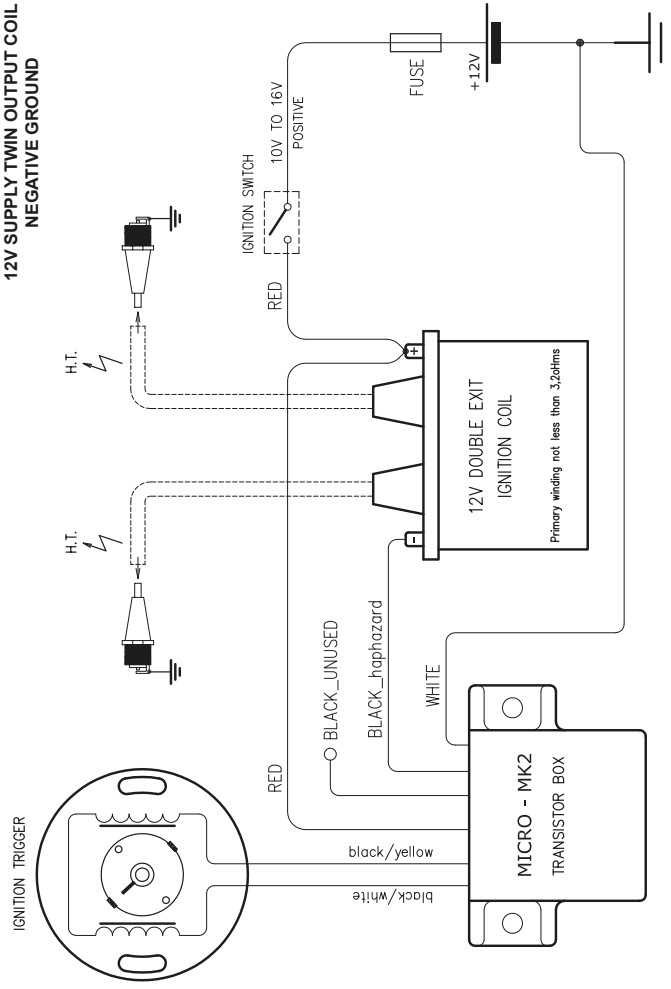
12V SUPPLY WITH 6V IGNITION COILS IN SERIES NEGATIVE GROUND



12V SUPPLY TWIN OUTPUT COIL POSITIVE GROUND



12V SUPPLY TWIN OUTPUT COIL NEGATIVE GROUND



NO SPARK

- 1 Check the battery voltage
- 2 Using a test bulb or multi meter, check the power feed to the transistor pack from the ignition switch power feed. On positive ground models via the white wire, on negative ground models via the red wire
- 3 The voltage reading should be the same as the motorcycle battery. If voltage is significantly lower than the battery reading this could be a faulty ignition switch/ switch feed wiring. Test by taking a direct feed from the battery to the ignition pack connection, bypassing the normal ignition switch feed
- 4 Check all wiring connections for continuity and that the push-on coil terminals are secure
- 5 The coils are designed to trigger together and both spark plugs should spark at the same time
- 6 With coils in parallel, check the coil terminals are secure. On positive ground ensure the red wire has a good earth connection (on negative ground check the white wire has a good earth connection). If only one coil produces a spark check continuity of the black wire to the transistor connector block. Also check the HT lead connection, spark plug cap and spark plug. It is also possible for the ignition coils to fail due to overtightened mounting clamps
- 7 With coils in series (12 volt feed and 2 x 6v coils) if one coil develops a fault it can stop the other from producing a spark. Check the link wire connections across the two coils on the positive supply. Check the earth connection red wire (on negative ground check the white wire has a good earth connection). When using 6 volt coils in series you will have a spare unused black feed wire from the transistor pack. It is also possible to connect coils to this circuit board for use. Do not forget to insulate the remaining unused black wire
- 8 Check the condition of the HT lead and plug caps. Spark plug bodies must also be grounded to a good engine earth for testing

STATOR PLATE

- 1 Check wiring connections on black/white and black/yellow wires. Check for any visible signs of damage to the wiring loom and stator plate. Also ensure the rotor is correctly located in the taper seating and rotating with the camshaft
- 2 Using a multi meter, check continuity through the stator plate. Set the meter to ohms and each coil should have a resistance of 73 ohms. By connecting the meter to the black/yellow and black/white there should be a combined resistance of 146 ohms. This may vary slightly depending on the ambient temperature

SPARKS ON CRANKING BUT ENGINE WILL NOT RUN

- 1 Check the polarity of the wires from the ignition module to the stator (black/white and black/yellow). If these wires are connected incorrectly the ignition will produce a spark but the timing will be retarded
- 2 Check the ignition timing and ensure the rotor has not moved in the taper

CONTINUOUS SPARKING WITHOUT CRANKING ENGINE

- 1 This indicates a poor supply to the ignition. Check the battery for a bad cell. A bad battery with a charger connected can also cause this problem
- 2 Check for good engine earth and battery earth points. Powder coated frames or rubber mounted engines require a separate engine earth strap
- 3 The wrong type of ignition coil, fitted with a low primary resistance (CDI or digital coils are unsuitable)



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