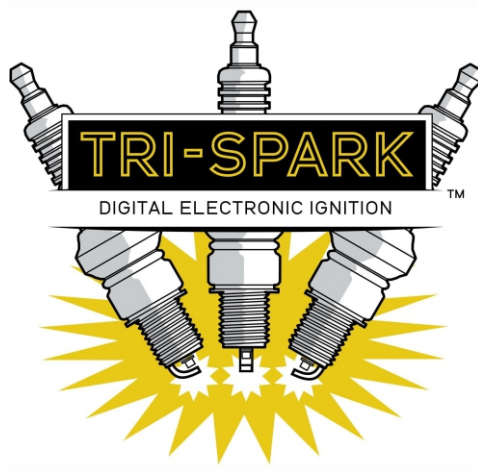


Tri-Spark - Classic Twin Troubleshooting



TRI-0006



Using the built in Self Test, troubleshooting tips, notes and cautions

- Take care! Do not probe around the wiring with the power on. Disconnect the fuse before attempting any adjustments or disassembly.
- Do not run the engine without all spark plugs connected as this can damage the Tri-Spark system and/or the ignition coils.
- We recommend the use of spark plug suppressor caps (5k Ohm caps such as NGK LB05EP) or resistor type spark plugs - not both together. An 'R' in the spark plug part number denotes resistor type.
- Always try a fresh set of spark plugs. Most ignition problems are related to fouled spark plugs. Try a new set right out of the boxes.
- This is a wasted spark system - it fires both coils together therefore if a fault exists on one cylinder only it must relate to the coil, HT lead or spark plug on the faulty cylinder - not the ignition module in general.

Five steps to checking the Classic Twin stator unit

1. Check coil compatibility
2. Check the air gap
3. Check power to the unit
4. Run the self-test
5. interpret the test results

Step 1 Check Coil Compatibility

Ensure that you have the correct coils for your installation. Wrong coils can damage the electronics!

Twin Cylinder engines:

Installing the TRI-0006 generally requires two 6 volt Lucas style ignition coils (aluminium canisters). Tri-Spark p/n IGC-1006.

These coils should measure 1.8 to 2.2 Ohm primary resistance across the two metal tab terminals on the top of the coil. The secondary resistance is not critical but it will often measure between 5 to 10k ohms from the high voltage terminal to either of the primary terminals.

Alternatively a dual lead ignition coil may be used for twin cylinder installations. In this case the primary resistance should measure between 3.0 to 5.0 Ohms. Tri-Spark p/n IGC-2012.

Many of the British twins were originally fitted with 12 volt Lucas coils. These must NOT be used with the Classic Twin as poor performance and misfiring will result.

Single Cylinder engines

For single cylinder installations a 12 volt Lucas style ignition coil should be used. Tri-Spark p/n IGC-1012. These typically measure 3.6 to 4 Ohms primary resistance.

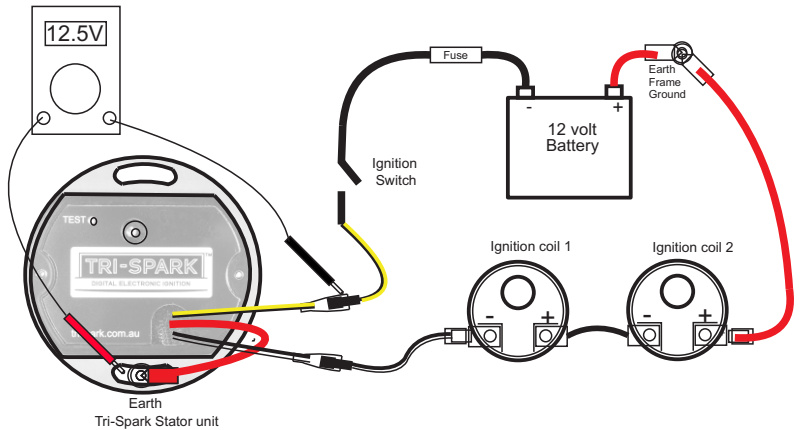
Step 2 - Check the Air Gap

Ensure that you have the correct air gap between the trigger rotor and the stator unit. the gap should be 2mm +/- 0.5mm

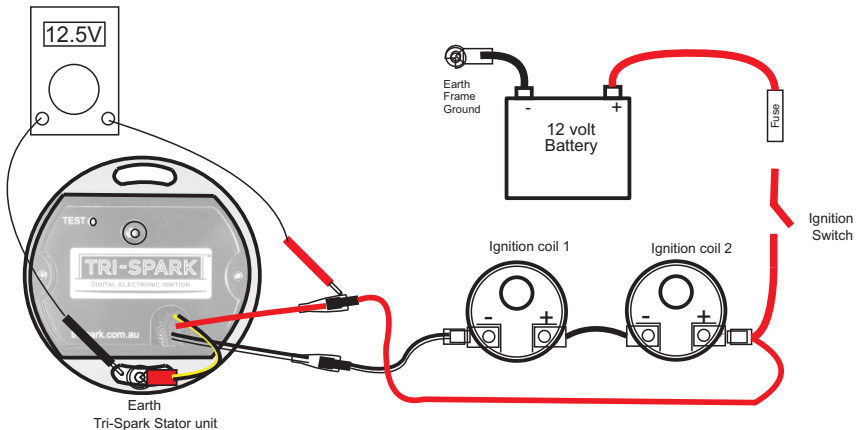
Step 3 - Check Power to the Unit

Check that the battery voltage is reaching the stator unit. Switch on the power and check for voltage at the stator unit with a voltmeter as shown below. The voltage should stay up over 12 volts with the headlight switched on - replace battery if faulty.

POSITIVE EARTH / GROUND TESTING



NEGATIVE EARTH / GROUND TESTING

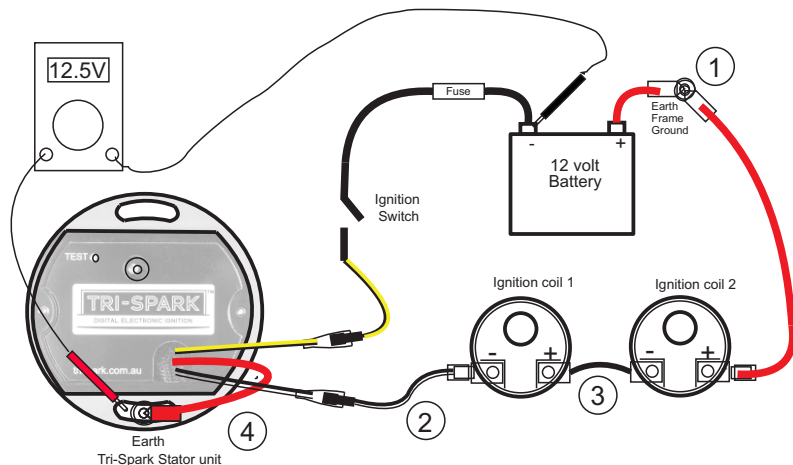


Step 3 - Continued

If the battery voltage is not reaching the unit check for faulty electrical components such as switches and fuses. The following tests will help to isolate the faulty components.

If you can measure battery voltage as shown in the following diagram but not when probed at the stator unit then the fault is with the switches or fuses or somewhere in the negative supply to the unit.

POSITIVE EARTH / GROUND TESTING



Additional wiring checks

1. Check continuity from the coil earth to the battery Positive
2. Check continuity from the Black /white at the stator unit to the coils
3. Check continuity of the coil link wire
4. Check continuity from the stator unit red wire to battery positive

Note: Connections to the frame, engine and other metal parts are often faulty due to corrosion.

Once you have established power to the unit proceed to step 4 and run the self test checks on the stator unit.

Step 4 - Run The Self Test

The built-in test mode makes it possible to check the operation of the stator unit, trigger rotor, coils, HT leads and spark plugs. Read the following carefully.

Warning: the system is capable of sparking the coils in this mode - extreme care must be taken.

We recomend engaging a technician to perform these tests in the safety of a fully equipped motorcycle workshop.

TEST 1: Start by removing the spark plugs from the engine and laying them on the cylinder head.

The test button is located beside the word 'TEST' on the unit as shown. It is activated by pressing gently with a pen as shown here.

To begin the self test:

1. Press and HOLD DOWN the TEST button.
2. Switch on the power to the ignition (ignition key switch).



The TEST button MUST be HELD DOWN WHILE the power is switched on to begin the testing.

Once the test starts release the TEST button. The unit will stay in the test mode until the power is switched off.

The spark plugs should begin sparking immediately at a rising rate for 10 seconds and then stop. The LED should light during the 10 seconds while the system is sparking. This test can be repeated by pressing the TEST button again.

DO NOT SWITCH OFF THE POWER - GO STRAIGHT TO TEST 2

TEST 2: WITHOUT SWITCHING OFF THE IGNITION rotate the engine slowly until the red LED on the stator unit is seen to light. The LED should light when the triggering magnet is between the "CW" and "AC" marks on the rim of the stator unit.

This is the ONLY test of the magnets in the rotor triggering BOTH position sensors in the stator unit. LED operation in normal operating mode is not the same. Checking the triggering must be done within the test mode.

EXIT TEST MODE - The ignition switch must be switched off to power down the stator unit in order to exit the test mode before attempting to start the engine.

Step 5 - Interpret the test results

If the LED does not light during Test 1 and there is no sparking at the coils - repeat checks for power reaching the unit. If you are absolutely certain there is power reaching the unit - arrange to return the unit for factory testing.

If the LED lights for 10 seconds at the start of test 1 but there is no sparking at the coils - have the wiring and the coils checked by an automotive electrician. If the coils and wiring check out OK then arrange to return the unit for factory testing.

If the LED lights and the coils spark during test 1 but the LED does not light during test 2 when the magnet in the trigger rotor is aligned with the sensors check the air gap. If the Air gap is 2mm then arrange to return the unit for factory testing.

If the Coils spark in test 1 and the LED lights during test 2 then the unit is fully functional and should work on the engine. We would expect that when the engine is cranked over it should be sparking. No need to return for testing. There may be some other issues with the installation that can be remedied by a mechanic. The following checklist may assist your mechanic.

General troubleshooting Tips

1. an engine not starting may not be timed correctly - repeat static timing procedure.
2. Lack of power may relate to incorrect static timing - too retarded.
3. Pinging may also relate to static timing - too far advanced.
4. Misfiring under load can relate to fouled spark plugs, faulty HT leads, faulty or incorrect ignition coils.
5. Poor idling is often related to tuning issues or worn out carburetors.
6. Poor connections (often concealed by layers of tape) should be repaired by a specialist or the wiring loom replaced (recommended)
7. Misfiring at 3000 to 4000 RPM but not at idle can sometimes be caused by problems with the charging system. Run the engine with the alternator disconnected briefly to see if the problem clears. If this fixes the problem try a different brand of voltage regulator.

Tri-Spark Classic Twin Warranty Policy

The Manufacturer Tri-Spark extends a Warranty to the original purchaser of this kit covering the Stator Unit and Rotor components of the system (not sundry items) under normal use for a period of **three years from the date of purchase**. Only those parts which are deemed by Us to be defective due to faulty materials or workmanship in manufacturing shall be repaired or replaced under this Warranty. Conditions apply.

Limitation of liability

It is the sole responsibility of the purchaser to determine the suitability of the product for a particular installation or purpose. Under no circumstances shall the Manufacturer Tri-Spark be liable for any consequential, special, incidental, direct or indirect damages arising from the use or lack of ability to use this product. The Manufacturer's liability under this Warranty is limited to the replacement of the product or its parts and no other obligations, expressed or implied are assumed by the manufacturer Tri-Spark. A refund option is not offered as part of this Warranty.

Conditions

This Warranty will be void if the product or parts have been in any way misused, abused, altered or installed incorrectly as determined by Us.

This Warranty will be void if faults are caused by but not limited to:

- 1) operation with incorrect coil circuit resistance (under 3 ohms)
- 2) the rotor contacting the stator unit as evidenced by circular scratches
- 3) bending, cutting or any other physical damage to the parts
- 4) the ingress of oil, water or other liquid into the parts
- 5) exposure of the parts to solvents or chemicals
- 6) damaged or broken wires connecting to the parts
- 7) any modification to the parts not authorised by the Manufacturer
- 8) any electrical damage to the parts caused by voltage spiking from the battery, charging system, jump starting or any other devices connected to the electrical system.

The manufacturer reserves the right to charge a testing fee of \$50 AUD and a return freight fee of \$30AUD in cases where parts returned to Us are found to be functional.

The purchaser is responsible for the cost of freight, customs duties, taxes and tariffs to and from the point of purchase where the part or parts shall be assessed for possible replacement. Recorded delivery is recommended to protect against loss.

To make a claim under this Warranty the purchaser is requested to contact the point of purchase for instructions. The purchaser may be asked to perform certain tests to determine the nature of the problem. The suspected faulty part(s) must be returned with proof of purchase and a detailed account of the problem experienced to the point of purchase or the Manufacturer for testing and possible replacement. Returned parts must be sent with freight prepaid. Recorded delivery is recommended.

Statutory rights

Your statutory rights are unaffected. Additionally, if any statement herein is deemed to be invalid for any reason then only that statement shall be deemed invalid. The Laws of South Australia shall apply to purchases made directly from the Manufacturer.