Rex's Lucas RITA AB5 & AB11 Troubleshooting Tips & Testing

The RITA Ignition system has been out of production for many years but remains in regular, daily use. We provide everything you need to keep the iconic 1970s AB5 & AB11 running smoothly, adding a touch of vintage authenticity to your ride. Our "RITA Revival" repair, along with replacement parts, is available, and we offer free online access to helpful information. Additionally, historical wiring guides are available for reference; while these are no longer current, they may still serve as a valuable resource for owners.

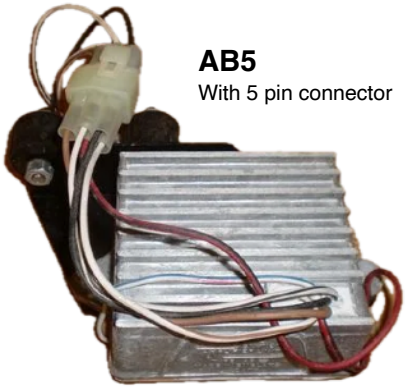
When To Use This Guide

This troubleshooting guide is designed to be used where an existing system has developed a fault while in use, or it has stopped working altogether. **Important:** Where a new part has been fitted, you must first recheck connections, settings & advice given in the fitting guide for that item BEFORE following this document.

Which RITA Version?

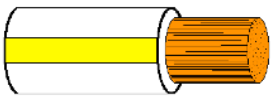
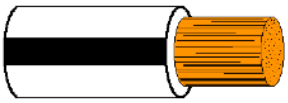
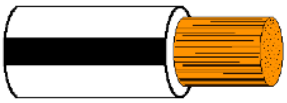
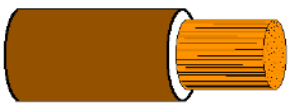
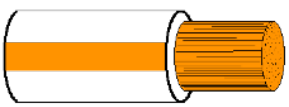
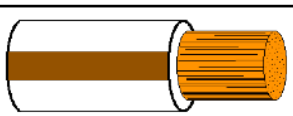
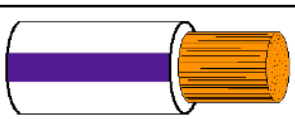
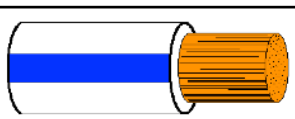
AB5 units have a ribbed case and (often) a 5 pin 'Rists' type connector. The AB11 has a smooth case and two pin connector for the pick-up along with a three way for the power connections. The wires have different colours but the same function, so it is important to identify which unit you have.

AB5
With 5 pin connector



AB11

Wire Colour & Function

FUNCTION	AB5	AB11
+12V Positive Connection		
12V Negative Connection		
HT Coil (-) to RITA (Sparker wire)		
Pick-up to RITA (+)		
Pick-up to RITA (-)		
Ballast Resistor to RITA		**Not Applicable**

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Generic RITA wiring diagrams

Below are generic wiring diagrams for AB5 and AB11 units. Refer to the RITA 'Revival' installation guide for recommended HT coils configurations. Also available from our website are free to download copies of historic wiring diagrams that show specific wiring for some models.

AB5

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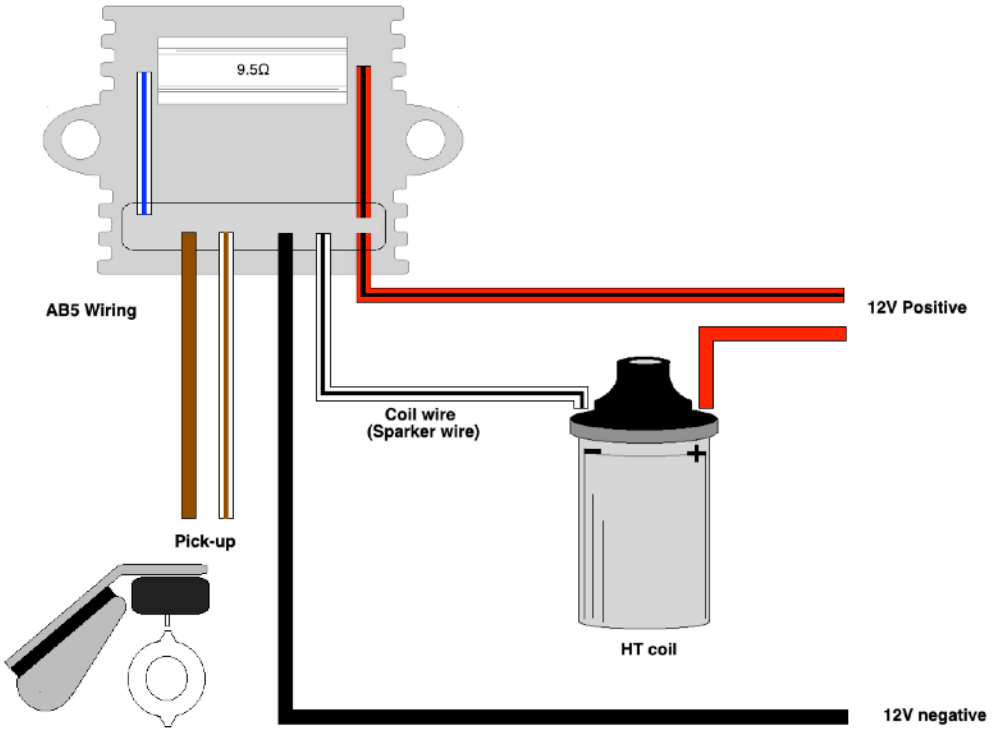
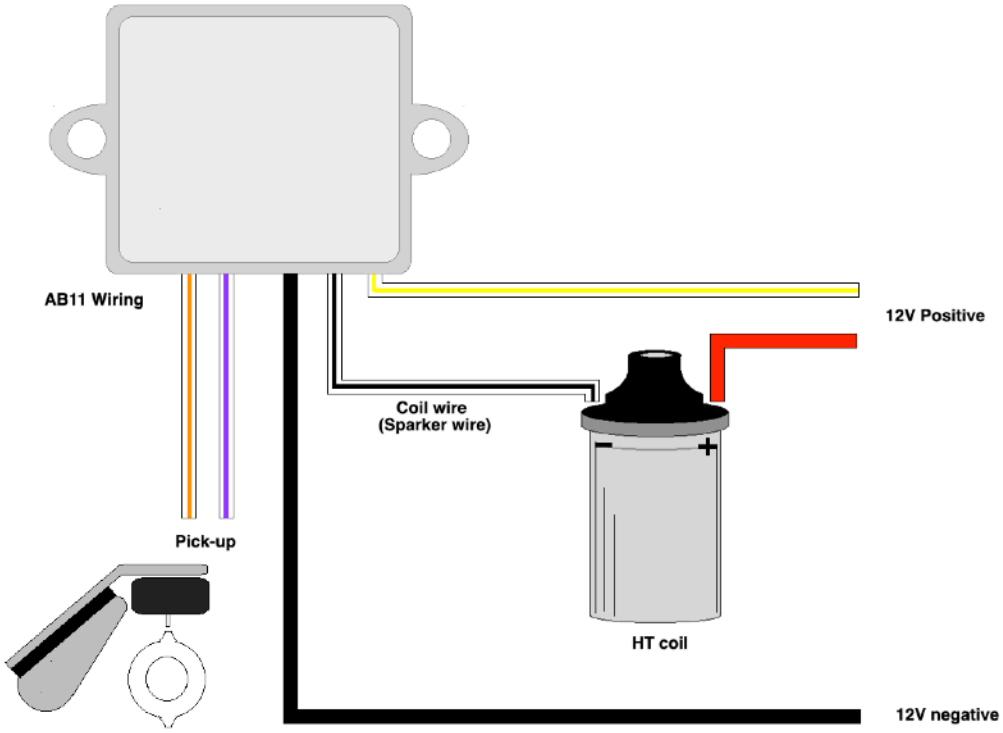


AB11



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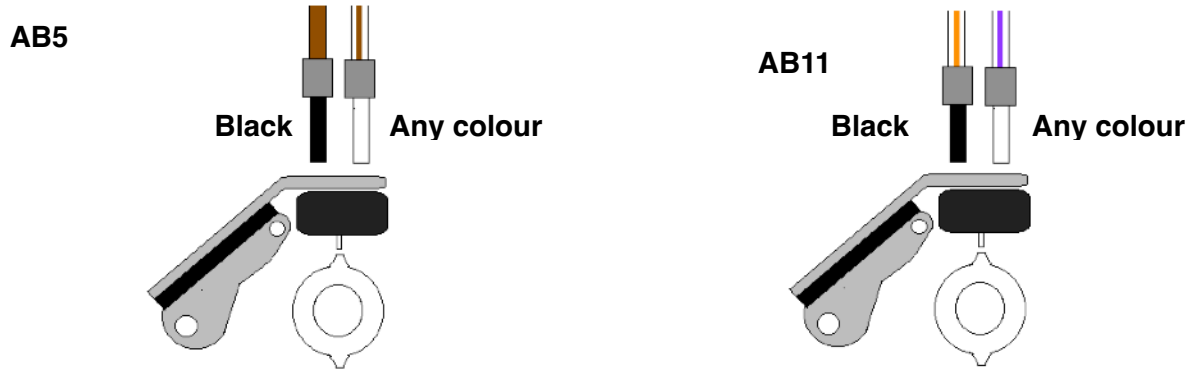
Connection to The Pick-up
The 5PU was made by Lucas and should have matching wire colours. The 'C' type was made by various manufacturers, while a black wire seems to be used in all cases, the other wire varies in colour.

Connect the pick-up to the RITA as shown below. If you have a problem with the ignition remaining retarded and the engine being hard to start or not wanting to rev, swap the pick-up wires over.



Warning - Working With Electrical Systems: Motorcycle ignition systems carry extremely high voltages. If you have a heart condition or any concerns about working with electrical systems, do not attempt troubleshooting. Seek assistance from a qualified professional.

Before you begin, it's essential to be comfortable using a multimeter. You should be able to select the correct range and accurately interpret the readings. Ensure that all wiring meets the highest standards and use motorcycle-specific connectors for reliable connections. Proper tooling, particularly for forming crimps, is also crucial for safe and effective repairs. If you're unsure about working with electrical systems, consult someone with the right tools and experience.

A note on Positive Earth
In all DC circuits, power should always be connected positive to positive and negative to negative. The term 'earth' often causes confusion, so it's best to avoid using it. When making connections, clearly identify the positive and negative terminals or wires on the vehicle, and connect the RITA wires accordingly. Incorrect polarity will damage the circuit.

Warning When Trouble Shooting
The original Lucas Rita unit is very poorly protected against misuse and hence it is VERY easy to inadvertently damage it.
- Never leave the ignition on and the engine not running for more than a minute.
- Never allow more than a 5 mm spark gap to exist - if you do the unit will fail.

If the engine won't start/No Sparks
Confirm the loss of sparks by checking the spark plugs, ensure the plug remains earthed to the engine and connected to the HT coil. Single HT coils with two HT leads must have an earth path on both leads or the coil will be immediately damaged if one lead has no path to earth.

1. Many times faulty spark plugs have been found to be the cause of a variety of problems. Modern fuel is extremely hard on spark plugs so these must be replaced. Also check HT caps for resistance with a multimeter, most NGK caps are 5KΩ, some other brands may be as much as 10KΩ. Resistor caps are needed as the RITA electronics can be upset by interference from the HT.

2. Check all connections at HT coils, RITA unit, any ballast resistors, pick-up and ignition switch.

3. Check the battery voltage reads approximately 12.6 volts. Check the '+' terminal of the HT coil reads the same. Then, at the RITA connections to the vehicle wiring loom, measure the voltage between the positive and negative wires to confirm the battery voltage is properly reaching the unit.

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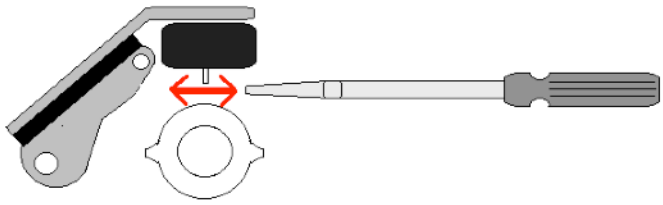
4. Switch the ignition on and off, this should produce a spark each time, alternately a steel screw driver or feeler gauge moved past the pick-up should also make the unit spark. If sparks are produced it is a good indication the pick-up, unit and ignition coils are OK.



5. If no sparks are produced in Test 4 measure the pick-up resistance with a multimeter between the two wires coming from it. If the resistance is within 5% of the figures below go to test 9 & 10.

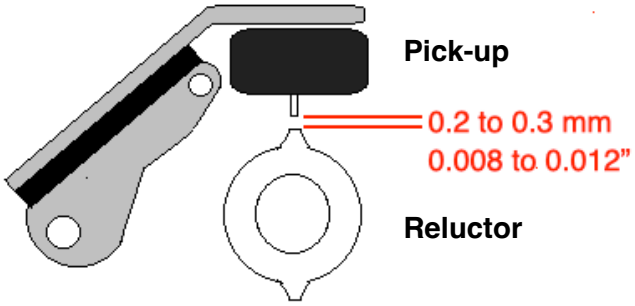
200-450 ohms - C and Low C types (typically 270R at 20 degrees C)
1500-2000 ohms for the 2PU type
600-700 ohms for the 5PU type

6. If sparks are observed during Test 4 but not while the electric starter is cranking the engine, verify the voltage at the RITA unit. Connect your multimeter as described in Test 3 and ensure that the voltage remains above 9 volts during engine cranking. If it drops below this threshold, investigate the cause of the excessive voltage drop.

7. If sparks are visible in Test 4 but not when kick-starting the engine, or when using the electric starter with a satisfactory voltage reading from Test 6, check that the reluctor is turning with the engine and that the pickup is properly secured. If the pickup or reluctor are loose, address and rectify the issue. Proceed to item 8 for further checks.

8. **Proper adjustment of the air gap between the pickup and reluctor is essential**. The gap should be between 0.008" and 0.012" (0.2–0.3mm). A gap that is too large may prevent the engine from starting. Since the pickup is magnetic, it is recommended to use plastic or brass feeler gauges. Although steel feeler gauges can be used, they may become magnetised, making it more difficult to set the correct clearance.

5PU pick-ups are not adjustable for clearance.



'C' Type Pick-up

9. **Still No Sparks?**
Check each HT coil for old leads that could be breaking down. Only copper core HT wires should be used, replace any suspect lead. Test the coil's resistance on it's primary and secondary circuits. The primary is measured between the '+ & –' terminals. The reading will be a few ohms. The secondary is measured with the HT cap removed between the HT lead and '–' terminal. This reading will be kilo (K) ohms. The reading must be steady, and very close to the new specification.

Generally primary resistances should be approximately; 12 volt coils 4-5 ohms, 6 volt 2 ohms, 3 or 4 volt 0.3 to 1 ohm. Modern Lucas 17M12 & 17M6 coils measure 9KΩ at the secondary. The bike's manual will contain the actual HT coil resistance information.

A 'no reading', an unsteady one or one that is more than 5% different to the new value shows a failed HT coil which must be replaced. The secondary (HT) winding is often the one to develop a fault. Note windings are temperature sensitive. All resistances are given at 20 degrees C.

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10. **Isolating Diodes (PM6A6)** Some installations use diodes to connect multiple HT coils. Test diodes using a multimeter with a diode test function or a battery and bulb. A working diode will show two readings on the meter: 0.5 or 0.6 in one direction and 0 (or out of range) in the other. An identical reading both ways or an error message indicates a faulty diode. With a battery and bulb tester, the bulb should light only in one direction and remain off when reversed.

Failed diode packs must be replaced. New isolator diode packs (equivalent to PM6A6) are available from our on-line shop. These can be used with Boyer or Lucas systems.

Finally: If all the tests, checks and adjustments prove good, disconnect the wires from the pick-up. Make a temporary connection to the RITA white/brown (AB5) or white/purple (AB11) wire to the battery negative terminal. Each time the connection is made, all spark plugs must be seen to spark. If they do not, replace the RITA unit.

Misfiring. This type of fault is one of the most difficult to pin down as other factors can cause similar symptoms. It is important that all the basic checks are carried out first and loose connectors and failure of other parts is ruled out. It is also worth checking the ignition timing with a strobe and seeing that it advances normally and to the maximum advance point.

All RITA units are well over 20 years old now, misfiring, changes in the timing curve, or rough running are often caused by electronic components inside the unit that have dried out, degraded, or failed altogether. The most cost-effective solution is to replace the old electronics with a 'Revival' circuit board. While it is theoretically possible to repair the RITA, heat from soldering can cause the tracks of an old PCB to come away, and nearby components are often damaged, leading to further failures within weeks. Our RITA 'Revival' offers a fixed-price solution with a 12 month warranty.

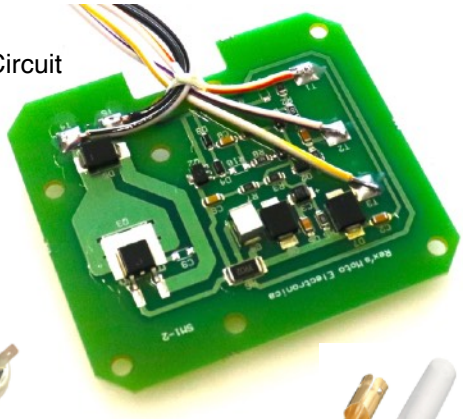
With such old electronics in use, and the engine is not running cleanly and the spark has a distinct orange or yellow colour this is often a warning the unit is about to fail.

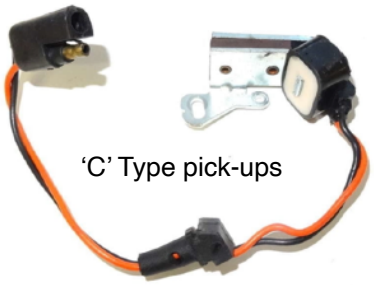
Continual sparking. Where sparks are seen continuously, this can be caused by very low battery voltage, high resistance in any connection (check earthing) or faulty wiring.

In Conclusion

The RITA system is generally very reliable, but like any electrical system it can be affected by poor wiring, low-quality connections, and aging components. We stock a wide range of motorcycle wiring products, along with replacement RITA 'Revival' circuit boards, pick-ups and HT coils. Additionally, we offer expert help and advice for maintaining and troubleshooting the Lucas RITA system.

Rita 'Revival' Repair Circuit





'C' Type pick-ups

PM6A6 Isolator Diode Packs

Wiring Products

HT Coils

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