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Ignition Testing Guide - Rotax 348, 504 & 604 Powered Machines

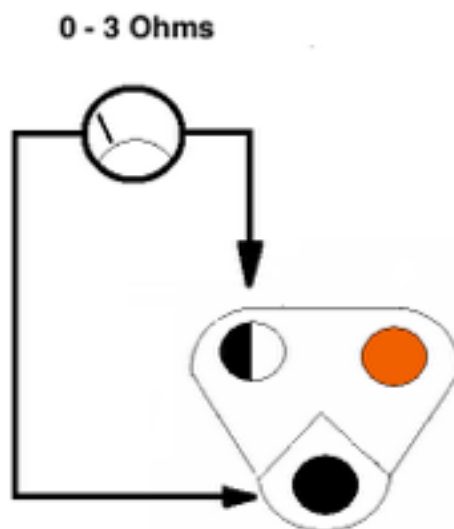
Applicable to CCM, KTM Aprilia, MuZ, Harley MT & Armstrong MT500

Here are a few simple tests to aid trouble shooting the Rotax ignition system to decide where the fault lies. These tests assume a good working knowledge of your bike and that you have carried out obvious checks first such as replacing the spark plug and checking for loose connectors. All tests are done with a cold engine and an ambient of 20 degrees C (70F), start by locating the CDI unit connectors and unplug them. You will need a good multimeter, a cheap one can give misleading results, we stock a suitable meter should you require one.

*** Do not carry out these tests on the CDI (amplifier) unit plug.**

Test 1 - No Spark - Check to operation of the ignition and kill switches

Check the kill switch, ignition switch and the associated wiring by carrying out continuity (resistance) checks on the loom 3 way plug.



New CDI Units - CDI Unit Testing - Generator Repairs - Terminals, Wire, Connectors & Coils

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Correct Results: If yours don't match there is a fault with the switches or associated wiring

KILL SWITCH	IGNITION SWITCH	OHMS
OFF	OFF	0-3
RUN	OFF	0-3
OFF	ON	0-3
RUN	ON	INFINITE

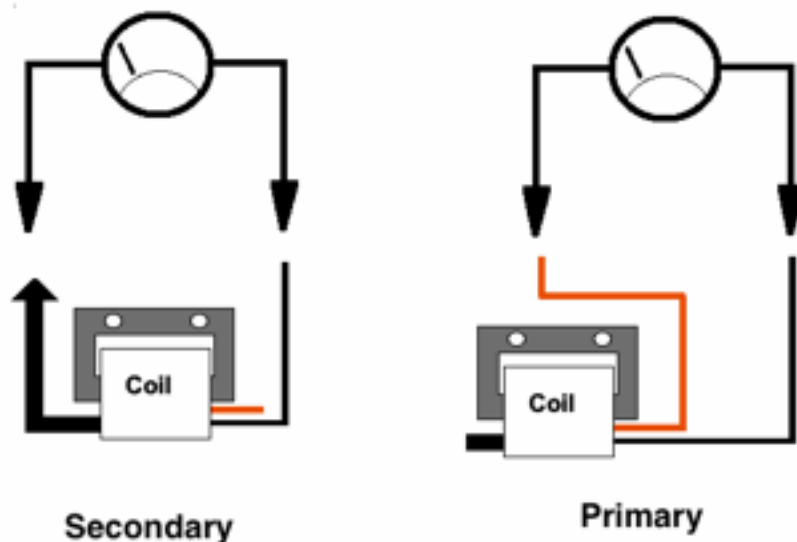
Test 2 - No Spark - Check the HT Coil - You will need to remove the fuel tank to access the coil

Standard Coil:

Secondary Resistance: 11-14.5K

Primary Resistance 0.8 -1.1R

Rex's stock the correct type of HT coil for all Rotax models - our P/N: HTC11. If you find you have the incorrect type of HT coil, IE one that does not have the metal frame around the coil body this maybe the cause of poor starting. Incorrect or low quality HT coils should be replaced for the correct sort. The values of these coils are slightly different but they have



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Poor Running

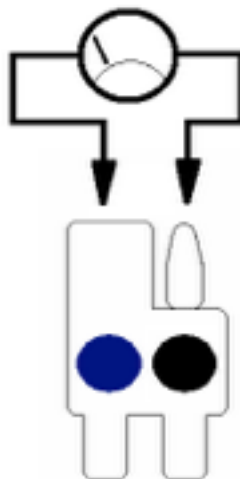
We recommend you start by testing the generator and pulser coil windings as these are simple to test and don't require the generator to be removed. The generator windings that supply the power for the ignition and give the timing information tend to fail gradually. The ignition box on the other hand tends to fail suddenly. The first signs of trouble with the generator can be one or a combination of the following; misfiring at speed, poor running only when warm, failing to rev above 3,500 RPM, very stubborn to start when warm but OK when cold, engine runs for a short period then cuts out or a weak, yellow spark.

The ND CDi unit can fail partially and will give the same symptoms as a failing generator source coil windings just to add to the confusion! However rule of thumb is suspect a winding fault first and wherever a problem comes on only when the engine is warm. Winding faults are very common.

The generator is tested via the black rubber plugs on the generator lead. You are looking for readings exactly to specification at 20 degrees C (70F) and that remain steady, any readings that are off by 5% or more or any that fluctuate show a failed winding. We can correct your figures if you tell us the ambient temperature where it is more than 2 degrees away from 20 degrees C. The engine must not have run for several hours when testing.

The manuals all give a 10% tolerance - however machine wound coils will be within 2% of each other when new. Winding industry standards state that where a reading has changed by as little as 5% this indicates a winding failure. You can save time and money by using this tighter tolerance. We see many 330 ohm windings reading 315 with running issues.

Test 3 - Low Speed Pick up 145 Ohms



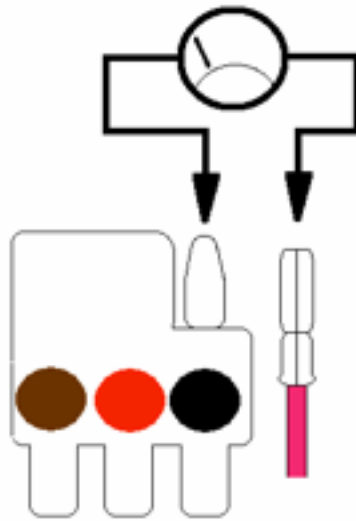
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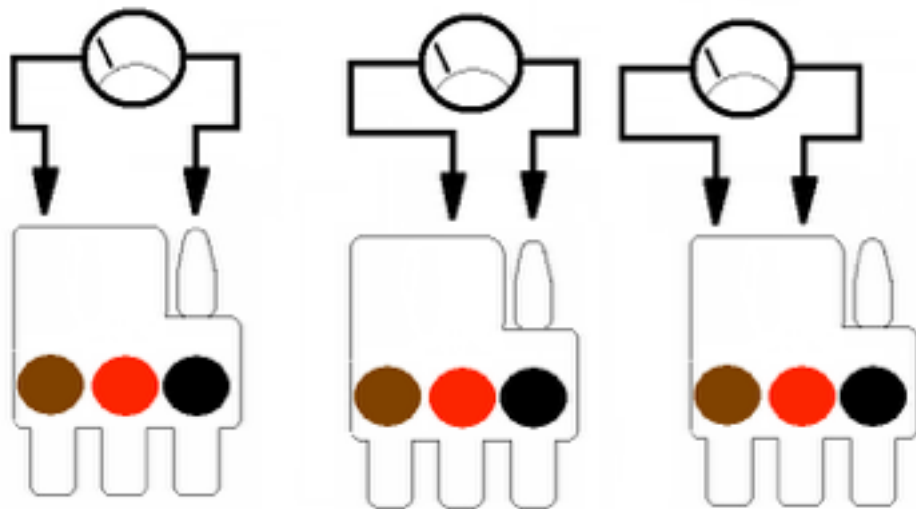
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Test 4 - High speed pick up 16 Ohms



Test 5 - Source coils

Brown to black 329 Ohms; red to black 335 Ohms; brown to red 6 Ohms
These should be measured with a cold engine. A 5% tolerance applies.



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Test Results

Never take stator resistance readings from an engine run within 6 hours.

Ambient temperature when readings taken:

	C/F
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Rotax Stator Test Results - 348, 504 & 604 engines			
Test	Item under test	Results	
1	Kill switch	1A	
		1B	
		1C	
		1D	
2	HT Coil	Primary. Ohms	
		Secondary. K Ohms	
3	Low speed pick-up	Ohms (140)	
4	High speed pick-up	Ohms (15)	
5	Low speed source	Ohms (329)	
6	High speed source	Ohms (6)	
7	Total of low & high speed	Ohms (335)	

Look for a reading that is the odd one out. IE if all your readings are in the middle of a give range of values but one is on the upper limit, the one on the limit should be suspected. If you e-mail tech@rexs-speedshop.com our techs will look at your results.