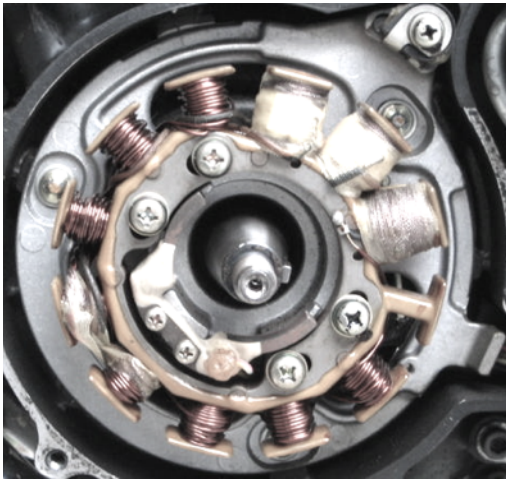




Unit 1, Russet Farm
Redlands Lane
Robertsbridge
East Sussex
TN32 5NG

USA Model XT500 (G & H Models) with radial type stator & ND CDi units



Rex's are specialists in motorcycle electronic ignitions and generator systems. We design and manufacture new replacement electronic modules and generators as well as carrying out rewinds to existing equipment. To help owners decide where the problem is we provide more specific and definitive test results, far more accurate than shop manuals.

To get answers quickly, carry out only the tests we specify and provide only the information we ask for, our techs will not discuss your own made up tests or measurements. The ignition unit is not user testable, however the generator is and is often found to be the cause of the problem.

Brand new, modern ignition units rarely give trouble, all ours are quality checked and fully run before they are sent out. Most faults are eventually traced to the motorcycle's system, especially if the bike is 30 years old or more!

Note: If you do decide to return a CDi unit for re-checking, we reserve the right to charge a testing fee should the returned unit be found to be without fault. Careful and thorough examination of the rest of the electrical system can avoid the expense and time wasted in returning perfectly serviceable parts.

These tests assume a good working knowledge of your bike and that you are able to use a multimeter. You should also have the shop manual and carry out obvious checks first such as replacing the spark plug and checking for loose connectors. You will need an accurate multimeter, such as our P/N TM-2 to carry out these tests.

Testing must be carried out by a trained, experienced person with professional quality tooling. Severe damage to the electrical system can occur by in-experienced or unapproved testing. The bike's workshop manual is required in conjunction with this testing guide. Nothing contained in this publication over rules any safety warning or cautions given in the Manufacturer's shop manual. Failure to follow this guide and the workshop manual can result in injury to yourself or those around you or damage to your machine.

Note tests in the OEM manual for CDi units not apply to our products, CDi units are not user testable.

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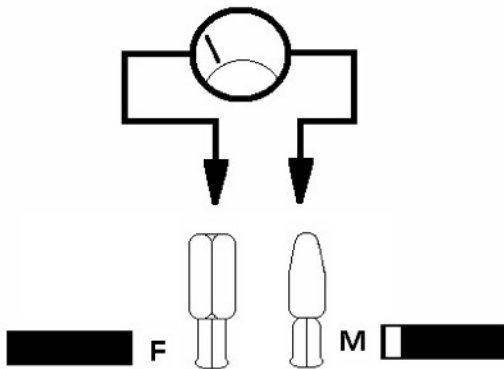
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XT500 Factory CDi system testing. Revision 5 Issued July 2018

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

At the CDi unit identify the black wire with white strip plus the plain black wire on the wiring loom (don't test the wires coming out of the CDi unit). Use a multi meter set to a low range resistance range to measure the resistance on these two wires. Some XT models don't have kill switches, in which case the test is even simpler. If yours has a kill switch, follow the table of correct results.

If your bike only has an ignition switch, do switch tests 1A & 1B only, if it has both start at 1C:



TEST	KILL SWITCH	IGNITION SWITCH	OHMS
1A		OFF	0-3
1B		ON	INFINITE
1C	OFF	OFF	0-3
1D	OFF	ON	0-3
1E	RUN	ON	INFINITE
1F	RUN	OFF	0-3

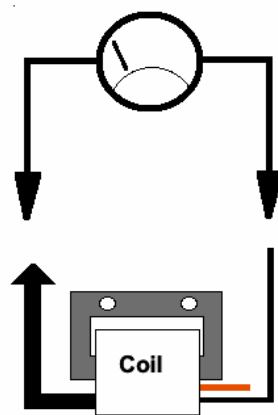
Test 2 - No Spark - Check the HT Coil - You will need to remove the fuel tank.

Secondary Resistance: 11-12K
Primary Resistance 0.95 -1.1R

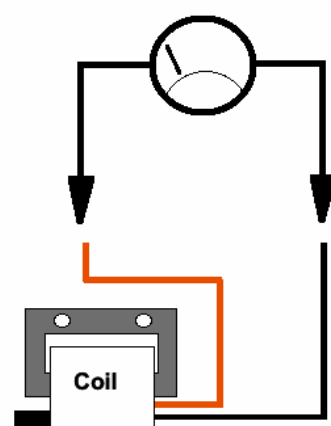
Replacement HT coils may give different readings from OEM. Different readings from those above don't always mean a failure. What you are looking for are sensible readings that remain steady. Typical values could be anything from 0.6R to 1.5R for the primary and 7-14K for the secondary. The HT cap should be removed to test the secondary. Low cost, low quality HT coils must be replaced as we have seen many faults caused by poorly made HT coils. There is no need to buy OEM but avoid 'bargain basement' parts.

XT500 coils should have two wires. If yours does not, try using the metal core of the HT coil as the black connection.

If your multimeter is not the auto ranging type, set the resistance to 20 ohms for the primary and 10 or 20 kilo ohms for the secondary tests. Consult the meter's hand book if you are not sure which range to use.



Secondary



Primary

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XT500 Factory CDi system testing. Revision 4 Issued January 2018

Poor Running

We recommend you look at the generator windings first. OEM manuals will tell you to change an expensive ignition unit first. A faulty ignition unit tends to give a 'hard or consistent' fault that is there all the time. Faults that show only when the engine is warm or after a few miles riding are very likely to be caused by a winding starting to fail.

Both windings and ignition units can suddenly fail completely to give a hard fault there all the time, but generally a winding fault gets worse gradually before failing. Swapping the ignition unit can cause a weak winding to stop working completely because capacitors naturally lose their ability to store charge with age. A new unit that is able to store 100% charge will place a heavier load on the windings than one that is degraded and only holding 50% of the charge.

CDi faults in order of most commonly seen.

Below are the most common problems we see with all CDi systems, regardless of make or model, 2 or 4-stroke. This table is only a guide to where the problem is most likely to be and does not replace thorough and methodical fault finding.

<i>Hard to start or won't start hot - Winding fault. (Big 4-stroke singles; incorrect starting technique or badly adjusted idle mixture [too rich] are more common).</i>
<i>Misfires only when engine warm - Winding fault.</i>
<i>Won't rev out hot -1) Low/high speed source winding 2) faulty low/high speed trigger windings.</i>
<i>Won't rev out hot or cold. 1) Low/high speed source winding 2) faulty low/high speed trigger windings - 3) faulty CDi timing circuit (CDi faults in combination with winding faults are very unlikely on the XT).</i>
<i>Runs on old CDi units but not new - Weak source winding.</i>

The easiest way to test a winding is to measure its resistance, with a cold engine and at 20 degrees C. Machine wound coils will always have a resistance within 2% of its design figure. If the resistance has drifted away from its design specification by as little as 5% this is a sure sign of a winding failure (or it has been incorrectly rewound). Wider tolerances given in the OEM manual should be ignored, doing so can save you a lot of time and money.

Write down your resistance readings, there is a form at the end of this guide for this. With the results in writing it's sometimes easier to spot the odd one out and therefore the problem. Remember that resistance of windings change with temperature - take your readings at 20 degrees C, or record the ambient temperature if it is more than 5 degrees different. Never take readings from a hot or recently run engine.

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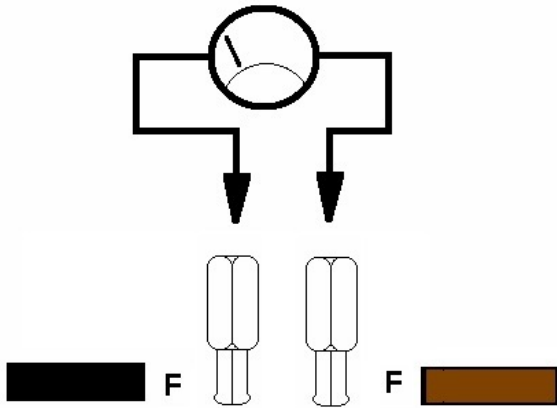
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Source windings provide the electrical power for the ignition. Having low and high speed source windings gives a much higher output at all RPMs compared to a single source winding.

Test 3 - Low speed source coil

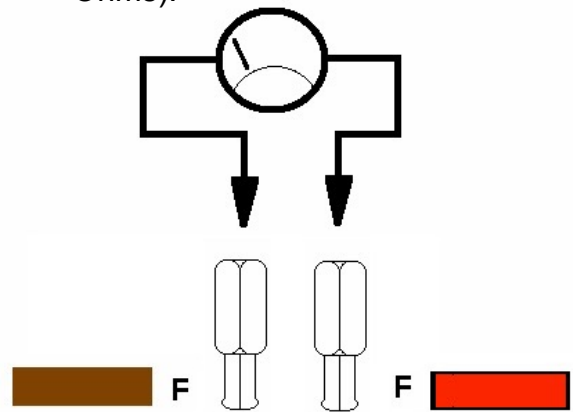
Brown to black 380 ohms at 20 degrees C (70F). A 5% tolerance applies.



Test 4 - High speed source coil

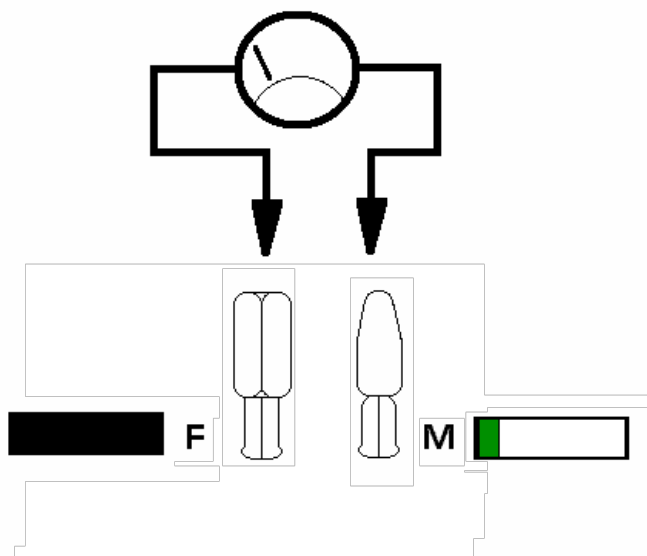
Brown to red 10 ohms at 20 degrees C (70F). A 5% tolerance applies.

A final check, red to black should measure the same as test results 3 & 4 added together. (390 Ohms).

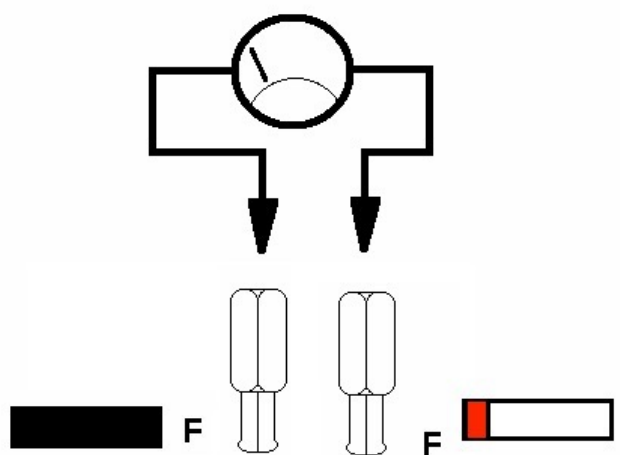


Pick up windings provide the fire signal for the ignition. The CDi unit decides when to use low or high speed pick-ups for firing the spark plug.

Test 5 - Low speed pick up 91 ohms



Test 6 - High speed pick up 16 Ohms



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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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Standard Yamaha Factory Fitted CDI Stator Test Results - XT500 USA (G&H)			
Test	Item under test	Results	
1	Kill switch	1A	
		1B	
		1C	
		1D	
		1E	
		1F	
2	HT Coil	Primary. Ohms	
		Secondary. K Ohms	
3	Low speed source	Ohms	
4	High speed source	Ohms	
5	Low speed pick-up	Ohms	
6	High speed pick-up	Ohms	
Did black to red measure the same as 3 & 4 added up? (Y/N)			

Look for a reading that is the odd one out. IE if all your readings fall in to the middle of a given range 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.