

Rex's Speed Shop

Guide Y-8: CDi Ignition Generator Checks & Ignition Timing

Yamaha IT200 1984-86



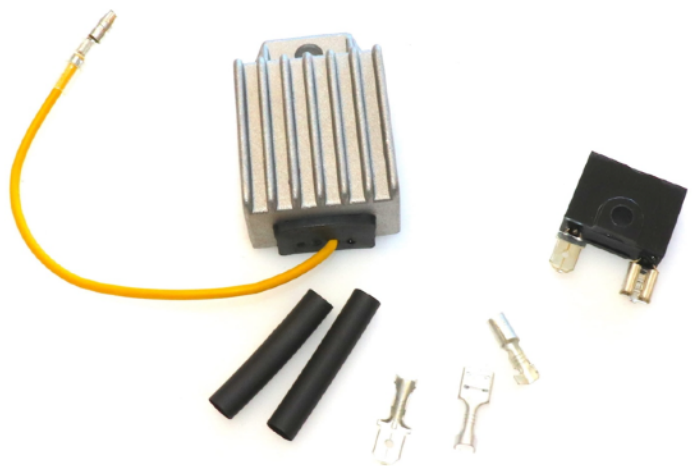
A simple plug-in unit may be all that is required to restore relatively new ignition systems, however systems older than 20 years are often suffering age related degradation of all their components. The generator is an often overlooked but key component to consider, as it too can cause symptoms such as: no spark, poor starting, misfiring when hot, or a weak, yellow spark. It can stop the engine running when hot or cause a failure to run after fitting a new CDI unit.

The condition of the generator can usually be assessed with a careful visual inspection and basic multimeter tests, bearing in mind the age of the system. If fitting a new component changes the fault or stops the ignition working, this normally indicates age degraded components still in the system that are failing when loaded. This guide does not replace or alter any instructions or warnings given in the workshop manual and assumes the work is being carried out by someone competent to interpret readings and complete the work to a high automotive standard.

IT200 Stator:



Single source coil, mounted on the **right** of the pick-up.



Rex's 6 volt charging system repair kit is suitable for the IT200: **6VAC-RK1**
Parts are also available separately

| Manufacturer | Mitsubishi | Item | Notes |
|--------------|---|-------------------|---|
| Flywheel: | F3T-207 (2 windows) | Source coil | ~ 12.5 mm thick at mounting points |
| OEM CDi P/N | 23X-85540-20-00 | Brown ~ Black | 420Ω @ 20°C |
| REX CDi P/N | YZ1 | White/red ~ Black | 12.4Ω @ 20°C |
| IGN TIMING | IT200 ~2.25-2.6mm BTDC. 23.7° @2,000 RPM | HT Coil PRI / SEC | OEM: 1.0Ω/5.9KΩ Non OEM 0.6 ~ 1.8Ω / 4KΩ ~ 8KΩ |

Testing the CDi generator windings

This guide brings together the key information needed assess the bike's stator and interpret the results. The measurements themselves are carried out using a multimeter, following the procedures described in the Yamaha workshop manual, please make yourself familiar with ignition/ generator section as we do not repeat those step-by-step test procedures here. If you are unfamiliar with using a multimeter to take these readings, we recommend seeking assistance from someone experienced in electrical testing.

We recommend the TESTO 760-1 multimeter. Although you have to have experience to interpret the readings, it is fully auto-ranging and at the touch of a button select either volts, amps or ohms making this a very simple to use instrument for the workshop.

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We cannot accept responsibility for incorrect diagnosis of faults within the system. Parts returned for testing that are found to be fully functional may incur standard workshop inspection charges.

Your Test Results:

Ambient Temperature:.....C or F (please circle which units)

| Measure Resistance: | Standard reading @ 20°C | Your Readings (un-corrected): |
|---------------------|-------------------------|-------------------------------|
| Brown ~ Black | 420Ω | |
| White/red ~ Black | 12.4Ω | |
| HT Coil PRI / SEC | 0.6 ~ 1.5Ω / 4KΩ ~ 8KΩ | |

Important: Many manuals suggest accepting a large tolerance of 10 or even 20% on measured coil resistance readings, yet this is entirely misleading as CDI windings are precision components. The key point is that copper's resistance changes in a predictable way with temperature, therefore once a correction for ambient temperature has been applied, any difference between specification and a measured value gives a clear warning that the coil is breaking down internally. There is only a very small allowable tolerance due to copper being highly temperature-sensitive and meters varying slightly in accuracy. Small variations of up to 2% are normal, but once the discrepancy reaches 5% or more, this is a clear indication the winding has failed. Any winding that gives no reading or one that does not remain steady has also failed.

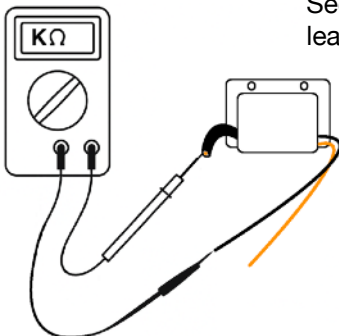
The source coil is by far the hardest-working coil and the one most likely to fail, but as these bikes age, faults begin appearing throughout the ignition system. If your stator gives perfect, stable resistance readings but the bike still does not run properly, look further for other symptoms. Does the fault worsen when the bike is hot? Is there a mysterious misfire or problems only under load? Is the bike difficult to start, perhaps needing bump starting? Has fitting a new CDI caused it to stop working altogether? New CDI units load the windings to their full design power, charging much faster and to a higher voltage than an old CDI can achieve, which highlights weaknesses in ageing windings. If heat or load triggers problems, this clearly indicates insulation failure that a multimeter test will not detect.

If you find off-specification resistances or suspect failing insulation, the cure is to have the generator overhauled back to its 'as new' specification.

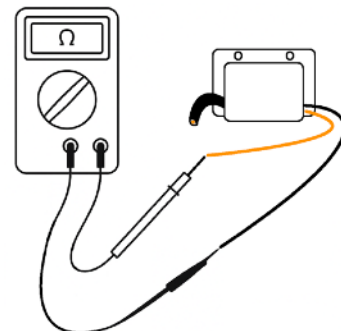
| Correct for Ambient Temperature | | |
|---------------------------------|---------------|-----------|
| Temp (C) | Source Coil Ω | Pick-up Ω |
| -10 | 370.49 | 10.94 |
| -5 | 378.74 | 11.18 |
| 0 | 386.99 | 11.43 |
| 5 | 395.25 | 11.67 |
| 10 | 403.50 | 11.91 |
| 15 | 411.75 | 12.16 |
| 20 | 420.00 | 12.40 |
| 25 | 428.25 | 12.64 |
| 30 | 436.50 | 12.89 |
| 35 | 444.75 | 13.13 |
| 40 | 453.01 | 13.37 |

Testing the HT coil

When measuring HT coils, remove the cap. Secondary resistance is taken between HT lead and earth wire, or the metal frame.



Primary readings are made between the primary wire and earth wire, if there is no earth wire, then the metal frame is earth.



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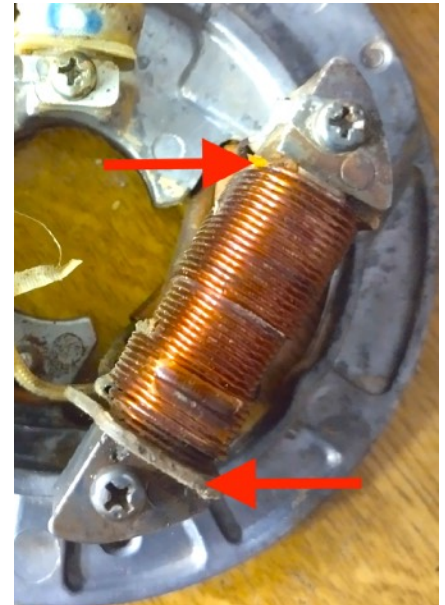
Checking the lighting coil:

The lighting coil is wound from much heavier wire than the CDI source coil, it operates at a much lower voltage and it is more robust, it is also easier to assess by inspection. Signs of burning or mechanical damage to the copper will be obvious, however patchy discolouration, usually lighter in colour due to overheating maybe less easy to spot. The copper will be an even colour over the entire winding if it is still in good condition. Age of the lighting coil, and hence it's insulation is again a significant factor.

Check for:

General condition, the winding on the right has an end piece missing, a common issue on older generators. The insulating end pieces must be intact at both ends of the winding as these prevent the copper from contacting the steel winding slot. They also form part of the mechanical support for the winding, if missing or damaged, the winding is no longer properly supported or sealed.

Check also the copper is tight on the steel former, firmly hold it with your fingers and attempt to move it back and forth towards the mounting screws, also attempt to twist it. Any movement of copper on the former, even slight shows a failure.



Lighting coil electrical test

Lighting and charging coils use several metres of relatively thick copper wire, so their resistance will always be very low (the IT200 is 0.48Ω), most typically fall between 0.2 Ω and 2 Ω. Readings within this range should be considered a pass. Obtaining an exact figure can be difficult, as multimeters are not especially accurate at the very low end of the resistance scale. Do not be concerned if your readings do not exactly match the figures in the manual as sensible, stable readings are more important.

Carry out the resistance tests as described in the workshop manual. These models were produced with different lighting coil configurations, but all are grounded, so readings are taken to the black ground wire or directly to the stator plate. We stock replacement voltage regulators and rectifiers for the IT200.

We offer a wide range of CDI units, generator parts, rewinds, electrical testing & repairs for Yamaha models of this Vintage.

If you are subscribed member there is free access to our on-line help guides and technical support which is exclusively via on line or via e-mail.



IT200 CDI unit: **YZ1**
Made in the UK



IT200 Replacement HT coil
HTC30-4