

Rex's Speed Shop
Guide Y-9 CDI Ignition & Generator Trouble Shooting
 Yamaha TY250 R&S1984 -1991 Air Cooled
 TY350
 With Mitsubishi CDI



A simple plug-in unit may be all that is required to restore a relatively new ignition; however, older systems are often suffering age-related degradation of all their components and require a more holistic approach to repair. 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.

Although we have attempted to ensure accuracy, information given has been compiled from various Yamaha publications. Variations may occur due to the market the machine was sold in or owner modification, which is common on competition machines. If you are in any doubt, always refer back to the manual for your model. This guide does not replace or alter any instructions or warnings given in the Yamaha workshop manual. These systems require skill, knowledge, and experience to fit, adjust, and troubleshoot. This work must be carried out by someone experienced, competent, able to interpret readings, and complete the work to a high automotive standard.

CDi units are not testable by mechanics, so we focus on looking at areas that cause problems as the machine ages that can be tested easily. The generator on these models is very similar, and although it was supplied with and without lighting and differently weighted flywheels, essentially the ignition items are the same. The windings can usually be assessed with a careful visual inspection and basic multimeter tests. Remember, older than 20 years = older than intended life.



Weighted flywheel.
 Note the TY engine is not tuned for light flywheels

Single source coil on RHS of pick-up

Manufacturer	Mitsubishi	Test	Resistance at 20°C
FLYWHEEL	F3T373	White/red ~ Black	4Ω
OEM CDI P/N	53Y-85540-20	Brown ~ Black	240Ω
REX CDI P/N	TY2	HT Coil PRI / SEC	Original 1.0Ω / 5.9KΩ Replacement 0.6-1.8Ω ~5-8KΩ
IGN TIMING	5N9 2.6mm BTDC (20°BTDC) 38V 2.8mm BTDC (21°BTDC)	Static set up is shown, but engine timing marks align when checked with a strobe at 2,500RPM	

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.

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Testing the CDi generator windings

Your Test Results

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

Brown to Black:

White/red to Black:

Important: Many manuals suggest allowing a 10% tolerance on coil resistance readings. This figure is misleading and often causes people to assume a failing coil is healthy. CDi windings are precision parts; the resistance is quoted in the manual at 20°C for a good reason; copper changes its resistance in a predictable way with temperature. So if a winding's resistance differs from its specified value, it's either at a different temperature or the winding has failed. Only a small tolerance is allowable due to copper being highly temperature-sensitive and meters varying slightly in accuracy. Once corrected for ambient temperature, variations of up to 2% are normal, but once the discrepancy reaches 5% or more, this clearly shows that the winding has failed. Any winding that gives no reading or one that does not remain steady has also failed.

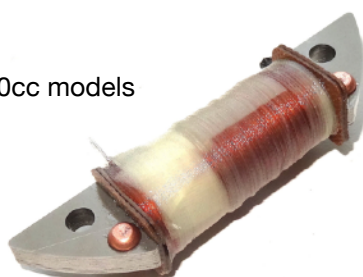
If your stator gives perfect, stable resistance readings but the bike still does not run properly, look further for other symptoms. Unfortunately, simple resistance tests can't reveal whether the coil's insulation is still strong. After 15 years, it will be degraded and after 20 years, well beyond its expected useful life. Age-related insulation breakdown shows up by causing misfires, loss of spark, or becoming difficult to start when hot. Heat and load often highlight a source coil with insulation that is silently leaking power to ground.

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 any 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, we have a wide range of new ignition and charging system parts available. Many riders opt for one of our electronic ignition stator kits, which replaces all the problem parts: old HT coils, generator windings, and aged CDi units in one simple operation.

Correct for Ambient Temperature		
Temp (C)	Source Coil Ω	Pick-up Ω
-10	211.71	3.53
-5	216.42	3.61
0	221.14	3.69
5	225.85	3.76
10	230.57	3.84
15	235.28	3.92
20	240.00	4.00
25	244.72	4.08
30	249.43	4.16
35	254.15	4.24
40	258.86	4.31
Note the ambient temperature and use this to give the corrected resistance. If your reading differs from the temperature corrected one, the winding has failed.		

New 240 ohm source coil for TY250 & 3500cc models
P/N: SC8
 Made in England



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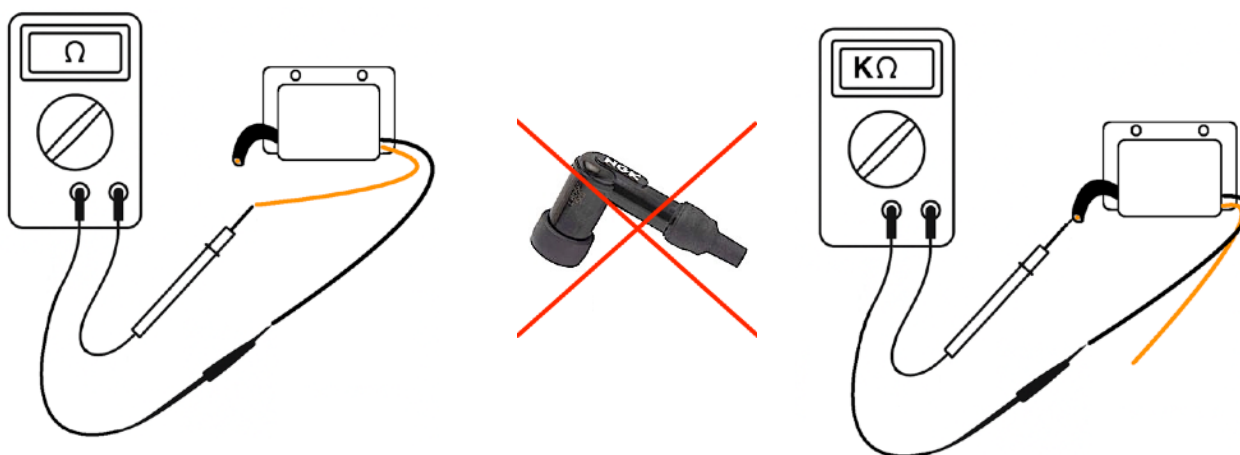
HT Coils

Original HT coils were generally 1.0 Ω /5.9K Ω . Aftermarket coils show some variation in resistance, so here we are looking for 'sensible' readings. HT coils are very heavily stressed and tend to simply stop working, although occasionally they can cause bad running at high RPM before ceasing to function. Problems may also occur with the HT lead which in many cases is not replaceable. We remind you that parts which are clearly manufactured with a low price being the key specification often let you down when it matters most.

When measuring the HT coil, always remove the HT Cap.

Primary: measure between primary wires or if there is only one wire, that and the coil frame.

Secondary: measure between HT lead and earth wire or coil frame if there is only one primary wire.



Lighting System

This is a very basic lighting system intended only for marker lights. Output is sufficient for small filament bulbs but is not suitable for normal road use or LED lighting. An AC regulator is used to prevent bulb failure. We stock both replacement lighting coils and 6V AC regulators.

The lighting coil is wound from much heavier wire and is therefore more robust than a CDi source winding; however, the same ageing rules apply. It may be a different size or have a different number of wires depending on model and market but is always made from a few metres of fairly thick wire, so its resistance will be about 1-2 Ω or less. Even good meters struggle to measure such low values accurately. Check for sensible readings and the general condition. The copper must not be loose on the former, and the insulation at each end must be present. A winding that has even a slight movement on the former will quickly wear through its insulation and short out under engine vibration.

Subscribed members of our website have free access to wiring diagrams, but this system is very simple to understand. The lighting coil has one end connected to the stator plate, with the other connected to the AC regulator and then to the lighting switch and bulbs. The system requires the bulbs to have a complete two-wire connection across the lighting coil. The simplest method to achieve this is to have a wire connecting the metal body of the headlamp and tail lamp bulb to the HT coil mounting point. The stator is already connected to this point by the black wire in the loom. The AC regulator case should also have a connection to the HT mount bolt.

Any restoration can involve many hours of preparation and finishing, so there is little sense in damaging a freshly painted frame or lamp brackets simply to carry electrical current. The additional wire hardly makes the wiring more complex yet removes the need to scratch through paint, while providing a far more reliable lighting circuit. The motorcycle frame was designed to hold the engine to the wheels and give the rider something to hang on to. It was never intended to be a high-quality electrical conductor; in fact, it is so poor at doing so that it often leads to blown bulbs and a variety of frustrating lighting faults when used for this purpose.

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Parts Catalogue

RMK1, 3 & 5 Stator Kits

Both our **Clubman** and **Pro** ignition systems feature our unique **Dual Power™** stator assembly.

Unlike systems that rely on a single source winding, the **Dual Power™** design delivers substantially more electrical energy to the CDI unit without causing peaky engine performance. The result is a less electrical stress on each winding, stronger spark, and steady consistent performance, all day.

- New stator
- New HT coil
- New CDI unit

Available for 175, 250 & 350cc machines



Rewinds, fitting of parts to generators & electrical repairs available

Trials bike 6V AC Regulator
RG6V-1A



Basic & High output Lighting sets



Replacement Factory ignition CDI unit:
TY2



TY250 Mono HT Ignition Coil
HTC30-5