

Rex's Speed Shop
CDi Ignition/Generator Trouble Shooting Guide 4
Yamaha DT400D&E 1977-78
IT250 1977-80
IT400 1977



The ignition system fitted to these models represents some of the very first CDI generator systems of this type developed by Mitsubishi Electric. It features windings mounted in a 'V' rather than parallel to each other and uses a trigger pick-up mounted beneath the flywheel, firing twice per revolution. This design formed the foundation of a series of Yamaha CDI systems that went on to become extremely successful and, in its evolved form, remained in use well into the 1990s. The development stages can clearly be seen between the early system, used up until 1976 and this revised DT400D&E system introduced for 1977.

The 1977-8 (D&E model) generator represents a marked improvement in both running and lighting. The black plastic pick-up and fixed timing was replaced by an all metal pick-up which is easily identified by its thick, 'chunky' appearance. This system gives a few degrees of ignition advance, with full advance occurring at 4,000 RPM. The source coil appears similar to the B&C model, but has a revised winding resistance. IT models used a very similar generator up until 1980, with reduced lighting output. A point to be aware of is that the DT shop manual contains misprints, quoting the points magneto values for the CDI windings.



The charging and lighting system used was much improved. Gone was the three rate, switched charging coil, this version used a revised 6V, AC regulator to control charging current, coupled with the larger 6 amp/hour battery which also assists the regulator in stabilising the system to 7.2V. The Lighting coil has two versions, a fine wire version that limited its own current as the engine speeds up, assisting the regulator. By 1978 the system had quietly evolved again into the format most owners now recognise as the reliable and mature version of the design. This further refinement to the lighting coil arrangement, using thicker wire made this a solid system that has been replicated so widely that the format has become almost universal today.

No manufacturer (or owner) can expect the original electrical components to remain serviceable half a century later. Second hand parts will also be a similar age and equally beyond their original design life.

However the good news is that this system is fully repairable. If you are restoring a bike and wanting to maintain its maximum value, having an OEM standard overhaul to the generator maybe an option.

We produce a new CDI unit for use with the standard generator as well as supplying electrical parts including, voltage regulators, rectifiers and HT coils.

Those looking to **up-grade** their bike's lighting and ignition can do so with our simple to fit 12V system. We offer a RMK stator kit, comprising a replacement 12 volt stator, CDI unit, HT coil and voltage regulator, all supplied in a single kit. This is an off the shelf solution, replacing all the parts that are degraded without having to wait for a repair.



HT Ignition Coils for DT Models

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Information on the original Mitsubishi system is mis-quoted in the 1977 shop manual as well as the 1978 supplementary version. The figures we have obtained are compiled from various sources, including our own measurements.

IMPORTANT: Replacing a single part in systems well beyond their intended design life is likely to highlight the deteriorating state of the remaining parts, rather than fixing the system. We remind owners that if the motorcycle is more than 25 years old, both the ignition and charging systems are already well beyond their intended design life, and will require a more holistic approach to their repair.

We also remind owners that where we are asked to re-test new parts, we do charge for this service where the part is found without fault, which is the normal outcome. This guide supplies information to help make a more informed decision.

Measure Resistance:	Standard reading @ 20°C	DT Lighting @ 20°C. From black to:
CDi Source ~ Brown ~ Black DT400	166Ω	Yellow ~ less than 1Ω
Pick-up ~ White/red ~ Black DT400 - IT400 1977	3.4Ω	Green/white ~less than 1Ω
HT Coil PRI / SEC	1Ω / 5.9KΩ	Flywheel: F3T-350
Ignition timing	2.9mm BTDC	Timing mark aligns @4,000 RPM

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, 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. 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. If heat or load triggers problems, yet resistance tests are exact even when compensated for temperature, this clearly indicates insulation failure inside the winding, something that a multimeter test will not detect but is predictable due to the age of that component.

Want to avoid these problems? Our 12 volt RMK kit replaces all the old charging and ignition parts in one simple operation, giving brighter lighting, strong sparks and none the headaches of 50 year old electrics.

