

Rex's Speed Shop

CDi Ignition Trouble Shooting

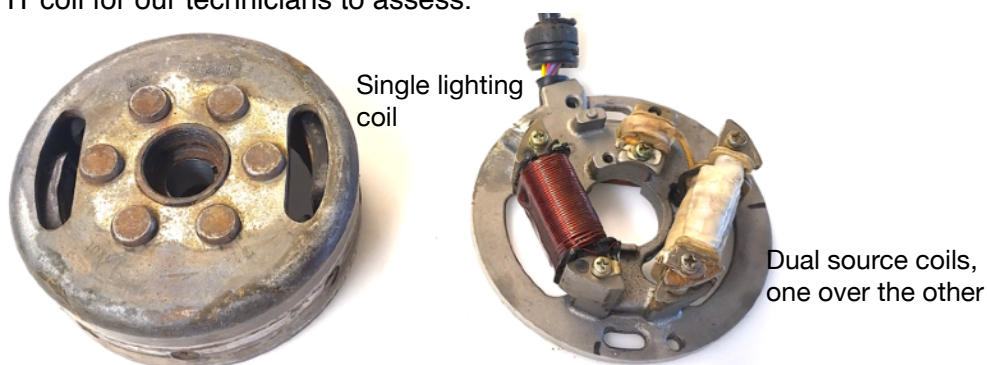
Yamaha DT175 (1978-79) ~ IT125 (1980-81) IT175 (1979-83)
& IT490 (1983-84) USA & Canada Models (DT2 CDI)



Applicable to machines using our 'DT2' CDI unit: Where you have poor starting, misfiring, a weak or yellow spark, the engine stops, only restarting when cold, or a failure to run after fitting a new CDI unit, the generator is most often at fault.

Our new CDI units will only perform correctly if the generator that powers and triggers them is in good condition. After 20 years or more this may not be the case, internal shorts may form inside the generator windings or the insulation can break down, allowing power to leak away causing random faults that seem to appear and disappear. These issues often worsen with heat and eventually develop into a hard fault, IE one that is present all the time.

Other failures can occur at any time, even when the system is relatively new. Source and trigger coils can simply fail outright, creating an immediate hard fault. CDi units by their nature tend to be very robust, but are subject to degrading with age, these require special equipment to test. The condition of the generator can be assessed with a multimeter. You'll need a professional-grade instrument, the sort a qualified domestic electrician would use. Budget mechanic's meters often give misleading readings and can't be relied upon for accurate diagnosis. Alternately send in the stator, CDI and HT coil for our technicians to assess.



Manufacturer	Mitsubishi	Test	Resistance at 20°C
FLYWHEEL (never mix flywheels and stators)	IT490:F3T201 DT175: F3T250	Red ~ Black	13.6Ω*
OEM CDi P/N	IT ~ 2W6-85540-20-00 DT175 ~ 2A7-85540-20	Brown ~ Black	420Ω
REX CDi P/N	DT2	White/red ~ Black	12.4Ω
IGN TIMING	IT ~1.9~2.1mm BTDC DT175 ~1.8mm BTDC	HT Coil PRI / SEC	0.6 ~ 1.5Ω / 4KΩ ~ 8KΩ

*We have noticed that this winding measured at 17.1Ω at 20°C on IT490 models, not 13.6Ω as stated in the manual. We feel there is a typographical error in the shop manual.

The lighting coil is grounded and may have a different number of wires from it depending on model and market. It's 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. As long as each wire, when measured to the black wire, shows a similar low reading, and the coil appears in sound condition, is not loose, has an even copper colour all over, and no material missing from either end of the copper wire, the lighting coil can be considered serviceable.

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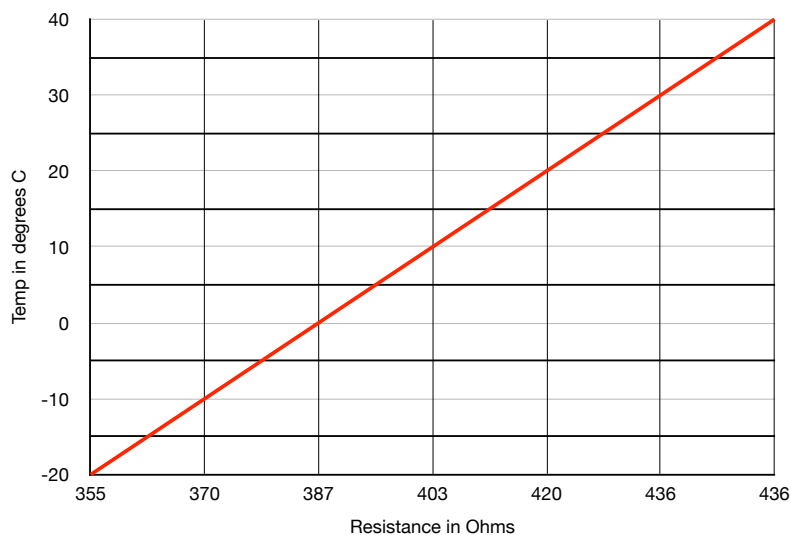


Important: Many manuals suggest allowing a 20% tolerance on coil resistance readings. This figure is misleading and often causes people to assume a failing coil is healthy. Copper's resistance changes in a predictable way with temperature, so if a winding's resistance differs from its specified value, it's either at a different temperature or the windings have started to short together, changing the coils resistance.

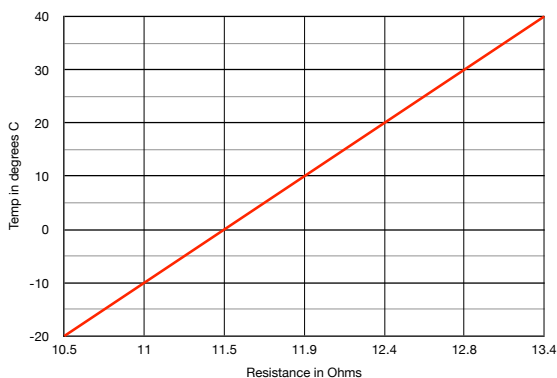
Use the graphs provided to correct your readings to ambient temperature and remove temperature as a factor. Make sure the engine hasn't run for several hours and that the stator is at room temperature before testing. If, once corrected, your readings differ by more than a few ohms, the winding can be classed as shorting internally and must be repaired. A reading that does not remain steady is yet another sure sign of shorting wire inside the winding.

A simple resistance test can't reveal whether the coil's insulation is still strong. If the engine misfires, loses spark, or becomes difficult to start when hot, it's a clear sign the source coil insulation is silently leaking power to ground. As temperature increases, this leakage worsens until engine heat causes the ignition system to fail completely.

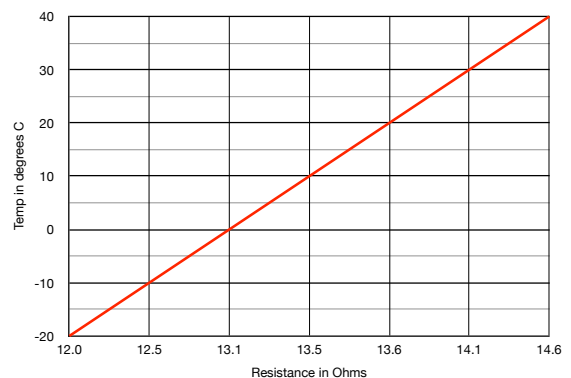
This is often why a new CDI unit won't work with an old generator. A fresh capacitor places a greater load on the source coil, and weakened windings can no longer supply the required energy.



Low speed coil (brown to black): This is the hardest working winding and will fail more often. Its temp corrected resistance must be within a few ohms.



Temp correction for pick-up (white/red to black)



Temp correction for high speed source (red to black)

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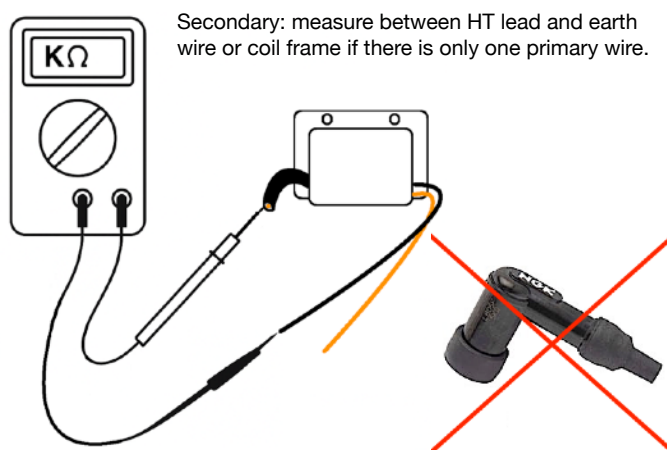
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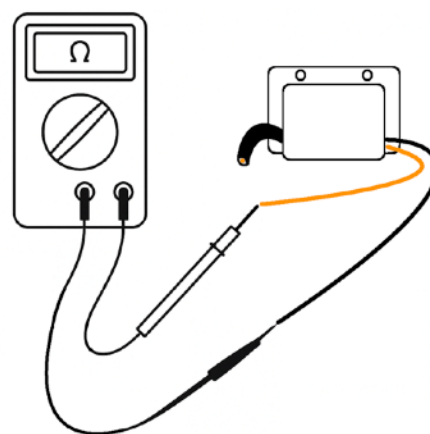
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HT Coils

These often show some variation in resistance as manufacturers used different suppliers. It is more important to get the correct type of coil, IE one for CDi ignition and not one for points ignition. When measuring the HT coil, always remove the HT Cap



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



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

Your Test Results

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

Measure Resistance:	Standard reading @ 20°C	Your Readings
Red ~ Black	13.6Ω*	
Brown ~ Black	420Ω	
White/red ~ Black	12.4Ω	
HT Coil PRI / SEC	0.6 ~ 1.5Ω / 4KΩ ~ 8KΩ	
HT Cap Resistance	5K Ω	

Tips

-Carefully follow the troubleshooting given in the shop manual first. Avoid being caught out by simple issues such as a faulty spark plugs or HT caps or a kill switch that is not working as it should.

-Submitting new components for unnecessary re-testing causes delays and incurs inspection charges. When a new part does not fix or causes the fault to change or the system stops working altogether, the issue lies within the motorcycle's electrical system and not the new part. This is not covered under warranty so in such cases, standard workshop fees apply for diagnosis and bench testing the item returned.

Nothing in this guide over rules any safety or warnings given in the original manufacture's manuals.

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