



Kawasaki KH400 with Factory CDi - Quick Ignition Testing Guide

This guide is intended to help you through the testing that can easily be done by the average mechanic with a basic multimeter. If you want to you can send your generator and CDi to us to test. We don't charge to do basic tests of wound components, only the CDi unit as it requires specialist equipment.

We manufacture new pick-ups and source coils which should be tested in the same way as Kawasaki parts, these can safely be mixed with OEM Kawasaki ignition parts.

We can supply;

- * New KH400 CDi units
- * New Pick-ups windings (pulsers)
- * Up-rated source coil assemblies
- * HT coils (singularly or in sets)
- * Spark plugs & HT Caps
- * Combined regulator/rectifiers (4 wire, 200 watts)
- * Sealed AGM Motobatt batteries

Tests

We focus on testing the generator, HT coils and wiring using a multimeter as this is 95% accurate. There is no meaningful way to test the CDi unit without special electronic test equipment or another bike that is known to run normally. Note that all OEM windings and those we make new are machine wound, this means that their resistance will all be within 2% of each other when new. If a winding has drifted off its new value by as little as 5% (at 20 degrees C) it is because there is a fault. Ignore the manual if it gives 10 or even 20% variations in resistance, this will tell you to replace the CDi unit, when in fact the fault lays in a winding. Remember winding are temperature sensitive - make sure you measure them at 20 degrees C.

Do not try and obtain voltage readings while kicking the engine over - this is meaningless as; a) you have no way of accurately measuring the engine speed you got these readings at and b) your meter may not read changing levels well, if it cost less than £150 its likely to be very poor at this also, c) there is no data to compare your readings to.

CDi units

Capacitors dry out with age, even if left unused. This will leave them charging to as little as 50% of their original capacity. This can affect the spark strength and timing curves. New CDi units will charge to 100%, one of the problems that can be experienced is that the new CDi reveals a weak winding in the generator. If you replace the CDi and the bike won't run or has issues yet it runs with the old unit this is a likely reason why. 40 year old generators are less reliable than brand new electronics!

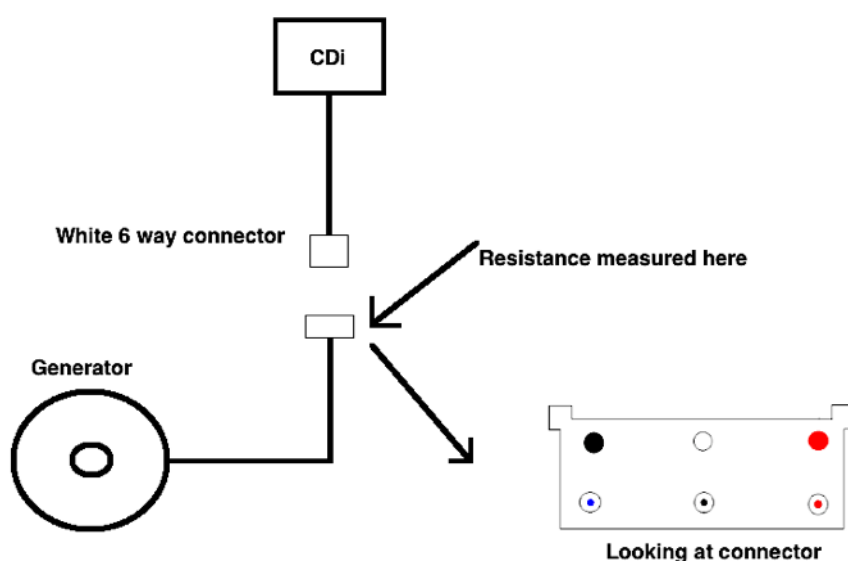
Test 1. No sparks on all 3 cylinders.

Disconnect the black/white wire from the CDi unit. Kick the engine over and see if there are sparks. If there are still none its fairly safe to say its not a problem in the kill wiring. If you have sparks check the kill switch, ignition switch and wiring. Connect one lead of your multimeter to the black/white wire coming from the loom (not the CDi unit) and the other to the engine case. Set the ignition and kill switches as below and look for the following results:

KILL SWITCH	IGNITION SWITCH	OHMS
OFF	OFF	0-3
RUN	OFF	0-3
OFF	ON	0-3

Test 2. Sparks on some cylinders but not all three.

We recommend that you test the pick-ups next as, so long as you can get access to the 6 pin connector that plugs in to the CDI box, these tests can be done without removing anything else. Disconnect the white block connector and test the wire coming from the generator NOT the end that goes in to the CDI unit. You measure the resistance between the black wire and the 3 white wires with trace colours in the bottom of the connector housing:



You are expecting a reading of 67 ohms +/-10%. If your meter isn't the "auto-ranging" type set it to a suitable ohms scale.

Test	Measure ohms between;	and wire colours below;	Resistance
2(A)	Black	White/red	67 Ohms
2(B)	Black	White/green	67 Ohms
2(C)	Black	White/blue	67 Ohms

If you get an open circuit on any of these, first investigate the wiring between the plug and the stator. You will have to remove the the generator to do this, follow the Kawasaki shop book for the procedure for doing this.

If you get readings below 60 ohms at 20 degrees C or one that is unsteady, that pick-up is suspect and should be replaced.

A faulty pick-up is a common cause of lost sparks on one cylinder.



Test 3. Poor starting, cutting out when hot but starts when cold again, wont rev or sparks on some cylinders but not all three.

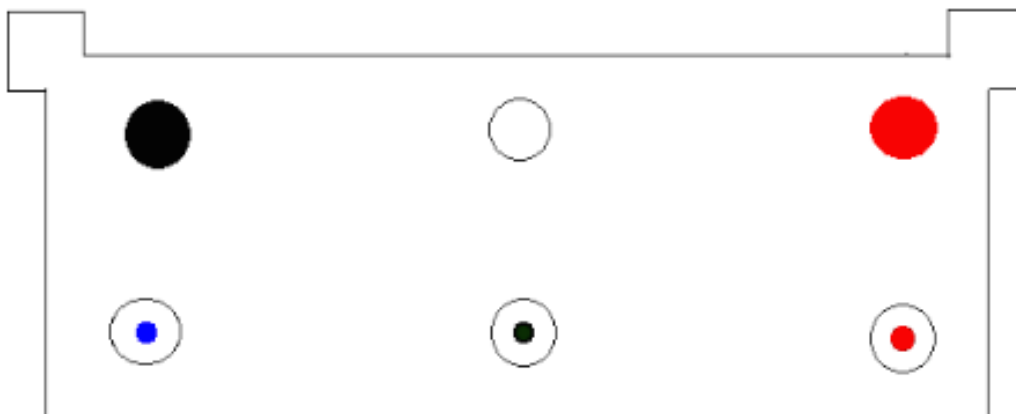
Problems that get worse with heat are a sure sign of a winding in trouble, this particularly true of the main source coil. If the pick-ups test good, the next stage is measuring resistance of the source coils. The CDi source coil are well known to be a weak point in the system. We supply an up-rated, newly manufactured part that replaces both high and low speed windings in one neat unit. Rewinding just the low speed coil can be done but requires the low and high speed units to be separated which in itself is a fiddly chore and leaves you with only half the job done as the high speed has the same ageing insulation as the part thats just failed. With a brand new assembly both low and high speed windings are new and guaranteed plus its a simple 'drop-in' assembly.

Failure of the source coils can give many different symptoms, including not running on all 3 cylinders (even if the pick-ups are OK). The resistance is measured from the same connector as the pick-ups, so its a logical next step. You are looking for good steady readings in the middle of the range given.

You are expecting readings of 0- 240 ohms, set your meter accordingly if it is not an auto-ranging type.

Test	Measure between:		Ohms reading
3(A)	Black	White	180-210 Ohms (190)
3(B)	Black	Red	210-240 Ohms (220)
3(C)	White	Red	30 Ohms

Generator to CDi connector (generator side)



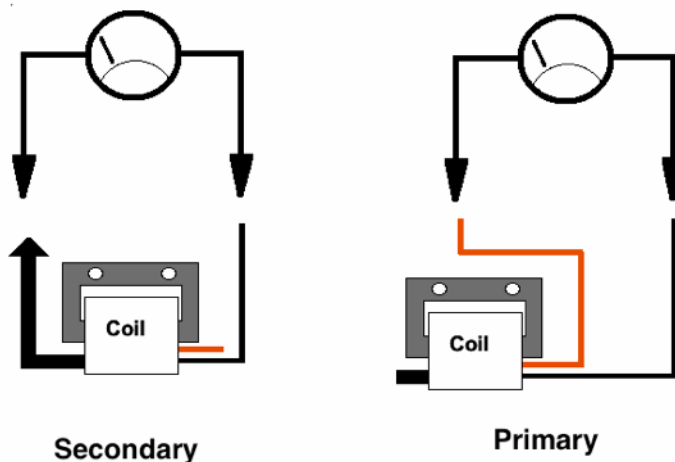
Test 4. HT Coils

We test these last as generally the CDI connector is easy to get to and the HT coils require the tank to be removed. Test 3 should be done first because if the source coils are “off” this may cause running on 2 cylinders.

It should be borne in mind that modern replacements with the exact same ohms readings as Kawasaki parts may not be obtainable, so long as the coil is for CDI ignition with a primary resistance between 0.6 and 1.8 ohms it will be safe to use. New old stock items (NOS) may seem like a good idea but insulation suffers with age regardless of how well its stored.

Points ignition coils or those for transistor electronic ignitions systems must not be used as they will put a heavy inductive load on the CDI box and cause poor starting.

To test the secondary winding measure between the black wire and core of the HT lead. The primary is measured between the black and the coloured wire. If they are the same brand all three will read very similar. Remember when testing HT coils - remove the plug cap!



If you note down your readings and email them to tech-support@rexs-speedshop.com one of our technicians will look at them and will be able to give you an opinion base on them. If all the generator readings are good, it points to the CDI box being at fault. Remember sometimes its possible for the resistance to be exactly right yet the winding can break down under load, if the problems only start when the engine is hot, this indicates a winding failure more than a CDI unit fault.

See our full range of products at:
www.rexs-speedshop.com