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## How to test 2 stroke cdi with pickup -stator

To test a CDI box with a multimeter, measure resistance between specific terminals. Consult your vehicle's service manual for exact values. Testing a CDI (Capacitor Discharge Ignition) box is crucial for diagnosing ignition problems in motorcycles and other vehicles. The CDI box controls the spark timing and intensity, ensuring efficient engine performance. Using a multimeter, you can measure resistance and voltage to determine if the CDI box is functioning correctly. This simple diagnostic tool helps identify faults without the need for advanced equipment. Accurate testing can save time and money by pinpointing issues early, preventing further damage to the engine. Always refer to your vehicle's service manual for the correct procedures and values to ensure accurate results. A CDI box is vital for engine performance. It controls the ignition system. Proper function ensures smooth running of the engine. It helps in efficient fuel combustion. The engine starts easily with a good CDI box. A faulty CDI box can cause engine problems. The engine may misfire or not start. The vehicle might stall frequently. Poor fuel economy is another sign. Loss of power during acceleration may occur. Irregular idling can also be a symptom. A multimeter is a crucial tool. Select a digital multimeter for accurate readings. Make sure it has a continuity tester. This helps in testing circuits. Check for an auto-ranging feature. This makes it easier to use. Wear safety gloves to protect your hands. Use safety goggles to shield your eyes. Have a set of screwdrivers ready. These help in opening the CDI box. A wiring diagram of the CDI box is useful. It helps in understanding the connections. Keep a clean workspace. This avoids accidents. Testing a CDI box with a multimeter ensures proper motorcycle ignition function. Start by setting the multimeter to resistance mode. Check the primary and secondary coil resistance to diagnose potential issues. Functions Of A Multimeter A multimeter is a tool used for measuring electrical values. It can measure voltage, current, and resistance. Multimeters are very important for testing electrical components. They come in digital and analog forms. Digital multimeters are easier to read. Knowing how to use one can help in fixing electrical problems. Always ensure the multimeter is working properly before using it. Setting Up The Multimeter For Testing First, turn on the multimeter. Then, set it to the correct function. For voltage, set it to the voltage mode. For resistance, set it to the resistance mode. Connect the probes to the multimeter. The black probe goes into the COM port. The red probe goes into the VΩmA port. Check the display to ensure it is ready for testing. Always handle probes carefully to avoid damage. Credit: dimmotoadventures.com The CDI box is usually near the engine. Look for a small, black box with many wires. Check the owner's manual to be sure. Ensure the engine is off to avoid any accidents. Wear gloves to protect your hands. Use a flashlight if needed. First, disconnect the battery to prevent any shock. Use a wrench to remove the battery terminals. Locate the CDI box connectors and carefully unplug them. Label the wires to remember their positions. Place the CDI box on a clean surface. Now, it's ready for testing with a multimeter. Set your multimeter to the resistance setting. Touch one probe to the ground wire. Touch the other probe to the frame or engine block. The reading should be close to zero. If the reading is high, the ground circuit may be bad. Check for loose or corroded connections. Fix any issues found. Turn your multimeter to the voltage setting. Connect the black probe to the ground. Connect the red probe to the input wire. Turn the ignition key to the on position. Check the voltage reading. It should match the specification in the manual. If the voltage is too low or too high, the CDI box may be faulty. Turn off the engine. Then, disconnect the CDI box. Set the multimeter to the voltage setting. Connect the red probe to the power input wire. Touch the black probe to a ground point. Check the reading on the multimeter. It should match the voltage from the battery. If the reading is low, the CDI box might have a problem. Reconnect the CDI box. Start the engine. Set the multimeter to AC voltage. Touch the probes to the output wires of the CDI box. Check the voltage reading. It should match the specifications. If it doesn't, the CDI box may need replacement. Testing a CDI box with a multimeter involves checking resistance and continuity. Ensure the multimeter is set correctly to measure ohms. Accurate readings help diagnose issues efficiently. Interpreting Resistance Readings Resistance readings tell us if the CDI box is working. Normal readings are usually within a specific range. If the reading is too high or too low, the CDI box may be faulty. Always compare the readings with the manufacturer's specifications. If the readings match, the CDI box is likely fine. If not, consider replacing it. Understanding Voltage Measurements Voltage measurements help determine if the CDI box is getting power. Connect the multimeter to the power source and ground. A normal CDI box should show steady voltage. If there is no voltage, check the battery and connections. If voltage fluctuates, the CDI box may be malfunctioning. Always use the voltage range specified by the manufacturer. Credit: m.youtube.com Inconsistent readings can confuse. First, check all connections. Loose wires can cause inconsistent readings. Clean the connectors. Dirty connectors can lead to wrong measurements. Ensure the multimeter is set correctly. Use the right settings for your CDI box. Compare readings to the manufacturer's specifications. If readings differ, the CDI box might be faulty. If readings remain inconsistent, it may be time to replace the CDI box. Frequent stalling or misfiring are signs of a bad CDI box. No spark from the engine is another indicator. Replacing the CDI box can solve these issues. Always refer to the user manual for specific instructions. Contact a professional if unsure about the replacement process. Always disconnect the power before touching any electronic parts. Wear protective gloves to avoid electric shock. Keep your workspace dry and free from clutter. Use insulated tools to handle components safely. Store small parts in containers to avoid losing them. Keep children and pets away from your workspace. Calibrate your multimeter before use. Check the battery of the multimeter to ensure it's charged. Use the correct settings on the multimeter for accurate results. Hold the probes steady to avoid false readings. Take multiple readings to confirm results. Use a known good component to compare readings. Document your readings for future reference. Credit: m.youtube.com Your CDI box may be bad if your engine misfires, won't start, or has erratic idling. A malfunctioning CDI can cause engine misfires, poor performance, or starting issues. It affects ignition timing and overall engine function. Check the voltage input to the CDI. AC CDI uses alternating current, while DC CDI uses direct current. The input voltage to CDI (Capacitor Discharge Ignition) typically ranges from 12V to 14V. This is usually supplied by the vehicle's battery. Testing a CDI box with a multimeter is straightforward. Follow the steps carefully for accurate results. Ensure your multimeter is in good condition. Regular testing can prevent sudden vehicle breakdowns. Maintain your CDI box for optimal performance. With these tips, you'll keep your vehicle running smoothly. Home Technical Forums Oil Cooled Testing cdi and pickups Home Technical Forums Oil Cooled Testing cdi and pickups Electronic Ignition... so easy to get to, so easy to test... so easy. I hate electronic ignition systems. At least, I hate to work on them. I wish I could tell you I know everything about motorcycle electronic ignitions, but, well, after working on these things since they first came out I can categorically state that I don't know anything about them. So I'll just ramble on about them for a while, and if you read real carefully, you will know as little as I do. Most Electronic Ignitions have four parts that can fail: trigger (pickup) coil, a source coil, a CDI unit (Black Box) and an ignition coil. The trigger coil tells the black box when to trigger the spark. It does this when a small magnet on the flywheel passes the trigger. The source coil produces the power. The black box coordinates everything and tells the ignition coil when to fire the spark plug. This is for a magneto and requires no battery, as the power comes from the source coil. Battery Ignition CDIs use the battery as a power source. The battery is then recharged by the charging system. Now, when I say CDI I mean Capacitor Discharge Ignition, but I am also lumping in all types of ignitions that don't use points. Each manufacturer has their own design and way of thinking. However, they all seem to have those four parts. Trigger coil, source coil, black box, and ign coil. Usually, they give you specs on the trigger unit, source coil, and ignition coil. Sometimes, they give specs on the CDI box too. These specs are given as resistance values in Ohms. That means we can test them to see if they are good... sort of... most times... maybe. Some manufacturers also give values for the black boxes too, and some don't. All this means these things are very hard to test accurately. Fortunately, most of the electronic ignition units are quite reliable and require no service, but this plus turns to a minus when they do go bad. They are very hard to trouble shoot. To top it off, most motorcycle CDIs are expensive to replace, and when they go out, the bikes are too old to justify the expense of replacement. They say electronic ignition doesn't change once it is set. BUT, IT DOES. Sometimes, it will change as it fails. This can give some pretty weird running. It can also cause the engine to overheat and seize. This is something to remember when you rebuild an engine that blew up for seemingly no reason. OK, we can use an ohm meter to check most things except the black box, and sometimes, even the black box... If we are lucky. Well, maybe things tested OK. You have to remember, on all electrical things, they test either bad or they might be good. There are a number of very expensive testers out there, and they all claim to work great. But do they? Let me tell you a story. I once had a snowmobile come in which would die (no spark) after 5-6 minutes of running. I had factory specs on everything including the black box. Everything tested OK, even when hot. Long story short, I finally ended up talking to the owner of a business that made aftermarket, replacement, snowmobile CDI boxes. He told me all the factory specs were wrong, and gave me some new specs that he said sometimes worked and as he was very knowledgeable about electronic ignitions I asked him what tester he used. He told me he had tried them all and none of them worked. He said for each new CDI box design his company bought an engine, and modified it so they could run it with an electric motor. They could then test the black boxes by substitution. Customers could send in their factory CDI boxes and he could test them to see if they were good. He said they had a whole warehouse full of these modified engines. This was back in 1988-89. I like to think they have something better now... however, I still can't afford a tester other than an Ohm meter. The reason I'm telling you all this, is to give you an idea of the amount of hassle these things can be. Many times I've read factory bulletins telling their people in the field to be more careful. They're sending back, under warranty, too many "bad" boxes that turn out to be good. All right, we have no spark. Check the resistance, in Ohms, of the Trigger coil. Source coil and Ignition coil. If one is out of spec, replace it, but first check all the plug in connectors. Check and clean all the ground connections and make sure the kill button is working right too. Also, remember some bikes have safety kill switches at the clutch lever, the side stand, and who knows where. Look for them and make sure you have all of them are working right. Check each Ohm reading several times and remember most specs give a temperature to check at, usually 70 degrees. So don't leave the bike out overnight at 30 degrees and expect to get an accurate reading. Sometimes there will be a spec for the black box, and sometimes not. Here are the specs on a Kawasaki Vulcan. Others, if they give any, look similar. As you can see, there are a fair number of tests to perform. Maybe this is why a lot of manufacturers don't give any specs. Honda used to give specs, but it seems they don't anymore. Yamaha doesn't give any. Kawasaki and Suzuki both sometimes give specs and sometimes defer to special factory testers. Others? You will have to look in the shop manual. The shop manual will give you the color of the wires to test and the correct resistance too. If everything is within spec, recheck all the connectors and the grounds. If all is OK the only thing to do is replace the black box. Sometimes you can get the part off a working bike and substitute it for the part in question. Most times this can work pretty good. Other times the bad part can take out other good parts. The reason this can happen is because these systems produce very high voltages. That voltage has to go somewhere. Sometimes it can burn it's way through the side of the plastic case. The good news is that this is quite rare in most motorcycle systems. Don't you love the way I use most and sometimes might and maybe? There's good reasons why electrical parts are sold with no warranty. Another thing to check is the air gap between the trigger and the magnet on the flywheel. Usually this is done with non-magnetic, brass, gauges. You can also use a piece of plastic of the right thickness. That thickness is usually .005" to .010". Try to get the parts as close as you can, without them hitting. Sometimes, there is no separate trigger unit. Everything is in the coils or the black box. The circuitry reads the voltage rise and triggers the spark at the right time. They do have little ignition units that are used on lawnmowers and small engines. They tell me some of these units can be used on motorcycles. I've never used them on a bike, but they do work on other small engines. Most Dirt bikes are a CDI magneto, and do not require a battery. Most street bikes are a battery charged CDI, and need a fully charged battery. That battery also has to run the starter, lights, radio, and other stuff in addition to the ignition. Different things require different power requirements from the battery. We think of the battery as supplying a steady 12 volts and it should. But, things can vary. What does all this have to do with electronic ignition? Most electronic ignitions require a full 12 volts to give out a good spark. If you let the bike sit a long time or the battery is weak, you may not get a full 12 volts. Now the starter may spin just fine, but the starter requires amps more than volts. Think of it like this. Amps are volume, volts are pressure. Amps won't jump a spark plug gap and volts won't spin that starter. At least they won't in the numbers that we deal with. Anyway, the starter is spinning but the ignition is not getting enough volts to fire the spark plug. The moral? Make sure you have a good, fully charged battery in the machine before you start hunting for ignition problems. Don't unplug anything while the engine is running. That includes the spark plug cap. These systems can produce a lot of volts, like 18,000-30,000 and more. It's got to go somewhere. Readers Digest magazine had a big expose' on bad auto mechanics. They pulled one spark plug cap loose and took it to a bunch of different mechanics. They complained that a lot of those mechanics did detailed, expensive tests, instead of just popping the plug cap back on. Those mechanics didn't do anything wrong. Pulling that plug could have fried the entire ignition system. I've seen it happen. When you check for spark, ground that plug to the engine. The spark should easily jump a 1/4" gap. If it won't jump 1/4", or more, outside the engine, it won't jump .030" inside the engine under compression. A handy tool is a spark tester. There are lots of different types. You can buy one or you can make one yourself real easy. Take a new spark plug and bend the side electrode out straight. Now solder a small clamp on the side and you are done. Clamp it to the cylinder head and hook up the spark plug cap. Crank the engine and you can easily see the spark. The engine can and will run if you connect the tester clamp to the end of the spark plug. Provided, of course, the plug is good and installed in the engine. Remember, that spark is what sets the air/fuel mix burning. It can do the same outside the engine too. Make sure there is no spilt gasoline or other flammable mixtures on or near that Spark Tester. Keep a fire extinguisher handy. What if there's a misfire at, say 1/2 throttle, but only under load? Carburetion can cause a miss that looks, acts, and feels exactly like an ignition miss. How do you tell the difference? Easy. Hook up a timing light. Use one of the types that does not have to be hooked to a battery for power, if possible. A lot of the old style lights were like this. Tape it to your handlebars and go for a ride. Look at the light. If the light looks bright and steady when the misfire occurs, then the problem is in carburetion. If it goes out when the misfire occurs, then the problem is with the ignition. There are all kinds of ways of doing this and you can use different tools, like plug caps with lights on them. The big thing is being able to see when the spark occurs... or doesn't occur. Well, there you go. Hopefully all this will help. One thing for sure... you now know as little as I do! Back to M/C Repair Course Did this page help you? Would you like to help us? If so Click HERECopyright © 1999-2002 danmc.com. All rights reserved. As we've already tested the ignition and the power source coils, today we're moving on to the pick up coils test as this is also a common cause of no spark issue. In the DR 350 we can have one or two pick up coils. It depends on the year of production. Simplifying things a bit, this pick up coil is generating a signal, when the crankshaft is in a particular position. The generated signal is then transmitted to the CDI unit, which, basing on this signal, decides whether it should fire up a spark on the spark plug. So as you can guess, if the pick up coil is not working properly, then the CDI unit doesn't know, how to behave, when it's a a right moment to make a spark and in the result - we don't get any. Like in the power source coil test, we've got two measurements to make - we will measure the coil's resistance and the voltage generated by it. The pick up coils resistance test We search for the two pairs of cables near the CDI unit - one pair for one coil, as our patient is DR350SP from 1993 and has 2 pick up coils. The first, bigger coil, is connected to the CDI unit with black and green wires. Look at the test setup on the DR wiring diagram: Test setup scheme for the first coil Test setup scheme for the first coil The second coils is connected with yellow and grey cables. Here's a diagram for those: Test setup for the second pick up coil measurement Test setup for the second pick up coil measurement All of the interesting wires are in the 4-pin connector. Let's have a look. First pick up coil terminals (black and green wires) First pick up coil terminals (black and green wires) Second pick up coil terminals (yellow and grey cables) Second pick up coil terminals (yellow and grey cables) The proper pick up coil resistance for either coil should be in range from 350 to 700Ω. In our case both coils scored 490Ω, so it should be ok. Traditionally, we filmed the test, so yo can check it out, too. I just like before we tested the resistance, we can check the voltage generated by the pick up coils. We just switch the multimeter to the alternating current mode and have to do some kicking. Take a look at the schemes: Test setup scheme for the first coil Test setup scheme for the first coil Test setup scheme for the second coil Test setup scheme for the second coil The proper voltage should reach from 0.5 to up to 2V AC during engine startup for both coils. Though, our multimeter isn't very accurate and its smallest range is 200V AC. So we just noted that the 0V AC value is changing to some unspecified and not very repeatable value, but from the required range. So eventually we thought to ourselves that the coils probably works :) What now? As we've already checked the ignition coil and the power source coil, there are still at least 4 more things to examine. In the next post we will look how the ignition and kill switches work. Hello, I have been looking for a way to get the RPM from a 2 stroke engine. I am not sure what is the best option so far I found out two ways: Forum for Electronics I have car with CDI type ignition system. I need to detect the rpm of the engine through electrical means. How do I interface a microcontroller circuit with the engine's spark coil. regards or this one The opto-coupler sounded like a good idea but I am not sure if I can connect it to my engine. I am using this kind of ignition coil: I was thinking first to try to get a square like signal from the oscilloscope then after try to work out the code on the arduino. I could not find a clear example for a 2 stroke engine. Thanks, /Eric Must be more than just a magneto. How do you stop the engine? Let it run out of gas? Let it run out of gas? Paul I'd say offhand the spade terminal goes to a kill switch, that's how most magnetos do their stuff. Op could use a simple capacitive pickup as described in the video below. You will also find he has Arduinodyno with a tach. I don't see a terminal in the OP's picture. Only the spark plug socket. IF there is a kill switch, then that lead will likely have a nice pulse you can use for a tach. Check it out. Paul Yes I have a kill switch I will check if I can get the signal from there. I will order the opto- coupler and give it a try. Thanks, Hi, I did my first test on a 2 stroke Grass Trimmer Cutter I used that schema: Here is the live result First Test video The rpm reading is way off. I check the Grass Trimmer Cutter manual. Idle RPM 2800-3200 Max RPM 10000 Here is my code #include SoftwareSerial BTSerial(6, 7); // RX | TX float rev=0; float rev=0; int rpm; int oldtime=0; int time; void isr() { rev++; } void setup() { //initialize Serial Monitor Serial.begin(9600); digitalWrite(2, HIGH); //initialize Bluetooth Serial Port BTSerial.begin(9600); attachInterrupt(0, isr, RISING); } void loop() { delay(1000); detachInterrupt(0); time=millis()-oldtime; rpm=(rev/time)\*60000; oldtime=millis(); rev=0; Serial.println(rpm); BTSerial.println(rpm); BTSerial.print("r:"); attachInterrupt(0, isr, RISING); } I will check with an oscilloscope how the signal looks like after the optocoupler. Any suggestion? Thanks, /Eric How are you connected to the coil to get the tach signal? You might consider winding a wire around the coil wire as a tap, to get the signal then send it through a signal processing circuit to clean it up before trying to count pulses. Idahowalker: How are you connected to the coil to get the tach signal? You might consider winding a wire around the coil wire as a tap, to get the signal then send it through a signal processing circuit to clean it up before trying to count pulses. I have using the kill switch to get the signal not the coil wire. I read somewhere that you can get cleaner signal. /Eric Did you look at the video link I posted above as he has some good pickup ideas already tried and tested. bluejets: Did you look at the video link I posted above as he has some good pickup ideas already tried and tested. Nope but I will try next. For me getting the signal from the kill switch would be better as my paramotor have them but it is good to experiment all possibilities. Here is a picture of my setup: barnabeft: kill switch would be better as my paramotor have them Hope you are not thinking of "tinkering" with that one... bluejets: Hope you are not thinking of "tinkering" with that one... I just want to get RPM for it, nothing more. I run some the oscilloscope at the end of the filtering circuit and it is just garbage signal... The pulse are completely uneven... Oscilloscope test Next test is to check on the real engine (185 moster) to see if I get similar result. But I will build the circuit you have suggested and give it a try. Hello, I am trying to do the same, also for a Monster185 engine. Did you found a circuit that solve the signal issues? I tried one, but the measured rpm is.... awfull! Regards, Patricio There's a link in reply 2 above..... Hi, I got a bit lost in trying to use a pca10059 board. I just got back to the basic last week. I am now trying this method: kokoraskostas and if that does not work I will try Bluejets suggestion. ArDyno bluejets: There's a link in reply 2 above..... I will let you know the outcome once I try this solution. Here is my latest prototype with bluetooth connection. Please share your findings with the Monster185 as I really would like to get that working :) 1 Like