

Hard To Start Marauder 800

By Boydster, MIG 2929

This FAQ deals with the electrical problems that can be present in a hard-to-start 1997 to 2004 US version Suzuki Marauder VZ800. This does not address all the problems that may be present with a *non*-starting Marauder.

It requires a certain number of tools to troubleshoot a hard-to-start bike. Among them is a multi-meter, some 18 or 20 gauge jumper wires, a can of electrical contact cleaner and some dielectric compound. Contact cleaners are generally flammable. Do not get the contact cleaner on the paint, your skin or in your eyes. Clean connectors and apply some compound before putting them back together.

USE CAUTION AROUND ELECTRICAL CIRCUITS. YOU WILL BE DEALING WITH BATTERY POWER, WHICH CAN BE POWERFUL ENOUGH TO INJURE YOU, DAMAGE YOUR BIKE OR START A FIRE IF USED INCORRECTLY. BEWARE OF WHERE YOUR TOOLS ARE AND WHAT YOU ARE WORKING ON AT ALL TIMES. IF YOU HAVE FURTHER QUESTIONS ABOUT WHAT YOU ARE DOING, ASK ON MIG OR CONSULT A PROFESSIONAL MECHANIC.

THESE TESTS ARE BEST DONE WITH A COLD ENGINE AND THE CHOKE CONTROL KEPT PUSHED IN. THERE ARE SEVERAL TESTS THAT INVOLVE CRANKING THE STARTER AND WE REALLY DO NOT WANT THE ENGINE TO START.

First, some familiarization. The starting circuit is really quite simple in that it is generally a straight series circuit. There are some parallel legs to it, but they don't concern us. The parts we'll be dealing with are, in electrical order: battery, ignition switch, ignition fuse (#3), side stand relay, stop / kill switch, start switch, clutch switch, start control relay, starter relay and the starter. There are some differences between the years. As far as the starting circuit is concerned, these differences are for the 97, 98-03 and the 04 side stand relay and how it's mounted with other electrical items. These will be pointed out as we go along.

Note: When using jumper wires or shorting out relays, use common sense. Don't crank on the starter or jump that relay for excessive periods of time... just long enough to gauge the reaction of the starter or to check the meter. A few seconds is usually all that is needed.

1. Battery. Make sure it is fully charged. A 12-volt battery that is in good condition and fully charged will indicate about 12.2 to 12.6 volts with everything turned off, measured across the battery positive and negative terminals. If you have any question about the status of your battery, get it load tested. Your battery terminals should be clean, dry and tight. Now turn the key ON but do not start the engine. The battery voltage should still be about 12.2 volts. If the voltage drops sharply when the key is turned on, suspect a bad or inadequately charged battery. [If you suspect your battery is not charging properly, see the Marauder Charging System FAQ on www.spacerjim.com/Faqs]
2. OK. Battery is in good shape and charged. Remove the LH side cover on your bike. You will see a funky looking green or clear plastic cover over a small black box. This is your starter relay. Pull back the cover. See those 2 big red wires? **CAUTION: DIRECT LIVE BATTERY POWER IS AVAILABLE AT THE INBOARD OR RH (LOOKING FORWARD) TERMINAL!** Make sure the transmission is in neutral. Turn the key on, check that the N light is on, and turn the key off. Double check that it is in neutral. If it is in gear, your bike will take off on its own, come off the kickstand, fall, damage your handlebars, dent your tank, bust up your front fender, snap off your levers, break your left wrist and kill the neighbors cat. The jumping you're about to do bypasses every safety system on the bike, so be careful, OK? Just make

sure it is in neutral. With the key turned off, use a heavy gauge wire (14 or bigger) or a large tool like a screwdriver or allen wrench (an allen wrench works well to get around the plastic blocker between the terminals. Use a big one...) and carefully short across the two large terminals that the red wires are connected to. You will see some sparks and hear a loud click. This puts direct battery power straight to the starter. The starter should engage and the engine should turn over. If it spins over nicely, go to #5. If nothing happens, or the engine still turns over very slowly, go to #3.

3. No click? No sparks? Starter does not engage? Engine does not turn over? Engine slow to turn over as if the battery is weak? Make sure the key is on and use your meter to check the volts at that inboard RH terminal. Place your meter negative probe on a part of the frame that is clean and not painted. It should be the same as the battery. If the volts are OK, go on to #4 now. If there is a big difference between the voltage at the relay and the battery voltage, you could have a bad battery + or - cable or dirty / corroded connections at either end of those cables. Carefully inspect the positive and negative battery connections, at both ends of the cables. Make sure the connections are clean and free of corrosion. Turn the key OFF. Using the ohmmeter function of your meter, check the resistance from the battery negative to the bike frame. The battery frame ground is located behind the LH lower swingarm cover, just below the cover you have already removed. Check from the battery positive to the live right side starter relay terminal. It should be less than 1-3 ohms. Higher resistance indicates a bad battery cable.
4. If the volts at the starter relay RH terminal (battery power) are OK, but the starter is still slow to turn over, remove the cover from the power terminal on the starter. Turn the key on. Check the volts at the power connection to the starter with the starter relay terminals jumped like you did before (having a helper would be smart here... or use alligator clips to attach the meter leads while you short the relay terminals and watch the meter). Bad volts here indicate a bad starter power cable, a shorted or dirty starter or a ground problem. Disconnect the power cable from the starter (don't let the stud turn! Just turn the nut to remove the cable). Short the relay again and check the volts at the starter end of the power cable. Good volts = good cable, bad volts = bad cable. If the check with the cable attached indicated the volts are good, use the ohm function of your meter to check the ground from the starter motor case back to the battery negative. Good ground = bad starter. Bad ground = check battery negative cable for corrosion, breaks, etc.
5. So you shorted the starter relay, got some clicks and sparks and the engine spun over faster than you have ever seen before. Cool! Let's find out why it is slow when you press the starter button. Go to the starter relay again. Disconnect the electrical connector that has (1997 = 3 wires, 1998 – 2004 = four wires) in it. There should be either one or two small red wires, a yellow wire with a black tracer (called Y/B for short) and a black wire with a white tracer (B/W). Holding the connector in your hand, carefully inspect the connector and socket in the relay to make sure they are clean, dry and free of corrosion. If there is a section where the red wires connect that is burned or melted, this is a problem with the charging system and must be repaired following the instructions in Eric's Charging System FAQ. Plug the connector back into the relay. Connect your meter positive lead to the Y/B wire by sticking the probes into the back of the connector and the meter negative lead to the battery negative terminal. Key on, in neutral, clutch in, killswitch on. Hit the start switch and see how many volts you have on the meter. If it is the same as the battery voltage (within .2 volt), that indicates that all the starting circuits and grounds are in good shape and you should suspect a bad starter relay. If the voltage at the connector is lower than the battery voltage by 1 volt or more, we want to check the ground circuit. Put your meter on ohms and use it to check continuity from the back of the connector at the B/W wire to the battery negative terminal. Reading should be less than 1 ohm. If it's higher, you need to check the wiring

harness B/W wires back to the battery. If the continuity is less than 1 ohm, the ground is good and we have more checking to do.

6. The MMM: Just behind the starter relay, you will see what we call the Mitsuba Mystery Module. We are not sure why Suzuki put this unit into the system except to maybe protect the starter relay. Other Suzuki bikes do not have an MMM even though they use the same main starting relay. We are going to check it because it does affect the starting of your bike. It is labeled as a "Mitsuba Relay Control". Disconnect the connector. It should have three wires... yellow with green tracer (Y/G), black with a white tracer (B/W) and yellow with a black tracer (Y/B). Again, make sure the connector and socket are clean, dry and free of corrosion. Reinstall the connector. Place your meter positive lead on the Y/G going into the back of the connector as we did before and the negative lead on the B/W. Key on, in neutral, clutch in, killswitch on. Hit the starter button and see what volts you get. Now move the meter positive lead to the Y/B and test again. The voltage readings should be within about .2 volt. Any more significant voltage difference would indicate a failure of the MMM [See *Footnote*]. If the 2 measurements are within .2 volts, and you're reading good battery voltage, you may have fixed your problem by removing and reinstalling the connectors (cleaning the contacts). Try starting the bike by normal methods. If the 2 MMM readings are within .2 volt of each other, but you are still 1 volt or more below battery voltage, check the volts at the Y/G wire with the meter negative on the battery negative. If the volts are now good, check the ground circuit from that B/W wire terminal back to the battery. If the volts are still low, the ground is good and we have more to check.
7. Your low voltage problem to the starter relay has been isolated down to one of several things. At this point, we are looking at a bad fuse connection, bad switches, dirty connectors or broken / chaffed wiring. We will work on the fuse, switches and connectors first. The fuse involved is the #3, ignition. The switches involved are the ignition switch, side stand switch, the stop / kill switch, the starter switch and the clutch switch. We will go over how to locate and test each one. Make sure all connectors are installed securely. Each time you hit the starter button, the engine should try to crank. Evaluate how well the bike tries to start as well as obtaining the voltage readings.
8. #3 fuse & ignition switch: Remove the fuse and make sure the legs are clean and bright. Put your meter negative probe on the battery negative terminal. Key on. Touch the open contacts, one at a time, of the fuse box where the #3 fuse was installed with your meter positive probe and check voltage. One should have no volts; the other should have full battery voltage. If you have good volts, go ahead to #9 now. If the one reading voltage is lower than battery volts, suspect the ignition switch. The ignition switch can be tested by opening the wiring connector to the switch and checking volts at the red wire on the bike side of the connector with the meter negative on the battery ground. Good volts, but you had bad volts at the fuse, indicates a bad ignition switch or the orange wire that runs from the switch to that #3 fuse.
9. Side Stand relay: The side stand relay has a history of being affected by dirty connectors. On the 97 Rauder, Suzuki installed three separate items (turn signal control, side stand relay and side stand diode block) with the side stand relay under the RH side cover with four wires going to it. From 98 - 03, they are all in one unit, under the LH side cover with eight wires coming out of the connector. It is installed in the same frame as and just behind the fuse box. On the 04, I think it is installed in the same connection as the fuse box (haven't seen one of the 04's yet). Regardless of the year, first make sure you are in neutral (the neutral light won't work once you remove the relay, so check it now), then remove the side stand relay unit from the connector. Check that the contacts are clean, dry and free of corrosion.

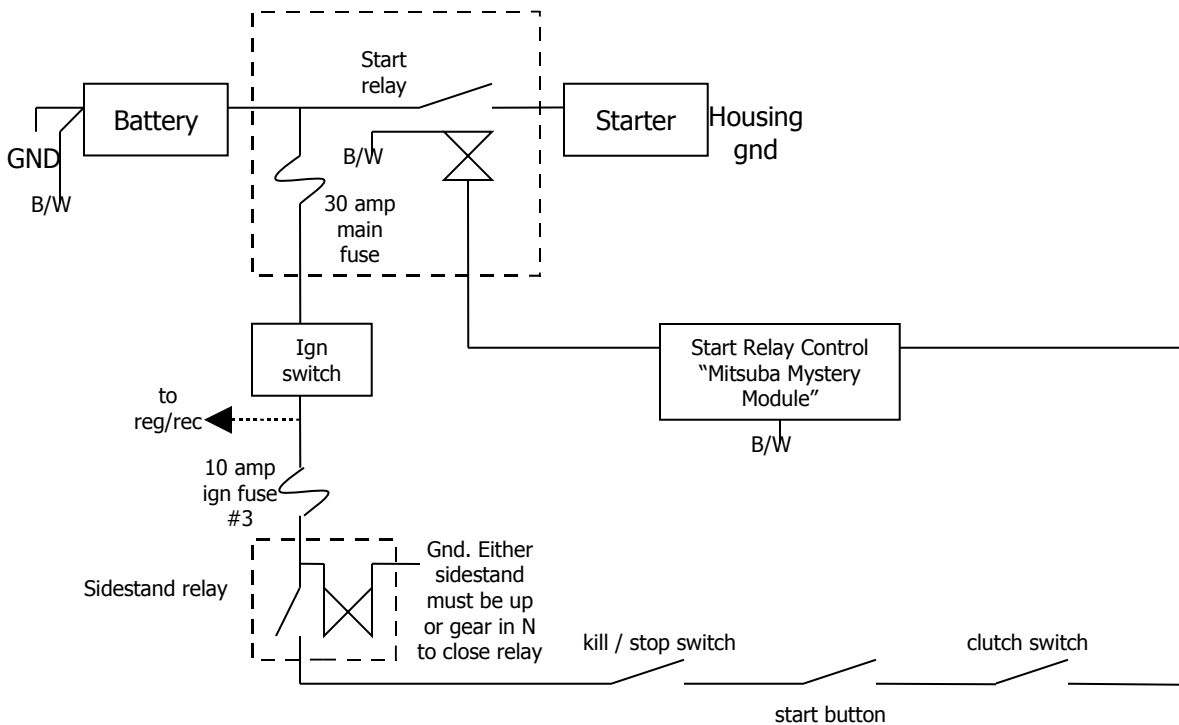
You want to install a small jumper wire from the orange/yellow (O/Y) wire socket to the orange/black (O/B) wire socket. Install your voltmeter in the Y/G and B/W wires at the MMM. Key on, in neutral, clutch in, kill switch on. Hit the starter button. Check the voltage at the meter attached to the MMM and check starter reaction. If the starter cranks quickly and your volts have increased, you may have bad side stand relay contacts [See Footnote]. If there is still a problem with the cranking, you have a bit more work to do... remove the jumper, reinstall the relay and continue on.

10. Kill switch and starter switch: The starter switch has been a source of starting problems on several MIG bikes. Remove the fuel tank (you might be able to get to the connectors by just lifting the rear of the tank on a block of wood) and look for the 2 wiring harness's coming from the switch boxes along the LH side of the tank and frame rail. You want the one that has several orange wires in it. Disconnect the connector; inspect it for clean, dry and free of corrosion. The wires you want are going from the connector to the switchbox (not coming from the bike's electrical system). Set your meter for ohms and probe the Orange/Black (O/B) to Orange/White (O/W) wires (+ and - doesn't matter). While watching the meter, actuate the kill switch on and off. When the switch is on, you should see near zero (0.00) ohms. Anything above 1 ohm, suspect bad contacts in the switch. It is not cleanable, and should be replaced. If it's good, probe the O/W to the Y/G wires. Actuate the start switch and check the meter. It should also be near zero ohms. Note that this is a slider switch, so the readings may vary while the switch is moving. But once the switch is depressed and held steady, the readings should be consistent and very close to zero. If the readings are good, reassemble the connector. If not, you can open the rh switchbox and disassemble the start switch for cleaning and inspection. Be careful with that tiny spring in there! If your ohm values are good, assemble the connector and give it a test. If the starter is still slow, we'll carry on...
11. Clutch switch: There are several MIGs out there that have the clutch switch bypassed and have never had a starting problem. While I will not suggest or condone bypassing a safety switch, it is an interesting fact. Other MIGs have reported their switch being faulty. It is known that this switch can be a problem. Locate the wires for your clutch switch. Sitting on the bike, look under your left switchbox. You should see two wires that come out of the switchbox to the clutch switch. Pull the connector off and install a jumper wire between the 2 contacts. Key on, in neutral, kill switch on. Hit the starter button and check your volts (with the meter on the MMM, Y/G to B/W) and starter effort. Good volts and fast cranking indicates a dirty or faulty switch. This switch is held in with a single, small Phillips screw and can be removed, disassembled, cleaned and packed with dielectric compound. Be very, very careful with that little spring in there. Still low volts and slow cranking? Remove the jumper, install the wires on the clutch switch and move along.
12. If you are at this point and have not fixed the Hard-To-Start problem, your situation is unusual. Remove the fuel tank. Under the tank, there are some wire harnesses. Follow the wiring harnesses and look closely at them to make sure there are no spots that are rubbed through. Inspect the wiring going to all the items you've checked. Repair any problems that you find.

Well that is it. You have checked everything there is to the starting system on the Suzuki VZ800 Marauder. Double-check all your connectors to make sure they are tight. We hope that your bike is now cranking and starting like it was brand new. If it is not, post to the Marauder Intruder Group (MIG) on the Delphi Forums (<http://forums.delphiforums.com/mig/start>) and tell us what the problem is. We will do whatever we can to help.

Please report any problems or suggestions to this FAQ to Boydster by emailing [here](#).

[Footnote: If you suspect the internals of the Mitsuba Mystery Module or the Side Stand Relay are bad, they can be internally tested with the diode setting of your multi meter. You need a copy of the Suzuki Marauder VZ800 Service Manual to do this. However, diode testing with different types of meters may give different results, so this type of testing can be unreliable. Instead of looking for specific numbers, use the individual readings to locate one that may be out of spec (because of a blown diode or an open coil) when other readings are OK. If all of the readings are in spec, or slightly but evenly out of spec, your unit is most likely OK. However, I would be going more by the bike testing done above rather than internally testing individual units.]



B/W = Black wire w/ white tracer. This is the ground wire that runs all through the Marauder. It returns to battery negative.