

# Scooter Starting Tips

It is definitely frustrating when you can't get your scooter or moped started. The first thing you'll need to do is to narrow down the problem. In order for your gas scooter to start, it really only needs 3 things:

- Your scooter needs to spark at the correct time.
- Your engine needs the proper fuel/air mixture and exhaust flow.
- You need sufficient engine compression.

## Top 9 Reasons Why Your Scooter Won't Start:

- Try depressing the brake handle when starting.
- The battery has not been charged.
- The battery is hooked up wrong. This is often the reason for blown fuses.
- There isn't enough gas.
- There is a gas flow problem.
- The spark plug wire is not connected.
- A low battery or bad relay can cause the scooter to only start by using the kick starter.
- There is no spark to the spark plug. The coil is bad and needs to be replaced.
- Turn the key to the "on" position.

## Compression Check

If you just acquired your scooter, you should first do a full inspection before you try to get it running. If this is the case, I'd do a compression check first because it's easy to do. First, check the quantity and condition of the engine oil. Hook up or purchase a good battery. Leave out the spark plug and crank the scooter for ~5 seconds. This helps to circulate the oil. Let it set for ~15 seconds and then do it again. It's not a good idea to continuously crank the starter because it can overheat and wear out prematurely.

Most scooters need a minimum of 100 psi in compression in order to run start and properly. Compression should be checked when the scooter engine is warm. However, that's hard to do if your scooter is not running. So, just hook up a compression gauge and open up the throttle all the way. Crank the scooter until the needle on the compression gauge stops moving. This should take no more than 5 seconds. Very roughly, 100-125 psi is good, 125-150 psi is very good, and 150+ psi is great. If you don't have this level of compression, then you have bad valves and/or bad piston rings. If you want, you can add a teaspoon or so of oil to the engine through the spark plug hole. Then try the compression test again. If compression is higher, then it's likely you have bad rings. The oil will seal the rings and give you better compression. If compression is the same, then you have bad/misadjusted valves.

## Got Spark?

You need to check for a spark. There are a few ways to do this. The easiest way is to remove the spark plug and put it back in the spark plug cap. Then ground it to the engine - you should be able to lay it against a non-painted portion of the engine. Make sure there is good metal-to-metal contact. In a semi darkened area, attempt to start the scooter. You should see a definite spark at the tip of the spark plug. It's hard to see in direct light. If the color of the spark is *blue*,

that means it's a strong spark. A *white* color is less strong, and a *yellow* color is weak. Most scooter starting systems are a bit weak (compared to cars). Even a *yellow spark should start your scooter* just fine.

The spark must occur at the right time. Just about all scooters made since around 1980 have an electronic ignition. These systems can rarely be set. In general, the spark occurs just before the piston reaches the top of it's stroke. There is a slight delay between the spark plug fire and the fuel-air mixture ignition. That's why the spark occurs a little early. Most ignition systems have an advance unit build in. As the engine speeds up, the time of the spark retards a little bit. This helps the engine fire the mixture at the proper time.

## Starting Fluid

Assuming you have sufficient compression, try to squirt in a bit of starting fluid and then see if your scooter will start. If so, that's great! That means that you have sufficient compression and the proper spark. You should get the scooter to run for a second or so on starting fluid. If so, there's a good chance you can keep it running. One caution here - *do not run your engine for very long on starting fluid because it's hard on the scooter engine.*

## Fuel/Air Mixture

The next thing to check is your fuel/air mixture. You could be getting too much or too little of either. If your scooter has been sitting for a while, it's likely that the gas has evaporated and left a bunch of sludgy deposits. If it's been more than 3 months, you should clean out the fuel system and the carb.

Disconnect the fuel line and drain the old gas. Add fresh fuel and make sure it flows smoothly through the petcock (on the bottom of the fuel tank). If the petcock is controlled by vacuum, you'll have to draw a vacuum on the vacuum line in order for fuel to flow. The vacuum line will be the smaller line on the petcock. Do you get a good, steady flow of gas? If so, good. If not, you will have to remove the petcock and clean it. The gas flow should stop when you release the vacuum.

## Remove The Carburetor & Clean It

There are a lot of tiny fuel and air passageways in the carburetor that must be kept clean in order for your scooter to run right. Carefully, take the carburetor apart. This can be relative easy (on a 50cc scooter). The carb has tiny passages that can get gummed up. Your scooter will not run correctly if the carburetor isn't completely clean, so take your time. I use a gallon container of carb dip (you can get a gallon at your local auto supply store).

First, remove all of the rubber and gaskets or they will get damaged. After a 20 minute soaking in carb dip, I blow out the carb with compressed air. You have to get all the jets and the passageways clean. Be sure the jets are clear, especially the starter jet. Sometimes carb cleaner won't clear out these tiny jets. Use a guitar or a piano string, a strand of copper electrical wire, or a tiny drill bit pin vise. Be sure not to increase the size of the hole in the starter jet or you'll change the tuning. Carefully reassemble everything, checking for cracks in the rubber carb boots and the gaskets. Replace them if they are old and cracked. Be sure and remove all rubber and gasket material first or they could get ruined. Spray carb cleaner also works if you're diligent.

If you have an electric choke, check it to make sure it works. Check the resistance between the wires - you should see around 10 ohms or less. Measure the length of the choke assembly.

Remove the choke from the carb and plug the wires into a 12V source for 15 minutes. The choke body should be warm. Measure the length again - it should increase by around 1/8".

Next, consider whether your exhaust pipe is clogged. This is especially a problem with older two stroke scooters. The unburned fuel/oil mixture builds up in the exhaust pipe along with carbon over time. If the exhaust pipe is clogged, your scooter will run terribly or not at all. It can be difficult to tell if the exhaust pipe is clogged. The easiest way to tell is to remove it and try starting your scooter. It will be a bit loud - two strokes will sound like a chain saw. If it runs with the exhaust pipe off, you know that is the problem.

## Old Gas?

Does your gasoline smell old? If the scooter has been sitting for over a year or so, the gasoline will turn look more like varnish than gasoline. If so, you'll have some serious cleaning to do. The gasoline will have evaporated for the most part, leaving a sludgy, molasses like substance in the gas tank, petcock, fuel lines, and the carb. All of these parts will have to be cleaned. This is especially a problem in the carburetor. Thoroughly flush out the gas tank and gas lines with new gas.

If your gas powered scooter tank is not too rusted or dirty, you might be able to get away with just flushing it out. Pour in some fresh gas. But if you are uncertain how old the gas is (even if it smells ok), drain the gas tank, fuel lines, and carb float bowl and then refill your tank with fresh gas.

## Fuel & Vacuum Lines

Remove the fuel and vacuum lines that run from the petcock to the carb. Place a suitable container under the fuel line and draw air on the vacuum line to the petcock (if so equipped) and see how well the gas flows. The flow has to be more than a trickle. It should be steady and fairly substantial. If you get this flow, then you're ok.

Run at least a pint of gas through to help flush the system. If you don't get a flow then it's likely your petcock is clogged. You have to remove it before you can disassemble and clean it. Carefully reinstall it on the gas tank or you could get a gas leak. Reassemble everything and try to start the scooter. It will take several seconds of cranking to get the gas to work its way from the gas tank to the carburetor.

## Spark Plug

Install a new spark plug (especially if the engine is a two stroke). Clean or replace the air filter as necessary. The carb, air cleaner, and exhaust pipe are all carefully tuned to work together. Most scooters absolutely WILL NOT run correctly if any of these parts are changed in a haphazard manner!

Double check all connections, then crank your scooter for 10-15 seconds. Did it start? Do you hear any popping? It should sound like the engine is trying to run. Most scooters will not start if you apply throttle while cranking. If the scooter catches, but doesn't start, let it rest 15 seconds before trying to start it again.

## The Speedometer

Most of the time a speedometer will quit working because your speedometer cable is broken. Most of the time, the speedometer cable breaks 5-6 inches from its connection at the front wheel. It tends to break here because of the bend in the cable and the exposure to the elements (water and dirt) near the front wheel. The good news is that new speedometer cables are cheap and are not difficult to replace.

## **I Have Trouble Getting My Scooter On Its Center Stand**

Like most things, there is a technique to this. Even a small person can put a large motorcycle on the center stand with the proper technique. Here's what I do: Hold the scooter with your left hand on the left grip. Put your right (or left foot) on the center stand to hold it down. Put your right hand under the seat area, where there should be a railing or a grip. This is the place where you'll lift the scooter a bit. Now in one motion, push down with your foot while you tug back with your left hand and up lift up with your right hand. If you do all of these movements at the same time with the proper motion, you'll have zero problems.

## **How Can I Increase My Scooter Performance?**

This is a common question with 50cc scooters, but it comes up a lot with bigger scooters also. The most important question is how much money do you want to spend. If you have a 50cc scooter, and you want to increase the top speed from 25 mph -> 50 mph, you might be better off to just buy a new scooter.

As you increase the scooter's speed and acceleration, you will find that your brakes, frame, and suspension are probably not up to the task. Replacing all of these parts is quite expensive. If you just want a bit of increased performance for your 50cc scooter, there are probably carb, exhaust pipe, and variator (gearing) changes you can make. You might be able to find a big bore kit, so that you can increase the engine displacement from 50cc up to around 70cc.

You might want to get a performance carb and/or a new exhaust pipe. You'll need to replace these two components (and probably the air box) at the same time to get the best performance increase. The engine is basically just an air pump. The more air you can move through the engine, the more power you get. Adding a bigger carb draws more air (and more fuel) into the engine. But you restrict the amount of added air if you don't change the air box.

You also restrict the amount of air out of the engine if you don't replace the exhaust pipe with a bigger (or more free flowing) exhaust pipe. In addition, just changing the carb changes the fuel / air ratio inside the engine. Your engine may or may not like the change. For instance, the new carb could give you more top end power, but also lead to starting problems. Or it may run better at low RPM's and poor at high RPM's. Tuning for best performance can be a lot of work!

Try to buy a scooter performance kit (carb, air box, exhaust pipe) that is tuned for your scooter. It will make things much easier. Lastly, add the big bore kit. This will give you more torque (pulling power) and better acceleration. It won't necessarily add top speed unless you make gearing changes too. For larger scooters, there aren't too many performance parts available here in the U.S. The easiest thing is to do a web search for "scooter performance parts" and see what you can find.

### **Scooter Performance Tips**

- You can also try replacing your worn drive belt. This will give you a few more MPH because a new belt rides higher in the pulleys.
- Changing your roller weights. You can use just slightly heavier rollers for more top speed.
- Adjust your valves.
- Install a new air filter.
- Change the oil.
- Put in a new spark plug.
- Keep your tires at proper inflation levels. This also helps you get better mileage and prevent premature tire wear.

## **My Idle Runs Too High**

This could be due to a throttle cable that is too tight or misrouted. It could also mean you need to turn the idle screw on the carb counterclockwise 1/4 turn. A high idle may be due to a vacuum leak. The rubber manifold between the carb and the cylinder head can crack over time. Try starting the engine and squirting some water around the carb, manifold, and vacuum hoses. If the idle decreases, you have a vacuum leak somewhere.

## **High Altitude Changes**

This issue doesn't come up very often. However, at high altitudes (above 4000 ft), your scooter will start starving for air. You'll need to place a smaller main jet in the carb, so that it will take in less fuel. A good rule of thumb is to reduce the size of the main jet by 10% and see if that works.