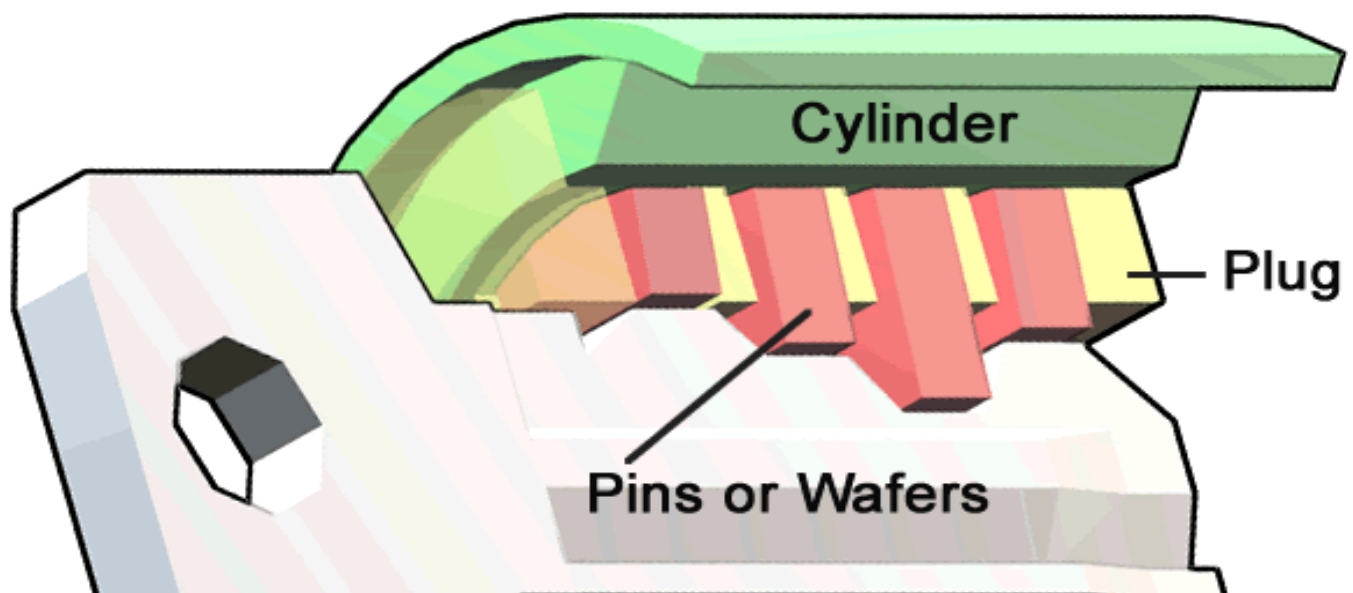


Suzuki GS Ignition Switch Lock-Cylinder Removal and Repair

Since motorcycle manuals don't reference anything about ignition switch and the steering lock, I figured I would share some information and tips as you might find yourself in my shoes one day, and of course your ignition key stops turning at the most inconvenient place. This tutorial is for Suzuki GS850GZ ignition cylinder, but it is the same in principal for many other makes and models of motorcycles.

If your ignition key stops turning, which often happens when the steering is in locked position, first shoot a stream of WD-40 down the hole to see if it starts turning again. If after WD-40 treatment your key still won't turn, don't force it as you will cause more damage.

The wafer-tumbler or pin-tumbler lock systems have very primitive and simple mechanisms. They either use round cylindrical pins or small flat metal wafers to prevent the lock from opening unless the correct key is inserted. The major difference between the wafer-tumbler and pin-tumbler design is that in pin-tumblers, pins consists of two or more pieces, but in wafer design, each wafer in the lock is made of a single metal piece.



The lock that I'm working on here is a wafer-tumbler design. The wafers sit on tiny springs and when you insert your key in, the notches in the key will position these wafers in an order that allows the plug to turn freely inside the cylinder, hence unlocking and starting the bike. With the key in the lock, the outside edge of all wafers should be flush with the surface of the plug. The reason that your key gets stuck is that your key or wafers/pins are worn out. When this happens, the configuration of the pins will go out of sync, and they start to protrude above the surface of the plug which makes it impossible to turn inside the cylinder.

To get to the inside of the lock, first you need to remove the headlight bucket to get to the ignition switch. Remove the two Allen-head bolts holding the lock housing with a 5mm Allen Wrench. Then

remove the small screw that holds the actual electrical switch to the lock housing and you will end up with the whole shebang in your hand. If you are not in a place that you can work on the cylinder, you can still start the bike by manually turning the switch to ON position with a coin and get to civilization.



First, remove the black plastic cover on the top and be careful not to break it as it is very brittle. To remove the cylinder from the lock system, you need to remove three roll-pins on the body of the lock housing. These little buggers are not very easy to remove, but if you have a drill with very small drill bits, just drill them out and put new ones in when assembling again (same size wire works fine as a quick replacement.) If you don't have a drill, find a very skinny screw that barely fits inside the pins and try to remove them that way.





If all fail, do as I did. File down a piece of hard wire to just a hair bigger than the inside diameter of the pins, and remove them by pushing the wire in, expanding them a little, and pull them out as they grab the wire. It will take a few try and you can also heat up the body around the pins with Zippo lighter or torch to make the metal housing expand and make the pin removal easier. Don't worry; there are no plastic parts inside the cylinder, but don't melt the housing either.

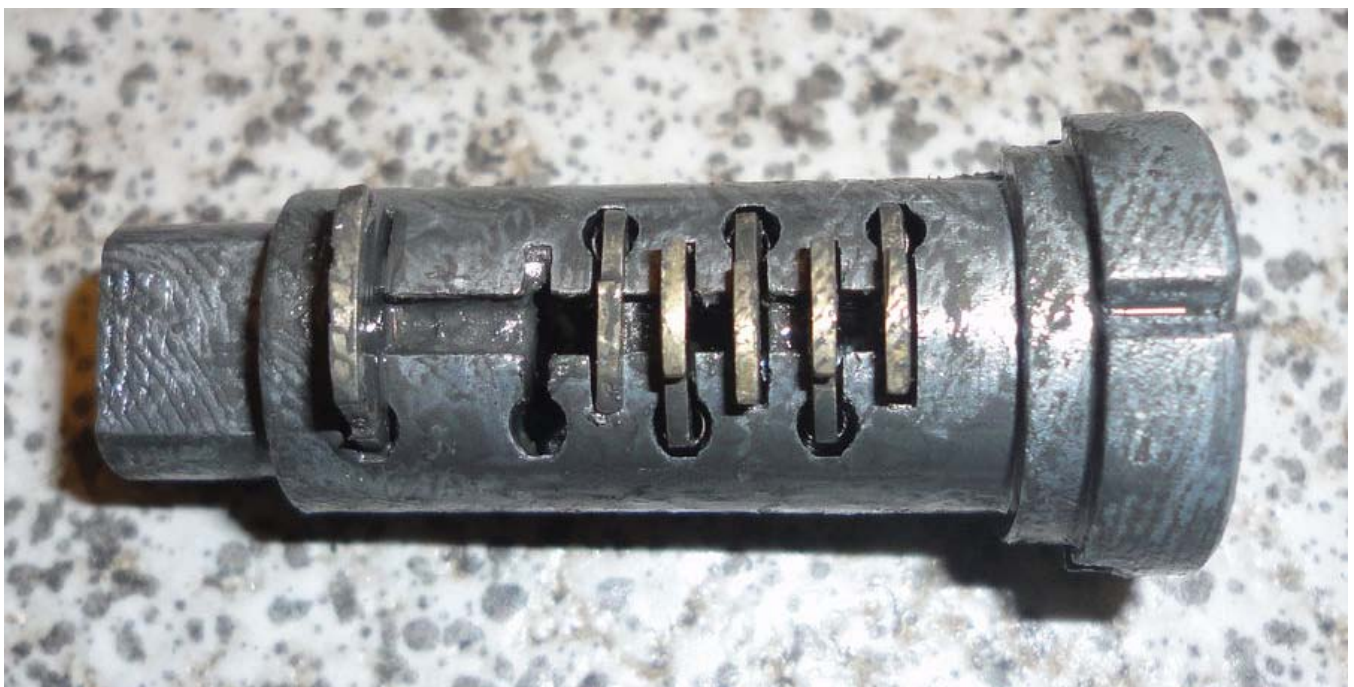


Once you have separated the cylinder from the lock housing, clean the cylinder with gasoline or brake-parts cleaner so you can see what you are doing. Then grab a very small flat-head screwdriver and push the big half-moon looking pin inside the cylinder towards the shaft. This is the pin that holds plug inside the cylinder. It is the very last pin on the plug and is the biggest one. Once that is out of the way, start pushing the shaft out of the cylinder with your finger or a socket extension. It should slide out easily.

Important Note: The tumbler-set comes out of the top of the cylinder, not the bottom.



In my case, two of the wafers were broken to pieces, and those pieces with orphaned springs had jammed up the whole thing. If the wafers are broken and the mechanism is worn out, they won't sit flush with the shaft body when the key goes in and the lock won't turn. In the picture below you can see that one wafer is missing and the one next to it is broken. The pin that you need to push to get the plug out of the cylinder is the first big one from left.



A dirty but quick fix is to insert your newest key inside the lock, and then file away the outside of the wafers that stick out of the plug. Motorcycle ignition locks are not that great to begin with, so whether you file or not, always chain your bike to something when parked. I always do.



The other solution is to have a locksmith cut a new key based on the worn out cylinder and wafers. This is more expensive and defeats the purpose if DIY approach. If this is the route you are going, just get a new gut for your lock and replace the plug and wafers.

If you have broken wafers, just remove them along with their springs, and the lock will still work. (Not as secure but it works.) You should at least have three wafers in the plug so that should be the maximum limit. One of the broken wafers is shown in the picture below to the right.



Caution: Don't remove the chrome rain/dust cover cap (the spring loaded flapper that opens up when you insert your key.) You don't need to remove this cap to work on the tumblers but in my case, those broken pieces had gone up and I had to remove it to get the bits and pieces out. If you do need to remove it, make sure that you don't lose the small spring, and be warned that it is a pain to put back on.

For assembling the cylinder, put a very light coat of synthetic grease on everything and test to make sure everything works.



After you put everything back together, wrap over the pins with electrical tape to ensure that they don't come out with vibration and re-install everything in reverse order.

Fixing locks are not hard if you take your time and work in a well lit place. Watch out for tiny springs and parts and put them in the order when you remove them.

This tutorial should help you get out of the bind next time your steering refuses to turn and you find yourself stranded in the middle of nowhere.

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