Replacing a Tool Switch

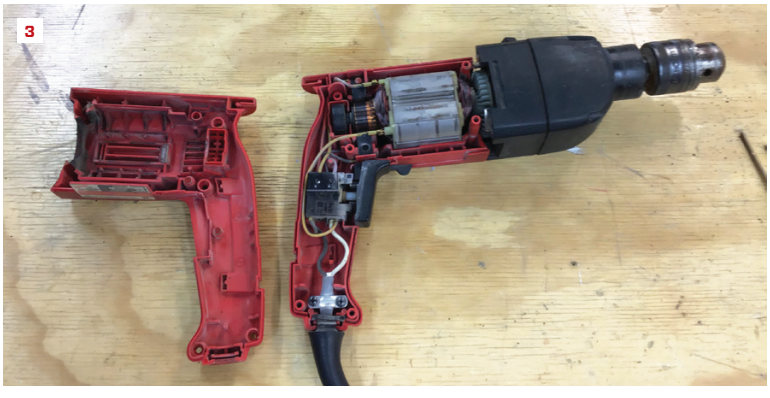
BY BARRETT SITES

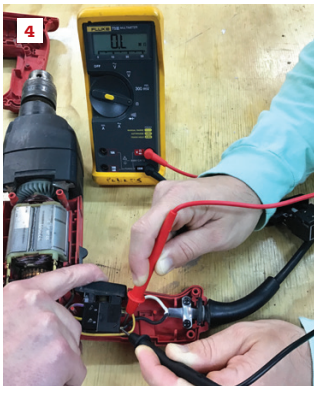
I had owned my Milwaukee hammer drill for about 17 years when it suddenly stopped working. It had been a reliable tool up to that point, so I wanted to keep it in my arsenal and not just throw it away. I enjoy the challenge of figuring out how to fix a tool when it stops working, so on a rainy day I decided to check out what was wrong with it.

Check the warranty. It may be overstating the obvious, but before jumping into a repair on any power tool, check to be sure that the tool is no longer under warranty. I've been impressed by some of the warranties I've seen on tools these days, and it doesn't make sense to attempt a repair that the manufacturer will handle with little or no cost. And attempting a repair on a warrantied tool is a surefire way to void that warranty. It should also be noted that some manufacturers just charge a flat fee (bench charge), plus any parts that need replacing. For this old hammer drill, though, the warranty had long since expired, and I was confident that I could get the tool working for just the price of some parts.

Disassembly. Before starting to dismantle the tool, I put it through my usual protocol of initial checks—I plugged it in, shook it, worked the switch, and turned the chuck—but had no success. Next, I unplugged the tool and started removing parts to get to the tool's inner workings. I removed all of the exposed screws holding the two halves of the handle together **(1)** and found an additional screw hidden under the rubber handle grip **(2)**. I also took off the two machine screws coming into the handle assembly from the chuck end. I don't own any long, skinny torx drivers, but instead I was able to use a 7/64-inch Allen wrench (hex key) to remove those screws without stripping the screw drive.

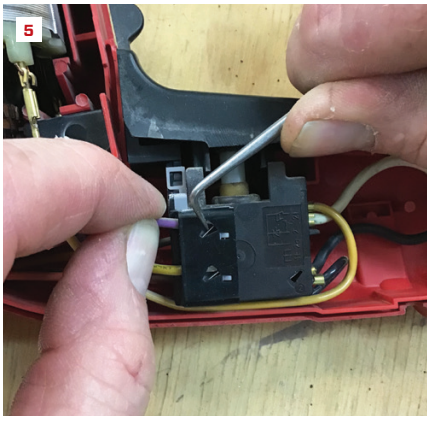
Electrical check. I carefully separated the two halves of the handle **(3)**. My son-in-law (an electrical engineer) happened to be in the shop that day, and we began by checking the switch with his multimeter. We checked the continuity of the hot wire (usually black) coming into the switch and then the wire going from the switch to the motor **(4)**. (When you depress the switch, it should show continuity between the wires). Our tests confirmed that the switch was indeed bad. I bought a replacement switch from a local tool repair shop for around $35—a lot cheaper than buying a new tool. Similarly priced parts are available from several online companies.

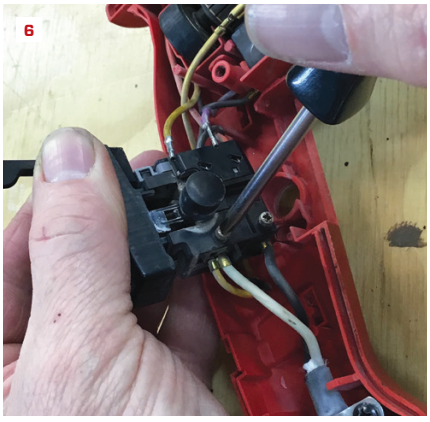




To access the switch, the author removes the screws holding the handle together **(1)**, including one below the rubber grip **(2)**. He then separates the halves of the handle **(3)**. To confirm that the switch is bad, the author depresses the switch while a helper checks the continuity through the switch **(4)**.

Photos by Aaron Powers





Before removing the wires, the author takes pictures of the switch and wires so he can make sure that he puts them back together properly. To remove the wires from the switch, he depresses spring-loaded metal keepers with a pick **(5)**. On the opposite side of the switch, he backs off screws that hold the wires in place on that side **(6)**.

Remove the wires. Before disconnecting the switch, I took a couple of pictures with my phone to reference the wire placement for installing the new switch. Then I removed the wires one at a time. The switch fit into guides in the plastic handle, and separating the halves of the handle allowed the switch to be removed. While the old switch was still in the handle, I used a pick on the exposed side to release the wires that were held in place by spring-loaded metal keepers **(5)**. Then I pulled the switch out of the handle and backed off the screw holding the wires in place from that side **(6)**.

I've replaced a few switches and have found that there are only slight differences in tools from different companies. I find it helpful to try to leave the wires in their original pathways to the switch for as long as possible, although in some cases, it's difficult to remove the wires from the switch without taking them out of their original configuration in the handle.

Connect the new switch. With the faulty switch removed, I reversed the process to connect the wires to the new switch. The wires held in by the spring-loaded keepers have solid metal ends, and small needle-nose pliers were helpful for inserting those ends into the new switch **(7)**. As I reconnected the wires, I double-checked the connections against the cellphone pictures I'd taken.

Reassembly. When all the wires were reconnected, I carefully pushed the switch into position in the handle. The lock button on this switch fit into a hole molded into the handle to help align the switch properly. I made sure I routed all the wires properly around the switch, so the wires wouldn't be pinched when I reassembled the handle **(8)**. Finally, I mated the other half of the handle in place and replaced all the screws **(9)**, including those from the chuck area **(10)**, and reinstalled the rubber handle cover.

As a final test, I plugged the tool in and made sure that everything, including the switch lock and reverse switch, worked as it should. The best part was that I could keep this trusted tool in my arsenal.

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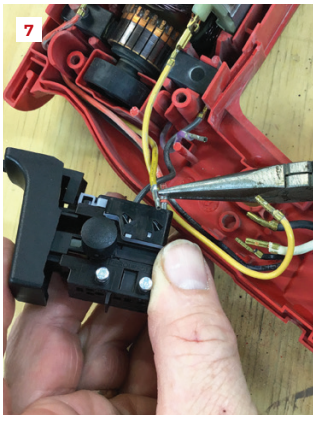

Reversing the process, the author uses needle-nose pliers to insert wires into their slots **(7)**. Checking against the photos he had taken earlier, he repositions the switch and makes sure the wires are routed through the handle without being pinched **(8)**. Then he screws the handle back together **(9)** and replaces the screws from the chuck end of the tool **(10)**.