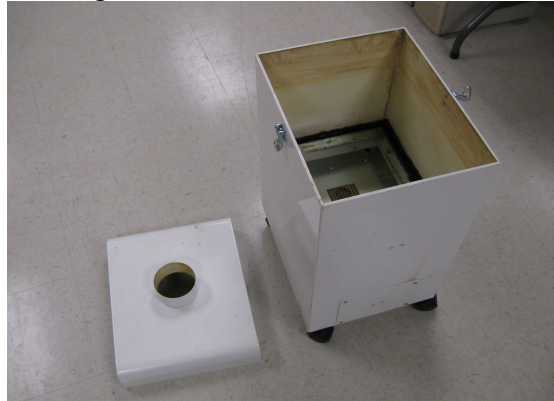


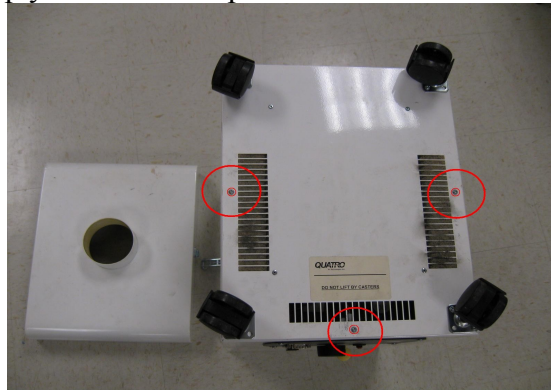
Checking and Changing Motor Brushes on Your Exhaust System

Your laser machine probably came with a large smoke collector, which attaches to the exhaust port of your laser machine. This is powered by two large fans. The brushes on the fan motors will need replaced every 500 hours of use. Failure to replace these brushes could lead to very costly system failure, so it is extremely important to check the motor brushes every month or two, and replace them at the appropriate time. This guide will show you how to check and change your motor brushes.

1. To check your motor brushes, first disconnect your smoke machine from the laser and open the top, removing all the filters. Your machine will look like this:



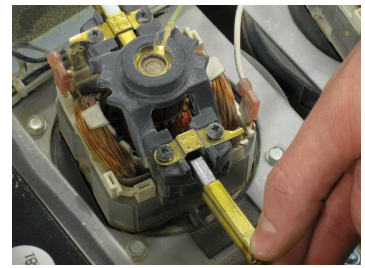
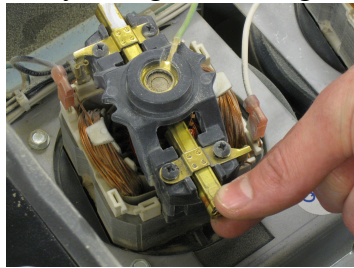
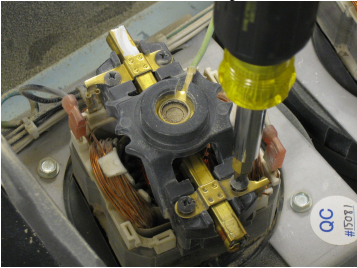
2. Next, gently flip your machine upside down so the wheels are facing up, like so:



3. Notice three screws are circled in red. Remove these screws and pull the bottom panel off of the machine, wheels and all. Your unit may have additional screws in the corners as well. Now you should be able to see the backs of the two motors that run the fans. It should look like this:



4. There are four motor brushes; two on each motor. They are outlined in red in the above picture. Circled in red are the screws that hold the motors in place. Turn each of these screws approximately 2 rotations. This should be enough to loosen the brushes enough so you can remove them by lifting and sliding them out:



5. Here are three examples of brushes at various stages of use. The top one is brand new, and does not need to be replaced. The brush in the middle is worn and will need to be replaced in time. The brush on the bottom is very worn and needs immediate replacement. Failure to do so at this point could result in total machine failure, which is extremely costly!



6. If any of the brushes need replaced, it is best to replace all four at the same time. Slide in the new brushes in the proper orientation and screw them down securely. Reattach the bottom panel, and screw it in. Flip the unit right-side up, insert the filters, and reattach the top. Reconnect the unit to the laser machine.