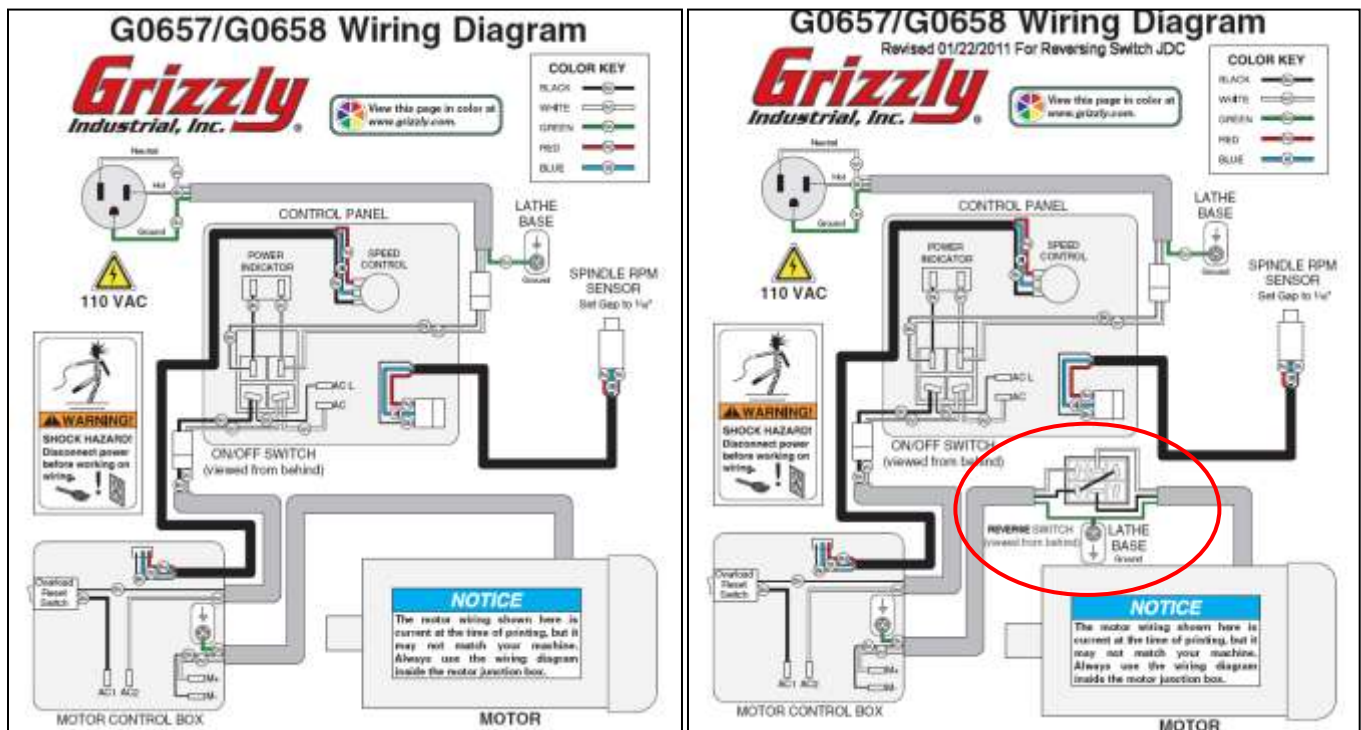


Add Reversing Switch To Your Grizzly G0658 Midi Lathe

I purchased my Grizzly G0658 back in 2009. At the time I was a novice wood turner and I did not give any thought to whether I needed reversing capability on a lathe. I have since added a JET 1642VS-2, which has reverse, to my lathe cell. Having found that reverse is a handy feature after using the Jet for a while I decide it would be nice to have it on the Grizzly.

This is the step by step procedure that I used to add reversing capability to my Grizzly G0658 Midi Lathe.

Here is a before and after revision of the electrical schematic showing the addition of the reversing switch and its location in the electrical circuit.



Original

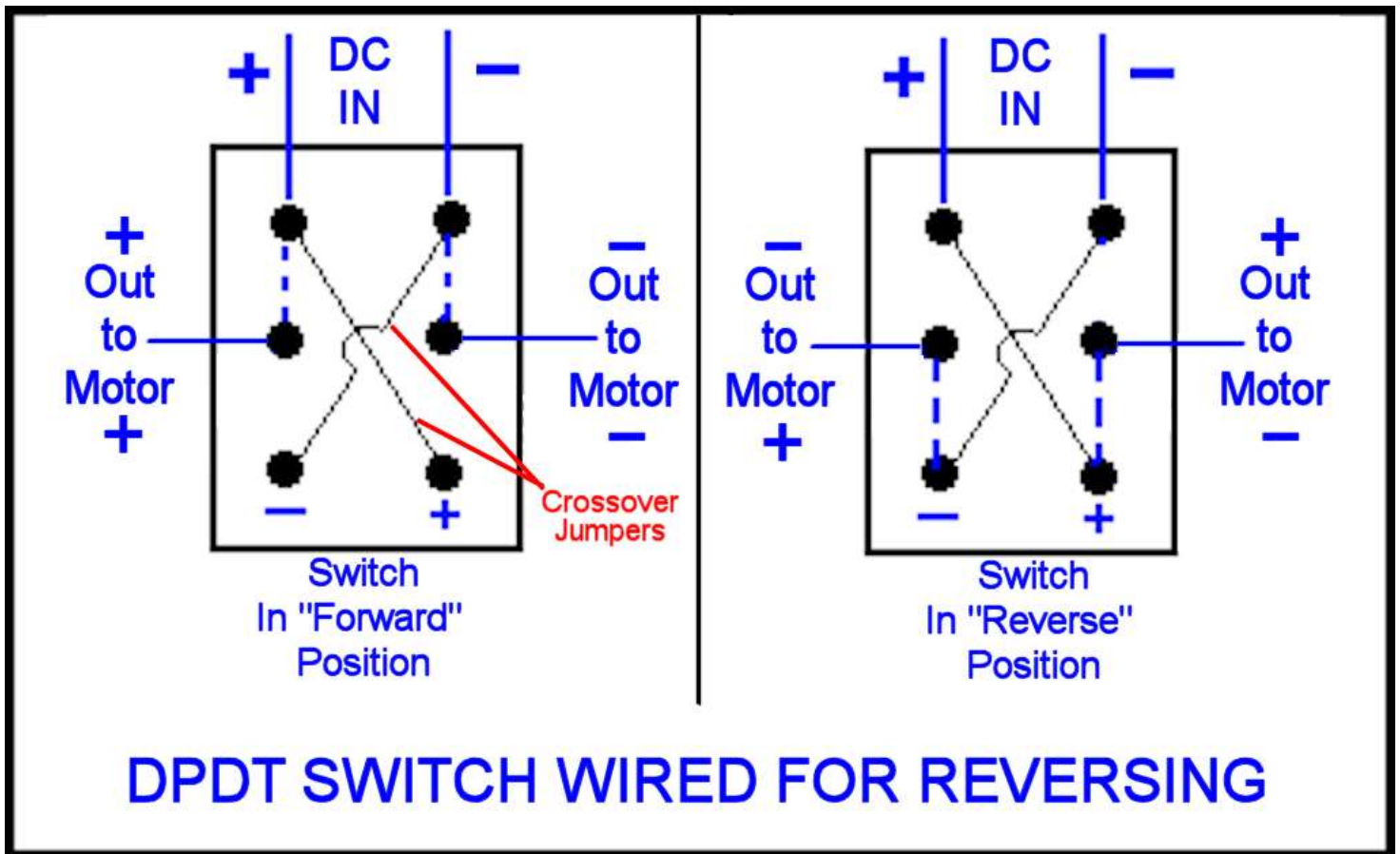
Revise

The motor is a DC motor so to reverse its rotation direction the only thing that needs to be done is reverse the two motor power leads. For those of you with AC motors this would have no effect on your motor direction, however, internal connections in some AC motors can be swapped to change motor direction, check with your electrician.



Swapping DC motor power leads can be accomplished easily with a DPDT (Double Pole Double Throw) On-On toggle switch. The switch will have 6 lugs (either spade style or screws) with the center two being made (connected) to either of the other two sets depending on the toggle handle position. It is actually two SPDT switches in parallel activated by one handle. The motor leads will be connected to the center set of lugs and the DC power leads will be connected to one set of the other lugs. A set of crossover jumpers will be used to "reverse" the connections of the DC power leads to the other side of

the switch. (See the following sketch)



Now that we know where in the electrical circuit the switch is and how it works let's take a look at where it could be placed physically on the lathe.



The best place would be on the front of the lathe along with all the other controls. However, there is no room in the G0658 control panel. There is room in the motor control box and that would be convenient for accessing the motor leads but that is on the back of the lathe and not very handy for in process use.

I opted for a location on the headstock just above the control panel.



This will be a little harder installation but much more convenient than other alternatives. Notice that in this case removal and drilling of the head stock is involved.

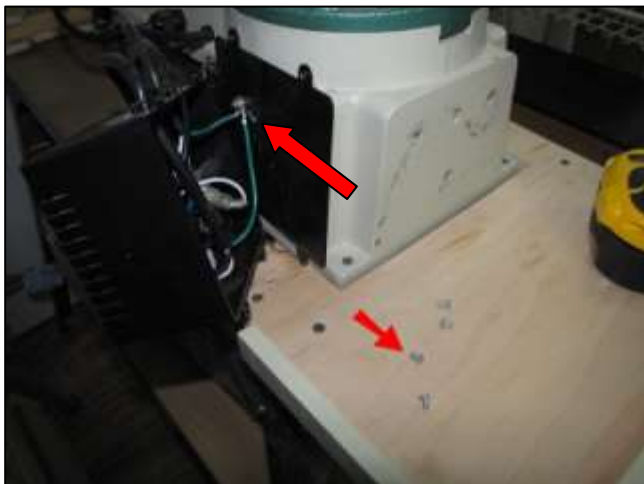
Now that we know where we want the switch let's get to installing it.

Although this procedure applies specifically to a Grizzly G0658 wood lathe the general concepts and procedures could be used on any DC motor operated device but in all cases you should check with a certified electrician and electronics technician before attempting the modification.

Step 1: FIND AND REMOVE THE MOTOR LEADS FROM THE MOTOR CONTROL BOX

UNPLUG THE POWER CORD. **THEN** Remove the 4 small screws (P1) that hold the motor control box onto the lower belt access door. Open the door and disconnect the two ground wires from the door (P1). Verify which lead is the motor lead, it will be the one coming directly from the motor. Pull the two motor lead spade lugs from the control board (P2) being careful not to damage the board.

Using a pair of pliers squeeze the plastic strain relief together (P2) and remove it and the motor lead from the motor control box. This may take some effort. Be careful not to crack the control box.



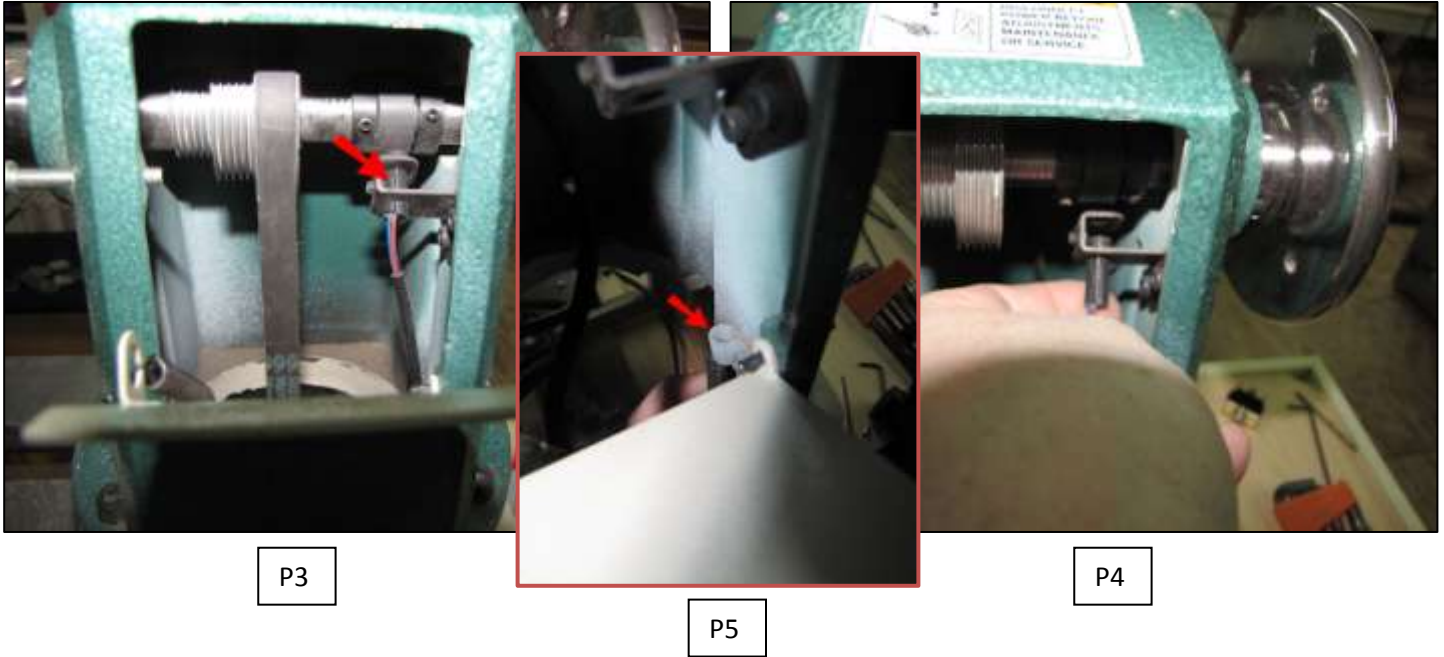
P1



P2

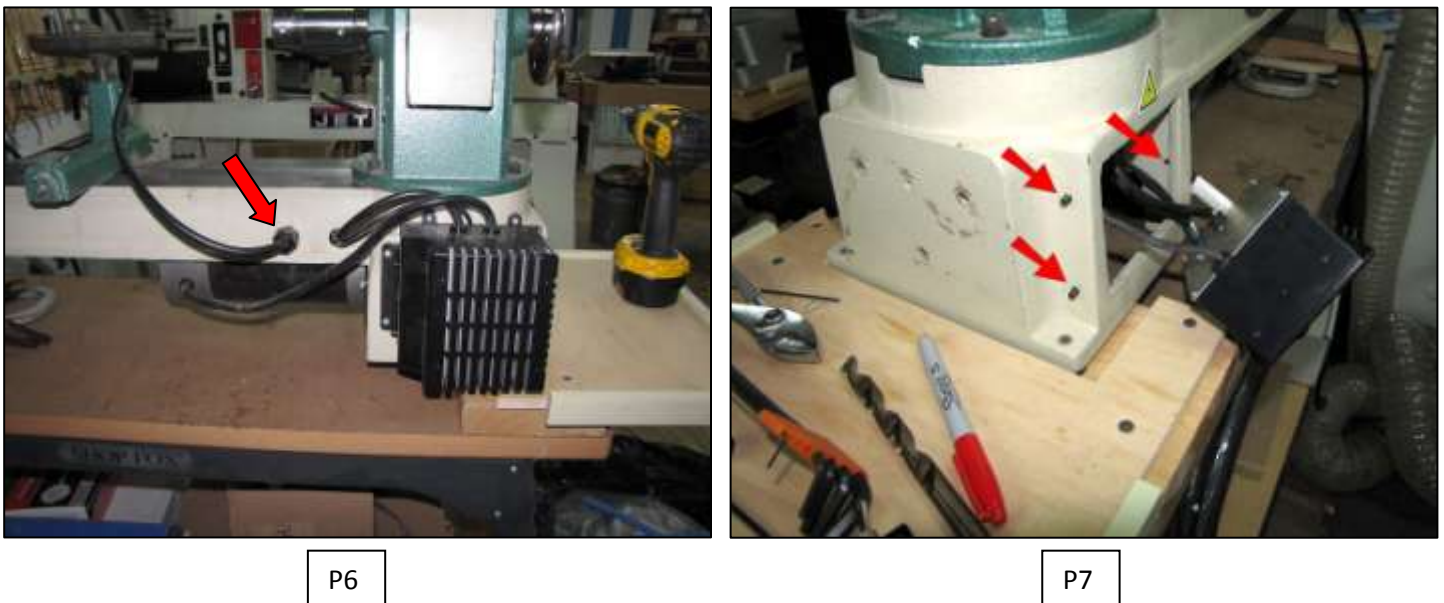
Step 2: REMOVE THE SPEED SENSOR FROM THE HEADSTOCK

Open the top belt access door. Loosen the small Allen screw (P3) that retains the sensor. Slip the sensor down and out of the mounting bracket (P4). In P5 you will see a small nylon retaining loop that you will have to slip the sensor through.



Step 3: REMOVE THE FRONT CONTROL PANEL FROM THE LATHE BASE

Loosen the power cord strain relief (P6) and push the power cord through it 2-3 inches. Loosen the 3 small socket head set screws, two on the left, one on the right of the control panel (P7). Pull the control panel free of the base. Fish out the speed sensor and its cord and lay the sensor aside out of the way, **do not** detach its cord from the control panel.



Step 4: REMOVE THE HEAD STOCK AND FISH IN THE MOTOR LEAD

Remove the four socket head cap screws that hold the headstock on (P8). Set the headstock aside. Fish the motor lead cord from **Step 1** into the headstock opening (P9). The cord should be routed beneath the motor then up at the left end of the housing base. In P9 you see me checking the location of the motor leads. I have the lead temporarily attached to the switch and am holding the switch in its approximate final position. This allowed me to see where I might need to add cable clamps to restrain the lead out of the way of the belt pulleys. In the process I noted an unused hole in the end of the base housing (P10). It looked like a perfect place to attach a cable clamp or strain relief. I tapped it to M6-1 all the way through from the outside and was able to installed a plastic loop style strain relief for the motor lead. The loop will hold the cord next to the base wall well away from the pulleys.



P8



P9



P10

Step 5: DRILL AND COUNTERBORE THE HEADSTOCK AND ASSEMBLE SWITCH

You probably noticed that I have already drill the switch hole in the headstock. That would have been all that was necessary if I had gotten a switch with a longer mounting. In my case it was fairly short and the wall of the headstock was too thick for the switch to accept it's retaining nut. I clamped the headstock onto my drill press and used a 5/8" end mill to counter bore the previously drilled hole to give me room for the switch retaining nut. Again this would have been unnecessary if I had ordered a more appropriate switch.

In either case, right switch or counter bore, install the switch into the head stock and tighten the retaining nut. Since I was unable to get a wrench on the retaining nut I turned the switch instead and stopped when it was in a properly lineup side to side orientation. To make sure it did not loosen up I applied a small drop of CA to the nut so that it would wick into the threads and under the nut being very careful not to get any in the switch. Again something that would not be necessary with the right switch. There is a need for a ground connection close to the switch so while at the drill, drill a 5mm hole at the location shown in photo P12b-c. Tap it to M6-1.

A word of caution: The sensor ring on the spindle shaft is magnetic so take care that you don't get metal shavings all over it.



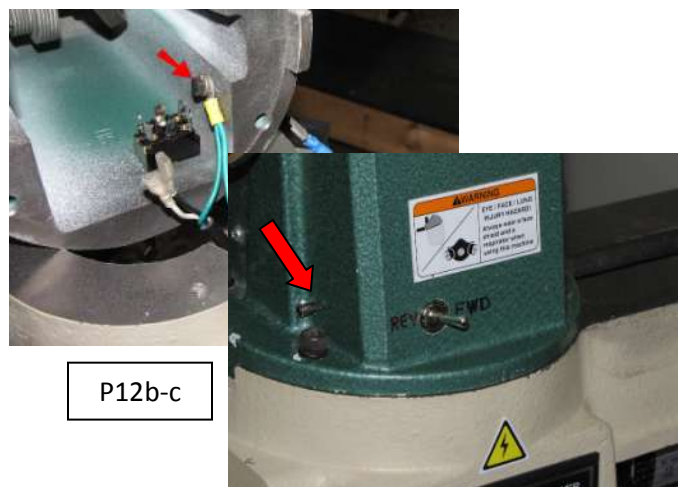
P11



P12a



P13



P12b-c

Step 6: INSTALL NEW SWITCH LINE FROM MOTOR CONTROL

For this step and remaining steps you will need six 14-16 gauge 1/4" female spade lugs, Two 14-16 gauge ring lugs, and about 18" of 14-3 appliance cord. These are illustrated in P14. I used a piece of an old extension cord. On one end of the cord trim back about 6" of the external insulation. Trim the black and white wires to about 2" and remove about 1/4 inch of insulation from all three wires. Install two of the six spade lugs on the black and white wires. Install one of the ring lugs on the ground wire. Reinstall the strain relief removed in **Step 1** onto the new cord about 4 inches from the end of the outside insulation. Crimp it tightly with a pair of pliers and hold it together while you insert the lugged end of the cord and it into the motor control box. It will go into the box in the same location as the original motor lead cord (P15). Slip the two spade lugs onto the terminals from which you removed the motor leads back in **Step 1**. Now attach the new ground wire and reattach the one original to the door and tighten. Reassemble the motor control box to the door with four small screws from **Step 1**.

To dress things up a bit I nylon tied the new cord and the original motor cord together as in P17. They will both terminate at the new switch.



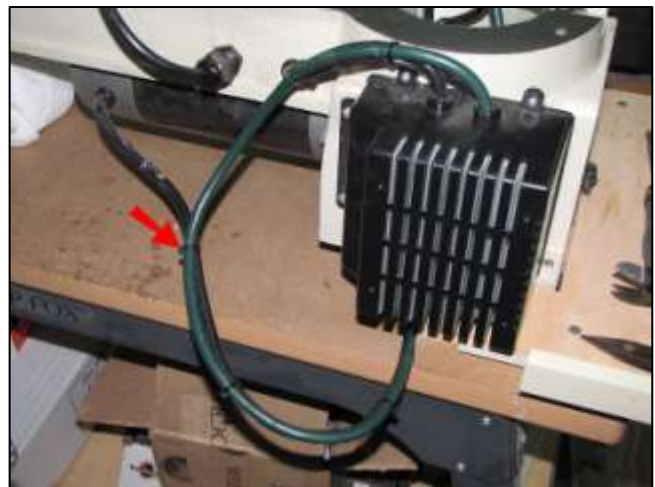
P14



P15



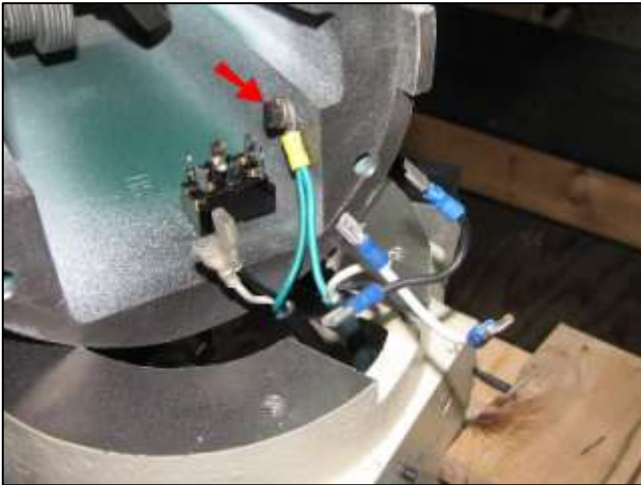
P16



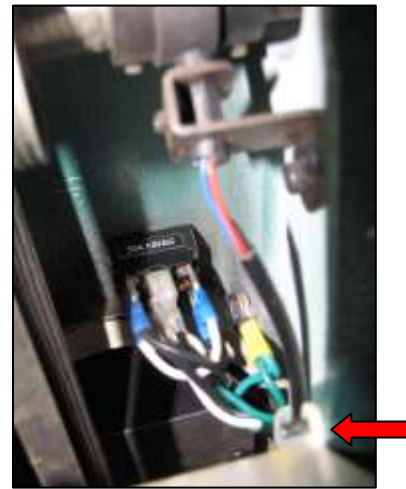
P17

Step 7: CONNECT SWITCH LINE AND MOTOR LEADS AND REASSEMBLE LATHE

Place the head stock onto the lathe base so that the inside is accessible. Assemble two ring terminals to the two ground wires or as I did, I had a larger # 10-12 gauge and put both wires into one ring terminal. Attach the ground wire terminal(s) to the head stock using an M6-1 bolt and the threaded hole drilled in Step 5 (P18). Cut two 1.75" jumpers from left over pieces of the extension cord, one white, one black. Strip the wires and assemble female spade lugs on one end of each jumper. Strip the wires on the "switch" cord (the green cord in my case) and strip the other ends of the two jumper wires. Twist the stripped end of the white jumper with the striped end of the white switch cord and assemble one spade lug to the twisted pair. Repeat for the black wires. You will end up with something that looks like the black and white wires in P18. Slip the original motor lead female lugs onto the center lugs of the new switch. Slip the new cord twisted double female lugs onto one end of the switch. Slip the female lugs at the end of the jumpers onto the other end of the switch making sure to cross the two jumpers (P19). Refer to the sketch "DPDT SWITCH WIRED FOR REVERSING" if you are confused. Now reinstall the sensor being sure to thread it back through the nylon clamp (P19LR) Tilt the head stock back into its original position and reinstall the four cap screws and tighten (P20). Reinstall the front control panel using the reverse of **Step 3** (P21).



P18



P19



P20



P21

Step 8: FINAL WRAP UP

Pull the power cord back out to its original length through its strain relief. Refer to **Step 3**. Retighten the strain relief collar/nut. Realign the belt onto its pulleys checking it in all three positions that it does not rub any of the cords or the wires on the switch. Close up all access doors.

Keeping your hand on the power plug, plug the power cord back in and watch for smoke and listen for arcing sounds. If all seems well check the front to ensure that the little green LED power light is on. Keeping your hand on the power switch, switch on the power and watch for smoke and listen for arcing sounds. The lathe should start rotating. Verify direction and that the VS knob works as usual.

On my Jet 1642 the lathe is in forward when the "Forward Reverse" switch is flipped to the right. I wanted the Grizzly to be the same for consistency. Of course when I tried it the first time it was the opposite. Not a problem, if that is your case as well unplug the lathe, release the belt tension, just open up the bottom access door, pull off the center motor leads from the switch and reverse them and slip them back on. If you have big hands there maybe some difficulty here but it is manageable. After the leads are swapped, repeat previous paragraph.

You may want to add markings to the sides of the switch indicating direction once you have it going in the direction you prefer for the given switch position (P22). I just used a magic marker but my try to get some labels on it "someday".



P22



P22

Assuming that all is well now grab you a turning blank and get busy.

Hope this was helpful to someone and if so I would appreciate some feedback through Sawmill Creek.

Thanks:

JD Combs