

# ***GRANITE XT ELECTRICAL SYSTEM TROUBLESHOOTING***

## **FIRST THINGS TO CHECK**

1. Is the machine plugged in?
2. Is there power to the outlet?
3. Push the e-stop button in then rotate it clockwise until it pops out.
4. Turn the key switch to the "ON" position.
5. Make sure the forward/reverse rocker switch is either forward or reverse, not in neutral(the middle position).
6. Is the LED display for the spindle speed illuminated?
  - If the display is illuminated, go to section "A".
  - If the display is not illuminated, skip to section "B"

## **SECTION "A"**

This section will reset the drive and get in synchronization with the motor so it can receive and process position signals from the motor. If your machine is running after the completion of either step 1 or 2 in this section, no further action should be needed.

1. With the machine plugged in and the speed dial set on the lowest setting, push and hold the reset button for 20 seconds or more. Try the machine now. If it runs now, all is OK. You have successfully reset the drive. **END**.
2. If step 1 did not work, unplug the machine for at least 1 minute. Plug it back in and see if it will run. If it does all is OK. You have successfully reset the drive. **END**

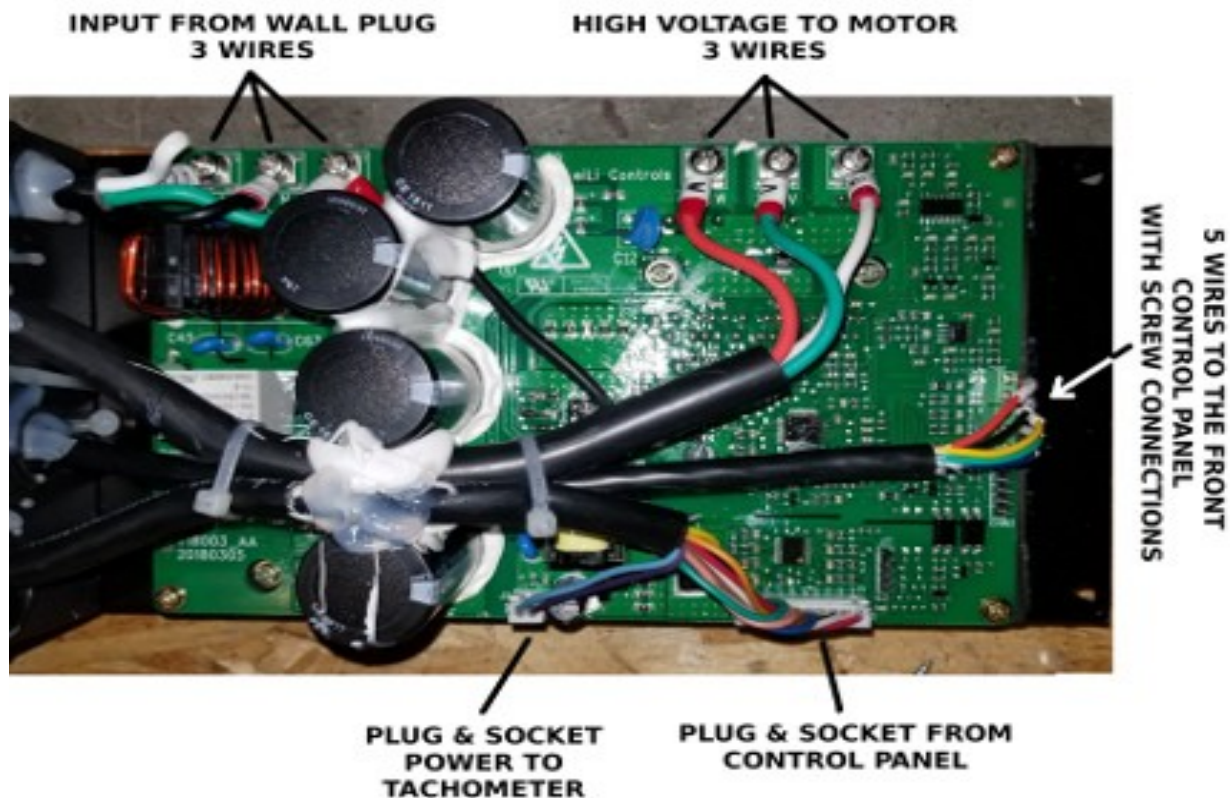
If section "A" did not fix the problem, proceed to section "B"

## **SECTION "B"**

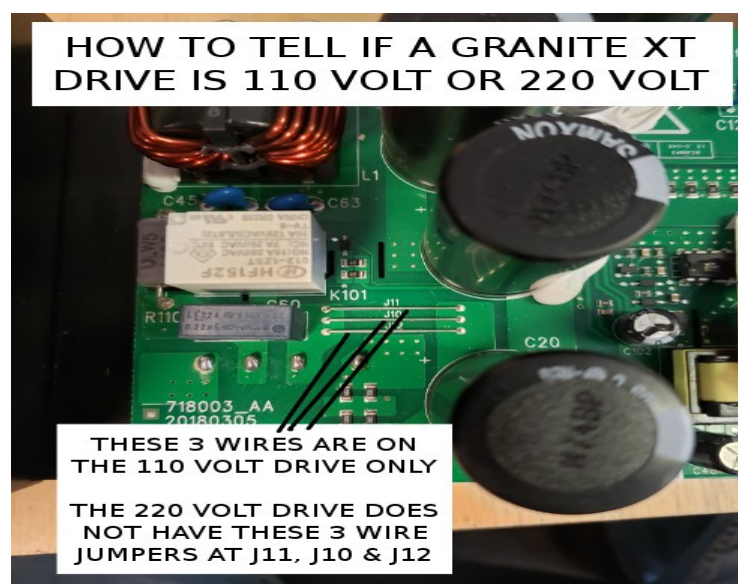
This section will safely remove the drive cover and perform some simple checks on the drive.

**Note:** *Some steps in this section require the drive to be plugged in so take **caution** when working with live electrical connections and components. Unplugging the drive for 1 minute will allow the capacitors to bleed of their high voltage.*

1. Turn off the key switch. Unplug the machine and let it set for 1 minute to allow the high voltage to bleed from the drive capacitors.
2. Remove the 6 small screws holding the drive cover in place and remove the cover.
3. With the drive unplugged, look for any obvious damage to the board or the components on the board.
  - If there appears to be physical damage to anything, the board must be replaced. You have found the problem and can stop at this point. A picture of the board and it's damaged area is very helpful when contacting Detroit Machine Tools for assistance.
  - If there is no signs of physical damage, continue on to step 4.
4. Check all connections for loose wires.
  - Using a pair if long nose pliers, gently pull on each wire to make sure they are securely connected.
  - Check all the screws on the connections to ensure their tightness.
  - Make sure the 2 plug in sockets are firmly seated to the board.

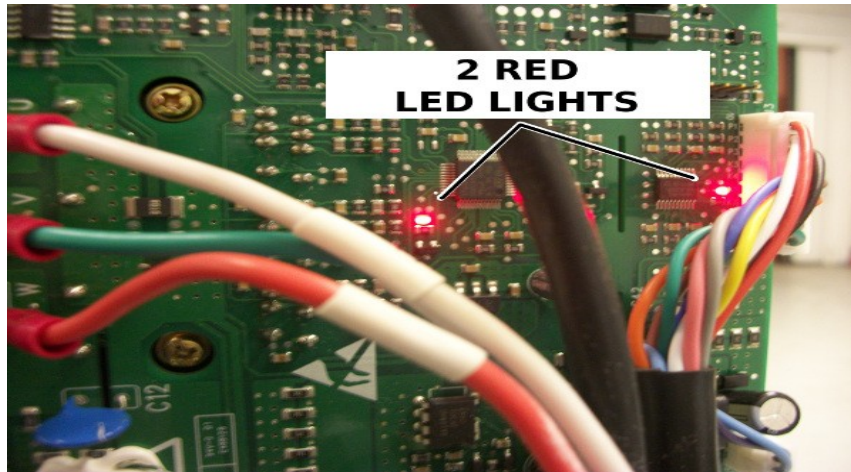


- If any wires are found loose or disconnected, repair as necessary. Then plug the machine in and see if it will run. If it runs, you have found and fixed the problem. **END**
- If all wires are found to be OK or if repairing a faulty connection does not fix the problem, proceed to next step.
- Check the board to determine that it is the correct voltage drive for the power source you are using. If the wrong voltage drive is installed, this must be address to make the machine function properly.
  - A 110 volt drive will have 3 jumper wires visible near the K101 relay at J10, J11 and J12 as shown in the picture.



- A 220 volt drive will NOT have these jumpers.

5. Have the key switch in the off position and the e-stop button pushed in. Plug the machine in and in less than 10 seconds there are 2 red led indicator lights on the board that should light up and start blinking. Illuminated LEDs show that there is input voltage to the board. The pattern of the blinking is important to note.
  - If the 2 LEDs do not illuminate, then proceed to the step 6.
  - On **220 volt machines only**, If one light blinks very rapidly and the other hardly at all and this pattern is consistent, this is a sign the machine is not receiving correct voltage. Proceed to step 6
  - If the 2 LEDs illuminate, go to section "C".
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6. When the LEDs do not illuminate, you need a volt meter to check the AC voltage between the L and N terminals on the drive. There should be 110 volts for a machine wired for 110 volts and 220 volts for a machine wired for 220.
  - If you have the required vintage between L and N but the LEDs do not illuminate, the drive has an internal problem and must be replaced. You have found the problem and can stop at this point. **END**
  - If the required voltage is not present, the problem is somewhere in the chord going to the outlet, the plug on the end of the chord or in the outlet and it's circuit. This voltage comes directly from the wall outlet. It does not go through the switches. The switches are This problem must be corrected before any further testing can be conducted. There is probably no problem with the machine itself.

### **SECTION "C"**

1. You need a volt meter to check proper AC voltage between the L and N terminals on the drive. There should be 110 volts for a machine wired for 110 volts and 220 volts for a machine wired for 220.
  - If you have the required vintage between L and N, proceed to step 2.
  - If the required voltage is not present, the problem is somewhere in the chord going to the outlet, the plug on the end of the chord or in the outlet and it's circuit. This voltage comes directly from the wall outlet. It does not go through the switches. The switches are This problem must be corrected before any further testing can be conducted. There is probably no problem with the machine itself.
2. The 2 LEDs should blink in an alternating and rhythmic pattern such as you see at a railroad crossing signal. One may blink just slightly faster than the other so the timing does vary over time. If you have this type of blinking, go to section "D".

3. If the LEDs are blinking in a very random pattern, we can try to reset the drive connection to the motor.
  - Go back to section "A" and repeat both 1 and 2 to see if the drive can be reset. Do not attempt to run the machine yet. We are just trying to see if the drive will reset.
  - If the drive resets and the LEDs go into a rhythmic blinking pattern, go to section "D".
  - If the drive will not reset after both steps 1 and 2 in section "A", the problem is most likely in the drive board. The board should be replaced.

### **SECTION "D"**

At this point the machine is plugged in and we have proper voltage to the drive and the drive is set and ready to run the motor. The LEDs are blinking in a rhythmic pattern of one then the other. We are now ready to try to start the motor.

**Note:** *Some steps in this section require the drive to be plugged in so take **caution** when working with live electrical connections and components. Unplugging the drive for 1 minute will allow the capacitors to bleed of their high voltage.*

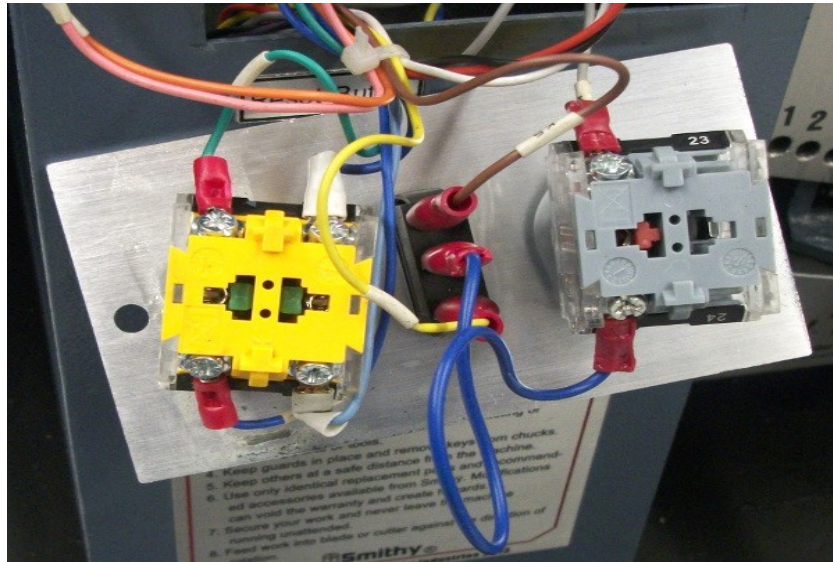
1. Have the machine plugged in, the speed dial all the way counterclockwise, the e-stop in, the forward reverse switch in either forward or reverse (not the middle neutral position) and the key switch OFF. The Spindle Speed display will not be illuminated. The LEDs are blinking in a rhythmic pattern of one then the other.
2. Rotate the e-stop button clockwise until it pops out. There should be no change in the LED pattern and the display will still be off.
3. Turn key switch ON and the only change should be the display will come on. It will go through a short random pattern then display "O".
  - If the display does not illuminate, unplug the J5 connector on the drive board to take the display out of the system. A malfunctioning display can keep the motor from running. We will trouble shoot it after we get the motor running.
4. Turn the speed dial up at least half way.
  - If the motor turns slightly but stops, this is a motor problem and the motor must be replaced.
  - If the motor does not try to turn but the LEDs start spastic blinking pattern, this is a motor problem and the motor must be replaced.
  - If the motor does not try to turn and the LEDs keep their normal rhythmic pattern, This could be the speed dial potentiometer of the forward reversing switch. Proceed to section "E".

### **SECTION "E"**

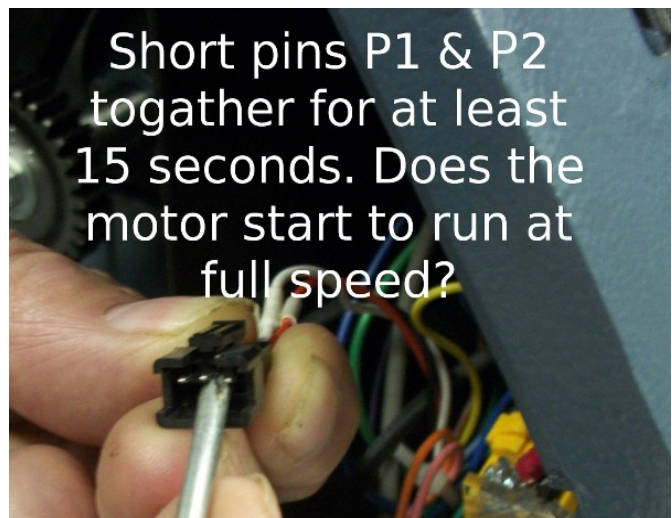
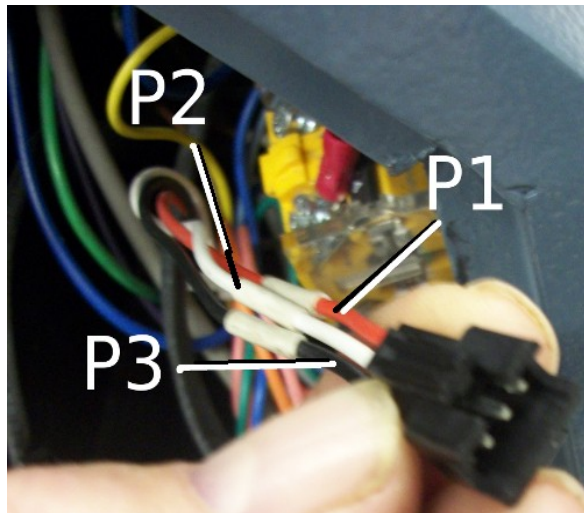
This section is checking the operational controls at the front control panel. All of these wires and controls at the front panel are low voltage and part of the low voltage circuit. None of the currents at this panel is above 18 volts and very low amperage. These components and wires are safe to handle with the machine plugged unless other wise stated.

1. Unplug the machine and remove the 2 screws holding the front panel in place.
2. Pull the panel assembly out of the machine and check all connections for loose or disconnected wires. Pay special attention to the 3 push on connections at the forward/reverse switch. If they come off with very little effort, crimp the connectors closed slightly with a pair of pliers and reattach them to the switch.





3. Plug the machine in, rotate the e-stop out, turn the speed dial is turned all the way up and check to make sure the LEDs are in their rhythmic pattern.
4. To check the speed dial:
  - Unplug the 3 wire connector for the potentiometer.



- Use the end of a small screw driver or other metallic item to short between the 2 terminals of the wire from the control board as shown in the picture.
  - If the motor starts to run, the potentiometer is bad and must be replaced.
  - If the motor does not run, plug the potentiometer back in and proceed to step 5.
5. This is the conclusion we can come to at this point
    - The potentiometer is OK.
    - The voltage to the system is OK.
    - There are no loose or disconnected wires.
    - The LED lights keep blinking in a rhythmic pattern.
    - The motor does not turn slightly and stop.
    - **THE DRIVE IS DEFECTIVE AND NEEDS TO BE REPLACED.**