



## Laser Not Firing: Interlock Testing

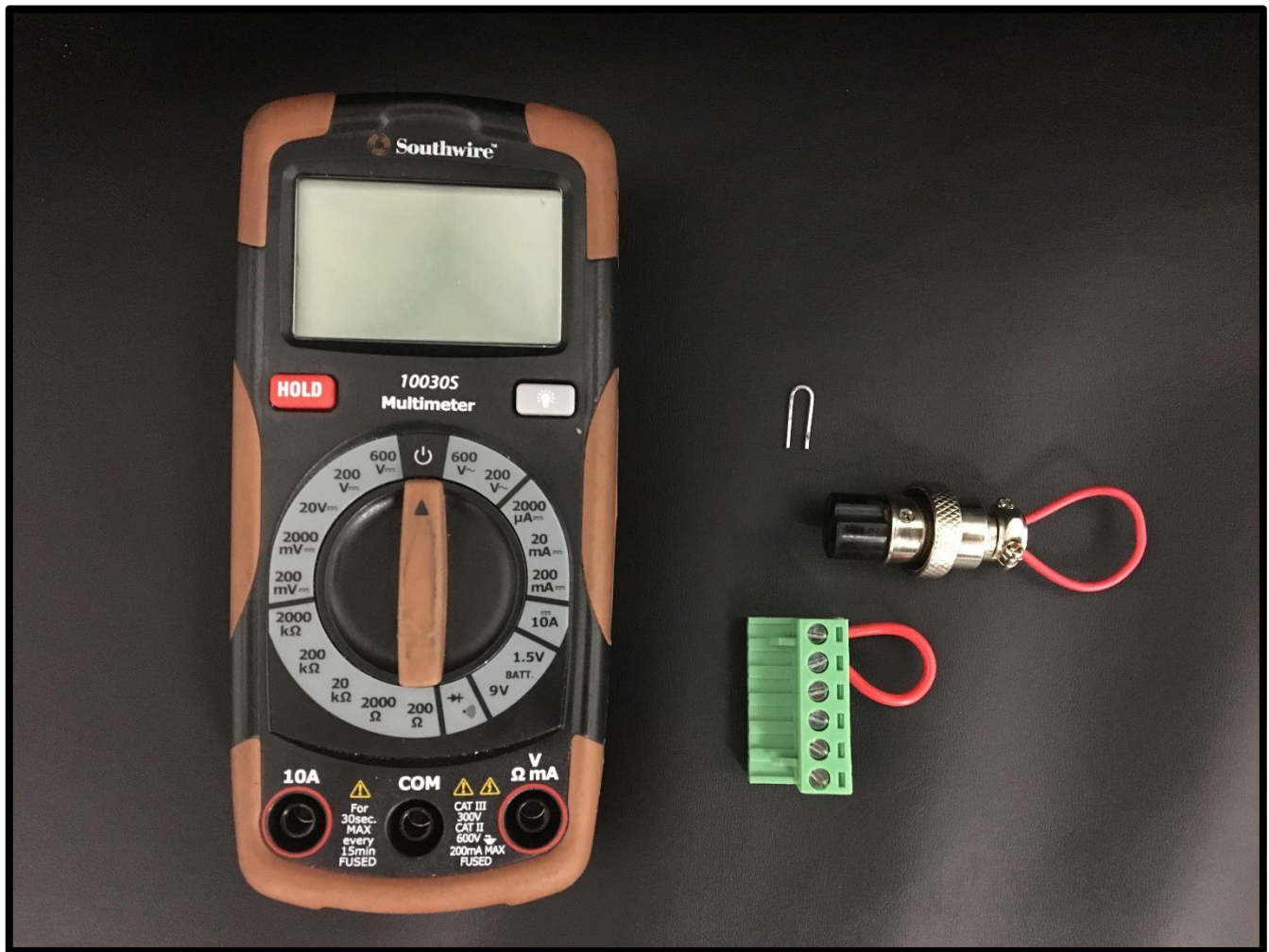
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In event that your laser does not fire you will have to conduct interlock testing, this will allow for Technical Support to determine what interlocks are causing the laser to not fire. If you need help at any time along the way, please reach out to us at [techsupport@bosslaser.com](mailto:techsupport@bosslaser.com) or call 407-878-0880

Tools to Gather:

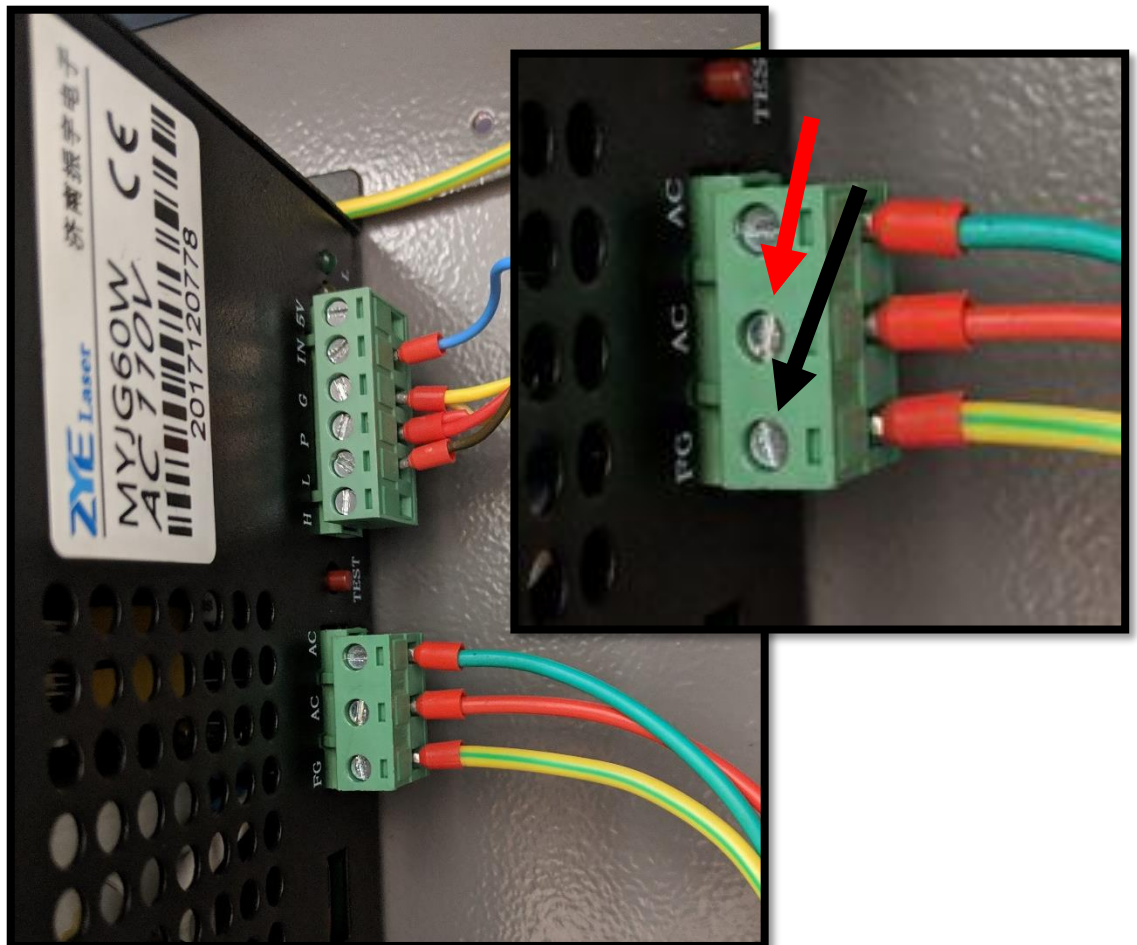
1. Chiller bypass
2. 6-Pin bypass
3. Interlock bypass OR Paperclip
4. A multi-meter



### Make Sure Power Supply Is Powering On

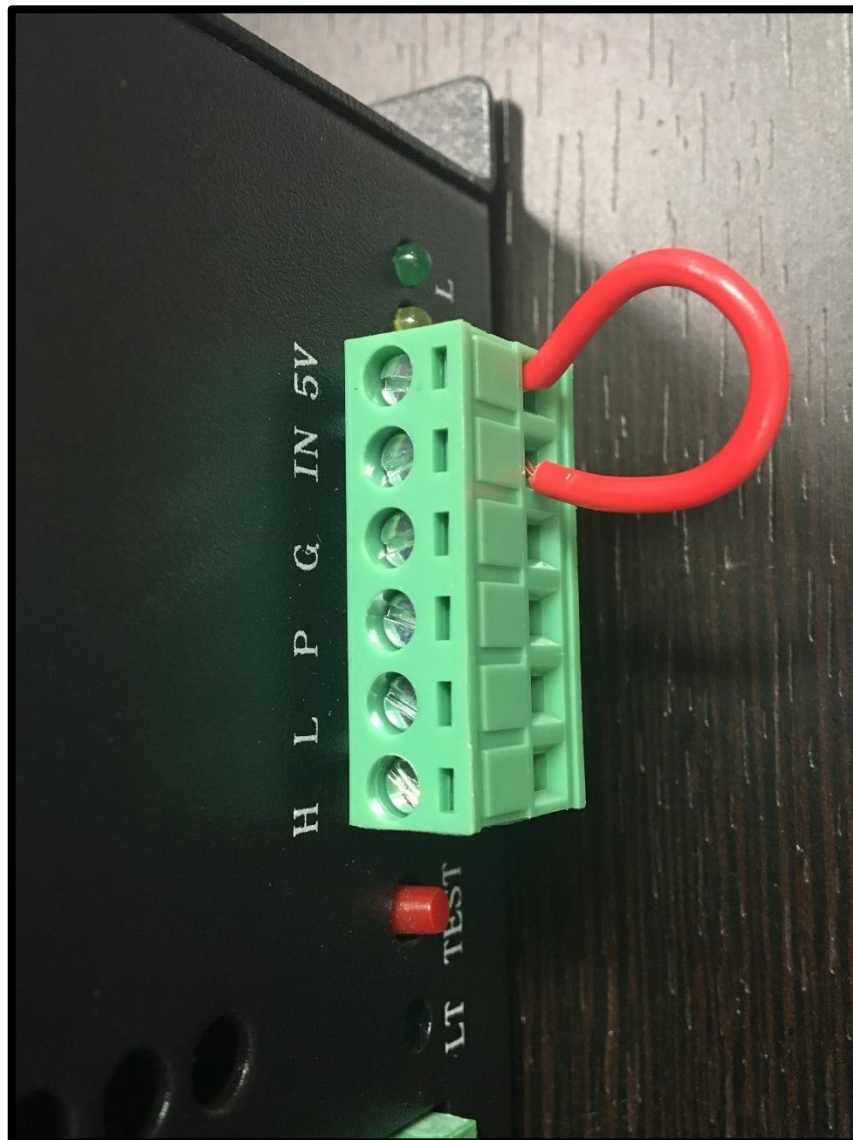
1. Locate your power supply unit, this is found through the right side of the machine through the large white door on the bottom.
2. The power supply is either going to be gold or black in color. It will have a six-pin green connector and a three-pin green connector going into it. On the other side it will have a larger red wire and black wire as well.
3. Take a look at the power supply with the machine powered on, do the lights work and are the fans on the power supply spinning?
  - a. If yes, please move onto the testing below.
  - b. If no, please check the three-pin connector along the side of the machine on three yellow wire with a green tracer and the red wire. This would be your hot lead and ground lead.
4. If you have 120V going into the power supply but it is not powering on, then the power supply is faulty and will need to be replaced.

⚠ Please reach out to us at [techsupport@bosslaser.com](mailto:techsupport@bosslaser.com) or call 407-878-0880 for a replacement power supply.



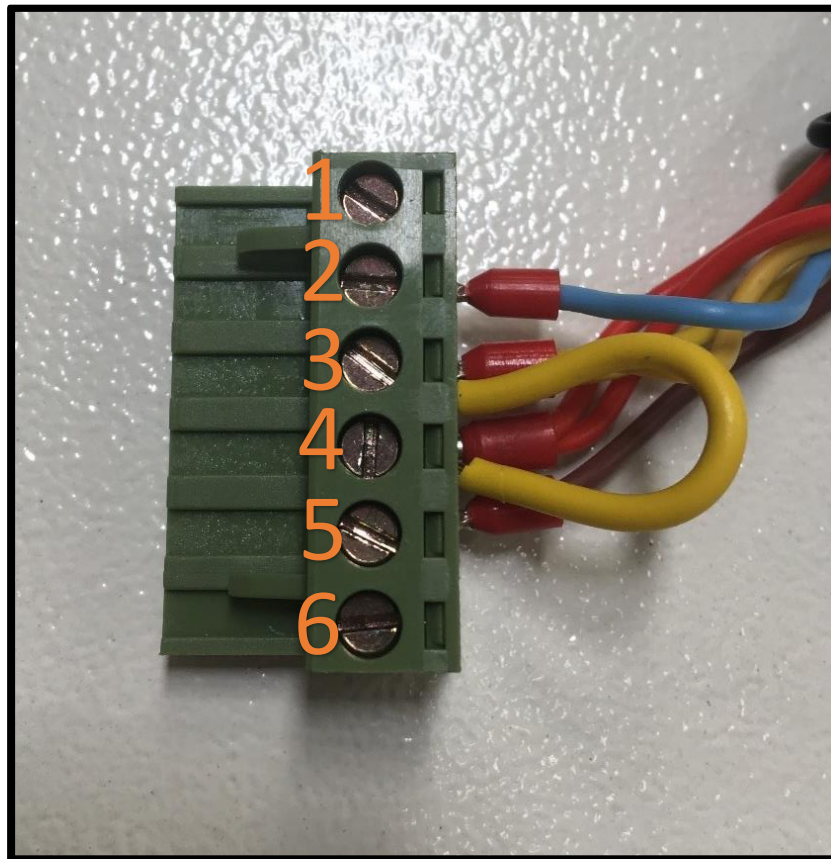
### Six Pin Bypass Test For 60W, 100W and 150W Machines

1. Locate your 6-pin bypass.
2. Make sure that your machine is powered off.
3. Locate your mA meter, this will be above your laser keypad and temperature gauge.
4. Locate your power supply (PSU). Normally will be on the right-hand side of your machine.
5. Take out your 6-pin from the laser power supply.
6. Replace this connector with the six-pin found in your tool box with the wire loop.
7. Locate your test button on the power supply, it should be a red push button that says test or laser
8. Power your machine back on.
9. Use the test button while viewing the mA meter. If the laser fires then you have an interlock issue.
  - a. If the laser does not fire, then you will need to complete the **RESISTOR TESTING** document.
  - b. If the laser fires with the 6-pin bypass you may continue testing below.



### Six Pin Bypass Test for A Gold PSU

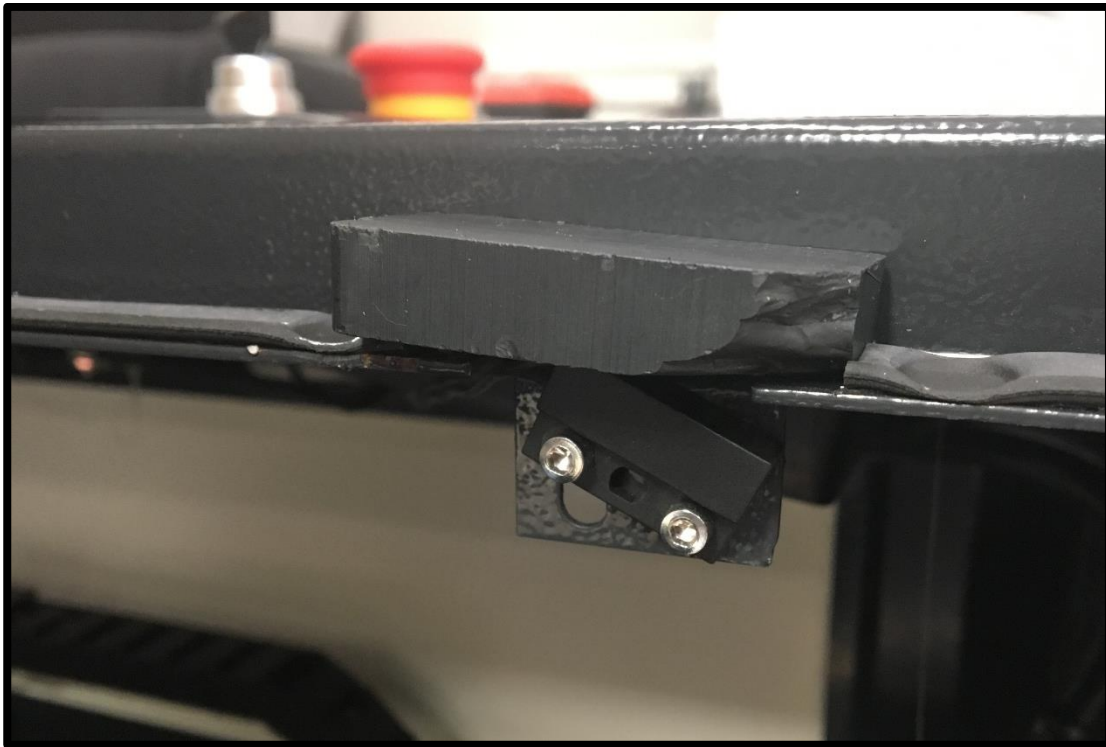
1. Locate your 6-pin bypass.
2. Using the screwdriver provided in your tool box you will remove the looped wire from the six-pin connector that was found from the tool box.
3. Make sure that your machine is powered off.
4. Locate your mA meter, this will be above your laser keypad and temperature gauge.
5. Locate your power supply (PSU). Normally will be on the right-hand side of your machine.
6. Take out your 6-pin from the laser power supply and add the wire that you removed to pins **3 & 4** of your 6-pin connector. This will go on top of what is already there in addition.
7. Plug the 6-pin connector back into the laser power supply.
8. Power your machine back on.
9. Go to the keypad of your laser machine, and make sure the power is set to 95%.
10. Once power has been verified, hit the pulse button on the key pad.
11. If the laser does not fire then you will need to complete the **RESISTOR TESTING** document.
12. If the laser fires or the mA meter moves then you have an interlock issue and you may continue testing below.



## Testing the Door Sensor

We will be testing the door sensor. This is a safety switch that tells your laser not to fire with the door open. You will need a magnet to do the following test. Your regular 6-pin connector should be plugged in, not your 6-pin bypass.

1. What you are going to do is place the magnet directly on top of the door contact. The door contact will be in the door jamb when you lift the hood of the machine up.



2. With the magnet on top of the door contact you will go to the keypad and see if the laser will fire
3. If the laser fires, then the door interlock is the issue, and this will need to be adjusted
4. Since the laser fires with the magnet on the contact this indicates that it does not make good contact with the hood magnet.
5. To fix this you are going to loosen the two Allen screws on the contact and raise the contact up as high as it can go (***still at an angle***) and then drop the hood down and see if the laser fires with the door closed.
6. **IF THE LASER DOES NOT FIRE WITH THE MAGNET ON THE DOOR CONTINUE TESTING TO THE CHILLER SIGNAL CABLE PORT LOCATED ON THE BACK OF THE MACHINE**

## Testing the Water Chiller Signal Cable

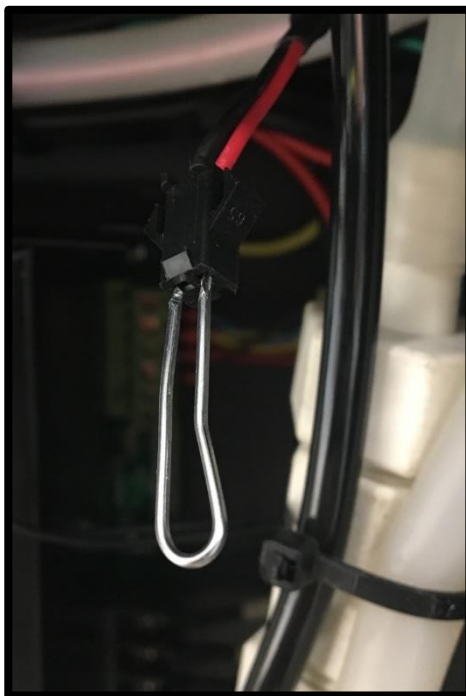
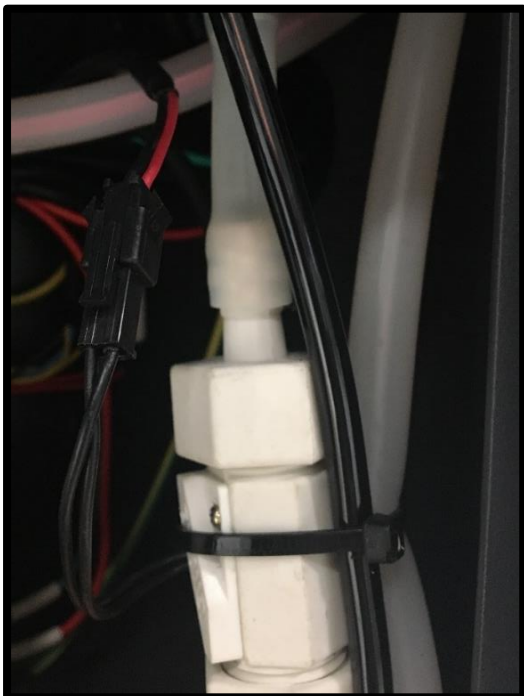
We will be testing the chiller signal cable port, this will be located at the very back of the machine, labeled as chiller signal.



1. Locate the chiller signal cable, this will be found on the exterior of the machine labeled chiller signal
2. If the cable from the chiller to the machine is in its place you will remove this wire from the connector
3. With this connector removed you will go to your tool box and locate the chiller bypass plug
4. Go to the back of the machine and install the chiller bypass plug
5. With the bypass plug installed you will go to the keypad of the machine and see if the laser will fire
6. If the laser does fire, then the cable going to the chiller has gone out and you will likely need a new one
7. **IF THE LASER DOES NOT FIRE THEN YOU WILL MOVE ON TO THE FINAL INTERLOCK TEST WHICH WOULD BE THE WATER FLOW SENSOR. YOU WILL LEAVE THE MAGNET ON THE DOOR AND THE CHILLER BYPASS IN THE SIGNAL CABLE PORT.**

### Testing the Water Flow Sensor

1. Locate the water flow sensor, this can be found in-between the power supply and the frame of the machine, it will be a large white cylinder that will have the water in and out hoses attached.
2. Once this has been located you will remove the male and female connector to disconnect the wiring of the water flow sensor.
3. With the wiring disconnected you will take your paper clip and plug it into the female end of the connector, one end of the paper clip on one side and the other end on the other side.
4. With the water flow sensor completely bypassed you will see if the laser machine will fire from the keypad.
5. If the laser fires, then the water flow sensor is the culprit and will need to be replaced.
  - a. Before we replace the water flow sensor we need to verify if it just slid out of position
  - b. Please take the paper clip off and reconnect the male connector to the female connector as it was before
  - c. Take a small screwdriver and loosen the screws on the plate that has the wires going to the connector
  - d. Slide the plate to the middle or opposite end(s) of the screw groove and retighten the screws (you may need to repeat steps d – f up to 2 times)
  - e. Turn the machine back on
  - f. Press the Pulse or Laser button on your Control Panel
  - g. If the laser fires, then you have fixed your issue and there's no need to continue troubleshooting or replace the Water Flow Sensor as it was just out of position
  - h. If the laser still doesn't fire after moving the plate to all of the other possible positions on the groove, then the Water Flow Sensor must be replaced
6. **IF THE LASER DOES NOT FIRE THEN YOU WILL NEED TO CHECK FOR CONTINUITY USING A MULTIMETER.**



## Testing the Interlock Testing

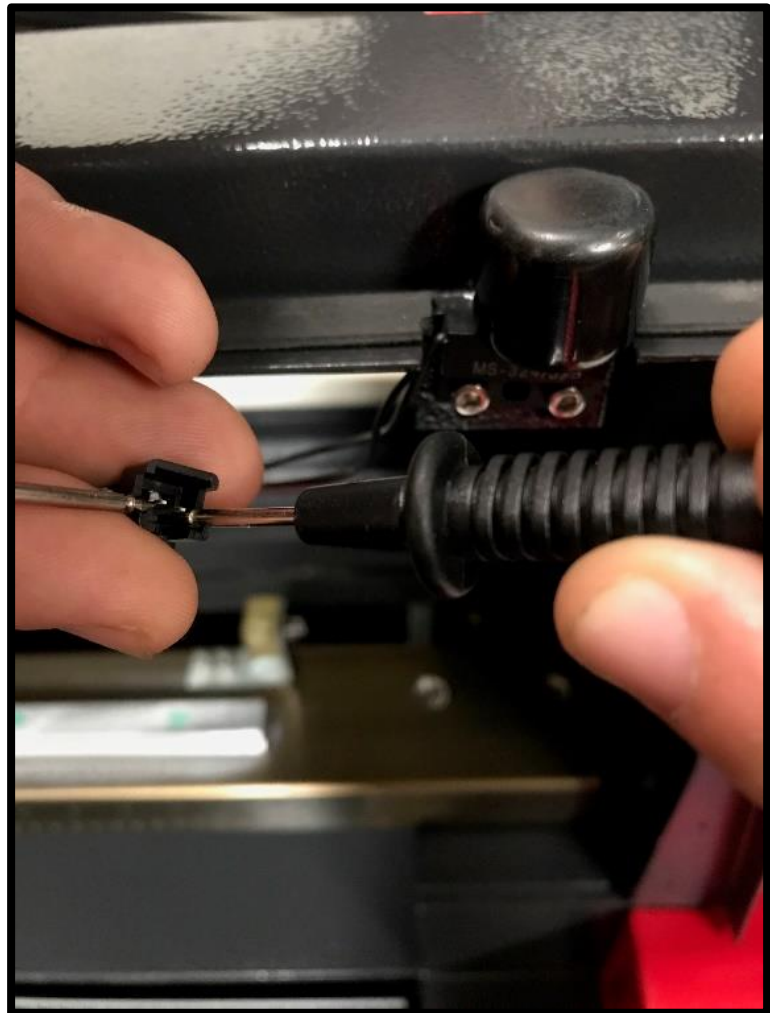
If none of the interlock testing checks out, you will need to run continuity tests on all components until you find the culprit.

- Turn your multimeter to check for continuity with an audible beep, to do this you can refer to the picture, this shows where the meters setting should be set for.
- When you tap the red and black leads together while in this setting it will beep, confirming that the circuit is complete and has continuity on it.



### Door Sensor Male End

1. Turn the machine off
2. Place a magnet on the door contact
3. Unplug the door contact by tracing down the wire to the female/male connector
4. Turn your meter on and set it for continuity
5. Once you have this plug undone and the male end in your hands, you are going to put the meter leads on both silver prongs, one prong for red and one for black.
6. With a magnet on the door contact you should have continuity, and once the magnet is gone, continuity will disappear along with the beeping.
  - a. **YES continuity:** This means your door contact is good. You are losing continuity somewhere else; you will proceed with checking the water flow sensor.
  - b. **NO continuity:** Door contact is bad; you will need to reach out to Tech Support

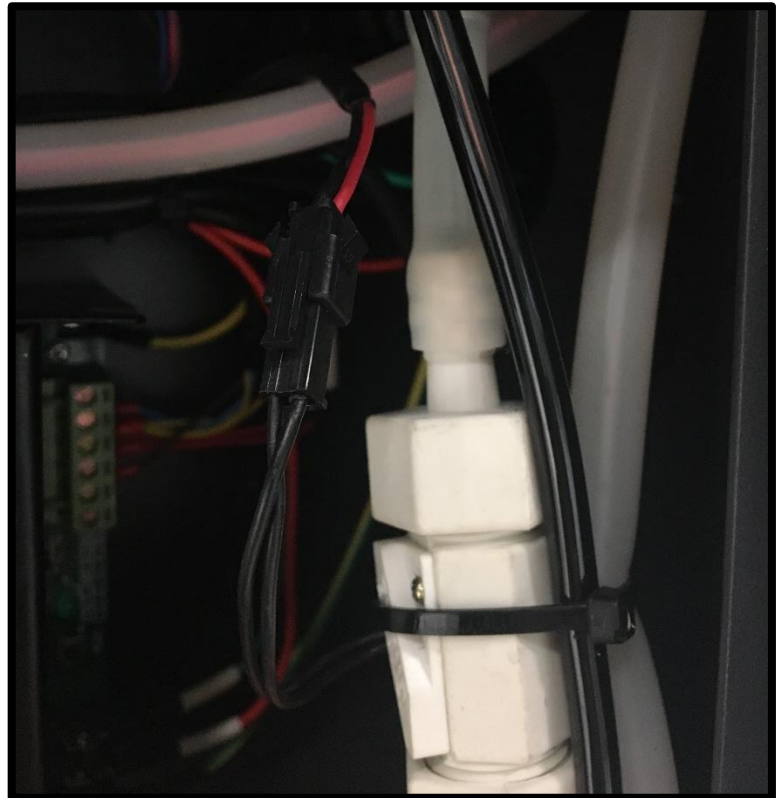


## Testing the Water Flow Sensor

Testing the waterflow sensor will be like how we tested the door contact, this time it makes continuity only when the water is flowing. To test this, you need to make sure that the door contactor is put back together and door is closed.

### Male End:

1. Machine off, water pump or chiller turned on
2. Turn your meter on continuity.
3. Open the door that houses the power supply and unplug the water flow sensor.
4. With your meter on the male end of the plug and the chiller or water pump turned on you should have continuity on the male connector, with it turned off you will lose continuity.
  - a. **YES Continuity:** This tells us that the water flow sensor is good, and that we would need to check on the water chiller signal cable.
  - b. **NO Continuity:** This tells us that the water flow sensor is bad, contact Technical Support.



## Testing the Water Chiller Signal

The last interlock switch, which is the water chiller signal cable. Its located on the back of your machine. Where your chiller plugs in. If you have a water pump you will already have this plugged in.

1. Making sure all the other interlocks we have tested are plugged back in.
2. Locate your chiller bypass.
3. Plug the chiller bypass into the chiller signal port on the back of the machine
4. Have machine off and the water/chiller on
5. Put the multimeter on the inside of the chiller signal port where the wires attach, red on one black on the other, do you have continuity?
  - a. **Yes**, bypass plug is good, laser should be able to fire, continue testing
  - b. **No**, the issue is coming from either the bypass plug or the port itself, contact Technical Support.



Lastly, if all the interlocks have continuity on it and check out, you will be able to check the six-pin connector on the power supply, this is a matter of putting the leads on pin 3 and pin 4. Once you have the meter on pin 3 and 4 you will have continuity and a beep indicating that you are ready to fire your laser. If you still do not have continuity at this point, then please contact Technical Support.



**Technical Support can be reached by calling 407-878-0880  
or emailing at [techsupport@bosslaser.com](mailto:techsupport@bosslaser.com)**