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# Zeroing Filaments

Updated October 27th, 2017

# Zeroing the CCD and TCD Filaments

To zero the CCD and TCD filaments:

1. Turn the Zero Air knob clockwise so that it is pointed to Zero Air. Note: It is best to do this during times when the mud pumps are off, such as during a connection, so that lagging has stopped.

**Pointed to Zero Air**


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2. Adjust the Main flowmeter to 5scfh and the TG flowmeter to 0.5scfh if they are not already set to those values.

**TG Flowmeter Set to 0.5scfh**


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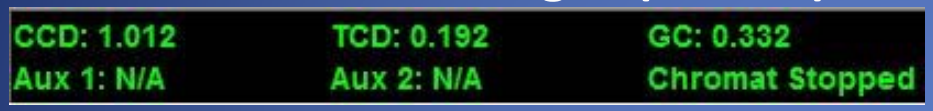
3. Wait for the CCD and TCD voltages to drop and level out.

**CCD and TCD Voltages (before)**




**CCD and TCD Voltages (dropped)**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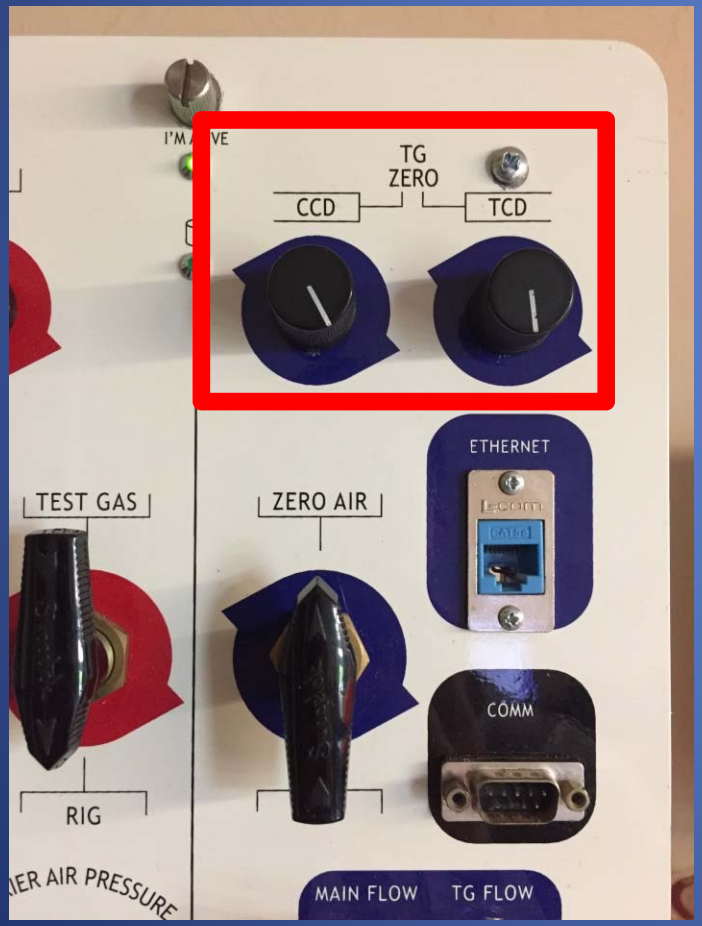
4. Turn the CCD and TCD potentiometer knobs on the front panel of the MLogger counterclockwise to decrease the voltage or clockwise to increase the voltage to 0.05v. Note: The voltage will not rest directly on 0.05v, so just get it as close as possible.

## CCD and TCD Knobs




## CCD and TCD Voltage (dropped)

| | | |
|---|---|---|
| CCD: 0.081 | TCD: 0.013 | GC: 0.323 |
| Aux 1: N/A | Aux 2: N/A | Chromat Stopped |

In this example, the CCD voltage is a little bit higher than the target 0.05v, so the CCD knob needs to be turned counterclockwise, slightly, to attain the desired voltage. The TCD voltage is a little bit low, so it's knob needs to be turned clockwise, just slightly, to reach 0.05v.

## CCD and TCD Voltage (zeroed)

| | | |
|---|---|---|
| CCD: 0.055 | TCD: 0.049 | GC: 0.050 |
| Aux 1: N/A | Aux 2: N/A | Chromat Stopped |

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5. Turn the Zero Air knob counterclockwise so that it is pointing back to Rig.
6. The CCD and TCD filaments are now zeroed.

**Pointed back to Rig**


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# Zeroing the GC Filament

Unlike the CCD and TCD filaments, the MLogger does not have to be turned to Zero Air to zero the GC filament. So, while zeroing the GC filament, the MLogger can continue reading Total Gas. The MLogger just **cannot** be in the middle of a chromat run while trying to zero the GC filament because it will affect the readings.

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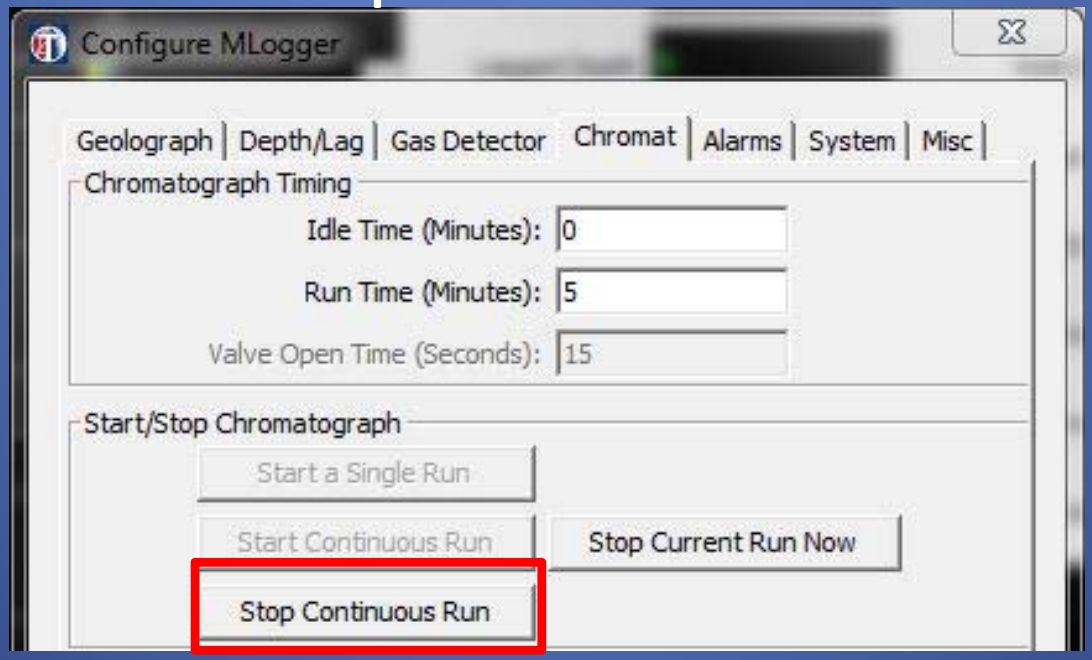
To zero the GC filament:

1. Stop Continuous Runs.
   a. Go to the Setup menu in TControl.
   b. Select the Chromat tab.
   c. Click the Stop Continuous Run button. This will prevent another chromat run from starting after the current run finishes it's cycle. If this button is already grayed out, move to step 3 because the chromats are already stopped.

**Stop Continuous Run**

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2. Let the current run finish. The run time in the Status Bar will display “Chromat Stopped” when the run is complete.

**Chromat Stopped**


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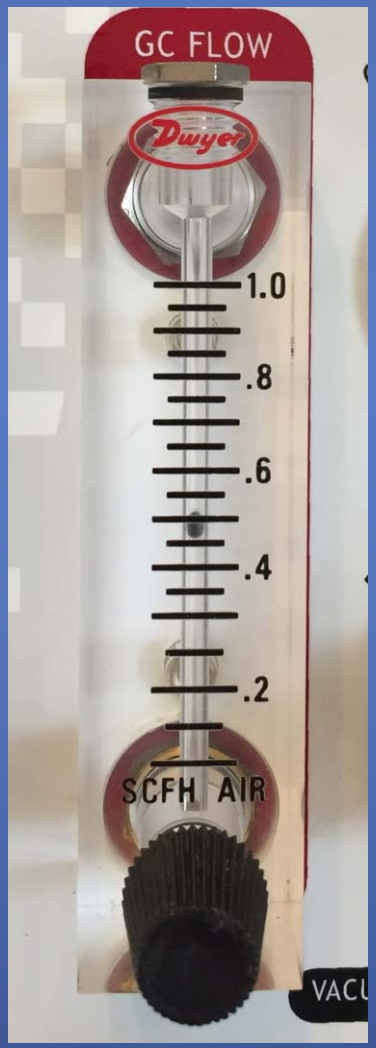
3. Adjust the GC flowmeter to 0.5scfh if it is not already set to that value.

## GC Flowmeter Set to 0.5scfh

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4. Once the run is stopped, turn the GC potentiometer knob on the front panel of the MLogger counterclockwise to decrease the voltage or clockwise to increase the voltage to 0.05v. Note: The voltage will not rest directly on 0.05v, so just get it as close as possible.

## GC Knob


## Chromat Stopped

| | | |
|---|---|---|
| CCD: 0.059 | TCD: 0.049 | GC: 0.097 |
| Aux 1: N/A | Aux 2: N/A | Chromat Stopped |

In this example, the GC voltage settled a little higher than the target 0.05v, so the GC knob needs to be turned counterclockwise a little bit to decrease the voltage to 0.05v.

## Chromat Stopped (GC voltage zeroed)

| | | |
|---|---|---|
| CCD: 0.048 | TCD: 0.054 | GC: 0.056 |
| Aux 1: N/A | Aux 2: N/A | Chromat Stopped |

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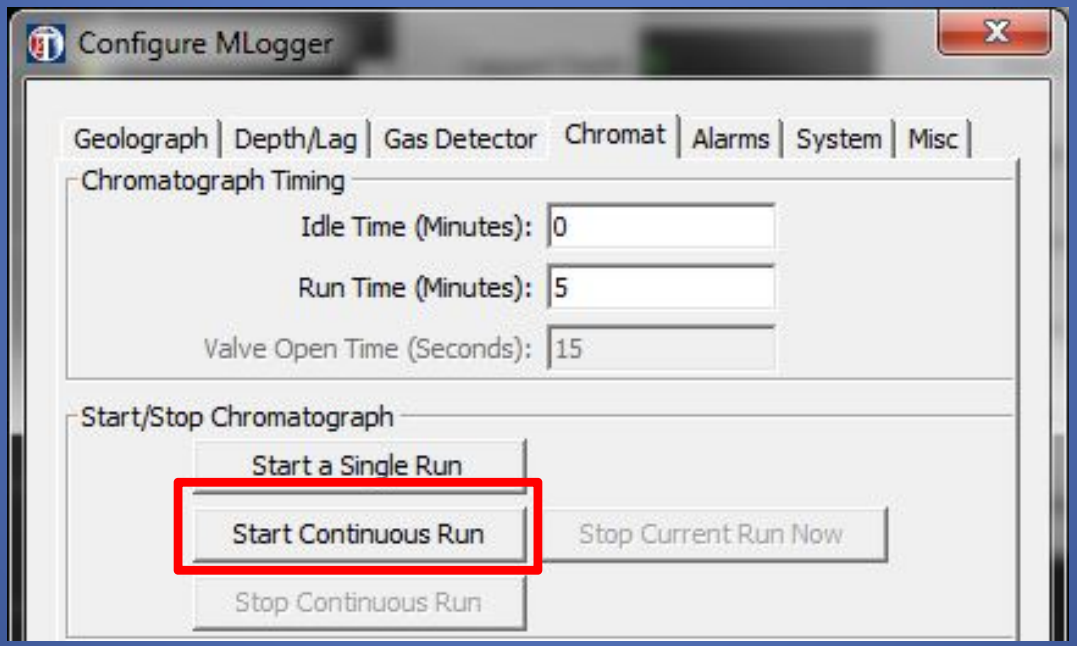
5. Start Continuous Runs.
   a. Go to the Setup menu in TControl.
   b. Select the Chromat tab.
   c. Click the Start Continuous Run button.
6. The GC filament is now zeroed.

## Start Continuous Run

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# Summary

## CCD and TCD

1. Turn the Zero Air knob from Rig to Zero Air.
2. Adjust the TG flowmeter to 0.5scfh.
3. Wait for the voltage to drop and settle.
4. Adjust the voltage for the CCD and the TCD to 0.05v.
5. Turn the Zero Air knob back to Rig.

## GC

1. Stop Continuous Runs.
2. Let the current run finish.
3. Adjust the GC flowmeter to 0.5scfh.
4. Adjust the voltage for the GC to 0.05v.
5. Start Continuous Runs.

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# Troubleshooting

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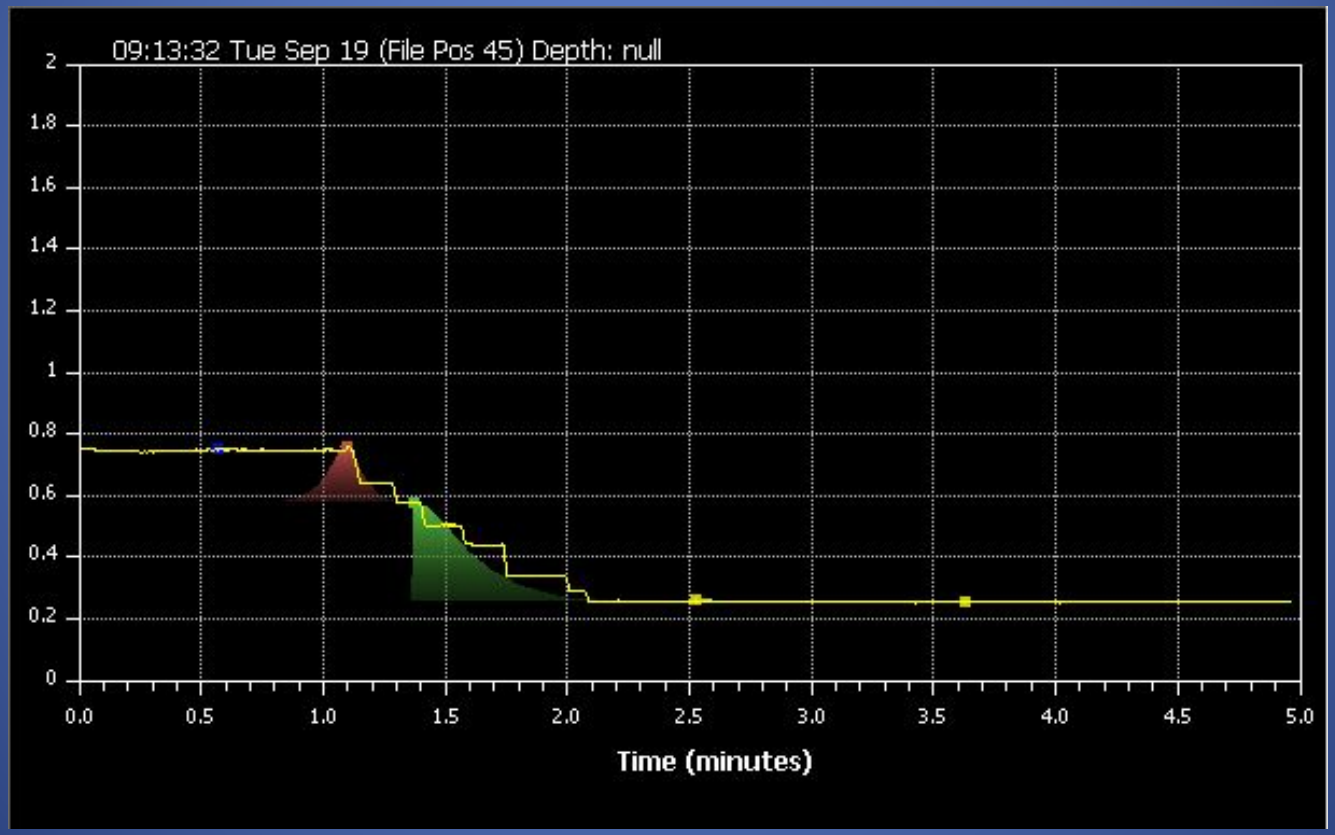
# Stair-stepped Baseline

When the GC filament is zeroed during a chromat run, it is easy to spot because the yellow spark-line that draws the peaks in the chromatogram will have a very recognizable stair-stepped character.  Just make sure that there is not a chromat running while trying to zero the GC and this won't happen.

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# Voltage Not Stable After Zeroing

When zeroing a filament to 0.05v, there will be some small fluctuation up and down and the voltage will not hold steady on a single value. This is normal behavior. When trying to reach 0.05v, the fluctuation will probably range between 0.04v to 0.06v. However, if the fluctuation range is larger than that, (e.g., 0.03v to 0.07v), then the filament might be bad or the plug on the filament might need to be reseated or the plug on the I/O board might need to be reseated.

## Quick Check for a Bad Filament (CCD and TCD)

1. Turn the box to Zero Air.
2. Turn the corresponding CCD or TCD potentiometer knob all the way counterclockwise (to the left) until it stops.
3. Turn the corresponding CCD or TCD potentiometer knob clockwise (to the right) until the desired 0.05v is reached. The rule of thumb here is that it should take between 4 and 6 full revolutions to get to 0.05v. If it takes much less than 4 turns (e.g., 3.5 turns) or much more than 6 turns (e.g., 6.5 turns), then the filament is probably bad and should be changed. Before changing the filament, see the Reseating Molex Connector troubleshooting tip. For help with changing the filament, read the *Changing Filaments* guide.

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# Voltage Not Stable After Zeroing (cont'd)

## Quick Check for a Bad Filament (GC)

1. Stop Continuous Runs.
2. Let the current run finish.
3. Turn the GC potentiometer knob all the way counterclockwise (to the left) until it stops.
4. Turn the GC potentiometer knob clockwise (to the right) until the desired 0.05v is reached. The rule of thumb here is that it should take between 4 and 6 full revolutions to get to 0.05v. If it takes much less than 4 turns (e.g., 3.5 turns) or much more than 6 turns (e.g., 6.5 turns), then the filament is probably bad and should be changed. Before changing the filament, see the Reseating Molex Connector troubleshooting tip. For help with changing the filament, read the *Changing Filaments* guide.

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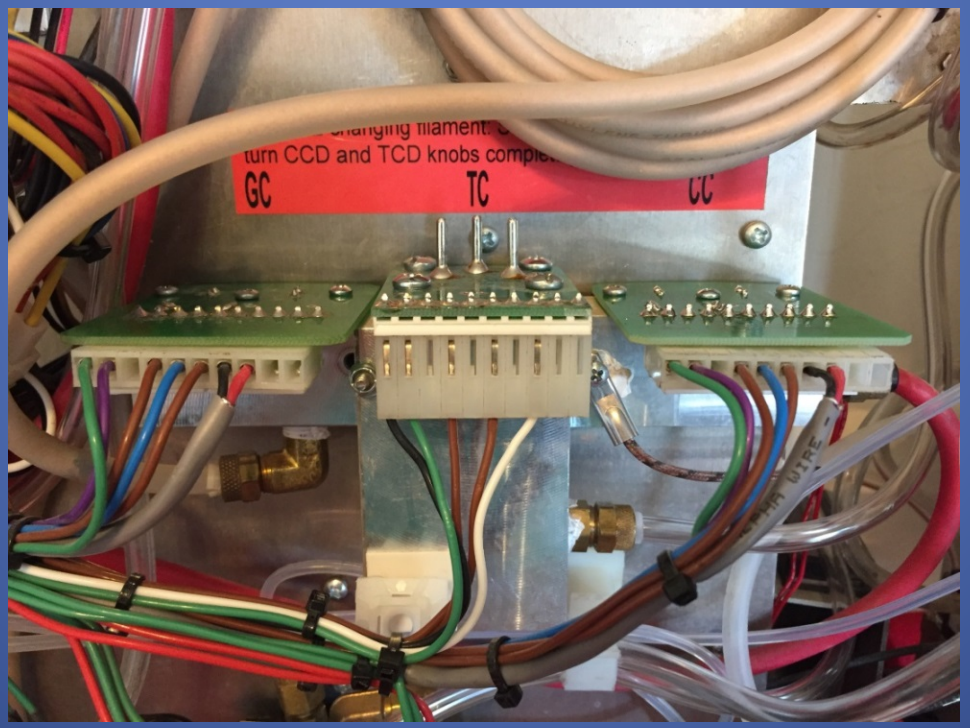
# Voltage Not Stable After Zeroing (cont'd)

## Reseating Molex Connector On Filament

1. Loosen the two thumb screws on the front panel of the MLogger and slide the carriage out. If the carriage only slides out about half way, read the *MLogger Wont Open All The Way* troubleshooting guide.
2. Look at the left side and the 3 filaments can be seen with the identifying label above them.

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# Voltage Not Stable After Zeroing (cont'd)

## Reseating Molex Connector On Filament (cont'd)

3. Disconnect the plug from the filament in question by simply pulling the plug straight back (CC and GC) or straight down (TC). The filament does not need to be unscrewed from the aluminum gas block to perform this step.
4. Connect the plug back to the filament, making sure that the plug is matched up with all of the pins and is not offset.
5. Disconnect and reconnect 2 or 3 times.
6. Check the voltage for the filament in question and see if it is more stable. If so, close the MLogger by sliding the carriage back in and tightening the thumb screws on the front panel and then zero the filament to 0.5v if it needs it. If the carriage will not slide back in, read the *MLogger Will Not Close* troubleshooting guide. If the voltage is still not stable, see the troubleshooting tip for Reseating Molex Connector On I/O Board.

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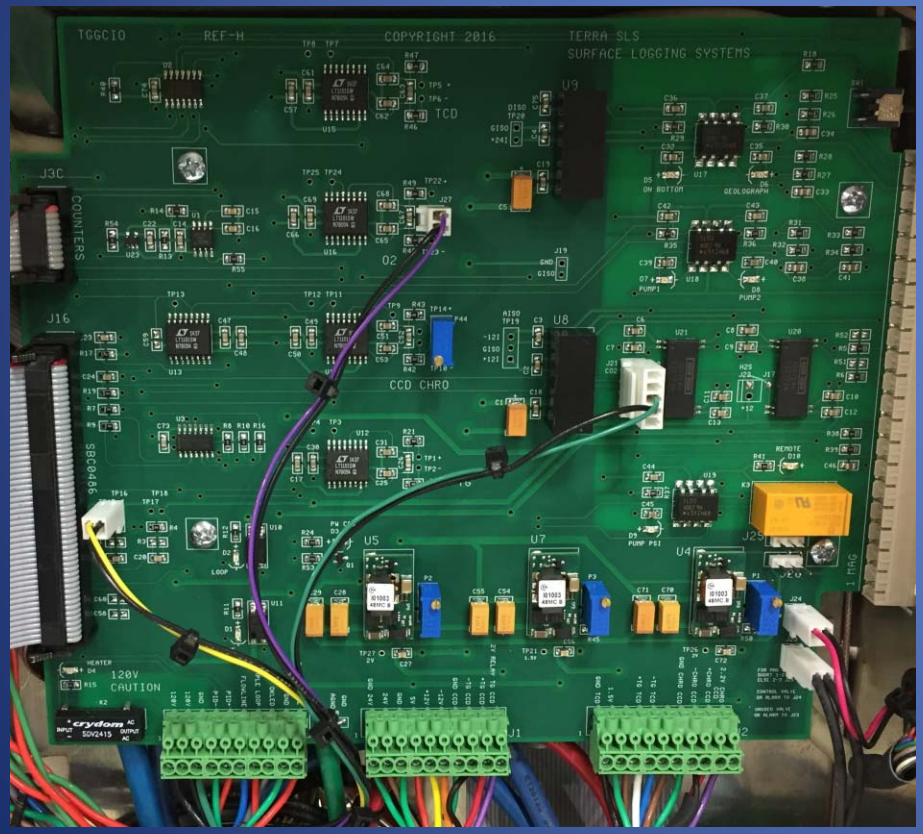
# Voltage Not Stable After Zeroing (cont'd)

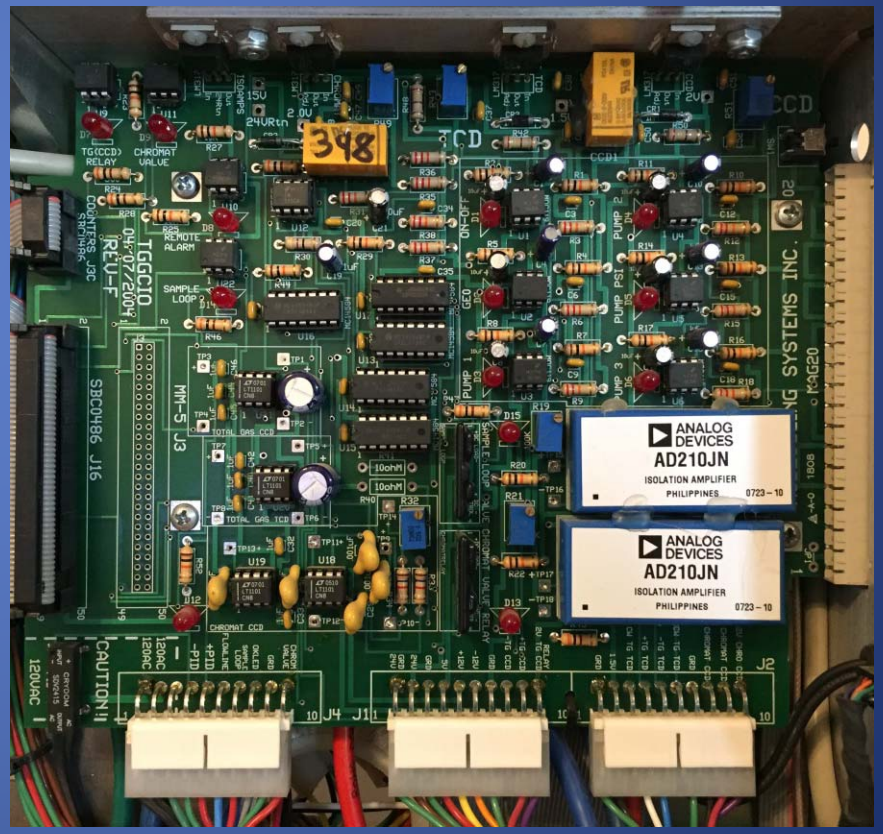
## Reseating Molex Connector On I/O Board (TCD and GC)

1. This applies only to non-Rev H I/O boards. The non-Rev H boards will not have green plugs at the bottom of the board.

**Rev H**




**Non Rev H**

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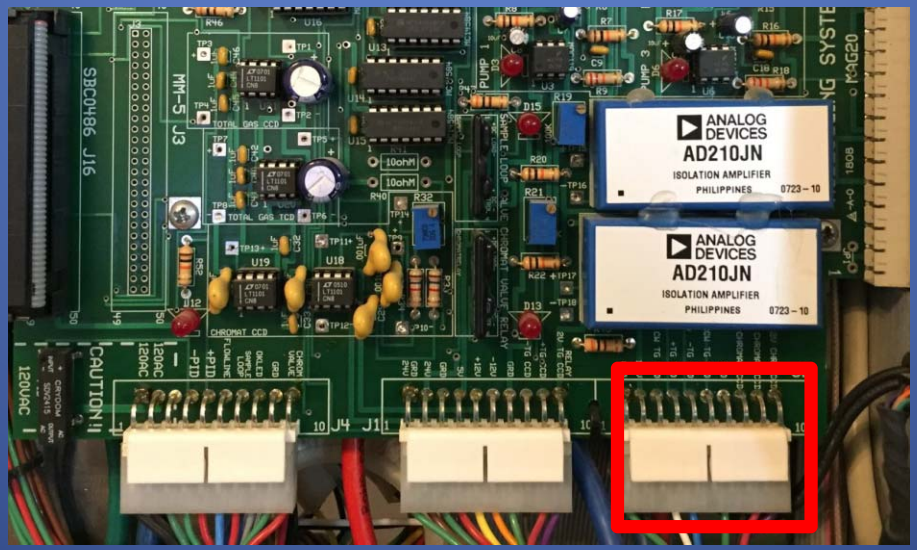
# Voltage Not Stable After Zeroing (cont'd)

## Reseating Molex Connector On I/O Board (TCD and GC) (cont'd)

2. Loosen the two thumb screws on the front panel of the MLogger and slide the carriage out. If the carriage only slides out about half way, read the *MLogger Wont Open All The Way* troubleshooting guide.
3. Look at the right side of the box, the side with all the circuit boards.
4. On the bottom of the I/O board are 3 Molex connectors (Molex is just a brand).
5. The Molex connector on the far right sends the power to the TC and GC filaments. Disconnect the plug by pulling straight down on it. Sometimes, it is easier to grab all of the wires from the plug all at once and pulling that way.

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# Voltage Not Stable After Zeroing (cont'd)

## Reseating Molex Connector On I/O Board (TCD and GC) (cont'd)

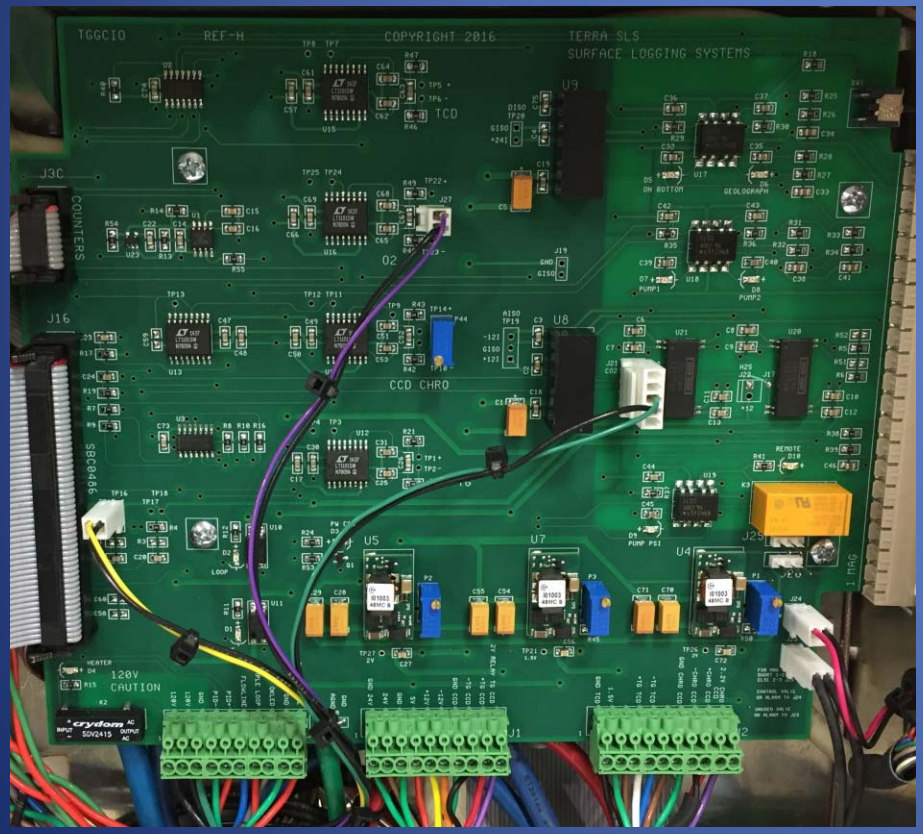
6. Connect the plug back to the board.
7. Disconnect and reconnect the plug 2 or 3 times.
8. Check the voltage for the filament in question and see if it is more stable. If so, close the MLogger by sliding the carriage back in and tightening the thumb screws on the front panel and then zero the filament to 0.5v if it needs it. If the carriage will not slide back in, read the *MLogger Will Not Close* troubleshooting guide. If the voltage is still not stable after reseating the Molex connector on the I/O board and on the filament, then try changing the filament. For help with changing the filament, read the *Changing Filaments* guide.

# Voltage Not Stable After Zeroing (cont'd)

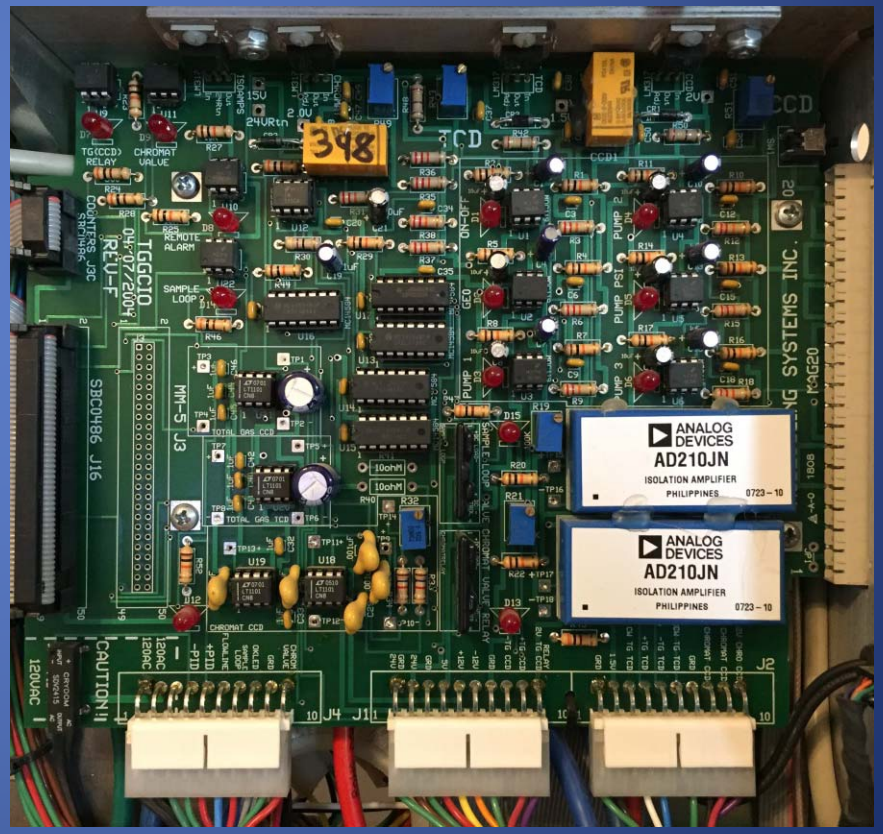
## Reseating Molex Connector On I/O Board (CCD)

1. This applies only to non-Rev H I/O boards. The non-Rev H boards will not have green plugs at the bottom of the board.

**Rev H**




**Non Rev H**

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# Voltage Not Stable After Zeroing (cont'd)

## Reseating Molex Connector On I/O Board (CCD) (cont'd)

2. Powerdown the MLogger.
    a. In TControl, select the Tools menu.
    b. Select MLogger.
    c. Select Shutdown MLogger.
    d. Wait for both green LED lights on the front panel to quit blinking.
    e. Once the lights quit blinking, turn the power switch on the rear panel to the Off position.

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# Voltage Not Stable After Zeroing (cont'd)

## Reseating Molex Connector On I/O Board (CCD) (cont'd)

3. Loosen the two thumb screws on the front panel of the MLogger and slide the carriage out. If the carriage only slides out about half way, read the *MLogger Wont Open All The Way* troubleshooting guide.
4. Look at the right side of the box, the side with all the circuit boards.
5. On the bottom of the I/O board are 3 Molex connectors (Molex is just a brand).
6. The Molex connector in the middle sends the power to the CC filament. Disconnect the plug by pulling straight down on it. Removing this plug while the MLogger is turned on will Nuke the box.


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# Voltage Not Stable After Zeroing (cont'd)

## Reseating Molex Connector On I/O Board (CCD) (cont'd)

6. Connect the plug back to the board.
7. Disconnect and reconnect the plug 2 or 3 times.
8. Close the MLogger by sliding the carriage back in and tightening the thumb screws on the front panel. If the carriage will not slide back in, read the *MLogger Will Not Close* troubleshooting guide.
9. Flip the power switch on the rear panel to the On position to turn on the MLogger.
10. Wait for the I'm Alive light on the front panel to start blinking. This should take about 6 minutes or less.
11. Connect to the MLogger with TControl.
12. Try zeroing the CCD voltage to 0.05v again. If the voltage is still not stable after reseating the Molex connector on the I/O board and on the filament, then try changing the filament. For help with changing the filament, read the *Changing Filaments* guide.