

**Fusion3**

# **EDGE 3D Printer**

**REPAIR:**

**ELECTRONICS BAY SLED SWAP**

**Revision 5/28/2022**

# REPLACING THE ELECTRONICS BAY SLED ON EDGE

The steps to replacing your EDGE's electronics bay sled.

## INTRODUCTION

While EDGE has been designed to be highly reliable, sometimes problems with the electronics do occur. We've designed EDGE to make it easy to service when this happens.

In the case of the electronics bay, that means the entire contents of your EDGE's "brain" can be swapped out, and replaced with a new set. We call this an "electronics bay sled swap".

The sled swap consists of the following major steps:

1. Set up & prep
2. Removing (breaking) the connections to the existing sled
3. Removing the old sled
4. Installing the new sled
5. Making the connections to the new sled
6. Power up & function test

## 1) SET UP & PREP

1. Power EDGE off and remove the power cord from the machine.
2. If you're using it, disconnect the ethernet cable as well.
3. Position EDGE so that you have free access to the right side of the machine.
4. Remove the electronics bay service door on the right side.

## 2) BREAKING THE CONNECTIONS ON THE OLD SLED

In order to remove the sled from EDGE, you must separate several connections between the sled and components mounted in EDGE.

Some of these connections are "in-line" connections that are not attached to any board.

Others are on the main control board. All connections you need to break on the main board are color-coded to make identifying where they go easy.

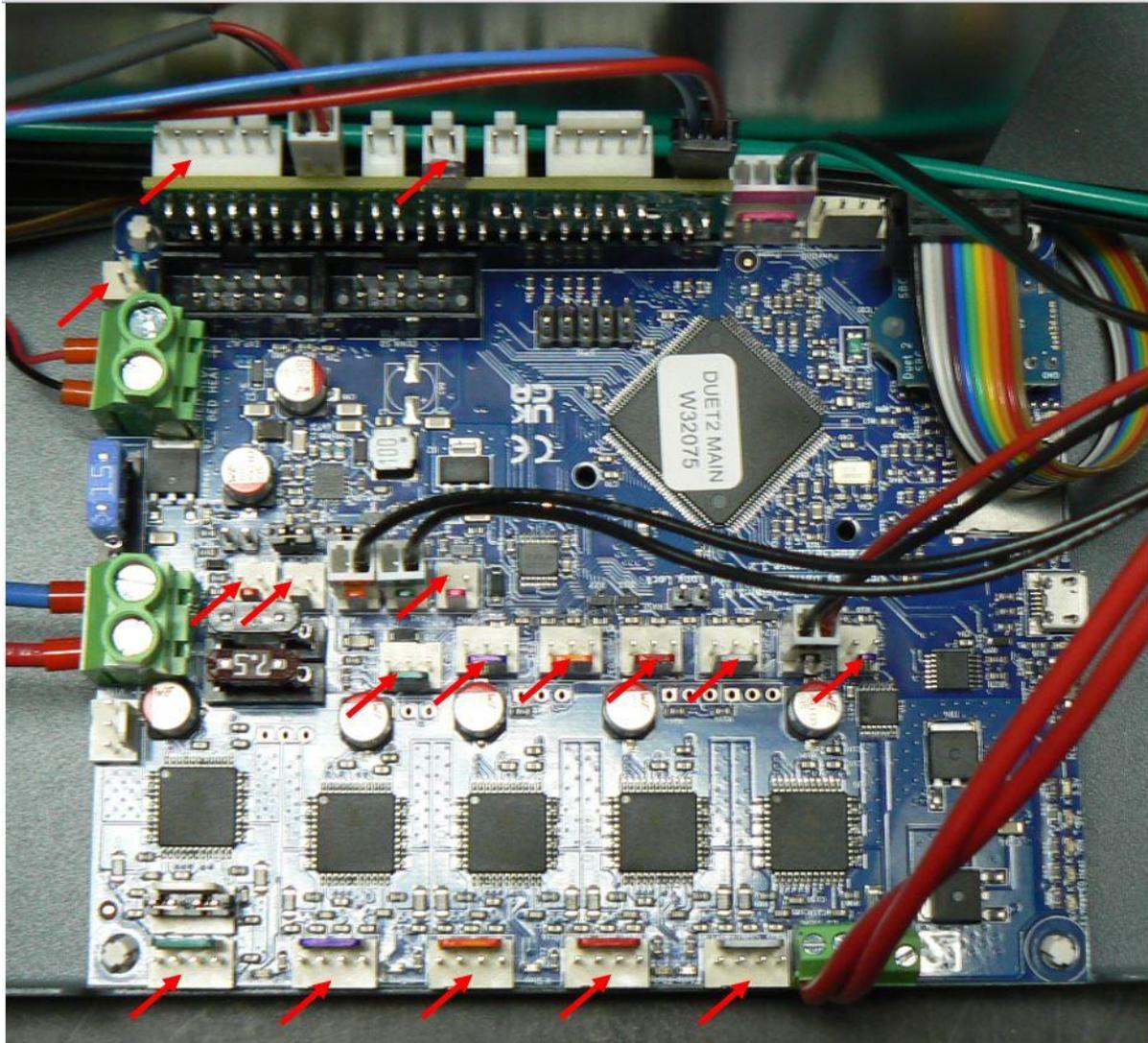
Break the connections in the approximate order they're listed below, to make things easier.

## Board Connections

The connectors to the board do not have release latches, they are just friction-fits. That said, if one is tight, gently wiggle it side-to-side to get it to release. Don't put excessive force on the connectors to get them to release.

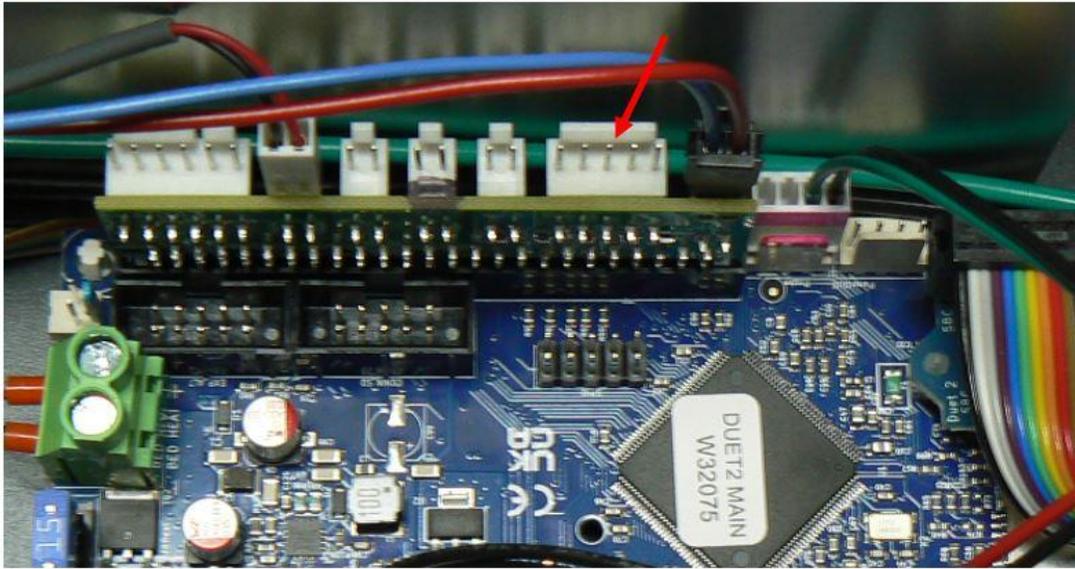
You should not need to cut any zip ties in the electronics bay to remove any of these connectors.

There are 17 connections on the main board you will need to separate. The picture below shows their position on the board. **DO NOT** disconnect the connectors that are not highlighted by an arrow.



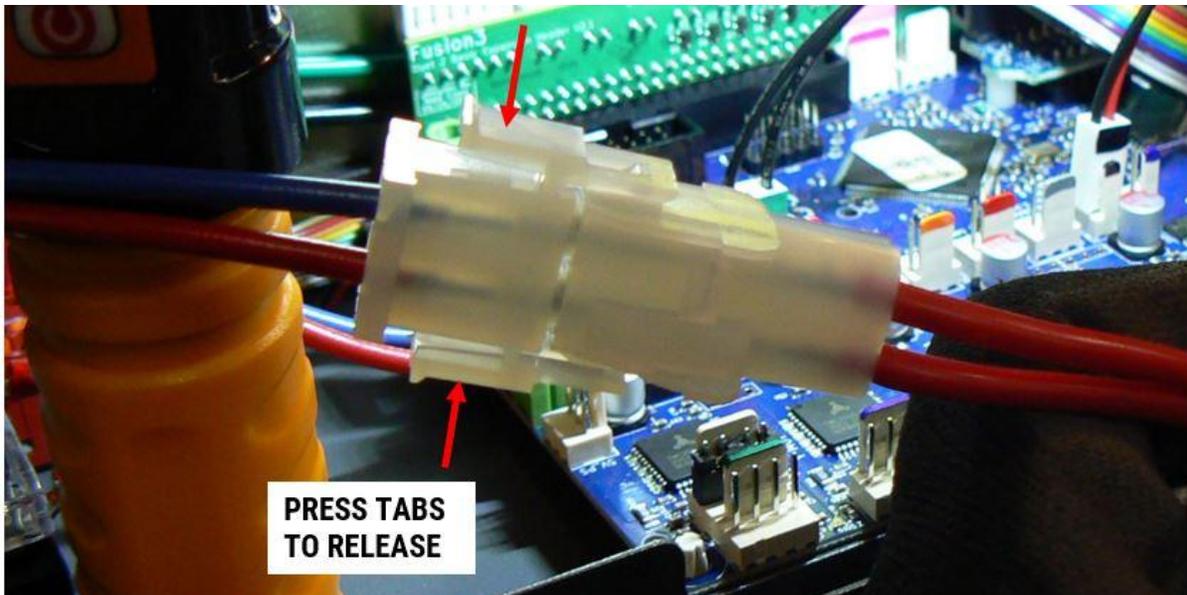
## Stack Light (if equipped)

This plugs into the expansion board in the location shown.



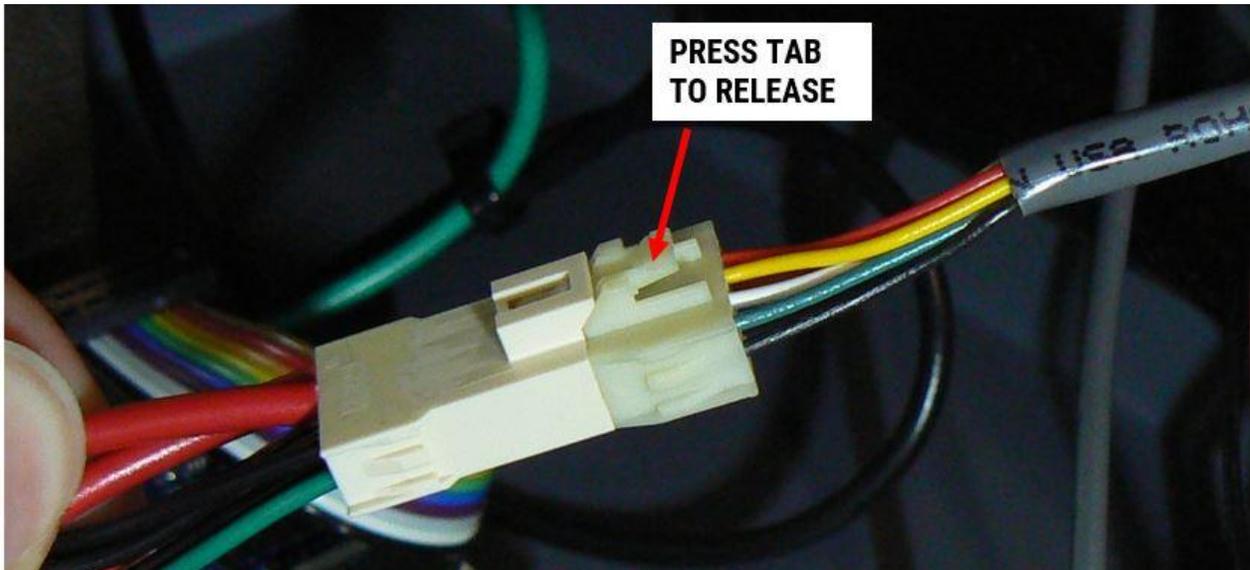
## In-line Connections

### Bed Heater



Press the release tab on either side of the connector to separate it.

## Print Head Harness



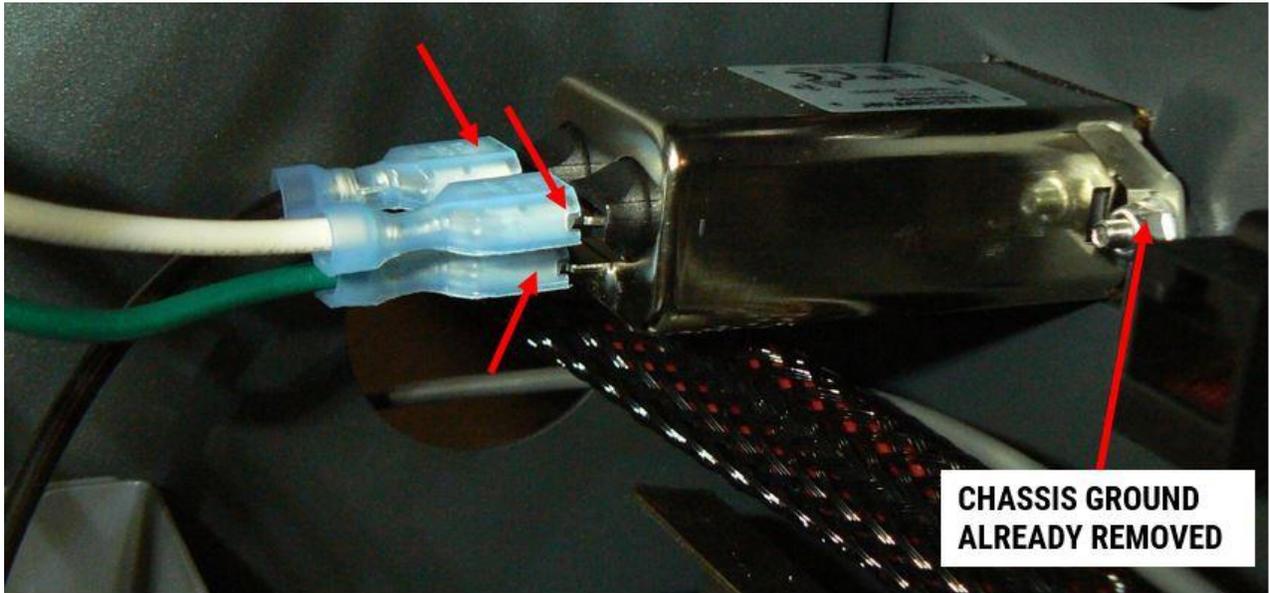
Press the release tab on the top face of the connector to separate it.

## 24V Components

There is 1 in line 24V connector. It has a single release tab you'll need to push to release the connector. The connector is near the 24V terminal block

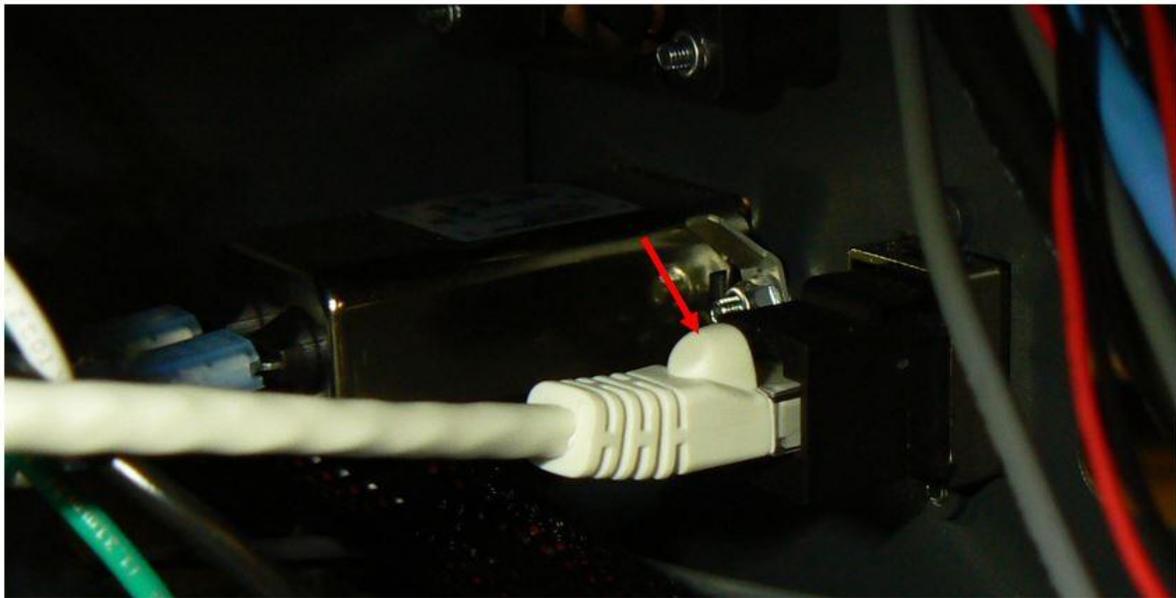


## Mains AC Input



Pull the 4 wires loose from the AC input socket. There are 2 green ground wires: one goes to the input and one is a chassis ground.

## Internal Ethernet Cable



Press the release tab on the top/bottom of this connector to remove it from its housing.

## Filament Bay Drier (if equipped)

pic

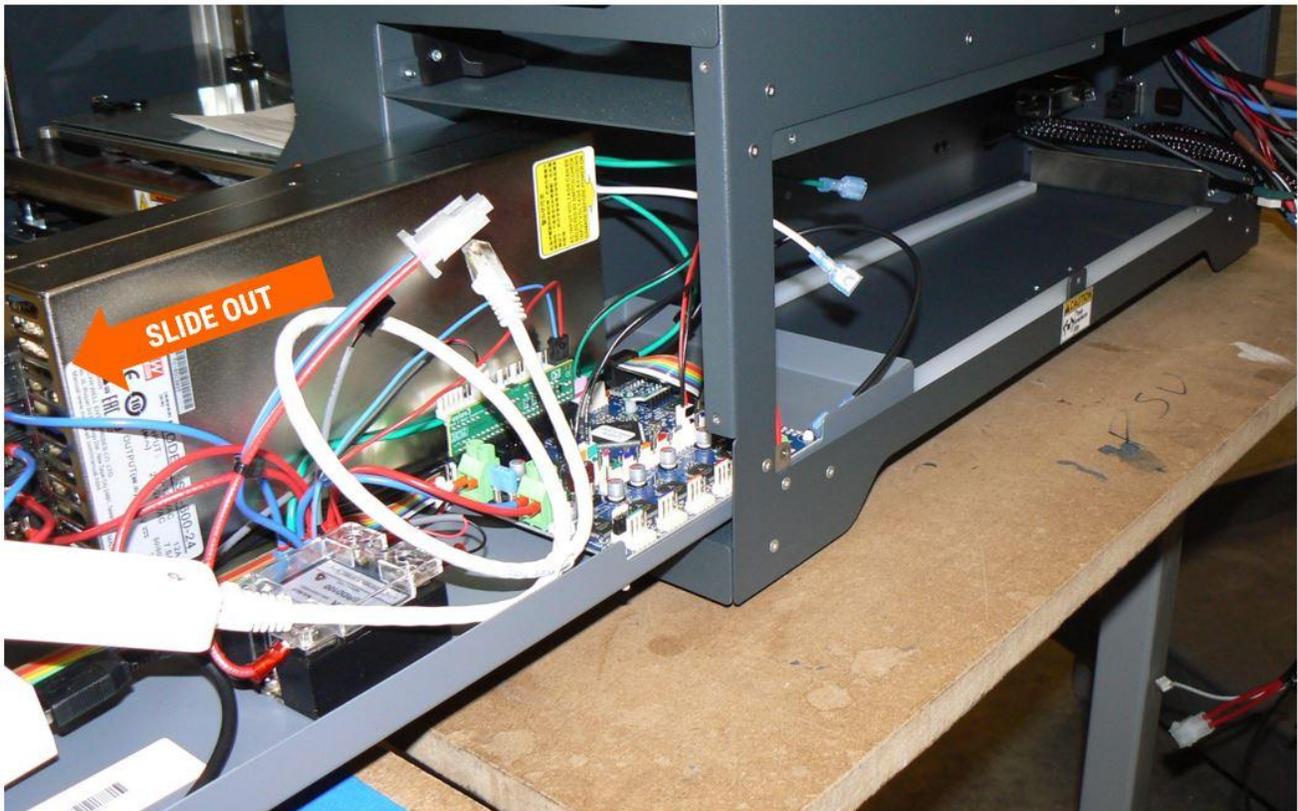
This connector is a simple friction fit. Just pull until it comes apart. Look for the yellow wires

## 3) REMOVING THE OLD SLED

1. Remove the 3 screws on the front face of the sled



2. SLOWLY and GENTLY slide the sled straight out of the printer. Pause frequently to check for wires that are caught on something, or connectors you forgot to separate. Use the handhold built into the bottom of the LCD bezel for grip. Support the sled from the bottom.



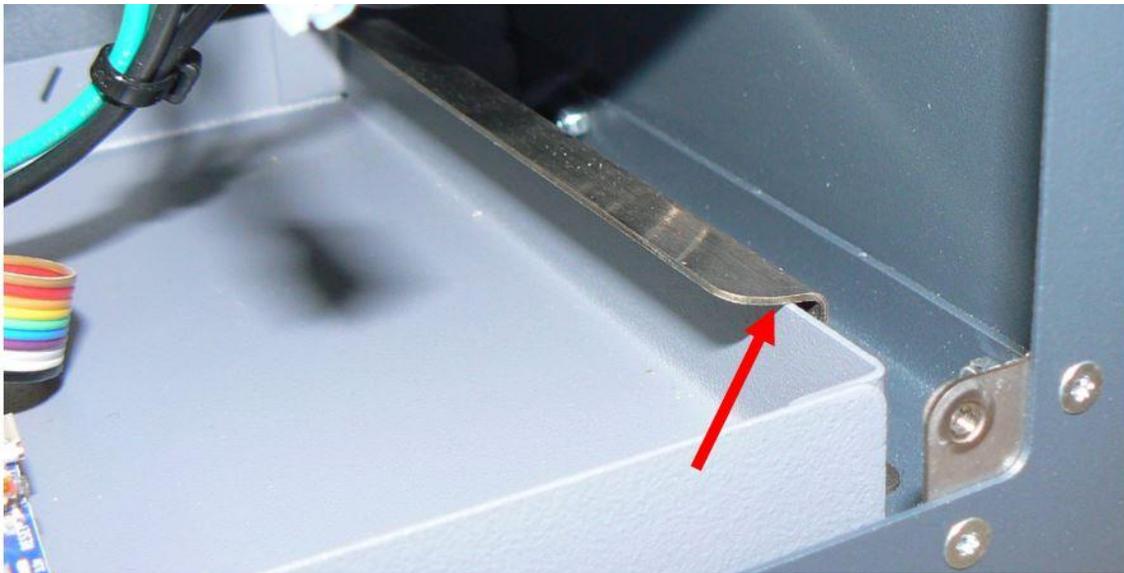
3. If you encounter resistance, STOP and figure out what's caught.
4. Continue to slide the sled straight out of the printer until it's completely free.
5. Remove the new sled from its packaging and put the old sled in its place.
6. Return your old sled to us using the included return shipping label.

**IMPORTANT: Fusion3 MUST receive your old sled back within 2 weeks of shipping the replacement or we will have to bill you for the cost of the replacement sled.**

#### 4) INSTALLING THE NEW SLED

Installing the new sled is mostly the reverse of removal. There are a couple of things to watch out for:

- As you slide the sled into the printer, make sure no wires are caught on the side, below, or on any of the components. It can help to have a second person whose job it is to just hold wires out of the way.
- The tail end of the sled must sit under the catch at the rear of the electronics bay.



The sled is installed correctly when the front face sits flush with the front of the printer, and sits cleanly in the cutout in the front of the printer.

pic

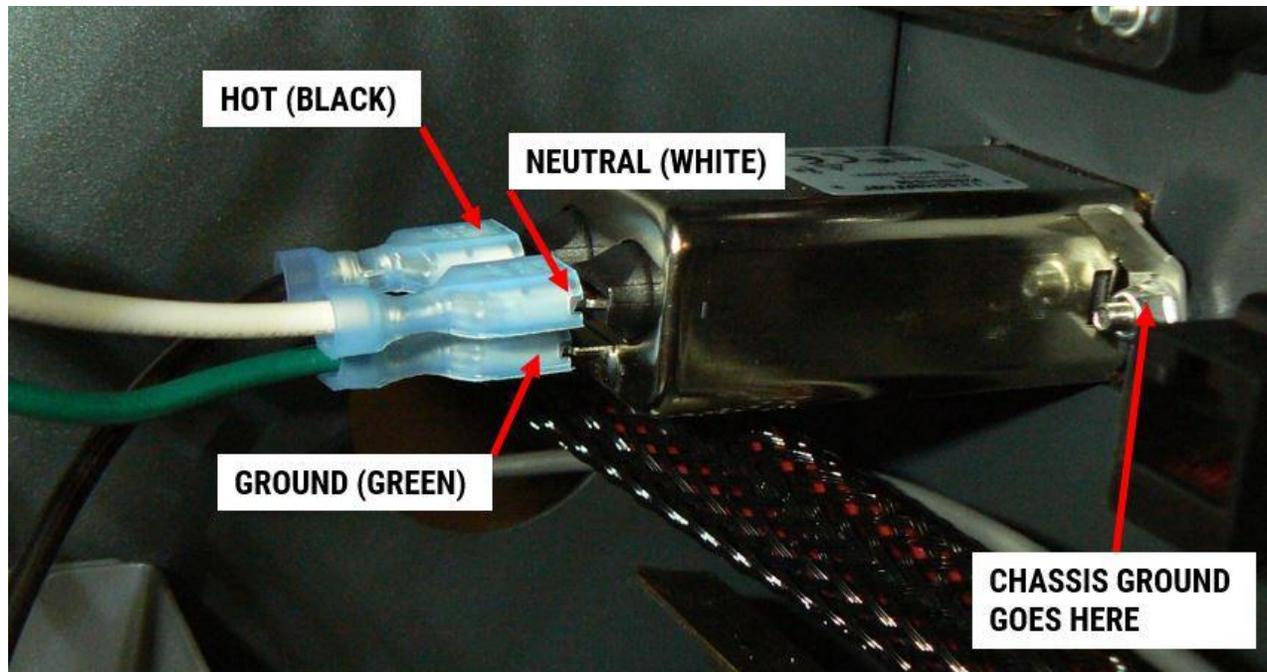
**DO NOT force the sled into place.** If it doesn't fit, the cause is almost always a wire or connector caught somewhere.

#### 5) MAKING THE CONNECTIONS TO THE NEW SLED

We recommend making the electrical connections to the sled before bolting the front face into place. This gives you a little bit of wiggle room if needed to correctly position a connector or reroute a wire.

## AC Mains Connection

- This has to be done first.
- Black (hot) goes on the upper terminal furthest away from you.
- One of the two green connectors goes on the bottom terminal.
- The white wire goes on the upper terminal closest to you.
- The extra green connector goes on the bolt-on grounding lug right next to the AC inlet.

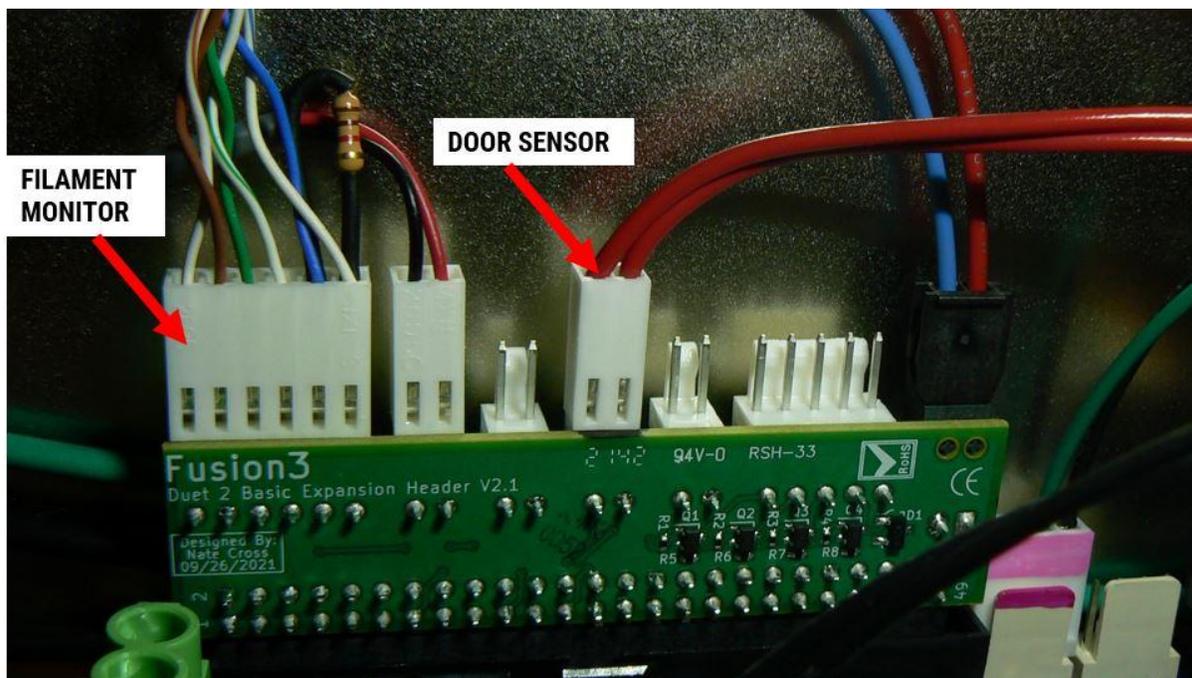


## Board Connections

Make the board connections first. Work back-to-front to give yourself the most working room possible.

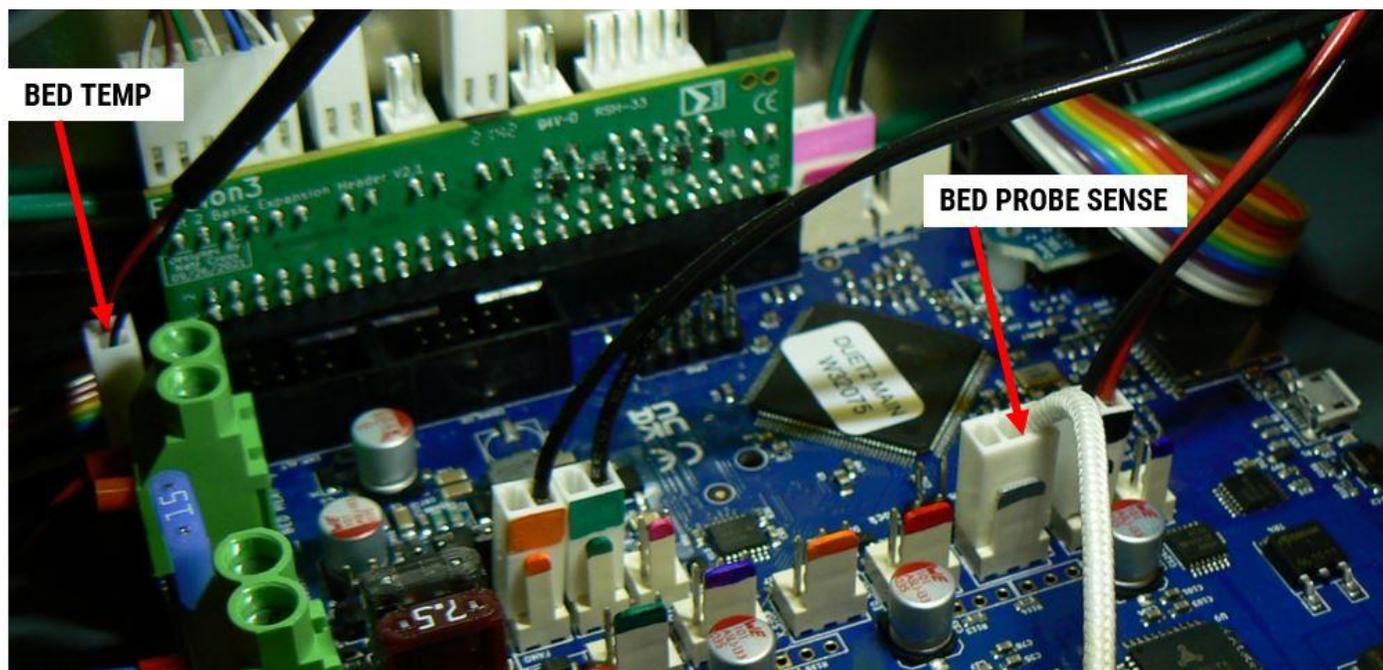
### Breakout Board

- Connect filament monitor (7 pin with blue oversleeve)
- Connect door sensor (2 pin, 2 red wires) Leave an open connector between the red/black that's already installed.



## Bed Connections

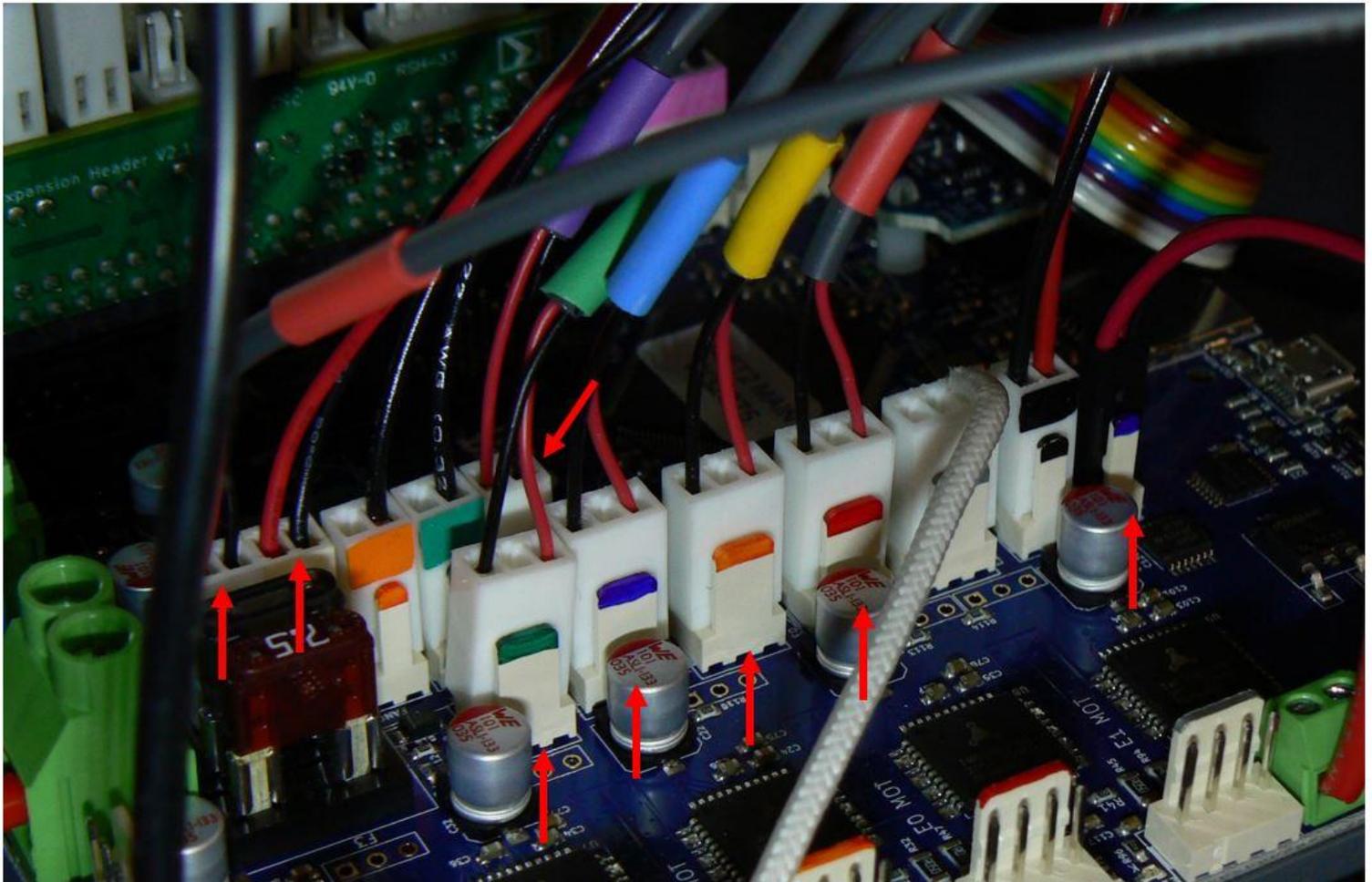
- The bed power is an inline 2 pin connector (covered later).
- The bed temperature sensor is a 2 pin red/black with black sleeving. This goes to the cyan connector behind the 2nd green connector on the board on the left side.
- The bed probe connection is a single white wire that goes into a 3 position housing. This goes to the 3 position input marked in silver.



## Fans & Endstops

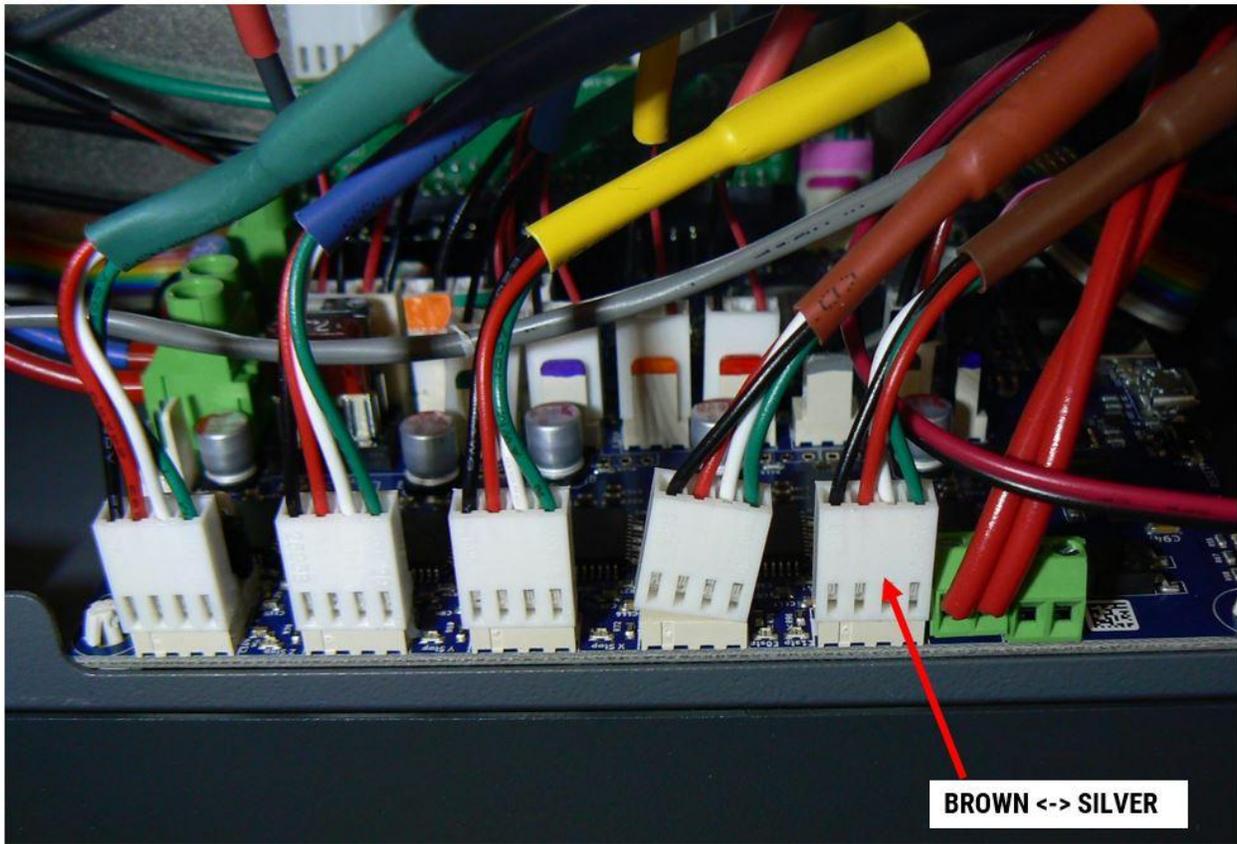
- Grey oversleeve 2 wire with red heatshrink goes to the red 2 position input (this can be hard to see behind the fuse)

- The red/black without oversleeving goes next to it (no color on the board connector).
- Grey oversleeve with purple heatshrink goes to pink on the board.
- The endstops simply match colors.
- The right-most 2 pin input gets the red/black with slim back connector (dark blue on the board).



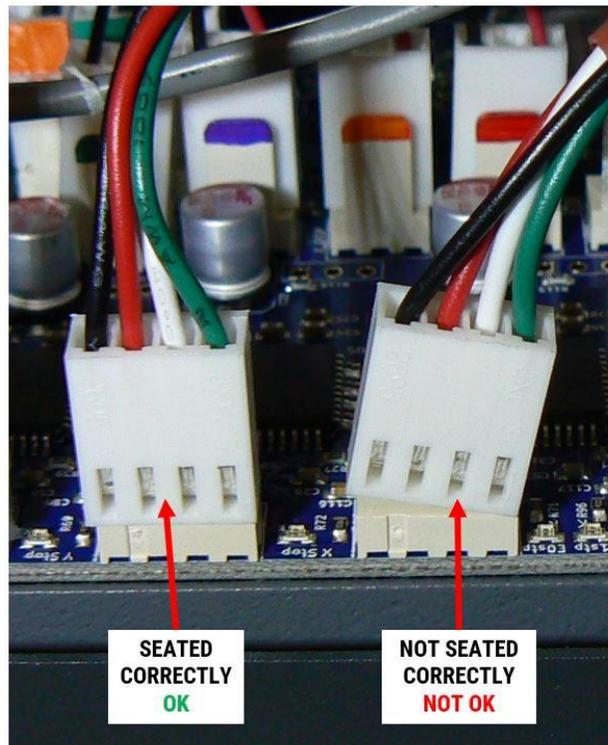
## Motor Connectors

These simply match colors. Brown heatshrink goes to silver on the board.



## Correctly Seated vs Incorrectly Seated Connectors

The left connector in the picture is incorrectly seated. Make sure none of your connectors look like this.



## In-Line Connections

Next make the in-line connectors. Your in-line connector checklist is:

- AC mains input (should already be done)
- Ethernet cable
- Bed heater power
- Print head harness
- LED lights (24V)
- Filament drier (if equipped)

Refer to the pictures in the sled disconnection section for what they look like. In all cases except the AC mains, the connectors are polarized and can only be connected the correct way.

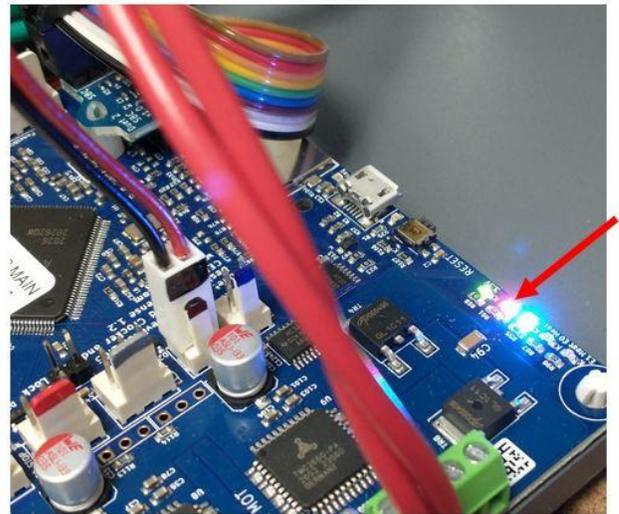
Once you have all connectors reinstalled, CAREFULLY inspect the electronics bay for any connectors that aren't connected to something.

Once you're satisfied with your wiring, reinstall the 3 front panel screws to bolt the sled into place.

**Make sure you have no tools or other stray items in the electronics bay before proceeding to power up!**

## 6) POWER UP & FUNCTION TEST

1. Leave the service panel off of the electronics bay for the initial power up.
2. Make sure the power switch is in the OFF position.
3. Connect the power cord to the machine.
4. Flip the power switch ON.
5. Immediately check for:
  - Red, green, blue LEDs on the edge of the main control board
  - Solid red and intermittent green LEDs on the forward PCB



- The electronics bay fan should be spinning
  - The print chamber fan should be spinning
6. If any of these are not present, **IMMEDIATELY STOP, POWER DOWN THE MACHINE**, and contact Customer Support.
  7. Make sure the LCD powers up and displays the normal interface. The first time it powers on it may take a little longer than normal.
  8. On the LCD, go to *Utilities > Maintenance >* and press the "Self Diagnostic" button. This will re-run the wizard that ran the first time you powered on your printer. This wizard will make sure we've correctly reconnected everything and the machine is working normally.
  9. If you encounter any errors during this wizard, contact Customer Support as directed. The error code will quickly tell us where the problem lies.
  10. Once the wizard completes successfully, reinstall the electronics bay service door.