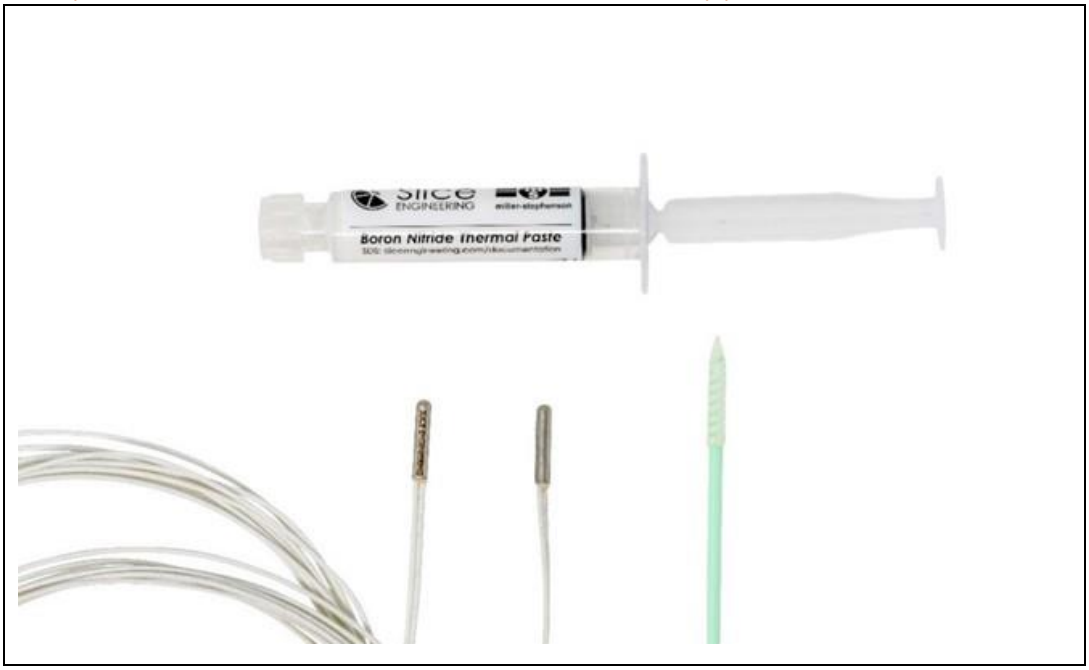
Slice Engineering

Mosquito® Magnum+ 1.75 Air-Cooled Assembly Document

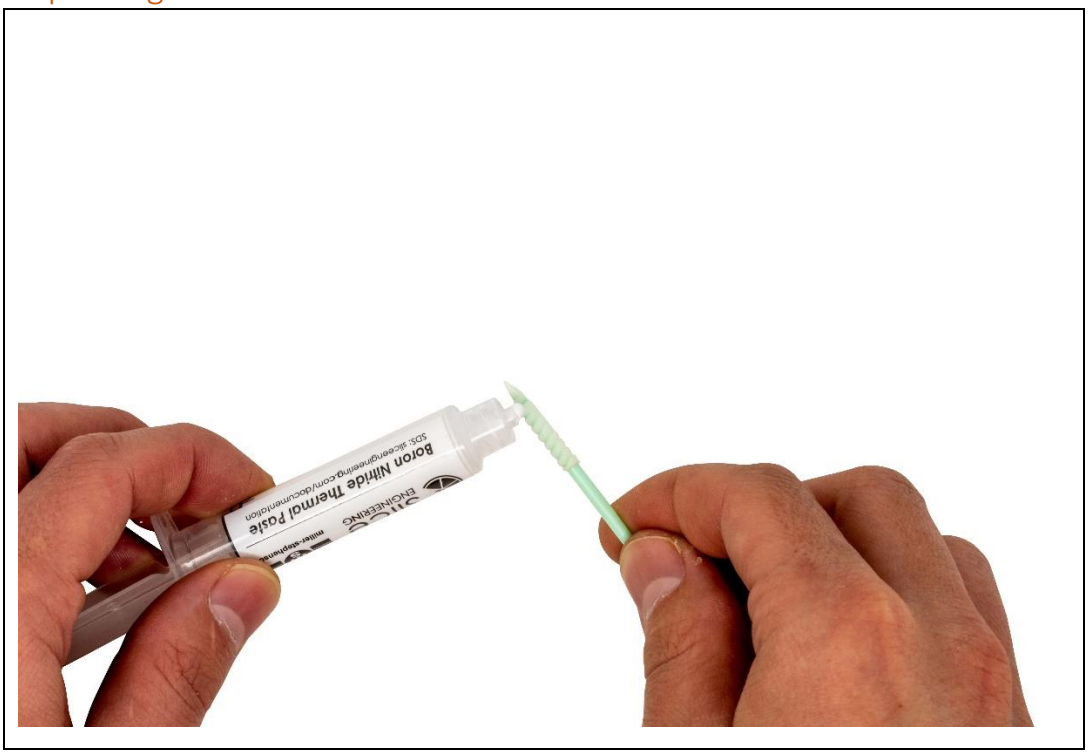
Step 1: Temperature Sensor Installation

Components Needed for Boron Nitride Paste Application



- Please prepare the following items for the next steps:
- Boron Nitride Paste Syringe
- Applicator Swab
- Temperature Sensor(s)
- **Note: One or two Temperature Sensor(s) can be used for the following steps.**

Dispensing Boron Nitride Paste



- Apply a pea-sized amount of Boron Nitride Paste to the soft tip of the Applicator Swab by pushing the syringe's plunger.
- You may need to repeat this step if more Boron Nitride Paste is required.

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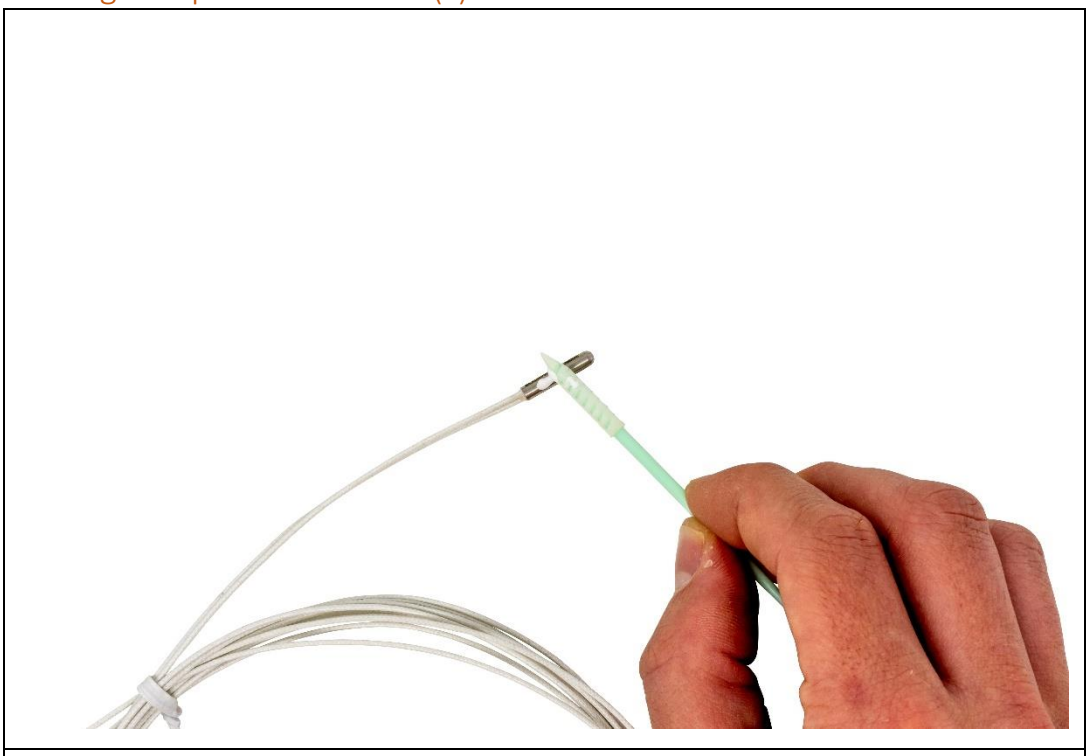
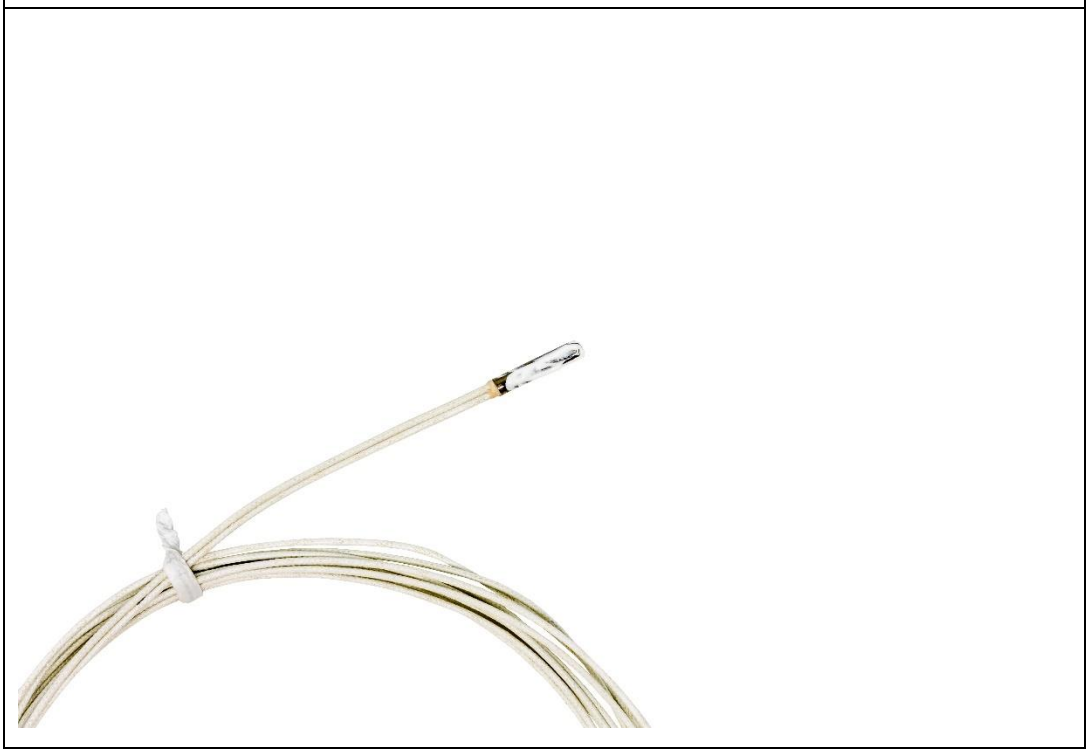
Coating Temperature Sensor(s)





- Thoroughly coat the Temperature Sensor cartridge so there is as much Boron Nitride Paste coverage as possible.
- The entire surface area of the Temperature Sensor cartridge should be coated with Boron Nitride Paste.
- Repeat this step if you are using more than one Temperature Sensor.

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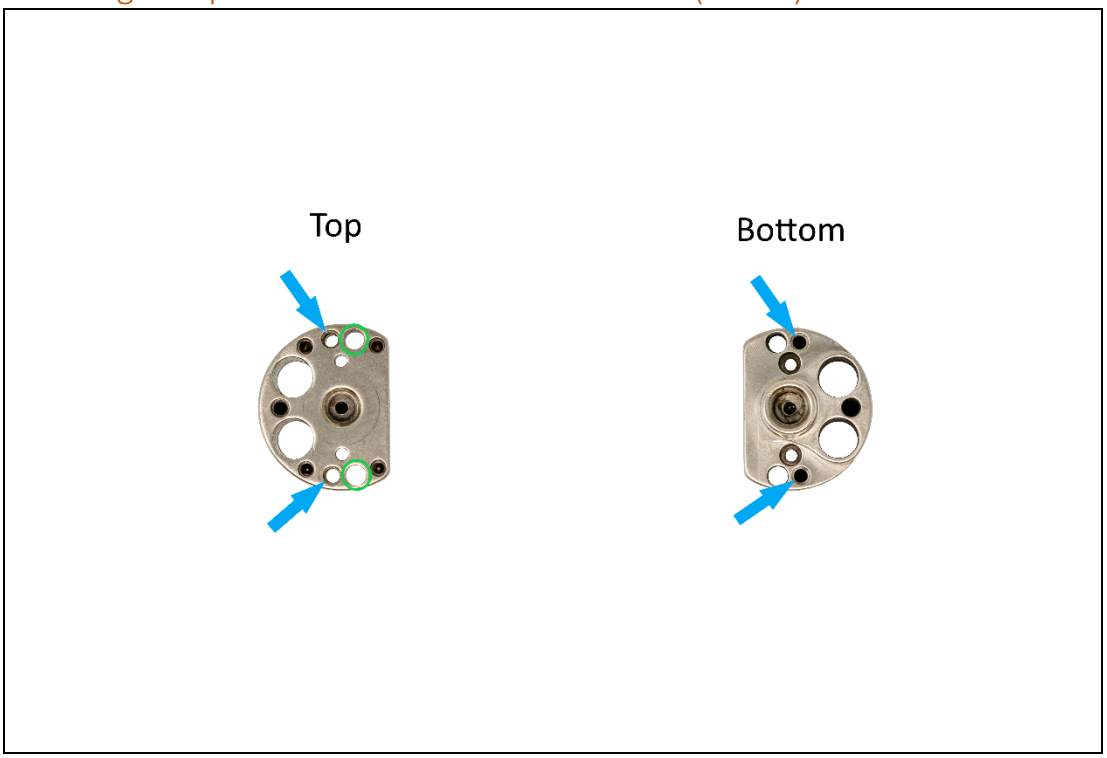
Inserting Temperature Sensor(s) into Hot Block (Part 1)

- Please prepare the following items for the next steps:
- Hot Block
- (4x) M2.5 x 0.45 x 4 mm Retaining Screws
- 2 mm Hex Key
- Fully coated Temperature Sensor(s)

Inserting Temperature Sensors into Hot Block (Part 2)



- Orient the Hot Block so you can see the top face.
- Identify the two sockets for the Temperature Sensors.
- Identify the two tapped holes for the Retaining Screws.
- Orient the Hot Block so you can see the bottom face.
- Identify the two tapped holes for the Retaining Screws.

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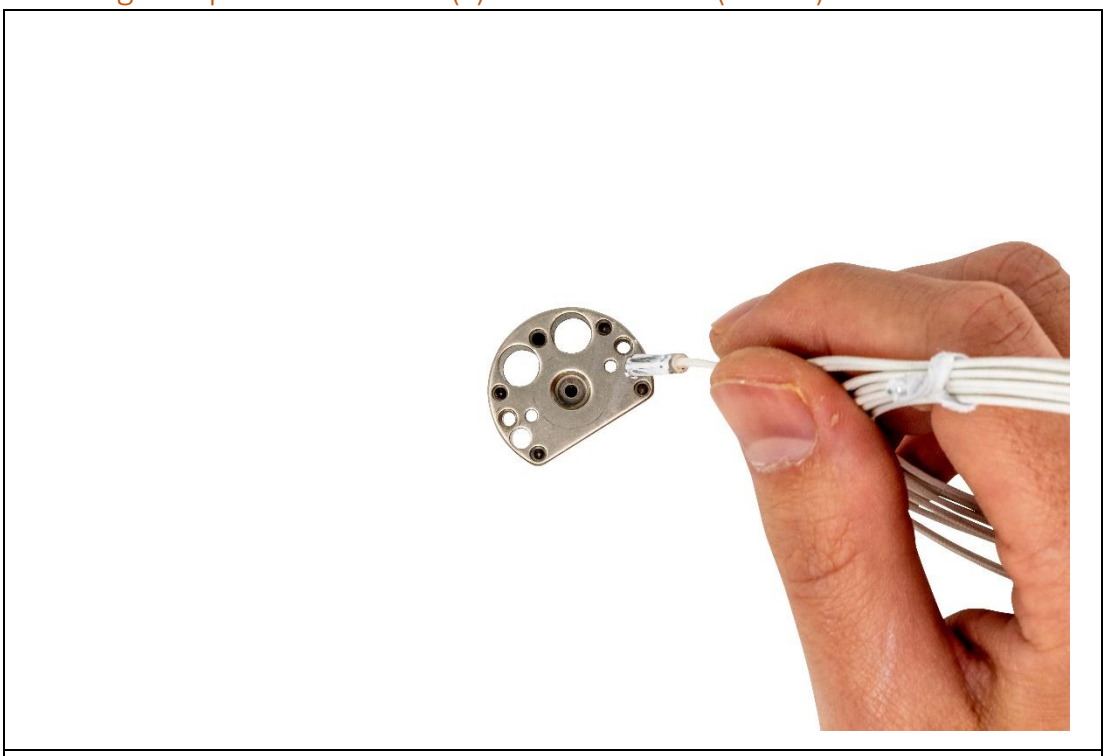
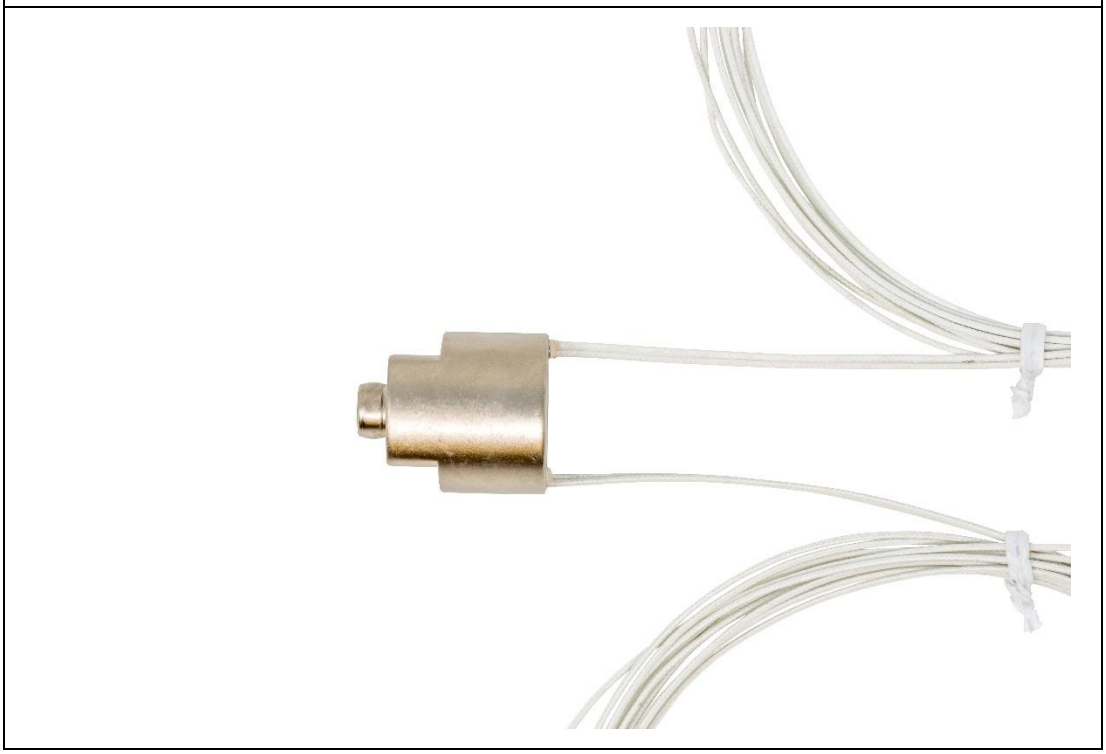
Inserting Temperature Sensor(s) into Hot Block (Part 3)





- Orient the Hot Block so you can see the top face.
- Insert the Temperature Sensor into the socket.
- Push the Temperature Sensor into the socket until the cartridge is fully inserted.
- Repeat this step if you are using more than one Temperature Sensor. It is okay to have an empty Temperature Sensor socket.
- **Note: This is a messy process. You may want to clean the Boron Nitride Paste that flows onto the Hot Block with a towel.**

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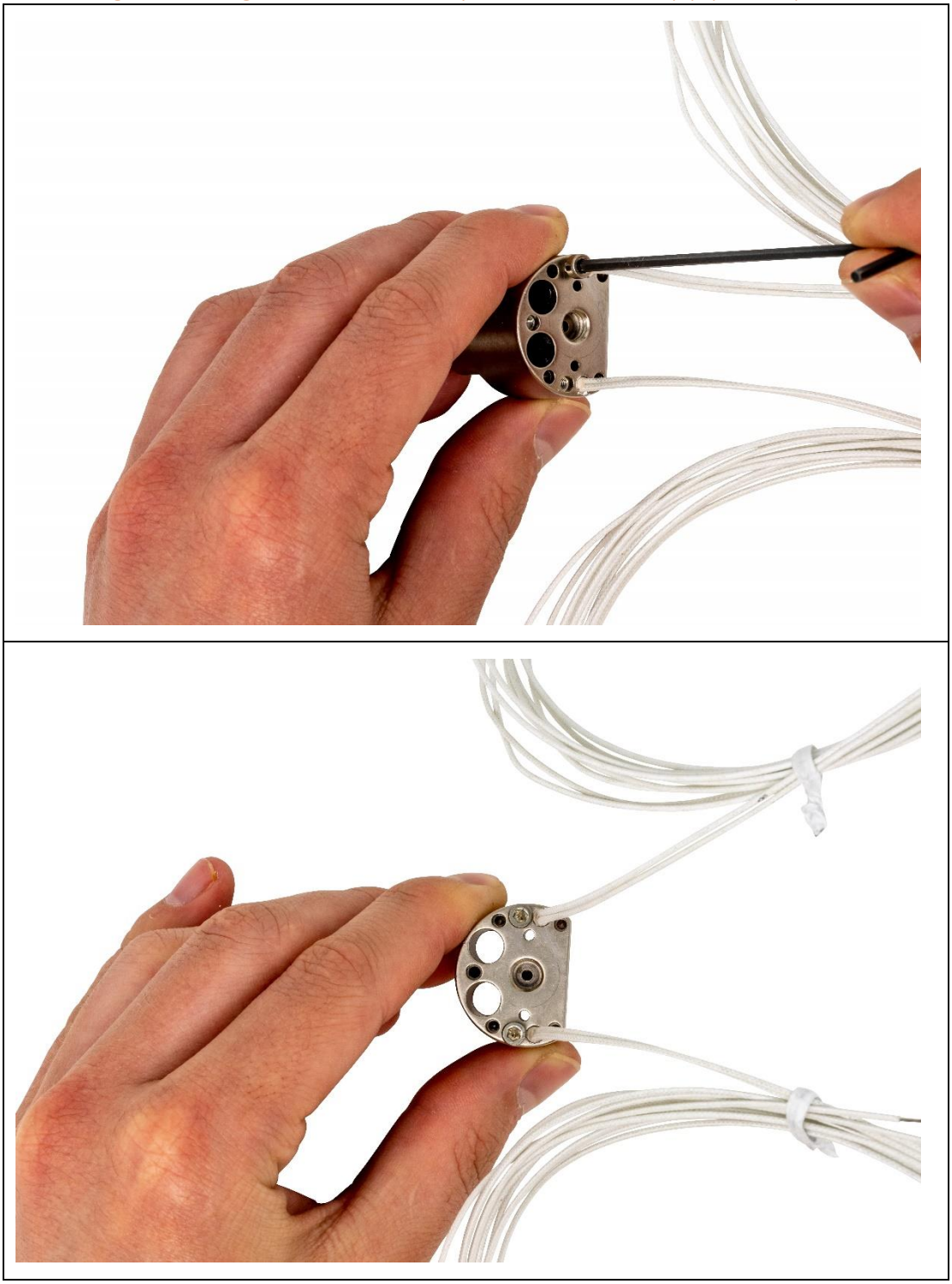
Attaching Retaining Screws for Temperature Sensor(s) (Part 1)



- Thread the Retaining Screws into the Hot Block into the previously defined tapped holes.
- Do this for both tapped holes.

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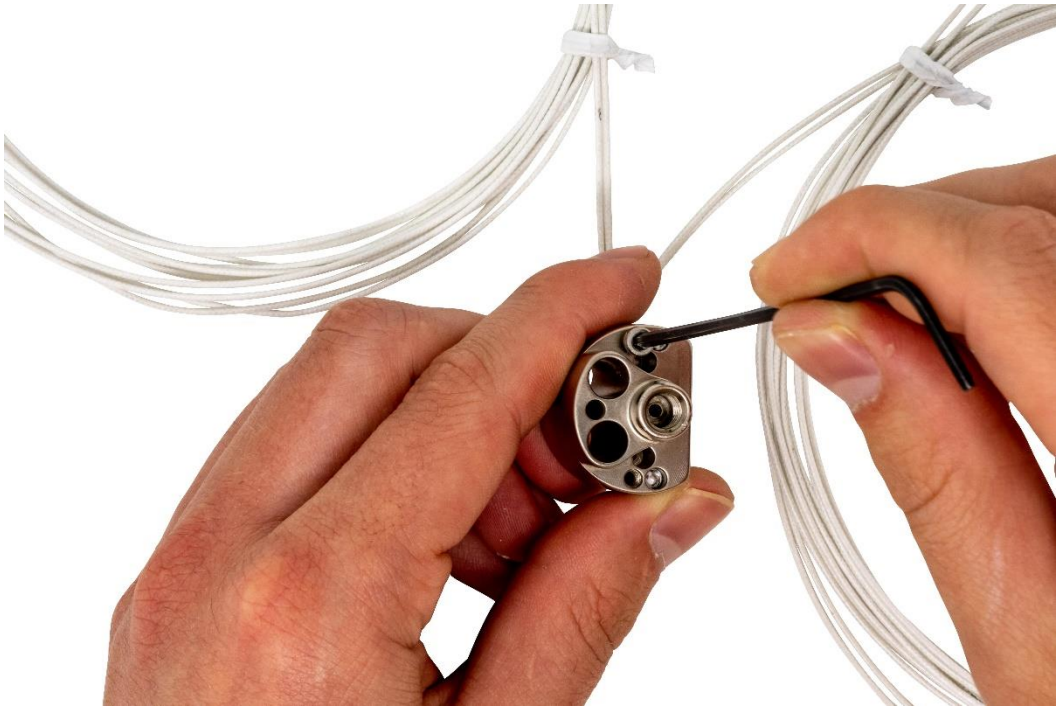
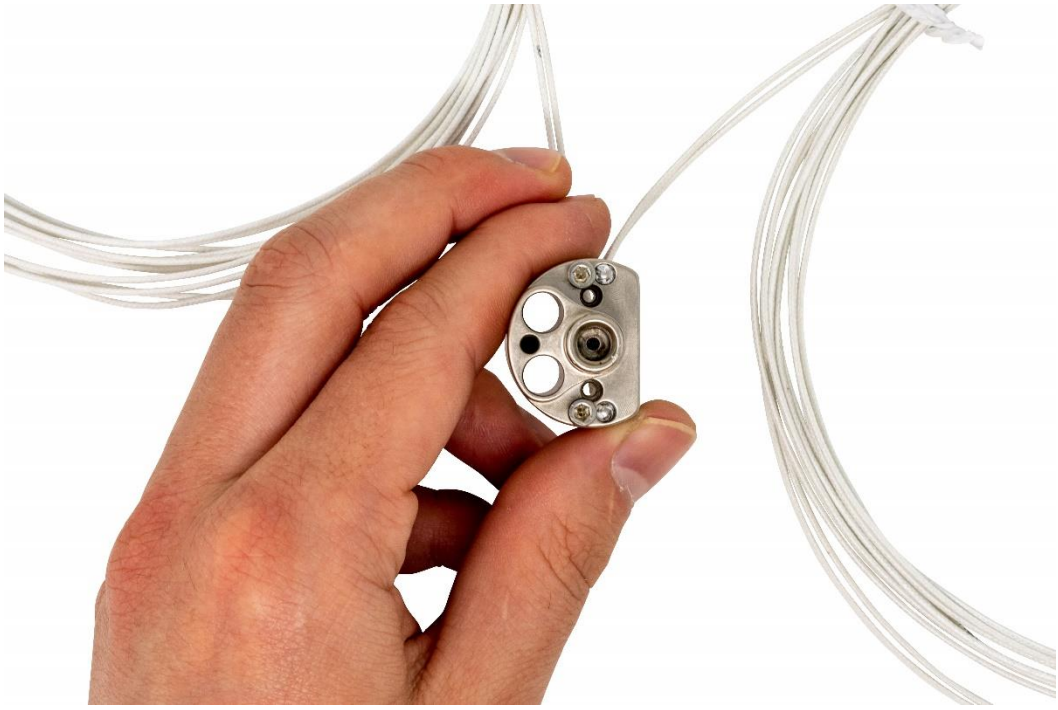
Attaching Retaining Screws for Temperature Sensor(s) (Part 2)





- Orient the Hot Block so you can see the bottom face.
- Thread the Retaining Screws into the Hot Block into the previously defined tapped holes. **Do not fully tighten the Retaining Screws until the Heat Sink has been attached to the Hot Block.**
- Do this for both tapped holes.

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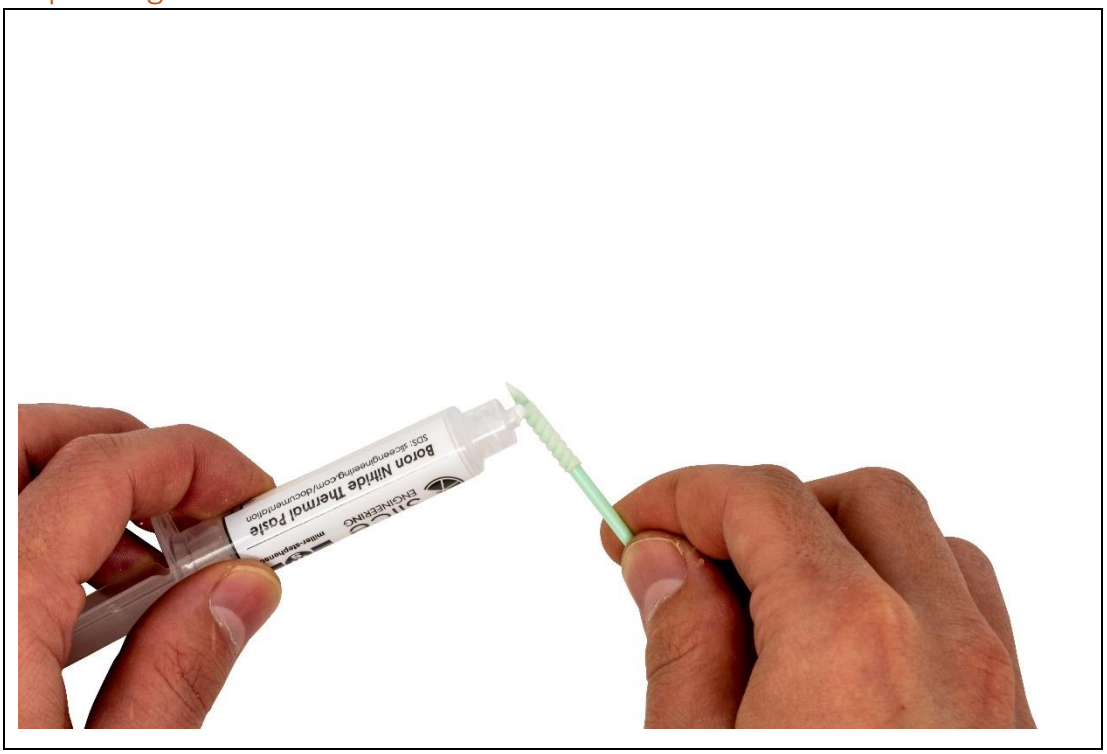
Step 2: Heater Cartridge Installation

Components Needed for Boron Nitride Paste Application

- Please prepare the following items for the next steps:
- Boron Nitride Paste Syringe
- Applicator Swab
- Heater Cartridge(s)
- **Note: One or two Heater Cartridge(s) can be used for the following steps.**

Dispensing Boron Nitride Paste



- Apply a pea-sized amount of Boron Nitride Paste to the soft tip of the Applicator Swab by pushing the syringe's plunger.
- You may need to repeat this step if more Boron Nitride Paste is required.

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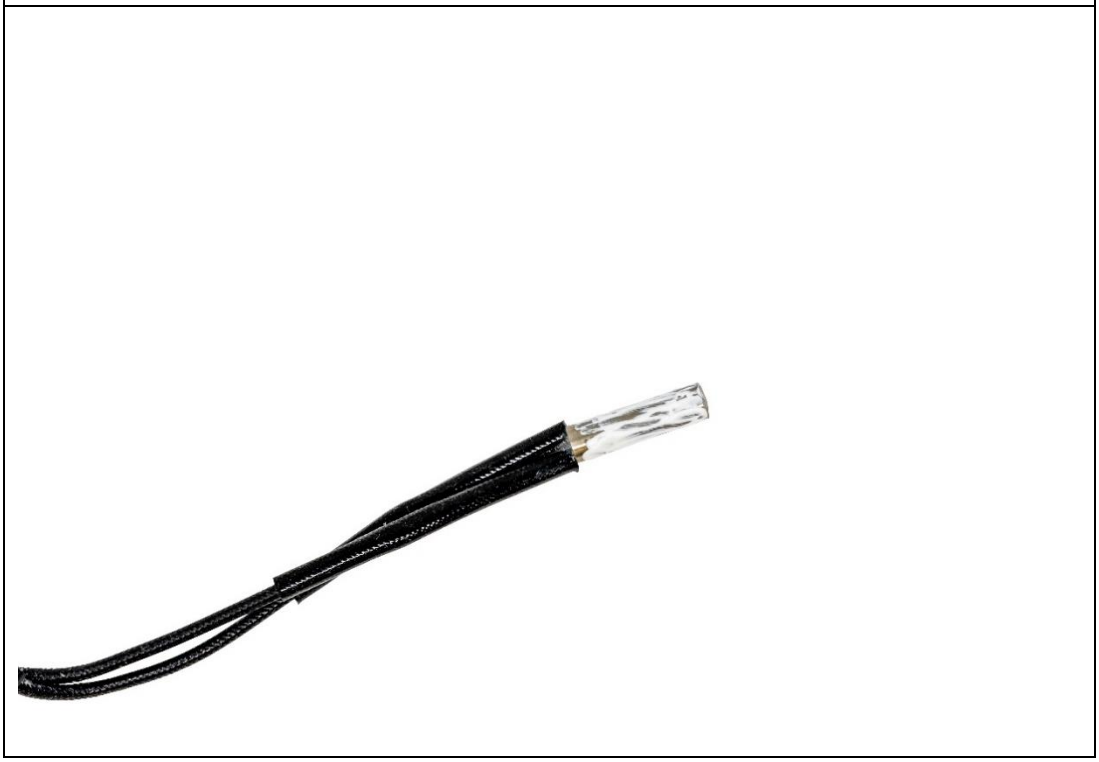
Coating Heater Cartridge(s)



- Thoroughly coat the Heater Cartridge so there is as much Boron Nitride Paste coverage as possible.
- The entire surface area of the Heater Cartridge should be coated with Boron Nitride Paste.
- Repeat this step if you are using more than one Heater Cartridge.

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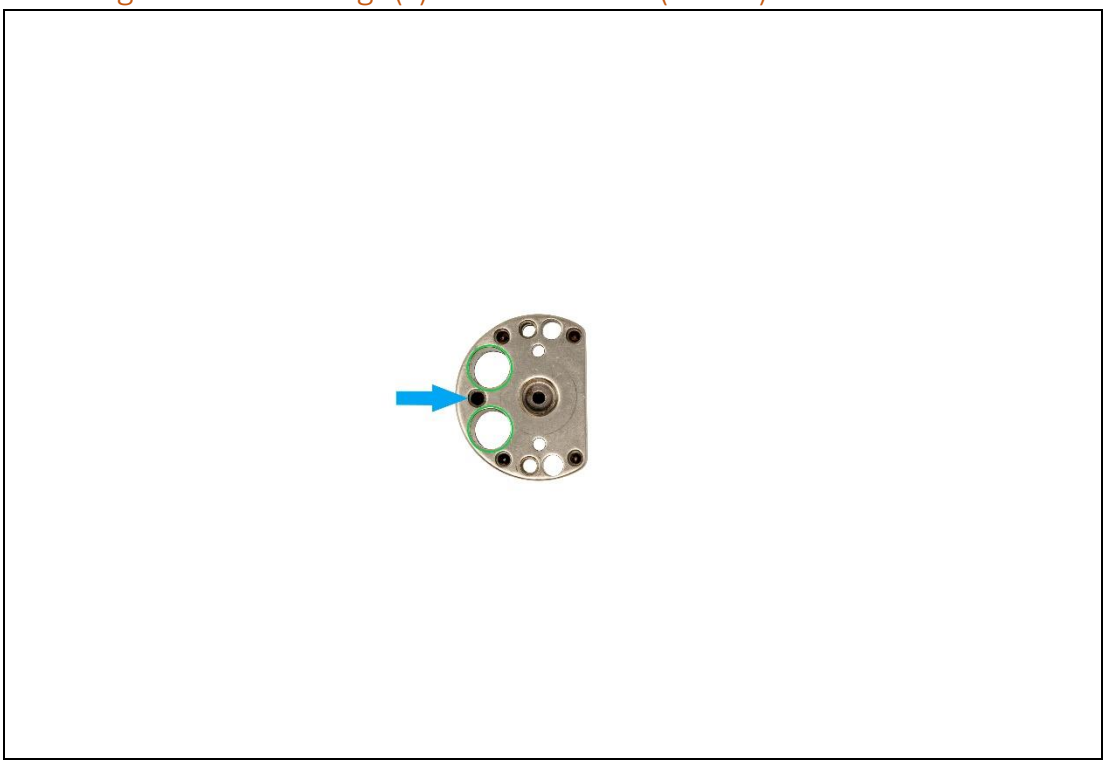
Inserting Heater Cartridge(s) into Hot Block (Part 1)

- Please prepare the following additional items for the next steps:
- (1x) M2.5 x 0.45 Retaining Screws
- 2 mm Hex Key
- Fully coated Heater Cartridge(s)

Inserting Heater Cartridge(s) into Hot Block (Part 2)



- Orient the Hot Block so you can see the top face.
- Identify the two sockets for the Heater Cartridges.
- Identify the tapped hole for the Retaining Screw.

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Inserting Heater Cartridge(s) into Hot Block (Part 3)

- Orient the Hot Block so you can see the top face.
- Insert the Heater Cartridge into the socket.
- Push the Heater Cartridge into the socket until the cartridge is fully inserted.
- Repeat this step if you are using more than one Heater Cartridge. It is okay to have an empty Heater Cartridge socket.
- **Note: This is a messy process. You may want to clean the Boron Nitride Paste that flows onto the Hot Block with a towel.**

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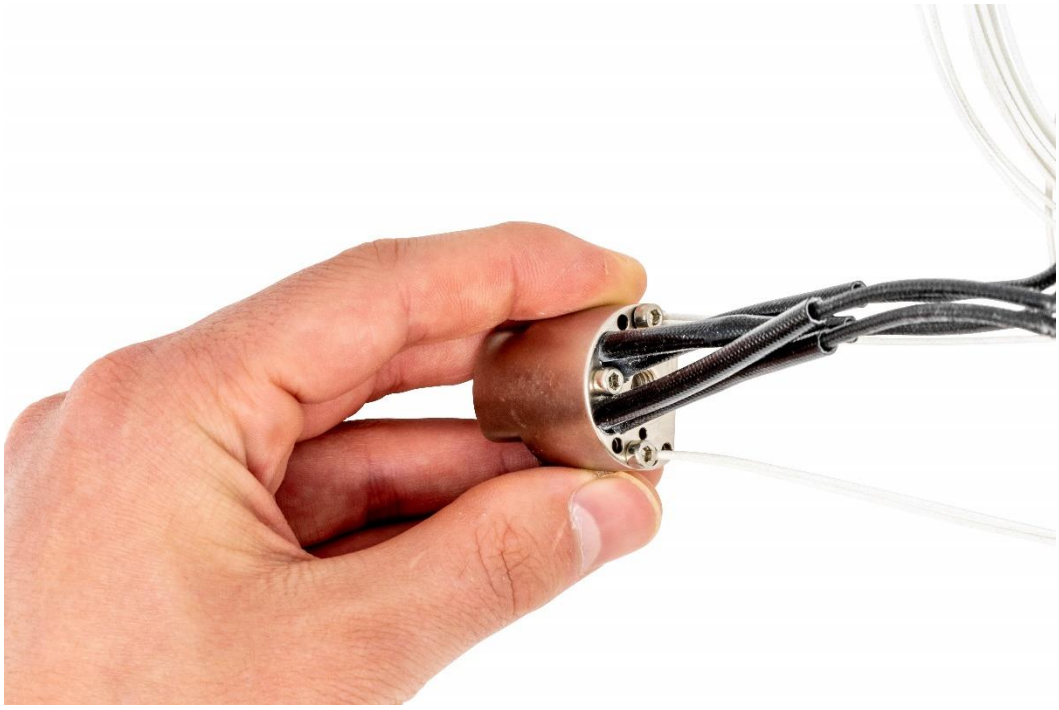
Attaching Retaining Screw for Heater Cartridge(s)



- Thread the Retaining Screw into the Hot Block into the previously defined tapped hole.

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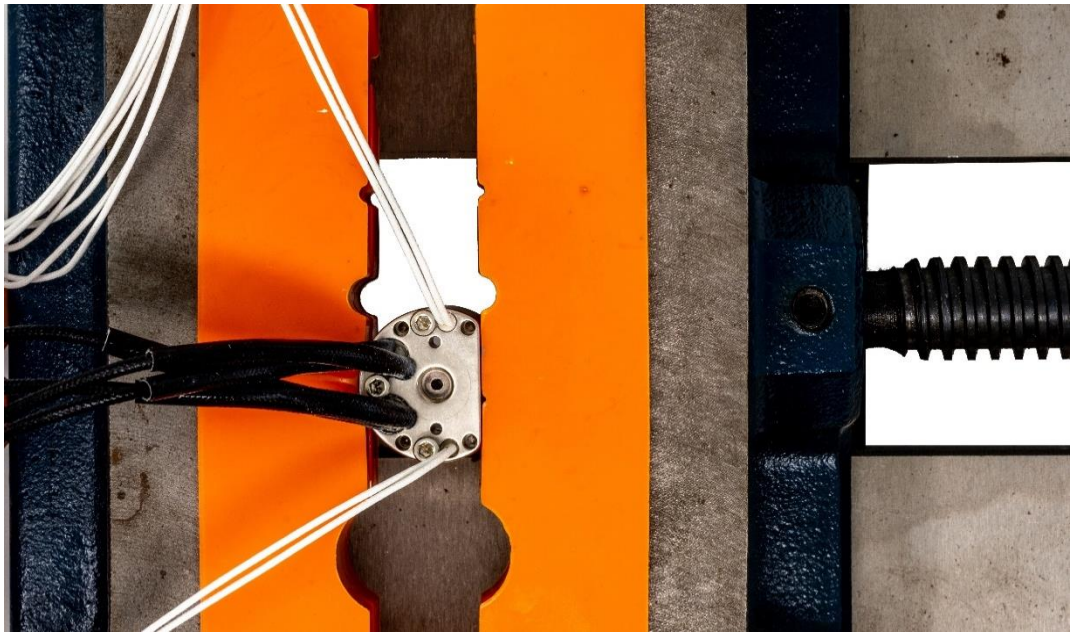
Step 3: Heat Break Installation

Components Needed for Heat Break Installation

- Please prepare the following items for the next steps:
- Hot Block with Temperature Sensor(s) and Heater Cartridge(s)
- 3 Nm Torque Wrench with Deep Well 9 mm Socket. **Alternatively, a standard 9 mm wrench can be used.**
- Heat Break
- Vise for Holding the Hot Block (Not Pictured)

Securing Hot Block



- Place the Hot Block in between the vise jaws with the top face pointing up.
- Tighten the vise jaws until the Hot Block is secured. **Do not overtighten.**
- **Note: It is recommended to use vise jaws with a soft covering like rubber or a towel to protect the Hot Block.**

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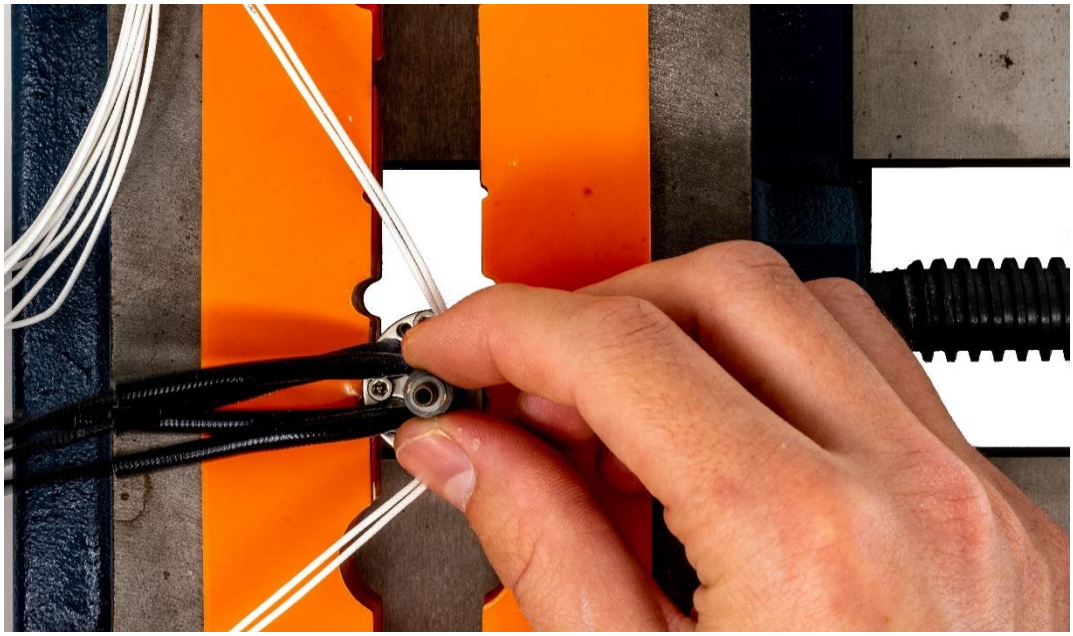
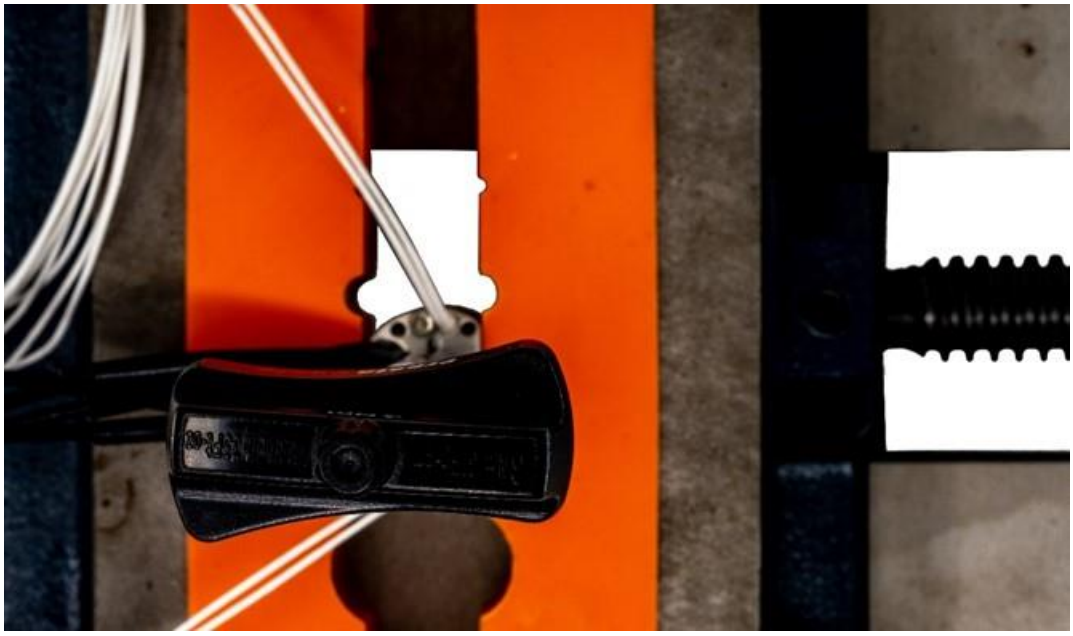
Torquing the Heat Break (Part 1)



- Finger tighten the Heat Break into the M6 thread on the top of the Hot Block.
- **Be careful not to bend the Heat Break during these steps.**

Torquing the Heat Break (Part 2)

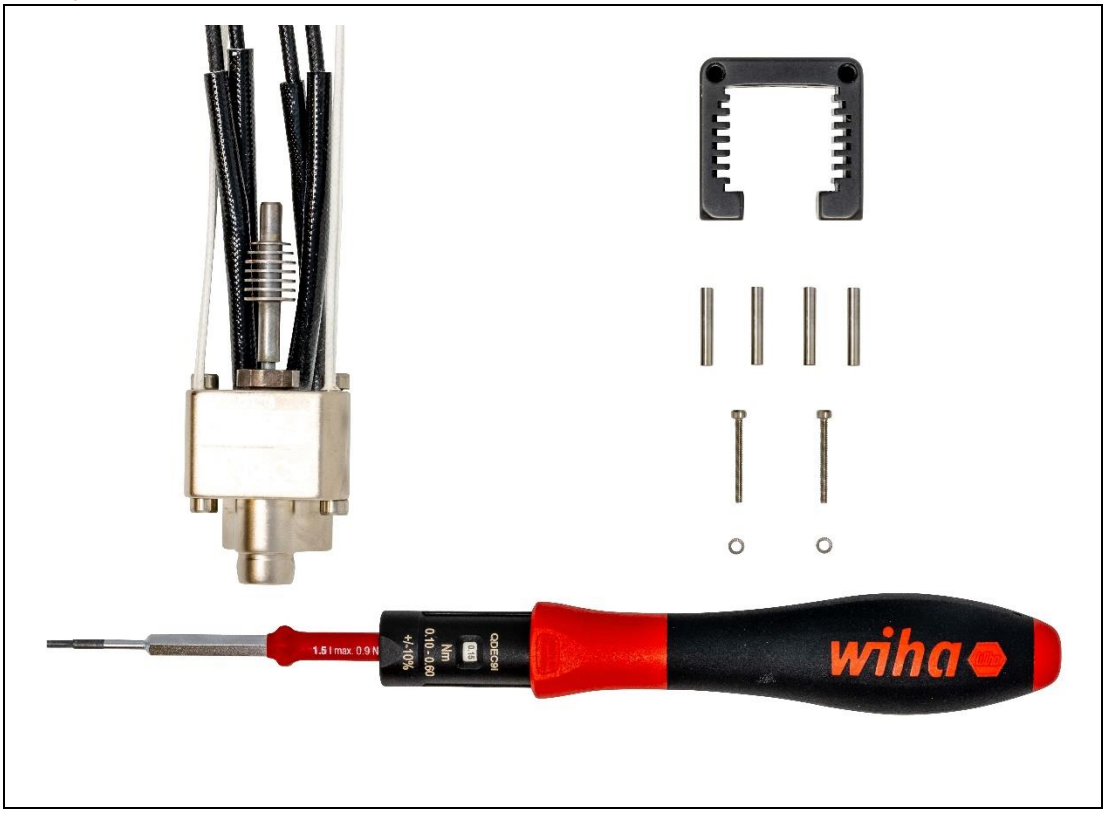


- Use the 3 Nm Torque Wrench to secure the Heat Break to the Hot Block.
- Use one hand to hold the handle and another hand to support the socket.
- Rotate the handle clockwise.
- **If not torqued properly, the Heat Break may leak filament through the threads, or the threads could strip.**

- **Be careful not to bend the Heat Break during these steps.**

Step 4: Heat Sink Installation

Components Needed for Heat Sink Installation



- Please prepare the following items for the next steps:
- Hot Block with Temperature Sensor(s), Heater Cartridge(s), Retaining Screws, and Heat Break
- Heat Sink
- (4x) Standoff Tubes
- (2x) M1.6 x 0.35 Screws.
- (2x) Serrated Safety Washer
- 0.15 Nm Torque Wrench. **Alternatively, a standard 1.5 mm hex key can be used.**

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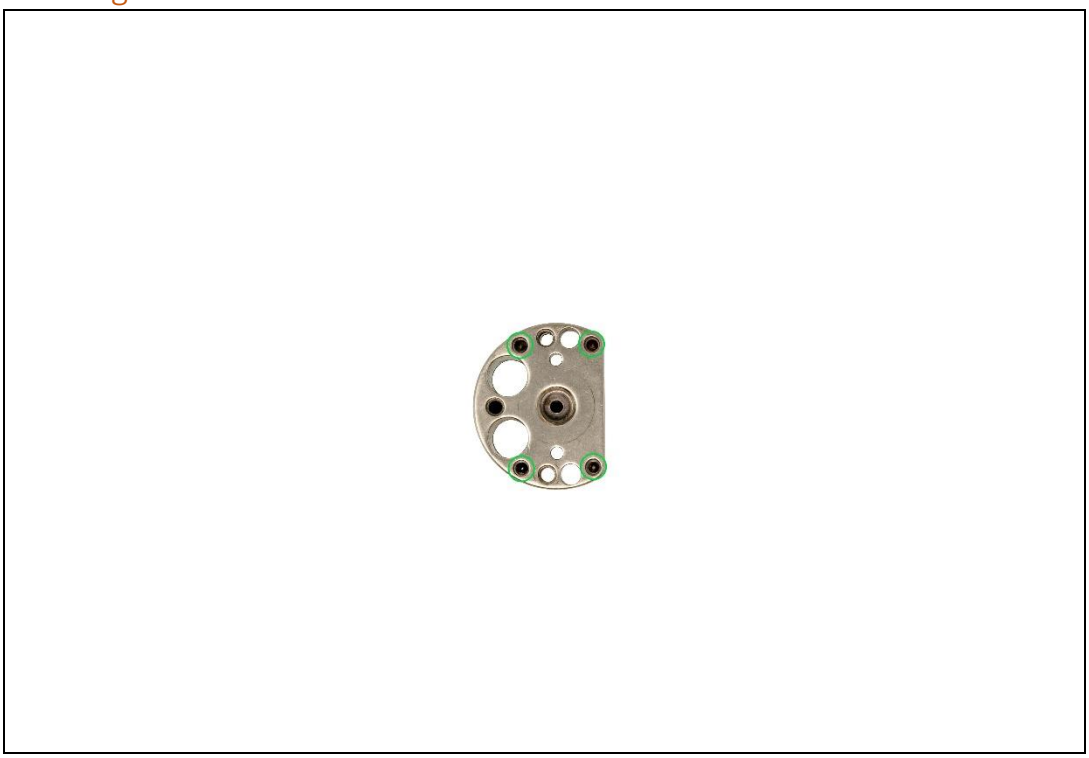
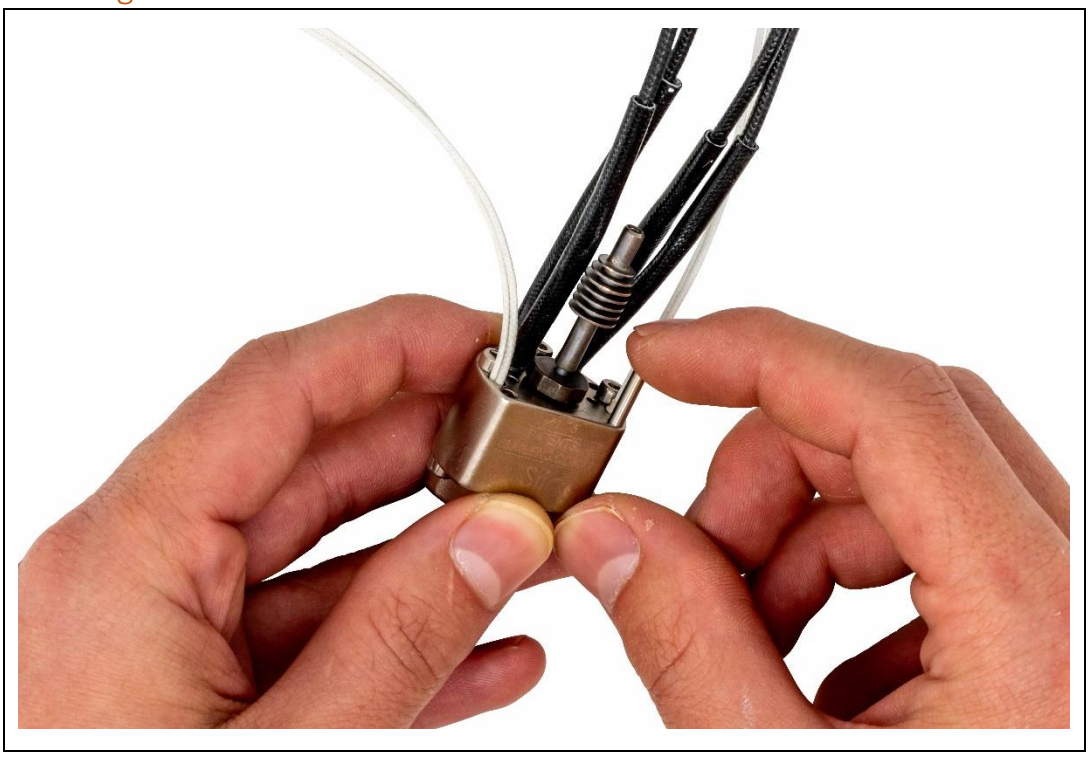
Locating Standoff Tube Holes

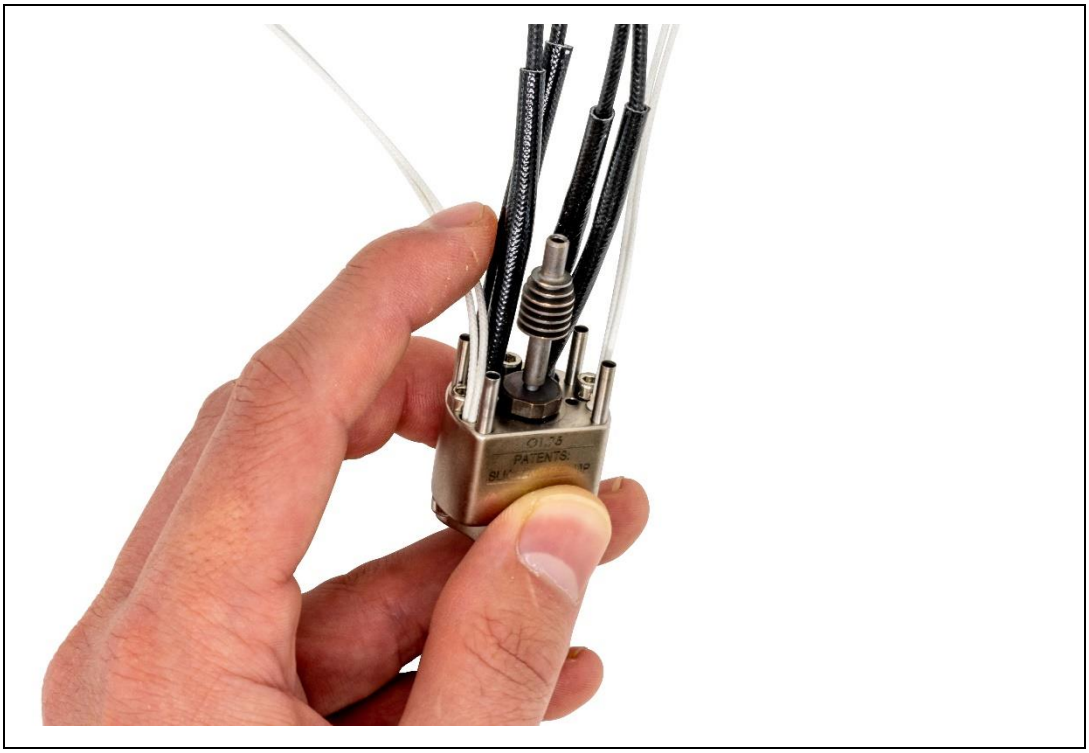


- Orient the Hot Block so you can see the top face.
- Identify the four recessed holes for the Standoff Tubes.

Inserting Standoff Tubes



- Insert a Standoff Tube into the recessed hole.
- Push the Standoff Tube until it stops moving.
- Repeat this step for all four Standoff Tubes.



Routing the Cables

- Reposition the cables from the Temperature Sensor(s) and Heater Cartridge(s) towards the back of the Hot Block.
- **Do not create a 90° bend in the cables.**

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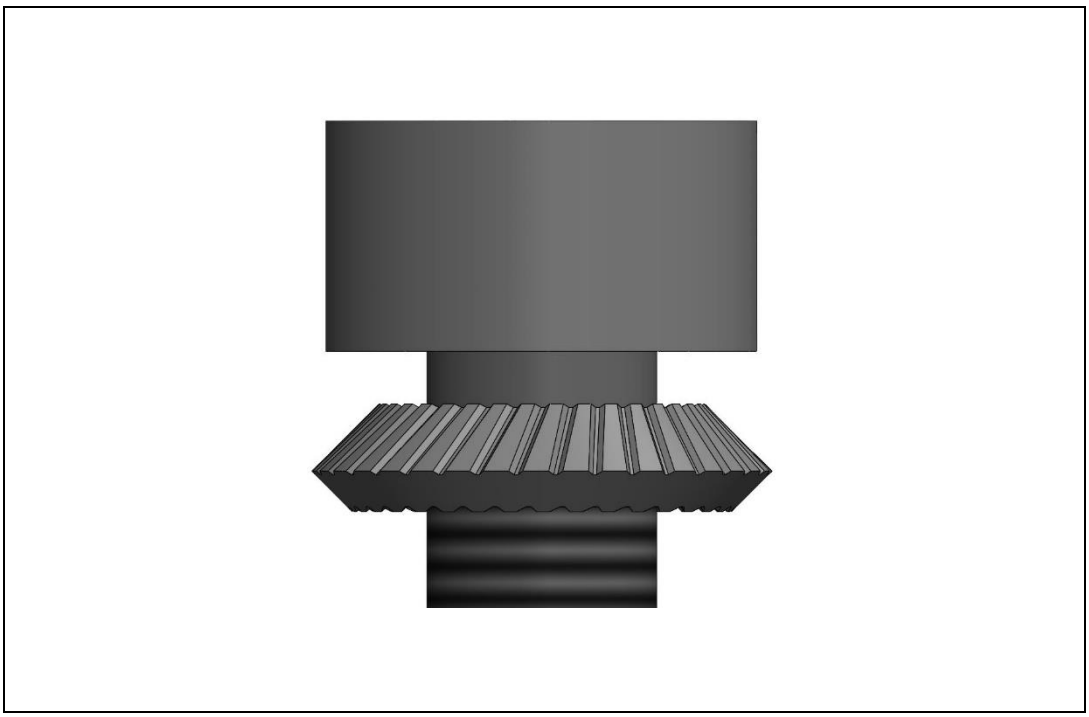
Placing the Heat Sink

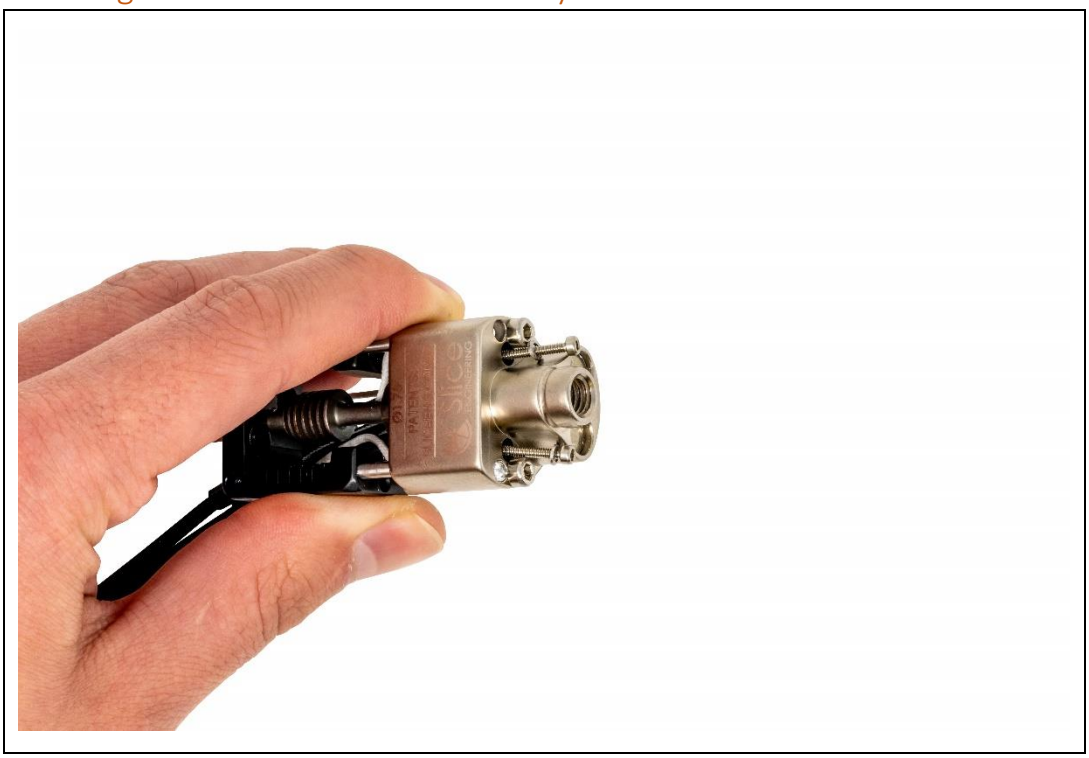
- Carefully slide the Heat Sink onto the Heat Break tube and the Standoff Tubes.
- **Make sure the Heat Break tube is easily sliding into the opening of the Heat Sink.**

Serrated Safety Washer Setup

- Place one Serrated Safety Washer onto the M1.6 x 0.35 Screw.
- Pay close attention to the orientation of the Serrated Safety Washer on the M1.6 x 0.35 Screw.
- **The convex side of the Serrated Safety Washer needs to face the M1.6 x 0. 35 Screw head.**
- Repeat this process for the remaining Serrated Safety Washer and M1.6 x 0.35 Screw.



Inserting Screw and Washer Assembly



- Insert the M1.6 x 0.35 Screw and Serrated Safety Washer assembly into the bottom of the Hot Block.

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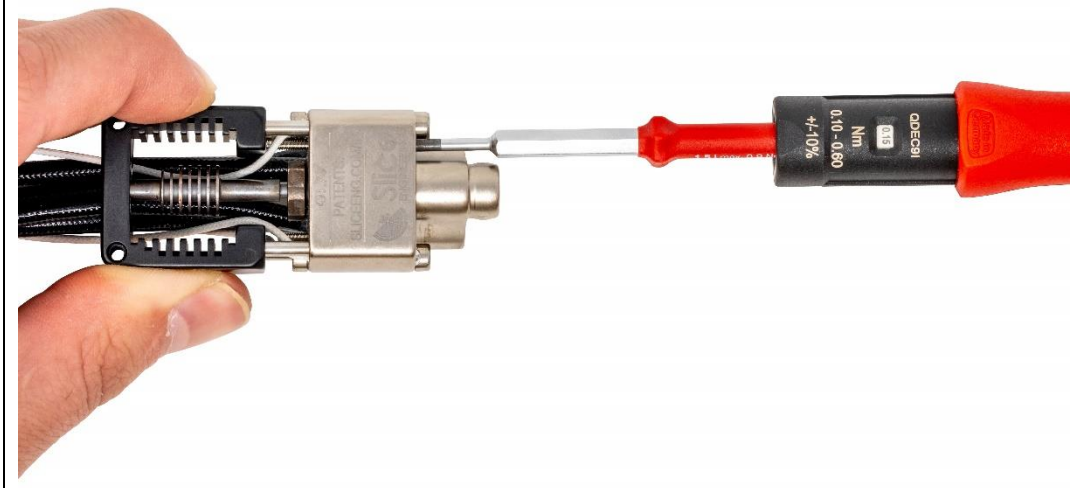
Attaching Hot Block to the Heat Sink



- Use a 1.5 mm hex bit and a Torque Wrench to torque the M1.6 x 0.35 Screw to a torque rating of 0.15 Nm.
- Alternate between the two M1.6 x 0.35 Screws every three rotations.
- **If not appropriately torqued, the M1.6 x 0.35 Screw head may strip, or the Hot Block may detach from the Heat Sink.**
- **Fully tighten the bottom two M2.5 x 0.45 x 4 mm Retaining Screws from Step 1.**

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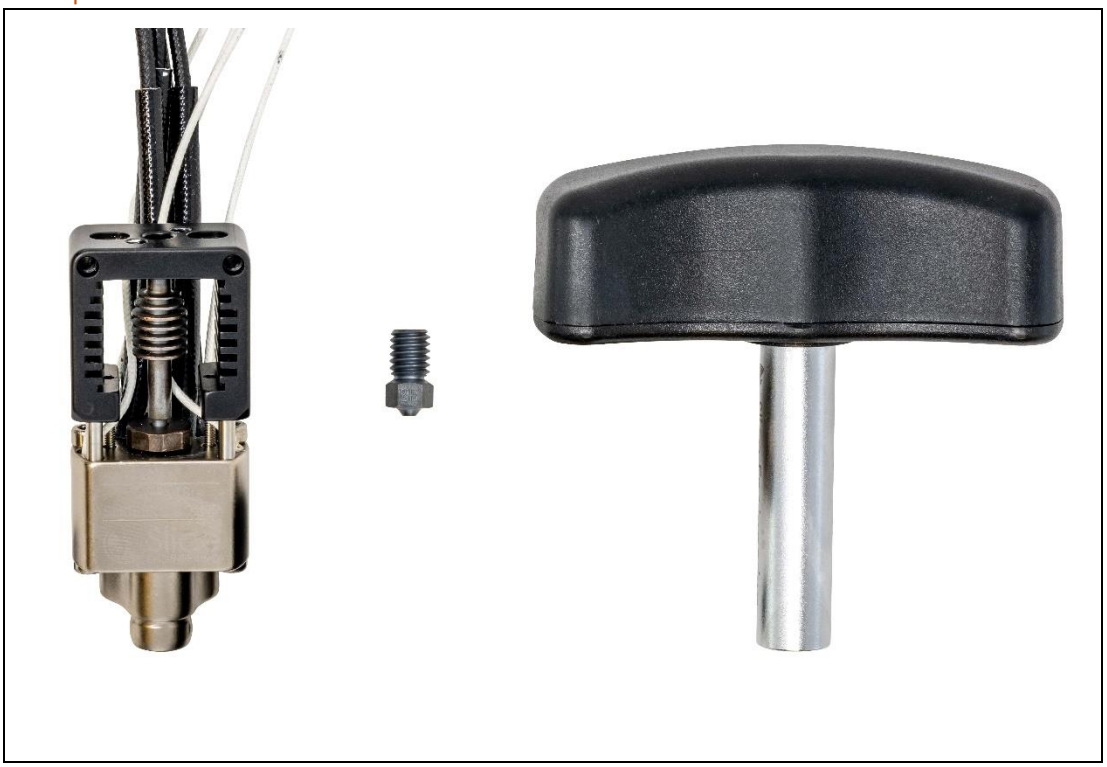
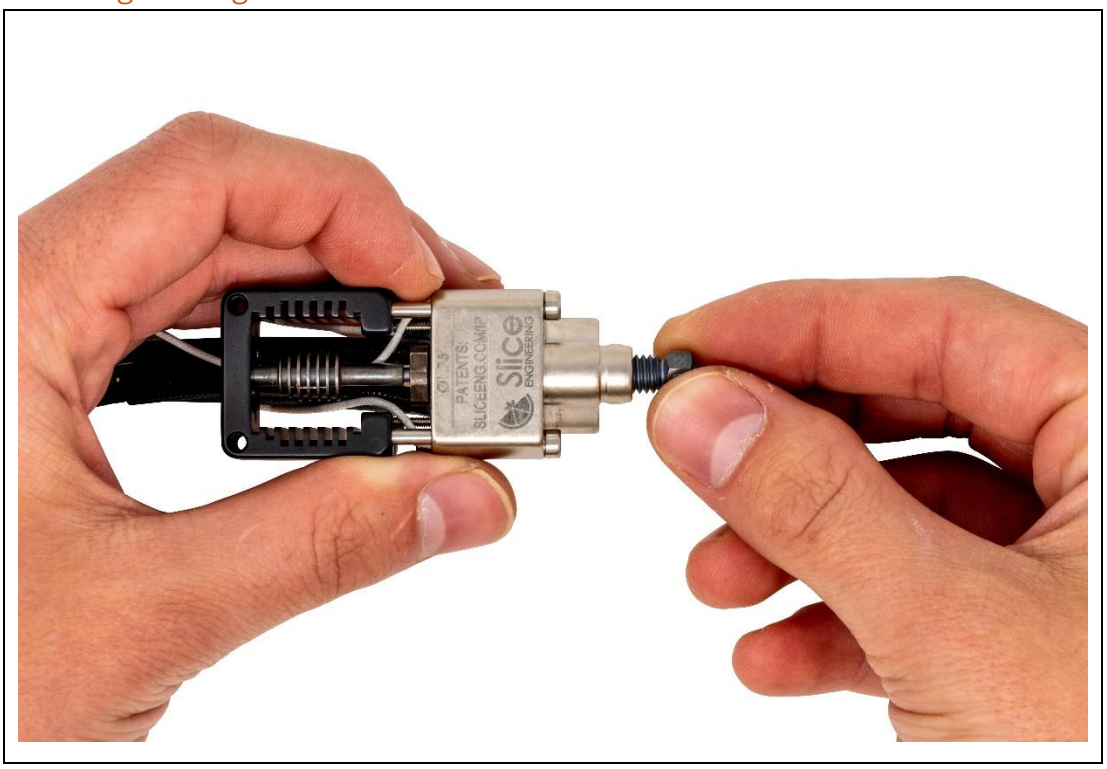
Step 5: Nozzle Installation

Components Needed for Nozzle Installation



- Please prepare the following items for the next steps:
- Assembled Mosquito® Magnum+ Hotend
- Nozzle
- 1.5 Nm Torque Wrench for 6 mm Hex

Hand Tightening the Nozzle



- Manually screw the Nozzle onto the Hot Block in a clockwise direction.

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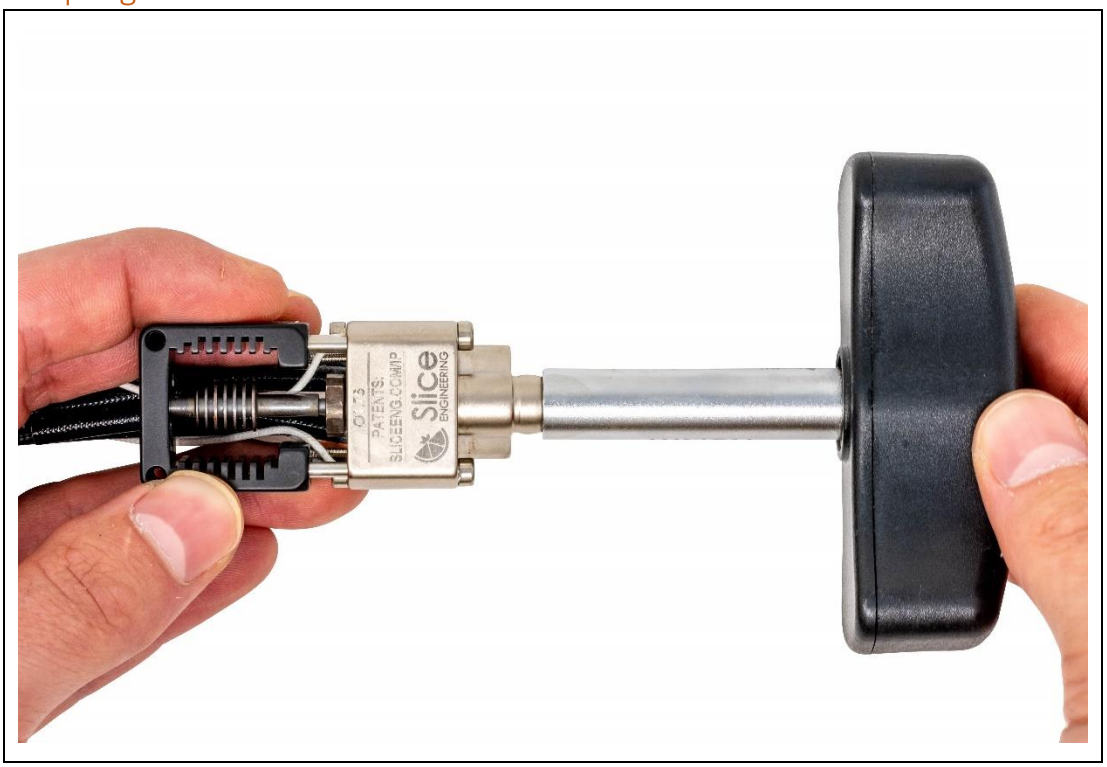
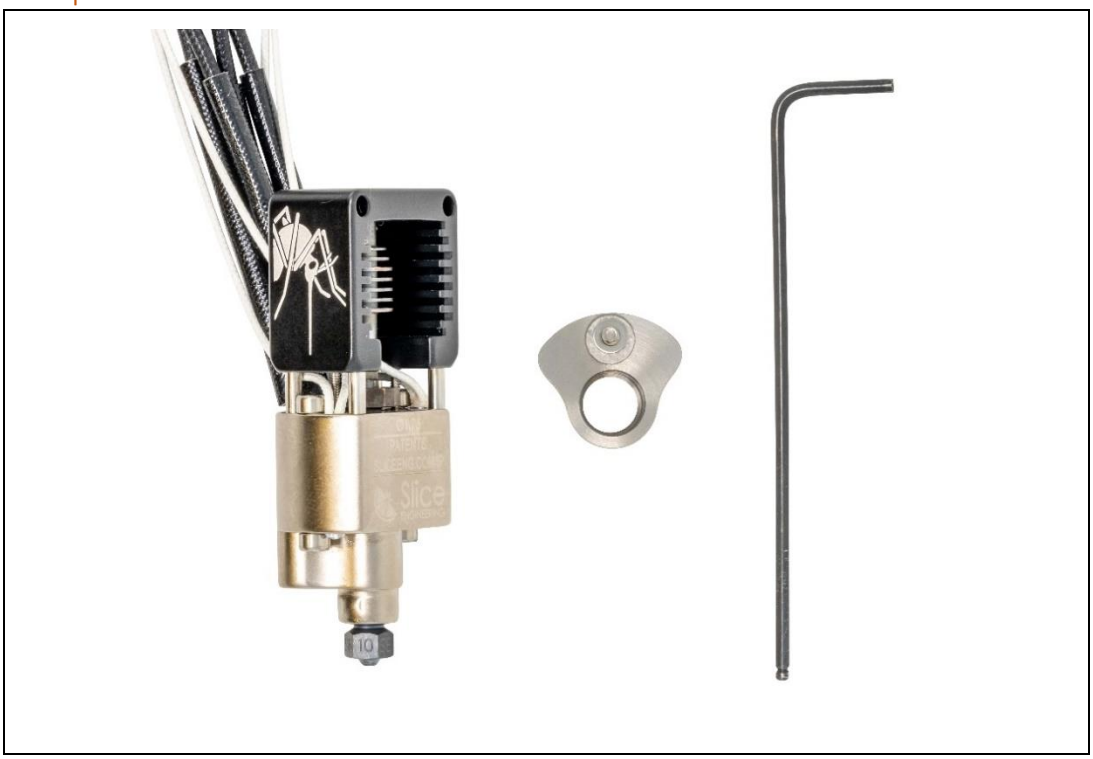
Torquing the Nozzle



- While either holding the hotend in your hands or a vise, use a 1.5 Nm Torque Wrench to fully tighten the Nozzle onto the Hot Block by rotating clockwise with the Torque Wrench until it clicks.

Step 6: Nozzle Insulator Installation (Optional)

Components Needed for Nozzle Insulator Installation



- **Note: If you are not using the Nozzle Insulator then skip to Step 7: Heater Cartridge Retaining Screw.**
- Please prepare the following items for the next steps:
- Assembled Mosquito® Magnum+ Hotend
- Nozzle Insulator
- 2 mm Hex Key

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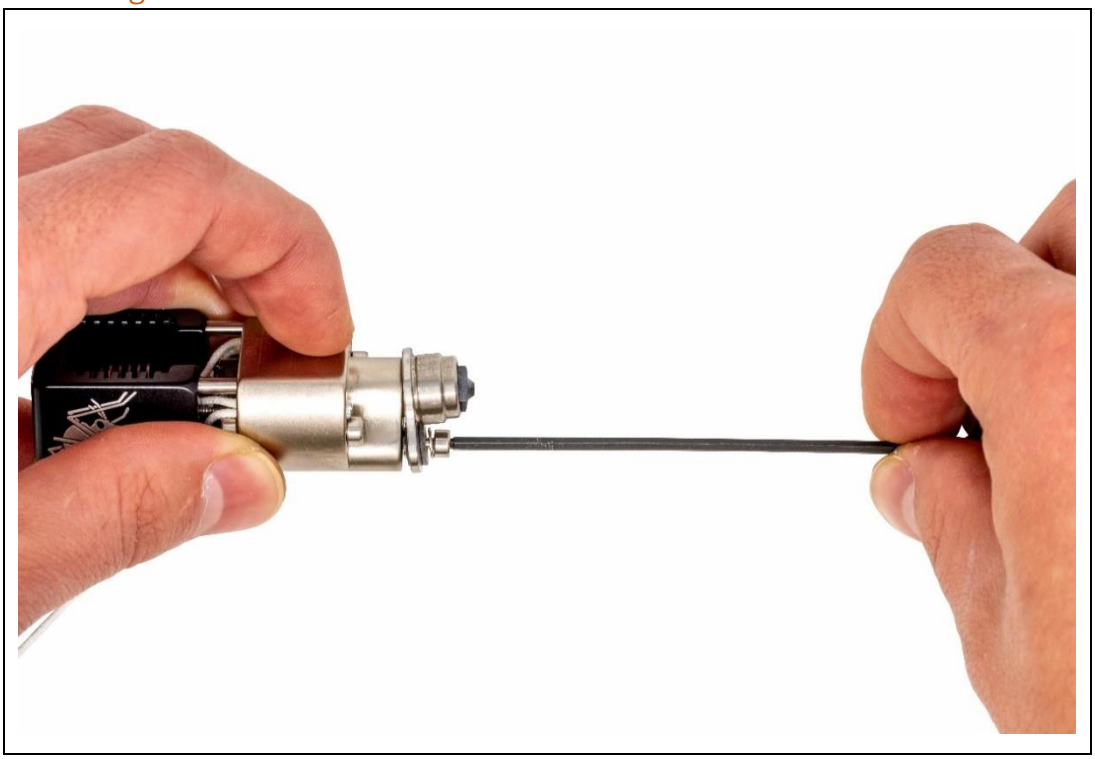
Placing Nozzle Insulator

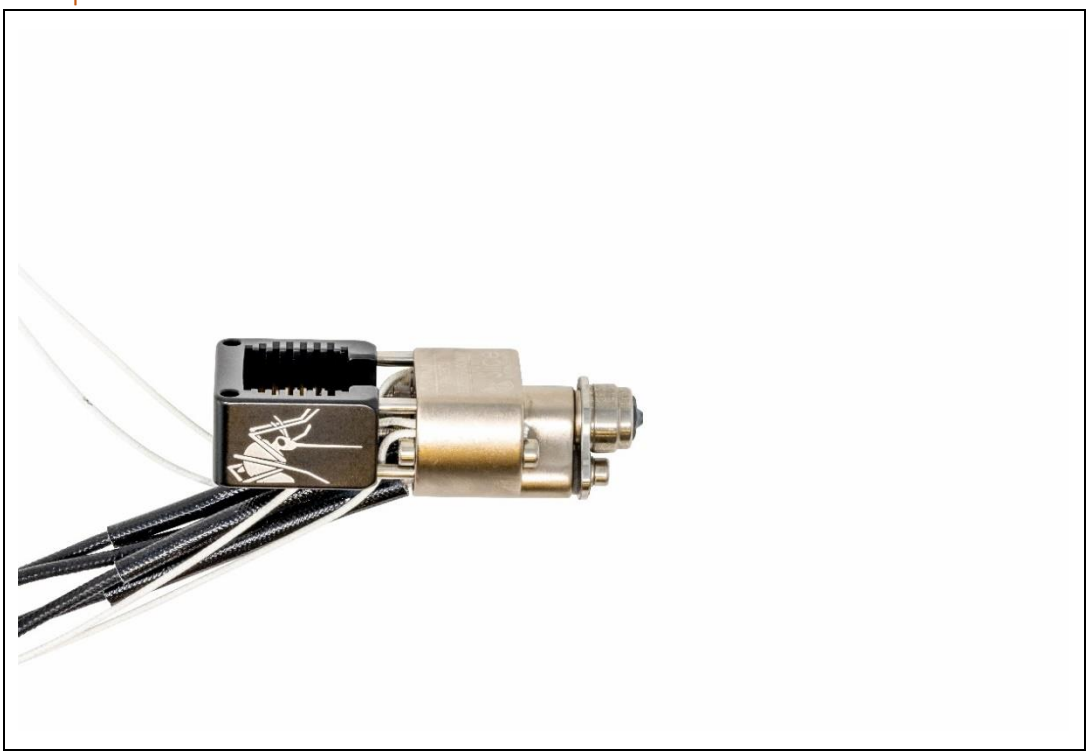
- Slide the Nozzle Insulator over the Hot Block.
- Line up the screw with the remaining open tapped hole on the Hot Block.

Attaching Nozzle Insulator



- Tighten the screw with the 2 mm hex key until the Nozzle Insulator is parallel to the bottom surface of the Hot Block.

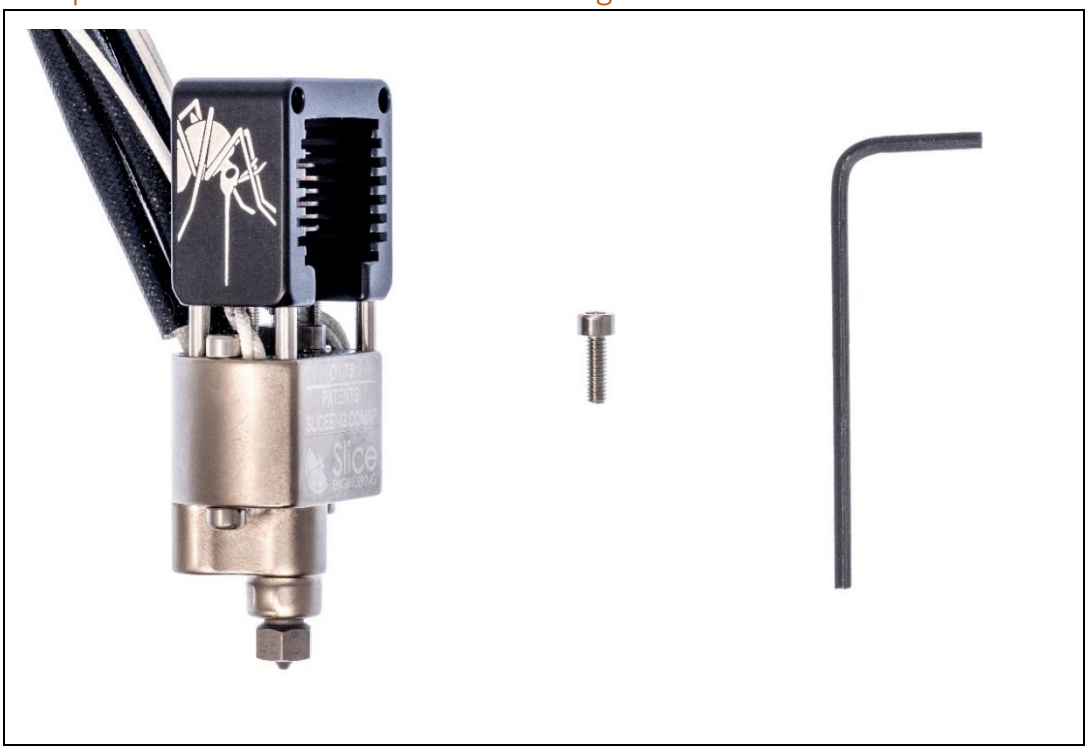
Completed Nozzle Insulator Installation



- The Nozzle Insulator is parallel to the bottom of the Hot Block.

Step 7: Heater Cartridge Retaining Screw

Components Needed for Heater Cartridge Retention



- **Note: If you are using the Nozzle Insulator then skip to Step 8: Fan Installation.**
- Please prepare the following items for the next steps:
- Assembled Mosquito® Magnum+ Hotend
- M2.5 x 0.45 x 8 mm Retaining Screw
- 2 mm Hex Key

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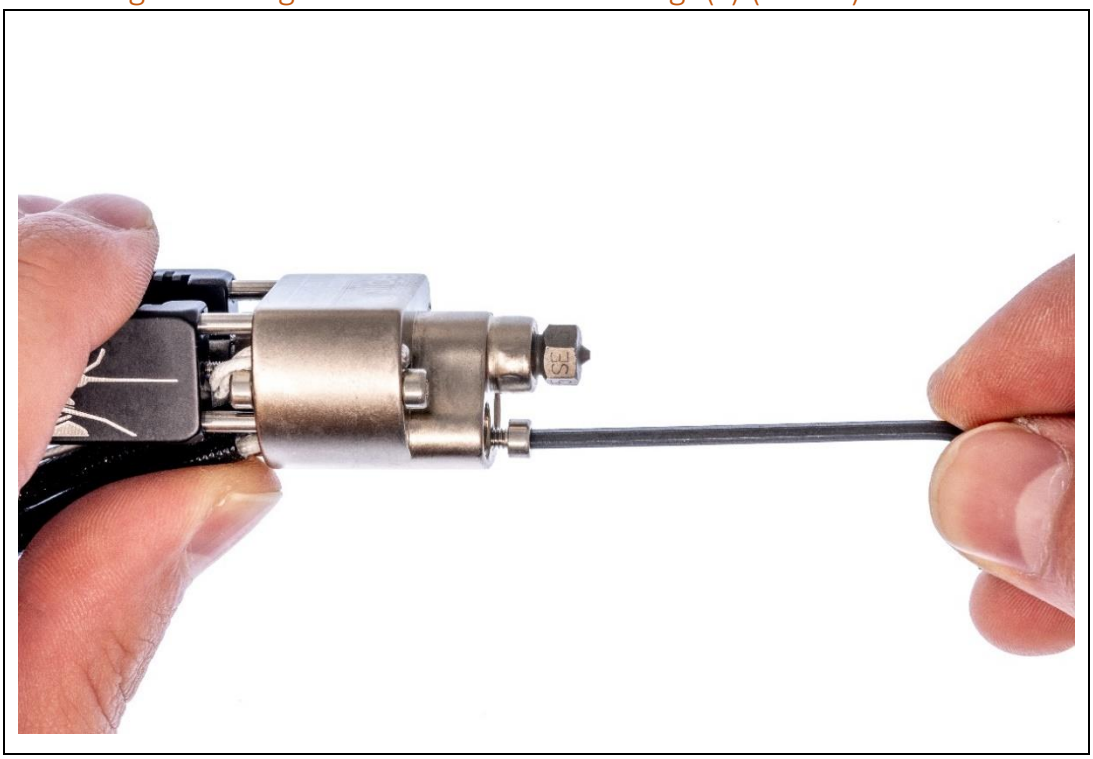
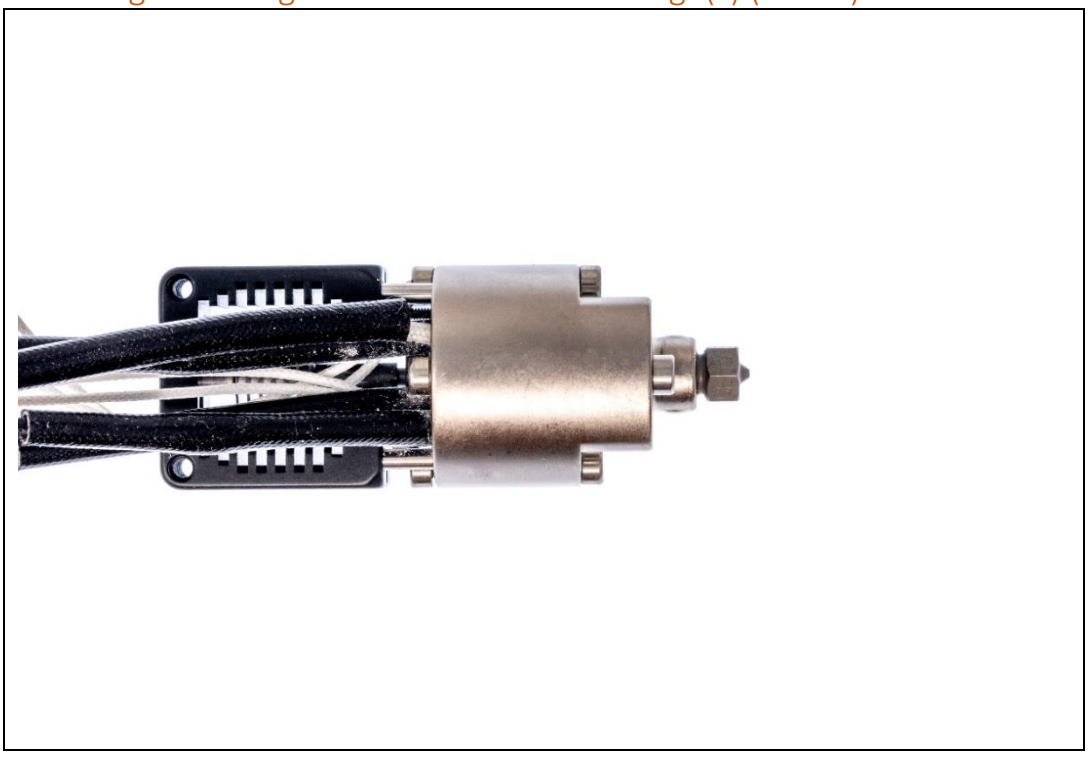
Attaching Retaining Screw for Heater Cartridge(s) (Part 1)



- Thread the M2.5 x 0.45 x 8 mm Retaining Screw into the remaining tapped hole on the bottom of the Hot Block.

Attaching Retaining Screw for Heater Cartridge(s) (Part 2)



- The M2.5 x 0.45 x 8 mm Retaining Screw head should be flush with the bottom of the Hot Block.

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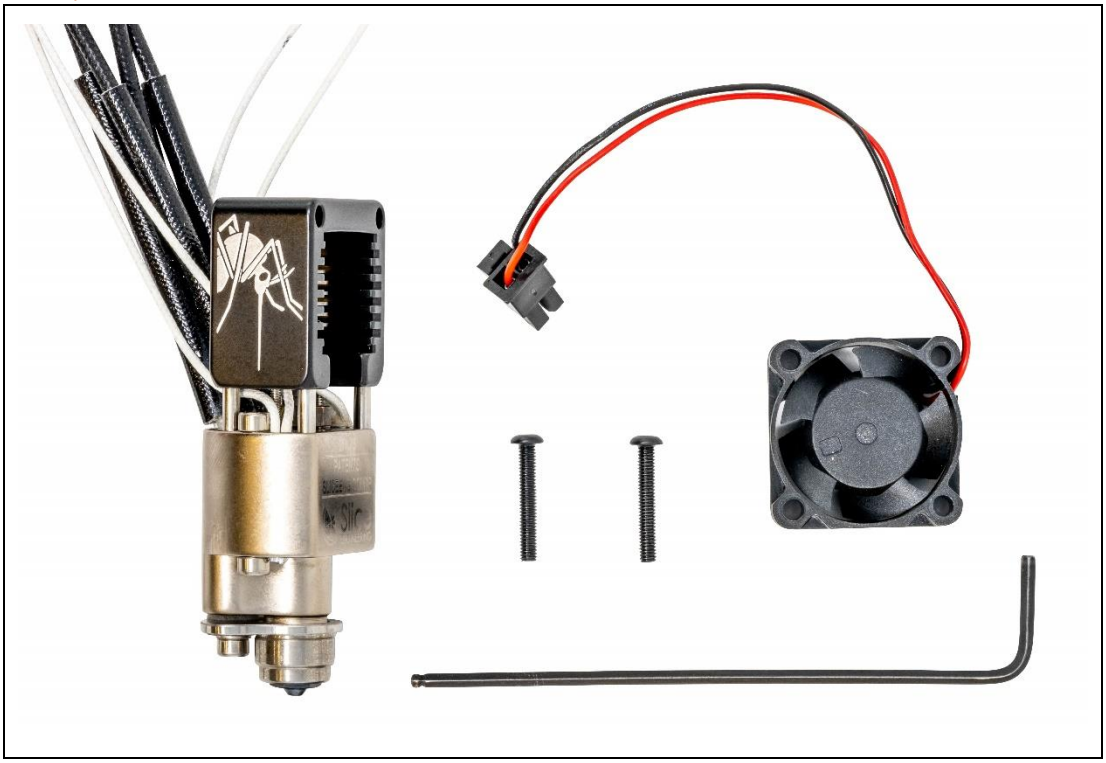
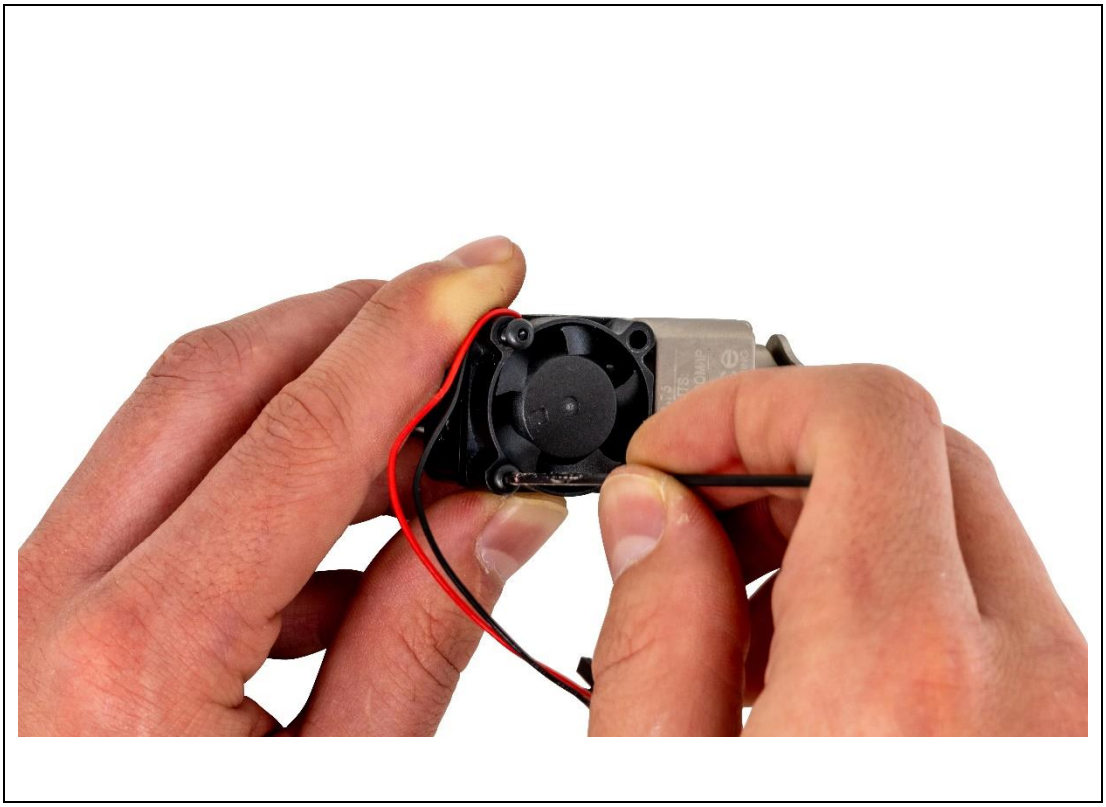
Step 8: Fan Installation

Components Needed for Fan Installation



- Please prepare the following items for the next steps:
- Assembled Mosquito® Magnum+ Hotend
- (2x) M2.5 x 0.45 x 16 mm Screws
- Hotend Cooling Fan
- 1.5 mm Hex Key

Attaching Fan to Heat Sink



- Place the Hotend Cooling Fan over the Heat Sink with the sticker facing towards the Heat Sink.
- Line up the two screw holes on the top of the Heat Sink with the two holes on top of the Hotend Cooling Fan.
- Use the 1.5 mm hex key to screw in the two M2.5 x 0 45 x 16 mm Screws.
- **Do not overtighten the M2.5 x 0.45 x 16 mm Screws. The plastic will deform.**

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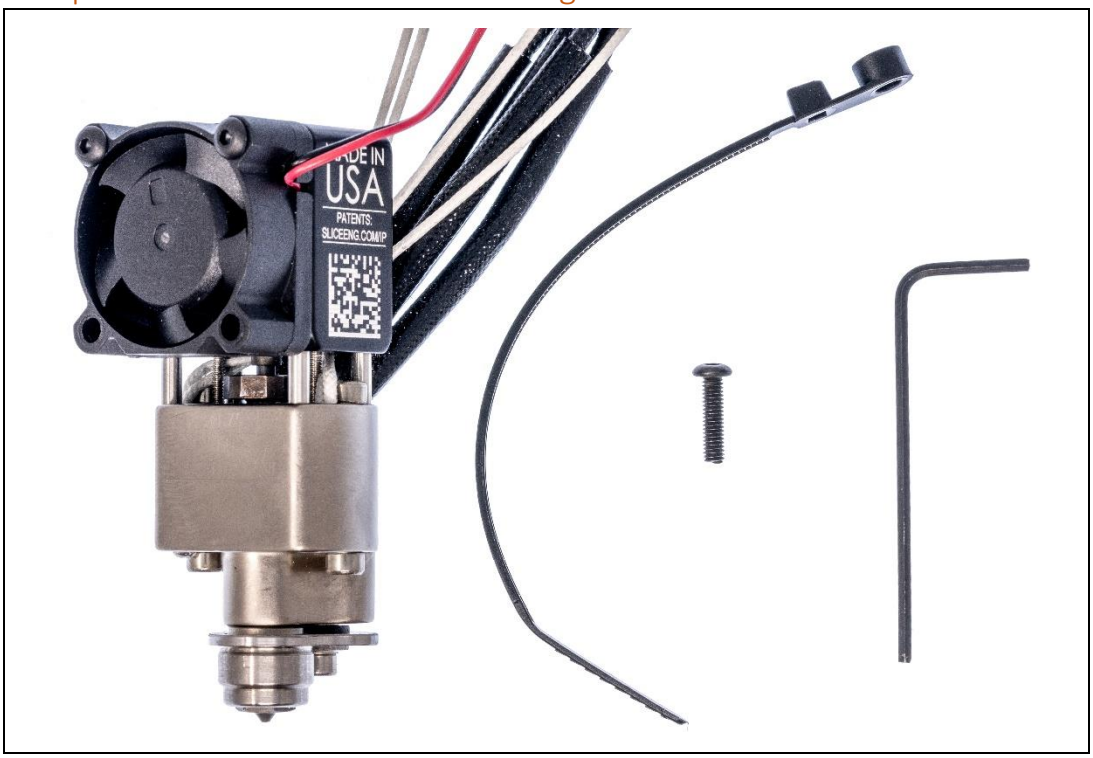
Finished Fan Assembly

- This is what the Fan should look like when fully assembled.
- Notice that the blue sticker is not visible as it is facing the Heat Break.

Step 9: Cable Management

Components Needed for Cable Management



- Please prepare the following items for the next steps:
- Assembled Mosquito® Magnum+ Hotend
- Panduit Cable Tie
- (1x) M2.5 x 0.45 x 10 mm Screw
- 1.5 mm Hex Key

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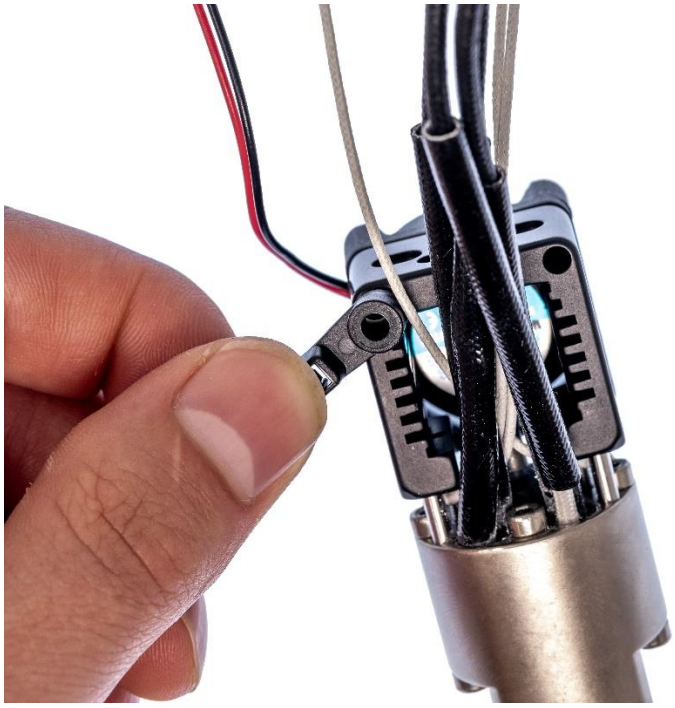
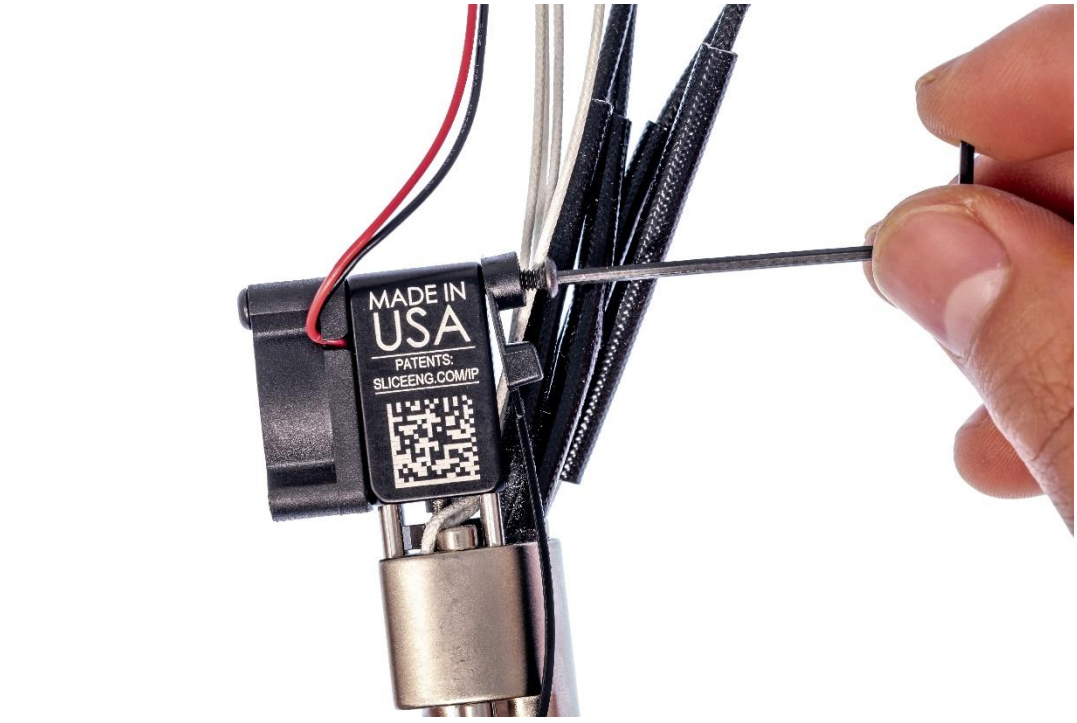
Panduit Cable Tie Location

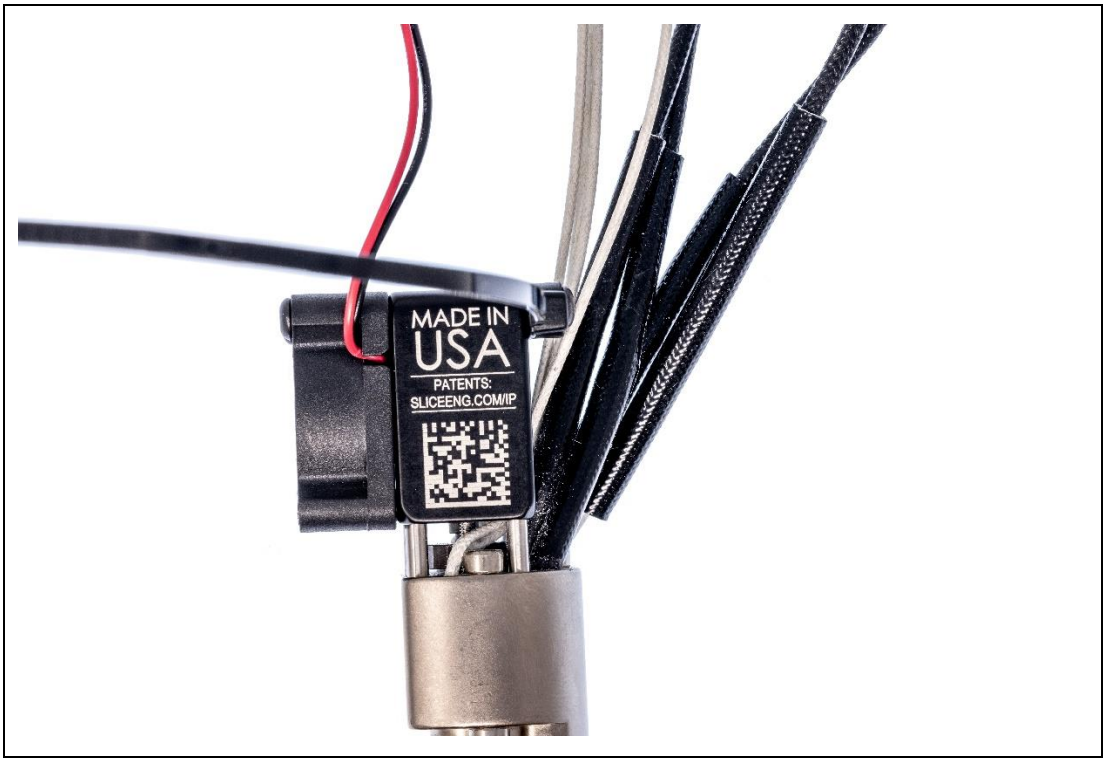


- Place the Panduit Cable Tie's screw opening over one of the Heat Sink screw holes on the opposite side of the Hotend Cooling Fan.

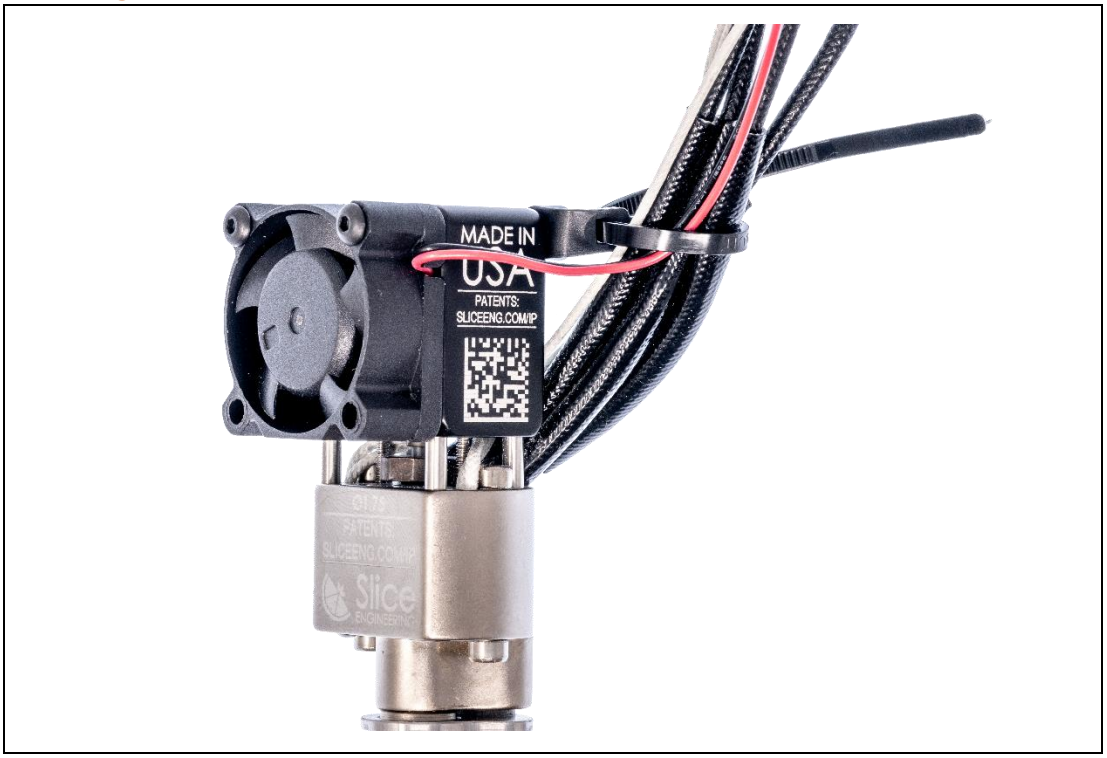
Panduit Cable Installation



- Use the 1.5 mm hex key to screw in the M2.5 x 0 45 x 10 mm Screws.
- Rotate the Panduit Cable Tie so it is pointed away from the Heat Sink.



Securing the Cables



- Wrap the Panduit Cable Tie around the Heater Cartridge, Temperature Sensor, and Fan cables.
- Tighten the Panduit Cable Tie to secure the cables.

Slice Engineering

Cutting the Panduit Cable Tie (Optional)

- Use a pair of cutters to cut the excess length from the Panduit Cable Tie.

Finished Assembly

- Congratulations! You now have a fully assembled Mosquito® Magnum+ Hotend.