STACKER
INDUSTRIAL GRADE 3D PRINTERS

STACKER 500KS Z-Endstop Upgrade Kit and
Aluminum Bed & Heater Upgrade Kit Instructions

Introduction: This guide is divided into three parts. It is important to have a clear understanding of all of the steps in each part before you begin:

PART I details the installation of the *Z-Endstop Upgrade Kit*.
PART II details the installation of the *Aluminum Bed & Heater Upgrade Kit*.
PART III is a necessary final step for to *Verify Z-Endstop Contact* and is used with either upgrade kit.

Note: With the installation of the *Z-Endstop Upgrade Kit*, your Desktop or Full Height STACKER Model 500KS will effectively become a STACKER Model 500S. Upon completing installation of the new Z-Endstop, please download the user guide for the STACKER Model 500S which is available on our support page. If you have any questions, please contact Stacker at info@stacker3d.com.

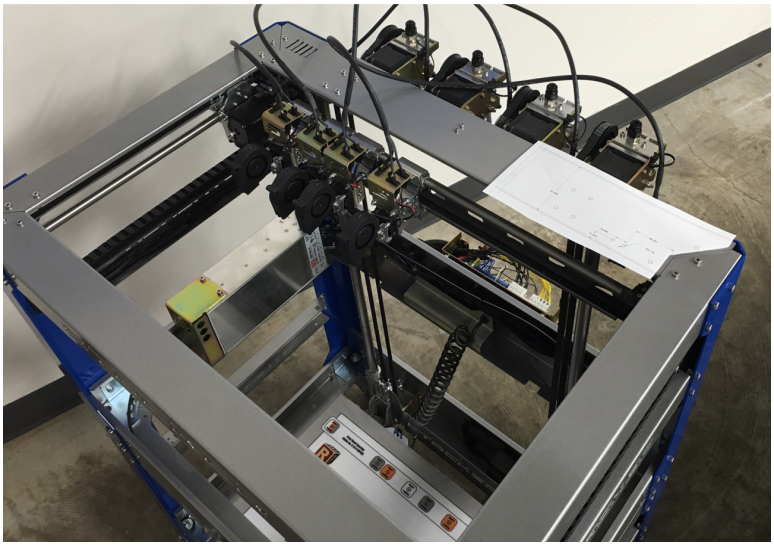
PART I: Installation of the Z-Endstop Upgrade

Kit Contents:

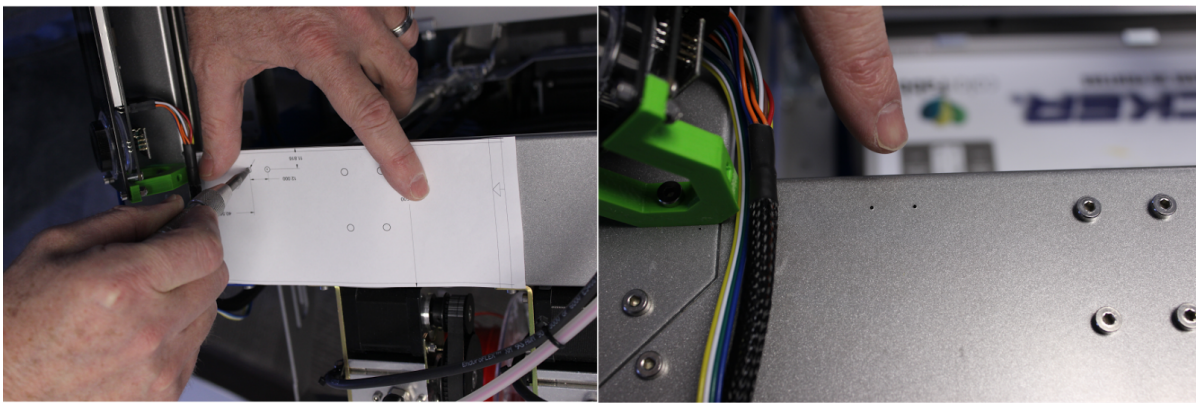
(1) Z-Endstop Hole Drill Template
(1) Z-Endstop Switch Assembly
(2) M3 x 6mm SHCS
(1) Z-Assembly Bracket
(2) M3 x 16mm SHCS
(2) M3 Nylon Lock Nut
(1) M3 x 30mm SHCS Full Thread
(6) Zipties

Step 1. Cutout Drilling Template, Mark Drill Locations, and Drill the Installation Holes.

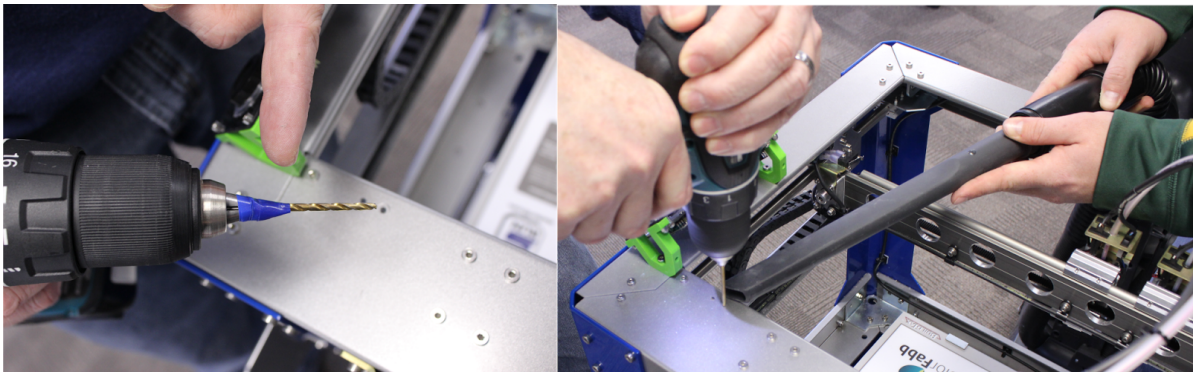
You will be drilling two small holes through the frame of your printer to mount the new Z-Endstop. Align the included “New Z-Endstop Hole Drill Template” on the rear right corner of the printer frame (see image on next page). The template uses bolts and frame parts of your printer as reference points. Use a scissors to trim the template for a better fit.



With the template positioned correctly, use a drill hole punch or alternate method to accurately mark the two drill locations.



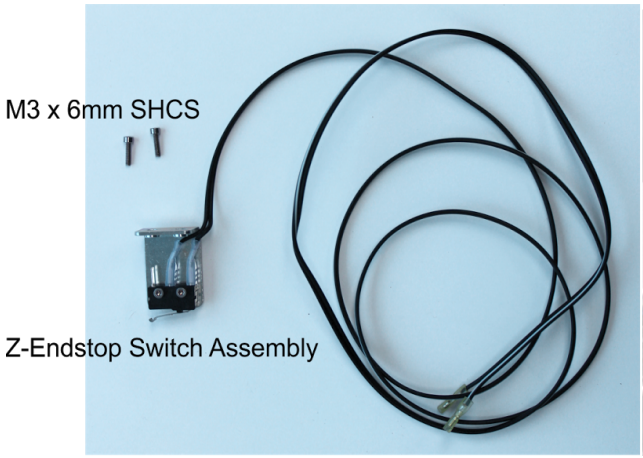
Use a ⅛" bit to drill the two hole locations you have marked. We recommend applying tape to prevent the drill from scratching the surface of your printer. Also, it is important to use a shop vacuum while drilling to collect the metal debris. ***The metal debris created during drilling can cause serious damage to your printer, so be sure to use a vacuum while drilling!***

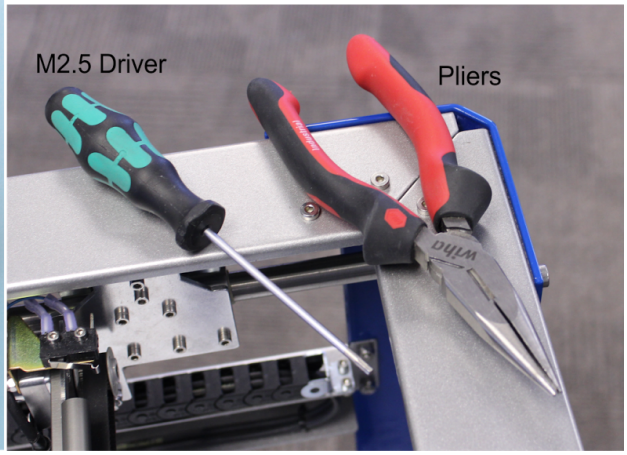


After the two holes have been drilled, use a flathead screwdriver to smooth and remove any metal burrs from the underside the drilled holes.

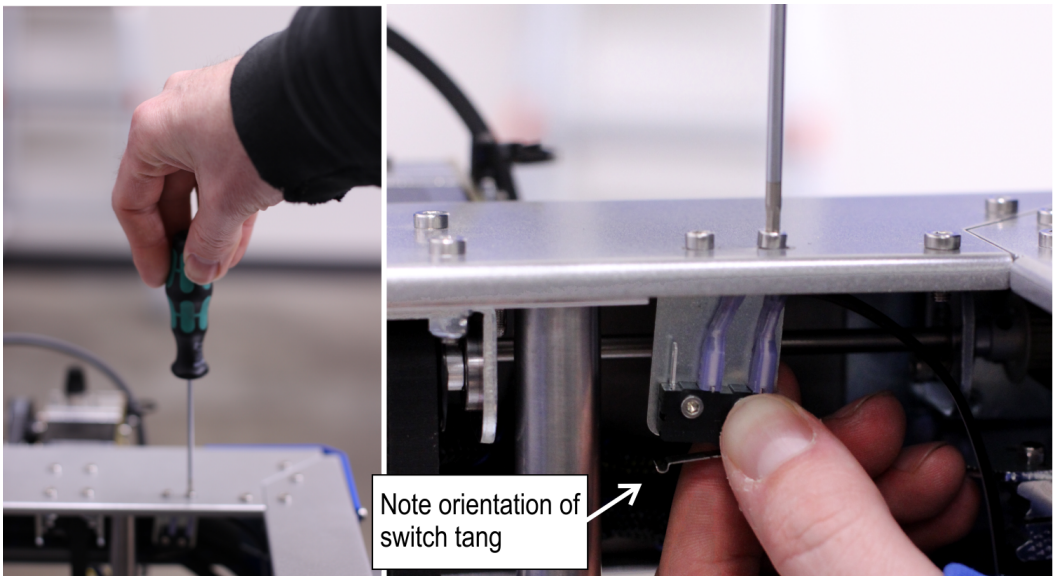
Step 2. Install the New Z-Endstop.

Locate the two M3 x 6mm SHCS and the Z-Endstop Switch Assembly. You will also need a 2.5mm hex driver and a good pair of pliers.



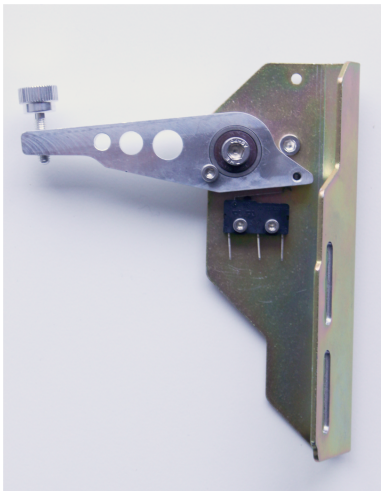


Hold the Endstop Switch as shown below and use the two M3 x 6mm SHCS to attach the switch to the frame through the holes you drilled in Step 1. Note the position of the switch and orientation of the tang in the image below. Run the switch wires toward the wires bundled along the rear interior leg of the frame.

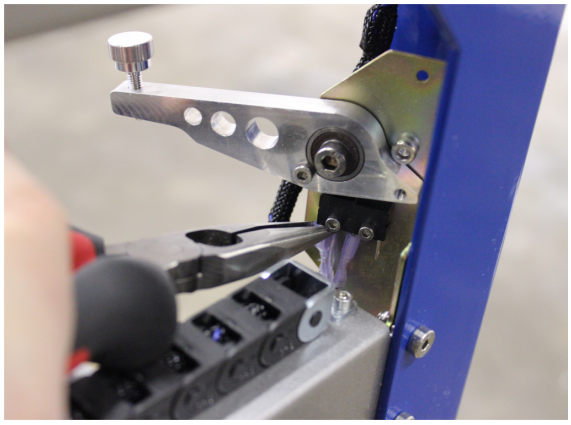


Step 3. Remove the Z-Probe Bracket

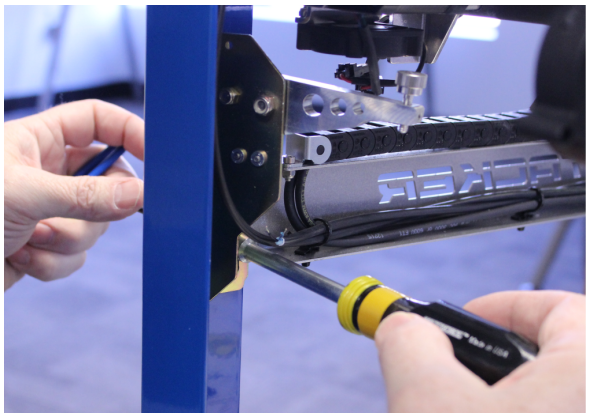
With this upgrade, you will no longer be using the Z-probe to home or level the bed. You will remove the entire Z-Probe bracket (pictured below).



To begin the removal of the Z-Probe, use your fingers or a pliers to disconnect the two wire connectors from the switch.



Next, detach the Z-Probe Bracket by removing the two socket head cap screws, nuts and washers using an M3 hex wrench and an 8mm hex nut driver. After the Z-Probe has been removed, reattach the screws and nuts to the same locations on the frame. The two spacer washers are no longer needed.

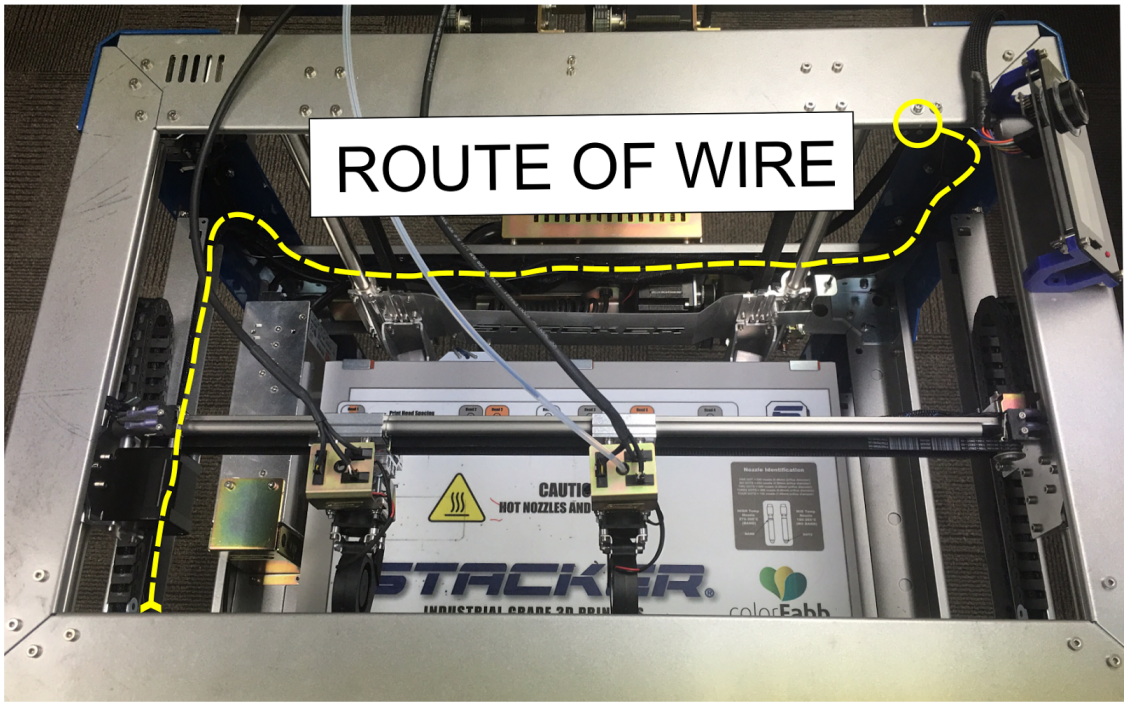


Step 4. Reconnect the the Endstop Wire

You will be splicing the wires from the newly installed Z-Stop Switch Assembly (in Step 2) to the Z-probe wires you detached from the Z-Probe Bracket Switch (in Step 3).

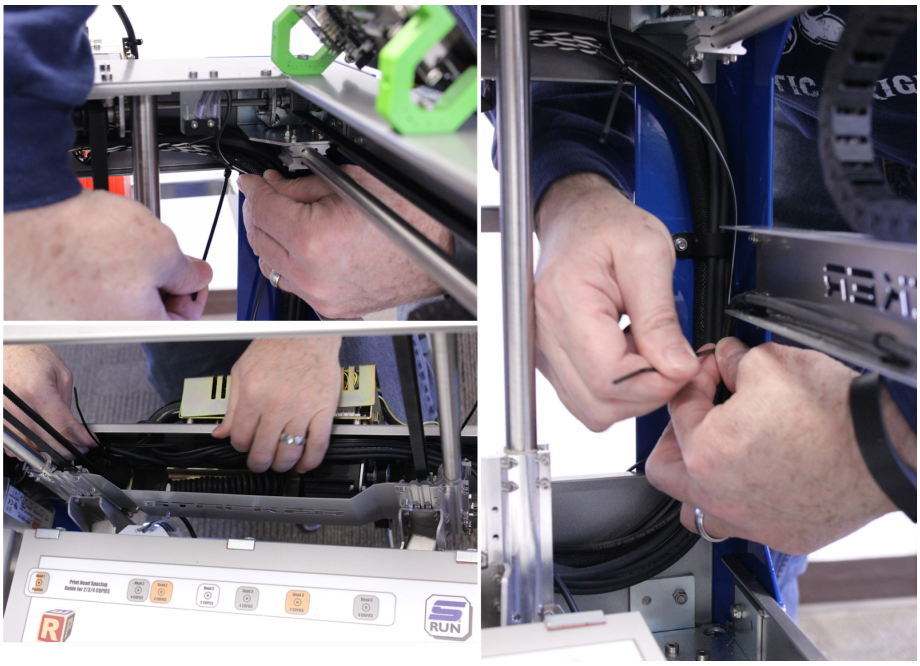
Cut the two connectors from the Z-Probe wires. Be sure to cut these wires as close to the connectors as possible to maximize the available wire for stripping (see image below). After the connectors have been removed, strip both wires (remove the casing of) approximately ⅛” (3mm) by using a 24 gauge wire stripper.

Now, you will need to carefully run the wires from the new Z-Stop Switch Assembly to the wires you just stripped. Run the wire along the current wire bundles. Avoid twisting this endstop wire with the existing wires -- just lay the wire along the route. You will zip tie the wires after the connects are made.

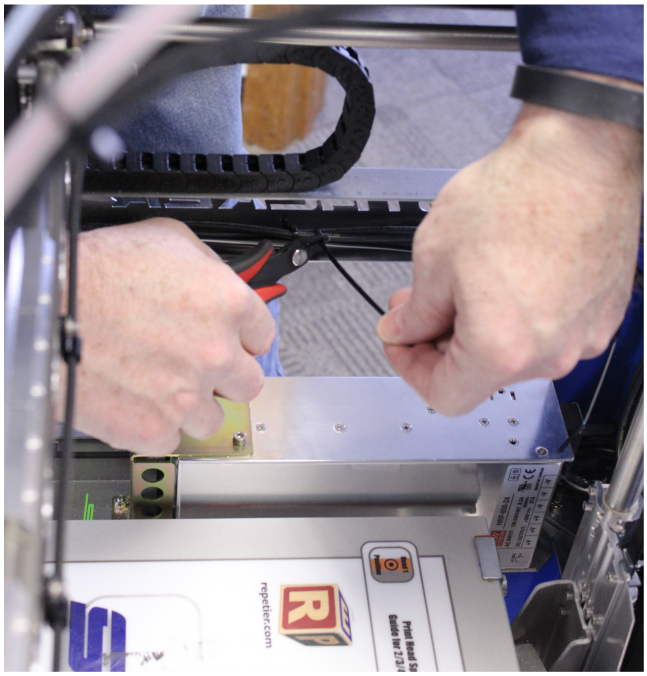


To connect the endstop wires, carefully insert the wires you stripped into the housing and crimp. Polarity is unimportant but both wires must be properly connected for your new end stop to function.

Now that the wire is connected, take up the slack in the wire by using the zip ties to attach the wire to the existing wire bundles.

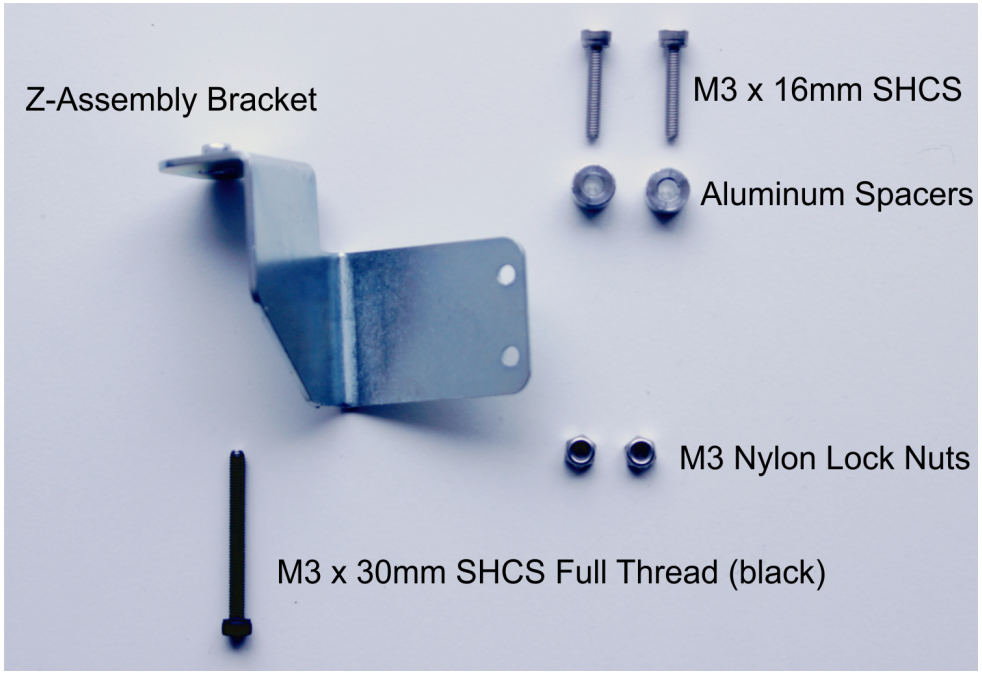


Make sure the wire is zip tied to avoid any moving parts of your printer. Be sure to trim the tails from the zip ties.

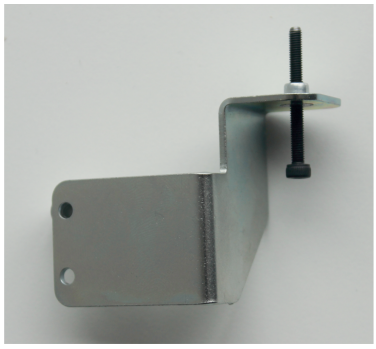


Step 5. Install the New Z-Endstop Bracket

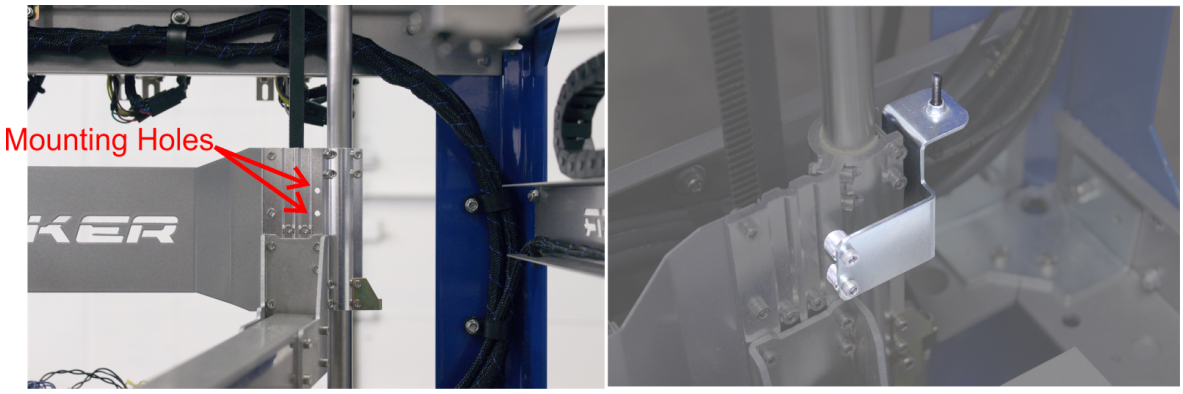
Locate the hardware pictured below to install the Z-Endstop Bracket. You will also need a 2.5mm hex driver and a good pair of pliers.



Insert the M3 x 30mm SHCS Full Thread into the Z-Assembly Bracket as shown. The screw should be advanced about half-way through the bracket.



The Z-Assembly Bracket is mounted to the two open mounting holes shown below. To attach the bracket, use the 2.5mm hex wrench and the good pair of pliers to hold the M3 nylon lock nut. Make sure the nuts are tight and the bracket is firmly attached. Any movement in the bracket will affect your bed leveling and subsequently affect your print quality.



Step 6. If you are installing the Aluminum Bed & Heater Upgrade, continue to Part II, otherwise go to PART III to verify that the endstop makes contact with the switch.

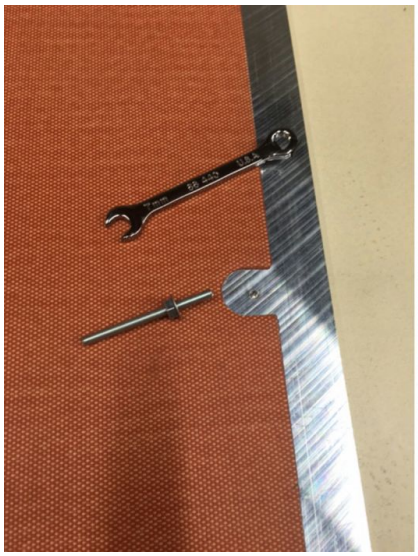
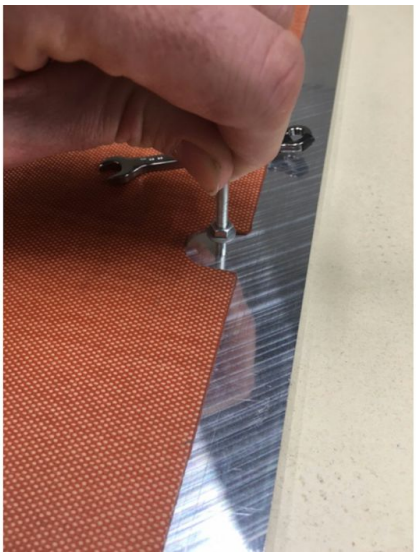
PART II: Improved Aluminum Bed & Heater Upgrade

Kit Contents:

(1) Aluminum Plate w/Heater Bed and BuildTak™ attached
(3) M4 x 50mm Full Thread Rods
(3) M4 Hex Nut with Conical Washer
(2) Large Wire Crimp Connectors
(2) Small Wire Crimp Connectors

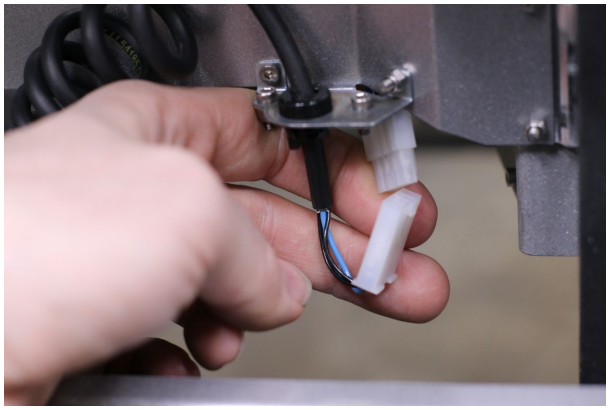
Step 1. Attach the three 50mm Full Threaded Rods to Aluminum Plate

Insert and finger tighten the three 50mm Full Thread Rods into the three threaded holes found on the underside of the aluminum plate (the heater is notched at these locations). If you have a high strength thread-locking fluid available (e.g., Loctite Red) we recommend using it to secure these threaded rods into their locations. Once the Rods are fully inserted, place the M4 Hex Nut with Conical Washer onto each of the threaded Rods and tighten with a 7mm wrench. It is critical that these rods are secure because any movement in these rods will affect your bed leveling.


Step 2. Remove Old Bed

Begin by disconnecting the Molex power connector from the bed. This connector can be found underneath the print bed, and is best accessed from the rear of the printer.

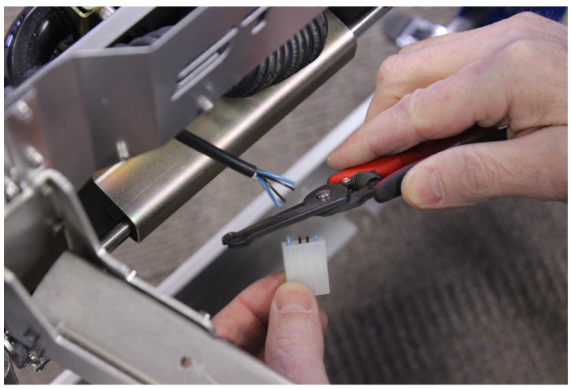


Next, use a 7mm nut driver to loosen and remove the three nuts from the leveling screws found underneath the bed. You will reuse these nuts when you attach the new aluminum bed.

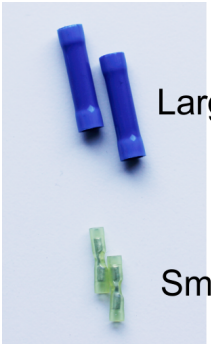
Once the nuts have been removed, the entire bed will lift easily off the printer. When you lift the print bed, the springs will fall from the leveling screws -- be careful to avoid losing these springs, you will need them to install the new bed.

Step 3. Prepare Heated Bed Wiring

Now that the bed is out of the way, remove the bed's Molex power connector and strip the 18 gauge and 24 gauge wires.



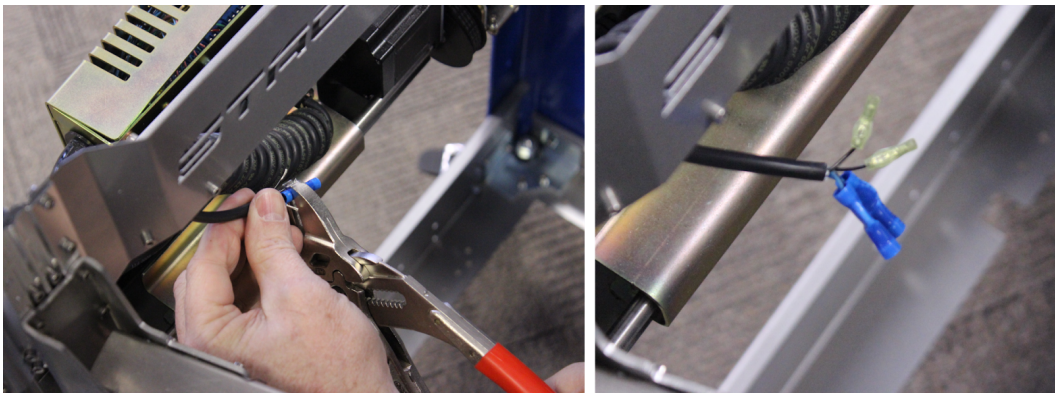
Next, you will need the four connectors pictured below.



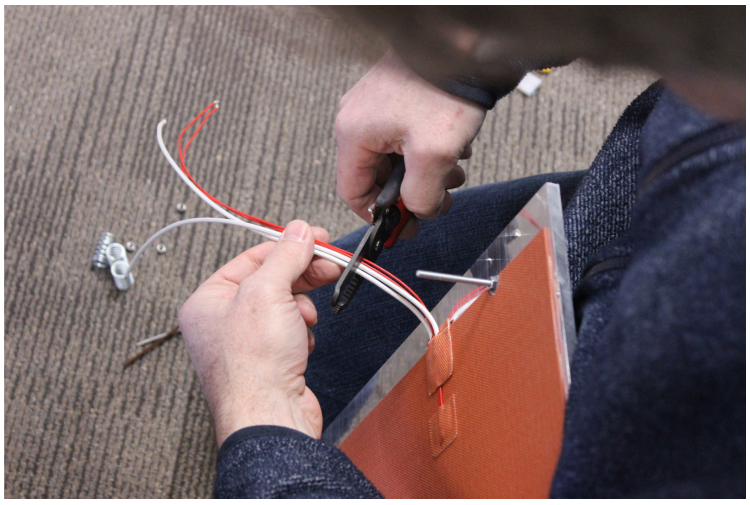
Large Wire Crimp Connectors

Small Wire Crimp Connectors

With each wire, make sure it has been stripped to length sufficient to make contact inside the crimp connector. Use the large blue connectors on the larger 18 gauge wire and the smaller yellow connectors on the smaller 24 gauge wire. Attach these crimp connectors to the wires.

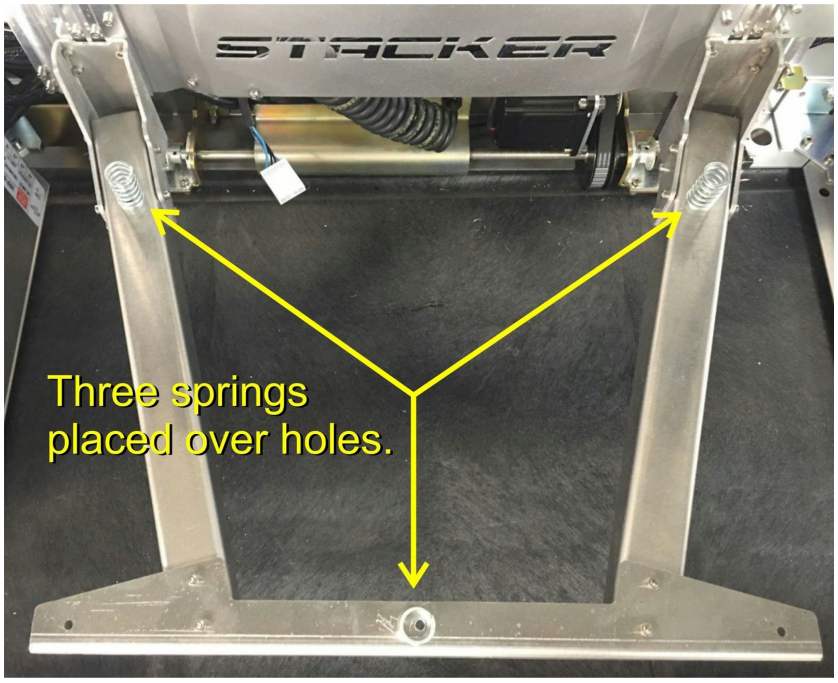


Next, shorten the new heatbed wires leaving approximately 3” (80mm) of wire for splicing. Strip the wires so they will work with the wire connectors.

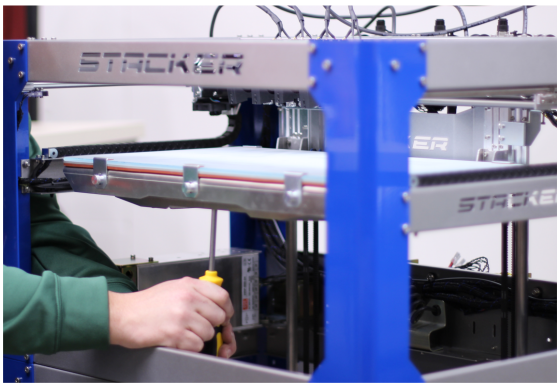


Step 4. Installing the New Bed on the Printer

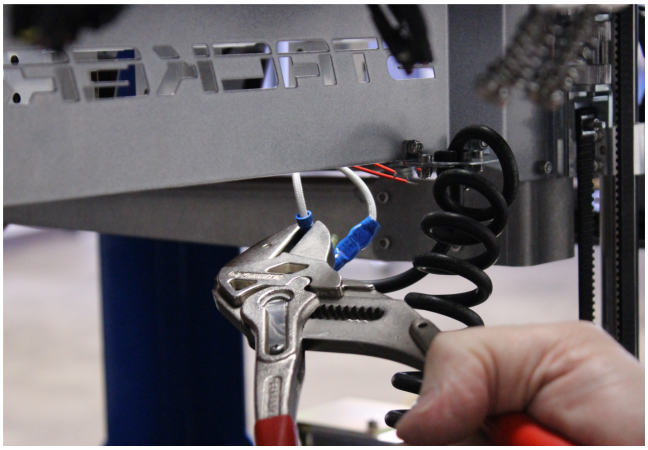
Use the three springs and three nuts you removed earlier during Step 1 to attach the new bed to the printer. Before attempting to place the bed onto the printer, it is helpful to place the springs on the bed frame and carefully lower the new bed into position over the springs.

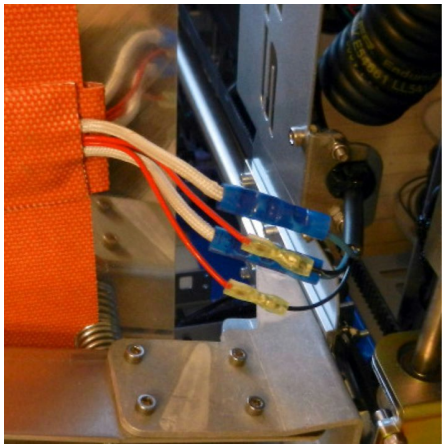


As you lower the bed, the leveling studs drop through the springs and into holes. Once they are all in position, you can attached the nuts from underneath the bed. Tighten the the three M3 nylon lock nuts until they compress the springs and are approximately to the middle of the stud.



Move to the rear of the printer (or tip a desktop printer on its side) to carefully insert the 18 gauge heat bed wires into the blue crimp connectors and crimp them. Then, insert the two smaller 24 gauge wires to the small yellow wire crimp connectors and crimp these. Again, polarity is unimportant, but the wires must be properly connected for your new heater bed to function properly.

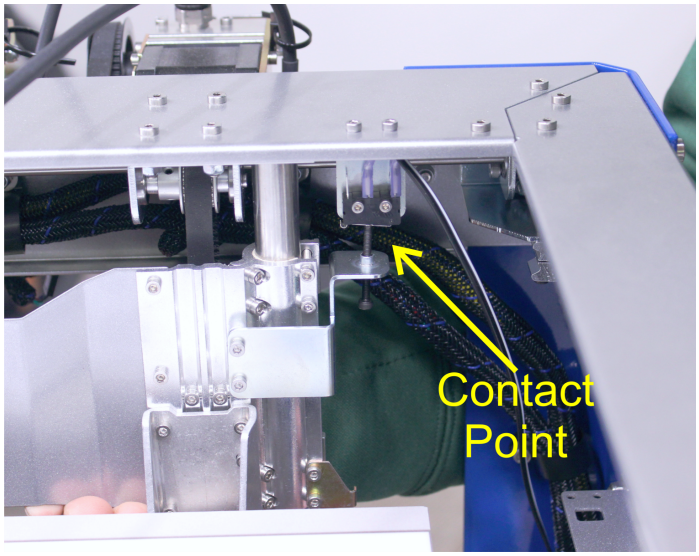




When all four wires have been connected, continue with PART III.

PART III: Verify Z-Endstop Contact

Raise the bed by hand, lifting it near the shafts. The screw on the Z-Assembly bracket should make contact and trip with the Z-Endstop Switch.



If a print nozzle makes contact with the bed before Z-endstop screw can reach the contact point with the switch, then you should first verify the location of the nuts on the leveling screws. The nuts should be at least midway up the leveling screws to compress the springs slightly.

If the leveling nuts are in their proper location, you should then adjust the screw on the Z-Assembly Bracket by turning it clockwise. Turn the screw until you can lift the bed and reach the contact point without having the nozzles crash into the bed.

When the screw is in a position where it makes contact with the switch and the nozzles do not make direct contact with the bed, you have completed the installation of the new Z-Endstop Assembly. Please download the latest manual from our *support page* for the STACKER 500S for instructions on how to perform the bed leveling procedure.