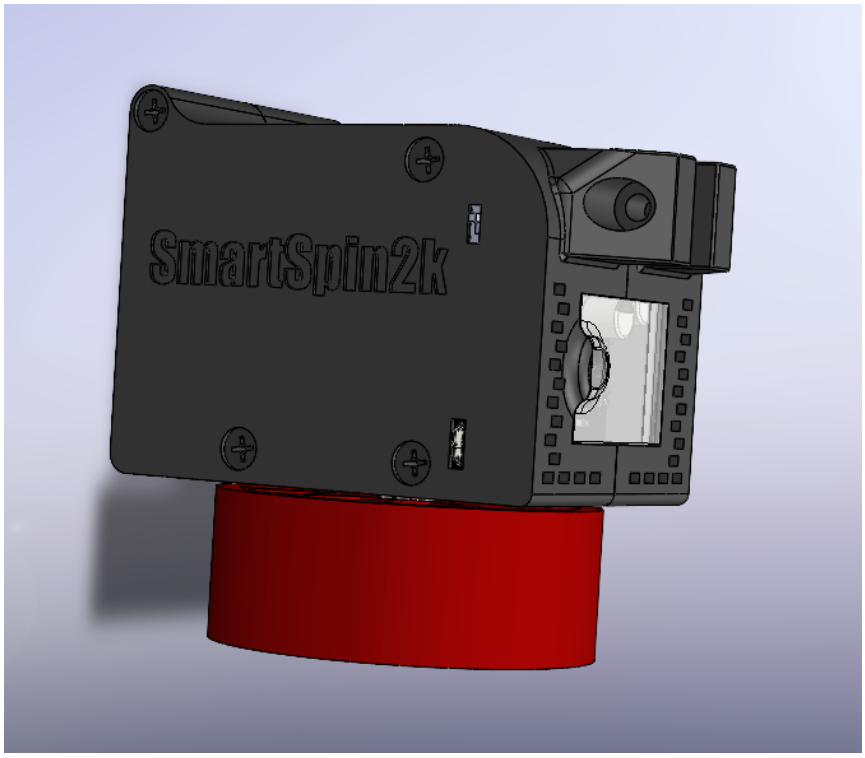
Smart Spin Rev 3 Building Instructions



http://SmartSpin2k.org

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PRINTING GUIDELINES

We've tested a lot of different materials and techniques, but here are our recommended guidelines.

3D PRINTING PROCESS
FDM

MATERIAL
ABS, ASA, PETG or PA

LAYER HEIGHT
Design optimized for .3mm

EXTRUSION WIDTH
Design Optimized for .6mm
But prints well with .4mm as well.

INFILL TYPE
Grid, Gyroid, Honeycomb, Triangle or Cubic

INFILL PERCENTAGE
Recommended: 40%

WALL COUNT
Recommended: 4

SOLID TOP/BOTTOM LAYERS
Recommended: 5

We suggest printing the knob cup in an accent color. Our preferred accent color is **RED**.
The window should be printed in a **TRANSLUCENT** PETG to let the LEDs show through.
The rest of the design can be printed in **BLACK**.

HARDWARE

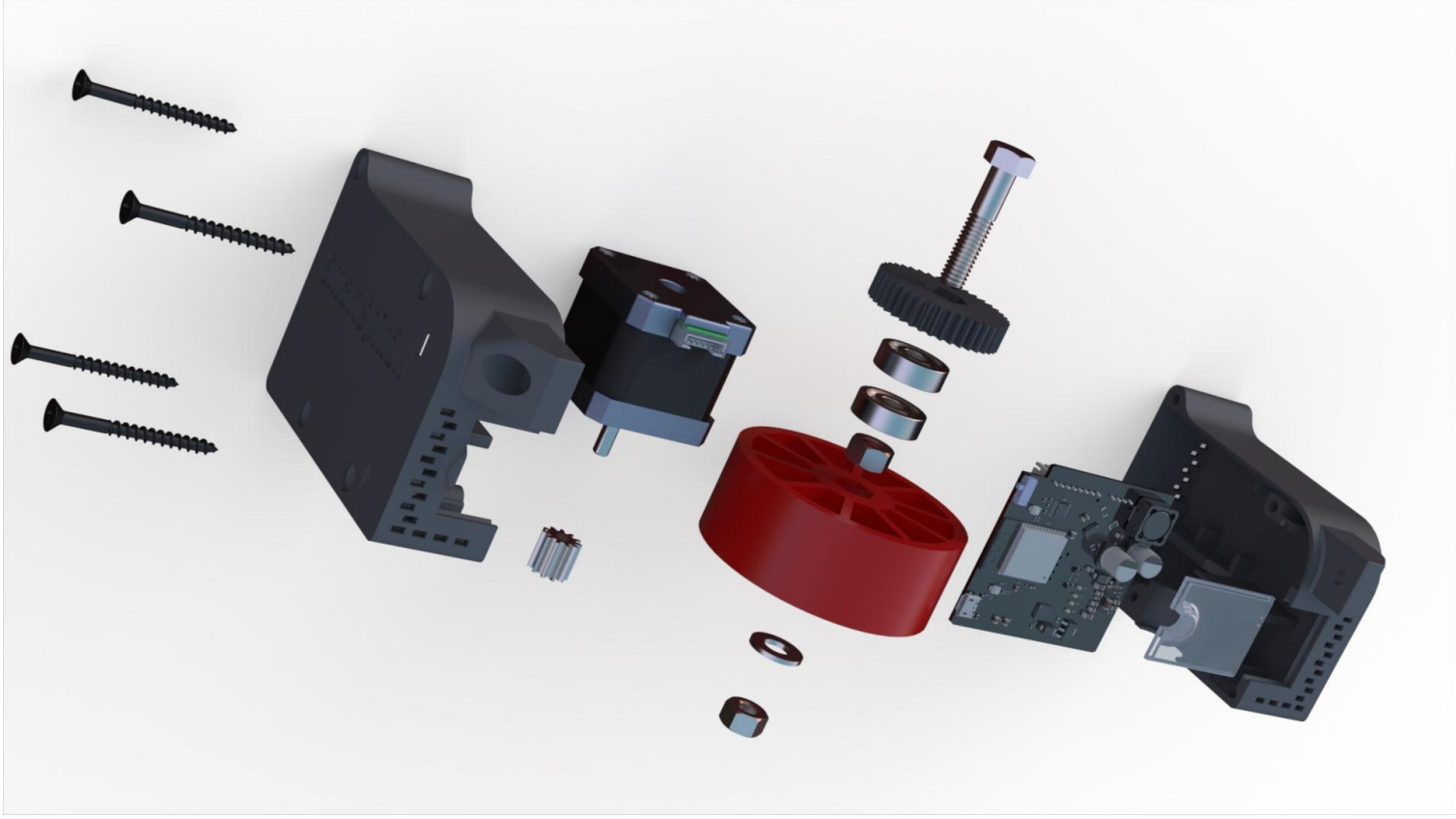
SmartSpin2K has been designed to minimize the amount of hardware you'll need. Rev 3 takes this approach even further.

- SmartSpin2K PCB
- SmartSpin2K Cables
- 12 or 24v Wall Power Supply
- 38mm NEMA 17 Stepper
- 2 x 608 Skate Bearings
- 1 x 5/16" x 1-1/2" Hex Head Holt
- Stereo RCA-->3.5mm headphone "Y" Cable
- 2 x 5/16" Hex Nuts
- 5/16" Flat Washer
- 4 x 2" Black Oxide Sheet Rock Screws
- 2 x M5 X 30mm Cap Screw (or #10x1.25")
- 2 x M5 Hex Nut (or #10)
- 2 x Tactile Switches
- Zip Ties or Velcro Strap

NOTE: Only one of each item is required unless an x is indicated to imply multiples.Refer to the wiki for questions about where to obtain parts.

OVERVIEW

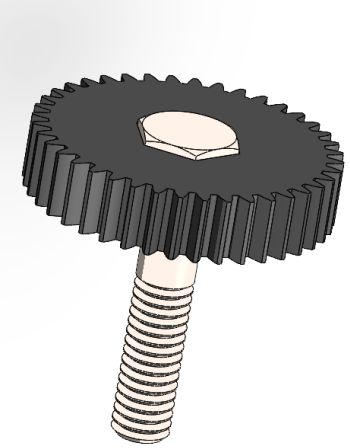
This is an exploded view of the main SmartSpin2k Body. Feel free to come back to it if you have any general questions on where parts fit.



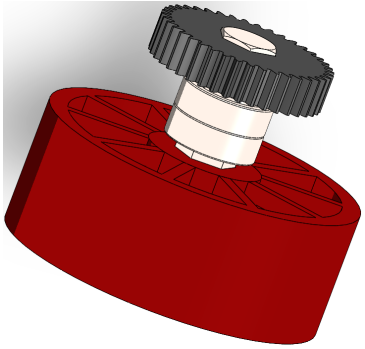
AXLE ASSEMBLY

For this step, you'll need the 5/16" bolt, both 608 bearings, the washer and both nuts. Blue threadlocker is also recommended on the nuts.

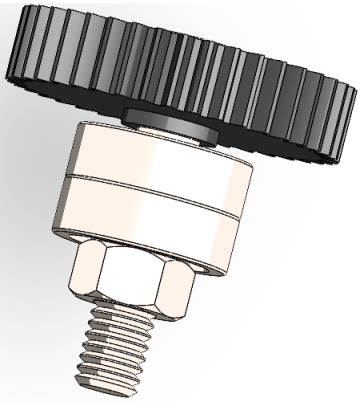
Insert the bolt into the 40t gear.



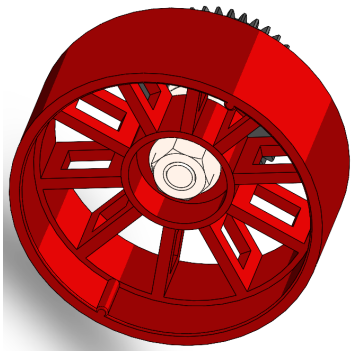
Slide the knob cup Onto the axle assembly.



Install both bearings and one nut onto the bolt.



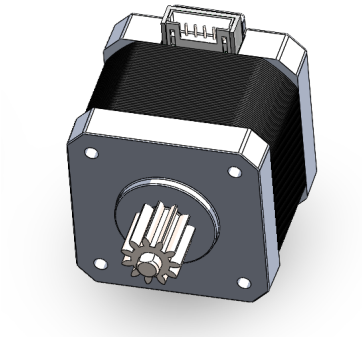
Install the washer And the final nut Onto the assembly. Tighten by holding the gear in your hand with a cloth and a ratchet on the nut.



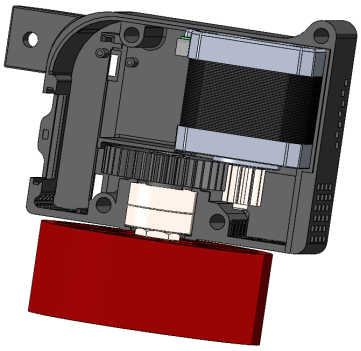
STEPPER INSTALLATION

It's time to put the motor into the case!

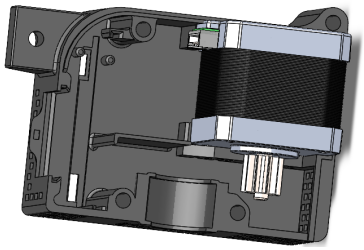
Line up the flat side and press the gear onto the D shaft. Depending on printer tolerances, you may need to heat the gear to prevent damaging it.



Insert the axle assembly into the left case half.

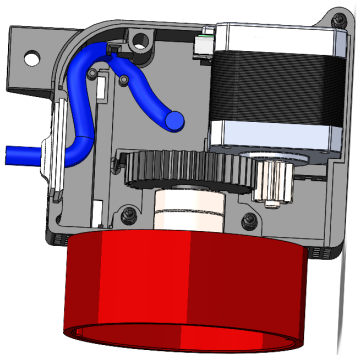


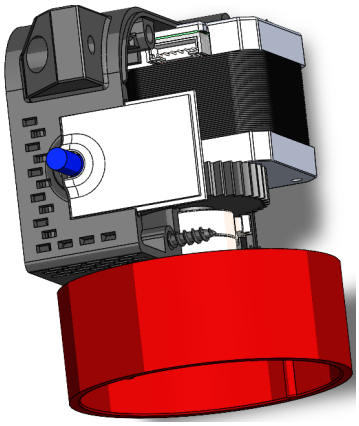
Place the stepper into the slot in grooves in the left case half.



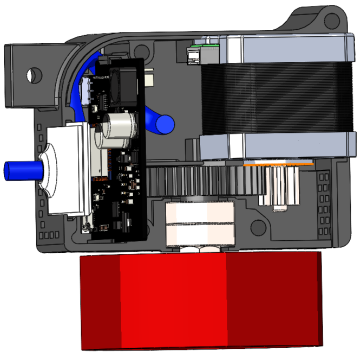
PCB INSTALLATION

Prior to PCB install, lay the main cable (blue) on the side of the case and out of the hole in the window using the two pegs on the case to hold the wire in place. Slide the window into place.Leave the connector disconnected until the board is in place.





Carefully slide the PCB Into the grooves on the case half being careful not to pinch the cable. There is a cutout in the PCB to let the cable pass through.

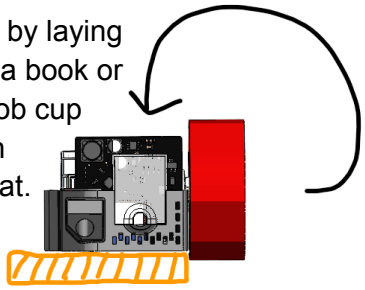


Once the board is in place, both the stepper motor cable and the main cable can be connected. If Solidworks Gave me cable routing, I'd show that To you. :)

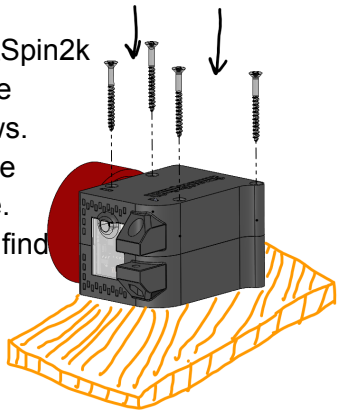
JOINING CASE HALVES

Follow along with the pictures in the instructions below.
Use your imagination and pretend there's a cable sticking out from the appropriate hole in the window.

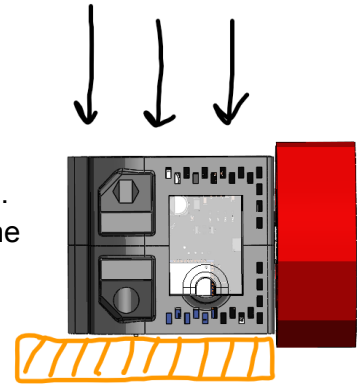
Prepare for this step by laying the SmartSpin2k on a book or board so that the knob cup doesn't interfere with the assembly lying flat.



Now flip the SmartSpin2k Over and Insert the 4 sheet rock screws. Tighten until they're flush with the case. Hopefully you can find a straighter board than this one.

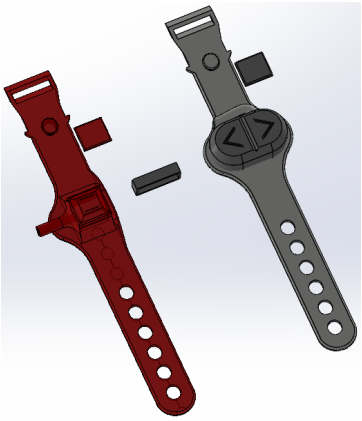


Evenly slide the opposite Case half onto the other side. There is a locking tab near the rear vents that should click Into place.

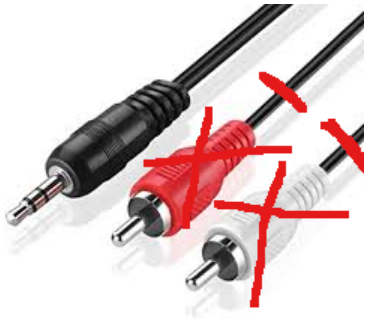


BUILDING SHIFTERS

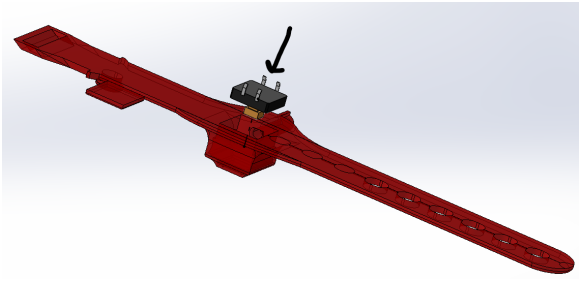
There are currently two similar shifter designs. One places both buttons on one TPU strap. The other is if you'd like shift up on one hand, shift down on the other. They are both built similarly, so we will only show the single button shifter.



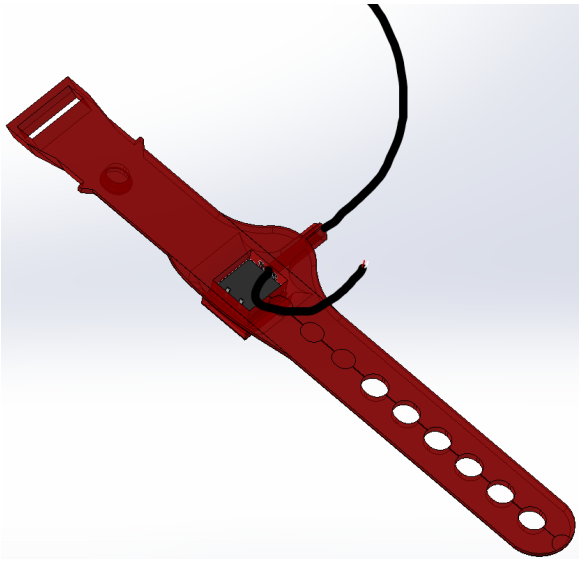
Prepare an 3.5mm to stereo RCA cable by cutting off both RCA ends.



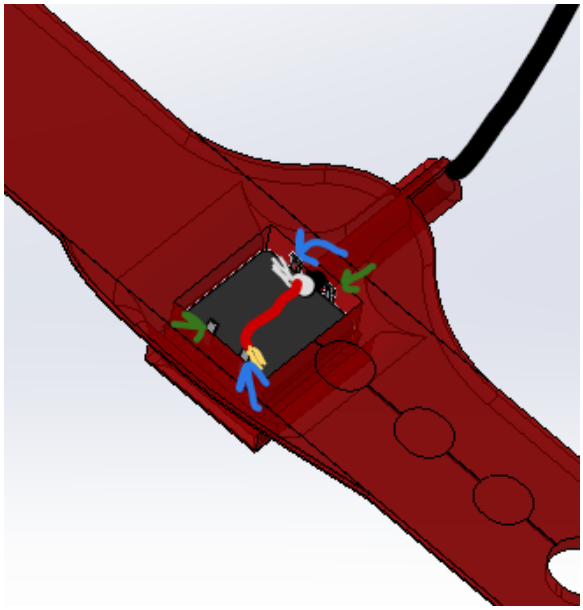
Flip the shifter upside down and insert a tactile switch into the shifter as shown.



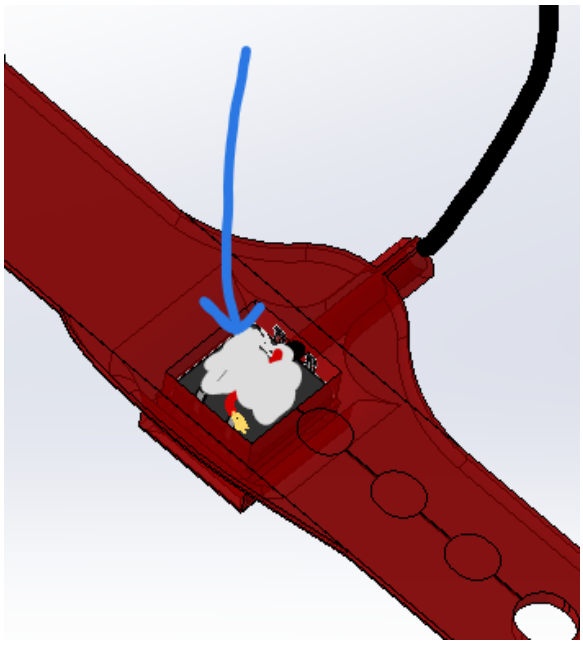
Insert the cut end of the RCA cable into the housing and pull excess through. Then strip about ⅜" of cable back to expose the conductor and shield.



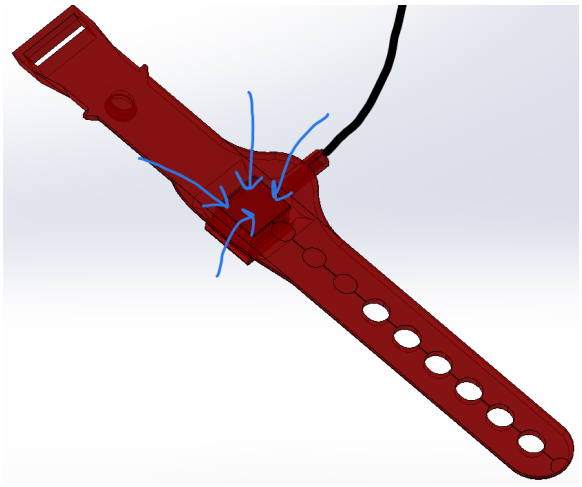
Fold the blue tabs on top
of the conductors, apply
a dab of flux and then solder.
Fold the green tabs down
out of the way so the cover.
will fit properly..



Place A dab of hot glue on top of the switch. More might be better, but I don't know what your definition "more" is.



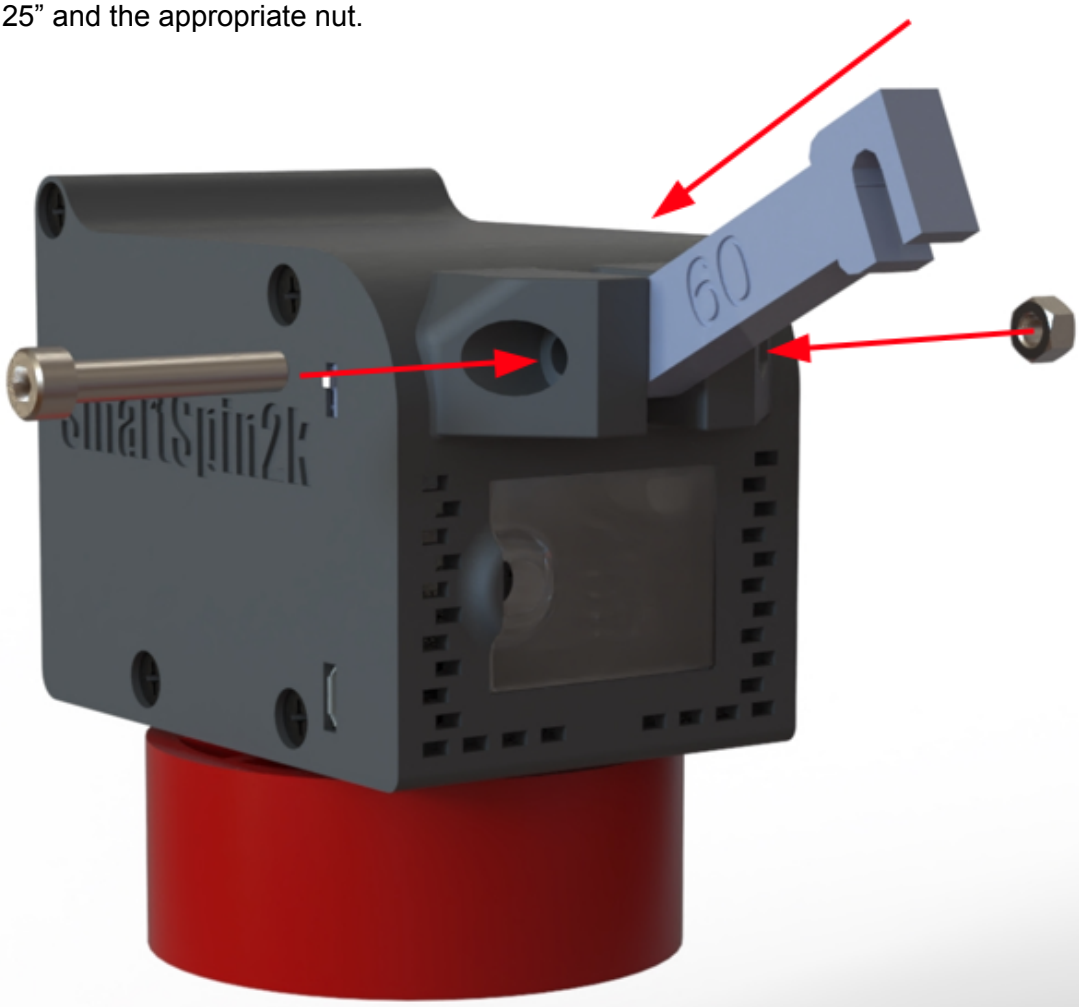
Finally insert the plug into the back while the glue is still hot. Apply even pressure so it is flush.



INSTALL BIKE ARM

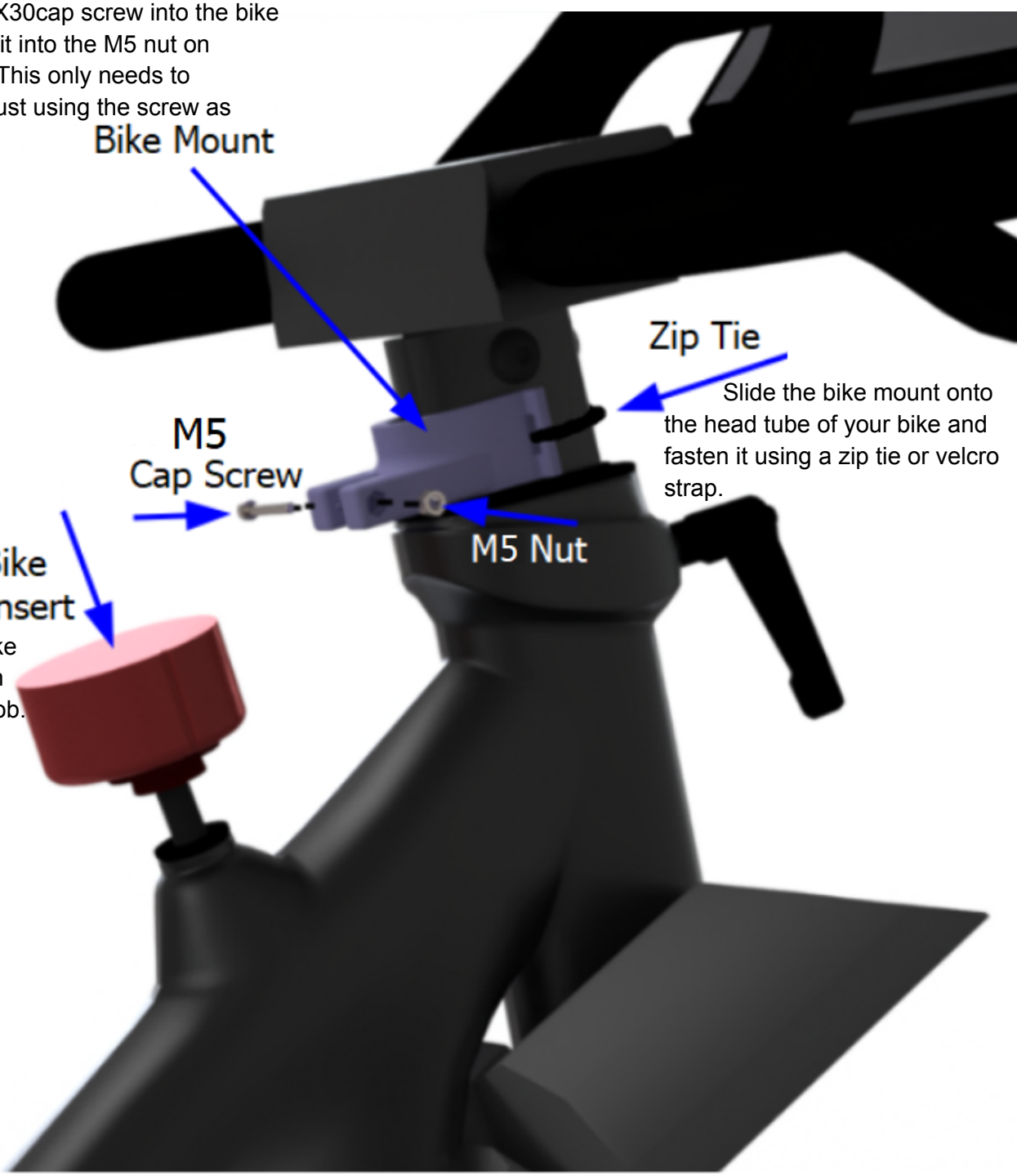
Finally, an easy step.

You'll need 1 M5X30mm or
#10x1.25" and the appropriate nut.



INSTALL BIKE MOUNT

First insert the M5X30cap screw into the bike mount and tighten it into the M5 nut on the opposite side. This only needs to be snug as we're just using the screw as a crossbar.



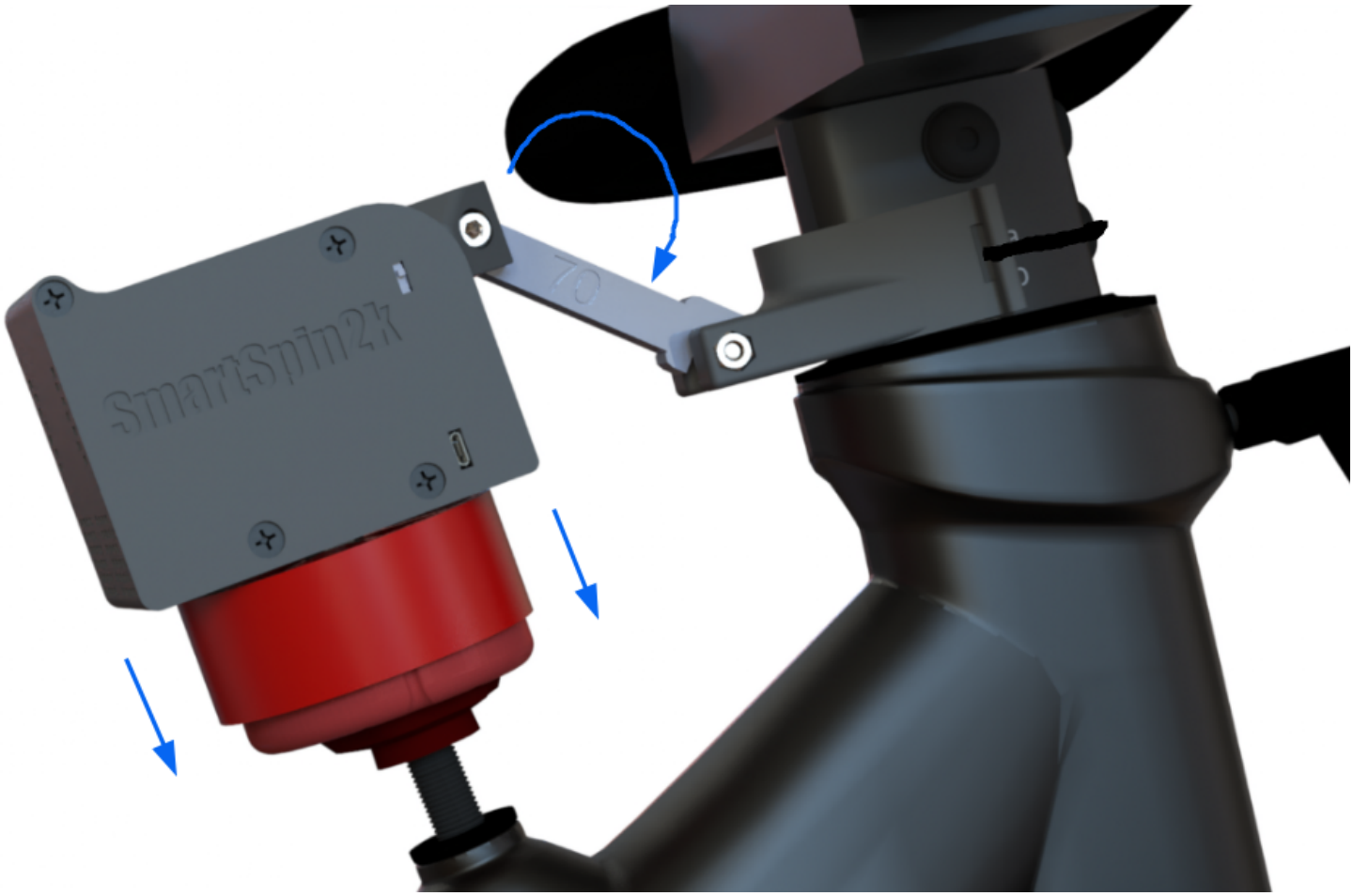
Slide the bike mount onto the head tube of your bike and fasten it using a zip tie or velcro strap.

Third, place the bike insert onto the spin bike resistance knob.

MOUNT SS2K ON BIKE

Line up the indexing grooves on the knob cup with the ones on the bike insert and lower the SmartSpin2k into place.

Then rotate the bike arm down onto the cap crew in the bike mount.



FINISHED ASSEMBLY

Congratulations. You deserve a break!