CS7.2 Sorter Assembly Guide

Printing the parts

The models for the 3d printed parts for the classifier base are available in the “Sorter” folder in the GitHub CS7.2 repo.

https://github.com/sjseth/AI-Case-Sorter-CS7.2/tree/main/Models/Sorter

From this folder, you need to print the following models.

- CS7.2 Pipe Bracket
- CS7.2 Sort Pipe – 40mm LO **or** CS7.2 Sort Pipe – 200mm LO
- CS7.2 Sorter Base
- CS7.2 Sorter Homing Interrupt

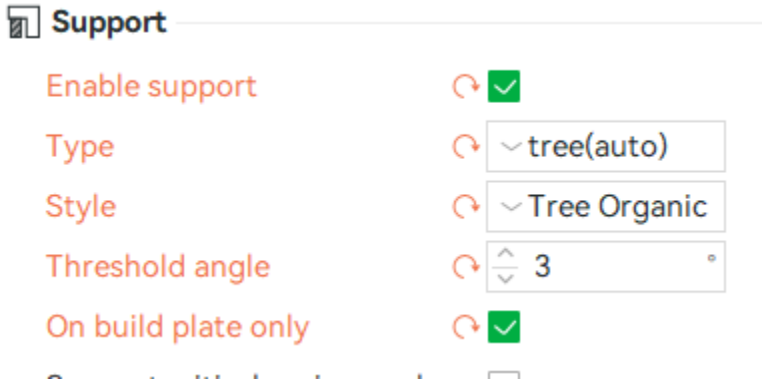
For these parts here are the basic recommendations:

Filament: PLA+ or PETG.

Color: These parts can be printed in any color you have available.

Layer Height: .2 or finer

Support: Recommend using tree support for the sorter base, however, use the support mode you get the best results with on your printer. For Bambu printers, I have found these settings work well:



Note that other slices such as Cura, the support angle may read 87 degrees (opposite of Bambu/Orca slicer)

Strength/Density: 3 walls, 20% infill

Assembly

Tools Required:

- Screwdriver with bits or Allen keys for M3, M6 socket head cap screws

- Small Phillips head screwdriver

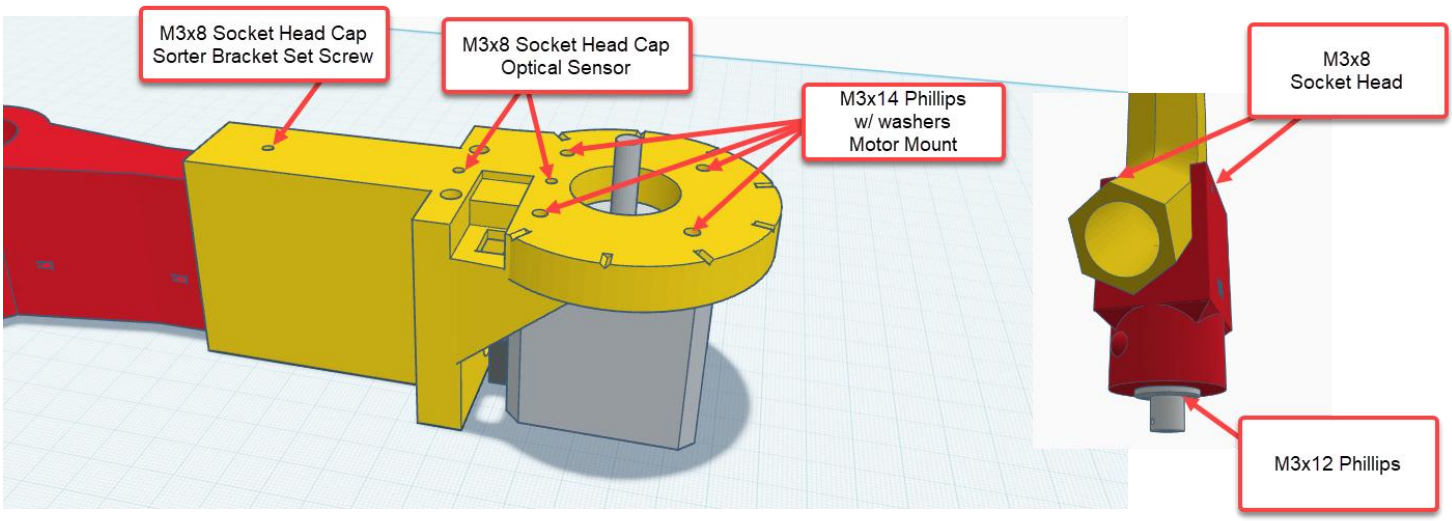
Hardware required:

- (4) M3x14 Phillips Head Screws (motor mount)
- (4) M3 washers
- (4) M3x12 Phillips Head Screws (for flange mount)
- (3) M3x8 Socket Head Screw (set screw for base mount and sort pipe)
- (1) 5mm Motor Flange with lock screws
- (1) m3x18 Socket Head (clamp screw for homing interrupter)
- (optional) Small Zip Ties .1”W x 4”L

Electronics

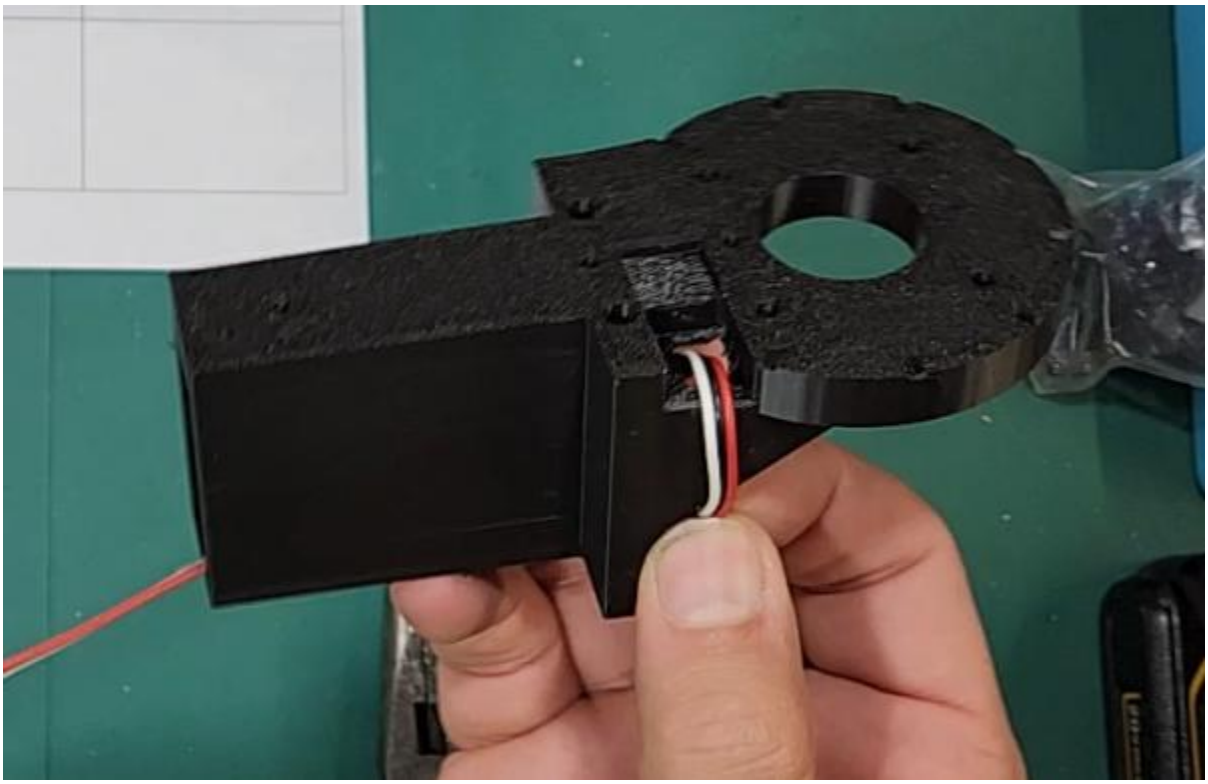
- (1) Nema 17 Motor
- (1) Optical Homing Sensor

The following diagram is a quick reference to where the hardware belongs.

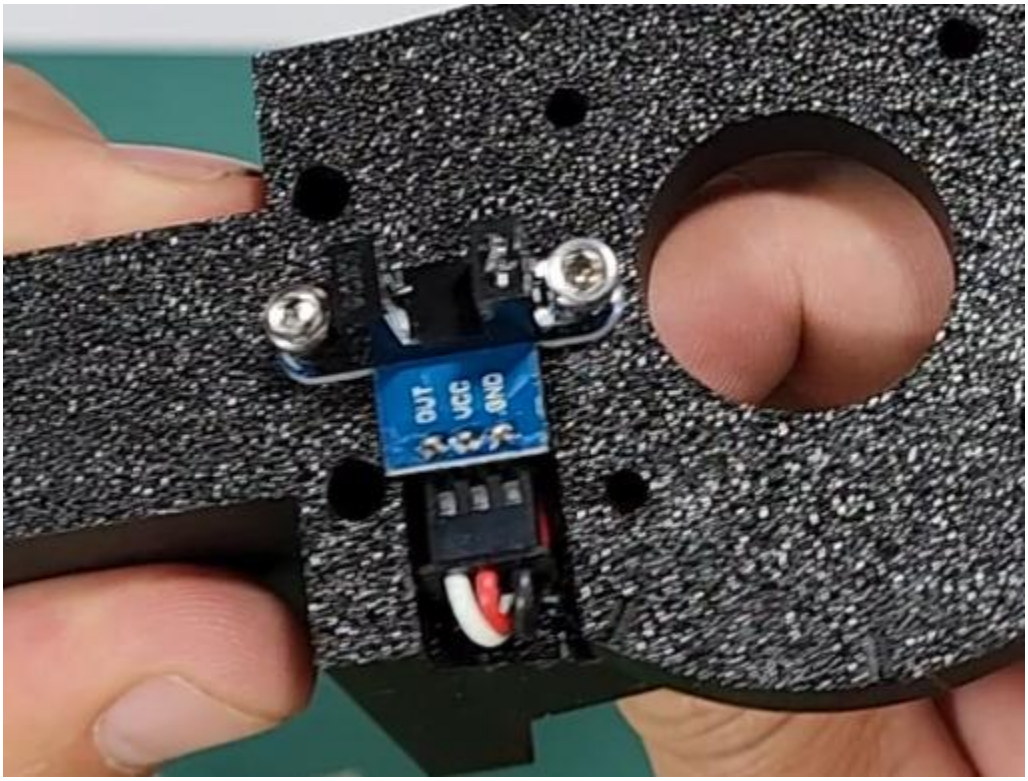


Assembly Steps

1. Remove 3d printed support material from Sorter Base.
2. Run cable for sensor passing it through the inside of the sorter base, and up through the square hole

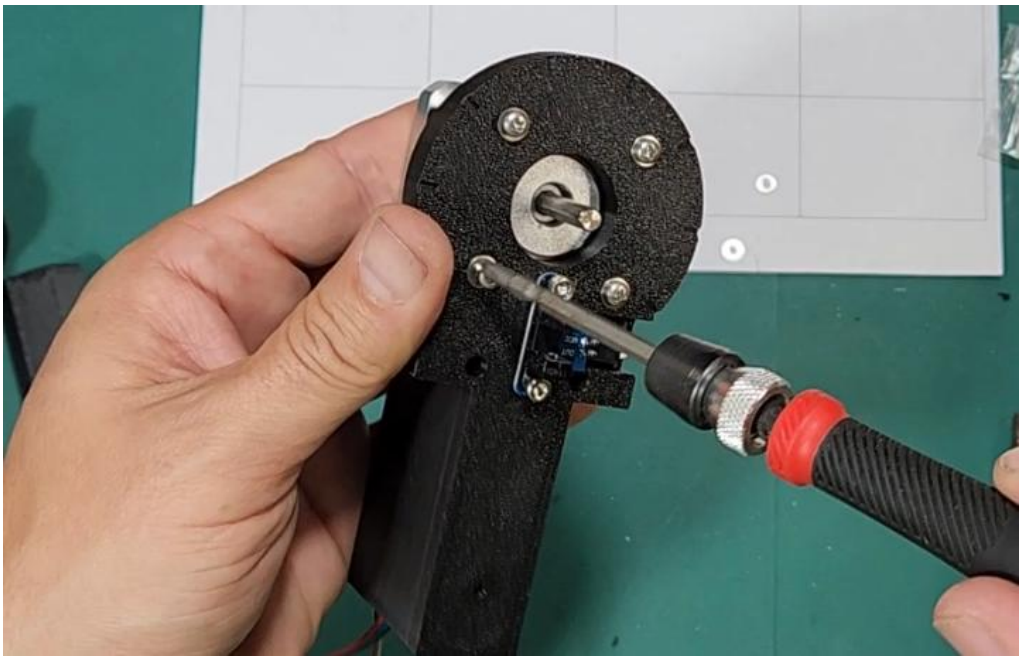


3. Install Optical Sensor using two M3x8 socket head screws and connect the cable. The clips on the connector should be face down. In the orientation for the picture above, the white wire is on the left, red on the right.



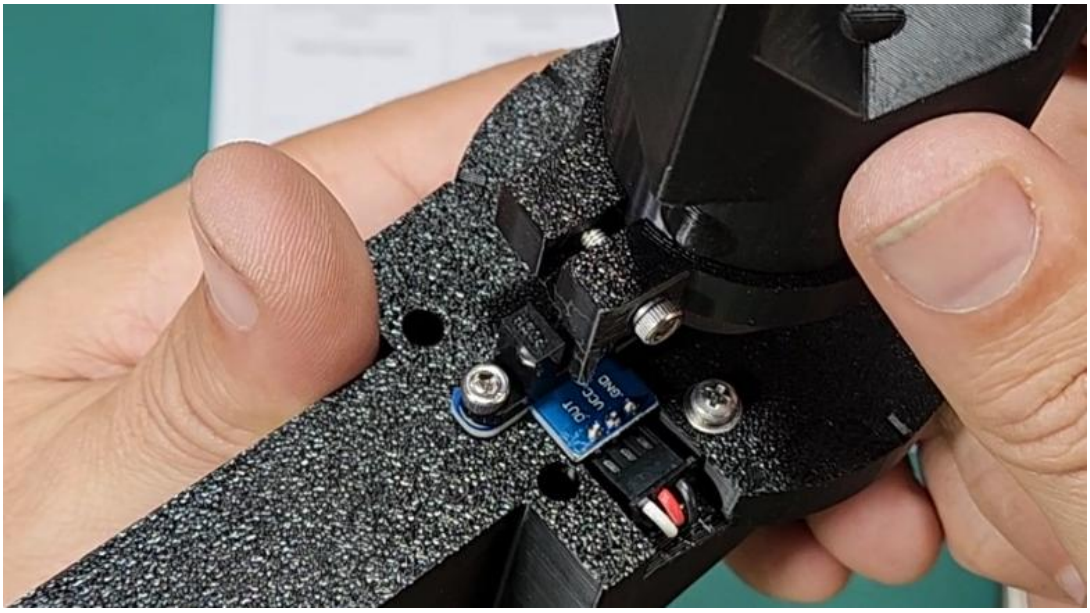
4. Run the motor cable through the inside of the sorter base and connect to the Nema 17 motor.
5. Attach the motor to the sorter base with the cable facing the wire management hole in the bracket.

6. Attach the motor using 4 m3x14 Phillips screws and 4 washers. The washers are important here to prevent the motor from being pulled through if there is excessive heat buildup.



7. Install the 5mm Motor flange onto the bottom (recessed) side of the Sort Pipe Bracket. This should be installed using 4 of the Phillips head m3x12mm screws. The screws should go through the flange and thread into the bracket
8. Attach the homing sensor interrupt to the bottom of the sorter pipe bracket using one m3x18 screw. Tighten just enough so that the interrupter can still be rotated around the bracket

9. Add set screws to the flange and then slide it down over the motor shaft, locking the set screws in place. One of the set screws should lock down on the flat side of the motor shaft.
10. Clip the sorter tube into the sorter bracket ensuring that the two indexing slots are aligned.
11. Insert a m3x8 socket head screw into both sides of the sorter bracket to hold the pipe securely in place.
12. Rotate the Bracket/pipe until it is aligned with the 1st indexing notch on the sorter base.
13. Rotate the sort homing interrupt until it covers the first half of the sensor slot. Tighten down the interrupt lock screw.



14. Insert the pole mount bracket into the sorter base ensuring that the motor and sensor wire are guided in the wire management channel in the bracket.
15. Use a m3x8 socket head screw as a set screw to keep the two pieces in place (do not over tighten as we will need to adjust this during the install and don't want to create a dent yet in the bracket.

This completes the bottom half of the sorter build. It is now ready to be mounted to the pole and connect up to the electronics.