

Gugusse Compact Layout

This document will explain how to lay out your Gugusse Roller. You'll need a good Hot Glue Gun to complete many of the steps. The good thing about Hot Glue is that it's very strong and can be removed if you need to with a flat screwdriver or scraper. Hot glue at multiple points around the devices to glue them to the board.

Printed Parts:

ITEM	FILENAME	PRINTING NOTES
Big Pi Camera Holder	BigPiHolder.stl	Substitute for other camera mounts if using other cameras besides the Raspberry Pi HQ camera. Any color.
Slide	Glissade.stl	This is a big part but you absolutely need it. White will have a benefit.
Sled	Traineau.stl	Any color.
PCB Mount	Gugusse_PCB_Mount.stl	Optional – Designed to hold a 8cm X 10cm PCB.

Assemblies and Purchased Parts

ITEM	QTY	NOTES
2' x 2' x ½" (70cm X 70cm x 13mm) Wooden Board	1	Everything will be attached to it.
10" x 10" (25cm x 25 cm) Steel Plate	1	We found a galvanized steel "Sign" at a craft store.
Hot Glue Gun w/Glue	1	Get a decent one that doesn't drip.
Double Sided Carpet Tape	20"	Used to hold down metal plate but hot glue would work as well.
Main Base Assembly	1	
Turntable w/Shoe	2	
PC Power Supply (AT or ATX)	1	Must have a connector to power the Gugusse PCB
24 Pin ATX Jumper Bridge Tool	1	Use if using an ATX power supply.
Gugusse 3.1 PCB / Raspberry Pi Combo	1	
Raspberry Pi HQ Camera with Lens, Extended Cable, and Adapters.	1	Many Lens options here. Suggest Edmunds Optics 17.5mm FL f/5.6, Blue Series M12 Lens - #83-943 / C-Mount to M12 Adapter for UCi Lens - #12-879 – 5mm C-Mount Extension (eBay).Hole
Configured EX-DN10 Hole Sensor	1	
M2.5 x 16mm Bolt	2	To Mount Camera
M2.5 Nut	2	To Mount Camera
#6 X 3" Bolt	1	
#6 Nut	1	
Neodymium Magnets	8	Ours are 2.2 x 1.5cm – Anything around that size will work.

Position the two drive units on the upper corners of board on their shoes and have them overhang as shown. This will give you more space for the rest of the machine. The Feeder is on the left and the Pickup is on the right.



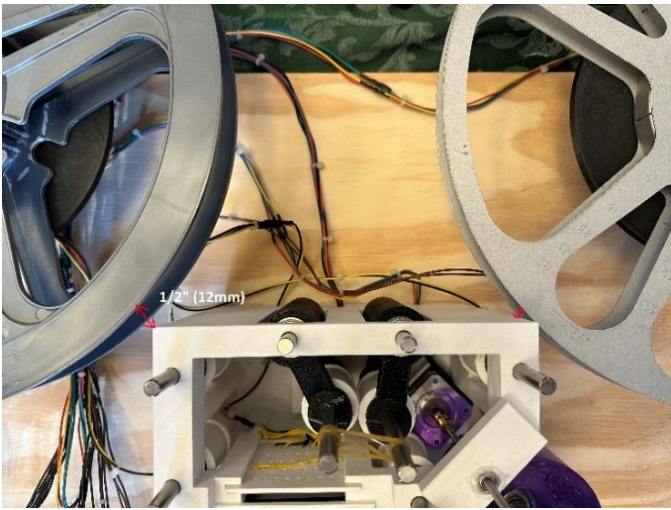
Hot Glue the shoe down and then glue the motor to the shoe.



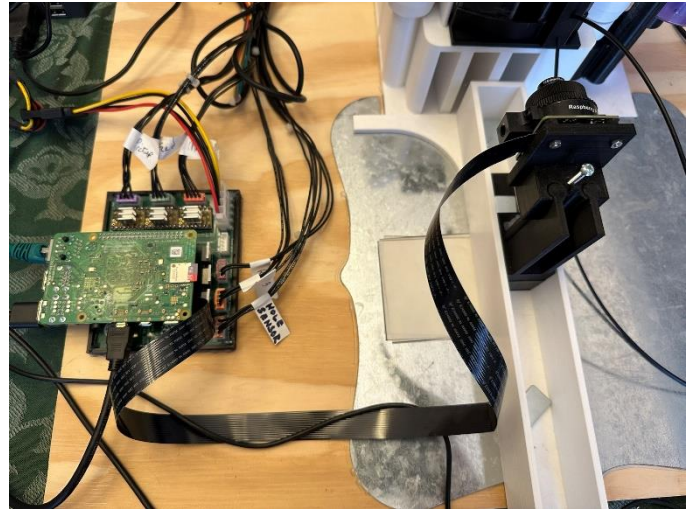
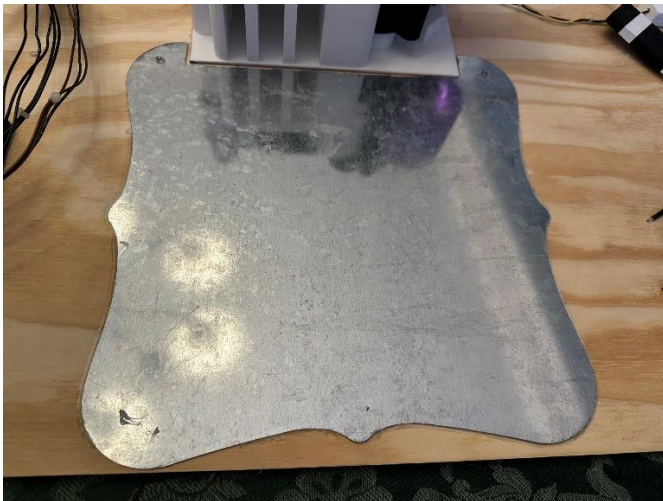
Place two turntables on your motors.



Place two 15" (or 2000') reels on your turntables. They can be 16mm or 35mm. Position your Main Base Assembly as shown, leaving about 1/2" (12mm) between the reels and the adjustable rollers. Remove the reels and glue the Main Base Assembly down.

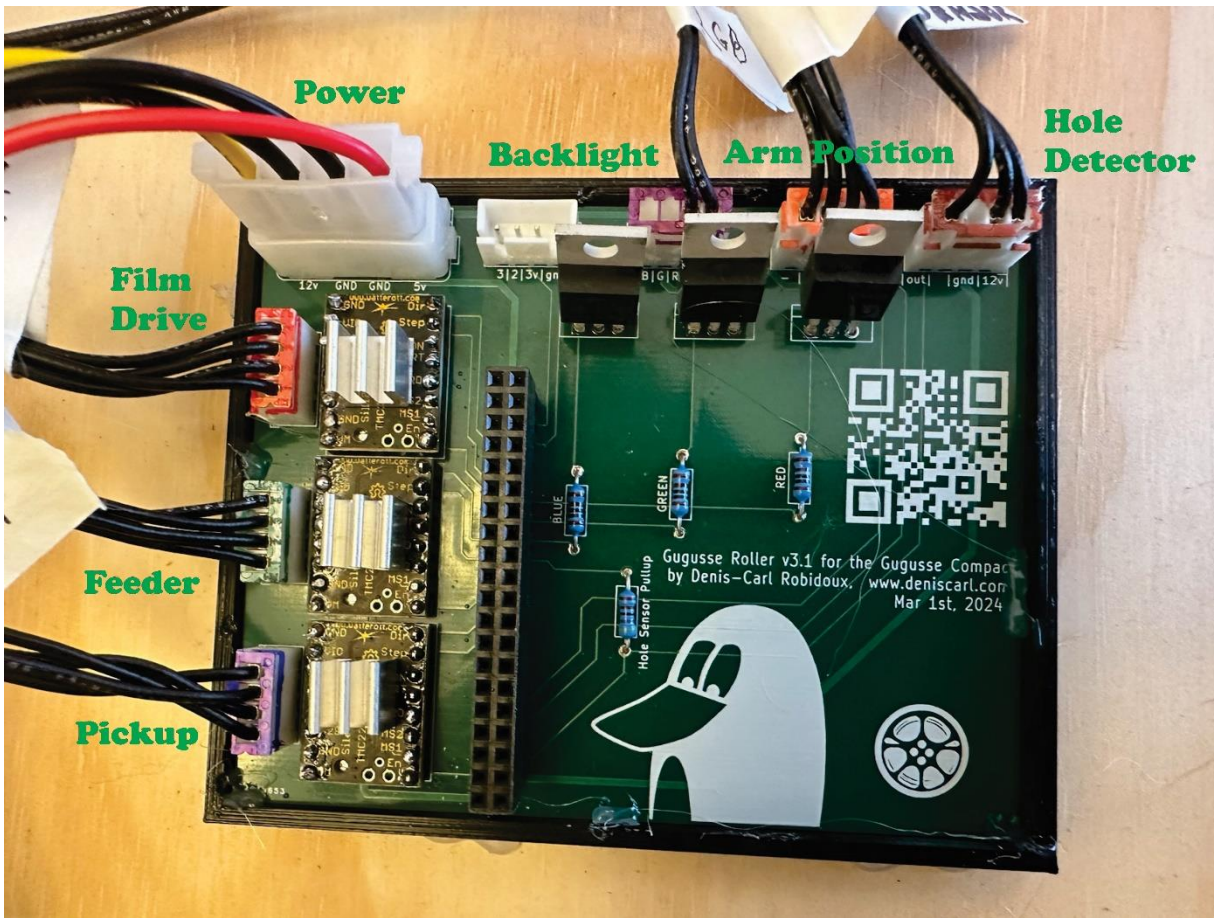


The next step is essential for camera positioning. The metal plate needs to be fitted directly in front of the Main Base. The one shown is a 25cm X 25cm galvanized steel sign that was found at a craft store. We used tin snips to get it to conform to the bottom edge of the Main Base. It is attached to the board with hot glue or double-sided carpet tape. The PCB can be mounted anywhere as long as all of the cables will reach it. You'll be connecting everything to it so position it wherever it will work the best. Your shortest cable will probably be your camera so be sure to position it near the camera. Use the PCB Mount to glue your PCB to the board. The lower left section of the board is probably a good choice.



Plug everything in. Be VERY Careful not to plug the Backlights or Arm Sensors into the motor connectors or they will be destroyed. Plug in the following cables:

Pickup Turntable, Feeder Turntable, Film Drive, Power, Backlight, Arm Positions, and the Hole Detector.



The Raspberry Pi connects directly to the top of the Gugusse PCB as shown. Make sure to line up the pins properly.

Run the cable for the EX-DN10 so it goes behind the Main Base and is on the right side. The Light Pipes plug into gate hole detectors with the lighted LED on the bottom and the detector on the top. Make sure there is enough slack on the wires so the light pipes stay inserted.



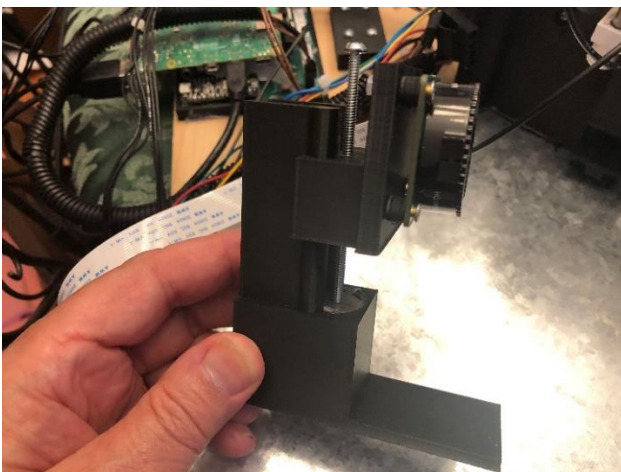
Prepare the camera by mounting it in the proper mount, in our case we used the Raspberry Pi HQ camera and the Big Pi Camera Holder. Prepare the camera by mounting it in in the Big Pi Camera Holder with the cable going toward the right. Use two M2.25 X 16mm screws with nuts at the top to hold it in. Hot Glue a dime (10c coin either U.S. or Canadian) to the bottom of the sled.



Push a #6 nut into the bottom of the Big Pi Camera Holder and Hot Glue it in place being sure not to get any hot glue in the center hole of the nut.



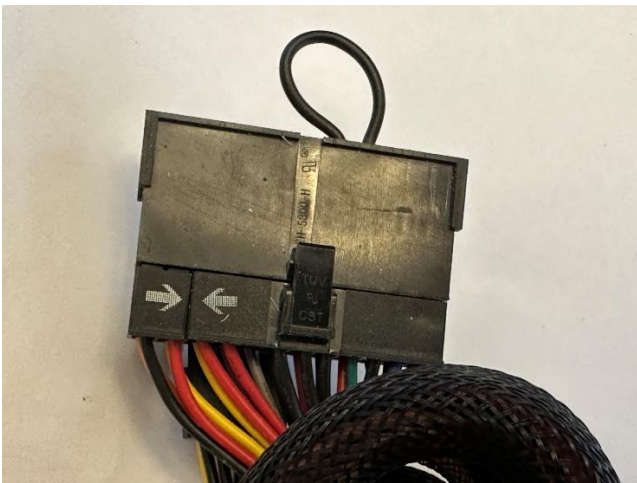
Connect the Big Pi Camera Holder to the Sled and screw in the #6 x 3" screw to support it. Put a couple of magnets in front of the Sled.



Put the Camera Assembly into the Sled and put a couple of magnets on it. Put some more magnets behind the camera mount in the Sled. You can now adjust the camera whatever way necessary to frame up the picture properly.



If you are using an ATX power supply, you'll need to jumper two connectors on the main PC power connector to get it to run. You'll need to purchase a jumper bridge plug as shown. An older AT style power supply will not need this jumper. Your power supply can sit wherever you want it to as long as the cables reach the PCB/Raspberry Pi.



Final Steps:

Attach your lens to the camera. Check all connections. Turn on your monitor and power supply. When starting for the first time, watch your circuit board and if there is any smoke, cut the power immediately. If you preconfigured the SD card on your Raspberry Pi, you should be at the desktop. Follow the software loading guide to test the motors and test run the software.

Congratulations, You just built a Multi-Format 4K Motion Picture Film Scanner.

