WHAM BAM
MUTANT v2 Installation Instructions

Before Mounting: IMPORTANT NOTICE

Please do not mount this yourself if you don't already have knowledge and proficiency with working with electrical components.   The electrical work is pretty easy, simply inserting wires into connectors, no soldering, no firmware adjustments.   If in doubt please bring to a certified electrician.

- *Our PCBs are simple straight connections from entering wires on Fixed Plate to exit wires on Mobile Plate, please check and double check your wire entry and exit according to the letters assigned to each, wire polarity is important and crossed wires may result in damage to your machine and your mainboard.*
- *Wham Bam is not responsible for any damage this may cause to your machine or equipment, nor as a result of user error, so please use caution when installing and testing.*
- *Always ensure the machine is powered off before disengaging or reattaching a mobile plate to avoid current arcs and spikes.*

MUTANT PCBs are rated for **3 Amps** and accept wire gauges of 26-18 AWG on each terminal block and each signal lead, with the exception of A and B which are each rated to **10 Amps** each and accept wire gauges of 26-16 AWG on each. These two higher rated terminal blocks are appropriate for most Heater Cartridges and power leads up to 10 Amp per lead. All leads are made for 12-24V DC and not rated for AC line current.

Please do not mount any components to any terminal if they exceed these ratings.

To calculate Amps when you know Volts and Watts formula is Watts/Volts =Amps. For example, if you have a power of 100W running at 24V, the current is 100W / 24V = 4.17A.   100W at 12 Volts = 8.33A

Wire Planning:

Plan you wire layout well with a specific logic for your Fixed Plate wiring, this will allow you to easily make up new Mobile Plate configurations that match in the future. Also if you are using or plan on using multiple MUTANTs on various machines, keep the Fixed Plate wiring identical such that you can swap and interchange mobile plates between machines!

In Preparation to Mount to your Machine:

If you need to print parts to either install the **MUTANT** to your machine or your hot end to the MUTANT, do this before disassembling your machine, especially if you only have one printer.

In order to mount the **MUTANT** to your machine you will need either of these:

1. Download and print one of the many interface plates found on our support page, https://whambamsystems.com/mutant-support   You can use our included M3 heat press inserts in the **Fixed Plate Accessories** bag to create the 4 threaded mounts for the MUTANT Fixed Plate.

2. Create your own interface plate, use our **Interface Template or our STEP or STL files** found on the support page and design the hole positions needed to mount it to your machine, use our included heat press inserts in the **Fixed Plate Accessories** bag to create the 4 threaded mounts for the MUTANT Fixed Plate.

3. Purchase one of our **Universal X Gantry Plates.** We offer one for standard 3 wheel V-slot carriages "**Universal X Gantry Plate Roller Bearing**", and one for MGN12H linear rails both top and front mounted "**Universal X Gantry Plate Linear Bearing**".

Mounting Instructions, Fixed Plate to Machine:

1. Lay out all components, accessories, tools, and contents of your **MUTANT** and become familiar with each part and its functions.
2. Shut off and unplug machine before working with electricity. Double Check before moving on.
3. Unscrew and unmount your full hot end assembly from your printer, leave wires connected.
4. Mount one of the **MUTANT** mounting options to your machine as mentioned above, either an Interface Plate (A.) or a Universal X Gantry Plate (B.)

   A. If using an Interface Plate, you can screw this to your empty X gantry plate. Some versions require that one of the wheel bearing assemblies (typically top right) be unscrewed and replaced after mounting the interface plate. Be sure to have at least 3 secure screw mounting points

from interface plate to X gantry plate. Pay attention to the order of parts during disassembly, and when remounting. Use included M5 x30 Countersunk screw to remount the bearings to the new interface plate and X gantry when plate when needed such that the screw head is recessed and does not protrude.

B. If using a **MUTANT Universal X Gantry Plates**, you will need to unscrew and remove your bearings from your machine and replace these on our Universal X Gantry Plate paying attention to remount the hardware in the same direction and order it was placed. For the two top screws use the M5 x 30 countersunk screws that come with the kit. You may need to adjust the length of your belt or use our included Gates Belt, and after passing through appropriate slots simply secure the ends with zip ties.

5.   Mount the **MUTANT** Fixed Plate Assembly to your Interface Plate or Universal X Gantry Plate with supplied 2 button cap M3 x 6 screws on Left side and 2 button cap M3 x 16 screws on right side in **Fixed Plate Accessories Bag.**

Mounting Instructions, Wiring the Fixed Plate:

6.   Locate your wire harness which leads into your hot end and identify each wire. Visually position the **MUTANT** on the machine and find the best place that you will cut your wires such that there is enough wire leading off from your components to be routed into the Mobile Plate of the MUTANT, **mark this point, but do not cut yet.**

7.   Use the included stickers to label each wire, both above and below the position you are going to cut them (2 per each wire), and write down the corresponding letter and wire function on the included **Wire Records sticker.** These letters correspond to the letters printed on the green terminal blocks on each part. Be sure to pay attention that A and B terminals are the 10 Amp rated terminals and use these for your heater cartridge or higher amp component. Note that Red Stickers should be used on positive leads and gray on negative leads. Heater Cartridge and

Thermistor do not have a polarity, but most of your other components do, so please make sure you are keeping notes on polarity for all other components. ***If you are going to mount the MUTANT on multiple machines make sure to keep the same order of wires to terminals on each Fixed Plate so you can swap tools between machines!***

8. **Make sure the machine is powered off and unplugged**. After mounting identification stickers on the wires cut the wires between the stickers. Make sure your Heater Cartridge (usually the thickest red wires) go to A and B terminals on both PCBs.

9. Plan on how you are going to organize your cables. You may want to slip extra braided cable or a large heat shrink tubing up on your wire harness before securing ends, to later seal and clean up the terminal of the harness cover. Heat Shrink Tubing and braided cable are included in **Fixed Plate Accessories bag**.

10. **With the Machine unplugged** you can now begin wiring the Fixed Plate. Remove the cover of the Fixed Plate assembly. Identify each of the terminal block letters and pay attention to the corresponding wire leads from the machine wire harness. Strip the ends of each wire about 3 mm or an 1/8" and neatly twist each tip to keep wire strands together precisely.   Begin to unscrew each terminal block a bit, insert each wire in order, and retighten the terminal block screws on top. Once again, make sure A and B are used for your heater block as these are rated for up to 10 Amps. Once you have routed all wires and secured, inspect to make sure there are no exposed wires crossing over, no stray wires, give a slight tug on each wire to make sure is well clamped.

11. Now you may want to slide down the braided cable or heat shrink tubing and with heat gun or lighter to seal off the end of the wire harness end. Use 2 included zip ties to secure the harness to the vertical post located on the top rear of the MUTANT Fixed Plate. Now secure back the cover of the Fixed Plate in place using original screws. Your MUTANT is now Installed on your Machine!

Mounting Instructions, Wiring Tool Heads to Mobile Plate:

12. Time to mount your hot end to the Mobile Plate Assembly! If you are planning on using a small cable tie on the top of the cover, you may do so after wiring by pre-curling the cable tie end and fishing through both wires, however, if you would like easier mount, you can remove the cover temporarily to fish the cable tie through, then reassemble the cover. Keep the cover on the Mobile Plate Assembly for wiring terminal blocks. Follow the order of the wires according to the labels you placed on each lead and following the letters etched into each terminal block. Once again A and B are reserved for the Heater Cartridge or other higher tension components. Strip 3mm off each end of each wire, feed into terminal blocks and tighten down and test. After mounting all wires visually inspect that there are no stray wires crossing over, nor loose connections. Use 2 more small zip ties fed through the two sets of double slots on the Mobile Plate cover to secure wires.

13. Mount your components mechanically to the Mobile Plate using included M3 screws and backing with the nuts provided, make sure your screws do not protrude beyond the back surface of the Mobile Plate Assembly or they will interfere with the dovetail joint. We have also included our custom all metal Quick Release Pneumatic Connector which should easily release your Bowden tube every time, mount these to your hot end and take advantage of a quick change. We have included a spacer to mount Creality style MK8 hot ends, or feel free to print any spacer you need. We have also included a spacer to mount the original Creality Hot End Shroud. There are many mounting opportunities to find ways to mount an ABL sensor, hot ends of all sorts, fans, lights, anything you like. We will have a large library of downloadable mounts and accessories available on our support page: https://whambamsystems.com/mutant-support We also have the CAD files and template for the hole position on support page, should you care to make your own.   Your MUTANT is ready to attach and go!

Use and Mobile Plate Swapping: Always switch Mobile Plate Assemblies with power off to avoid any current flashes or shorts.

14. Swing the arm of the Fixed Plate outward and line up the Mobile Plate so the dovetail joint fits into the correct guides and drop down, it should take little force to insert, use a hand to push down until seated, and swing the lever upward to lock in.

15. Turn on your machine and check that each component powers up correctly. If there is any unexpected issue, turn off the machine immediately and inspect all connections.

16. Switching Mobile Plates. **Always switch Mobile Plate Assemblies with power off to avoid any current flashes or shorts**. Simply swing the lever arm outward, this will give a push upward on the Mobile Plate Assembly and disconnect the electrical connector. Lift off the Mobile Plate Assembly and you are good to go!

We look forward to seeing what the community will mount, create and transform with the MUTANT, please share your creations with us and on social!

thank you!