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## Installing and Using the Bantam Tools Fine Dust Collection System

This tutorial will show you how to properly install and use the Bantam Tools Fine Dust Collection System. This system will allow you to cleanly mill PCBs and other flat materials (up to 0.3" thickness) without spreading dust and debris around your milling machine. This is a great way to reduce time spent cleaning your machine, extend cutting tool life, and improve the quality of cuts when you mill parts on the Bantam Tools Desktop PCB Milling Machine. To purchase the Fine Dust Collection System, please visit our store.

### Tools, Materials, and Files

#### Tools:

- (1) Bantam Tools Desktop PCB Milling Machine
- (1) Bantam Tools Fine Dust Collection System

#### Materials Included in Fine Dust Collection System:

- (1) Double Elbow
- (1) Hose
- (1) Dust Collection Hood



**WARNING:** You cannot use the Fine Dust Collection system if you have a bit fan installed on your end mill. Remove the bit fan before installing and using the Fine Dust Collection System.

## Step 1: Install the Double Elbow

First, if the vacuum port fitting and vacuum port are in the machine, unscrew and remove them. The vacuum port fitting sits inside the machine, and the vacuum port plug is on the exterior.

Vacuum Port Fitting

Vacuum Port Plug



Next, place the Double Elbow inside the machine and screw on the Vacuum Adapter on the back of the machine. The Vacuum Adapter comes with your Bantam Tools Desktop PCB Milling Machine, or can be purchased as part of the Vacuum Port Upgrade:



When tightening, align the Double Elbow with the closest wall of your milling machine.

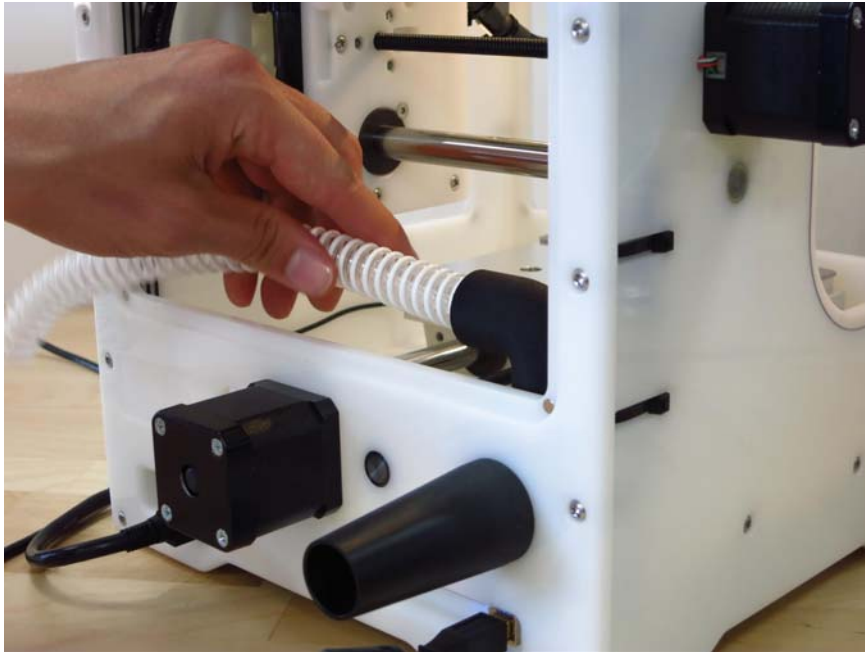


**IMPORTANT:** If you improperly line up the Double Elbow, your X-carriage or Y-carriage will collide with the Double Elbow, causing the machine to lose steps and possibly damaging the machine. This will ruin most milling jobs, so be sure that the long edges of your Double Elbow are parallel with the walls of your milling machine, as shown in the above photo.



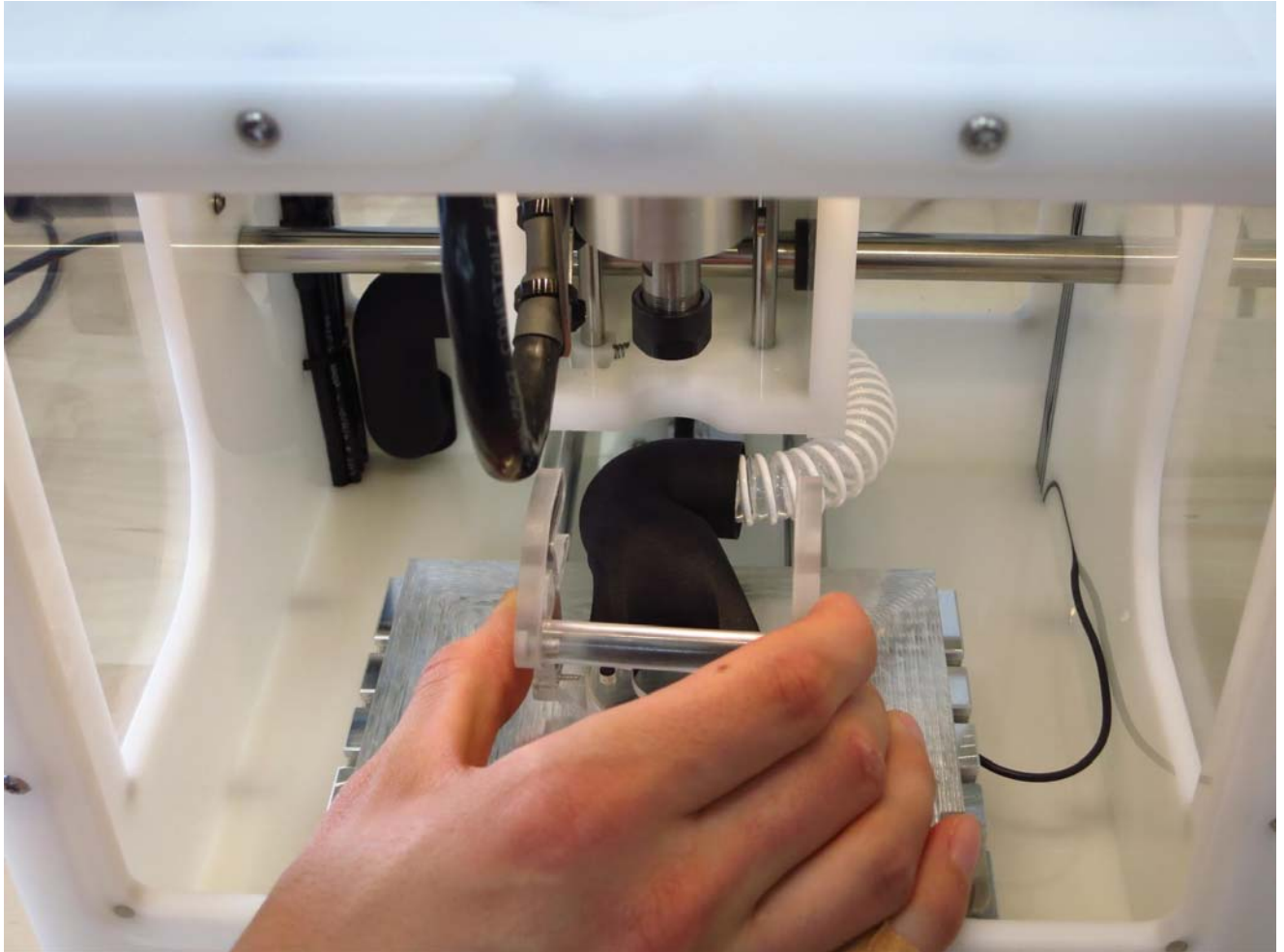
## Step 2: Install the Vacuum Hose

Install one end of your Vacuum Hose into the top opening of the Double Elbow, then install the other end in the Dust Collection Hood. Both parts are internally threaded to mate with the hose; simply twist each clockwise to install the hose. Gently tighten each until they are snug.



## Step 3: Placing the Dust Collection Hood

Pass the Dust Collection Hood through the machine so you can reach it through the front window. Orient the Dust Collection Hood so the hose points to the right. Line up the polycarbonate arms with the bottom surface of the X-carriage; the polycarbonate arms should fit snugly between the two vertical walls of the X-carriage frame.

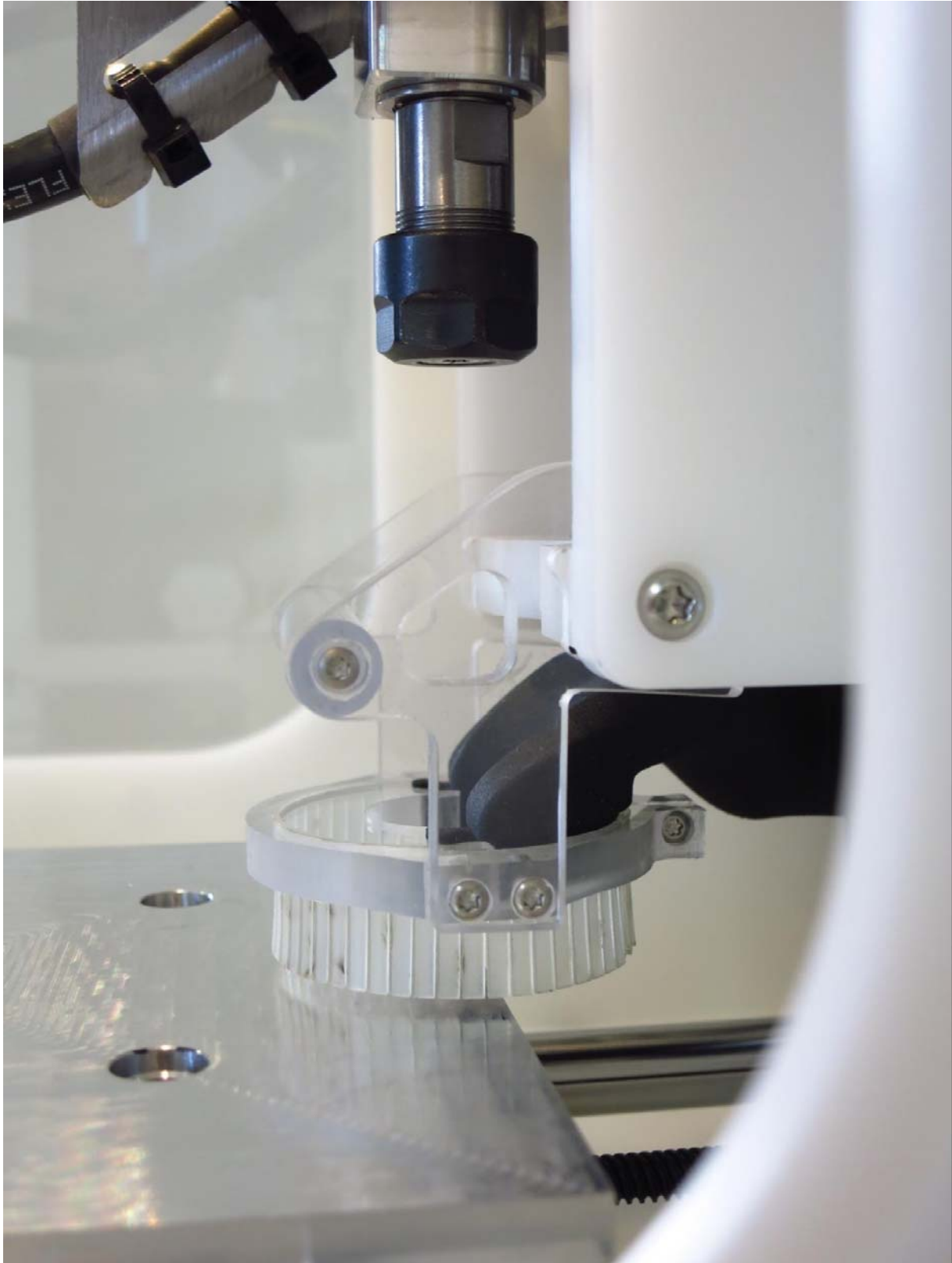


Once lined up, push the Dust Collector Hood into place on the X-carriage, gently at first, then firmly pressing towards the back of the machine to ensure it is completely seated. It should snap into place when it is correctly installed. If it does not snap into place, press again towards the

back of the machine. After the Dust Collector Hood snaps into place there should be little to no space between the inside of the F-Clip arms and the X-carriage (see photo for details).



***Incorrectly installed Dust Collector Hood:*** Avoid having a gap between Dust Collection Hood arms and X Carriage frame

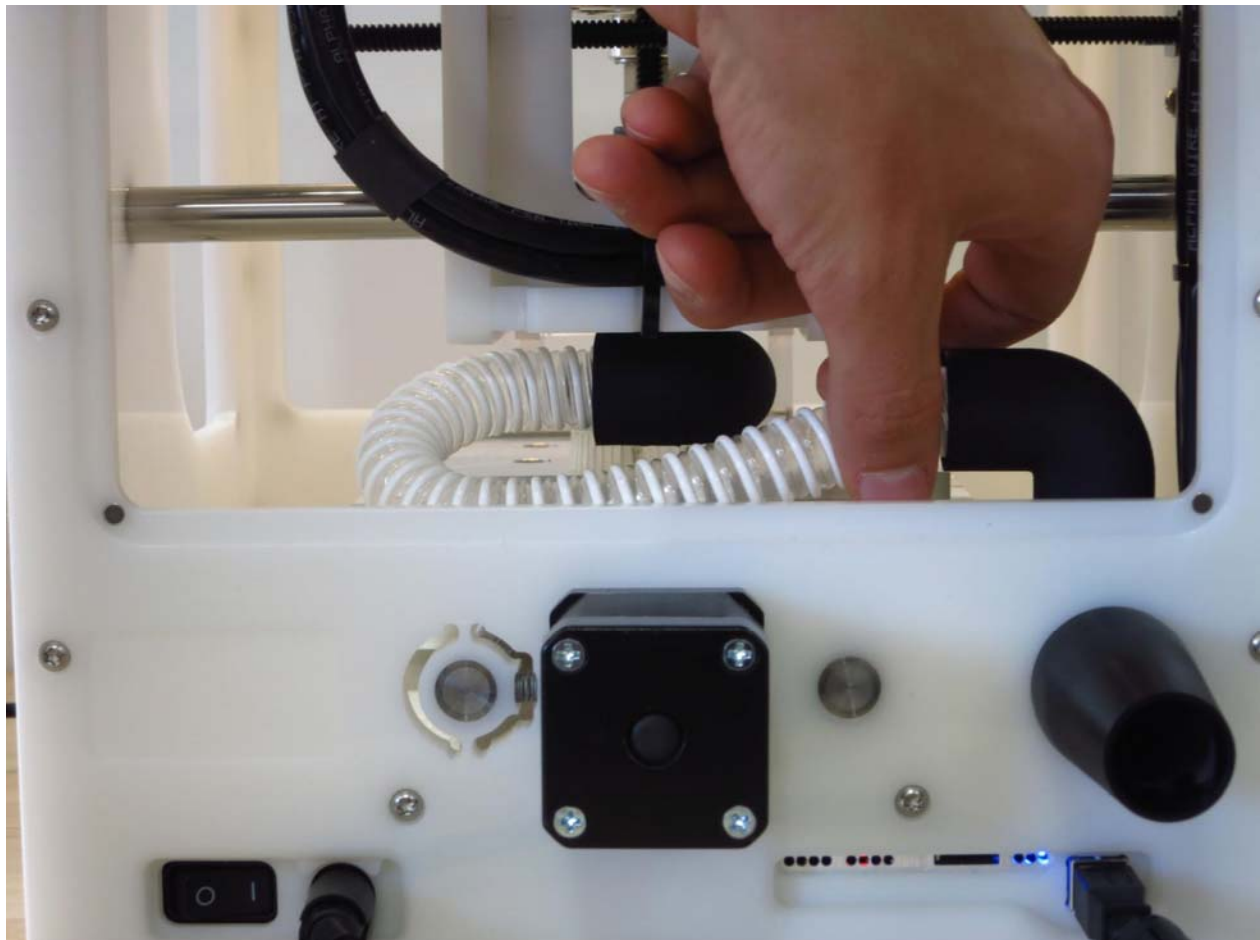


*Correctly installed Dust Collector Hood: There's no gap between Dust Collection Hood arms and X Carriage frame*

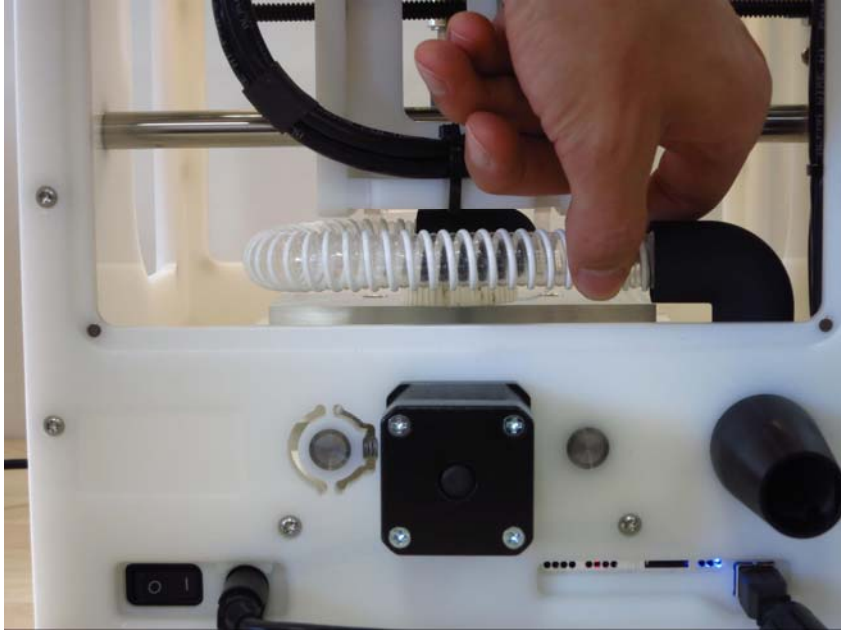


When the milling machine is operating, you want to make sure that none of the components of the Fine Dust Collect System collide with moving parts of the milling machine. To avoid collision, the hose should lay flat and not have any bends or curves, other than the 180 degree loop between the two components.

If the vacuum hose curves up or down, then rotate the hose at either interface (on the Double Elbow or Dust Collector Hood) until the hose lays flat and there are no bends and curves.

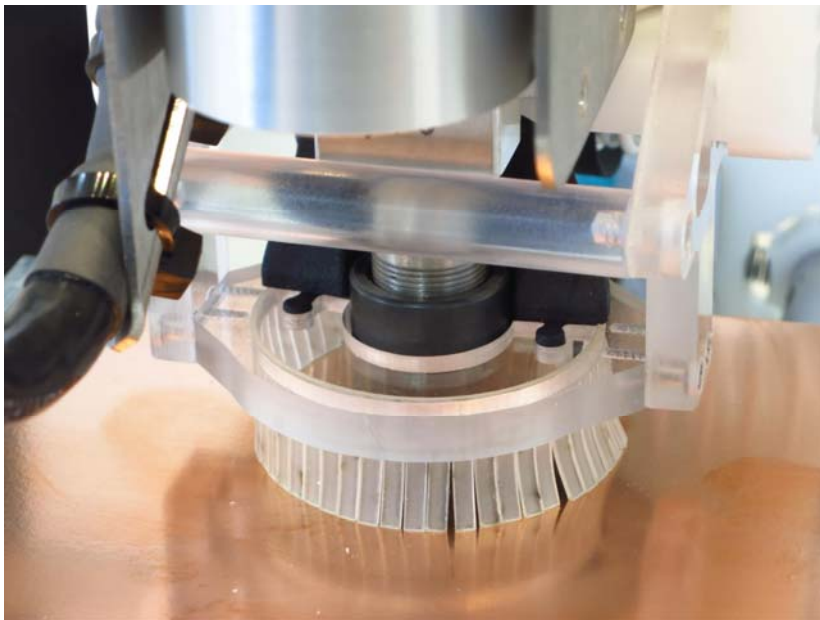


***Incorrect:*** The hose is not level, which means the Y Carriage will collide with the hose.



*Correct: Hose is level and will not collide with the Y carriage.*

Make sure you double check the installation every time. The skirt, which is the flexible plastic wall beneath the Fine Dust Collector Body should be resting directly on or right above the Spoilboard (the skirt legs should be parallel with the Spoilboard) and the clearance hole on the top of the Dust Collector Hood should be placed so that the collet nut can pass through with clearance on every side.



## Notes on Functionality:

- You should be able to see your end mill clearly through the Dust Collection Hood window, even when it is running a milling job.
- Test clearance with your part, the collet nut, and the Dust Collector Hood before milling any new files. To test clearance, move the machine using the Bantam Tools Software. Check clearance on all three axes.
- If your vacuum is too powerful it will overheat during long jobs because of the small size of the Vacuum Hose. We recommend using a vacuum rated below 50 CFM (24 Liters per second). One option we have used with the Bantam Tools Fine Dust Collection System is this vacuum.
- Never leave the milling machine unattended while it is operating.

If you have any questions, please don't hesitate to email us at [support@bantamtools.com](mailto:support@bantamtools.com)!