



Excel 3™ & Excel 5™ Vacuum Press Assembly Instructions

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The Excel vacuum press kit is incredibly powerful and is a testament to simplicity. With its wide range of uses, you'll find it a versatile and practical addition to your arsenal of tools. The Excel 3™ is designed for vacuum bags up to 4' x 9' and the Excel 5™ is suitable for bags as large as 4' x 15'. We recently redesigned this system with several updated parts and new features to make this the most versatile and affordable vacuum press available.

This kit is designed for woodworkers looking for a simple and affordable method of veneering wood panels and clamping wood projects for routing, sanding, and carving. The vacuum level is fully adjustable and can generate more than 1,785 lbs of pressure per square foot at sea level. At the heart of the system is a very powerful vacuum pump designed to ensure many years of trouble-free operation.

Every part of this system was designed with simplicity in mind. This makes it easy to assemble and incredibly durable. The assembly consists of only a few pieces and each uses standard NPT threads. There is no wiring involved in the assembly process and the whole system goes together very quickly.

I hope you find the assembly process to be very easy. This guide will help get your vacuum press put together as quick as possible. As always, feel free to contact me any time through my website at VeneerSupplies.com if you have any questions.

Assembly Time: 30 - 35 minutes

Assembly Tools:

- | | | |
|---|------------------------|---------------|
| • Wrenches: 1/2", 9/16", 5/8", 11/16", 3/4", 18mm | • Pliers or Vise Grips | • Razor Knife |
| • Cross-Tip Screw Driver | • 1/4" Allen Wrench | • Marking Pen |

Excel Vacuum Press Kit Parts List



Heavy-Duty Vacuum Pump

- Port size: 1/4 NPT
- Sound Rating: 55 dB @ 10 ft, A-Scale
- Cylinder: Wetted Aluminum Alloy
- Design: Oil-less Double Rocking Piston
- Maximum Bag Pressure: 1,785 lbs/sqr ft
- Maximum Vacuum: 25.5" Hg at Sea Level



Thread-Sealing
Tape



Brass Cross
Fitting



Lock-On
Connector



Vacuum
Gauge



Vacuum
Filter



Vacuum
Bleeder



Brass Pipe
Elbow



Brass Barb
Elbow



Vacuum
Valve



Long Brass
Pipe Nipple



Short Brass
Pipe Nipple



1/8" NPT
Barb Fitting



Composite Handle



Composite
Manifold



Vacuum
Tube
(Length: 6" & 10')



Rubber
Feet
(Qty: 4)



1/4" NPT
Barb Fitting
(Qty: 2)



1/4" Brass
Hex Plug
(Qty: 2)

Optional Manifold Kit with Quick Connectors

This additional parts kit allows the pressing of 3 vacuum bags at the same time. This optional kit must be selected when your order on our website.



1/4" NPT
Barb Fitting
(Qty: 2)



Vacuum
Valve
(Qty: 2)



Lock-On
Connector
(Qty: 4)



Lock-On
Plug Fitting
(Qty: 2)



1/8" NPT
Barb Fitting
(Qty: 2)



Vacuum
Tube
(Qty: 2)

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Before You Begin

Time Estimates for Assembly

The assembly time will vary, but it shouldn't take more 35 minutes. If these instructions appear excessively long, it is only because of the large number of pictures I've included throughout this document. The assembly process does not take as long as it appears in these instructions.



Required Abilities

The Excel 5 system is offered as a kit which requires assembly. A certain amount of dexterity and physical strength will be needed to adequately assemble and tighten each fitting.

Vacuum Gauge Inspection – IMPORTANT!

The vacuum gauge is a sensitive measuring instrument containing a fragile sensing spring inside. Handle the gauge with care; do not drop it or allow a hard object such as a wrench to collide with the gauge. Open the vacuum gauge packaging now and make sure the gauge needle is resting at the zero position. If not, cut the rubber tip off the top of the gauge with scissors. That will often allow the gauge needle to drop to the zero mark.

Do not attach the gauge to the assembly if the needle is not at zero. Stop and contact us immediately so we can help with this issue. We cannot help resolve this issue once the gauge has been installed on the vacuum press assembly.

A Note About Thread Sealing Tape

All metal-to-metal connections must have thread sealing tape applied to the male threads. Start the process of applying thread sealing tape by holding the fitting in your right hand. Then apply the end of the tape to the threaded portion of the fitting and rotate the fitting clockwise. The fitting should be rotated in the same direction as if it were being inserted into another fitting. No more than three layers of tape should be applied to the fitting.



Tightening Instructions

Throughout these pages, you will find three terms used to describe the amount of effort that must be applied when assembling any two parts.

"Hand-Tighten" - Tighten by hand as far as possible. Do not use tools to further tighten.

"Firmly" - Use tools as required to tighten the fittings with firm but not aggressive force.

"Aggressively" - Use tools to tighten the fittings using as much force as reasonably possible.

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As with any product of this nature, you should wash your hands after contact with brass parts. We provide this warning based on our knowledge concerning the possible presence of one or more such chemicals, without attempting to evaluate the level of exposure.

Not Suitable for Use Near Flammable or Combustible Materials

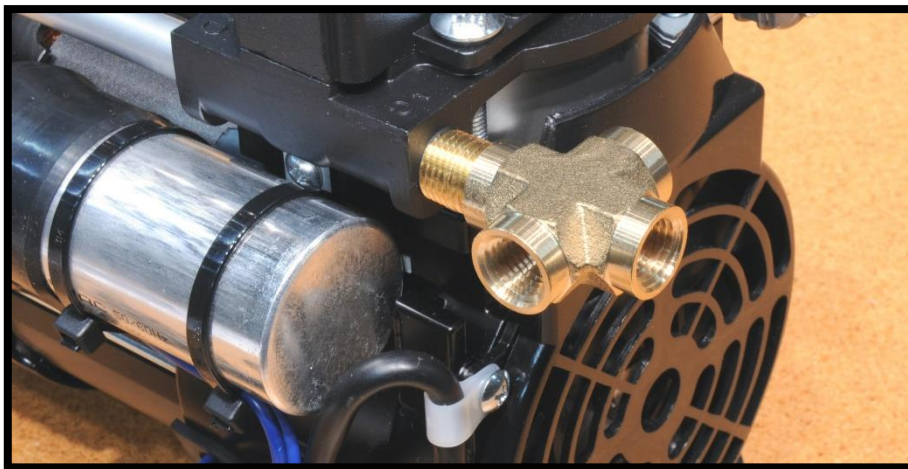
The individual components of this kit and the completed assembly of these components should not be considered suitable for use in areas where flammable or combustible gases or dusts are present.



Assembly Instructions

Before you begin, please keep in mind that there is no need to apply excessive force when tightening any of the fittings. Since this is a continuous-run vacuum press, small leaks will not affect the vacuum level created by the vacuum pump.

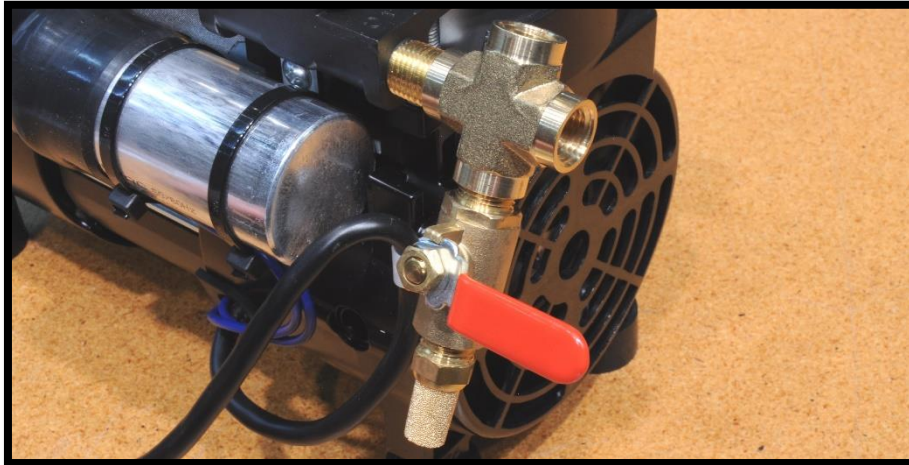
1. Thread sealing tape will be applied only where there will be a metal-to-metal connection. The tape is not shown in the assembly pictures for the sake of clarity. Use the parts list on page 2 of these instructions to identify the correct parts needed for this step. Apply sealing tape to the threads on the following items.
 - a. Short Brass Pipe Nipple
 - b. Brass Pipe Elbow
 - c. Vacuum Valve
 - d. Vacuum Bleeder
 - e. Vacuum Gauge
 - f. Long Brass Pipe Nipple (*apply to one side only*)
 - g. 1/8" NPT Straight Barb Fitting
2. Remove and discard the nut from each of the four rubber "feet". Leave the small lock-washer in place on each of the feet. Attach the four rubber feet to the bottom of the vacuum pump.
3. Loosely attach the short brass pipe nipple to the vacuum port (marked with a "C") on the vacuum pump.
4. Attach the brass cross to the brass nipple. Firmly tighten the cross with an 11/16" wrench. This will also tighten the brass nipple. When finished, the cross should be horizontal as shown in the picture below. This positioning is temporary and will be changed in a few moments.



5. Firmly attach the vacuum bleeder fitting to the vacuum valve using 9/16" and 18mm wrenches.

The vacuum valve and bleeder fitting allow the user to quickly and easily adjust the amount of vacuum being applied to the project. The fitting which we call a "bleeder" can be used for many purposes. For this kit, the bleeder simply allows filtered air back into the system to lower the vacuum level on the project.

6. Firmly attach the vacuum valve to the forward opening on the brass cross and tighten it with an 18mm wrench. The valve should be oriented so the handle is facing upward when it is fully tightened. **Update:** The new version of the vacuum valve has a blue handle and the closed setting is at the 9 o'clock position instead of the 3 o'clock position shown in the picture below.
7. Rotate the cross back to the almost-upright position leaving this part of the assembly tilted as shown in the picture below.



8. Next, use a 3/4" wrench to firmly attach the brass elbow to the side opening on the brass cross. An 11/16" wrench can be used on the brass cross to prevent rotating. When tight, the brass elbow should be horizontal and pointing toward the back side of the pump as shown below.



9. Please read the section titled "Vacuum Gauge Inspection" on page 4 before continuing. Attach the vacuum gauge to the top port of the brass cross fitting using a 9/16" wrench. Do not apply force to the gauge housing and use care to avoid hitting the gauge with any tools as this will damage the sensing element inside. Firmly tighten the gauge and then stop applying turning force when the gauge is facing forward as shown in the following picture.

10. Find the long brass pipe nipple and firmly attach the side with the thread sealing tape to the brass elbow.

Use vice-grips for this step of the assembly. To prevent the tool from marring the soft brass surface of the pipe, consider wrapping the pipe with a few layers of masking tape.

11. Unscrew the clear filter bowl from the black plastic filter head. Attach the filter head to the brass pipe. There is an arrow stamped the side of the filter head. Be sure the directional arrow is pointing in the direction of vacuum flow (toward the front of the system).

Do not over-tighten the filter head. The plastic is soft and it will easily seal against the threads on the brass fitting. "Gently snug" is adequate.



12. The filter bowl can now be re-attached to the filter head. Hand-tight is adequate.
13. Attach the brass barbed elbow to the filter by hand. Generally speaking, there is no need to attach this fitting so tight that a tool is needed. Do not over-tighten this part. Again, "gently snug" is adequate. When finished, the fitting should be pointed in the direction shown in the picture below.



14. The composite plastic manifold can now be assembled. You may notice some plastic debris from the milling process inside the manifold. Some of the debris can be shaken out. What remains inside may eventually break free, but it will be captured by the vacuum filter.

With a 9/16" wrench, attach a straight brass barbed fitting to each of the two end ports on the manifold. No thread sealing tape is needed on these fittings. Remember that the composite material is soft so be sure to avoid cross-threading as the fittings are attached. It may take a couple of tries to get the threading started accurately. Be sure to avoid over-tightening the fittings.

- If you did not opt for the "extended kit" with the Excel 3 or Excel 5 system, you will find two brass plugs included with the parts bag. Insert a brass plug into each of the side ports on the black composite manifold using a 1/4" Allen wrench. See figure A below. No thread sealing tape is needed on these fittings.
- If you ordered your Excel kit with the "extended kit", the brass plugs will not be used. Find the two vacuum valves and attach a lock-on connector plug fitting to each. Be sure to use thread sealing tape. Then attach the vacuum valves to the side ports on the black composite manifold. See figure B below.



Figure A

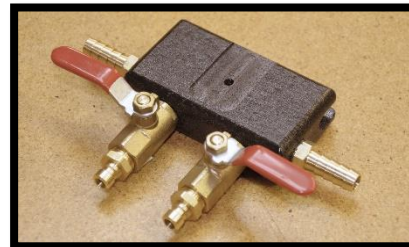
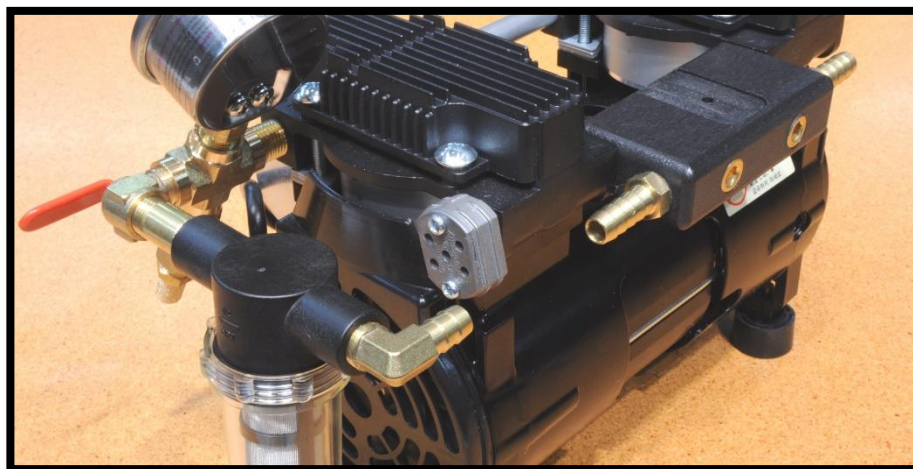
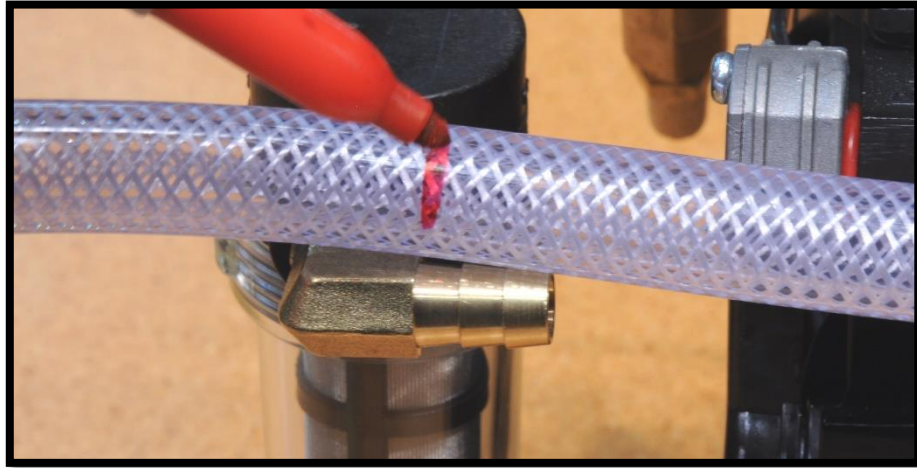


Figure B

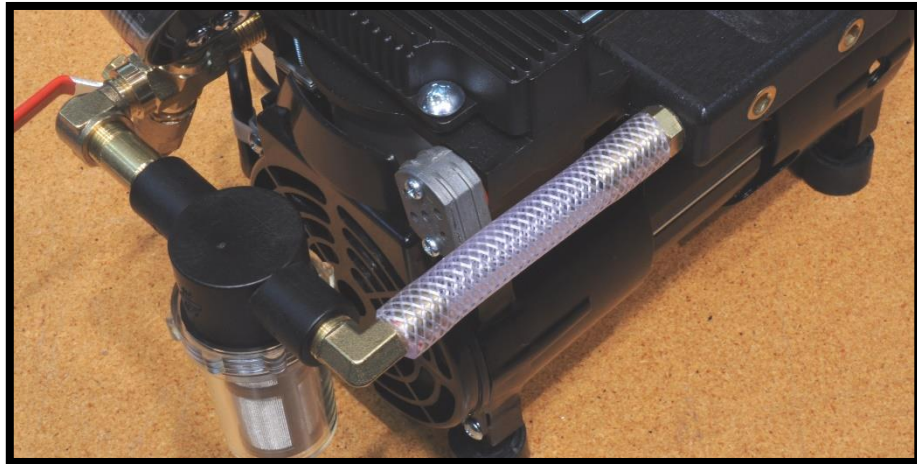
15. Note the channel machined into the side of the manifold. Slide the channel of the manifold over the aluminum tube on the vacuum pump so that the shallow recess is on the top.



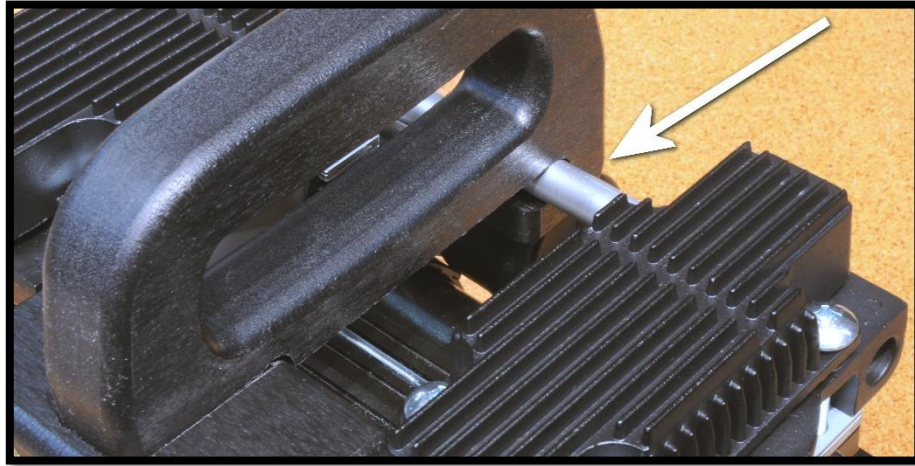
16. The kit includes a small piece of vacuum tube. Attach the tube to the straight barbed fitting on the manifold as shown in the picture below. Mark a line where it will be cut so that it fits between the brass barbed elbow and the straight barbed fitting on the manifold. Cut the tubing at the marked line with scissors or a razor knife.



17. When the tubing has been cut to the correct size, slide the manifold off the pump and attach the short piece of tubing to the brass barbed elbow. Then slide the manifold back on to the aluminum tube. The assembly should look like the picture below.



18. Note that there is a U-shaped protrusion on the composite handle part of your kit. Slide the protrusion over the other aluminum tube on the vacuum pump. Then press it down into the recessed area of the manifold as shown in the picture.



19. Using the provided coarse-thread screw, attach the handle to the manifold. The screw is inserted from under the manifold into the handle. A pilot hole has been pre-drilled into the handle to help with alignment. Do not over-tighten this screw.
20. Attach the end of the 10-foot braided vacuum tube to the brass barbed fitting on the manifold.
21. Firmly attach the 1/8" NPT brass barb fitting to the lock-on connector using a 5/8" and 9/16" wrench. This fitting should have thread sealing tape applied to it.



22. Attach each of the above assemblies to the vacuum tube. A high-grade braided tube is included with the Excel kit so the barb fittings should slide in without much effort, but the tubing can be softened in hot water to make this process easier.
23. If you opted for the additional manifold kit with quick connectors, attach the 1/8" NPT brass barb fittings to the two lock-on connectors. Then attach these assemblies to the remaining end of each vacuum tube. You will finish up with two vacuum tubes that have the same lock-on connector on all four ends.

Your Excel Vacuum Pressing System Is Now Complete!

I've written a short but helpful article that explains what else you will need to use your vacuum press. The article also includes a step-by-step guide to using your system for vacuum pressing a veneered panel. Check it out here... www.JoeWoodworker.com/veneering/getting-started.htm

How to Use the Excel Vacuum Press System

Apply the bag closure to the vacuum bag when the project is prepared and placed inside. Pull back the sleeve on the lock-on connector and slide it onto the brass stem on the vacuum bag. Release the sleeve while gently pushing downward to snap the lock-on connector into position.



Plug in the Excel vacuum press and close the vacuum valve by turning the handle to the horizontal position. The gauge will show how much vacuum is being applied to the bag. The ideal vacuum level for most veneering projects is 21" of Hg. Observe the vacuum gauge as the indicator needle moves toward this ideal vacuum level. When the needle passes the 21" of Hg mark on the gauge, slowly open the vacuum valve. Doing so will allow a small amount of air to vent back into the system and the gauge needle will move backward. Adjust the position of the vacuum valve handle until the gauge needle settles at the 21" mark. No further adjustment should be needed during the pressing time for the project.

Warnings

1. Do not allow the vacuum press system to run unattended.
2. The vacuum gauge is a sensitive instrument and will be rendered inaccurate if dropped or struck with a hard object.
3. The individual components of this kit and the completed assembly of these components should not be considered suitable for use in areas where flammable or combustible gases or dusts are present.
4. The vacuum pump may be hot during and after use. Exercise care when handling the vacuum press system.
5. This system is designed to run continuously. The vacuum pump will not restart if power is removed from the system and there is any amount of vacuum shown on the gauge. If you need to turn the system off while pressing a project, then you must temporarily disconnect the lock-on connector from the vacuum bag before turning on the pump again. Re-attach the connector to the bag only when the pump is running at full speed. Failure to do this will cause the pump to stall and over-heat which can result in permanent pump damage that is not covered by the warranty.



Pressing Time

The adhesive used on your project will determine how long the panel needs to be pressed in the bag. Always follow the instructions on the adhesive bottle for clamping time. Excess clamping time for some adhesives can be problematic so avoid pressing the project for too long.

Vacuum Pressing Multiple Vacuum Bags

The optional extended kit allows you to press up to three vacuum bags at once. Begin by closing off the two auxiliary vacuum valves that are attached to the handle/manifold assembly. Attach the first bag to the system and allow it to draw vacuum. Attach the second bag to one of the auxiliary vacuum lines. Open the corresponding valve to the bag. When the gauge indicates that adequate vacuum levels have been achieved in both bags, attach the remaining auxiliary vacuum line to the third bag and open the vacuum valve. Keep an eye on the vacuum gauge and adjust the system bleeder valve as necessary to maintain the level of vacuum required for your projects.



Optional Excel System with Podz™ Vacuum Clamping Jigs

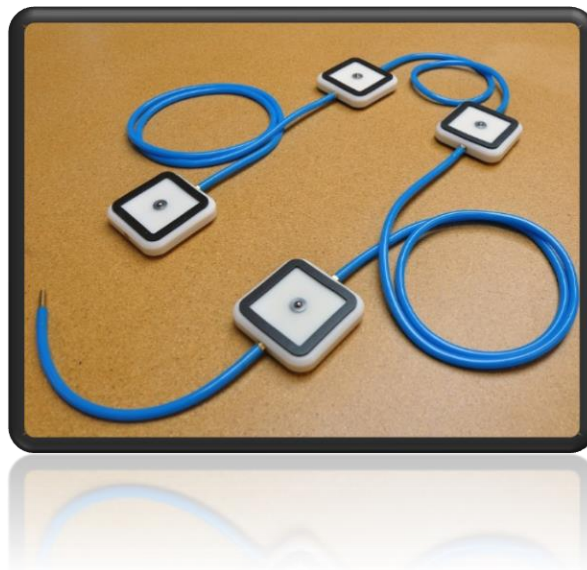
Set Up

If you ordered the Excel system with the optional Podz™ clamping kit, assemble the jigs using the instructions included with that kit.

Begin preparing the vacuum press system and the Podz jigs for use by attaching the tube adapter from the lead Podz clamping jig to the lock-on connector from the Excel vacuum system.

Attach the power cord from the vacuum pump to the end of the power cord on the electric foot pedal included with the Podz clamping kit.

Plug the foot pedal power cord into a standard 120v AC wall socket.



Using the Excel System with Podz™ Vacuum Clamping Jigs

Set the vacuum valve about half way between the fully open and fully closed position. Then turn the system on by depressing the front edge of the foot pedal (the area closest to the power cord). Now place your work piece onto the Podz jigs. You should feel the vacuum pull it down.

You may wish to adjust the vacuum valve if the clamping piece is very porous and causes inadequate clamping pressure. Adjust the vacuum valve handle as needed to create an ideal balance of vacuum clamping force and release time.

Slight adjustments toward closing the vacuum valve increase the clamping pressure and decrease the speed at which the project releases from the clamping jigs. Slight adjustments toward opening the vacuum valve decrease the clamping pressure but increase the rate of release when the system is turned off.

Press the back edge of the foot pedal to turn off the vacuum pump and release your project. You may hear the flow of air from the bleeder fitting as the vacuum from the jigs is unloaded.

