

# FUSER 500<sup>TM</sup>

OWNER'S MANUAL & SAFETY INSTRUCTIONS

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# TABLE OF CONTENTS

1. Introduction	03
2. Fuser500™ parts list	04
3. Safety, maintenance, and storage	05
4. Timeline overview	06
5. Fuser500™ lost-wax casting process	07
• Selection of jewelry pattern	07
• Connect the Fuser500™ vacuum pump to the mixer	07
• Silicone mold preparation using the Fuser500™ mixer and vacuum pump	08
• Silicone mold wax injection using the Fuser500™ wax injector	12
• Wax injection techniques using the Fuser500™ wax injector	13
• Sprue confection and tree assembly	14
• Flask preparation using the Fuser500™ mixer and vacuum pump	16
• Flask burnout using the Fuser500™ kiln	20
• Metal melting and pouring using the Fuser500™ casting base and vacuum pump	22
• Enjoy finishing and polishing your jewelry casting	24
• <b>BONUS:</b> Stone setting using the Fuser500™ vacuum pump	25
• Wax injector temperature controller operational instructions	26

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## **SAVE THIS MANUAL**

Keep this manual for safety warnings, precautions, operating, and cleaning procedures. Keep this manual and proof of purchase for future reference.

When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please visit [www.brightfuser.com](http://www.brightfuser.com) to contact us.

## **WARNING**

Read this material before using this product. Failure to do so may result in product damage and severe injury.

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# INTRODUCTION

Lost-wax casting is an intricate art dating back thousands of years. Despite being an ancient technique, it has been undergoing significant transformation, perfected each and every day. Today, lost-wax casting is one of the most reliable and effective methods used by jewelers worldwide.

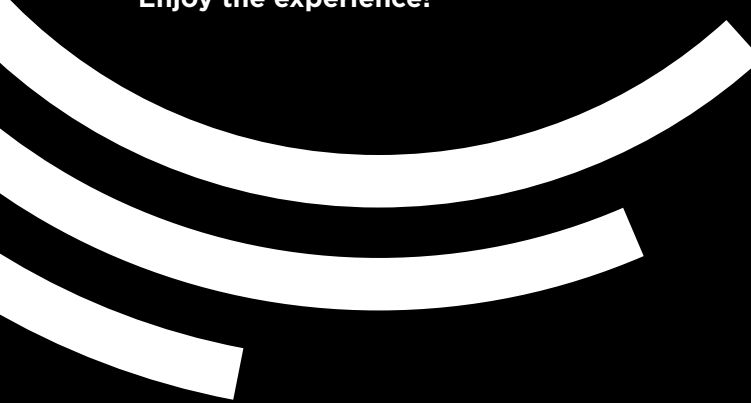
The use of lost-wax casting gives jewelers the ability to adequately produce similar pieces of jewelry in large quantities at a relatively low cost.

Our **Fuser500™** was developed by a father, an exceptional jeweler himself, committed to helping his daughter reach her full potential as an artist, following his very own craft. Together, they conceptualized the process you are about to experience.

Please make sure to read this material thoroughly before using the Fuser500™. Visit [www.brightfuser.com](http://www.brightfuser.com) and follow us on social media to learn more.



**Enjoy the experience!**



# PARTS LIST

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Included items/parts:

- **1 Mixer**

- › 1 Mixing Chamber
- › 1 Vacuum Chamber
- › 1 Polycarbonate Lid
- › 1 Mixing Glass
- › 1 Power Cord
- › 1 Flask Base
- › 1 Flask Top
- › 1 Rubber Filling Funnel
- › 500 Grams of Investment Powder

- **1 Kiln**

- › 1 Large Flask
- › 1 Medium Flask
- › 1 Small Flask
- › 1 Crucible Tongs
- › 1 Temperature Controller
- › 1 Probe
- › 1 Power Cord

- **1 Casting Base**

- › 1 Casting Base Bottom
- › 1 Casting Base Top
- › 5 Paper Gaskets

- **1 Vacuum Pump**

- › 1 Vacuum Hose With Filter
- › 1 Power Cord
- › 1 End Cap

- **1 Wax Injector**

- › 1 Pressure Pump
- › 100 Grams of Wax Inside the Heating Reservoir
- › 1 Power Cord
- › 1 Vacuum Pen + 2 Suction Needles
- › 1 Suction Silicone Tube (18 inches)
- › 1 Sprue Silicone Tube (4 inches)
- › 2 Pink Vacuum Suction Needles

- **1 Accessory Kit**

- › 1 Plastic Storage Box
- › 1 Large Impeller
- › 1 Small Impeller
- › 1 By-pass Silicone Tube (10 inches)
- › 2 Threaded Rods + 2 Nuts
- › 1 Precision Knife
- › 1 Lecron Carver
- › 1 Allen Key
- › 6 Molding Panels
- › 4 Rubber Bands
- › 3 Aluminum U-shaped Mold Frames (Small, Medium, Large) + 3 Sprue Formers
- › 1 Pink Wax Sheet
- › 1 Silicone Mold Cutting Aid
- › 1 End Cap
- › Silicone Molding Rubber Compound

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Additional items needed **(not included)**:

- **Clean Cloth**

- **Empty Water Container (large enough to fit the flasks)**

- **Grease (used in bikes or boats)**

- **Low Power Soldering Iron, Pyrograph or Wax Pen Tool**

- **Motor Oil**

- **Paper Towels**

- **Personal Protection Equipment**

- **Precision Scale**

- **Ruler**

- **Silica Crucible**

- **Small Screwdriver**

- **Super Glue**

- **Torch**

- **Water**

The manufacturer and/or the distributor has provided the parts list and assembly diagram in this manual as a reference tool only. The manufacturer and/or the distributor are not responsible nor liable for any repairs made by the buyer. The manufacturer and/or the distributor expressly state that only a qualified technician should undertake all repairs or parts replacements. The buyer assumes all risk and liability if any repairs or parts replacements are made by a non-qualified technician.



# SAFETY, MAINTENANCE, AND STORAGE

**WARNING:** Read all instructions before using this equipment.

When using any electrical equipment, basic precautions should always be followed, including the following to reduce the risk of, but not limited to, fire, electric shock, or injury:

1. Operate the equipment only as described in this manual.
2. Do not leave equipment unattended when plugged in a power outlet. Unplug from the outlet when not in use and before cleaning.
3. Do not use the equipment on wet surfaces. Do not expose to rain. Store indoors.
4. Stay alert and use common sense when operating the equipment. Do not use the equipment if tired or under the influence of drugs, alcohol, or medication. A moment of distraction while operating the equipment may result in personal injury and to others.
5. Do not allow children and/or an unqualified person to use the equipment. Keep children and pets away during use. The equipment is not a toy.
6. Do not use if power cord or plug is damaged in anyway. Do not pull or carry the equipment by the power cord. Keep power cords away from heated surfaces.
7. Do not unplug the equipment from the power outlet by pulling on the power cord. To unplug, grasp the plug, not the power cord.
8. Turn off all necessary controls before unplugging.
9. Do not handle plug or equipment with wet hands.
10. To reduce your exposure to chemical reactions, vapors and other harmful products, always work in a well-ventilated area.
11. Wear long pants, long sleeves, and protective footwear.
12. Wear Personal Protective Equipment. Wear ANSI-approved safety goggles. As appropriate, wear a protective mask and gloves.
13. Maintain labels and nameplates on the product. These may carry important safety information. If unreadable or missing, visit [www.brightfuser.com](http://www.brightfuser.com) to contact us.
14. The warnings, precautions, and instructions discussed in this owner manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors that cannot be built into this equipment. Use your own caution.
15. If the equipment is not working, visit [www.brightfuser.com](http://www.brightfuser.com) to contact us.

**TO PREVENT SERIOUS INJURY FROM ACCIDENTAL OPERATION:** Turn the power switch of the equipment off and unplug the equipment from the electrical outlet before performing any procedure in this section.

**TO PREVENT SERIOUS INJURY FROM EQUIPMENT FAILURE:** Do not use damaged equipment. If abnormal conditions occur, have the problem corrected before further use.

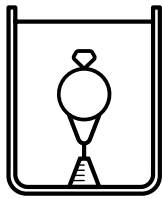
**BEFORE EACH USE,** inspect the general condition of the equipment. Check for:

- Loose parts,
- Misalignment or binding issues,
- Cracked or broken parts,
- Damaged extension cords,
- Damaged electrical wiring, and
- Any other condition that may affect its safe operation.

**AFTER EACH USE,** clean parts as indicated.

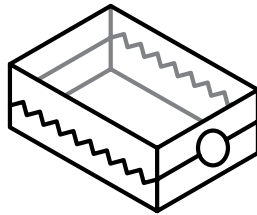
- Store in an indoor dry area out of the reach of children and pets.
- Failure to do so may result in equipment damage and malfunction.
- Wipe external surfaces with a clean, dry cloth.

# TIMELINE OVERVIEW



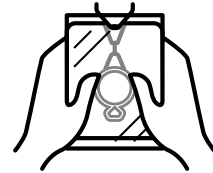
1

**Silicone mold preparation**  
Cure time: 2hrs



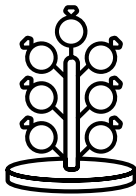
2

**Silicone mold cut**



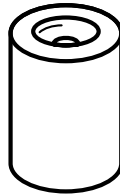
3

**Silicone mold wax injection**



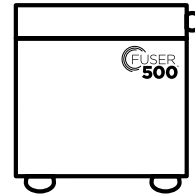
4

**Tree assembly**



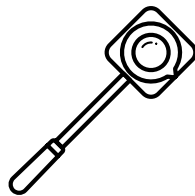
5

**Investment powder/  
flask preparation**  
Drying time: 2hrs



6

**Kiln (flask  
burnout)**  
3 1/2 and 4hrs



7

**Metal melting**



8

**Jewelry ready for finishing**

# Fuser500™ Lost-Wax Casting Process

# LET'S GET STARTED

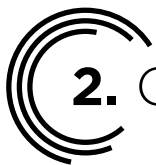
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## 1. SELECTION OF JEWELRY PATTERN

At **BrightFuser**, we believe in compact tools by design. Our Fuser500™ takes casting to a whole new level, allowing you to streamline your production.

To get started, [select your jewelry pattern](#). Our equipment allows you to get creative and use models made out of several materials, including metals, wood, plastic, resin, and even organic sources.



## 2. CONNECT THE FUSER500™ VACUUM PUMP TO THE MIXER

1. Connect the Fuser500™ mixer to a 110V outlet
2. **You may connect the Fuser500™ vacuum pump plug into:**
  - Regular power outlet: Turn it on and off directly on the vacuum pump using the on/off switch.
  - Mixer outlet (**recommended**): As long as the Fuser500™ mixer is connected to a power outlet, the vacuum pump can be left on and be turned on/off using the vacuum switch on top of the mixer.

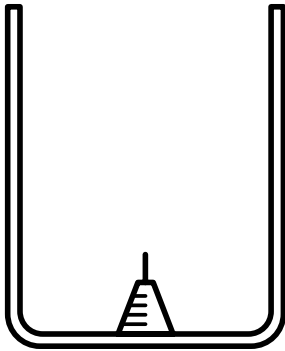




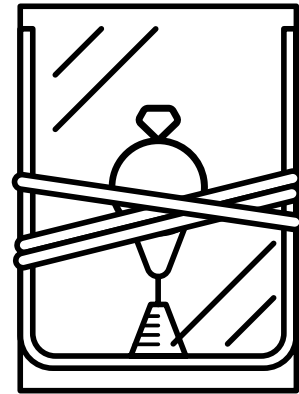
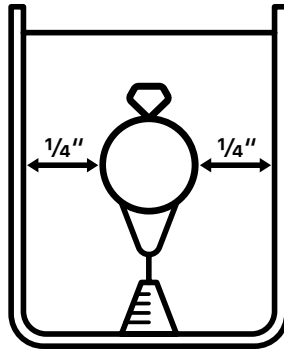
### 3. SILICONE MOLD PREPARATION USING THE FUSER500 MIXER AND VACUUM PUMP

**EXPERT TIP:** In this section, you will need a precision scale, a ruler, and super glue.

Custom silicone molds are reusable and can last for many years when properly cared for. They are incredibly flexible, allowing for sophisticated, detailed casting. Our molds are prepared under vacuum condition, minimizing imperfections, and resulting in higher quality pieces.



Attach your jewelry pattern to the sprue former using a drop of super glue. Make sure to position it leaving at least 1/4 inch from the edges of the u-shaped mold frame.



Enclose the aluminum u-shaped mold frame using the two molding panels, then secure it using a rubber band. Make sure to align the panels to the base of the u-shaped mold frame so that, when secured together, the piece firmly stands in the upright position.

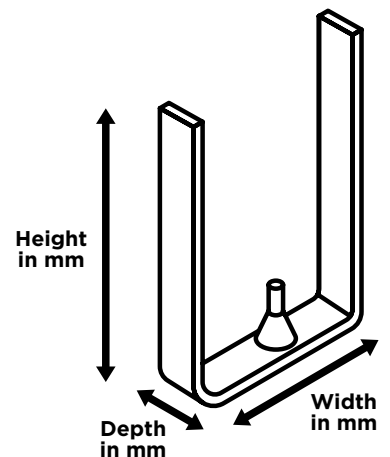
**EXPERT TIP:** Additional sizes of u-shaped mold frames may be purchased.  
**REMINDER:** The built-in sprue former will eventually detach from the u-shaped mold frame. Glue it back using a drop of super glue.



### 4. PREPARE THE SILICONE MOLDING RUBBER COMPOUND

Use the mixing glass to prepare the silicone molding rubber compound used to fill up the u-shaped mold frame. The quantity of silicone molding rubber compound needed for each mold should be calculated based on the u-shaped mold frame's size:

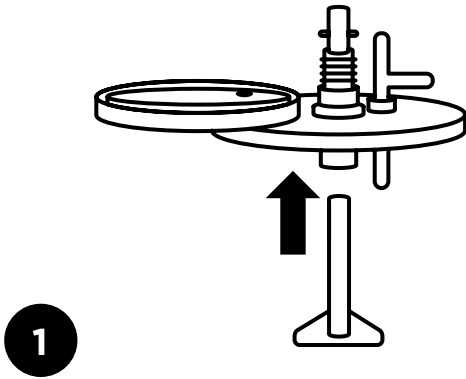
$$\text{Width (mm) x Height (mm) x Depth (mm) = Quantity in grams of silicone molding rubber compound}$$



Once the quantity is determined, add the catalyst. **Follow the manufacturer's specifications to define the amount and how to manipulate the catalyst.**

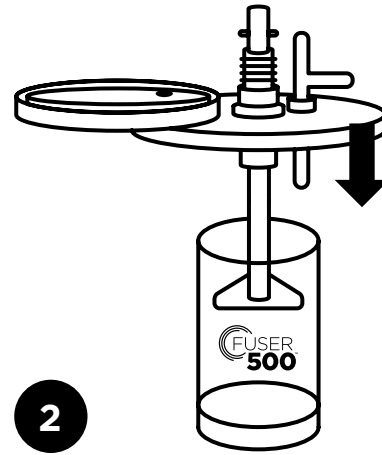


# 5. MIX THE SILICONE MOLDING RUBBER COMPOUND

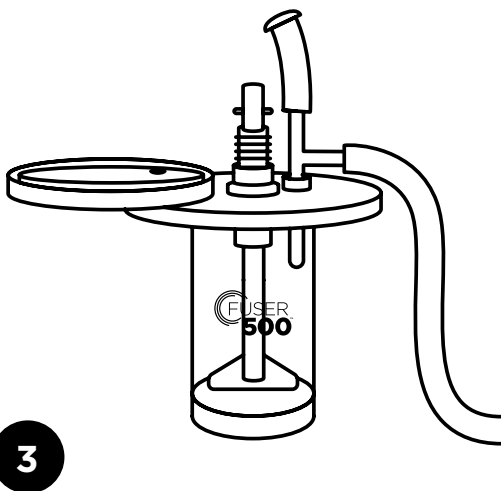


Attach the small impeller to the central shaft on the polycarbonate lid with the aid of the allen key. Make sure to properly tighten the screw.

**WARNING:** Failure to properly tighten the screw may result in equipment damage and malfunction.

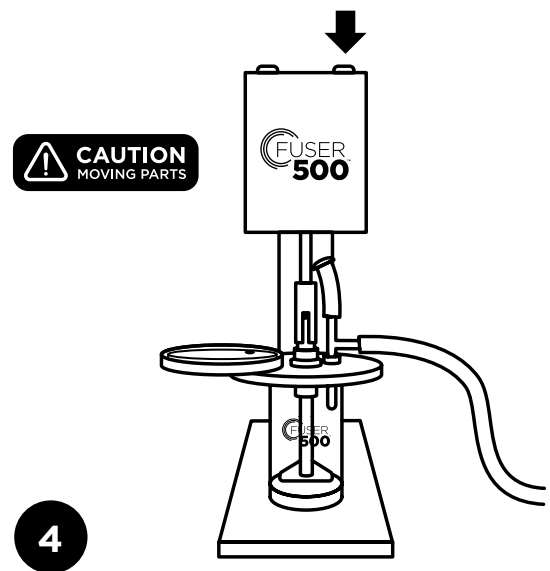


Rest the mixing glass on a flat surface with the silicone mix in it. Close it with the polycarbonate lid, placing the small impeller inside the mixing glass.



Connect the vacuum pump hose to the horizontal vacuum connector on the polycarbonate lid. Close the vertical vacuum connector with the end cap.

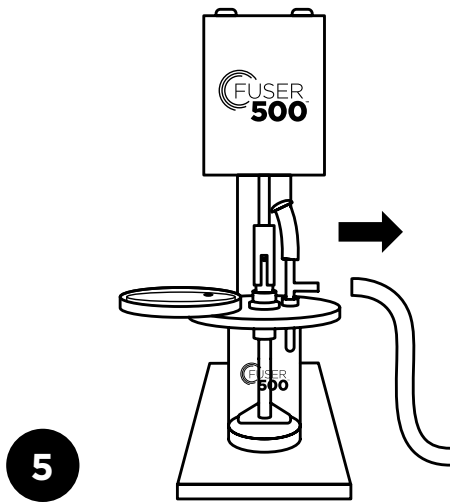
**Turn on the vacuum pump** (manometer should reach around 20 PSI). The mixing glass and the polycarbonate lid will be fully attached and sealed due to the vacuum.



Connect the polycarbonate lid's mixer shaft to the mixer's motor shaft.

**Turn on the mixer for 30 seconds.** During this process, the color of the silicone mix may change.

## MIX THE SILICONE MOLDING RUBBER COMPOUND CONT'D

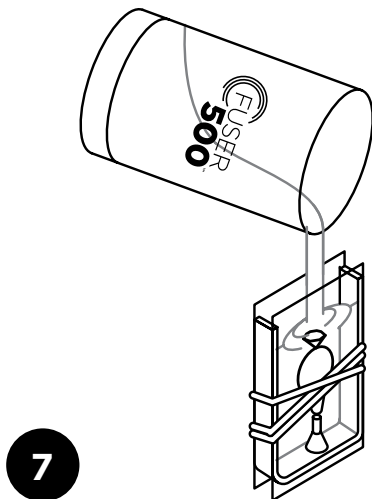


5 Turn off the mixer switch and disconnect the polycarbonate lid and mixing glass from its shaft.

Rest the mixing glass on a flat surface, turn off the vacuum pump and disconnect the hose from the horizontal vacuum connector on the polycarbonate lid.



6 Detach the polycarbonate lid from the mixing glass. Air bubbles in the silicone should burst, leaving a smooth and homogeneous silicone mix.



7 Pour the silicone mix inside the previously prepared u-shaped mold frame.

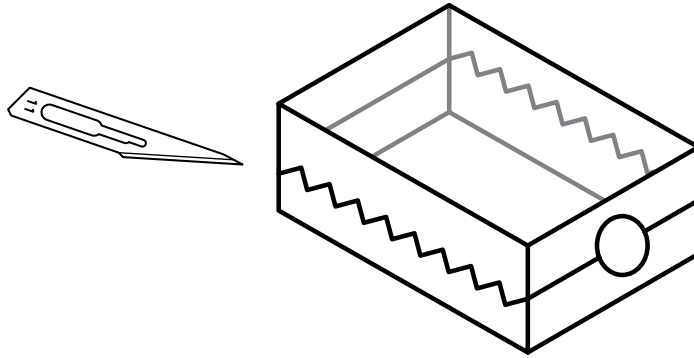
**Immediately clean the small impeller and mixing glass using paper towel. Failure to do so may result in equipment damage.**

Wait for the silicone to dry in the u-shaped mold frame. Drying time varies according to the silicone's manufacturer's specifications.

## 6. CUT THE SILICONE MOLD

**After the silicone dries**, unmold it from the u-shaped mold frame. Remove the rubber band and molding panels.

Use the precision knife to cut the mold in two halves, using your preferred technique.



**EXPERT TIP:** Try cutting the silicone mold in a zigzag pattern.

**Once the two halves separate, remove your jewelry pattern.**



**EXPERT TIP:** You may also use the silicone mold cutting aid to assist.

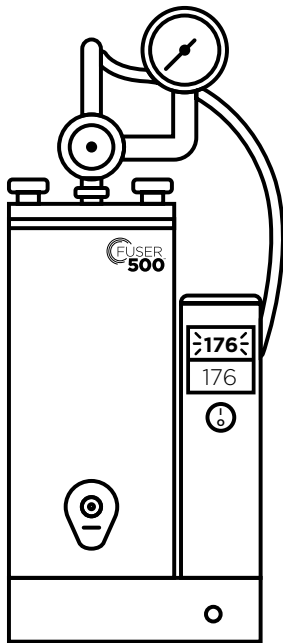
# ANY QUESTIONS SO FAR?

Watch our video tutorial at [www.brightfuser.com](http://www.brightfuser.com)

# 7. SILICONE MOLD WAX INJECTION USING THE FUSER500™ WAX INJECTOR

The Fuser500™ wax injector reaches up to 176°F. The wax heating reservoir may hold up to 1 pound (454 grams) of wax.

**WARNING:** To optimize the wax injector usage, do not place more than 7 ounces (198 grams) of wax in the heating reservoir.



Open the top lid of the wax injector and place the wax beads inside the heating compartment. Safely secure the top lid back and tighten all four knobs.

Turn on the wax injector and set the temperature to the wax manufacturer's specifications on the digital temperature controller.

**The wax will be ready to use once the heat reaches the set temperature.**

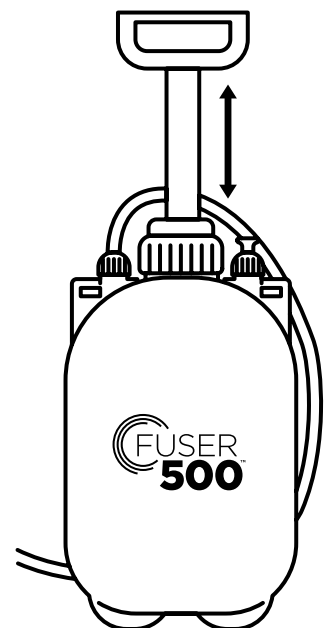
**REMINDER:** Make sure to replenish wax beads as necessary. You will know that the wax level is down when the wax injector starts discharging air rather than properly injecting wax.

**EXPERT TIP:** You can always filter and reuse leftover wax. Use caution: Any debris and/or small particles present in leftover wax may clog the injection nozzle, resulting in a complex cleaning process.

**WARNING:** Do not attempt to clean the interior of the wax heating compartment. Simply add new wax beads on top of previously inserted wax. Failure to do so may result in equipment damage and malfunction.

Connect the Fuser500™ pressure pump to the wax injector. Connect the pump's hose to the pressure regulator fitting. You will use it later to adjust the heating compartment's pressure to inject the silicone mold successfully.

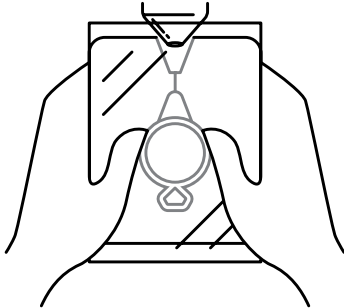
**EXPERT TIP:** Pressure levels required to fill each silicone mold will vary. Try it as needed until you find the perfect pressure for each mold. In general, simple patterns require less pressure, while intricate patterns require more of it. Keep a log of how much pressure may be required per mold for future reference.





## 8. WAX INJECTION TECHNIQUES USING THE WAX INJECTOR

### **Simple Injection**



Enclose the silicone mold (without the jewelry pattern in it) using the two molding panels.

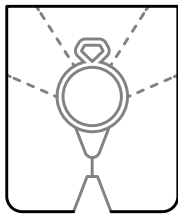
Position the sprue former inlet on the injection nozzle of the wax injector. Gently push it in until the wax fills up the entire mold's cavity.

Remove the mold from the injection nozzle.

Wait a few seconds for the wax to cool down and then unmold it.

Inspect the wax pattern for imperfections. If necessary, adjust the pressure regulator by pulling the black knob to unlock it. Turn the knob clockwise to increase pressure, counterclockwise to decrease pressure. You may also use the pressure pump, manually pumping for additional pressure.

If the wax pattern persistently presents flaws in a specific spot, even after adjusting the pressure, carefully inspect your silicone mold for imperfections. If needed, create a new silicone mold.

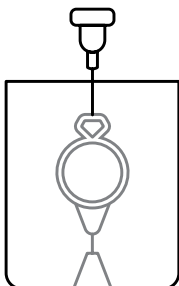


**EXPERT TIP:** If the wax pattern presents imperfections in a specific point, you may use the precision knife to cut through the silicone mold. These thin cuts will allow for more air to be released. They should be made targeting the imperfection from the inside of the mold's cavity through the outside.

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### **Vacuum Injection**

You may use the vacuum pump to aid the wax injection. This technique is especially recommended when working with intricate patterns:



1) Insert the pink vacuum suction needle through the silicone mold. The tip of the needle should stop right where the mold's cavity begins, preferably targeting a flat side or prong. Be careful not to insert the needle's tip too far into the mold's cavity as it may cause an imperfection on your wax pattern.

2) Connect the Fuser500™ vacuum pump hose to the inner lower vacuum connector in the wax injector.

3) Connect the suction silicone tube to the frontal lower vacuum connector of the wax injector.

4) **Turn on the vacuum pump.**

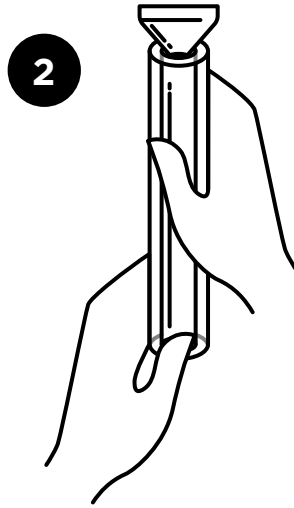
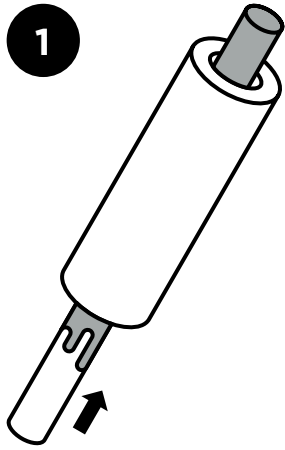
5) Follow the same steps as if for a simple injection. Remember to adjust the pressure if necessary.



# 9. SPRUE CONFECTION AND TREE ASSEMBLY

**EXPERT TIP:** In this section, you will need a precision scale, motor oil, a low-power soldering iron, a pyrograph, or a wax pen tool.

Sprues are the central stems used to mount wax trees. Use the sprue silicone tube to produce your own sprues.

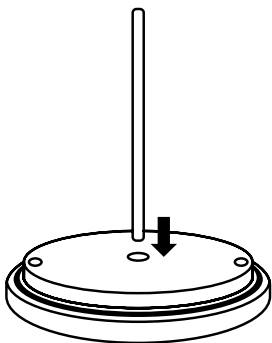


1. Spread oil inside the sprue silicone tube with the aid of one of the threaded rods.
2. Place your fingertip on one end of the sprue silicone tube and position the other end on the injection nozzle of the wax injector. Gently push it in until the wax fills up the entire tube.
3. Wait a few seconds for the wax to cool down and dry out, and then unmold the sprue by pushing it out.

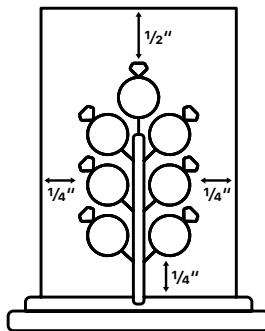
Cut the sprue into the size you will require. Weigh the sprue and wax patterns to determine how much metal will be needed.

**1 gram of wax = 17 grams of gold**  
**1 gram of wax = 10 grams of silver**

**EXPERT TIP:** Always add at least 10% more of the required metal quantity.

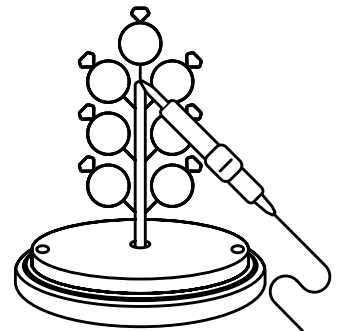


Fit the sprue into the flask base's center hole with the aid of a low-power soldering iron, a pyrograph, or a wax tool pen.



The Fuser500™ contains 3 flasks. Choose the appropriate size and start building your sprue tree following these measurements:

- At least 1/4" above the flask base.
- At least 1/2" below the height of the flask.
- At least 1/4" from the width of the flask.



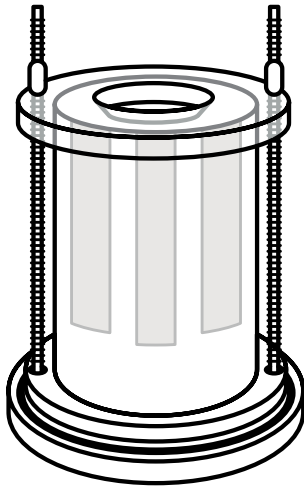
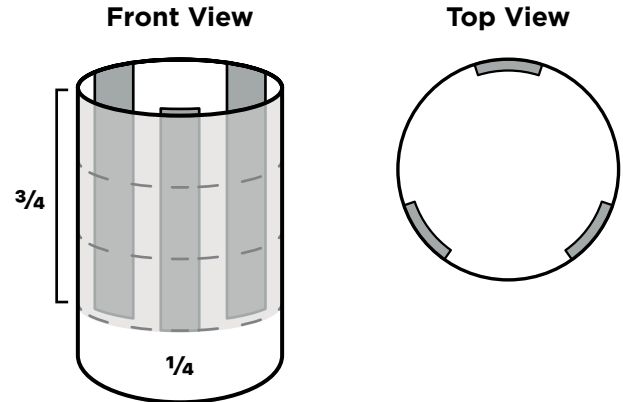
Attach your wax patterns to the sprue with the aid of a low-power soldering iron, a pyrograph, or a wax pen tool.

**Make sure to leave at least 1/4 inches between each wax pattern so they do not touch one another.**

## SPRUE CONFECTION AND TREE ASSEMBLY CONT'D

Before enclosing the wax tree with the flask, **make sure** to create at least 2 internal vacuum channels in it:

1. Cut the pink wax sheet into thin strips of approximately  $\frac{1}{4}$  inch.
2. Attach the strips to the interior of the flask, vertically positioned. The strips should cover  $\frac{3}{4}$  of the height of the flask, leaving the bottom  $\frac{1}{4}$  empty.



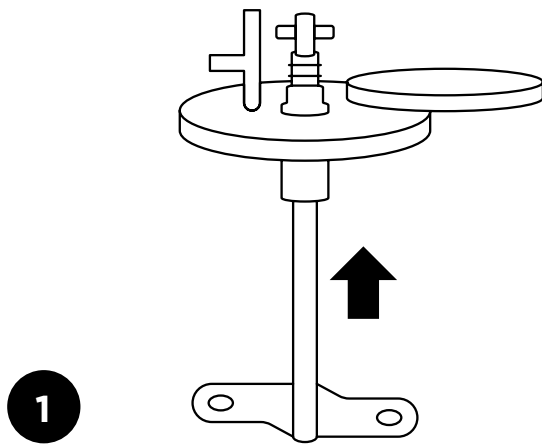
**Once you are done assembling your wax tree**, enclose it with the flask, making sure that the strips face up without touching the bottom, and place it on top of the flask base. Position both threaded rods, and set the flask top. Secure the casting base system by tightening both nuts.

**WE HOPE YOU ARE ENJOYING  
YOUR EXPERIENCE!**

Please let us know any feedback by sending an email to [info@brightfuser.com](mailto:info@brightfuser.com)

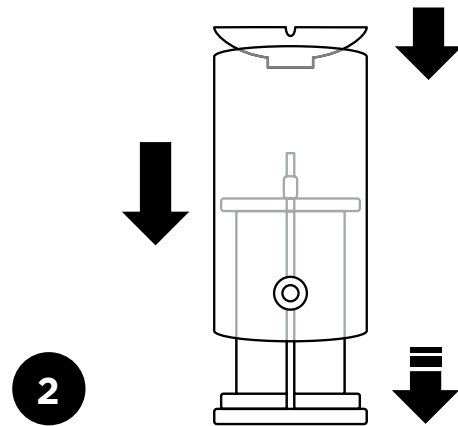
# 10. FLASK PREPARATION USING THE MIXER AND VACUUM PUMP

**EXPERT TIP:** In this section, you will need a precision scale, investment powder, water, a small screwdriver, and grease.



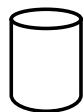
Attach the large impeller to the center shaft of the polycarbonate lid with the aid of the allen key. Make sure to tighten the screw properly.

**WARNING:** Failure to properly tighten the screw properly may result in equipment damage and malfunction.



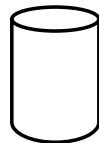
Rest the flask system on a flat surface and enclose it with the vacuum chamber. Place the rubber filling funnel on top (inside the vacuum chamber).

**3** Weigh the investment powder according to the size of the used flask being used:



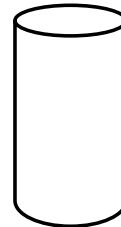
### SMALL FLASK

Approximately 100 grams of investment powder



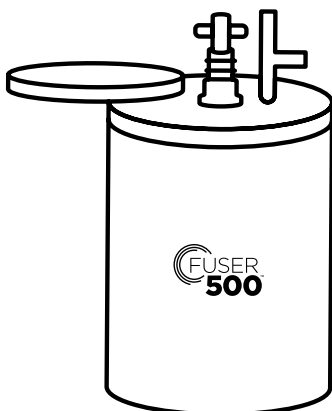
### MEDIUM FLASK

Approximately 190 grams of investment powder



### LARGE FLASK

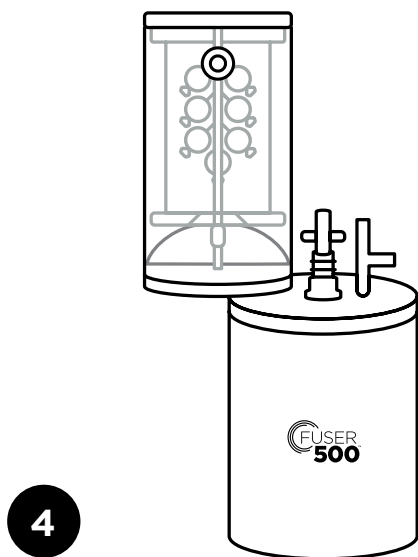
Approximately 390 grams of investment powder



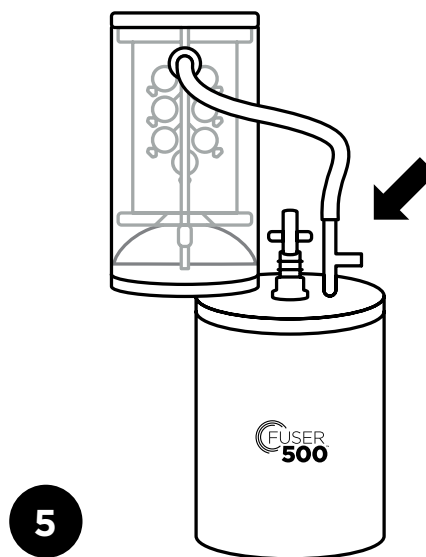
- Measure the quantity of water needed according to the manufacturer's specifications.
- Rest the mixing chamber on a flat surface. Pour water in it, followed by the investment powder. **Always add water first to ensure a more homogeneous mix.**
- Close the mixing chamber with the polycarbonate lid, with the large impeller inside the chamber.



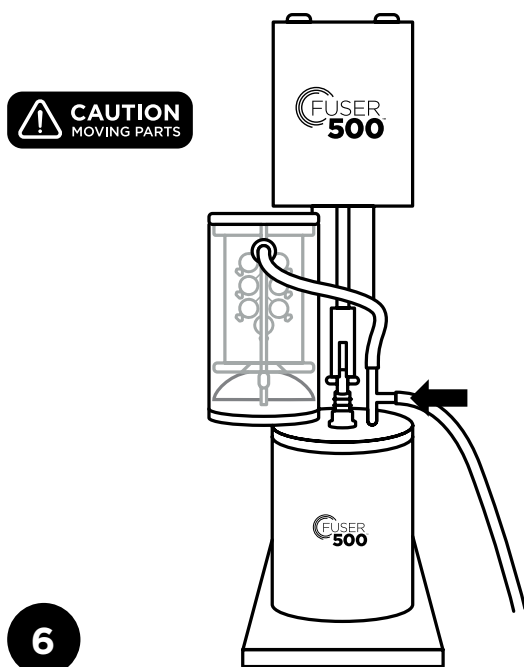
## FLASK PREPARATION USING THE MIXER AND VACUUM PUMP CONT'D



Turn the vacuum chamber upside down, with the flask system in it, and rest it on the small circle of the polycarbonate lid.

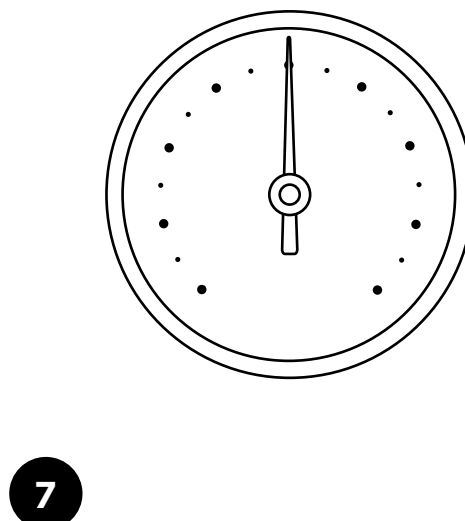


Connect one end of the by-pass silicone tube to the vacuum chamber connector and the other end to the vertical connector of the polycarbonate lid.



Connect the vacuum pump hose to the horizontal connector of the polycarbonate lid.

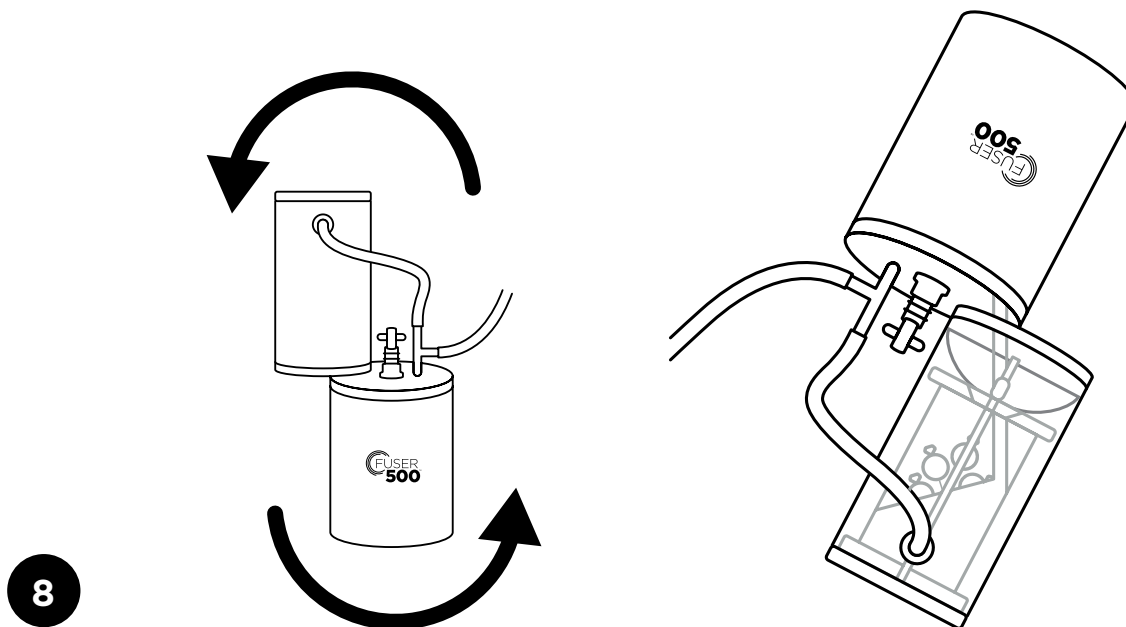
Connect the center shaft of the polycarbonate lid to the motor shaft of the mixer.



**Turn on the vacuum pump.** As soon as the manometer reaches 20 PSI, turn on the mixer for 1 minute.

**Turn off the mixer** and disconnect the polycarbonate lid from the motor shaft of the mixer.

## FLASK PREPARATION USING THE MIXER AND VACUUM PUMP CONT'D

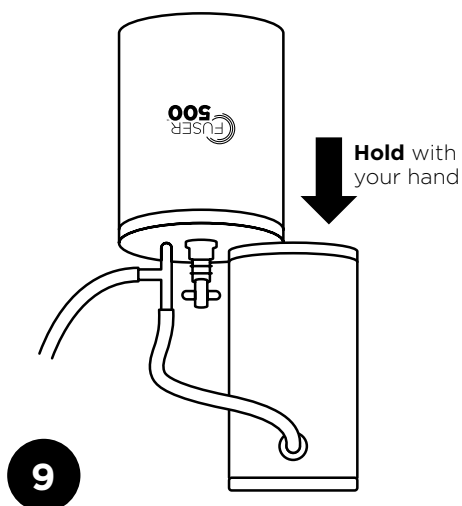


Keep the vacuum pump on. The mixing and vacuum chambers will be fully attached and sealed due to the vacuum.

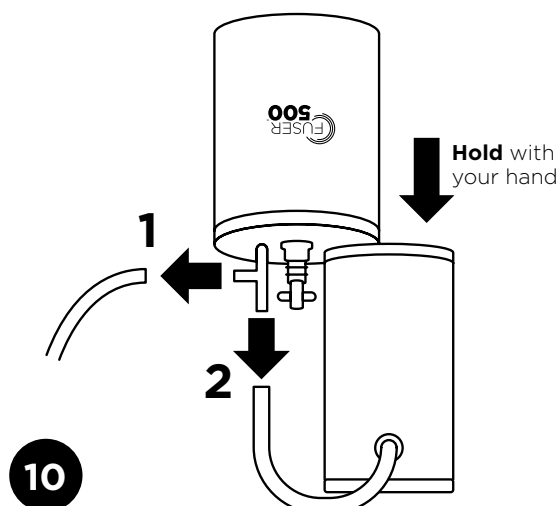
Turn the mixing chamber upside down **counterclockwise** so that the investment flows through the filling funnel into the vacuum chamber.

**WARNING:** Make sure to face the vacuum chamber connector and turn the mixing chamber upside down counterclockwise, so the investment flows directly to the vacuum chamber.

**Do not turn the mixing chamber clockwise**, where the investment would flow from the mixing chamber to the vacuum connector. Doing so may result in equipment damage and malfunction.



**Once all of the investment** fills the flask inside the vacuum chamber, rest it on a flat surface. Hold the mixing chamber and turn off the vacuum pump.

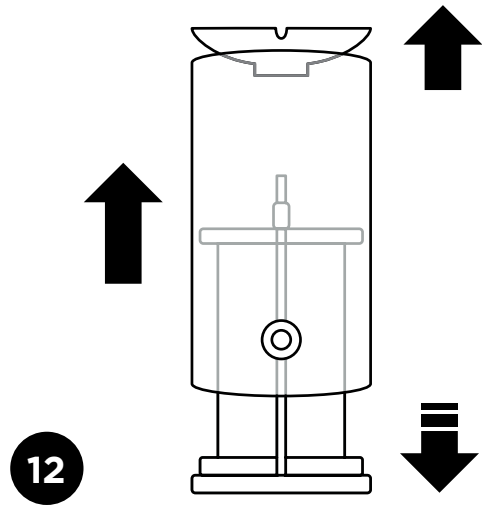


While holding the polycarbonate lid, detach the vacuum hose (1), **and then** detach the by-pass silicone tube (2). Pull the chambers apart.

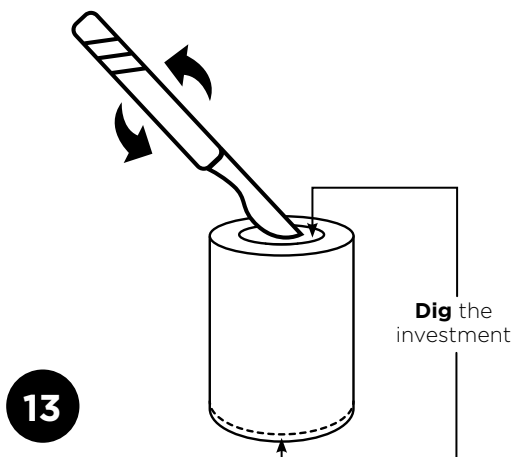
## FLASK PREPARATION USING THE MIXER AND VACUUM PUMP CONT'D



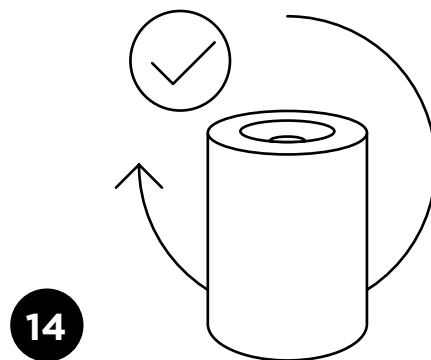
**Immediately** thoroughly wash the mixing chamber, large impeller, and polycarbonate lid with room temperature water. Dry it using paper towel. Failure to do so may result in equipment damage.



**Wait approximately 15-20 minutes.** Disassemble the vacuum chamber and gently touch the investment, making sure it feels firm before proceeding.



Use the lecron carver to dig approximately  $\frac{1}{4}$  inch to meet the sprue tree's base. **Remember, when you turned the mixing chamber upside down, the sprue tree base became the flask's top.** Also dig approximately  $\frac{1}{16}$  inch on the opposite side of the flask. This will later facilitate the metal inclusion under vacuum.



Wait for the investment to dry out completely. Drying time varies according to the manufacturer's specifications.

**EXPERT TIP:** The usual drying time for a small flask is approximately 2 hours.

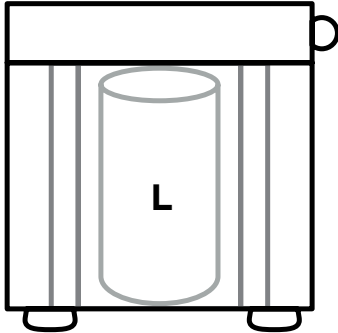
**WARNING:** You must clean the polycarbonate lid's shaft every 15 uses. Failure to do so may result in product damage. Use the allen key to remove the lock pin. Use a small screwdriver to remove the lock ring that holds the shaft. Gently pull the shaft and clean the excess grease and investment residues using a clean cloth or paper towel. Then, place the cloth or paper on the tip of the screwdriver and clean the shaft's fitting. Once clean, apply a generous amount of grease to the shaft, especially to its 2 rubber rings, then fit it back in. Secure the lock pin using the allen key and place the lock ring back into place. Clean the entire piece using a clean cloth or paper towel to remove any excess grease. **Visit [www.brightfuser.com](http://www.brightfuser.com) for the instructional video.**



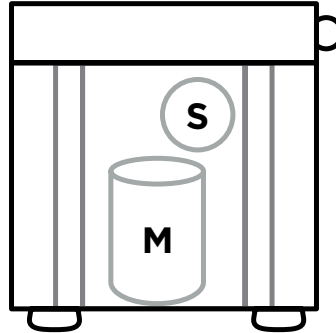
## 11. FLASK BURNOUT USING THE KILN

Once the investment is completely dry, place the flask(s) inside the Fuser500™ kiln. Position flask(s) with the dug hole facing up or sideways. Never position the hole facing down. Close the lid and turn on the kiln. **Your kiln's lid will not fully close due to ventilation purposes.**

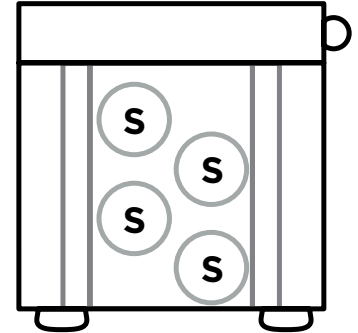
### Kiln capacity:



1 large flask



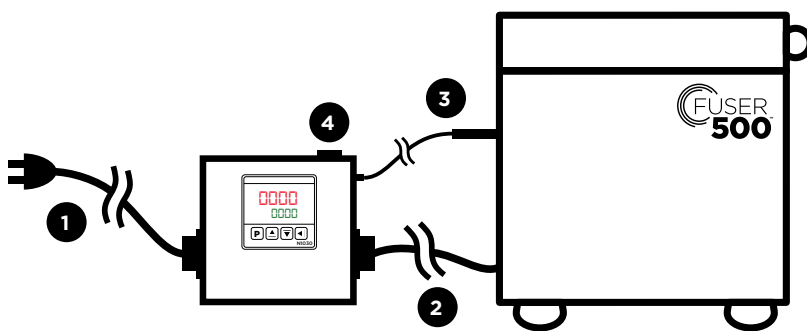
Up to 1 medium flask  
and one 1 small flask



Up to 4 small flasks

**EXPERT TIP:** Do not let the flasks touch the front and back walls of the Fuser500™ kiln where the heating elements are located. Failure to do so may cause flaws and porosities to the investment.

**Both sidewalls may be used as a support system to fit more than one flask.**



- 1) Connect the Fuser500™ temperature controller to a 110V outlet.
- 2) Connect the kiln's power cable to the temperature controller, and make sure the kiln's on/off cable switch is on.
- 3) Connect the temperature probe to the controller and insert it in the kiln's side entrance. Make sure its tip is inside the kiln's chamber.
- 4) Turn on the the controller's on/off switch.

The **Fuser500™ Temperature Controller** comes equipped with a preset digital temperature controller ready to be used. The kiln is designed to reach 1328°F between 3 ½ to 4 hours, but the temperature controller allows you to control your burn according to your production.

- **Red characters** show the current measured temperature value.
- **Green characters** show the desired temperature value.
- Please follow your manufacturer's specifications on recommended temperature/burning time.
- The kiln can be used with or without the external temperature controller.
- Please remember to follow all safety instructions and turn off all the equipment once done.

# FLASK BURNOUT USING THE KILN CONT'D



**Burnout time varies between 3 1/2 and 4 hours and only draws less than 4 amps when operating.**

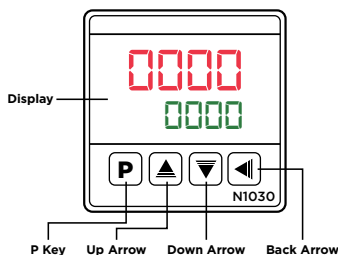


Do not leave the flask(s) past 3 1/2 up to 4 hours; otherwise, they may overburn and cause flaws and porosities to the investment.

During this process, the interior of the kiln and investment will turn black. When the wax calcines, everything will return to its regular color, and the investment cavity will be glowing red. This is when you should prepare to pour in the metal.

**WARNING:** Do not open the kiln during the burnout process. Do not touch the interior of the kiln. Do not use the kiln for any other purpose. Use caution and common sense when operating the Fuser500™ kiln. Misuse may result in product damage and severe injury.

In case the Kiln requires to be reprogrammed, please follow the steps below:



- 1) **Press the P key and hold for 3 seconds**
- 2) On the **Run** display:
  - Using the up or down arrow, select **oFF**
  - Press the **P** key to continue
- 3) On the **Pb** display:
  - Using the up or down arrow, select **00**
  - Press the **P** key to continue
- 4) On the **HYSt** display:
  - Using the up or down arrow, select **30**
  - Press the **P** key to continue
- 5) On the **REt** display:
  - Using the up or down arrow, select **rE**
  - Press the **P** key to continue
- 6) On the **Out:1** display:
  - Using the up or down arrow, select **Ctrl**
  - Press the **P** key to continue
- 7) On the **Out:2** display:
  - Using the up or down arrow, select **oFF**
  - Press the **P** key to continue
- 8) **Press the P key and hold for 5 seconds**
- 9) On the **TYPE** display:
  - Using the up or down arrow, select **tC P**
  - Press the **P** key to continue
- 10) On the **dPPQ** display:
  - Using the up or down arrow, select **00**
  - Make sure to select **00** instead of **0**
  - Press the **P** key to continue
- 11) On the **unit** display:
  - Using the up or down arrow, select **°F** (recommended)
  - Your choice to work with **°C** if desired
  - Press the **P** key to continue
- 12) On the **OFFS** display:
  - Using the up or down arrow, select **00**
  - Press the **P** key to continue
- 13) On the **SPtL** display:
  - Using the up or down arrow, select **32**
  - Press the **P** key to continue
- 14) On the **SPHL** display:
  - Using the up or down arrow, select **1562**
  - Press the **P** key to continue
- 15) On the **FuR I** display:
  - Using the up or down arrow, select **oFF**
  - Press the **P** key to continue
- 16) Your setup is completed:
  - **Red characters** show the current measured temperature value
  - **Green characters** show the desired temperature value
- 17) Using the up and down arrow, adjust to the desired temperature

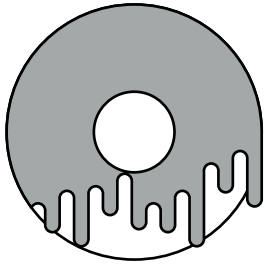
# 12.

## METAL MELTING AND POURING USING THE CASTING BASE AND VACUUM PUMP

**EXPERT TIP:** In this section, you will need a silica crucible, a torch, motor oil, and a container with water large enough to fit the flask(s).

Rest the casting base bottom on a flat surface and place the casting base on top of it.

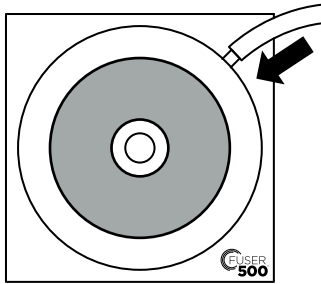
1



Apply a small drop of oil to the casting base top, spread it evenly, and center a paper gasket on it. The paper gasket will create a vacuum seal once you turn on the vacuum pump (replace the paper gasket as needed).

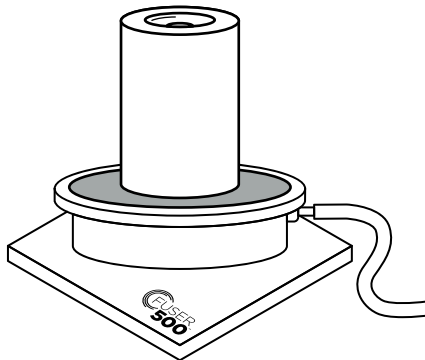
**EXPERT TIP:** After using the casting base, it is normal for oil to accumulate inside its bottom. Clean it using paper towel as needed.

2



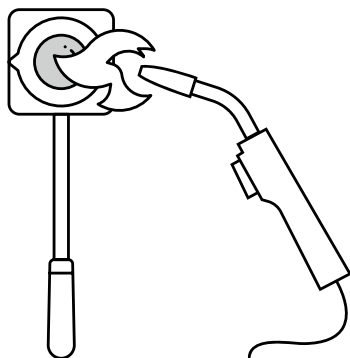
Connect the vacuum pump hose to the vacuum connector of the casting base.

3



Remove the flask from the kiln using the crucible tongs. Place it on the center of the casting base system, on top of the paper gasket.

4



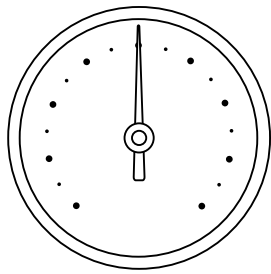
Use a silica crucible and a torch to melt the metal of your choice.

**WARNING:** Always follow the manufacturer's safety instructions when handling a torch.



## METAL MELTING AND POURING USING THE CASTING BASE AND VACUUM PUMP CONT'D

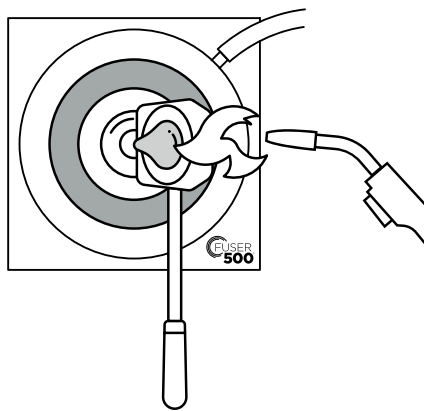
5



Once all of the metal becomes liquid, turn on the vacuum pump. As soon as the vacuum's manometer reaches 25 PSI, begin pouring the metal into the flask.

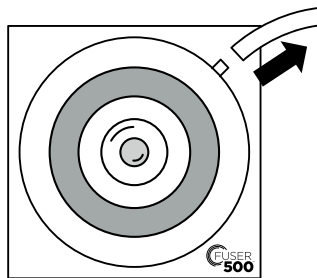
**EXPERT TIP:** The ideal melting point is when the metal becomes a bubble, similar to an egg yolk. Do not overheat the metal, as it may cause flaws and porosities.

6



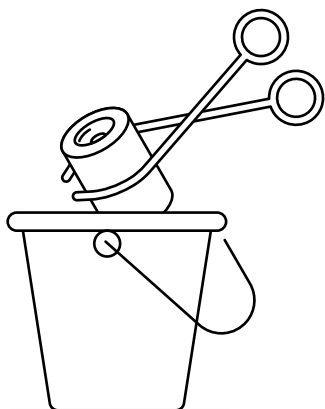
Make sure to keep the torch directed towards the molten metal so it does not solidify before being poured into the flask.

7



Once all of the metal has been poured in, turn off the torch. Wait for the poured metal to solidify, then turn off the vacuum pump and disconnect the hose.

8




Use the crucible tongs to remove the flask from the casting base system and carefully place it in the container with water.

The investment will crack and dissolve, unveiling your casting tree.

**WARNING:** Be mindful of how to discard investment residue. Do not discard it in a sink, toilet, or sewage system, as it may cause critical clogging.

Scrape off any investment residue from the flask. Wash it with clean water (room temperature) and dry it with a paper towel.



After removing your newly casting tree from the water, clean it up, and use your preferred technique to finalize it.

**EXPERT TIP:** To remove any investment residue from your jewelry casting, soak it in muriatic acid or place it in an ultrasonic cleaner.

# ENJOY FINISHING AND POLISHING YOUR JEWELRY CASTING!

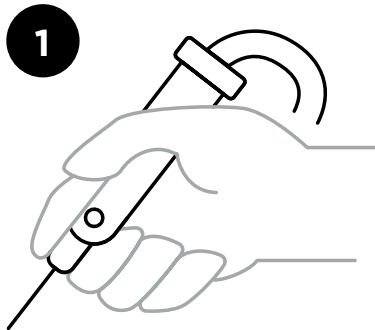




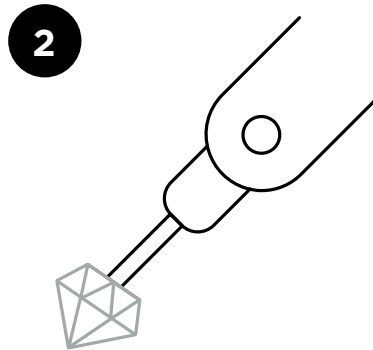
## BONUS: STONE SETTING USING THE VACUUM PUMP\*

You may use the vacuum pump and vacuum pen to pre-set stones when preparing your sprue tree.

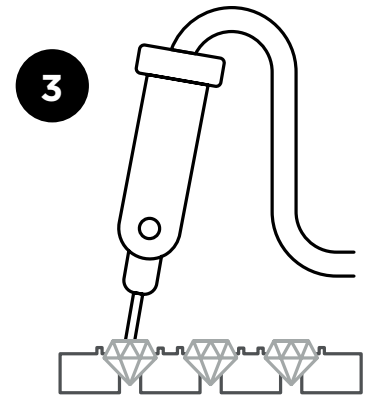
If pre-setting, make sure to check that the prong holes are open. The investment will fill up the cavity behind the prongs, holding the stones in place after the wax calcinates.



1 Connect one end of the suction silicone tube to the wax injector's frontal lower vacuum connector. Connect the other end to the vacuum pen. Hold it as if holding a pencil and place your finger in the side hole.

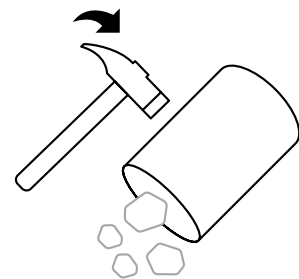


2 Turn on the vacuum pump and use the tip of the suction needle to manipulate any stone.



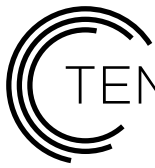
3 Release your finger from the side hole to drop the vacuum and release the stone.

**WARNING:** The casting process for pre-set stone jewelry is the same as for stone-free pieces. Yet, when handling pre-set stone jewelry, do not place the flask in a container with water, as it may damage the stone. Instead, wait for the flask and metal to fully cool down, then use a small hammer to break the investment open.



**WARNING:** Most precious stones cannot endure the heat of the Fuser500™ kiln and may get damaged. Some synthetic stones, sapphires, rubies, and diamonds may be pre-set. Make sure to ask your stone provider what is the maximum temperature that each stone may bear\*.

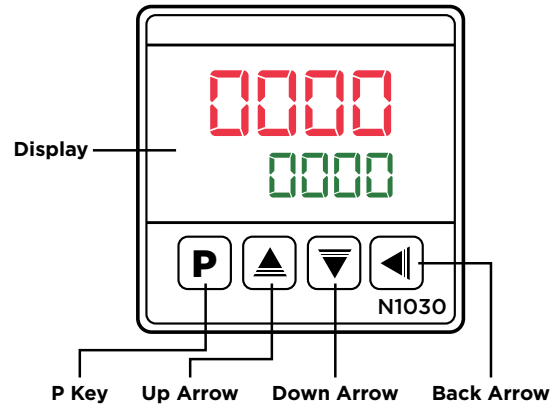
*\*BrightFuser does not accept any responsibility or liability for damaged stones, whether synthetic or natural. BrightFuser shall not be liable for any direct, indirect, or consequential loss or damage. Use this method at your own risk.*



# TEMPERATURE CONTROLLER OPERATIONAL INSTRUCTIONS



The **Fuser500™ Wax Injector** comes equipped with a preset digital temperature controller ready to be used. In case it requires to be reprogrammed, please follow the steps below:



- 1) **Press the P key and hold for 3 seconds**
- 2) On the **Run** display:
  - Using the up or down arrow, select **oFF**
  - Press the **P** key to continue
- 3) On the **Pb** display:
  - Using the up or down arrow, select **00**
  - Press the **P** key to continue
- 4) On the **HYS** display:
  - Using the up or down arrow, select **00**
  - Press the **P** key to continue
- 5) On the **Act** display:
  - Using the up or down arrow, select **rE**
  - Press the **P** key to continue
- 6) On the **Out.1** display:
  - Using the up or down arrow, select **Ctrl**
  - Press the **P** key to continue
- 7) On the **Out.2** display:
  - Using the up or down arrow, select **oFF**
  - Press the **P** key to continue
- 8) **Press the P key and hold for 5 seconds**
- 9) On the **TYPE** display:
  - Using the up or down arrow, select **tcJ**
  - Press the **P** key to continue
- 10) On the **dPP** display:
  - Using the up or down arrow, select **00**
  - Make sure to select **00** instead of **0**
  - Press the **P** key to continue
- 11) On the **unit** display:
  - Using the up or down arrow, select **°F** (recommended)
  - Your choice to work with **°C** if desired
  - Press the **P** key to continue
- 12) On the **OFFS** display:
  - Using the up or down arrow, select **00**
  - Press the **P** key to continue
- 13) On the **SPLL** display:
  - Using the up or down arrow, select **32.0**
  - Press the **P** key to continue
- 14) On the **SPhL** display:
  - Using the up or down arrow, select **302.0**
  - Press the **P** key to continue
- 15) On the **FuR i** display:
  - Using the up or down arrow, select **oFF**
  - Press the **P** key to continue
- 16) On the **SPR i** display:
  - Using the up or down arrow, select **32.0**
  - Press the **P** key to continue
- 17) On the **blR i** display:
  - Using the up or down arrow, select **no**
  - Press the **P** key to continue
- 18) On the **HYR i** display:
  - Using the up or down arrow, select **00**
  - Press the **P** key to continue
- 19) Your set-up is completed:
  - **Red characters** show the current measured temperature value
  - **Green characters** show the desired temperature value
- 20) Using the up and down arrow, **adjust to the recommended temperature by your wax manufacturer**

\*The supplied wax included inside the wax injector works at 80°C



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Patent pending PCT/BR2019/050537