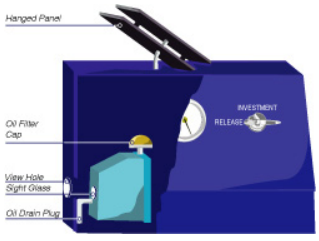
# *EZ-CAST*
# Premium Quality Vacuum-Assist Casting System
### Order No. 192.10 - 120V  Order No. 192.20 - 240V
# OPERATING INSTRUCTIONS
### SETTING UP YOUR EZ-CAST VACUUM ASSIST CASTING MACHINE

On the left side of the top of the cabinet is the investment table. On the right side is the casting chamber. The on-off switch is located on the left front panel. In the center is the vacuum gauge. The vacuum control lever is on the right. Inscribed on the cabinet at the vacuum control lever are the positions of control for release, investment and casting.

Remove the screws that hold down the top panel of the investment table. This panel is hinged on the right. Lift and swing the panel along with the investment table and let it rest on the cabinet. This open panel reveals the inside of the unit right at the vacuum pump. Remove and discard the rubber plug used in shipping and fill the pump with the vacuum pump oil supplied. Fill only until the oil is between the two red lines on the oil gauge, which can be viewed through the hole in the cabinet on the pump side. If you have over filled the pump, removing the drain plug on the bottom of the pump can drain it.
Once the pump is properly filled, remove the pump breather cap from its plastic shipping bag that is attached to the pump hose and screw the cap into the oil filler hole. Discard the plastic bag. Close the panel and replace the screws.

Be sure the on-off switch is in the off position and plug the unit into a properly grounded 120V outlet***. Please note that if your unit is 240V, it is shipped without a plug which you must supply and that will fit your outlet.***

It is important that you perform the following test to determine that your machine is in proper working order. Place the black rubber pad on the investment table. Fill a 600ml beaker or similar drinking glass or jar with room temperature water and place it in the center of the black pad. Place the plastic bell jar over the glass container. Wetting the black pad will assist in sealing the bell jar to the black pad during the vacuuming procedure. Turn the unit on and switch the control lever to investment. Press down on the lip edge of the bell jar if necessary to assist in securing a seal.
**DO NOT PRESS DOWN ON THE TOP OF THE BELL JAR AS THIS COULD CAUSE AN IMPLOSION.** Once the seal is made, the air is being extracted from the bell jar and the water. The vacuum gauge will begin to register and will reach its full vacuum in a mater of seconds. The water in the container will begin to appear as if boiling.
At this point release the vacuum by switching the control lever to release. When the gauge is down to 15, turn the unit off. Remove the bell jar and the water.
**NEVER TURN THE MOTOR OFF UNLESS THE CONTROL LEVER IS ON RELEASE. IF THE MOTOR IS TURNED OFF WHILE IN FULL VACUUM IT WILL DRAW THE OIL FROM THE PUMP INTO THE VACUUM LINES.**




Your test of the investment side is now complete.
To test the casting chamber, place the large red rubber gasket on the lip of the casting chamber.

Place the large steel adapter plate with the ½" hole in the center on top of the red gasket with the offset lip down. This will secure a seal between the chamber and the plate. Turn the unit on and switch the control lever to casting. Cover the ½" hole with the end of the square rubber pad.
This action will seal off the casting chamber and immediately register on the vacuum gauge at full vacuum. Switch the control lever to release and turn the motor off.
Your test of the entire unit is now complete.

It is important to note the effect terrain elevation will have on drawing a vacuum. At sea level, 29 inches of mercury is normal for most vacuum assist casting machines. For every thousand (1000) feet in elevation you loose one (1) inch of mercury. For example if you lived in Mexico City, which is over 5000 ft above sea level, your gauge would only read approximately 22 to 23 inches. Although this is important information, the performance of the vacuum machine is the important factor. If the elevation is not known but your machine extracts the air, as it should as you determined from your testing, this is all that matters.

## Shipped - Complete with the Bell Jar and all the accessories listed.
## Shipping wt. 113lbs (2 cartons 1-100lb and 1-13lb)

Accessories include the following:

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| 1. | Bell jar 9"x 8 ½" | No. | 192.101 |
| 2. | Black investment rubber pad | | 192.102 |
| 3. | 7" Flask steel adapter ring dia. ½" hole in center | | 192.103 |
| 4. | 4" Flask steel adapter ring dia. Hole in center | | 192.104 |
| 5. | 3 ½" Flask steel adapter ring dia. Hole in center | | 192.105 |
| 6. | Square red silicone rubber pad with ½" hole in center | | 192.106 |
| 7. | Set of three (3) red silicone casting seals 5,4 &3 ½" | | 192.107 |
| 8. | Melting crucible | | 192.108 |
| 9. | Melting crucible handle | | 192.109 |
| 10. | Flask tongs | | 192.110 |
| 11. | Vacuum pump oil | | 192.111 |
| 12. | Rubber sleeve for perforated flask | | 192.112 |
| 13. | Flask sprue base | | 192.113 |
| 14. | 3 3/8" perforated flask 167.00 | | |

### INVESTMENT AND CASTING PROCEDURES

*The following is a synopsis of vacuum assist investing and casting procedures. This system is known as the Lost Wax Casting process. There are many publications available that describe the process in its entirety, which can be obtained from most any jewelry supply house.*

*The following is the process for using a solid flask cylinder. Using a perforated flask is the same procedure with the exception of covering the flask with the rubber sleeve during investing and also the casting procedure in which the casting steel rings with the correct red silicone gasket is use. In most cases the perforated flask is used in tree casting meaning multiple patterns attached to a center wax post forming what is known in the industry as a tree casting.*

*First step is to obtain a wax pattern by either your own design or purchase one already made. Select a flask and appropriate sprue base. Use an electric wax pen or spatula to mount a sprue or sprues to the wax pattern and mount it onto the rubber sprue base. Next, use a surface tension reducing agent on the wax pattern. This will allow the wet investment to adhere to the wax insuring good detail. Surround the wax pattern with the flask making sure the flask is well seated on the sprue base.*

The next step is investing. Investing, meaning the mixing of investment powder and water, is a critical process and one should follow all factory recommendations. Most standard jewelry investments have a water-powder ratio of 182cc of water to one pound avoid of investment powder or 454 grams. There are charts available to determine the proper amounts of water/powder for different size flask. Most investments will set during the 10th and 11th minute. From this

it is determined that the recommended working time for investing is 9 minutes. This is calculated as from the instant the powder is introduced to the water until the flask is set aside to allow to set and harden.

The following are the standard steps used in the investing procedure. After calculating the amount of investment and water to fill your flask, weigh the amount of investment powder on a proper scale. Use a CC graduate or measuring beaker to obtain the proper amount of water. **The correct ratio is critical**. Pour the water into a rubber-mixing bowl and then the powder, mix with a spatula. A rubber bowl is necessary as it allows you to handle easily, especially when pouring the investment into the flask. The length of mixing time is related to the number of flask you are working with. If you are only working with one flask, your mixing time will be longer than if you were working with four or five flask. The important factor is to use up all the nine minutes of working time. Proper working time is important because it allows the powder and water to obtain the proper consistency so that it will have a minimal effect on separating. The separation can be visually seen on castings as trails or lines on the casting that was not a part of the design.

After mixing, place the bowl on the black rubber pad and cover with the bell jar. Turn the EZ-CAST on and move the control lever to investment. When the air is extracted from the slurry (investment powder), it will rise and return to its normal height as you slightly bang on the investment table. Once the investment returns to its normal height, move the control lever to release and switch the unit off. Remove the rubber bowl and fill the flask with investment. Pour the slurry down the side of the flask and not directly on the pattern. Allow the slurry to surround the waxes. Be sure to allow the investment to completely cover the pattern and leave a space of at least ½" from the edge of the flask to the investment. Place the flask on the black rubber pad, cover it with the bell jar and extract whatever air was trapped during the pouring of the investment. Do not violently bang on the investment table at this point of the procedure as it could cause damage to the patterns.

The ½" space is necessary as it allows the investment to rise during the second vacuuming of the investment avoiding spillage. Cap off the flask with the remaining investment leaving the investment below the edge approximately 1/16". This space is important as it allows the edge of the flask to seat on the red silicone pad during the casting procedure. Once you have completed investing, hold the flask by the sprue base and not by the flask and move to a bench to allow setting and hardening and not being disturbed. Allow to set for 1 ½ to 2 hours before burnout.

For casting, first remove the bell jar and black rubber pad from the machine and place the large red gasket on the lip of the casting chamber. Next, place the large steel ring with the ½" hole on the red gasket with the offset lip down and put the 6" square red pad on top of the steel plate. Be sure to align the holes.

After the proper and recommended burnout for the size flask you have selected and once the flask is at the proper casting temperature, prepare first by preheating your pouring crucible. Place the metal in the pre-treated crucible and melt the metal. Using tongs remove the flask from the furnace and place it over the hole on the square red pad with the hole up. Turn the EZ-CAST on. Re-heat the metal to reach the proper temperature. Once there, move the control lever to casting. Continue to heat the metal and look at the vacuum gauge, when you have reached the full vacuum, pour the metal into the flask rapidly as if dumping the metal but with out spilling. It is also important to allow the torch flame to remain on the metal as you pour.

After casting move the flask off the red pad and on to a heat proof surface. Once the red glow is gone, you may quench the flask in water. Do not quench white gold castings.

## SERVICING YOUR EZ-CAST

The EZ-CAST has an internal filter. The purpose of this filter is to catch or absorb any material that may pass through the lines so as to prevent it from entering into any other part of the system. This could easily happen if not enough investment is left between the item and the top edge of the flask on the solid type flask. It could also happen if the walls are to thin on the perforated flask. During the casting procedure, when vacuum is applied, the created suction and extremely hot metal being introduced to the flask will blow these thin portions of investment out. In the event this occurs, remove and replace the filter. At the same time, inspect all the hoses for rupture. Replacement PEPETOOLS filter No. 192.114

*Check and maintain the level of the vacuum pump oil. The oil must also be changed every four (4) hours of use. Judging from the actual time used in the investment and casting process which is approximately three (3) minutes, this would mean that you should drain and replace the oil with new vacuum pump oil every eighty (80) castings.* ***NEVER USE ANY OIL THAT IS NOT RECOMMENDED FOR VACUUM PUMPS.***

Keeping your EZ-CAST clean and well serviced will give you many years of excellent use.

Please read these instructions and follow them carefully. Please note that the EZ-CAST was shipped in two cartons, one, containing the EZ-CAST cabinet with vacuum pump and motor along with all hose and electrical connections. The other box contains the bell jar, all rubber pads and gaskets, casting rings and casting accessories. Be sure to unpack carefully making sure that all parts are accounted for.