This unit has been designed specifically for de-airing investment, RTV mold compounds or urethanes, and for vacuum casting small, solid flasks. The streamline-design footprint has a vacuum gauge, a vacuum/casting valve, an inline filter and a Rio 9" (inside diameter) x 7½" (inside height) side-draw bell jar. The side-draw bell jar helps keep debris away from the pump.

Equipped with a 6" high-heat white silicone vacuum casting pad and an 11" x 11" gum rubber investing pad with or without a 3cfm, 110V, 60Hz vacuum pump that efficiently pumps down the bell jar in less than 30 seconds.
7. Place the pump on the floor by the unit.
8. Plug the pump into a 120V power supply. Your machine is ready to use!

**De-Airing Operation**

1. Move the toggle switch on the front panel to the “invest” position.
2. Use the gum rubber investment pad and the bell jar for de-airing investment and other compounds. Check the pad and the table to be sure they're clean, undamaged and free of debris before de-airing.
3. Turn on the vacuum pump and make sure you have a good seal. **Please Note:** The vacuum gauge will indicate a seal has been established. A little water on the rubber pad will help ensure a good seal.

To release the vacuum in the bell jar, first turn off the vacuum pump, then move the toggle switch to the cast position.

**Casting Operation**

1. Move the bell jar safely out of the way, then move the toggle switch to the “cast” position.
2. Place the white silicone casting pad onto the metal surface of the table.
3. Place your flask, sprue hole up, on the pad. Please keep in mind that, when investing for vacuum casting, a 1/8" space must be left between the top of the solid flask and the investment. This area will help form the seal between the flask and the casting pad during the casting process. Use Wax Web™ with your solid flasks to reduce the trapped gases in your flasks, giving you better fills, reducing defects and improving cast quality. See your Tools & Equipment catalog for Wax Web (#702-200, 702-203/BK, 702-202/BK, 702-201/BK, 702-200/BK).

4. Turn on the vacuum pump and ensure that you have a good seal by checking the vacuum gauge. Full vacuum at sea level pulls about 29” to 29.5” of mercury. Vacuum efficiency is diminished by altitude: the precise vacuum reading will depend on your altitude. The gauge will register approximately 0.9” less with each 1000 feet of altitude (for example, full vacuum is approximately 24.5” of mercury at 5000 feet above sea level).

**Please Note:** The vacuum gauge will indicate a seal has been established. Now you are ready to cast.

To release the vacuum on the flask, first turn off the vacuum pump, then move the toggle switch to the invest position.
Setup

Setup for this vacuum machine is easy. Remove the unit from the box and carefully unpack the bell jar and table-top components. Place the machine on your bench or table. If you purchased the machine with the vacuum pump (#705-013), remove the pump and place it on your table or bench as well.

1. Attach the short polyurethane tubing coming from the unit to the barb-fitting on the bell jar grommet; no clamps are needed to complete this step.
2. You’ll notice an open port on the side of the vacuum pump's carrying handle. Install the barb-fitting onto the open port.
3. Cut 2"–3" of polyurethane tubing from the long piece coming from the unit and install it onto the barb-fitting that is attached to the vacuum pump (see illustration below).
4. Install the inline filter in the 2"–3" piece of polyurethane tubing coming from the vacuum pump. The inline filter keeps small pieces of debris from being drawn into the vacuum pump.
5. Attach the polyurethane tubing from the unit to the other side of the inline filter.
6. Fill the vacuum pump with the vacuum pump oil (supplied), to or just below the oil-fill line (use the sight glass to observe). The oil-fill line is designated on the side of the pump. **Please Note:** Do not fill the vacuum pump past the oil-fill line, it may damage the pump.

**CAUTION:** Always keep your bell jar to the side of or behind the machine when you’re casting. Hot metal, flames or debris can damage your bell jar. Always inspect the bell jar for any damage and replace any damaged bell jar immediately, as it can implode and harm the operator or others who might be close-by.
Maintenance

Water will accumulate in the oil over time and must be drained off. It is normal for some moisture to collect in the oil; when it collects in the bottom of the pump it should be removed before the next use of the pump. To drain the water from your vacuum pump, position your unit at the edge of the work table, open the drain spout and let the foamy oil run out until the oil runs clear. Close the spout and replace vacuum oil to the oil level mark as needed. Pump oil should also be replaced periodically.

Please Note: Drain off the water after every 40 hours of use. We recommend using Rio Flushing Oil (#706-017) to clean your vacuum pump and to help remove any water that may remain in the pump during regular draining and refilling. Use Rio Flushing Oil every 300 working hours.

Replace the inline filter if it accumulates debris.

Replacement Parts

<table>
<thead>
<tr>
<th>Description</th>
<th>Order #</th>
</tr>
</thead>
<tbody>
<tr>
<td>6” white silicone casting pad</td>
<td>705-163</td>
</tr>
<tr>
<td>9” side-draw bell jar</td>
<td>702-155</td>
</tr>
<tr>
<td>Vacuum inline filters, package of 3</td>
<td>705-169</td>
</tr>
<tr>
<td>Gum-rubber investing pad (11” x 11” x 3/16” thick)</td>
<td>705-165</td>
</tr>
<tr>
<td>Rio vacuum pump oil, one gallon</td>
<td>706-020</td>
</tr>
<tr>
<td>Rio flushing oil, one quart</td>
<td>706-017</td>
</tr>
<tr>
<td>Replacement vacuum gauge</td>
<td>B42003</td>
</tr>
<tr>
<td>Polyurethane tubing</td>
<td>B44402</td>
</tr>
</tbody>
</table>