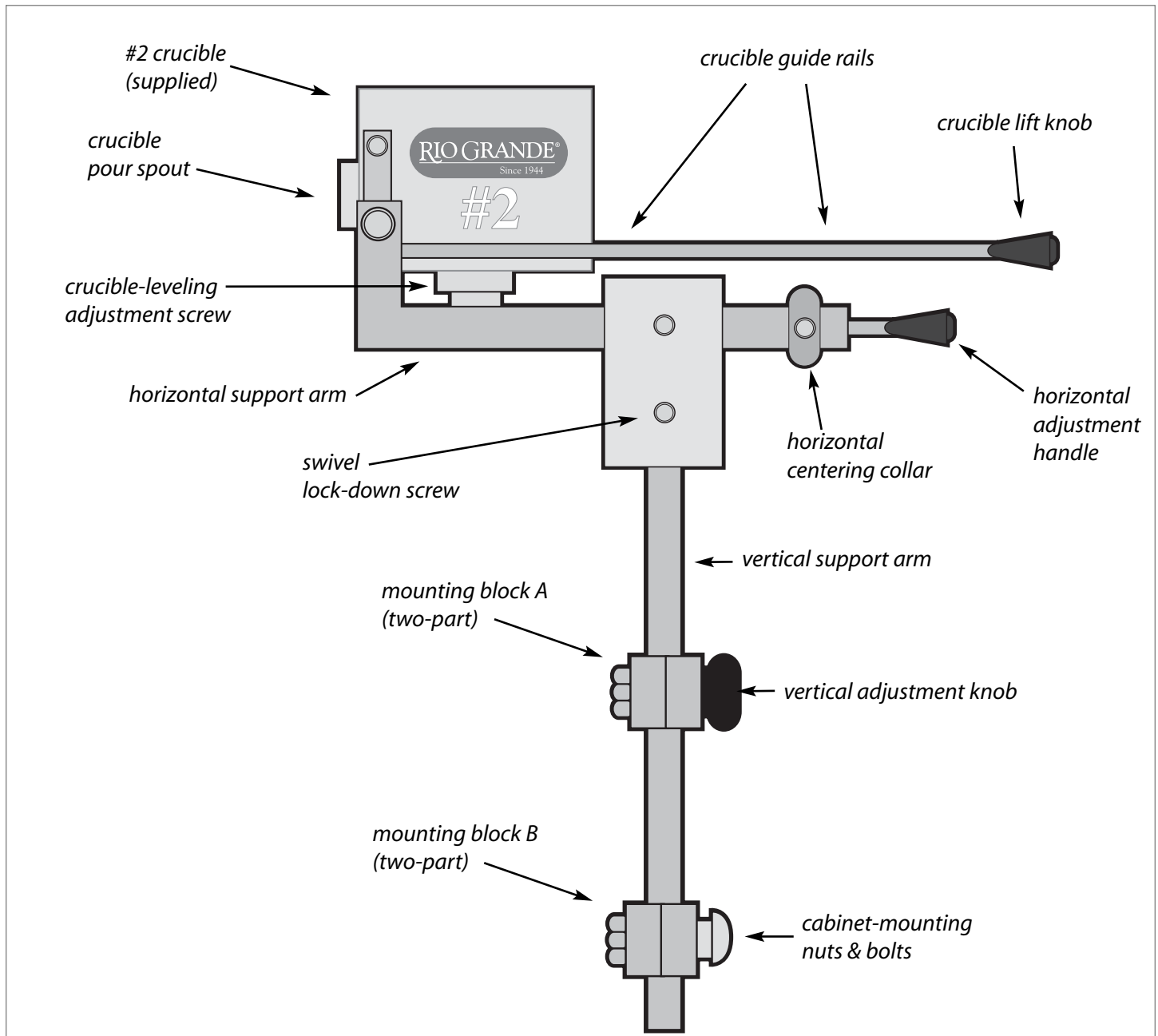


The Assistant™ Crucible Holder

Installation & Operation Handbook

#705-140



Packing List

The Assistant™ is packed in a single carton. As you unpack, check against this list to make sure all parts are included.

- Assistant frame assembly with mounting blocks A and B, and horizontal centering collar
- Flask guide Y-bracket with mounting block C
- Ceramic melting crucible
- Paper alignment template
- Adjustment knob for mounting block A
- Adjustment toggle for mounting block C
- Allen wrench for crucible guide collar
- Allen wrench for horizontal alignment collar



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Introduction

Congratulations on your purchase of The Assistant™ crucible holder. Correct installation and alignment are essential for the safe and correct operation of this equipment. Please read this entire handbook before installing and using The Assistant to gain a clear understanding of the equipment and process.

Overview

The Assistant™ is a lever-action crucible holder designed to be installed on your vacuum casting machine. The Assistant consists of a Y-shaped adjustable bracket that holds a solid casting flask in position on the vacuum table and a fully adjustable, pivot-action crucible holder that holds the flask in alignment as you pour. With The Assistant, you melt your metal directly above the flask, allowing you to keep the metal constantly covered with your torch flame while minimizing the risk of spills and casting accidents. For a small casting operation, The Assistant is an efficient and economical way to get the best casting results.

Please Note: The installation sequence described in this handbook is based on installing The Assistant crucible holder on V.I.C.™ 9 or V.I.C.™ 12 vacuum investing and casting machines. These machines come with mounting holes predrilled for The Assistant. If you are installing The Assistant on another casting machine, the same instructions should apply with slight modifications; for example, it will be necessary to drill mounting holes when another brand of casting machine is used.

Installation Preparation

1. Invest a test flask. This test flask will help you align The Assistant™ for the most efficient crucible pouring on your specific casting machine. The test flask should be prepared ahead of time and allowed to cool to room temperature. It will be needed for several steps in the installation and alignment process.

To make a test flask:

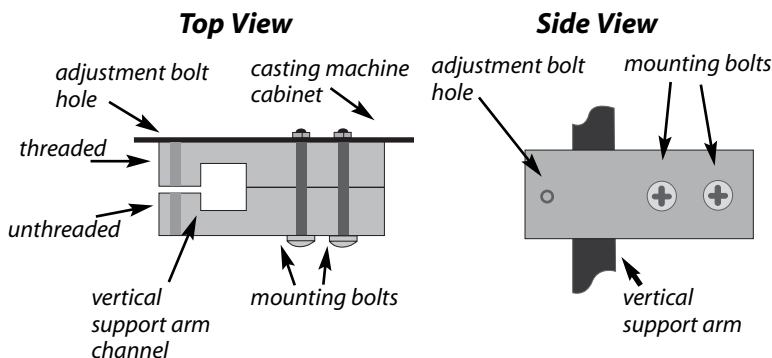
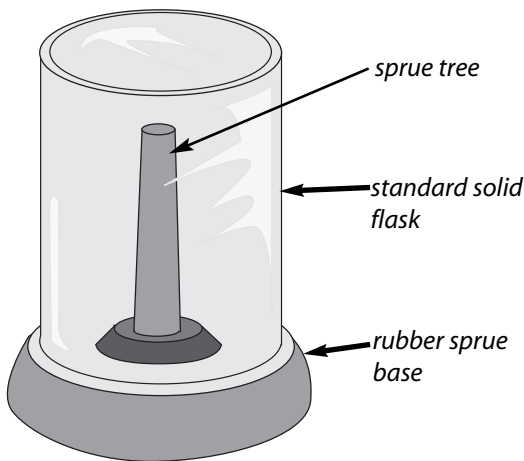
- Set up a 2" or 3" sprue tree on a 2½"-, 3½"- or 4"-diameter rubber sprue base.
- Invest a test flask in a standard solid flask.
- Burn out the flask as usual and allow it to cool to room temperature.

2. Place your casting machine on a sturdy, level surface with easy access to the side of the machine nearest the casting platform and the back of the machine.

3. Unpack The Assistant and identify each part of the assembly (see the packing list on the front page).

4. Additional tools you'll need to install The Assistant are:

- Phillips head screwdriver
- Crescent wrench or ¾" open-end wrench
- Drill with 13/64" bit (if not using a V.I.C. machine; V.I.C. machines come predrilled)

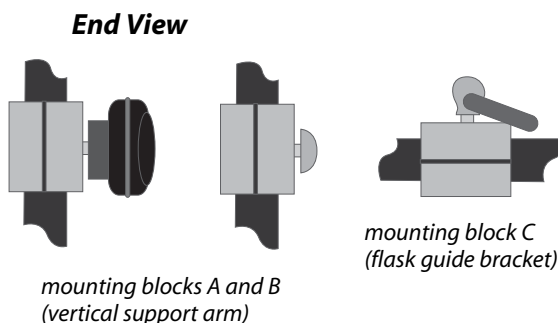


Mounting Blocks

The Assistant™ is mounted to your casting machine's cabinet with three two-part mounting blocks. All three blocks are identical, but the two halves of each block are not identical. One half of each block has one threaded hole, which gives the adjustment knob, bolt or toggle a secure grip when you are tightening the mounting blocks.

The half with the threaded hole is referred to as the back or bottom half during the assembly process. It is very important to install the bottom half of the mounting block first, or the adjustment bolts will not function properly.

Study the illustrations at left to understand the components and assembly of the mounting blocks.

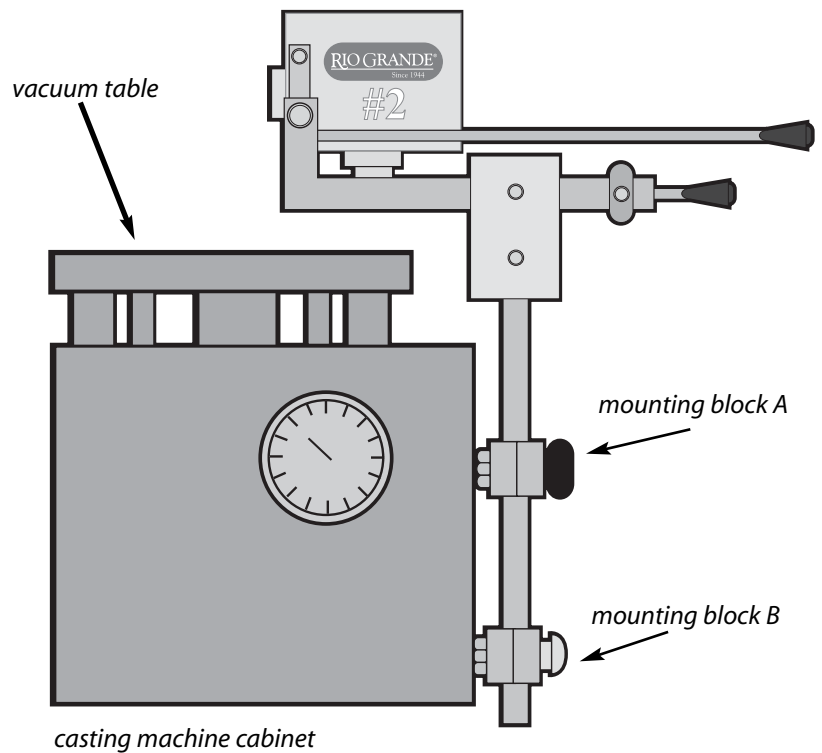
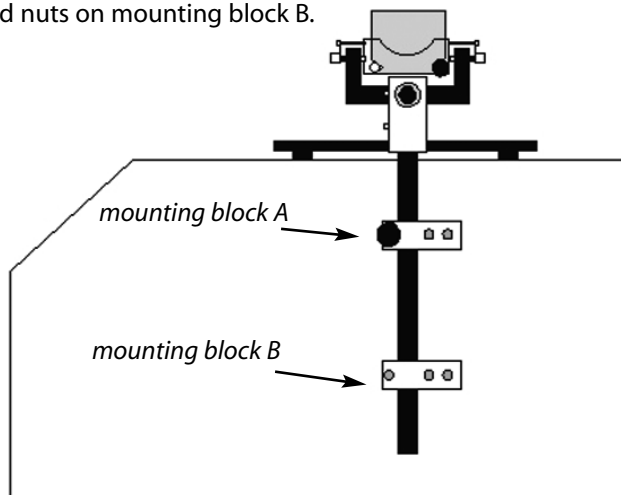


mounting blocks A and B
(vertical support arm)

mounting block C
(flask guide bracket)

Installing the Frame

1. Find the metal frame assembly (consisting of the vertical and horizontal support bars mounted at 90° angles to each other) and remove both two-part mounting blocks from the vertical support bar. Note that each mounting block consists of two halves. The back half (or the half that is installed first, flush against the machine) has one threaded hole and two unthreaded holes. The front half (or the half that is installed last, over the support arm) has three unthreaded holes. It is essential that the back half of the mounting block has the threaded hole, so the mounting block can be tightened with its respective adjustment knob, bolt or toggle.
2. Remove the screws from each block and separate the halves.
3. At the inside right angle of the frame body, locate the crucible guide Allen bolt, and loosen it until the horizontal bar moves freely.
4. Find the crucible-leveling adjustment bolt on the horizontal support arm near the pivot mechanism, and screw it in all the way until the tip of the bolt protrudes from the bottom of the horizontal support arm.
5. Insert the tip of the crucible-leveling bolt into the vacuum port at the center of the casting table. Let the horizontal bar rest on the casting platform, with the vertical bar hanging down against the side of the machine cabinet. Make sure the horizontal support bar is flush with the casting platform, and the vertical support bar is completely vertical and resting against the side of the cabinet.
6. Slide the back half of mounting block A onto the vertical bar. The mounting holes should point toward the machine cabinet. Position the mounting block flush with the top lip of the cabinet, and mark both holes with a pencil or scribe.
7. Drill both holes with a $\frac{13}{64}$ " bit only if the holes are not predrilled.
8. Assemble both halves of mounting block A, and install it around the vertical bar into the holes you just drilled.
9. Tighten the bolts and nuts on mounting block A, and recheck that the vertical support bar is completely straight.
10. Slide the back half of mounting block B onto the vertical bar about 4" below mounting block A. Install mounting block B following steps #5–7 above. Tighten the bolts and nuts on mounting block B.



Installing the Assistant to a Perforated-Flask Casting Machine (V.I.C. 12)

1. Put the proper-diameter silicone flask gasket onto the top adapter plate of the perforated flask chamber.
2. Prepare a perforated test flask (follow the process for creating the solid test flask described on page 2); allow it to fully cool. You'll use this test flask to determine the correct alignment of the crucible and frame in your perforated-flask machine.
3. Place the perforated test flask down into the flask chamber and follow the steps described on page 5 for aligning the crucible.

Please Note: The Y bracket is only needed when aligning and casting solid flasks. It will not be used when The Assistant™ is mounted to and used with a perforated-flask machine.

Installing the Crucible into the Assistant

1. Loosen the adjustment knob on the vertical support bar and lift the horizontal support bar to a comfortable working height. Retighten the vertical adjustment knob.
2. Grasp the knob at the end of the longest crucible guide rod and lift it enough so that you can slide the crucible between the guide rods. Make sure the pour spout of the crucible is pointing toward the casting table. Slide the crucible all the way into position against the pivoting end of the horizontal support bar.
3. Adjust the crucible-leveling bolt (found on the horizontal support bar) until the crucible sits completely level.

Please Note: It is not necessary to drill holes for the adjusting screw on block A or the adjusting knob on block B.

Aligning the Crucible

1. Place the solid test flask back on the casting table, with the flask guide in correct position for the flask size.
 2. Loosen the adjustment knob on the vertical support bar, and slide the crucible assembly down no further than $\frac{3}{8}$ " above the top of the flask. Retighten the vertical adjustment knob.
- Please Note:** The height adjustment of the crucible assembly is critical. The shorter the distance the molten metal has to travel to enter the mold cavity, the less it will be exposed to damage from the atmosphere, and the more consistent your casting results will be.
3. Lift the crucible guide rod knob and place the crucible in a vertical position.
 4. Loosen both set screws on the swivel block. This will allow movement of the crucible side to side and in and out. Align the crucible so the pour spout of the crucible is in position directly over the sprue hole in the flask. Tighten the two set screws in the swivel block with the supplied Allen wrench (Figure 1).
 5. To check the alignment, tilt the crucible back to a horizontal position. Place a pencil in the crucible with the tip at the pour spout (Figure 2).
 6. Lift the crucible by the knob to a vertical position. The pencil should fall out and go directly into the sprue hole of the flask (Figure 3).
 7. If it does not go directly into the sprue hole, recheck steps 1–4 above and adjust as needed.
 8. Once the crucible is centered over the flask, slide the crucible-centering collar against the back of the square plate on the horizontal support arm and tighten the Allen bolt with the provided wrench.

Operation

Invest and burn out flasks as usual. When you are ready to cast:

1. Check that the flask-size guide (Y-bracket) is aligned correctly for casting solid flasks.
2. Check that the height of the horizontal support arm is set correctly, with a maximum of $\frac{3}{8}$ " above the top of the flask.
3. Check that the crucible is securely in position with the correct amount of casting grain in place.
4. Melt metal, keeping flame constantly on the melt to avoid oxidizing your casting alloy.
5. Remove flask from burnout oven and place it on the casting table in position against the flask guide.
6. Turn on the vacuum pump and make sure vacuum is directed to the casting table.
7. When metal is molten and has been stirred with a stirring rod, lift the crucible guide rod knob and pour the molten metal into the flask sprue hole in one smooth movement.

Checking Crucible Alignment

Figure 1, top view. Align the crucible so the pour spout of the crucible is in position directly over the sprue hole in the flask.

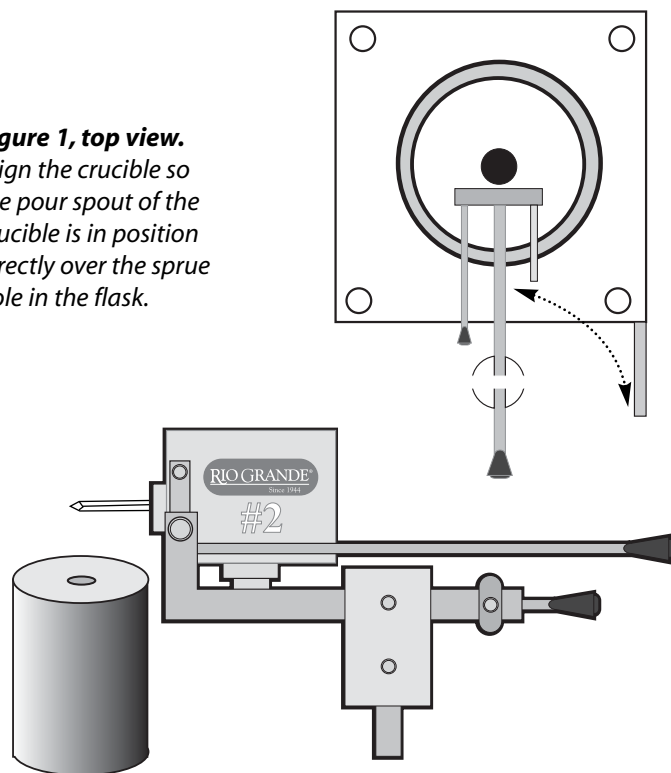


Figure 2. With the crucible in a horizontal position, place a pencil inside the crucible.

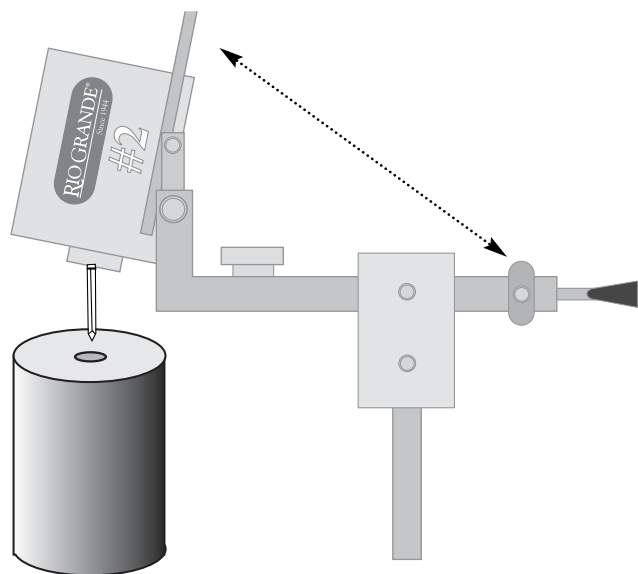


Figure 3. Tilt the crucible to a vertical position. The pencil should fall into sprue hole of the test flask.

Adjustments

1. To adjust the flask diameter, loosen the flask guide toggle and slide the guide bar to the line just above the number corresponding to the diameter of the flask you wish to cast.
2. To adjust the height of the crucible, loosen the vertical adjusting knob and the vertical adjusting screw on the side of the cabinet. Slide the vertical support bar to the desired position, then retighten the knob and screw.