



# Vinmetrica Deluxe Lab Accessory Kit User Manual

The Vinmetrica Deluxe Lab Accessory Kit is a compilation of the best laboratory equipment available. It is the perfect companion for our SC-100\*, SC-100A\*, SC-200\* and SC-300\* Analyzer Kits and allows its users to measure wine samples faster, with better resolution and higher precision.

## Materials Provided in the Kit:

1. 10mL or 25mL glass burette with Teflon stopcock (included: ~2 grams burette detergent)
2. Lab Support Stand
3. Double Burette Clamp
4. Magnetic Stirrer (batteries included)
5. Electrode Holder
6. Rinse Bottle

## Things you will need:

1. Distilled water, which can be found most grocery stores.
2. (Optional) Titration Beaker. Available from Vinmetrica (Part Number: SC-100-16).
3. (Optional) Burette Detergent. Available from Vinmetrica (Part Number: SC-300-12).

## Benefits of using the Deluxe Lab Accessory Kit:

Precision and accuracy are necessary for creating high quality wines. The glass burette allows the highest possible resolution and precision when measuring out titrant levels. The burette has gradations for every 0.05mL with the 10mL burette and 0.10mL with the 25mL burette, whichever you have. The Teflon stopcock ensures easy maintenance and smooth titrations again and again. The capacity of the burette (either 10mL or 25mL) allows you to do more titrations without having to refill the burette each time. If you have a number of wine samples to handle at once, this can be a huge time saver! All you have to do is make sure to write down your starting and final level for each titration and then you can proceed to the next one.

*\* US and Intl Patent Pending*

The included burette detergent ensures your burette will remain clean and accurate after each use. The Lab Support Stand and the Double Burette Clamp make adjusting the height of the burette easy. Using simple thumb screws, these two pieces easily fit together with the intent of keeping your burette secure while titrating. Also included is the magnetic stirrer and included stir bar to give you a hands free way to keep your wine sample stirring while you can focus on performing an accurate titration. The magnetic stirrer comes with a 50mL cylinder but is best used with the titration beaker provided with any one of the Vinmetrica analyzers. When using the magnetic stirrer, it is important to keep your electrode away from the spinning stir bar.

The Electrode Holder keeps your electrode steady when you are performing a titration. It easily attaches to the Lab Support Stand using a simple thumb screw and can be adjusted up or down depending on your need. This ensures the safety of the electrode. The Electrode Holder can hold up to two electrodes simultaneously and also has a convenient slot for guiding the tip of the burette into. The burette will not slide directly into the slot at the end of the electrode holder; it is simply a guide.

## Assembling the Deluxe Lab Accessory Equipment:

1. Remove the items from their packaging: the Lab Support Stand, the Vinmetrica Electrode Holder, the Double Burette Clamp, the Glass Burette and the Magnetic Stirrer. Carefully pull out the glass burette from its cardboard cylindrical container. Use caution not to exert too much force on the burette as it is fragile and can break.
2. Open the Magnetic Stirrer from its packaging and insert the double AA batteries included. For pH measurements, we recommend you do not use the cylindrical container provided with the magnetic stirrer but use the 100mL titration beaker included with the SC-100A and SC-300.
3. Assemble the Lab Support Stand by attaching the long metal rod and screwing it into the large metal base. We have found that adding a drop of super glue to the threads of the metal rod can prevent loosening of the assembly. Then place the magnetic stirrer below the lab support (Figure 1).
4. To attach the Electrode Holder, loosen the thumb screw on the Holder and slide it onto the Lab Support Stand rod (Figure 2). The small lip in each large hole should be at the bottom of the hole and the thumb screw should be on the left hand side. Then tighten the thumb screw to adjust it to an appropriate height (Figure 3).
5. Attach the Double Burette clamp to the Lab Support Stand using its thumb screw to adjust for height, as shown in Figure 8 below. Usually with the burette attached to the Double Burette Clamp, you may need to adjust both of them to the right height to read it properly.



**Figure 1.** The Magnetic stirrer and beaker with the pH electrode inserted into the Electrode Holder to the wine sample.

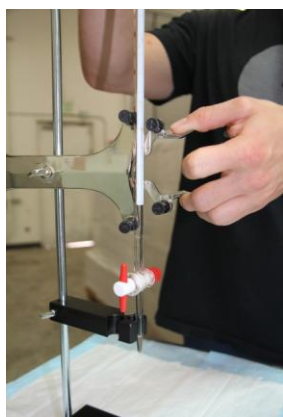
**Figure 2.** The Vinmetrica Electrode Holder slides onto the Lab Support Stand.

**Figure 3.** The thumb screw makes adjusting The Electrode Holder's height easy.

**Figure 4.** The Double Burette Clamp slides easily onto the Lab Support Stand.

6. Carefully open the Double Burette Clamp's spring arms with your thumb and forefinger and place the burette in between the four indentations in the double burette clamp's spring arm's plastic knobs. Slowly release the clamp spring to secure the burette between these four spring arm plastic knobs. You can adjust the burette at any time by raising and lowering it within the spring arm clamps of the Double Burette Clamp. When making these adjustments, hold onto the burette and do not apply too much force to it as the burette is delicate. Use the end of the Electrode Holder as a **guide** for the tip of the burette (Figure 7). **DO NOT try and force the burette into the cutout at the end of the electrode holder.** This may cause your burette to snap and break.
7. Finally, insert the electrode that you wish to use into one of the open side slots (as seen in Figure 1). Once the rubber neck of the electrode is sitting on top of the electrode holder, you can press down on the rubber neck gently so the electrode is further stabilized into the slot. You are now ready to titrate!

**Note:** The magnetic stir bar that is placed within the 100 mL titration beaker can potentially damage the SO<sub>2</sub> and pH electrodes. When adjusting the height of the electrodes, make sure that the stir bar in the beaker is below the bottom of the electrode. You do not want the spinning magnetic stir bar to strike the SO<sub>2</sub> or pH electrode. When titrating for SO<sub>2</sub> or TA, you can add a few milliliters of distilled water to raise the liquid level in the titration beaker by a half inch or so.



**Figure 5.** The glass burette should be placed between two sets of spring arm knobs on the Double Burette Clamp.



**Figure 6.** The burette sits firmly between the notches of the four spring arm knobs of the Double Burette Clamp.



**Figure 7.** The glass burette tip can be placed just outside the Electrode Holder's front slot for accurate titrations.



**Figure 8.** The Pro Kit Assembly is complete. Go take some measurements!

## Burette Maintenance

Keep the burette clean and wash with deionized (distilled) water when you are finished using the burette. This is especially important for TA titrations because the TA Titrant is caustic and can etch the burette. Every so often, you will want to clean your burette with a cleaning solution to maintain accuracy of the burette. The included ~2 grams of Burette Detergent is specially formulated to clean glassware. The dry detergent ships in an Eppendorf tube that has markings with approximate half gram increments. Upon first receiving the detergent, mix approximately half a gram (about an 1/8th of a teaspoon) with about 50 milliliters (mL) of distilled water into a small bottle. We recommend capping the bottle and shaking well for a minute or until the detergent is dissolved. Bubbles may form but the detergent will still be effective. The detergent solution should be made fresh every time you clean the burette, as it loses its potency quickly if stored as a liquid.

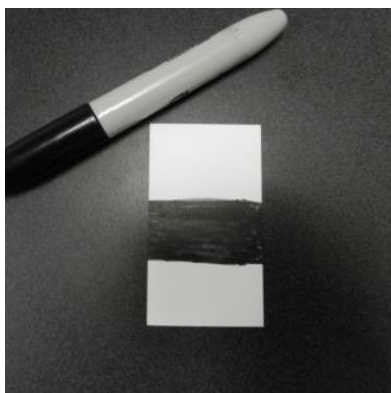
After you have run distilled water through your burette, close the stopcock, and fill with the Burette Detergent solution. You can open and close the stopcock over a waste bucket or sink to allow the solution to pass into the tip of the stopcock. We recommend letting this detergent solution sit in the burette for one hour. Dispense the detergent solution then rinse the burette with distilled water twice more. During this time we recommend opening and closing the stopcock to make sure the stopcock is turning easily. If it is not, remove the stopcock and clean it thoroughly. Once drained, allow to hang dry by hanging the burette upside down with the stopcock in the open position. Once the burette is dry, cover the top opening with a piece of tape. This will prevent dust from getting in that can cause aberrations when reading the burette. Remove the tape when you're ready to titrate.

## Burette Reading

**ALWAYS use eye protection and preferably gloves (latex or nitrile) when using glassware and chemical reagents.** To get the most accurate results when titrating, there are a few things to keep in mind. We recommend reading from the bottom of the meniscus (Figure 10 on the following page). First, use a thick sheet of white paper, note card or the back of a business card and draw a black band down the center of the paper about an inch and a half thick (Figure 9). When taking a measurement, hold the paper about an inch behind the burette and the black band about a half an inch below the meniscus (Figure 11). This provides a clear view of the bottom of the meniscus which helps make a precise, consistent measurement. Second, when filling the burette make sure the titrant (in most cases this will be either the SO<sub>2</sub> Titrant or the TA Titrant) has completely filled the bottom of the burette including within the tip. Sometimes bubbles can be trapped in the tip of the burette but can usually be dislodged by opening and closing the stopcock while the burette is hovering over a waste container. We also recommend washing a couple of milliliters of the titrant you are using through the burette to remove any

excess water or contaminants that may remain from a previous titration . Finally, make sure there are not any large bubbles in the burette after filling. If there are, cover the top of the burette with some saran wrap (or parafilm if you have it) and make sure the stopcock is in the closed position. Then take the burette out of its clamp and hold the saran wrapped end tightly. Rotate and invert the burette to allow the bubbles to move out of the column of titrant. Once the bubbles have been displaced, you are ready to titrate.

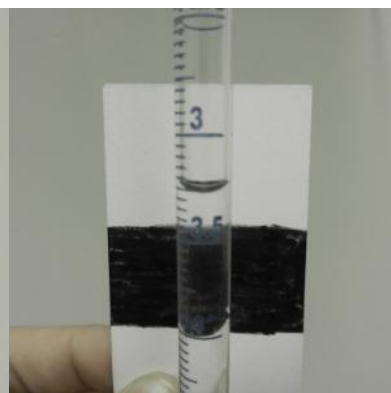
NOTE: The gradations on your burette may be different than shown in the figures below. These photos are of the 10mL burette; the 25 mL burette will have fewer gradations. Please take a look at your burette and determine the values for the gradations (lines).



**Figure 9.** On a thick white sheet of paper or a business card, use a black marker to draw a band approximately an inch and a half thick. This card will assist you in reading the burette accurately.



**Figure 10.** The Meniscus of the water column. This curve is formed because of interactions of water with the glass burette. We recommend measuring the titrant volume from the bottom of the meniscus. In the picture the value is about 3.27 mL.



**Figure 11.** Reading the Meniscus of the water column is easier and more precise if you use the paper with the black band held up an inch behind the burette and its black band 1/2 an inch below the meniscus. In this picture the value from Figure 17 is further resolved to 3.26 mL.

Before beginning the titration, record the starting titration volume, using the thick white paper with the black band, and then begin titrating, slowly. With enough practice, you will eventually be able to read the burette without the black banded paper. Record the final titration volume using the same technique. You can also check out these websites for more burette info:

<http://www.titrations.info/pipette-burette> or  
<http://www.csudh.edu/oliver/demos/buretuse/buretuse.htm>

## **WARRANTIES AND LIABILITIES**

1. The materials provided in the kit, as described on pages 1 and 2 above, (“Materials”) are warranted as follows: The SC-300 instrument, electrodes and non-reagent accessories are warranted against defects in workmanship for 12 months from date of purchase. The reagents are warranted to perform as described herein up until any stated expiration date or 6 months after purchase, whichever is later. **THE WARRANTIES IN THESE TERMS AND CONDITIONS ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, NONINFRINGEMENT, OR FITNESS FOR A PARTICULAR PURPOSE, SAID WARRANTIES BEING EXPRESSLY DISCLAIMED.**
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## **HAZARDS AND TOXICITY**

All Materials offered by Vinmetrica are intended for use by individuals who are familiar with laboratory procedures and their potential hazards. The Materials contain chemicals which may be harmful if misused. Due care should be exercised with all Materials to prevent direct human contact. Glassware can break and chemicals can splash during experiments; ***Always use safety glasses.*** We strongly recommend using nitrile or latex gloves and wearing long pants, long sleeves and closed toed shoes. Keep out of reach of children.

*Vinmetrica*

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