



DST-1000 Acid Purification System

Upgrade Instructions

Savillex DST-1000 Acid Purification System Upgrade Instructions

Introduction

The DST-1000 upgrade kit is applicable to DST-1000 units with serial numbers beginning with “V”. The kit eliminates the top mounted filling funnel replacing it with a front fill tube that is easier to access. The fill tube also has graduation marks that show the acid level in the still. A larger vent assembly also helps prevent differential pressure build up and avoids surges when the fill tube cap is removed.

The instructions below will guide the user through the installation of the DST-1000 upgrade kit. The installation will require removal of the existing unit’s safety funnel and stopper/dust cover, fill tube assembly, top vent assembly, bottle bracket, and elbow drain. See red shaded items in Figure 1.

Safety Information

The following safety information should be read carefully prior to installing the upgrade kit for the DST-1000. Installation of the DST-1000 upgrade kit may expose the user to residual acid that has previously been in the DST-1000. Take appropriate measures and always wear recommended personal protective equipment during the installation process.

Savillex assumes no liability for injury or damages resulting from improper handling or a failure to comply with this information.



Explosive; Fire, Blast or Projection Hazard

Electrics may ignite flammable or explosive mixtures. The apparatus is not designed for organic chemicals. Improper use of the DST-1000 with organic material may cause personal injury or property damage.



Causes Severe Skin Burns and Eye Damage

Take appropriate precautions during filling with and dispensing of acid. In case of contact, flush with copious quantities of water. See reagent manufacturer’s material safety data sheet (MSDS) for safe handling instructions.



Personal Protective Equipment

Wear recommended safety apparel when handling or working with acids.

Harmful If Inhaled

Avoid inhalation of acid vapors.



Causes Serious Eye Irritation

Wear eye protection.

Ensure the system is in a properly functioning controlled environment (e.g. fume hood). Acid vapor is emitted from the DST-1000 during use.

The Unit Employs High Voltage!

The DST-1000 must be connected to a grounded conductor. Connect the power cord of the control box to a grounded power source.



Chemical Hazard!

Chemical hazards associated with the connections, tubing and containers are identical to those noted above.

Assembly

Section 1 – Prepare Still

REMOVE ALL RESIDUAL ACID FROM STILL PRIOR TO DISASSEMBLY

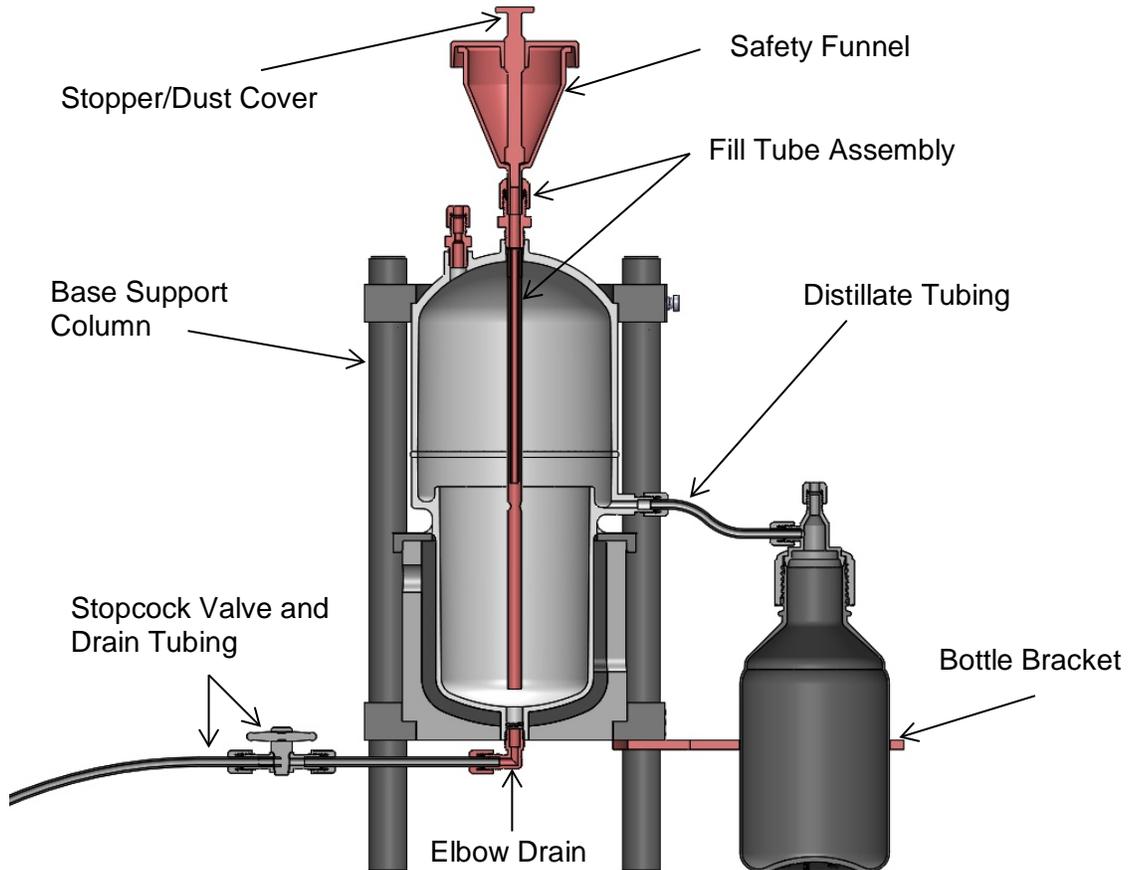
It is highly recommended that all residual acid is removed from the DST-1000 prior to the installation of the upgrade kit. This involves refluxing with deionized water following the steps below:

1. Drain any acid contents from the DST-1000 unit by opening the stopcock valve on the drain tubing and directing the acid into an appropriate container
2. Close the stopcock valve
3. Drain any residual acid in the distillate collection channel inside of the still vessel by slightly tilting the still in the direction of the distillate outlet and allowing liquid to flow into 1000 mL Purillex PFA collection bottle
4. Disconnect distillate tubing, and remove the 1000 mL Purillex PFA collection bottle from bracket and set aside. These items will be needed for the upgraded DST-1000.
5. Thread the enclosed ¼" OD ferrule plug on the distillate output port and tighten finger tight
6. Fill the DST-1000 with 500-1000 mL of deionized water
7. Turn the control knob on the power control unit to the HI setting
8. Allow the still to operate on the HI setting for the next 48 hours. The reflux action will transfer any remaining acid inside the vessel into the deionized water in the reservoir.
9. Turn the control knob to the OFF position and allow the DST-1000 to cool.
10. Drain the DST-1000 as outlined in steps 1 & 2
11. The remaining distillate (approximately 50 mL) in the distillate collection channel inside the vessel will also need to be drained. Carefully tilt the unit backwards so the distillate outlet is angled upwards and the distillate has drained away from the opening.
12. Remove the ¼" OD ferrule plug from the distillate outlet and re-connect the 1000 mL Purillex PFA collection bottle
13. Drain any residual chemical in the distillate collection channel inside of the still vessel by slightly tilting the still in the direction of the distillate outlet and allowing chemical to flow into the 1000 mL Purillex PFA collection bottle
14. Disconnect the DST-1000 from power outlet
15. Disconnect heater cable from heating control unit

Section 2 – Remove Old Parts

The instructions below will guide the user through the installation of the DST-1000 upgrade kit. Installation will require removal of the current unit's safety funnel and stopper/dust cover, fill tube assembly, top vent assembly, bottle bracket, and elbow drain. Items to be removed are shaded red in Fig 1.

Fig 1



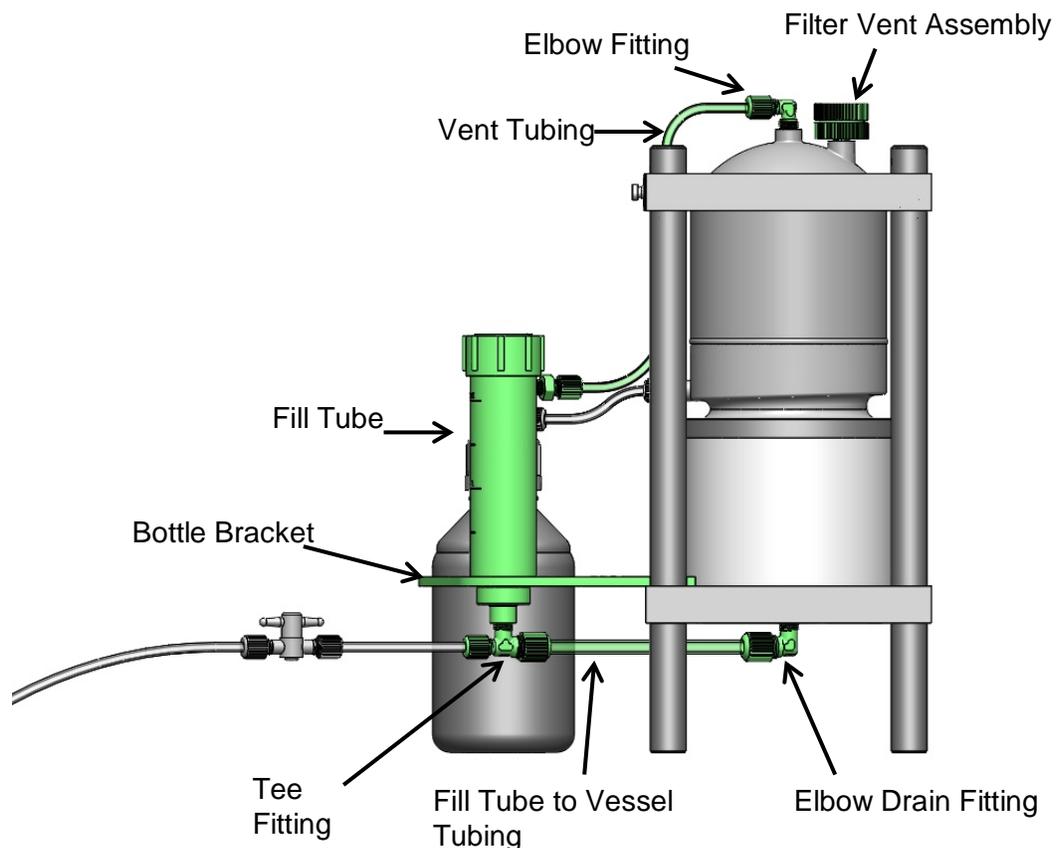
Tools Required: Adjustable Wrench

1. Remove the safety funnel and stopper/dust cover. The safety funnel and stopper/dust cover are no longer needed for the new DST-1000 and can be discarded
2. Remove the stopcock valve and drain tubing from the DST-1000. Set-aside the drain tubing and stopcock valve fitting. These items will be used for the upgraded DST-1000.
3. Remove the fill tube assembly by unscrewing the $\frac{1}{4}$ " MNPT x $\frac{3}{8}$ " ferrule connector fitting and fill tube from top-middle of the still vessel (an adjustable wrench may be necessary to loosen and remove the fitting). The fill tube assembly is no longer needed for the new DST-1000 and can be discarded.
4. Remove the vent assembly from the top of the vessel (an adjustable wrench may be necessary to loosen and remove the vent assembly). The vent assembly is no longer needed for the new DST-1000 and can be discarded.
5. Disconnect distillate tubing, and remove the collection bottle from bracket and set aside. These items will be needed for the upgraded DST-1000.
6. Remove the bottle bracket. The bottle bracket is no longer needed for the new DST-1000 and can be discarded.
7. Lay the DST-1000 unit on its side to expose the underside of the still
8. Unscrew and remove the elbow drain fitting from the bottom of the still vessel. The elbow drain fitting is no longer needed for the new DST-1000 and can be discarded.

Section 3 – Install Upgrade Kit

The instructions below will guide the user through the installation of the DST-1000 upgrade kit. Installation will require the installation of several new parts to the current DST-1000 unit including the graduated fill tube, new bottle bracket, vent tubing, filter vent assembly, new elbow drain and fill tube to vessel tubing. New parts to be installed are shaded green in Fig 2.

Fig 2



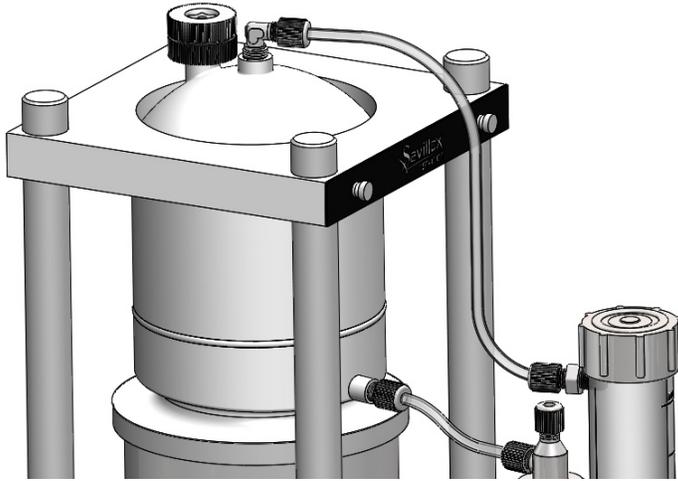
Tools Required: Adjustable Wrench

1. With the DST-1000 on its side, install the PTFE-taped ¼" MNPT x 3/8" ferrule elbow drain fitting in the bottom of the still. This elbow drain fitting replaces the elbow drain fitting that was removed in Section 2 (step 8). Tighten the elbow drain fitting finger tight. The open end of the elbow drain fitting should be facing toward the front of the DST-1000.
2. Place the DST-1000 upright
3. Install the bottle bracket with fill tube on top of bottom plate of the still by snapping the bracket into place against the support columns
4. Lay the DST-1000 on its side again
5. Connect 3/8" fill tube to vessel tubing from the tee fitting in the bottom of the fill tube to the new elbow drain fitting in the bottom of the DST-1000 still vessel, ensure ferrule nuts are finger tight and secure on the tubing and fittings
6. Attach stopcock valve and drain tube removed in Section 2: Step 2 to the front outlet of the tee fitting in the bottom of the fill tube. Ensure ferrule nuts are finger tight and secure on the tubing and fittings
7. Place the DST-1000 upright
8. Place the collection bottle in the new bottle bracket and connect the bottle to the distillate output port. Ensure the ferrule nuts are finger tight and secure on the tubing and fittings.
9. Install the new, pre-taped ¼" elbow fitting into top of dome (center port). Install the elbow fitting so that the open end of the fitting is toward the front of the DST-1000

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10. Connect the supplied vent tubing to the elbow in the top of the still and to the connection port in the front fill tube. Ensure that the ferrule nuts on the elbow and fill tube are finger tight and secure on the tubing and fittings. See Fig 3.

Fig 3



11. Install the new, pre-taped, 25 mm filter vent assembly into top of the dome. Screw the pre-taped fitting into the opening until finger-tight. The filter vent assembly replaces the vent assembly removed in Section 2 (step 4).

Section 4 – Final Steps

1. Unscrew and remove the threaded cap from the graduated filling tube.
2. Carefully and slowly pour approximately 500 mL deionized water into the filling tube. **DO NOT FILL TOO QUICKLY:** the water drains slowly into the reservoir. The fill tube has graduation marks which indicate the liquid level in the reservoir.
3. While filling, check all fittings from the fill tube to the still for any leaks. If any leaks are present, check all connections to ensure that the ferrule nuts are tight against the tubing and fitting. If leaks persist, contact Savillex.
4. Drain the deionized water from the stopcock valve and drain tube in the front of the DST-1000. Check for leaks as described in Step 1.
5. When all connections are confirmed leak-free, it is recommended to follow the initial cleaning procedures in the DST-1000 user's manual Section 4.4.

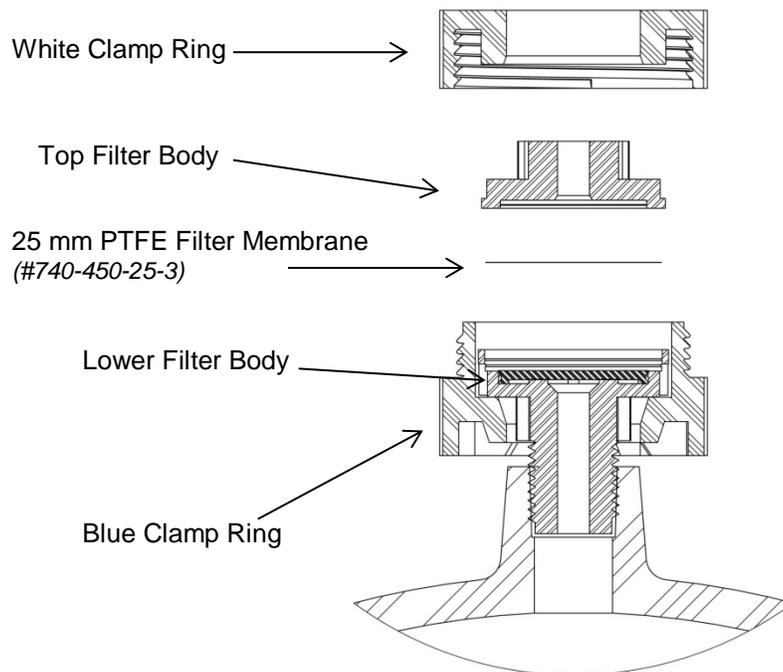
The installation of the DST-1000 upgrade kit is now complete and the upgraded DST-1000 is ready for use.

Please contact Savillex with any questions related to the installation or performance of the DST-1000.

Section 5 – Replacing the 25 mm Filter Vent Assembly Membrane

As with the original vent assembly, it is recommended to replace the membrane in the filter vent assembly of the upgraded DST-1000 after every 40 hours of use. Replacement instructions are below.

1. Grasp blue clamp ring while turning white clamp ring counter-clockwise to loosen
2. Remove white clamp ring and top filter body
3. Replace with new filter membrane being careful that membrane sits flat without wrinkles
4. Snap top filter body back in place by first aligning tabs with lower filter body
5. Finger-tighten by holding blue clamp ring and threading white clamp ring clockwise





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