



CARE AND USE OF THE FU-MEEI REGISTRATION SYSTEM

Punching alignment holes and loading the spindle:

Place a stack of up to 10 membranes (VP 502 or other source membranes) plus separation papers in the VP 441 paper punch and depress handle to punch alignment holes in membrane. Place the hole punched membranes on the Fu-Meei Registration Spindle (VP 440). Use the Fu-Meei MULTI-PRINT™ (VP 382F) to press the membranes over the spindles and down to the bottom of the stack. The Fu-Meei Registration Spindle properly loaded can hold over 100 membranes at the same time.

Disinfecting:

The Replicators can be sterilized by hot air oven, autoclaving, treating in 10% bleach or alcohol flaming.

The pins can be cleaned between source plates by dipping briefly in a 10% bleach solution, followed by a series of two sterile dH₂O baths (all in tip lid boxes), then a 99% isopropanol bath in a non flammable [VP 420 glass reservoir](#). The pins can be air dried, dried using a hair drier or by flaming the isopropanol. Between baths, remove the liquid from the pins by blotting on a [lint free blotting paper \(VP 522\)](#) as lint from paper towels will interfere with uniform liquid transfers. This blotting step is also very important to reduce carry over.

If you flame, do not blot the isopropanol before igniting and be prepared for a "whoosh" upon ignition. Keep the isopropanol reservoir and blotting paper at least 3 feet from the flame. We strongly advise you to use a non-flammable alcohol reservoir such as the VP 420 Pyrex® alcohol reservoir to avoid laboratory fires.

If you don't flame, blot on the lint free blotting paper and let the isopropanol evaporate. The evaporation can be speeded up with a hair dryer. It is important that the pins be dry before going into the next source plate.

Care:

Before each day's use we recommend that the pins be cleaned with [VP 110 Pin Cleaning Solution](#), which is designed to clean stainless steel and condition the pins. If the pins should be coated with organic material they can be mechanically cleaned with the [VP 425 brush](#) and Ivory dish detergent. If you have access to an ultrasonic bath, we recommend using MICRO 90®, from Cole Parmer®, at a 1/100 dilution in the ultrasonic bath. If you use an ultrasonic bath, hold the Replicator in the bath without letting the pins touch the bottom of the reservoir (the vibrating bottom surface of the sonicator's reservoir may damage the pin tips). The Cole Parmer Catalog #P-08857-02 ultrasonic

cleaner is ideal for cleaning the Replicators. It is not necessary to clean the replicators in an ultrasonic cleaner if you clean the pins with bleach and brush with detergent after each day's use.

Do not touch pins with fingers after they have been cleaned, avoid contact with oil. Visually examine pins for lint, debris or fibers attached to them.

Use: (liquid to membrane transfers)

1. Place a LIBRARY COPIER™ ([VP 381](#), [VP 381C](#), [VP 381D](#), [VP 381E](#), [VP 381M](#) or [VP 381N](#)) over a 48, 96, 384 or 1536 well source plate with the single alignment hole side of the device closest to the last row of the plate. Slide the LIBRARY COPIER™ to make sure the plate is seated within the device and therefore registered.
2. Place a Fu-Meei MULTIPRINT ([VP 382F](#), [VP 382F1](#), [VP 382F2](#) or [VP 382F3](#)) over a stack of membranes on a Fu-Meei Registration Spindle (VP 440).
3. Hold a sterile 96 or 384 MULTI-BLOT™ Replicator at a 45° angle to the source plate LIBRARY COPIER™ and 20° angle to the left alignment hole. Place the right guide pin into the right alignment hole. Then slowly decrease the 20° angle and place the left guide pin into the left alignment hole. Then rotate the Replicator forward until guide pins line up vertically and slide down the alignment holes and the Replicator pins drop into the wells (see diagram).
4. Hold the LIBRARY COPIER™ in one hand and mix contents of wells by raising and lowering the Replicator 3X through the meniscus with the other hand. The speed at which the pins are removed from the wells on the final withdrawal will affect the size of the hanging drops and the amount of liquid on the sides of the pin. Removing the pins quickly from the source plate produces large, hanging drops on the tips of the pins and more liquid on the sides. We recommend removing the pins on the final withdrawal at a slow even speed each time (~.5 cm/sec). This action produces very uniform transfers from plate to plate and reduces the amount of liquid hanging on the tip and sides of the pins. Performing this operation with the LIBRARY COPIER keeps the pins in the middle of the well and prevents hanging drops from being accidentally touched off.
5. Lift the Replicator from the source plate and holding it at a 45° angle to the Fu-Meei MULTI-PRINT™ and at a 20° angle to the left alignment holes, place the right guide pin into the "A" position of the right alignment holes. Then slowly decrease the 20° angle and place the left guide pin into the "A" position of the left alignment holes.

6. Rotate the Replicator forward until the Replicator pins rest on the surface of the membrane making the first stamp of blots. Press lightly and allow the liquid to wick from the slot pins for 20 seconds before removing the Replicator. Longer wicking times may be required for some membranes.
7. Repeat steps 3-6 for each replicate plate as needed.
8. After removing the Replicator and the Fu-Meei MULTI-PRINT™, the blotted membrane is removed by sliding two spatulas under the support paper between the spindle pins and gently lifting up to remove the blotted membrane and exposing the next membrane to blot.

Test your Replicator using dye (5% red food coloring) in 10 mM Tris, pH 8.0 with 0.005% Sarcosyl or Tween 20 as wetting agents in water.

Note: If you are having problems with varying volumes of liquid on the tips, clean the pins with the [VP 110 Pin Cleaning Solution](#). Cleaning with the V&P Pin Cleaning Solution will reduce the surface tension on the pin and this will solve 99% of your pin loading problems. Also, you can add 0.005% Sarcosyl, Tween 20, protein or carrier DNA to lower the liquid surface tension.

Warning:

- **Do not soak in bleach solutions for long periods of time as this can corrode the stainless steel pins.**
- **Do not soak in deionized water as this can corrode the stainless steel pins.**
- **Do not heat the pins directly in the Bunsen Burner flame.**

The VP 110 pin cleaning solution contains a dilute acid solution which can strip the protective anodized surface off the anodized aluminum replicator bases or float plates. If you accidentally get the VP 110 pin cleaning solution on an anodized surface, quickly rinse it off with water.