Langerhans Lab Protocols

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BRF 223 Rack Basic Maintenance

Main Reservoir water:

The tall white reservoir in the corner of the room contains pre-treated water used by the rack system when regularly scheduled automatic water changes are set to occur (currently set to change 5% of the water in the rack system every day). To comfortably accommodate this water change volume each day, the reservoir level should not drop below 20 gallons. If there are ≤20 gallons of water in the reservoir, make refilling a high priority during the day. Follow the re-filling procedure below:

1. Decide how much water you will be adding using the 10 gallon marks on the reservoir side.
    a. Do not fill the reservoir above 85 gallons.
    b. Filling time and treatment accuracy is increased when the water level is at or near one of the 10 gallon marks.
2. Connect the hose to the y-connector attached to the faucet
3. Orient the valve levers on the y-connector to allow flow only through the section of hose leading into the reservoir.
4. Depending on how much water you are adding, set a timer with an alarm for the appropriate amount of time it will take to add the water to prevent wasted waiting time and overfilling.
    a. The faucet runs at approximately 3.5 gallons per minute.
    b. Example: Set an alarm for 10 minutes if you are adding 35 gallons.
5. Turn the handle for the cold water to on (fully) and start the timer.
6. Inspect the hose and fittings to ensure there are no leaks.
7. Use syringes or graduated cylinders to measure the proper amount of each treatment solution (Stress Coat and Amquel Plus) to add to the reservoir water, depending on the volume of water you decided to add in step 1.
    a. Add 5mL of Stress Coat and 5mL of Amquel Plus for each 10 gallons of water.
    b. Example: Reservoir level at 40 gallons and 40 additional gallons are desired → add 20mL of Stress Coat and 20mL of Amquel Plus).
8. Periodically pay attention to the reservoir level and timer. Turn the flow of water off at the predetermined reservoir level and set time.
9. Record the date and time of refilling on the log sheet attached to the reservoir.
    a. Avoid using reservoir water for 18-24 hours after refilling.

System Water Conductivity and pH Regulation:

The solutions in the small bucket-like reservoirs above the filters and controls are used by the rack system to automatically regulate water conductivity and pH levels. When the conductivity and pH sensors (yellow devices on the upper right of the rack as you walk into the room) detect low values based on pre-set software settings, the appropriate solution is drawn from the reservoir to the large grey reservoir on the bottom of the rack until the sensors detect the target pre-set values.

Because the rack system is set to change 5% of the system water each day, these reservoirs will eventually become empty and need to be refilled. If no other water is taken from the system for other uses, the solution levels will not change very quickly. However, if a large amount of water is removed from the system to fill other tanks, etc., the

amount removed will be automatically replaced using water in the large white reservoir. This will cause the sensors to detect conductivity and/or pH values that are outside of the pre-set range and will result in the system drawing a larger than normal amount of one or both reservoir solutions.

To re-fill:

1. Lift the lid off of the reservoir (with attached hose and black draw fitting), slide the container to the side, and balance the lid on the metal bars holding the container.
2. Remove the reservoir and rinse any unwanted debris out using tap water. Drain.
3. For the conductivity reservoir, add ~2 scoops (~1 cup) of salt (e.g. CrystalSea marine mix).
    a. Precise measurements are not necessary.
4. Fill the container with water in the large white reservoir to within ~1" below the lid ledge using the blue tubing with attached filter.
    a. Stir the solution so that the salt is dissolved using your hand or other effective means.
5. Carefully lift the reservoir onto the metal bars just enough so you can hold it in place with one hand.
6. Use your other hand to grab the lid and lift it above the top of the reservoir.
7. Slide the reservoir completely onto the metal bars while replacing the lid with attached hose and black draw fitting on top of the container.
8. For the pH reservoir, add ~0.5 cup of baking soda from the black 5-gallon bucket.
    a. Precise measurements are not necessary.
    b. Follow the relevant instructions 1-7 above.

Filter Pad Replacement:

Check the filter pad underneath the plexiglass panel near the square recirculation channel leading into the grey reservoir daily to ensure water is easily flowing through. Rotate the pad 180° ~every 2 weeks and replace it ~every 4 weeks depending on the ease of water flow or when the pad turns brown.

Example of what a spent filter pad looks like. This particular one was in use for 5 weeks.

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UV Sterilization bulb replacement:

According to the installation technician, these bulbs typically last ~6-8 months. Refer to the rack system main manual for replacement instructions.

Canister Filter replacement:

If the pressure differential between the two gauges on either side of the mechanical and carbon filters is between 15 and 20psi, filter replacement is required. Refer to the rack system main manual for replacement instructions.