

GRADIENT MIXER

CATALOG NUMBER 731-8323

The Gradient Mixer proportions two buffers as commanded by either the BioLogic LP Controller or the Econo Gradient Pump and mixes the buffers in a dynamic mixing chamber to form a gradient. This valve may be used with either the BioLogic LP system or the Econo Gradient Pump; both applications are shown below.

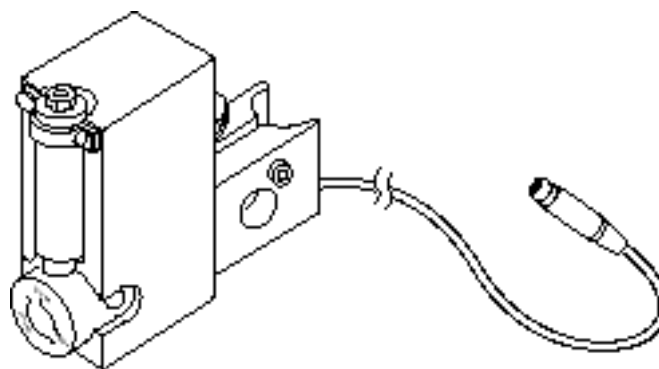


Figure 1. Gradient Mixer

I Use with the BioLogic LP

Plumbing and Operation of the Gradient Mixer

1. To attach the Gradient Mixer to the system rack:
 - a. Ensure that the clamping screw is loose.
 - b. Clip the attaching bracket to a convenient place on the rack.
 - c. Tighten the clamping screw.
 - d. Connect the signal cable from the Gradient Mixer to the port marked “Gradient Mixer” on the rear of the BioLogic LP Controller.
2. Plumb the Gradient Mixer’s inlet ports to the solvent reservoirs.

Using barb-to-male luers, connect an appropriate length of tubing between buffer ports A and B to their respective solvent reservoirs (see Figure 2.) Match the appropriate luer connector with tubing ID, and ensure a firm connection but do not overtighten. Similarly, connect the gradient mixer to either port A/B of the LP Buffer Select Valve or directly to the pump inlet if the Buffer Select valve is not used.
3. If a Method includes gradient formation, then the Gradient Mixer’s proportioning valve will automatically toggle between the two positions to create the gradient.

If a Method calls for either 100% A or B buffer, then the corresponding port will remain open. The stir bar in the Gradient Mixer’s mixing chamber will activate whenever the BioLogic LP pump is running.

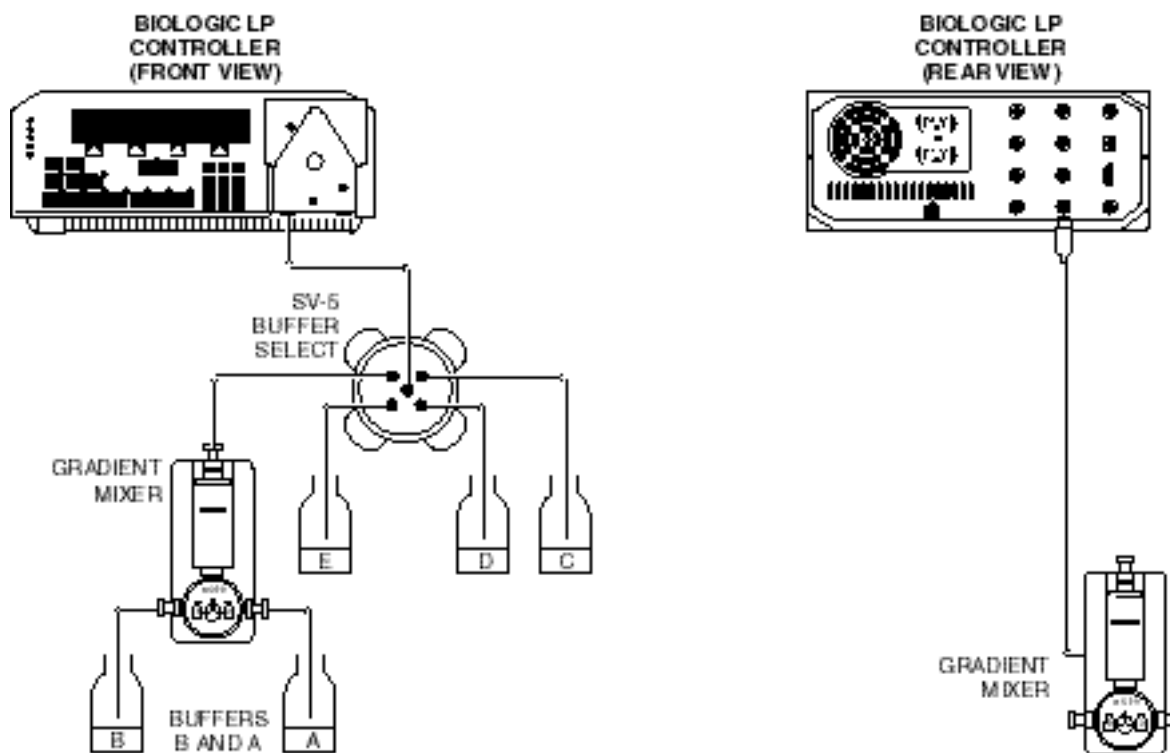


Figure 2. Use with the BioLogic LP

Care of the Gradient Mixer's Proportioning Valve

Normally, the only maintenance required is to flush the valve with water. Use the BioLogic LP's Manual mode to set the buffer to 50%B and place both inlet tubes in a vessel of water and pump until the salt is washed from the valve. Do not leave high salt buffers in the valve, as the crystallized salt may damage the valve. For long-term storage, store the valve in 20% EtOH. Do not expose the valve to pressures greater than 20 psi.

Care of the Gradient Mixer's Mixing Chamber

To clean the mixing chamber of residue, such as salt:

1. Disconnect the Gradient Mixer's cable from the BioLogic LP Controller.
2. Use a 3/8" socket driver or box wrench to carefully remove the top of the mixer by rotating the top counterclockwise. Refer to Figure 3.
3. The magnetic stir bar may be removed from the mixing chamber by turning the unit upside down and tapping the unit in the palm of your hand until the stir bar drops out of the chamber.
4. The mixing chamber may now be cleaned as required.
5. The chamber may be flushed by connecting a luer-tipped syringe to the "A" port and slowly passing fluid through the valve and mixing chamber.

To reassemble the unit:

1. Wipe the mixing chamber and threads clean.
2. Insert the stir bar back into the mixing chamber with the flat end of the stir bar toward the bottom of the chamber. Gently push the stir bar to the bottom of the chamber.
3. Wipe the top and threads clean.
4. Replace the 1.0cm O-ring seal on the top if it is damaged. (The Bio-Rad part number for the O-ring is 910-0075.)
5. Use a 3/8" socket driver or box wrench to screw the top on the mixer by rotating the top clockwise until the lip around the top is just flush with the top of the mixing chamber. The seal is made by a properly seated O-ring, not by the screw threads. To avoid damaging the unit, do not over-tighten the top.

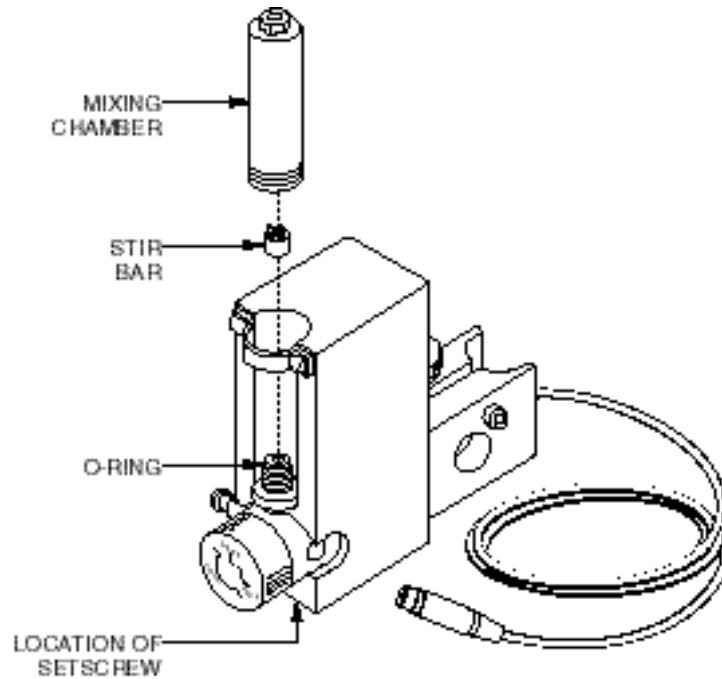


Figure 3. Gradient Mixer Assembly

II Use with the Econo Gradient Pump

Plumbing and Operation of the Gradient Mixer

1. To attach the Gradient Mixer to the system rack:
 - a. Ensure that the clamping screw is loose.
 - b. Clip the attaching bracket to a convenient place on the rack.
 - c. Tighten the clamping screw.
 - d. Connect the signal cable from the Gradient Mixer to the port marked "Mixer" on the rear of the Econo Gradient Pump.
2. Using barb-to-male luers, connect an appropriate length of tubing between buffer ports A and B to their respective solvent reservoirs (see Figure 4.) Match the appropriate luer connector with tubing ID, and ensure a firm connection but do not overtighten. Similarly, connect the gradient mixer to the pump inlet.
3. If a Program includes gradient formation, then the Gradient Mixer's proportioning valve will automatically toggle between the two positions to create the gradient.
If a Program calls for either 100% A or B buffer, then the corresponding port will remain open.
The stir bar in the mixing chamber activates when the Econo Gradient Pump is running.

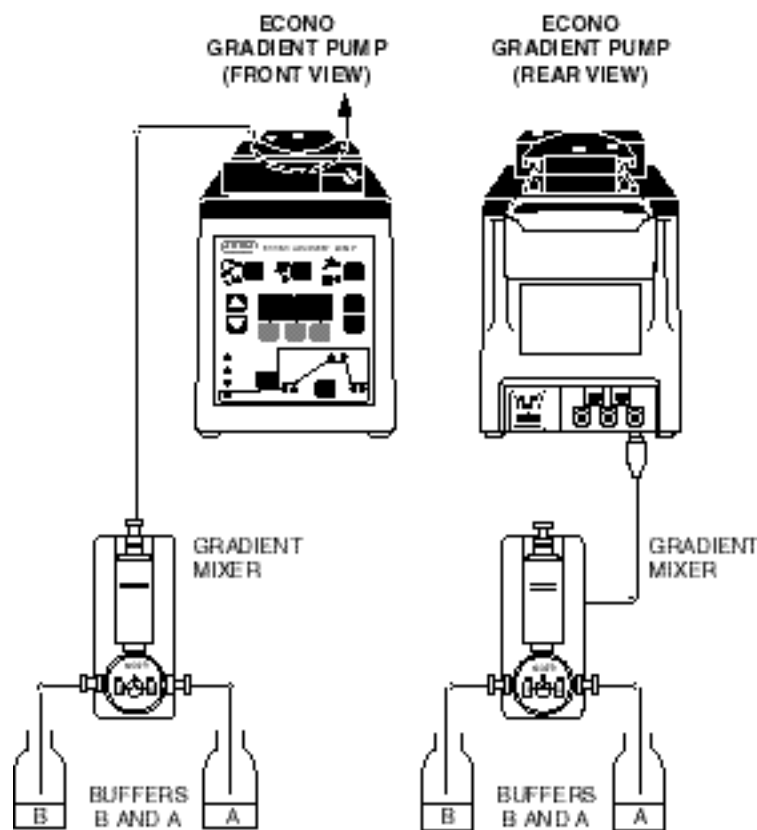


Figure 4. Use with the Econo Gradient Pump

Care of the Gradient Mixer's Proportioning Valve

Normally, the only maintenance required is to flush the valve with water. Use the Econo Gradient Pump's Manual mode to set the buffer to 50%B and place both inlet tubes in a vessel of water and pump until the salt is washed from the valve. Do not leave high salt buffers in the valve, as the crystallized salt may damage the valve. For long-term storage, store the valve in 20% EtOH. Do not expose the valve to pressures greater than 20 psi.

Care of the Gradient Mixer's Mixing Chamber

To clean the mixing chamber of residue, such as salt:

1. Disconnect the Gradient Mixer's cable from the Econo Gradient Pump.
2. Use a 3/8" socket driver or box wrench to carefully remove the top of the mixer by rotating the top counterclockwise. Refer to Figure 3.
3. The magnetic stir bar may be removed from the mixing chamber by turning the unit upside down and tapping the unit in the palm of your hand until the stir bar drops out of the chamber.
4. The mixing chamber may now be cleaned as required.
5. The chamber may be flushed by connecting a luer-tipped syringe to the "A" port and slowly passing fluid through the valve and mixing chamber

To reassemble the unit:

1. Wipe the mixing chamber and threads clean.
2. Insert the stir bar back into the mixing chamber with the flat end of the stir bar toward the bottom of the chamber. Gently push the stir bar to the bottom of the chamber.
3. Wipe the top and threads clean.
4. Replace the 1.0cm O-ring seal on the top if it is damaged. (The Bio-Rad part number for the O-ring is 910-0075.)
5. Use a 3/8" socket driver or box wrench to screw the top on the mixer by rotating the top clockwise until the lip around the top is just flush with the top of the mixing chamber. The seal is made by a properly seated O-ring, not by the screw threads. To avoid damaging the unit, do not over-tighten the top.

Technical Assistance

For additional help, contact your local Bio-Rad representative. In the United States, call Technical Service at 1-800-4BIORAD.