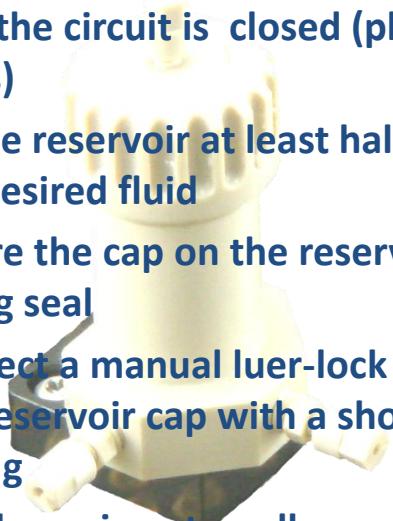# Degassing a microfluidic system

Dissolved gas and trapped air bubbles in a microfluidic system can affect repeatability and stability. Degassing a fluid system is easy using the LabSmith Breadboard Reservoir (BBRES-C360 or BBRES-T116) or Chip Reservoir (C360-405R)
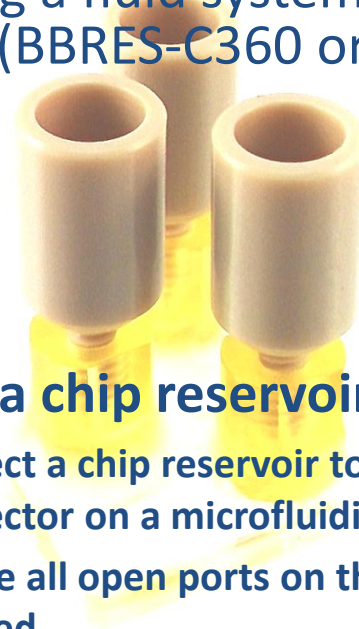
Using a breadboard reservoir:

- construct your fluid circuit as desired using the breadboard reservoir. Make sure the circuit is closed (plug any open ports)
- fill the reservoir at least half-full with the desired fluid
- secure the cap on the reservoir with an o-ring seal
- connect a manual luer-lock syringe to the reservoir cap with a short piece of tubing
- use the syringe to pull a vacuum in the fluid circuit

Using a chip reservoir:

- connect a chip reservoir to a bonded port connector on a microfluidic chip
- ensure all open ports on the chip are plugged
- fill the reservoir at least half-full with the desired fluid
- connect a manual luer-tip syringe to the chip reservoir and pull a vacuum

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Degassing a microfluidic system using the LabSmith Breadboard Reservoir

Dissolved gas and trapped air bubbles in a microfluidic system can affect experiment repeatability and stability.

- **construct your fluid circuit as desired using the breadboard reservoir (BBRES-C360 or BBRES-T116).**

- **ensure the circuit is closed (plug any open ports)**

- **fill the reservoir at least half-full with the desired fluid**

- **secure the cap on the reservoir with an O-ring seal**

- **connect a manual luer-lock syringe to the reservoir cap with a short piece of tubing**

- **use the syringe to pull a vacuum in the fluid circuit**

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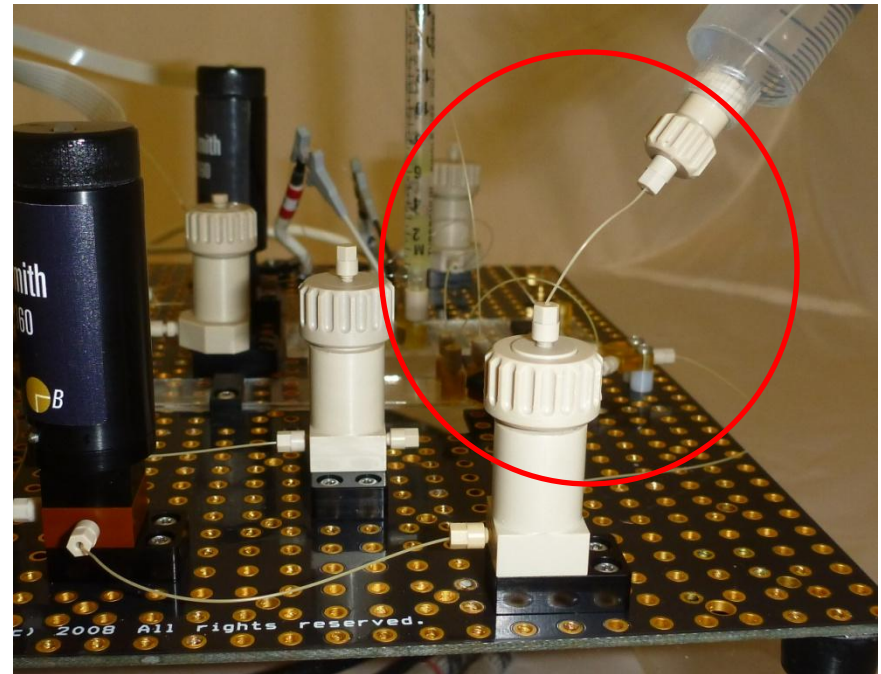
Degassing Tips

- Degas the circuit with syringes in the dispensed position to make it easier to remove the air bubbles

- Put a small amount of fluid in the manual syringe so you can observe when the fluid degassing is complete (when you no longer see bubbles rising into the fluid)

- If you continue to observe bubbles in the fluid you may have a leak in your fluid circuit or a blocked path (see Degassing Tips page)

- A ~10 ml syringe is a good size for degassing a circuit, however several iterations may be necessary to removed all trapped gas.

- Sonicate your fluid prior to introducing it into your system or reservoir to remove most of the dissolved gasses

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Degassing Troubleshooting

If you continue to observe air bubbles in your system after you have degassed you may have a leaky or blocked connection

Problem	Solution
Incorrectly assembled one-piece fitting	Tubing must extend past the end of the one-piece fitting to properly seal
Incorrectly cut tubing	Clean straight cut required for leak-free installation
Pinched tubing	Cut PEEK tubing with a sharp blade to minimize risk of pinching ends, look for kinks along the tubing
Blocked port or valve	• Always flush components (especially valves) after use if working with particles or condensing solutions • If using fused-silica tubing, incorrectly cut ends can cause glass particles to break off and block ports
Broken o-ring on reservoir cap	Check to ensure the o-ring isn't pinched or broken

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