

Microseeps Gas Stripping Cell Instructions

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[Choosing Sampling Pumps for Hydrogen from Deep Wells](#)

INSTALLATION AND OPERATION

To place the gas stripping cell into service:

Image 1.



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1. Remove one of the cell assemblies from the packing carton. See [Figure 1](#).
2. **Image 1.** Connect the inlet tube of the cell to the outlet of your pump. The inlet tube is designed to connect to 1/4 O.D. hard tubing. Secure the connection using binder clips or cable ties.
3. Insert the drain tube of the cell into a waste container, keeping the end of the tube at the bottom of the container. Any waste container of suitable size may be used. A 2-Liter soda pop bottle may be placed in the waste container to determine pumping flow rate.
4. Secure the cell assembly so that the housing cover (stopper) is above the glass housing (i.e. upright). A ring stand and clamp are recommended for this purpose.
5. Turn the pump on and check for leaks. If any leaks are found, seal them before proceeding.

Image 2.



6. **Image 2.** Measure, in mL per minute, the flow rate of the pump. If a 2-Liter soda pop bottle is used, the flow rate can be determined by measuring how many minutes it takes to fill the bottle and substituting the measured time into the following equation:

$$\text{Flow} = 2000 \text{ mL/Time to fill (in minutes)}$$

Consult [Table 1](#) to determine the equilibrium time needed to bubble strip at this flow rate.

Note: Use a flow rate between 100 mL/min. and 500 mL/min. **Do not turn off the pump.**

Table 1.

<u>Flow rate (ml/ min)</u>	<u>Sampling time (min)</u>
100-120	30
130-150	25
160-200	20
210-300	15
>300	10

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Image 3.



7. **Image 3.** Unclamp the cell assembly, invert it, and re-secure the assembly in the inverted position. Make sure the drain tube is still in the waste container and the end of the drain tube is near the bottom of the bottle.

Image 4.



8. **Image 4.** Connect the stopcock to the syringe and the needle to the stopcock (zoom in on image). Place the stopcock in the open position (so that the stopcock handle is in-line with the syringe). Draw the plunger back on the syringe to the 20.0 mL mark pulling ambient air into the syringe.

Image 5.



9. **Image 5.** Keeping the cell in the inverted position, insert the needle into the needle guide. Pierce the septum and inject the air into the cell creating the bubble. Withdraw the needle from the assembly and carefully place the needle into the cover. Do not discard the syringe apparatus.

10. Start timing and let the groundwater pump through the cell for time specified in [Table 1](#) for your particular pumping speed. Meanwhile, be sure that the sample vial is properly labeled and that the flow rate and any other relevant field data are recorded in the field log.

Note: Be sure to keep the end of the drain tube at the bottom of the waste container. This will insure that outside air is not drawn into the cell. **Failure to do this will invalidate the sample.**

11. When equilibration time is up, **turn off the pump**, unclamp the cell, and re-clamp it in its upright position. See [Image 1](#). Verify that the plunger of the syringe is pushed all the way in and that the stopcock is in the open position.

Image 6.



12. **Image 6.** Insert the needle into the needle guide and pierce the septum. Withdraw 1 mL of gas by pulling back on the syringe plunger while holding the syringe body in place. Remove the syringe from the cell and expel the sample.

13. Immediately re-insert the needle into the needle guide and pierce the septum. Withdraw a 15 mL sample of gas (being careful not to pull any water into the syringe). With the needle still through the septum, close the stopcock and withdraw the needle from the septum.

Image 7.



14. **Image 7.** Immediately insert the needle through the septum on the sample vial. Keeping the syringe and vial "in line", open the stopcock and completely depress the syringe plunger injecting the entire sample into the vial.

Image 8.



15. **Image 8.** Keeping the plunger depressed, quickly remove the vial from the needle. Your sample is now ready to be packaged and shipped back to Microseeps for analysis. Do not cool the samples.

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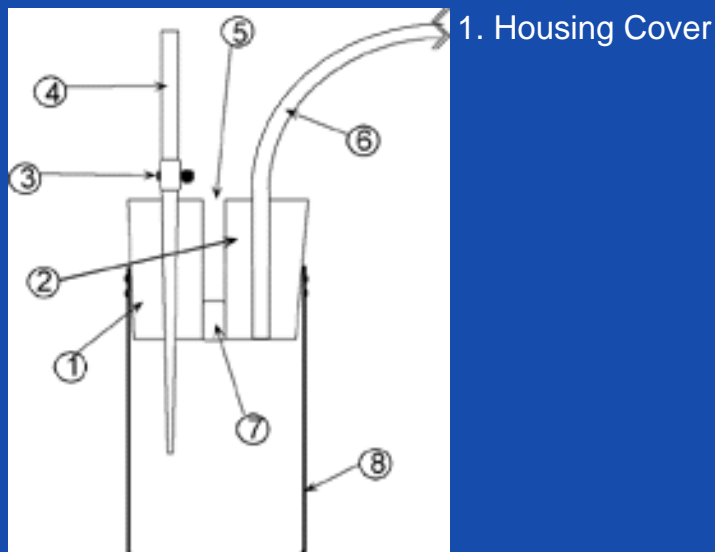
Decontamination/Cleaning

Pump at least 1 liter of potable water through the cell. The cell assembly is now ready for re-use.

The only expendable part of the cell is the sampling septum (part 7). Normally, each septum may be used for the collection of up to 5 samples. If bubbles are seen rising up from the septum when the cell is inverted the septum **MUST be replaced. Instructions for replacing the septum are provided below.**

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Figure 1. Cross section of Microseeps Gas Stripping Cell



- 2. Jet Spray Nozzle
- 3. Nylon Tie
- 4. Inlet Tube
- 5. Needle Guide Port
- 6. Drain Tube
- 7. Replaceable Septum
- 8. Glass Housing

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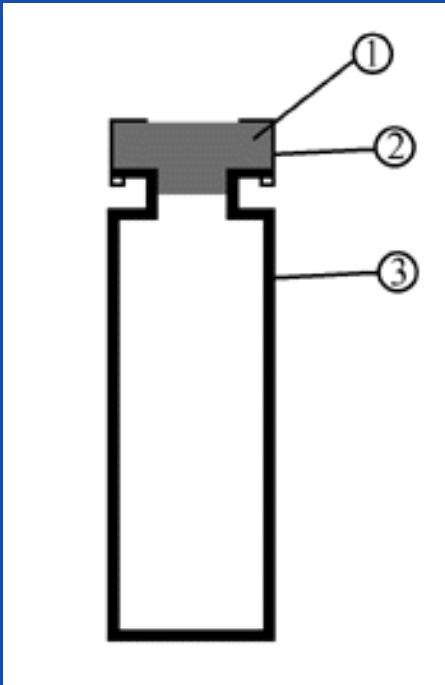
Replacing the Sampling Port Septum

All part numbers refer to Figure 1.

1. Remove the housing cover (part 1) from the glass housing (part 8).
2. Use a handy, blunt tipped object to push the replaceable septum (part 7) out of the housing cover. The cover to a needle works well for this purpose, but be sure that the needle is **NOT** in the cover. Discard the old septum.
3. Use a blunt instrument to push the housing cover (part 1) into the glass housing (part 8) until it is flush with the narrow end of the housing cover.
4. Take a new septum and wet both the new septum and the housing cover with potable water.
5. Carefully using the same blunt instrument used in step three above, slide the new septum into the hole from which the old septum was removed. The bottom of the new septum must be flush with the narrow end of the housing cover.
6. If the housing cover is not still wet, wet it again with potable water. Place the bottom end of the housing cover into the glass housing and push it in until less than 3/8" are above the rim of the glass housing. This may require some force.
7. Follow the cleaning procedures described above to prepare the cell for a return to service.

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Figure 2. Cross section of septum bottle



1. Septum
2. Metal Closure
3. Glass vial

SAMPLING QUESTIONS?

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MON.- FRI. 7:30 AM TO 6 PM EST

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