Flocell Instructions
(For use with 500 - 700 watt sonicators)

Model #4650 is a stainless steel continuous Flocell which enables closed system operation for continuous in-line processing of sample volumes over 1 liter.

The Flocell clamps onto a ½" (13 mm) tip diameter probe which has a flange for mounting. The Flocell can be used for a wide variety of applications and is especially useful for dispersing and homogenizing liquid samples. The maximum flow rate is 0.5 liters/min. This maximum rate is measured using water and is not representative of actual sample processing. Most samples will require slower flow rates for effective dispersing, mixing, etc.

The Flocell is fabricated from 316L stainless steel. The O-rings and gaskets are BUNA –N material. Please check sample/product formulation compatibility with 316L stainless steel and BUNA-N before using. The Flocell is suitable for pressures up to 100 psi and the black plastic polypropylene fittings accept ¼" ID tubing. To prevent cross-contamination of samples the Flocell should be cleaned after each use.

Flocell assembly with probe

Note: The Flocell must always be operated in a vertical position as shown above.

Note: When using a flocell the converter should be air cooled to ensure proper operation. Please refer to your Sonicator manual addendum for instructions on air cooling.

Assembly

- Please follow the drawing to the left for guidance on assembling the flocell and probe.
- O-ring grease is recommended for each o-ring to ensure the proper seal.
- Teflon tape is recommended with the hose barb fittings.

Flocell assembly with probe

Converter with flocell assembly and probe

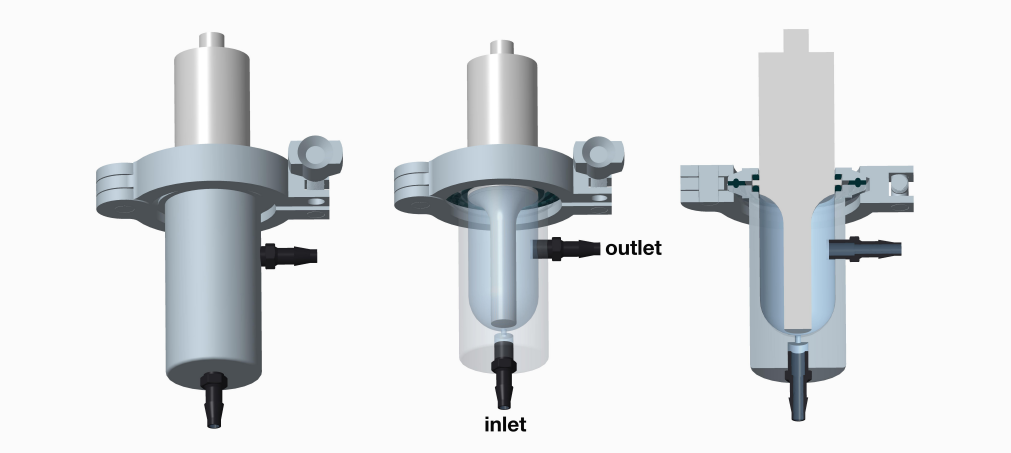
Parts List

Description	Part #
Low volume Flocell assembly	4650
Flanged probe with replaceable tip	4643
Flanged probe with solid tip	4644
Replacement o-ring (2 are required)	853-00087
Replacement flat gasket	853-00088
¼" Hose barb fitting (2 are required)	859-00067
Replacement sanitary clamp	868-00738
Replacement top flange	630-0647

Assembly Instructions

1. Ensure that the power supply is OFF and unplugged.
2. The probe and flocell must be assembled before attachment to the converter.
3. Apply a small amount of o-ring grease to all o-rings. Place one o-ring on flocell before inserting the probe.
4. Slide o-ring over the top of the probe until it sits firmly on the flange.
5. Insert the probe into the flocell body.
6. Slide the circular gasket and then the metal locking cover over the probe and o-ring.
7. Place the clamp over the components and lock in place.
8. Install the inlet and outlet to the flocell process chamber using Teflon tape. Do not over tighten.
9. Attach the converter to the probe by hand until tight. Then use the wrench set to effectively tighten the converter and probe assembly. The wrench set must be used to tighten the probe or the system will not operate properly. See the Sonicator manual for assistance with converter/probe tightening.
10. Mount the Flocell assembly onto a sound enclosure or appropriate stand and clamp. If using a clamp it must only be attached to the converter case.
11. Connect plastic tubing to the inlet and outlet port.
12. Test the complete assembly for leakage prior to turning on the ultrasonics.

Cross section diagram of #4650 with probe



Process Optimization

Note: The liquid sample should be pumped through the bottom inlet and collected through the outlet port. Qsonica does not supply pumps. **The flow rate is dependent on the amount of ultrasonic energy required to process the sample, and must be optimized empirically.**

Note: Re-circulating the sample though the chamber multiple times, may be necessary in order to obtain desired results.

- The degree of processing is controlled by varying the amplitude setting and the flow rate.
- A byproduct of ultrasonic processing is heat generation. Take steps to control the temperature of your sample during processing to prevent overheating. If your sample liquid is warmer than room temperature, please contact your Qsonica representative.
- Use gravity or a pump to circulate the material throughout the Flocell. If a pump is used, ensure the pressure within the Flocell does not exceed 100 psi.
- Processing the material with the amplitude control set at maximum will not necessarily give the best results, and may cause excessive heating of the sample, especially at low flow rates.
- When working with high viscosity liquids, it is advisable to take measures to reduce viscosity if possible (increase the temperature of the liquid, dilute the sample, etc.) to facilitate circulation through the cell.
- When working with slurries the suspension should be diluted if possible to reduce concentration and viscosity.
- Difficult materials may be pre-processed using a mechanical mixer or re-circulated until the desired results are obtained.
- If excessive heating is an issue an external Water Jacket is available to help cool the Flocell. Contact Qsonica for more information on water jackets.

Maintenance

The Flocell should be cleaned and the probe inspected periodically. The stainless steel processing chamber and probe can be autoclaved; however the fittings and O-rings should be removed. The probe may show signs of erosion after extended use and cause the intensity of the ultrasonics to decrease. If the probe is excessively eroded it will no longer create efficient cavitation and should be replaced. Contact Qsonica for replacement.