Flat Ceramic Ultra-Fine Pore Diffusers
Installation Guide

One of the simplest ways to dissolve gases such as oxygen, carbon dioxide or air in water is to introduce the gas as small bubbles—the smaller the bubbles, the more efficient the transfer of the gas will be. The micron-sized bubbles produced by the ultra-fine bubble diffuser ensure a very high gas transfer efficiency.

Typical Applications
Aquaculture: For supplemental oxygen to boost fish densities and for emergency backup. For fish transport by truck, barge, boat or plane.

Anesthetizing Using Carbon Dioxide: For fish handling and processing.

Waste Water and Effluent Treatment: Injection of oxygen to reduce BOD and COD in ponds, channels and large ponds.

Ozone Injection: Efficient and effective injection of ozone into water.

General Description
The ultra-fine bubble diffuser is a simple, easy-to-install device that produces bubbles 100 and 400 microns in size. The bubbles are produced over the entire porous area and are uniform in size. The flat design minimizes bubble coalescence (fusion). Made from nontoxic materials and safe for aquaculture use, it lies flat on the bottom of a tank under its own weight. It may also be fastened down. The slim profile does not hinder netting of fish and minimizes injury. Built-in check valve prevents water from entering the diffuser and impairing performance or causing damage in cold temperatures.

Installation
Locating the diffuser(s) in the water is a site-specific decision. The diffuser(s) should be located to give the best distribution of dissolved oxygen; use a D.O. meter to insure there are no "dead spots." When deciding on location, the following should be kept in mind:

• The deeper the diffuser is placed the more effective it will be.
• The bubble cloud should have an unobstructed path in which to rise. Protective screens placed above the diffuser may cause the bubbles to coalesce.
• Moving water will assist with the distribution of D.O. and improve performance.

Any number of diffusers can be connected in parallel to a common gas supply. If the ultra-fine bubble diffuser is to be used for dissolving oxygen, as is usually the case, ensure that all upstream gas lines, metering devices and instruments are clean for oxygen service (oil- and gas-free). We recommend that flow of gas be controlled by flow meter and that a preset pressure regulator be used, set at the flow meter's operating pressure—usually 20 to 30 psi (138 to 207 kPa) if a flow meter is not being used. If a flow meter is connected to the regulator, set regulator pressure to calibration pressure of flow meter, usually 50 psi (345 kPa), and adjust flow via flow meter. Check the line for leaks and allow a few minutes to blow out any water that may have seeped into the diffuser's air plenum. Do not exceed 50 psi (345 kPa) differential pressure across the diffuser.

Note: The diffuser produces the best bubble pattern after it has been wetted. A dry diffuser may display a patchy bubble pattern at first, but as the diffuser gets wet, the bubbles will become finer and evenly spread out. For best results, soak the diffuser in water for a minute or so, then shake out any water that has collected in the diffuser before applying pressure.

Maintenance and Care
The ultra-fine bubble diffusers are easy to maintain. To prevent buildup of algae growth and other deposits, the diffuser should be routinely scrubbed with a hard bristle brush or hosed off with a water jet. If there is a noticeable decrease in flow due to fouling, the diffuser can be cleaned by allowing the ceramic to dry out and then sanding it with coarse sandpaper (60 grit—included). To disinfect the diffuser soak it in disinfectant. This may stain the ceramic but will not affect performance. Shake out any disinfectant that may have gotten in the diffuser's air plenum before putting back into service. If a manually adjusted pressure regulator is used, be sure that it is in the closed position (adjustment fully screwed out) before turning on the gas supply. Turn the gas on and slowly adjust the pressure to the desired level, usually 20 to 30 psi (138 to 207 kPa) if a flow meter is not being used. If a flow meter is connected to the regulator, set regulator pressure to calibration pressure of flow meter, usually 50 psi (345 kPa), and adjust flow via flow meter. Check the line for leaks and allow a few minutes to blow out any water that may have seeped into the diffuser's air plenum. Do not exceed 50 psi (345 kPa) differential pressure across the diffuser.

Operation
Do not allow the diffuser to become contaminated with oil.

• Do NOT exceed 50 psi (345 kPa) differential pressure across the diffuser.
• Only pressurize when diffuser is submerged.
• Avoid physical shock.
• Do not over tighten bushing in gas inlet connection. We recommend the use of PTFE thread tape.
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WARNING

Oil, grease and other hydrocarbons, when combined with oxygen, will become highly combustible and should never be used on any part of the oxygen cylinder, valve, regulator, diffuser fitting or other equipment used with oxygen.

Ultra-Fine Bubble Diffusers Data

Bubble Size
100 to 400 microns

Oxygen Transfer Efficiency
40 to 55% over recommended operating range and depth of 3’ (1 m)

Materials of Construction
Porous ceramic diffuser, nylon/6 glass composite, epoxy resin bond, brass gas fitting

Gas Inlet Connection
1/4” FTP

Specifications

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Diffusing Area (In.)</th>
<th>Bubbling Pressure</th>
<th>Max Flow (cfm / Lpm)</th>
<th>Weight (lbs)</th>
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<tr>
<td>DYPFP24</td>
<td>24 x 2.5</td>
<td>20 to 30 psi (138 to 207 kPa)</td>
<td>.25/.7</td>
<td>4.4</td>
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<td>.13/3.5</td>
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<td></td>
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3. Damage caused by improper installation or storage.
4. Damage due to unauthorized product modifications or repairs.
5. Damage caused by negligence, or failure to properly maintain products.
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