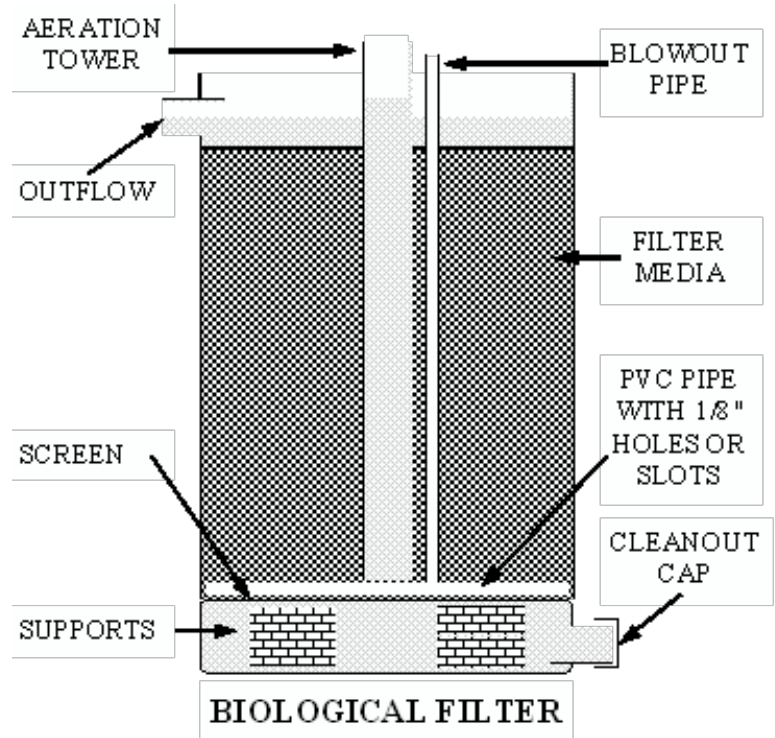




# Constructing A Biological Filter

**What Is a Biological Filter?** Whenever there are fish in a pond, there are also colonies of beneficial bacteria which break down the fish wastes and convert them into forms which can be absorbed by plants and other organisms. A Bio-filter simply provides a home for larger numbers of these bacteria than the pond could normally support, thus allowing for larger fish populations and/or fewer plants than would normally be required for a balanced pond.

**How Does It Work?** Water is pumped to the top of the FILTER CONTAINER, drops into the AERATION TOWER, and mixes with air. It falls to the base of the container where large particles can settle out. Water then travels up through the FILTER MEDIA. Here the bacteria extract fish wastes from the water, break them down, and use up the by-products. The filtered water returns to the pond through the OUTFLOW TUBE. For best results the entire volume of the pond should be circulated through the filter in 2 to 4 hours. About 200 to 250 gallons per hour is ideal for a single barrel. Note: Since gravity causes the water to flow out of the filter, the top of the filter must be above pond level.



**FILTER CONTAINER** - The illustration shows a filter made from a 55 gallon poly barrel. This will filter a pond of about 500 gallons. Wide, shallow containers actually make more efficient filters because the bacteria tends to grow in only the top 12" to 16" of the filter media.

**AERATION TOWER** - Beneficial bacteria require a constant supply of well-oxygenated water. Be sure that the water splashes into the tower. A bio-filter must run constantly or the bacteria will use up the available oxygen and die.

**SCREEN, PVC PIPE and SUPPORTS** - They hold the filter media up off of the bottom, thus creating a space where large debris can settle out of the water. This feature reduces clogging and maintenance. The holes in the PVC pipe allow you to blow air into the blowout pipe and flush sediment off the filter media. Divert the filter outflow away from the pond while cleaning.

**CLEANOUT CAP** - This allows you to backflush the filter without disturbing the filter media. A valve makes this easier.

**FILTER MEDIA** - Pea gravel, lava rock and poly fiber are common filter media.

**OUTFLOW** - The outflow pipe directs the water back to the pond. It should be at least two times the diameter of the pipe which brings the water into the filter.