



pond building & plumbing

tales from the FIELD

My pond was installed in July of 1997, so it was approximately four years old when we noticed that the amount of water spilling over the falls was beginning to dwindle to an unacceptable level. First, we checked the pump, then we moved on to the BIOFALLS® filter, the skimmer, and then the plumbing. Nothing we found was exposing the problem.

It Was a Real Head-Scratcher!

We decided to use a garden hose to snake our way into the pipe to see what we could find. After much trial and error, we found that the blockage was just past the manifold connection, behind the skimmer. Scratching our heads, we decided to dig up the pipe and see, with our own eyes, exactly what was causing the problem.

The Culprit

As we cut the section of the pipe away, we discovered that a root of some kind had wormed its way in through a tiny (hair-like) hole where the pipe and manifold were connected, and had proceeded to multiply exponentially. This mass of roots had filled the pipe so completely that it (the pipe) could accurately be described as “constipated.” The water that this baby was allowing to flow to the waterfalls was so minimal that we couldn’t believe it. To this day, the constipated section of this pipe that we cut away, is sitting on a shelf in the office to remind everyone in the tech department that, even with all our experience, we can still be surprised!

Chris Wilson

Training Supervisor



Plumbing ... A Key Component of Pond Building

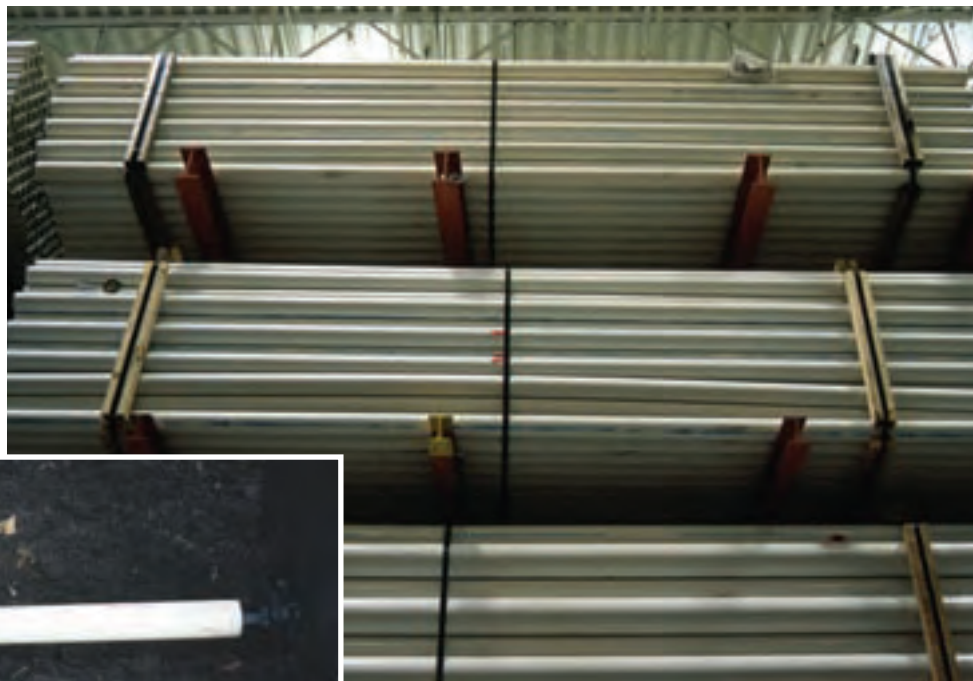
A well-designed water feature includes many components and construction materials for installation. One key component is a re-circulation system, which requires plumbing. Like everything else, there is a right way and a wrong way to plumb your water feature.

Lots to Choose From

There are several different methods used in plumbing these days, and over the last ten years of pond construction, we've toyed around with most of them. There are different kinds of pipe, many random components, and a wide array of fittings. After building 100+ ponds per year, over the last several years, we know that the plumbing method we use today is the best way to go.

Throughout this chapter we will explore the advantages and disadvantages of various pipe used in the industry. We'll show you the purpose of each plumbing component and its correct application, and we'll give you installation instructions. Fittings are necessary in all plumbing applications, so we'll break down the benefits and possible pitfalls of the fittings we use.

The final segment will cover the installation sealants used for the different types of pipe components and their fittings. We urge our installers to not overcomplicate this step of pond construction. The bottom line is that plumbing a water feature, when done the "right way," can be the simplest part of the installation process.



Types of Pipe

Schedule 40 PVC

The cheap cost of PVC (poly vinyl chloride) makes it the most commonly used plumbing material in the country.

Pros

- Strong and rigid, mainly used in household plumbing applications.
- Each fitting and component is connected using glue and primer.
- Inexpensive.

Cons

- Only sold in 10 and 20-foot increments, therefore difficult to transport.
- The need for 45° and 90° elbows to make necessary turns in your pipe.
- Every elbow will add head pressure to the pump, and will reduce the water flow to the waterfall.
- Susceptible to cracking during the freeze/thaw cycle of most zones.



Poly Pipe

Poly pipe was originally designed for use in the irrigation industry. Aqua-scape's construction crew used this pipe for several years before the days of flexible PVC. The discovery of flexible PVC has made the plumbing installation a much simpler and more effective

process. Therefore, we couldn't think of any pros for its use in the water garden application.

Pros

- None!

Cons

- Large size. A 100' roll of 2" poly pipe stands over 5½' tall and can be extremely hard to work with once unpackaged.
- The use of an industrial heat gun is often necessary to reform the packaged shape.
- A rubber mallet, barbed fittings, and metal clamps are necessary for making connections.
- Inconvenient and extremely labor intensive.



Forget doing this. While the pipe may be cheaper, your savings will evaporate in increased installation time



Flexible PVC

This stuff is great! It came to us from the pool and spa industry. All connections are made with the primer and glue included in our PRO-Fit™ Systems.



Pros

- Can be rolled tightly for transportation.
- Strong memory. Which means it will unroll and straighten out much more easily than poly pipe.
- Can handle sharp turns and tight corners, which alleviates head pressure on the pump by avoiding the use of tees and elbows.
- Will expand and contract with seasonal changes.

Cons

- None!

We can honestly credit the use of flex pipe for the birth of the "one-day pond." For years, we struggled to complete a pond in a single day, and for years we were pretty darn close. Flex pipe was the answer to our prayers. **Note: Extremely resistant to cracking, flex pipe will expand and contract with seasonal changes.**

Components

Check Valve

This plumbing component is used to prevent water from draining out of the BIOFALLS® filter and flowing back into the pond when the power to your pump is cut off. If the electricity goes out or the user simply unplugs the pump, gravity will naturally pull the water from the return line back into the pond, emptying the BIOFALLS® filter.

Without the water, the bacteria that has seeded within the media in the BIOFALLS® filter will most certainly die. Depending on the length of the pipe run and the amount of pond surface area, the water may rise enough to exit through the skimmer overflow. This will force the user to compensate for the

water loss by “topping off” the pond once it has restarted. A properly functioning check valve will solve these problems by trapping the water in the pipe and BIOFALLS® filter, with a one-way flap gasket contained within the check valve.

esp La Válvula de Chequeo

Este componente de la instalación de plomería se usa para prevenir que el agua tenga drenaje fuera del BIOFALLS® y regresa para atrás al estanque cuando se corta la corriente a su pompa. Si se corta la corriente o el usuario simplemente desenchufa la pompa, la gravedad naturalmente jalará el agua de la línea de regreso para atrás hacia el estanque, vaciando el BIOFALLS®.



Photo by Scott Hughes



Aquascape Dual Union Check Valve.

Sin el agua, las bacterias que han sembrado dentro de los medios del BIOFALLS® ciertamente morirán. Dependiendo de la largura del tubo y el área del superficie del estanque, el agua puede subir suficiente para salir por el escapa de capacidad excesiva del skimmer. Esto forzará al usuario a compensar por la pérdida de agua añadiendo agua al estanque cuando empieza a funcionar de nuevo. Una válvula de chequeo que funciona correctamente resolverá estos problemas atrapando el agua en el tubo y BIOFALLS®, con un culata de una sola vía dentro de la válvula de chequeo.

Installing the Pump, Filter Rack and Filter Mat

- The Signature Series™ check valve comes with two adaptors that replace the standard PVC pipe sockets on each end of the check valve (See Fig. 1). One adaptor threads directly into the pump, the other threads directly into the bulkhead on the back of the skimmer that supplies water to the BIOFALLS® filter (See Fig. 2 & 3). Apply silicone or Teflon tape (not included) to the threads of the fitting.
- Once inside the skimmer, feed the electrical cord over the depression located on the back, top edge of the skimmer. (See fig. 4)
- Set the Filter Rack inside the skimmer. (See fig. 5) Punch out the corresponding die-cut hole located on the skimmer filter mat and insert the skimmer mat into the filter. (See fig. 6)
- The 2nd hole located in the back of the skimmer is for the overflow. The overflow will help maintain the maximum water level in the pond after rainfall, ensuring that your skimmer works properly and water does not travel over the edges of the liner and cause problems with hydrostatic pressure. Refer to page 142 for overflow information.

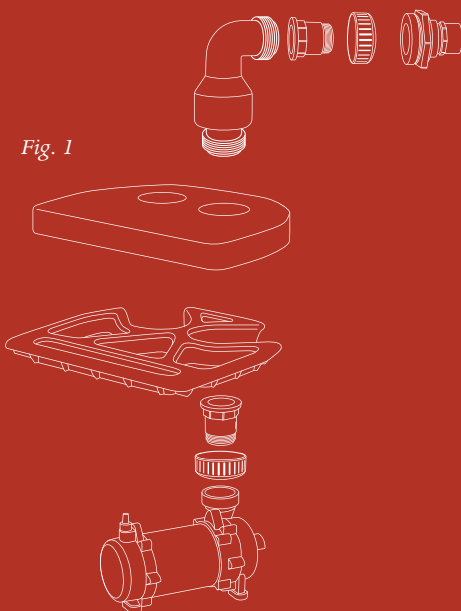


Fig. 1



Fig. 2



Fig. 4

*NOTE: One pump shown.
Your installation may
have two pumps.*



Fig. 3



Fig. 5

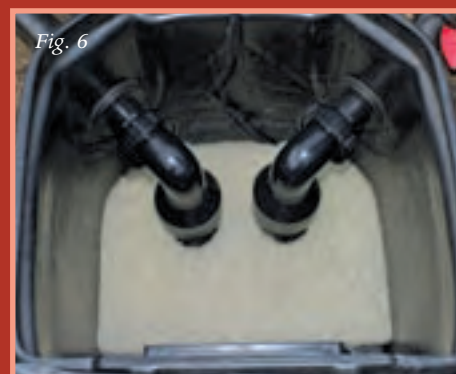


Fig. 6

The Manifold

The manifold is mainly used to split one line into two while creating less friction than a standard tee. The manifold takes a curved path instead of dead-ending and shooting left or right. We suggest using a manifold for several applications.

- The most common use is to split the flow of one large pump into two mini or standard BIOFALLS® filter.
- Note: Water will choose the path of least resistance. See section on use of ball valve.*
- Aquascape offers a 3" x 3" manifold assembly with elbows and 2" reducer bushings to accommodate several different pipe configurations. Manifold installation requires glue and primer only.



esp El Múltiple

El múltiple se usa principalmente para dividir una línea en dos, creando menos fricción que un "T" estándar. El múltiple hace una curva en vez de chocar e ir a la derecha o la izquierda. Proponemos el uso de un múltiple para varias aplicaciones.

- *El uso más común es partir el flujo de una pompa grande en dos BIOFALLS® mini o uniforme. La nota: Agua escogerá el camino de menos resistencia. Vea la sección en el uso del válvula de pelota.*
- *Diseños Aquascape ofrece un ensamblaje múltiple de 3" x 3" con codos y acoplamiento de reducción de 2" para acomodar diferentes configuraciones de plomería. La instalación múltiple sólo requiere el pre-tratamiento y pegamento.*

Ball Valve

A ball valve is used to restrict or divert the flow of water through a pipe. A 1½" and 2" ball valve are available from Aquascape.

- The most common use of a ball valve is to divert the flow of water from one side of a manifold to another. Water will choose the path of least resistance, therefore, the ball valve should be placed on the shorter pipe run or the one lowest in elevation.
- Turning the red handle moves the ball inside and allows the user to evenly distribute the flow rate of one pump through two or more BIOFALLS® filter.
- Can be used to slightly reduce the flow of a waterfall, or as an alternate check valve by fully turning the handle and preventing water backflow from the pipe and BIOFALLS® filter.

esp La Válvula de Pelota

Se usa una válvula de pelota para restringir o desviar el flujo de agua en el tubo. Diseños Aquascape ofrece una válvula de pelota de 1.5 y de 2".

- *El uso más común de una válvula de pelota es desviar el flujo de agua de un lado de un múltiple al otro. El agua escogerá el camino de menos resistencia, por lo tanto, la válvula de pelota se debe colocar en el tubo más corto o el que tiene menos elevación.*
- *Girando el mango rojo mueve la pelota adentro y permite que el usuario distribuye uniformemente el flujo de una pompa dentro de dos o más BIOFALLS®.*
- *Puede ser usado para reducir levemente el flujo de una caída de agua o como una válvula de chequeo alternativa girando completamente el mango y previniendo que el agua fluye para atrás en el tubo y BIOFALLS®.*





Conversion Kits

There are two conversion kits available from Aquascape. The first one is a 2 to 3" conversion to be used with pumps that are capable of producing greater water flow.

- Should be run directly through the discharge hole in the back of the skimmer and connected to the 2" check valve assembly.
- The other end is converted and will adapt to one 3" line.
- This will alleviate head pressure from the pump, and allow it to achieve maximum water flow.

esp Los Juegos de Conversión

Diseños Aquascape tiene dos juegos de conversión disponibles. El primero es una conversión de 2" a 3" para usar con pompas que tienen capacidad para producir flujo más de lo que permite un tubo de 2". (4,800gph aproximadamente)

- *Debe pasar directamente por el hueco de descarga en detrás del skimmer y conéctalo al ensamblaje de la válvula de chequeo de 2".*
- *El otro extremo es convertido y se adaptará a uno de 3".*
- *Esto aliviará la presión en la cabeza de la pompa, y le permitirá alcanzar el flujo máximo de agua.*

Be Prepared for Other "Plumbing"!

From time to time during installations, you may come across irrigation systems, as we often do. To save yourself delays, confusion, and potentially an angry customer, familiarize yourself with the plumbing and tools needed to work with these types of systems. You may want to carry a set of the necessary tools with you so you can divert the lines to accommodate your pond installation.



2 x 2 Grande BIOFALLS® filter Conversion Kit

- Will allow you to adapt two 2" lines to the back of a Grande BIOFALLS® filter. (For use with a Grande BIOFALLS® filter and a two pump system only) .
- Drill an inlet hole with a 3" hole saw (at least one foot away from pre-drilled hole).
- The kit includes one 3 to 2" reducer that threads into the 3" bulkhead fitting of the existing inlet hole, allowing the installation of one 2" MPT slip.
- The extra 2" bulkhead and 2" MPT should be installed in the new inlet hole. (see section on fittings) Your Grande BIOFALLS® filter is ready to accept two 2" lines.

esp Grande 2 x 2 BIOFALLS® Juego de Conversión

- *Permitirá que Ud. adapte dos líneas de 2" por detrás de un Grande BIOFALLS®. (Para uso con un Grande BIOFALLS® y sólo con un sistema de dos pompas)*
- *Taladra un hueco de entrada con una sierra de hueco de 2". (por lo menos una distancia de un pie del hueco taladrado previo)*
- *El juego incluye un reductor de 3 a 2" que enhebra en el cabezal de ajuste de 3" del existente hueco de entrada, permitiendo la instalación de una manga de 2" MPT.*
- *El cabezal extra de 2" y el 2" MPT se deben instalar en el hueco nuevo de entrada. (Vea la sección de ajustes) Su Grande BIOFALLS® está listo para aceptar dos líneas de 2".*



TIP from TEAM AQUASCAPE

The Signature Series™ BIOFALLS® filter already comes with two bulkhead fittings. You can use one or two and you also have the option to use a drain kit.



It is easy to add another plumbing part to a BIOFALLS® filter.



Pressure Relief Valve

A pressure relief valve (PRV) was designed to counter the effects of hydrostatic pressure in larger ponds with a minimum depth of five feet. Hydrostatic pressure builds up beneath the liner, usually due to a high water table, and forms air bubbles. The pressure can be so powerful that it actually stretches the liner and forms liner bubbles that can be seen above the water level, regardless of the heavy rocks holding it down.

The PRV is a spring-loaded device (rated at 90 PSI) that opens when enough hydrostatic pressure is present, allowing the ground water to enter the system. Once the pressure is released, the valve will close on its own and the spring gasket will re-seal the system. A minimum depth of five feet is recommended to create enough pressure on top of the liner to counter the PSI rating for the valve and allow the device to pop open. For example, a PRV will not work on a pond that is 50' x 50' x 3' deep, but will work on an 11' x 16' x 5' deep pond.

Note: Alternate methods of pressure relief involve running small diameter pipe underneath the pond liner, allowing gases and groundwater to escape.

esp Válvula de Control de Presión (VCP)

Una válvula de control de presión fue diseñado para combatir los efectos de la presión hidrostática en estanques grandes con una profundidad mínima de cinco pies. La presión hidrostática aumenta debajo de la capa protectora, generalmente debido a una tabla alta de agua, y forman burbujas de aire. La presión puede ser suficiente fuerte para estirar la capa protectora y formar burbujas en la capa protectora que se puede ver arriba del nivel de agua, a pesar de las piedras pesadas puestas encima.

La válvula de control de presión es un artefacto cargado de resorte (calificado a 90 PSI) que se abre cuando se presenta suficiente presión hidrostática, permitiendo entrar el agua del suelo al sistema. Una vez que la presión se libera, la válvula cerrará por sí mismo y la culata de resorte re-sella el sistema. Se recomienda una profundidad mínima de cinco pies para crear suficiente presión encima de la capa protectora para combatir el PSI de la válvula y permitir que el artefacto se abre por si sólo. Por ejemplo, una válvula de control de presión no trabajará en un estanque que es 50' x 50' x 3' de profundidad, pero si trabajará en un estanque 11' x 16' x 5' de profundidad.

La nota: Métodos alternativos para control de presión incluyen correr un tubo de diámetro debajo de la capa protectora del estanque, permitiendo escapar los gases y el agua del terreno.

The side benefit of hydrostatic pressure is the creation of resting places for migratory water fowl.



esp La instalación de la VCP

Installation of the Pressure Relief Valve

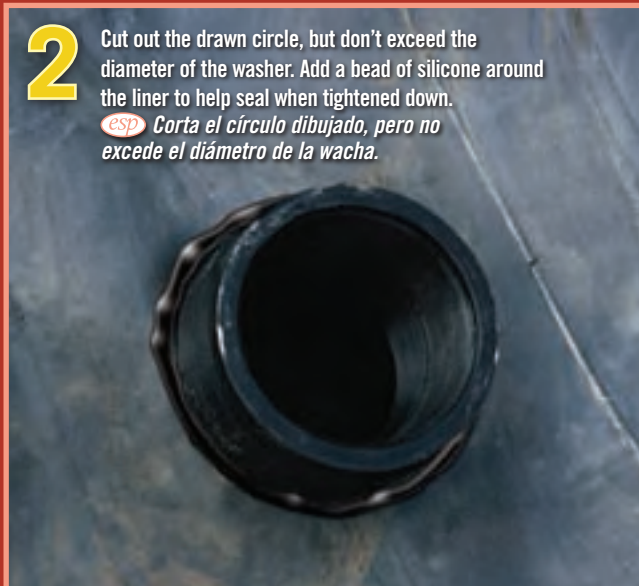
Place the plastic washer from the 2" bulkhead fitting on the liner in the middle of the deepest section of your pond, one per twenty linear feet, in the deep section of large ponds.

esp Coloca la wacha plástica del cabezal de 2" en la capa protectora en el centro de la sección más profunda de su estanque, uno por cada veinte pies lineales, en la sección profunda de estanques grandes.

- 1** Use an awl or a drawing tool to stencil the inside of the plastic washer.
 esp Usa un lezna o una herramienta de dibujo para estarcir el interior de la wacha plástica.



- 2** Cut out the drawn circle, but don't exceed the diameter of the washer. Add a bead of silicone around the liner to help seal when tightened down.
 esp Corta el círculo dibujado, pero no excede el diámetro de la wacha.



- 3** Stretch the liner around the bottom half of the bulkhead fitting, exposing the threads.
 esp Estira la capa protectora alrededor de la mitad del fondo del cabezal para abajo, exponiendo los hilos.



- 4** Fasten the top half of the valve counterclockwise a couple of turns past hand-tight.
 esp Abrocha la mitad de la válvula a la izquierda unas dos vueltas pasando apretado de mano.



- 5** Apply a small bead of silicone to the threads of the PRV (silicone 2" threads when using 2" bulkhead fitting) and tighten down the device (turn clockwise).
 esp Aplica un poco de silicón a los hilos del VCP (silicón los hilos de 2" cuando se usa un cabezal de 2") y ajusta el artefacto (torciendo a la derecha).



Automatic Water Fill Valve

An automatic water fill valve is a device installed in the back corner of a skimmer or Snorkel® Vault to help counter the effects of pond water evaporation or a slow leak, by adding small amounts of water, and maintaining a consistent water level.

There are many types of water fill valves available today, such as the arm float style and the patented Hudson Valve.

There are a couple different ways to connect a water fill valve – to standard spigot outside the house or an irrigation system. A brass quick-connect will allow poly tubing to connect right to the spigot. An irrigation conversion kit will allow the poly tubing to connect onto the irrigation line.

When connecting directly to the spigot, we suggest using a two hose adapter, this way you are still able to use a garden hose for watering plants and gardening, while being able to top off your pond at the same time.

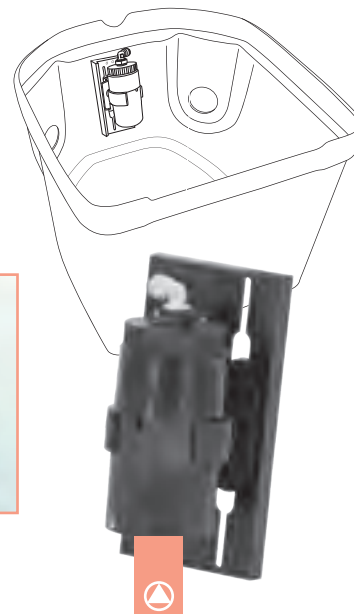
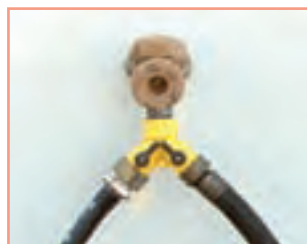
Regardless of which water fill valve and approach you take for installation, the lines must be blown out in the winter to prevent them from freezing and cracking.



Arm float style water fill valve



Hose and irrigation system adapters



Hudson water fill valve

esp Válvula para Llenar El Agua Automáticamente

Una válvula automática del agua (water fill valve) es un dispositivo instalado en la esquina trasera de un skimmer o Snorkel para mantener el nivel del agua constante que se pierde en la evaporación o si tiene un escape pequeño.

Hay muchos tipos de válvulas automáticas hoy en día disponibles tales como el estilo del flotador de brazo y la válvula patentada de Hudson.

Hay varias maneras de conectar una válvula - puede usar una espita que esta colocada fuera de la casa o se puede conectar a un sistema de irrigación. La espita es la llave del agua que usualmente se usa con manguera. Un adaptador de manguera permitirá que la tubería poly se conecte directamente con la espita. Un irrigation conversion kit permitirá que la tubería poly se conecte sobre la línea de el sistema de irrigación.

Al conectar directamente con la espita, sugerimos que use un adaptador de dos mangueras, de esta manera usted puede utilizar una manguera del jardín para regar las plantas, y a el mismo tiempo llenar su estanque de agua.

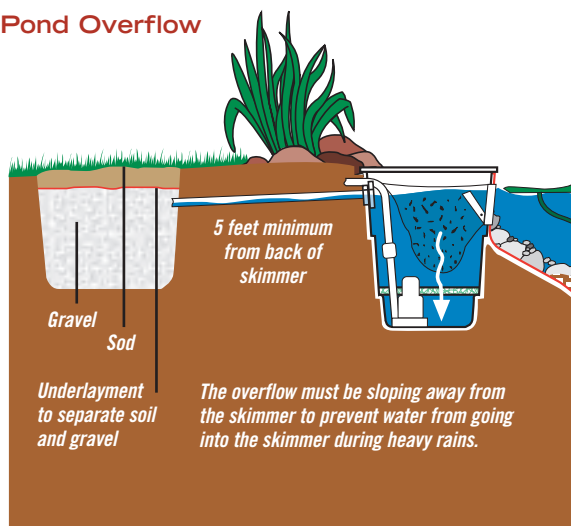
Sin importar qué válvula del agua decida usar, o de que manera la instale, debe asegurarse que las líneas estén vacías sin agua para prevenir que se congele durante el invierno.

Excess Water Overflow

An overflow design is built into the back of each Aquascape skimmer. The overflow will be the lowest pre-drilled hole in the back of the skimmer mold.

- There is a bulkhead fitting and MPT slip provided for the installation of the skimmer overflow. Install the bulkhead fitting and MPT slip. (see section on fittings)
- Connect a minimum 5' of flex pipe to the overflow MPT slip with primer and glue.
- Simply run your overflow pipe to a low retention area of the site.

Pond Overflow



Overflow: Attach bulkhead & pipe adapter. Set desired pond level from this point using a transit, a water level tool or a string level. Drain water at least a few feet away from the skimmer using a piece of 2" flex PVC piping.

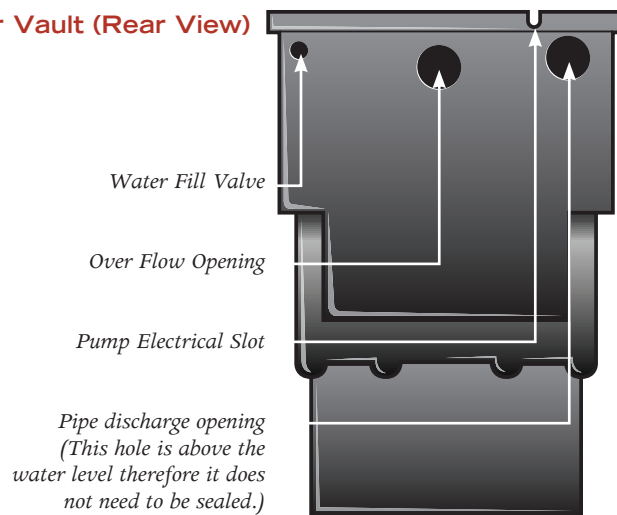
esp Capacidad de Agua Excesiva

Diseños Aquascape skimmer es diseñado tratar el agua excesiva. La capacidad excesiva será el hueco pre-taladrado más bajo por detrás del molde del skimmer.

- *Hay un ajuste cabezal y pieza de MPT proporcionado para la instalación de la capacidad excesiva del skimmer. Instale el ajuste cabezal y la pieza de MPT. (Vea la sección en de ajustes)*
- *Conecta un mínimo de cinco pies de tubo flexible a la pieza MPT de la capacidad excesiva con pre-tratamiento y pegamento.*
- *Simplemente hace correr el tubo de capacidad excesiva a un área bajo el sitio de retención.*

**Signature Series™ Skimmer varies in overflow design. See instruction manual for details.*

Skimmer Vault (Rear View)



TIP from TEAM AQUASCAPE

- You can also make a dry well to accept the overflow water. To make a dry well, dig a 2' x 2' hole and line with underlayment, then fill it halfway with gravel. Run the overflow pipe down into the gravel dry well and backfill. Now, when the pond overflows, the excess water will travel out the back of the skimmer and down the pipe to the dry well where the water will percolate through the gravel and into the ground. The overflow pipe must be run on a down slope. (see above)

esp Para construir un pozo seco, cava un hueco 2' x 2' y llénalo hasta la mitad con grava. Ponga el tubo de la capacidad excesiva en la grava del pozo seco y rellénalo. Ahora, en caso de inundación, el agua en exceso saldrá por detrás del skimmer por el tubo al pozo seco donde el agua se filtrará por la grava y el terreno. El tubo de la capacidad excesiva se debe correr en un ángulo hacía abajo.

Fittings

Bulkhead Fitting

A bulkhead fitting is a water-tight gasket seal used in conjunction with an MPT slip to connect a pipe to the back of the BIOFALLS® filter and skimmer molds. It is also used for the installation of a pressure relief valve.

- Installing a bulkhead fitting will require the use of channel locks.
- Remove the nut and place bulkhead with the rubber gasket on the inside (water side) of the mold's pre-drilled hole, exposing the threads of the fitting on the outside of the unit.
- Fasten down the plastic nut and washer, turn counterclockwise one to two turns past hand-tight.
- **Note:** 3" bulkhead fitting does not include a plastic washer.

esp Ajuste Cabezal

Un ajuste cabezal es una culata sellada contra el agua usado juntos con una pieza de MPT para conectar un tubo detrás del BIOFALLS® y los moldes del skimmer. Se usa también para la instalación de una válvula de control de presión.

- *Instalar un ajuste cabezal requerirá el uso de cerraduras de canal.*
- *Separa el ajuste y coloca la mitad con la culata de hule al interior (al lado del agua) del hueco del molde pre-taladrado, exponiendo los hilos del ajuste en el exterior de la unidad.*
- *Abrocha la tuerca y wacha plásticas, gira a la izquierda pasando dos vueltas apretado de mano.*
- **Nota:** *ajuste cabezal de 3" no incluye una wacha plástica.*



TIP from TEAM AQUASCAPE

The rubber gasket, included with the bulkhead fitting, must always reside on the water side of the container.

esp *La culata de hule siempre debe quedar al lado del agua del contenedor.*

Make sure you install the overflow to carry water a few feet away from the skimmer or else you can get water bubbling up in your skimmer. If this happens, pound in metal sign post stakes along the skimmer body and bolt them to it.



MPT Slip

An MPT slip (male pipe thread) is a fitting that threads into a bulkhead to connect a pipe to the BIOFALLS® filter and skimmer molds. It is also used in the check valve assembly to adapt the valve to the discharge of the pump. Wrapping teflon tape or a bead of silicone around the threads of the fitting is suggested to maintain a water-tight seal.

No silicone or teflon tape is required for check valve MPT slip.

esp La Pieza MPT

La pieza MPT (el hilo masculino de tubo) es un ajuste que enhebra al cabezal para conectar un tubo al BIOFALLS® y los moldes del skimmer. Se usa también en el ensamblaje de la válvula de chequeo para adaptar la válvula a la descarga de la pompa.

- *Envolviendo silicón o cinta teflón alrededor de los hilos del ajuste es sugerido para mantener un sello contra derrame.*
- *No se requiere silicón ni cinta teflón para la pieza MPT de la válvula de chequeo.*





Coupling

A coupling is a slip fitting that connects two sections of pipe together. This is a schedule 40 PVC fitting that requires glue and primer for installation. Rubber couplings should not be used in the connection of two permanent sections of pipe due to their potential for failure and possible leaks.

esp Uniones

Una unión es una pieza de ajuste que conecta dos secciones de tubos juntos. Esto es un ajuste de tipo 40 PVC que requiere pegamento y pre-tratamiento para la instalación. No se debe usar uniones de hule en la conexión de dos secciones permanentes de tubo debido a su potencial para fallar y posibles derrames.



It's easy to connect two sections of pipe together with a coupling.



Elbow

An elbow is a 90° slip fitting that connects two sections of pipe in a tight corner. This is a schedule 40 PVC fitting that requires glue and primer for installation.

esp El Codo

Un codo es una manga de ajuste de 90 grados que conecta dos secciones de tubo en un rincón apretado. Esto es un tipo 40 PVC que requiere el pre-tratamiento y pegamento para la instalación.



TIP from TEAM AQUASCAPE

In most cases, the advantage of flexible PVC is its ability to make most bends and turns without the use of elbows. Try to avoid using elbows when plumbing the system. However, always use 90° elbows when using schedule 40 PVC. The downfall when using an elbow with any pipe is the amount of additional head pressure you put on the pump, restricting the maximum flow of water. The downfall of any slip fitting is the potential for leaks.

esp En la mayoría de los casos, el tubo flexible de PVC manejará la curva aguda, pero codos de 90 grados son necesarios usando tipo 40 PVC. El problema de usar un codo con cualquier tubo es la cantidad de presión cabezal adicional que Ud. pone en la pompa, restringiendo el flujo máximo de agua. La caída de cualquier manga de ajuste presenta potencial de derrames.

esp Sellantes de Instalación

Installation Sealants



Glue and Primer

The glue and primer used with Aquascape's PRO-Fit™ Systems are included within the installation package. The glue and primer are specifically designed to prepare and adhere sections of

flexible PVC pipe to various fittings and components. You can use any glue and primer on the market as long as it's rated for use with flexible PVC pipe. Standard schedule 40 glue and primers simply don't have the right bonding strength and temperature to work with flex pipe.

esp Pre-tratamiento y Pegamento

El pre-tratamiento y pegamento usado con las Systemas de PRO-Fit™ de Aquascape incluidos dentro del paquete de instalación. El pre-tratamiento y pegamento son usados para preparar y adherir las secciones del tubo flexible de PVC a varios ajustes y componentes. Ud. puede usar cualquier pre-tratamiento y pegamento que hay en el mercado si es para uso con tubos flexible de PVC. Pegamento tipo 40 y pre-tratamiento no tienen la temperatura correcta para adherir bien un tubo flexible.

Silicone Sealant

The silicone sealant used by Aquascape is included in the installation package of the PRO-Fit™ Systems. Any silicone on the market will work, as long as the silicone is labeled "fish safe" or "food safe." Black silicone is much easier to disguise, but clear silicone will work just as well.



TIP from TEAM AQUASCAPE

Plumbing a water feature should take far less time than digging your first pond shelf. Complications are rarely an issue when plumbing an Aquascape water feature because we include everything you need for installation. On the other hand, if you piece together a pond kit, and you forget to bring one \$.50 fitting to the job site, you can turn your one-day pond into an expensive two-day pond.

Keep it simple. Using Aquascape plumbing products and following Aquascape plumbing techniques will simplify any job. The extra time and energy you'll save using these plumbing methods will be better spent building beautiful waterfalls and streams.

esp *Instalando plomería para un terreno acuático debería tomar mucho menos tiempo que excavar su primer estante de estanque. Las complicaciones son raras cuando uno instala la plomería en un terreno acuático de Aquascape porque todo viene incluido para la instalación. Por otro lado, si Ud. decide juntar las piezas y Ud. se le olvida traer un ajuste de 50 centavos al sitio de trabajo, el proyecto le costará mucho más.*

Manténgalo sencillo. Usando los productos Aquascape para instalación de plomería de y siguiendo las técnicas de instalación Aquascape simplificarán cualquier trabajo. Ud. ahorrará tiempo y energía usando estos métodos se puede invertir su tiempo mejor en construir caídas de agua y corrientes hermosas.

esp Sellante de Silicón

El sellante de silicón usado por Diseños Aquascape es incluido en el paquete de la instalación de las Systemas de PRO-Fit™. Cualquiera silicón en el mercado funcionará con tal que la silicón sea marcado "adecuado para peces" o "adecuado para comida". Es más fácil disfrazar la silicón negra pero la silicón clara funciona igual.

Teflon Tape

Using Teflon tape on the threads of certain plumbing fittings is a technique that the Aquascape construction crew used religiously before the days of silicone sealant. It's a common technique used in the plumbing industry and has proven to be very effective in forming water-tight seals on threaded plumbing fittings. Since our silicone sealant is included in our PRO-Fit™ Systems, we suggest using it in place of Teflon tape, but either one works fine. Simply apply one or two layers of tape on the threads of an MPT slip or pressure relief valve, and fasten down the bulkhead fitting.

esp Cinta Teflón

Usando cinta teflón (Teflon Tape) en los hilos de ciertos ajustes de plomería es una técnica que el equipo de construcción de Aquascape usó religiosamente antes de sus días de sellante de silicón. Es una técnica común, usada en la industria de instalación de plomería y ha probado ser muy efectivo en formar los sellos protegiendo de derrames en los ajustes de plomería. Como nuestro sellante de silicón viene incluido en nuestros Systemas de PRO-Fit™, nosotros sugerimos usarla en lugar de cinta teflón. Pero cualquiera está bien. Aplique simplemente una o dos capas de cinta en los hilos de una manga de MPT o válvula de control de presión, y abroche el ajuste cabezal.

Plumbing Fittings Glossary



Check Valve

Prevents back flush from filter, preserving bacteria growth in the BIOFALLS® filter.

Coupling

This fitting will join two separate pieces of pipe together. Available in 1 ½", 2" and 3".



Check Valve Reducer

1 ½" reducer that is used with the check valve when using 1 ½" pipe.

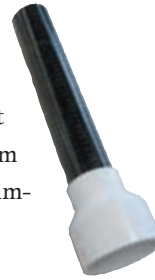
Bulkhead Fitting

Provides a water-tight seal for the BIOFALLS® filter and overflow connections. Most commonly used with the MPT fitting and it is also used with the Pressure Relief Valve. 2 or 3" available.



2 to 3" Conversion Kit

Conversion kit that increases the pipe from 2 to 3" through the skimmer wall.



Manifold

This fitting will take one pipe and split it into two pipes. This fitting creates a lot less head loss to the pump than your standard tee. Could be used with a ball valve to divert a certain amount of water through a particular path. This is available for 2 and 3" pipe.



Ball Valve

Reduces water flow through pipe. Diverts water flow through two separate pipes evenly.

Pressure Relief Valve

This fitting is used in large liner applications. It relieves pressure from underneath the liner through a spring loaded valve that will thread into a bulkhead fitting.



MPT Slip by Slip

This fitting is used to connect the pipe to the back of the BIOFALLS® filter. This comes in three different sizes on the slip side of the fitting with 1 ½", 2", and 3", and 2" and 3" for the MPT side. You should use silicone or Teflon tape to seal the threads.



BIOFALLS® Conversion Kit

These fittings are used when a contractor needs to have two 2" pipes enter into the 3" Grande BIOFALLS® filter.

the 20 steps

of pond construction
from start to finish



1 Mark Pond Area



2 Place Skimmer and BIOFALLS® filter



3 Lay Plumbing



4 Hook-up BIOFALLS® filter



5 Excavate Pond



6 Install Liner and Underlayment



7 Hook-up Skimmer



8 Rock in Pond



9 Position Underwater Lights



10 Wash Stones



11 Fill Pond/
Lunch Time!



12 Build Waterfall
and Stream



13 Bring in Top Soil



14 Build Retaining Wall



15 Tweak Waterfall



16 Trim Liner



17 Mulch Berm



18 Clean Up



19 Give Owner's Manual
and Bacteria



20 Get Paid!

