

Instructions for Installing the Bottom Drain Assembly in the PondSweep® Series of Skimmers

INTRODUCTION

Congratulations on your purchase of a bottom drain for your pond. PondSweep Manufacturing's (PSM) skimmers pioneered the use of bottom drains in water gardens, to improve circulation, filtration and water clarity. Bottom drains remove more pond dirt reducing the need for full pond draining and cleaning at the end of a season. This conservation technique is an integral part of our Pond-CPR™ program. Call your local dealer for more information, and see page 6.



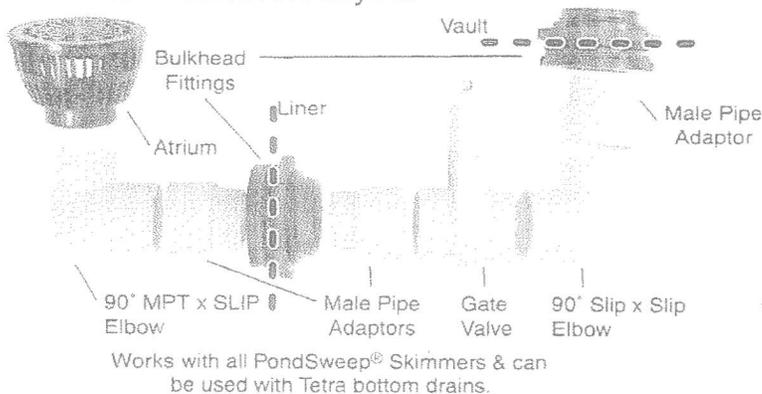
Your PondSweep bottom drain can be connected to the skimmer in either one of two locations. Instructions for installing it into the side wall of the skimmer start on page 2. Instructions for installing the bottom drain into the front of the skimmer begin on page 4. If you are retrofitting your pond, you may use either set of instructions. The kit comes with the parts necessary to install the bottom drain in either location.

On a new pond installation, it should only take about 1 hour. On a retrofit to an existing skimmer, additional time will be required to excavate the area around the skimmer and drain the pond so the pond water level is below the point where the drain will go through the liner. We recommend doing a pond clean out as part of this installation on a retrofit, to start with a clean pond and to take advantage of the lowered pond water level.

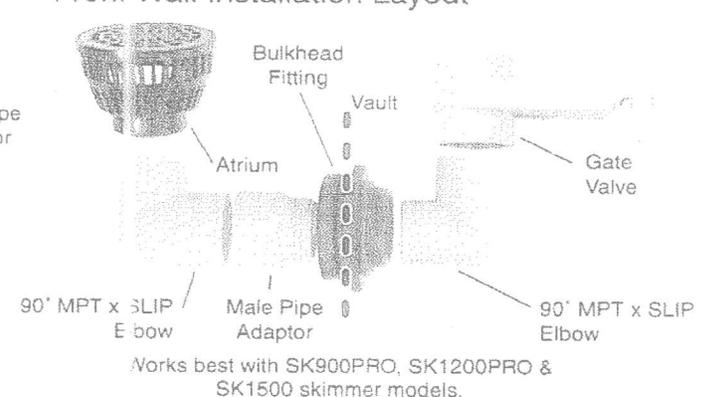
INCLUDED PARTS.

(1) Atrium inlet, (3) 2" Male Pipe Adaptors, (2) 2" Bulkhead Fittings, (1) 2" Gate Valve, (1) 2" 90° Slip x Slip Elbow, (2) 2" 90° MPT x SLIP Elbow, (2" PVC Pipe Purchased Separately).

Side Wall Installation Layout

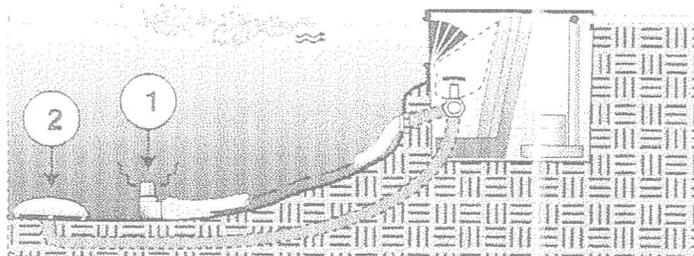


Front Wall Installation Layout

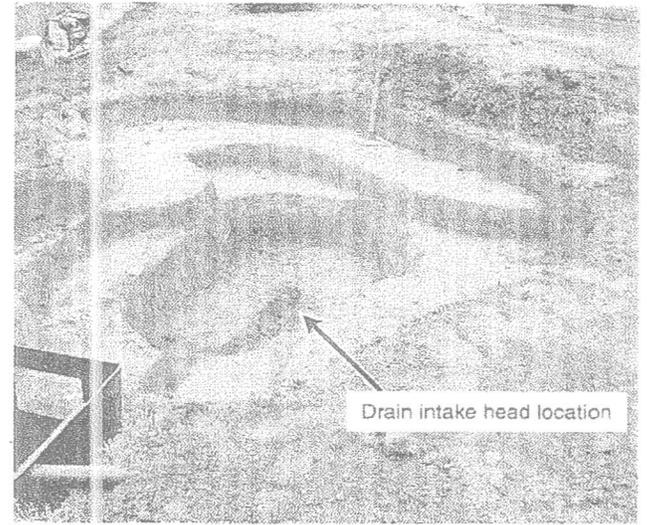


BEGINNING STEPS TO TAKE FOR EITHER INSTALLATION METHOD.

STEP 1. Determine which type of bottom drain to install. PSM bottom drains (1) only go through the liner up near or in front of the skimmer. A Tetra bottom drain intake head (2) can be installed through the liner at the pond bottom, then installed on the PSM drain line pipes, but the connection to the skimmer must use the side wall method. Follow the instructions included with that drain, to connect the drain through the liner and run the drain line up to the skimmer box. A Tetra Vacuum drain head can be installed inside the pond on the PSM drain pipes and then connected to the skimmer with either method, in front or to the side.



STEP 2. Decide where to locate the drain in the pond and where to bring the drain out of the pond. The drain intake head should be located at the lowest point in the pond. If that would require an unusually long run of flexible or rigid PVC pipe for the drain to reach the current skimmer location, consider adding a second skimmer to simplify the installation and improve the flow of the bottom drain. Buy the appropriate length of 2" diameter pipe to connect the drain to the side of the skimmer box.

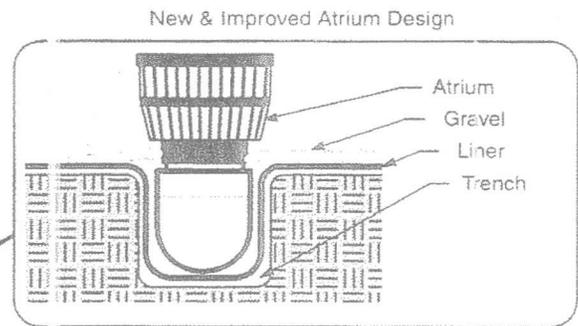
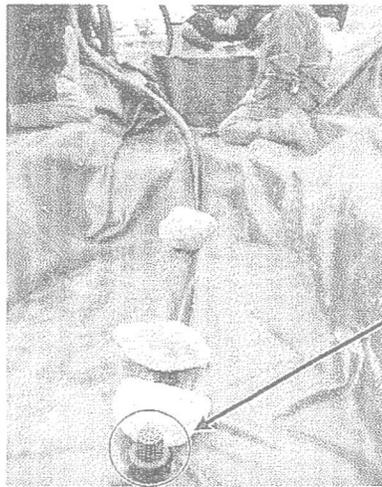


STEP 3. On new ponds, as an option to help hide the drain line, trench the excavation under the liner so the liner can be depressed into the trench, the drain pipe laid on top of the liner and in the trench and then topped off with gravel or rocks. While doing this, excavate the side of the skimmer box hole to permit placement of the plumbing for the drain to enter the skimmer box through the side wall if that is the method of installation you have chosen. (Go to page 4 for step 4 of the front wall installation method.)

Bottom Drain Trench



Drain Pipe and Liner In Place

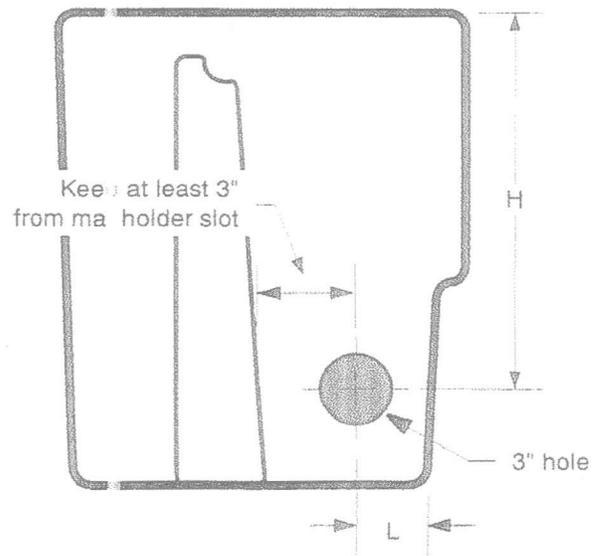


INSTALLATION OF BOTTOM DRAIN PIPING INTO SIDE WALL OF SKIMMER METHOD.

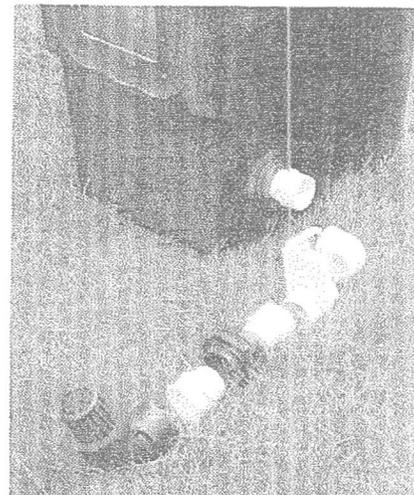
STEP 4. Drill a 3 inch diameter hole for the 2 inch bulkhead fitting in the side of the skimmer. See the following table and diagrams for the hole location.

BOTTOM DRAIN 3" HOLE LOCATION		
Skimmer	H is top of skimmer to center of hole	L is front of skimmer to center of hole
PS301F	14"	4"
SK302P*	14.2"	3.5"
PS701P	14"	4"
SK702P*	15.7"	4"
PS702F	14"	4"
SK700PRO*	10"	5.7"
PS901F	16"	4"
SK900PRO*	16.5"	4"
PS1200F	16"	4"
SK1200PRO*	16.5"	4"
SK1500	16"	7"

*Starter hole provided, dimensions for reference.



STEP 5. Install the bulkhead fitting onto the skimmer box, fitting the round shank through the hole from the inside. Use the neoprene rubber gasket on the inside of the skimmer and the hard plastic washer on the outside. The nut should be tightened from the outside of the box using a 16" Channel Lock pliers. The nut is a reverse thread so the male pipe adapter can be attached without loosening the nut. Tighten the nut until the neoprene gasket bulges slightly. Do not over tighten. By placing the nut on the outside of the box, the threaded bulkhead shank will project outside the box and will not interfere with the removal of the debris tray.



STEP 6. Install the male pipe adapter into the outside of the bulkhead fitting using Teflon tape.

Step 7. Glue a short (3" minimum) pipe stub into the pipe adapter and glue the gate valve into this short length of pipe. Use rigid PVC if you have it available but flex PVC will work.

STEP 8. Glue the 90° Slip x Slip elbow into the gate valve so the open end faces the pond.

STEP 9. Cut a short length of flex or rigid PVC to connect the elbow to the pipe adapter that screws into the bulkhead fitting that will penetrate the liner... **BUT DO NOT GLUE THIS PIPE INTO PLACE, YET....** This piece will be used to mark the liner so the bulkhead fitting in the liner will line up with the plumbing on the skimmer box. It will be glued in step 14.

STEP 10. With the pipe stub running up to the liner, mark the hole location for the bulkhead fitting that will penetrate the liner.

STEP 11. Remove the nut from the liner bulkhead fitting and use the threaded shaft to outline a circle on the liner. Cut a 3" diameter hole in the liner that will accept the bulkhead fitting.

See steps 10-12 of the **INSTALLATION OF BOTTOM DRAIN PIPING INTO FRONT WALL OF SKIMMER METHOD** on page 4 for an optional method of reinforcing the liner with cover tape.

STEP 12. Install the bulkhead fitting through the liner the same as you did on the skimmer box. Use two wrenches to tighten the fitting. One to keep it from spinning and a second to tighten the nut. The bulkhead fitting can be installed with the nut on either side of the liner.

STEP 13. Use Teflon tape to install male pipe adapters to both sides of the liner bulkhead fitting.

STEP 14. Glue in the pipe stub on both ends connecting the liner bulkhead adapter to the elbow next to the gate valve. (See step 9)

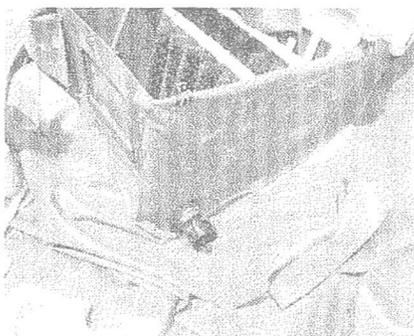
STEP 15. Install the bottom drain line inside the pond, adding any extra 45° or 90° elbows as needed to contour the bottom drain to your pond contours. You do not need to glue the pipe or fittings inside the pond, if desired, to facilitate drain removal during pond cleanouts.

STEP 16. Attach the PSM or Tetra vacuum bottom drain intake assembly to the drain line.

STEP 17. Install rocks and gravel around the drain pipe as desired to hide the drain and drain line.

STEP 18. Before back filling the skimmer box and drain pipe area, install a 10" diameter valve box with 3" tall extension to cover the gate valve. The gate valve can then be back filled and the pond filled with water. It's best to back fill the valve before adding pond water, so the pond liner is supported at the gate valve area.

STEP 19. Check for leaks in the drainage system and test the gate valve by opening and closing the valve.



A combination of both installation methods is possible. Wrap liner on one side of skimmer and use the front wall installation method on page 4. Install the bulkhead fitting at the location listed in table on page 2.

INSTALLATION OF BOTTOM DRAIN PIPING INTO FRONT WALL OF SKIMMER METHOD.

Cont. from Step 3, p 2

STEP 4. Position the bulkhead fitting so the nut will be able to turn past any obstructions in the front skimmer wall. (Below the net and above the horizontal mat shelf for the SK900PRO and SK1200PRO models, below the horizontal mat shelf for the SK700PRO, below the net for the SK1500. The side wall method is the preferred method for the 300 and 700 series of skimmers.)

STEP 5. Use a marker (white is preferred) to outline the hole.

STEP 6. Drill a 3 inch diameter hole for the 2 inch bulkhead fitting.

STEP 7. Check for clearance at the ground level in front of the skimmer and now you know where to locate the trench for the pipe.

STEP 8. After the skimmer has been backfilled and the liner is fully in place, but before it is attached to the skimmer on new pond installations, the hole through the liner is easy to mark by tracing the hole in the skimmer. White marker is the easiest to see.

STEP 9. Use scissors to make a precise hole. Do not make the hole too small. The bulkhead should slip through the hole without stretching the liner.

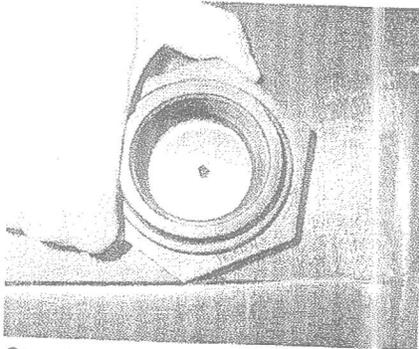
STEP 10. If desired, extra reinforcing tape can be applied to the hole. Also, if desired, use Firestone's Quick Prime Plus to prime the liner for the reinforcing tape.

STEP 11. Let dry until tacky, with a grey haze.

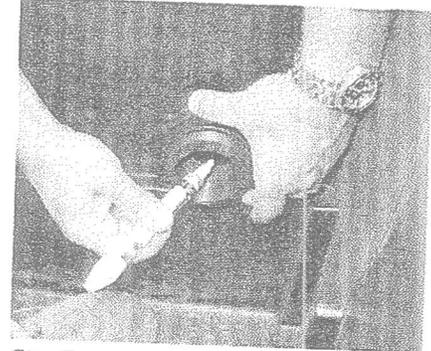
STEP 12. Apply the piece of cover tape to the liner, covering the hole in the liner. Cut the hole through the cover tape, using the hole in the liner as a guide.

STEP 13. Install the bulkhead fitting through the skimmer and liner.

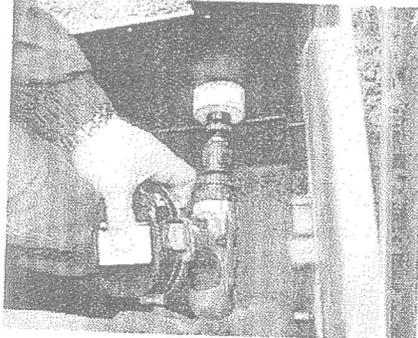
Step 4



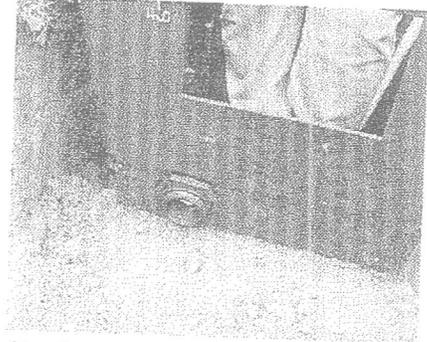
Step 5



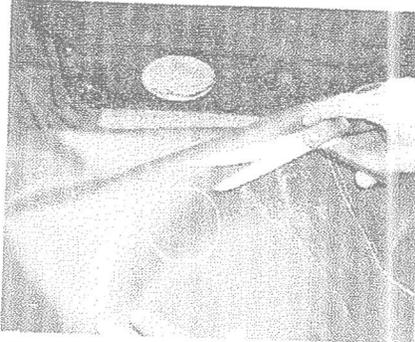
Step 6



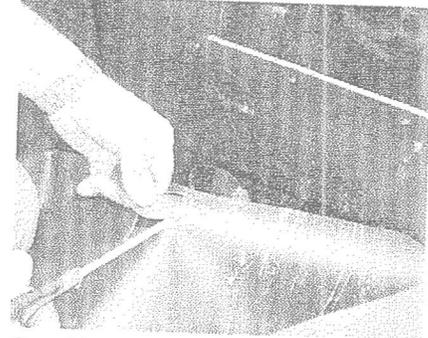
Step 7



Step 8



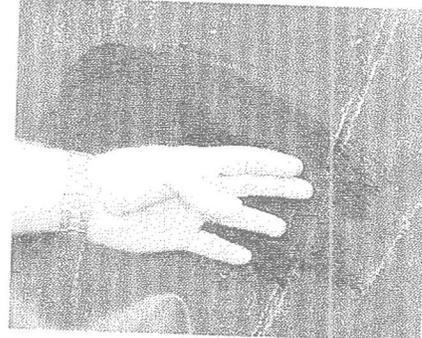
Step 9



Step 10



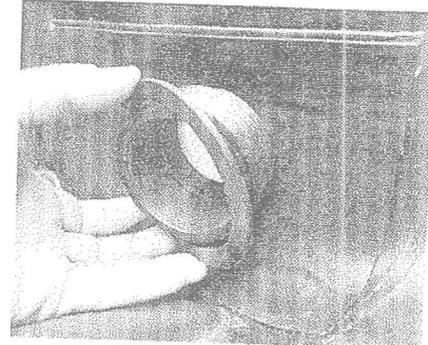
Step 11



Step 12



Step 13





4 CRITICAL ASPECTS OF A PROPERLY DESIGNED POND.

Learn How To Make Your Pond Efficient, Low Maintenance And Eco Friendly
With Pond-CPR™ Available Only From PondSweep Manufacturing.

1. High efficiency skimmer boxes.

The PondSweep® Skimmer's efficient design collects more pond waste using smaller pumps. PondSweep® Skimmers exclusively combine large capacity, one piece filtration nets, removable brushes and fine debris removing mats. The layout of the large skimmer box allows more room for pumps, eliminates the need to cut the filter mat (potentially diluting the cleansing effect of the mat), and signal when they get dirty. Best of all, they prevent your priceless investment in your fish family from becoming engaged with the pump.

2. High efficiency bellows.

PondSweep bellows force the ponds water over the top of the water dam (weir) by sealing all three sides to prevent inefficient leakage. By forcing the water over the top of the dam, it increases the efficiency by increasing the amount of dirt removed per gallon pumped. This means that smaller pumps and possibly bottom drains can be used - leading to reduced energy consumption.

3. High efficiency pump systems.

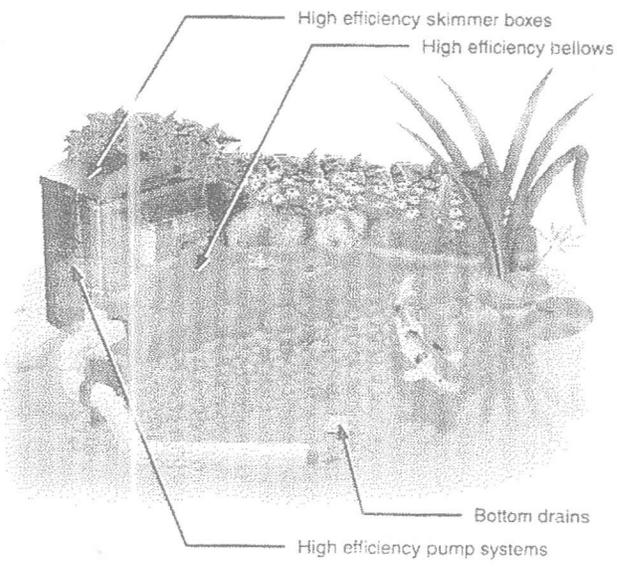
High efficiency two pump systems conserve water, reduce energy usage and decrease time consuming maintenance. PondSweep's patented, high-efficiency bellows coupled with a small (low wattage) pump will still clean a pond well, but can cut electrical costs even more than just using a single high efficiency pump alone.

4. High efficiency circulation.

Most ponds are built to produce high flow, dramatic waterfalls that greatly exceed the low flow requirements of the PondSweep Ecosystem. Low water flows reduce unnecessary filtering. By reducing unnecessary filtering you save considerably on energy usage and decrease the thermal loss of the pond, which will keep the fish healthier and more active. The PondSweep skimmer and bottom drain combination create a high efficiency circulation that reduces the need for excessive high flows and maintenance.

The overall cumulative effect of the patented design reduces pond maintenance from (on average) 4 to 8 hours per month to less than 1 hour per month. Each element is designed to reduce time consuming maintenance.

The results of proper Pond-CPR™ are that fish live longer and healthier lives in a cleaner and more stable environment even with higher fish loads.



Installers Note:

This Instruction manual is to be given to the pond owner.

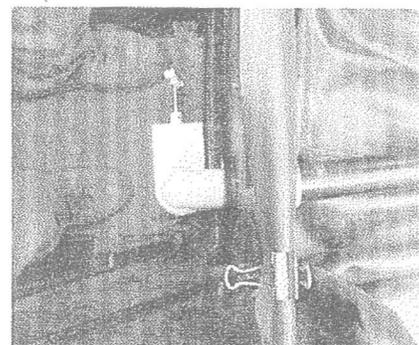


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Step 14. Screw the 2" slip x hub elbow into the bulkhead fitting so that it points downward. Use a 3" minimum piece of pipe to connect the elbow to the gate valve. **DO NOT GLUE** these parts together.

Step 14



STEP 15. Install the bottom drain line inside the pond, adding any extra 45° or 90° elbows as needed to contour the bottom drain to your pond contours. You do not need to glue the pipe or fittings inside the pond, if desired, to facilitate drain removal during pond cleanouts.

Step 15



STEP 16. Attach the PSM or Tetra vacuum bottom drain intake assembly to the drain line.

STEP 17. Install rocks and gravel around the drain pipe as desired to hide the drain and drain line.

Maintenance Notes:

1. The gate valve for the bottom drain is normally left wide open. We estimate that approximately 1/4th to 1/5th of your pond's pump capacity will be pulled through the bottom drain. We recommend pumps rated for 1,000 gph or more when adding a bottom drain to your skimmer. To increase the flow through the bottom drain, simply use a larger pump.

2. When cleaning the skimmer box, close the bellows door on the skimmer first. Check for adequate flow in the drain (see below). Close the gate valve in the bottom drain line. When the skimmer is adequately drained, turn off the pump. After cleaning the skimmer, open the gate valve to the bottom drain first, so it can flush the pipe clean.

3. To check for adequate flow through the bottom drain simply close the bellows and drain the skimmer box. With the box partially drained and the pump still running, the bottom drain fitting should be about 1/2 full of water and the water stream will gush approximately 3-4-inches into the skimmer box. If this is not the case, there may be a rock or other obstruction in the pipe or on the intake.

4. The bottom drain flow is a function of your pump's flow capacity. Locating the skimmer drain differently either in the box attachment point OR locating the drain deeper in the pond will NOT change the flow of water running through the bottom drain. The drain works because as the pump removes water in the skimmer box it becomes lower than water in the pond. Water always seeks to maintain the same level in both the pond and the skimmer, so it fills the skimmer by removing water from the bottom of the pond. More gallons per hour from the pump means greater bottom drain flow. Call us at PSM if you have any questions about the performance of this drain or maintenance requirements.

5. In cold water winter climates where the water temperature is below 40°, the gate valve should be closed when running the skimmer to avoid disturbing the bottom warm layer of pond water. It should remain closed all winter.

Water flow from bottom drain inlet with side entry

