

INSTALLATION INSTRUCTIONS FOR THE “TURBO-FLO”
“STRAIGHT LINE” UV SYSTEMS
“OUT OF POND” INSTALLATION ONLY.

CAUTION – READ CAREFULLY. This UV unit must be installed “**Out of Pond**” and must be **plugged into a G.F.I. receptacle. NO EXTENTION CORDS!!!** Exercise extreme caution when installing the UV system. This unit must be installed to rest on the ground or on a cement pad. Using an out-of-pond pump and filter, the Turbo-Flo should be installed on the filters discharge line back to the pond. **There can’t be any flow restriction devices or ball valves installed after the Turbo-Flo** on the return line back to the pond. Back pressure to the Turbo-Flo, will blow out your sleeves and bulbs. Installation is a simple process, but if done incorrectly, could be quite costly to you.

PRECAUTIONS - Do not look directly at the UV bulbs when the lights are on. Considerable ultraviolet energy is emitted that may produce severe sunburn and/or conjunctivitis with exposure to direct or refracted light. As long as the lamps are in the chamber, it is 100% safe for humans and fish.

PREPARATION – You have been supplied multi-purpose PVC glue and primer. If you do not have experience using these products or working with PVC pipe/tubing, read the instructions carefully. Spa tubing is used primarily for a skimmer and bio-falls kit or a large capacity filter installation. This means it could be retro – fitted or installed between the skimmer and bio-falls using 2” – 3” white or black spa tubing or rigid PVC SCH 40 pipe.

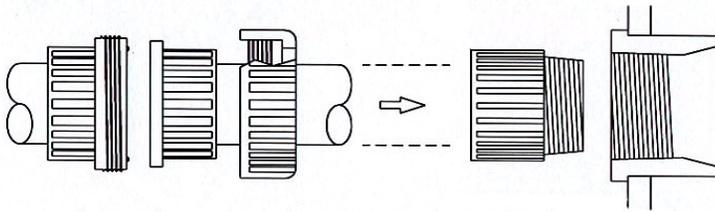
- 1) Choose the best site for installation; this should be within 15’-18’ of your GFI receptacle. You will need at least three feet of exposed pipe/tubing to insert the Turbo-Flo 225, 240, 425, 440 systems or five feet for the Turbo-Flo 2100, 4100 systems in-line.
- 2) The kit includes two male pipe adapters (#9) and two unions (#10) for easy installation or to retro fit to an existing system.
- 3) Remove the Turbo – Flo chamber from the box.

SCH 40 PVC PIPE/TUBING INSTALL INSTRUCTIONS

- 1) Liquid Teflon or tape will be applied to the threads of both male tubing adapters (#9) and screw them into the threaded bushings welded to the Turbo-Flo’s chamber. Using a locking jaw pliers tighten securely. Be careful not to over tighten, cracking the adapter fitting.
- 2) If this is a new install using rigid SCH 40 pipe, PFI suggests that flexible spa tubing be used between both unions and the Turbo-Flo’s chamber. The chamber should rest on a cement pad.

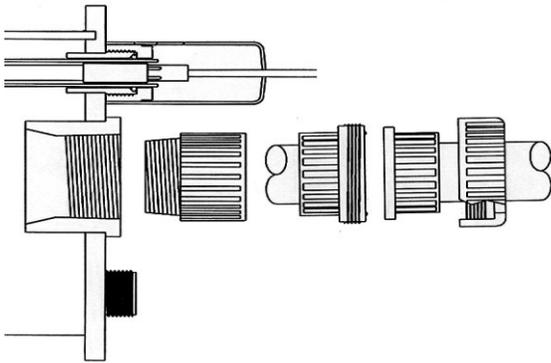
To retrofit the Turbo-Flo in-line to an existing skimmer and falls system or a large capacity filter system, a 3’or 5’ section of exposed tubing is needed.

- a) Cut the tubing at the beginning of the exposed section.
- b) Make a second cut 12” from the cut end of the section that’s exposed. This 12” section will need to have smooth ends for (easy insertion) when gluing the fittings together. Use a file to accomplish this.
- 3) Take a union apart (#10). The female half of the union with the locking nut will be glued to one end of the 12” tubing. The other end of the 12” tubing will be glued into the male adapter.
- 4) Apply PVC pipecleaner to the outside ends of the 12” section of tubing. Apply cleaner to the inside of the male adapter and the female half of the union. Let air dry. Then apply glue to one end of the tubing and insert it into the male adapter. Rotate the fitting a quarter turn just before it butts up inside to the end of the tubing. The fitting will want to back out unless you hold it securely. Hold together for about 30 seconds.



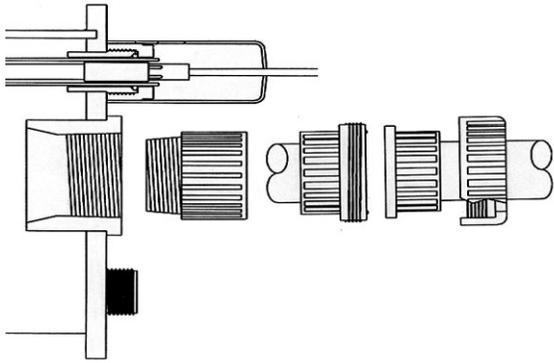
IMPORTANT!! Temporarily insert the female half of the union on the other end of the 12” tubing. Slide the locking nut back on the tubing. Position it so that it is at the very end, against the male adapter. Remove the female half of the union, apply glue to the end of the tubing and re-insert the female half of the union. Rotate a quarter turn and hold it into position.

- 5) Apply PVC pipe primer to the pipe/tubing end that will supply the water to the Turbo-Flo, and the inside of the male half of the union. Let air dry. Then apply glue to the pipe/tubing end and insert male half of union. Rotate a quarter turn and hold it into position.
- 6) **Wait 15 minutes, hand tighten this first glued union. This is for measuring purposes only.**

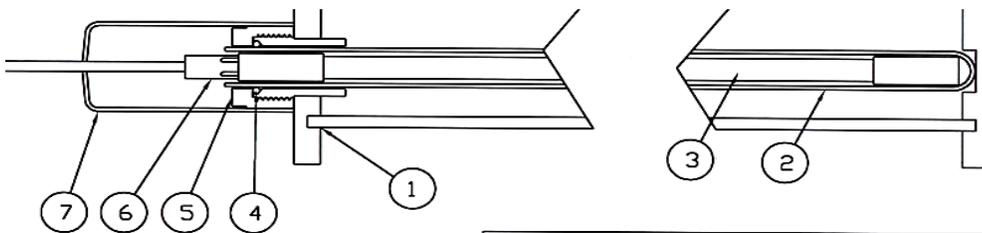


- 7) Now cut the very end of the exposed 3’ or 5’ section of pipe/tubing. File and clean off this end for gluing. Apply the PVC pipe primer to both the pipe/tubing end and the female half of the union. Let air dry.

IMPORTANT! Temporarily insert the female half of the union on the end of the pipe/tubing. Slide the locking nut back on the pipe/tubing, so that it does not interfere with gluing the female half of the union. Remove the female half of the union, apply glue to the end of the pipe/tubing and re-insert the female half of the union. Rotate a quarter turn and hold in position. You should now use PVC cleaner on one end of the remaining section of tubing and the male half of the union. Let air dry. Glue the male half of the union on the cleaned end of tubing. Rotate it a quarter turn and hold into position. Wait 15 minutes, then put together and hand tighten this second union. Lay the other end of this section of tubing next to the Turbo-Flo chamber. Determine the length that you need to cut off, considering that the tubing when glued will slide an 1 1/4” into the male adapter for the chamber. **Before cutting the tubing, Remember – It is better to cut off too little than it is to cut off too much!** You should have some slack to possibly work with later and to fully tighten the unions. If you ever need to remove this Turbo-Flo system, all you need is a section of tubing and one union. This would reconnect the inlet/outlet pipe/tubing ends to complete a required circulation necessity.



Use the PVC cleaner on the final cut of the tubing and the inside of the male adapter screwed into the chamber. Take apart the union on this section, to free up this section. Apply glue to the end of the tubing and insert into the male adapter, rotating it a quarter turn while holding it in place for 30 seconds. Wait 15 minutes, and tighten both unions by hand. You should wait 24 hours before carefully tightening the unions (they easily seal with the “O” rings) or operating the Turbo-Flo system.



TURBO-FLO PARTS LIST		
ITEM	DESCRIPTION	QTY.
1	ULTRAVIOLET CHAMBER	1
2	QUARTZ SLEEVE	2\4
3	ULTRAVIOLET LAMP	2\4
4	O-RING	2\4
5	COMPRESSION FITTING - OPEN	2\4
6	4 PRONG LAMP ADAPTER	2\4
7	RUBBER BOOT	2\4

QUARTZ SLEEVE INSTALLATION

In the box will be 2-4 quartz sleeves (Item #2), 2-4 bulbs (Item #3), and a packet of 6 “O” rings (Item #4). Two extra “O” rings have been included.

Take one quartz sleeve out one at a time, and install the “O” ring to within a quarter inch of the quartz sleeve’s opened end. Slide the quartz sleeve all the way into the **inside depression** of the chamber’s back plate. You may find it easier to install the sleeves with the unit upright. You can put your index finger inside the quartz sleeve to guide it to the end, feeling the depression. The quartz sleeve should appear to be level. With the quartz sleeve in position, push the “O” ring forward to the groove of the glued in black sleeve adapter.

IMPORTANT It is important for the quartz sleeve to be installed correctly. It must be supported by the depression inside the chamber. * Loosely install the compression fitting (Item #5 open end) over the quartz sleeve end and the “O” ring. While holding the quartz sleeve in position with your index finger

inside the sleeve, tighten the compression fitting. Hand tighten only, do not use a wrench. Install either two or four of the quartz sleeves provided.

For a **two-bulb placement**: Install the quartz sleeves parallel to the chamber's base, across from each other.

For a **four-bulb placement**: Install the quartz sleeves both from side to side and top to bottom.

If you only install two, there are 4 compression fittings (Item #14 with closed ends), to use with an "O" ring to seal those two unused remaining black sleeve adapters. It should be placed in the inside groove of the glued in black sleeve adapter. Dampen the "O" ring to hold it in place. At this point, only the quartz sleeves are installed inside the chamber- the bulbs will be installed after the unit has been tested for water leakage.

When all 4 of the compression fittings (opened or closed) are installed, and the chamber's glued fittings and tubing have dried for 24hours, you can test for any water leaks. Run your pump for at least 20 minutes to circulate water through the chamber checking for any leaks. Hand tighten compression fittings or unions as needed. The final position of the Turbo-Flo chamber should have a slight tilt [1/4 of a level bubble] towards the open ends of the quartz sleeves. This is to allow for any condensation to drain back to the black rubber boot.

INSTALLATION OF UV BULBS

If there are no leaks, take one bulb at a time, holding them only by the ceramic ends. Plug them into the 4-prong bulb adapter. Do not touch the glass. If this should happen, wipe your fingerprints off with alcohol. Carefully slide the bulb inside the quartz sleeve slowly until you feel it stop [**Do not wedge the bulb inside the end of the quartz sleeve-it will break the sleeve's end**]. While holding the cord to prevent bulb movement, slide the boot all the way over the compression fitting. You can then pull the cord back slightly, so that the bulb's end is not pushed tightly against the end of the quartz sleeve. Repeat these steps to install the remaining bulbs. The rubber boots have a drainage hole punched in them. It will be located at the very end where the cord exits. Rotate the boot until the hole is on the underside to drain off any water caused by condensation.

Push the transformer box in the ground; close enough to the chamber so that the cords have slack. The cords need to be out of the way of foot traffic. The transformer box should be installed 2" above the ground. Do not pound the transformer box into the ground with a hammer. The transformer is designed to be rain tight. Do not spray with a garden hose. Double-check the boots and sleeves for any leakage. Now plug in the transformer to your G.F.I. receptacle.

- **IMPORTANT** - For new ponds, leave unit off for at least 2-4 weeks until the pond is established biologically. PFI would suggest using liquid bacteria to seed a bio-filter during this period to establish the pond faster biologically.
- **IMPORTANT** – When the pond is biologically established for a period of 6 weeks and the Turbo-Flo is on, test the water in the early A.M., 3 times a week for the first two weeks. The tests for ammonia and nitrite are important. The Turbo-Flo systems handle large volumes of water and flows, which may reduce the bacteria count in your pond. If this occurs, you may see elevations in ammonia and nitrite. To correct this, you may have to control the time the Turbo-Flo is on by using a timer. Turn off the Turbo-Flo until the levels of ammonia and nitrite return to their normal ranges. In 6 hour increments reduce the time on for the Turbo-Flo using a timer. The Turbo-Flo should be on during the daylight hours as much as possible. Try 18 hours on, 6 hours off for a period of time. The ammonia and nitrite tests will determine the hours the Turbo-Flo will be on in a 24-hour period.

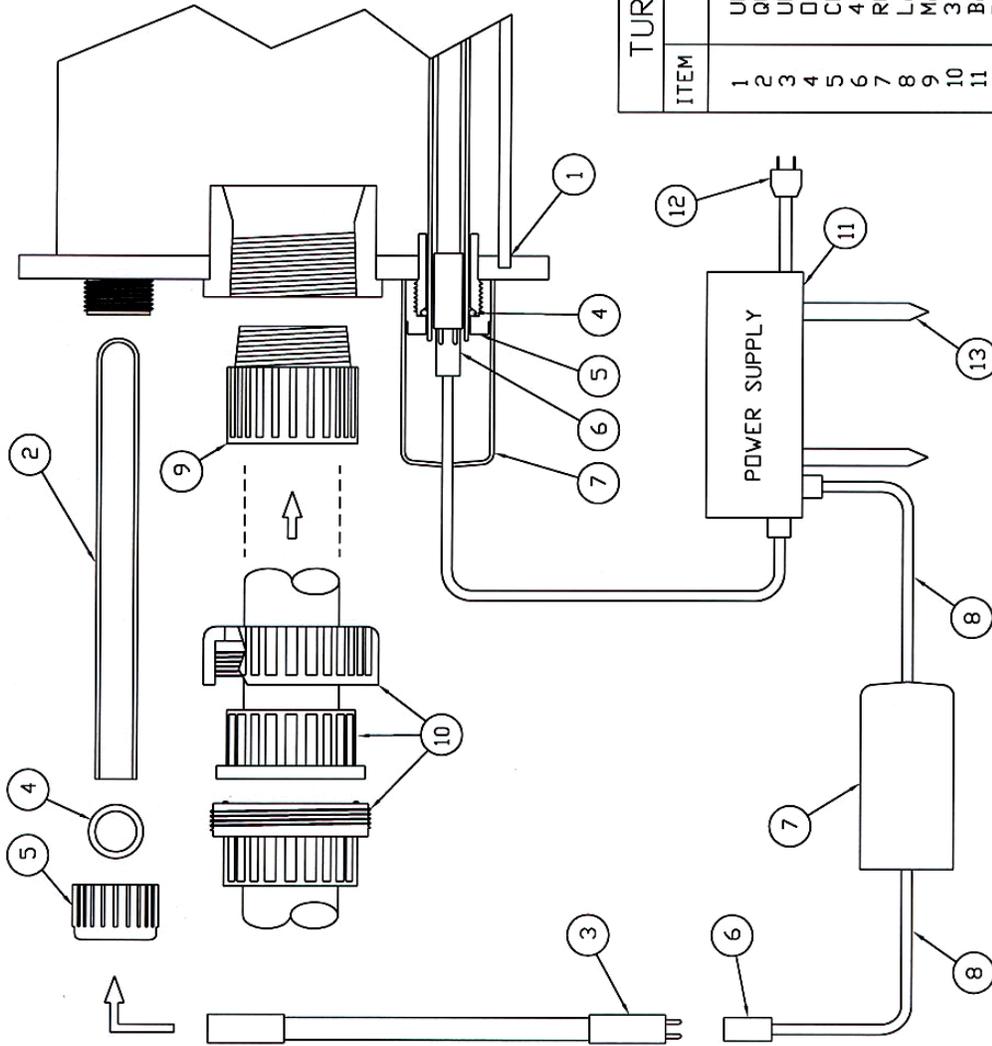
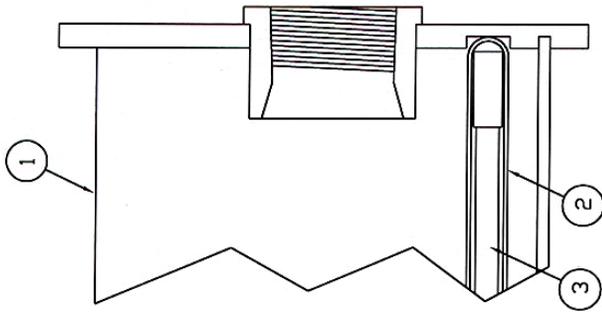
WINTERIZING YOUR TURBO-FLO

If you are shutting down your Turbo-Flo system for the winter, you will have to do the following:

- 1) Unplug the transformer.
- 2) Remove one bulb at a time, with the rubber boot. Unplug the bulb from the four-prong adapter, holding the bulb only by the ceramic ends. Wrap in newspaper and put away.
- 3) Loosen the two unions completely so that the Turbo-Flo could be removed and put away. If you decide to leave it outside, raise one end to remove all water from inside the chamber.
- 4) Remove each compression fitting and slide out the quartz sleeves. Remove the "O" ring, relaxing it, and wrap it in with the sleeve in newspaper to be put away. Re-install the compression fittings loosely and without "O" rings. Re-connect the two unions, but don't tighten.

*The sleeves should be cleaned in the spring using "CLR" or "Lime Away" to remove the mineral deposits before you re-install in the spring.

- 5) Put your transformer away.



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6	4 PRONG LAMP ADAPTER	2/4
7	RUBBER BOOT	2/4
8	LAMP'S POWER CORD	2/4
9	MALE ADAPTER PIPE \ TUBING	2
10	3 PIECE COUPLING	2
11	BALLAST - POWER SUPPLY	1
12	BALLAST - POWER CORD	1
13	STAKES - POWER SUPPLY	4
14	COMPRESSION FITTING-CLOSED	4

⑭ FOR SEALING INLET LIGHTS