

3iQ Ventures LLC

**Switching Current Water Director
(SCWD)
WaveMaker**

Owner's Manual
3/4" & 1" Models

- Introduction
- Important Safeguards
- Installation & Operation
- Maintenance Procedures
- Troubleshooting
- Warranty Information

"Make Waves, Save Energy"

INTRODUCTION

Dear Aquarist,

Congratulations on purchasing a 3iQ Ventures LLC SCWD Wave-Maker.

The SCWD (pronounced “squid”) is a revolutionary device, designed and manufactured to provide years of reliable service. Clearly the most efficient WaveMaker on the market, coupled with its unique and patented free-flow low backpressure features, this product is the best mechanical current generating device available today.

The SCWD was designed and manufactured to the strictest quality standards. Its durable housing and time-tested drive assembly will provide years of reliable, trouble free and silent operation. It was designed with ease of use in mind; eliminating any need for adjustments.

The **3/4” model** has been tested and is approved for use with pump applications not to exceed 1400 GPH, with a minimum rating of 50 GPH.

The **1” model** has been tested and is approved for use with pump applications not to exceed 3500 GPH, with a minimum rating of 500 GPH.

To get the maximum benefit and safest operation from this product, please carefully read and follow all instructions and recommendations contained in this manual.

If you should experience any difficulties while operating your SCWD, or have any questions regarding our products, please feel free to contact 3iQ Ventures LLC either directly or through our representatives.





SAVE THESE INSTRUCTIONS

IMPORTANT SAFEGUARDS

Please observe all **Danger** precautions, **Warnings**, and **Helpful Tips**. Even though this product is not an electrical device, you will be working around electricity and water. Care should always be taken during installation, maintenance, or removal of your SCWD and other aquarium equipment.

WARNING – To guard against injury, basic safety precautions should always be observed, including the following:

DANGER – To avoid possible electric shock, special care should be taken in the use of aquarium equipment.



IMPORTANT SAFEGUARDS Cont.

1. It is important to avoid the possibility of an electrical aquarium accessory or receptacle from getting wet. Position the aquarium stand and tank to one side of a wall mounted receptacle to prevent water from dripping onto the receptacle or accessory plugs. A “drip loop”, shown in diagram 1 on page 11, should be arranged by the user for each power cord connecting an aquarium appliance to a receptacle. The “drip loop” is that part of the cord below the level of the receptacle (or connector if an extension cord is used) to prevent water from traveling along the cord and coming in contact with the receptacle.

DANGER – If the plug or receptacle does get wet, DON'T unplug the cord. Disconnect the fuse or circuit breaker that supplies power to the appliance. Then unplug and examine for presence of water in the receptacle.

2. Unplug any accessory when not in use, before installing or removing parts, and cleaning.
 3. Do not use any aquarium accessory for other than the intended use.
 4. Do not install or store the SCWD or other accessories where they will be exposed to the weather or temperature extremes.
 5. Make certain the device (SCWD) is securely installed and all fittings are tight before operation. If using the 1” model, also make sure the cap is secure and tight.
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SCWD WaveMaker

INSTRUCTIONS

Manufactured to the highest standards of quality and reliability, your new 3iQ Ventures LLC SCWD WaveMaker is designed to provide convenient, trouble-free operation. Careful attention to these instructions is the first step in ensuring that your WaveMaker will perform as intended.

Please Read All Instructions Completely Before Attempting to Install and Operate Your SCWD WaveMaker, Paying Close Attention Specific Instructions for the 3/4 Inch and 1 Inch Models.

Special Note: Although there are many different ways to install your new SCWD, the following instructions reflect the most common method of installation. In addition, even though your new SCWD is not overly sensitive to the normal particulate and debris found in aquarium systems, to ensure long life, it is strongly recommended that water be filtered prior to entering the SCWD.

(1 “ Model Only)

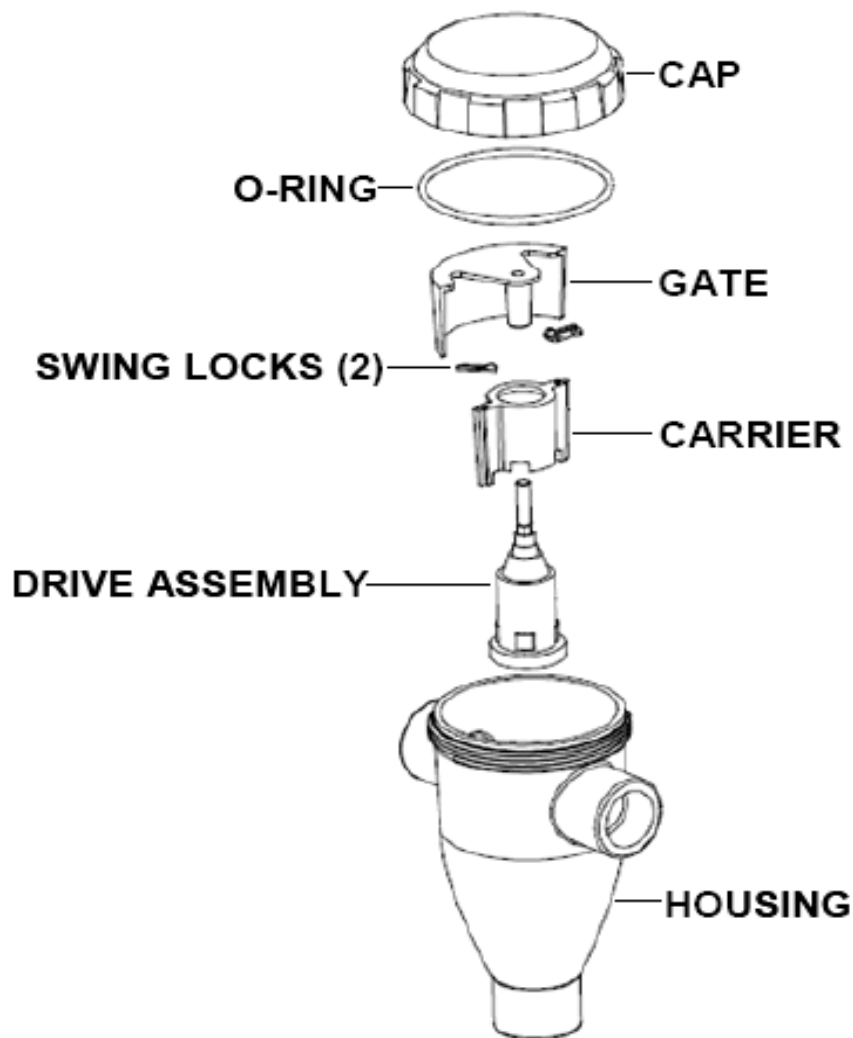
Your new SCWD has come preassembled with the standard drive assembly installed. For installations that require switching speed adjustments, an additional drive assembly and carrier package may be purchased separately.

Instructions for removal and installation of drive assemblies and carriers, or cleaning your SCWD are provided in the Maintenance section of this manual.

INSTRUCTIONS Cont.

If using the **1" Model**, which allows access inside the device, it is a good idea to now familiarize yourself with the individual components that make up the 1" SCWD. Please reference the diagram and part names below to help.

Exploded View of SCWD



INSTALLATION

Your new SCWD can accommodate many installation options to support various pump outputs and tank configurations. We will address the most common options to provide general installation and operating information.

The SCWD can be mounted in line using PVC pipe and fittings, or can be installed using vinyl tubing and barbed fittings. Please follow the steps provided below to install your new SCWD.

Planning is key. Identify the location the SCWD will be mounted. Consider mounting the SCWD in a location which will allow for ease of access to the SCWD. Mounting the SCWD behind or under the tank in the stand or cabinet will provide for ease of adjustments and cleaning.

Decide whether you are going to “hard” plumb using PVC piping, or “soft” plumb using vinyl tubing.

The following information will provide general instructions related to both Vinyl Tubing and PVC installations.

CAUTION: As in any external pump or filter, when mounting the SCWD where it is lower than the aquarium water line, performing maintenance without closing off the water to the SCWD will result in water backflow/siphoning, resulting in water leakage or flooding, which can cause extensive damage and present a SAFETY HAZARD...Please take necessary precautions by installing adequate valving to prevent potential flooding.

INSTALLATION Cont.

Caution: Although your new SCWD is built to the highest quality standards, it is recommended that care be exercised when installing fittings so as to not damage the inlet and outlet ports. Use Teflon Tape. Do Not Use Pipe Dope.

1) PVC Installation (1" Model Only)

Using 1 inch PVC pipe and fittings, plumb in-line as you would normally, using the appropriate materials and tools. To assure a water tight seal, please be sure to use Teflon tape for all threaded fittings and the proper PVC cement for all slip fit connections. **It is also recommended that in-line ball valves and union fittings be installed between the SCWD and water pump and between the SCWD and each outlet to allow for removal and cleaning (if required) and to prevent chance of flooding during maintenance.**

- a. Install 1 inch threaded fittings (3) into the SCWD inlet and outlet ports using Teflon tape to assure proper seal. Wrap the threaded end of the fitting clockwise three times. Be careful not to over-tighten.
- b. Measure and cut two pieces of 1 inch PVC pipe for the two outlets. For best results, it is recommended that both outlet pipes are cut equal in length, leaving the SCWD centered between the two outlet ports. Keeping the two pipes equidistant provides consistent switching duration between the two outlet ports.
- c. Install one pipe on each outlet of the SCWD by attaching 1 inch PVC pipe to each of the fittings using appropriate PVC cement, paying close attention to prevent any cement from entering the SCWD through the outlet ports.
- d. Measure and cut one piece of 1 inch PVC pipe that will be connected to the water pump, canister filter, or powerhead outlet at one end and the SCWD inlet at the other end. It is recommended that an in-line ball valve be installed between the SCWD and water pump to allow for flow adjustment and for ease of removal and cleaning.

INSTALLATION Cont.

e. Install the inlet pipe by attaching 1 inch PVC pipe to the fitting using appropriate PVC cement, paying close attention to prevent any cement from entering the SCWD through the inlet port.

f. Once all pipes and valves are in place, you are now ready to install the outlet elbows and nozzles on each end of the outlet pipes. By combining 1 inch PVC 90 degree elbows to form an angle over the aquarium side, you can adjust the position of the outlet nozzle's to give you the desired current effect. The configuration of the elbow is such that it will hang over the back of the tank on both sides like an upside down "U", ref. diagram 1 on page 11. Please note : There are other ways to plumb this, including use of preformed U-tubes and other such fittings, which are available separately.

2) Vinyl Tubing Installation (1" Model Only)

Using 1 inch (ID) vinyl tubing and fittings, plumb in-line as you would normally, using the appropriate materials and tools. To assure a water tight seal, please be sure to use Teflon tape for all threaded fittings and the proper PVC cement for all slip fit connections. **It is also recommended that in-line ball valves and union fittings be installed between the SCWD and water pump and between the SCWD and each outlet to allow for removal and cleaning (if required) and to prevent chance of flooding during maintenance.**

a. Install 1" threaded hose barbed fittings (3) into the SCWD inlet and each of the outlet ports using Teflon tape to assure proper seal. Wrap the threaded end of the barb fitting clockwise three times. Be careful not to over-tighten.

b. Measure and cut two pieces of 1 inch (ID) vinyl tubing for the two outlets. For best results, it is recommended that both outlet tubes are cut equal in length, leaving the SCWD centered between the two outlet ports. Keeping the two pieces equidistant provides consistent switching duration between the two outlet ports.

c. Measure and cut one piece of 1 inch (ID) vinyl tubing that will be

INSTALLATION Cont.

c. **Cont.** connected to the water pump, canister filter, or powerhead outlet at one end and the SCWD inlet at the other end. It is recommended that an in-line ball valve be installed between the SCWD and water pump to allow for flow adjustment and for ease of removal and cleaning.

To avoid potential leakage, for all connections, please be sure to use a worm clamp for external mounting and a plastic click type clamp for installations that are submerged.

Helpful Tip: To facilitate easy installation, moisten the end of each hose with hot water.

d. Install one hose on each outlet of the SCWD by applying firm but even pressure until each hose is fully seated on the barbed fitting. It is recommended at this point that you install the appropriate hose clamps for added protection against leaks and the possibility of the hose coming loose. Do not over-tighten the clamps.

e. Install the inlet hose using the same procedure noted in 1.d. Do not over-tighten the clamps.

f. Once all hoses and valves are in place you are now ready to install the outlet elbows and nozzles on each end of the outlet hoses. By combining rigid elbows to form an angle over the aquarium side, you can adjust the position of the outlet nozzles to give you the desired current effect. The configuration of the elbows is such that they will hang over the back of the tank on both sides like an upside down "U", ref. diagram 1 on page 11. Please note : there are other ways to accomplish this, including use of preformed U tube fittings and other such fittings, which are available separately.

3) Vinyl Tubing Installation (3/4" Model Only)

Using 3/4 inch (ID) vinyl tubing and fittings, plumb in-line as you would normally, using the appropriate materials and tools. To assure a water tight seal, please be sure to use Teflon tape for all threaded fittings and the proper PVC cement for all slip fit connections.

INSTALLATION Cont.

It is also recommended that in-line ball valves and union fittings be installed between the SCWD and water pump and between the SCWD and each outlet to allow for removal and cleaning (if required) and to prevent chance of flooding during maintenance.

a. Measure and cut two pieces of 3/4 inch (ID) vinyl tubing for the two outlets. For best results, it is recommended that both outlet tubes are cut equal in length, leaving the SCWD centered between the two outlet ports. Keeping the two pieces equidistant provides consistent switching duration between the two outlet ports.

b. Measure and cut one piece of 3/4 inch (ID) vinyl tubing that will be connected to the water pump, canister filter, or powerhead outlet at one end and the SCWD inlet at the other end. It is recommended that an in-line ball valve be installed between the SCWD and water pump to allow for flow adjustment and for ease of removal and cleaning.

To avoid potential leakage, for all connections, please be sure to use a worm clamp for external mounting and a plastic click type clamp for installations that are submerged.

Helpful Tip: To facilitate easy installation, moisten the end of each hose with hot water.

c. Install one hose on each outlet of the SCWD by applying firm but even pressure until each hose is fully seated on the barbed fitting. It is recommended at this point that you install the appropriate hose clamps for added protection against leaks and the possibility of the hose coming loose. Do not over-tighten the clamps.

d. Install the inlet hose using the same procedure noted in 1.c. Do not over-tighten the clamps.

e. Once all hoses and valves are in place you are now ready to install the outlet elbows and nozzles on each end of the outlet hoses. By combining rigid elbows to form an angle over the aquarium side, you can adjust the position of the outlet nozzles to give you the desired current effect.

INSTALLATION Cont.

e. **Cont.** The configuration of the elbow is such that it will hang over the back of the tank on both sides like an upside down “U”, ref. diagram 1, below. Please note : There are other ways to accomplish this, including use of preformed U tube fittings and other such fittings, which are available separately.

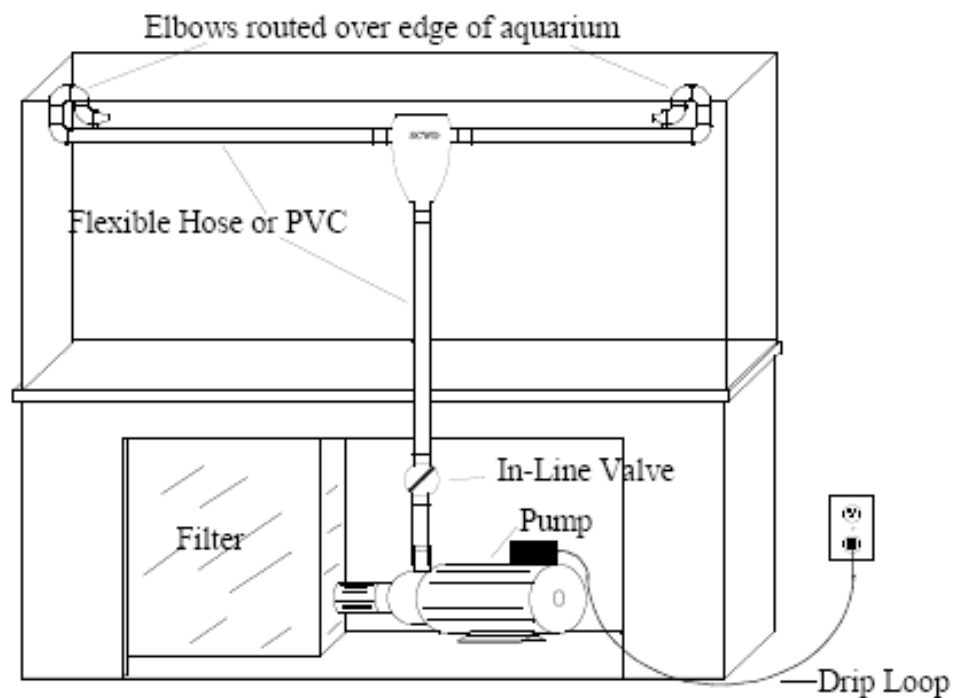


Diagram 1

OPERATION

1) Congratulations! You are ready to begin operation of the #1 Wave-Maker and bring your aquarium to life.

- a. Open the valve between the water pump and your SCWD so that it is approximately half open. This is a precautionary step to prevent a full force surge to the SCWD when using some of the higher volume and pressure pumps.
- b. Apply power to the water pump. Verify water outlets are expelling water and there are no leaks at any of the connections. Verify that the device is switching water flow between the two outlets.
- c. Adjust the valve to desired flow. Watch your fish and corals come alive.

Helpful Tip: Switching speed and current duration is dependent on the volume of water flowing through the SCWD. Higher volume pumps will naturally cause a quicker switching response than lower volume pumps. By adjusting your in-line valve you will be able to regulate both the amount of flow and the switching speed.

MAINTENANCE

1) Removal of Carrier and Drive Assembly (1" Model Only)

Provided all instructions and tips are followed in the previous pages of this manual, your SCWD was designed to be virtually trouble-free. It is recommended, however, that you inspect your SCWD for general serviceability whenever maintaining your aquarium. Inspect your SCWD and all pipes, hoses, valves, and their connections for leaks. Also, to assure proper water flow, inspect inlet and outlet hoses for algae and slime build-up, and clean if required.

Cleaning the inside of the 1" SCWD is possible, but should not be required provided a pre-filter is used. To clean, please follow the simple steps below.

Helpful Tip: To prevent harm to fish and invertebrates, never use soap or detergents when cleaning your aquarium and supporting equipment. Do not subject your SCWD to intense heat, such as boiling or dishwasher, as it will cause parts to warp.

- a. Remove SCWD Cap by turning counter-clockwise.
- b. Remove O-Ring from Cap and inspect O-Ring for wear or cracking.
- c. Unlock the Swing Locks at both sides of the Carrier shoulders. To remove the carrier assembly without removing the gate, you will need access to the Swing Locks. Depending on the orientation of the Gate, you may need to turn the Gate counter-clockwise enough to gain access to the Swing Locks. With your finger and using the small raised tab on the Swing Lock, slide the Swing Lock to either side making sure the Swing Locks are clear and out of the way.
- d. Gently pull out the Carrier and Drive Assembly.
- e. Inspect inside of Housing, including Housing Channel Rails for debris. Flush out Housing with fresh water as required.

MAINTENANCE Cont.

2) Installing Carrier and Drive Assembly (1" Model Only)

To re-install the Carrier and Drive Assembly, please follow the simple steps below.

a. Making sure that Swing Locks are off to the side and completely clear, slide the Carrier and Drive Assembly into both Channel Rails in Housing. **Please Note:** Because the Drive Assembly is secured to the Carrier through a slight friction fit, please make sure you seat the Carrier in the Housing by pressing down on the Carrier and not the Drive Assembly or Gate. Otherwise you may force the Drive Assembly out of the Carrier from below.

Please make sure the Carrier is installed in both Channels and is fully seated, verifying the top Carrier surface is flush with the top of the Channel Rail surface.

b. Once the Carrier and Drive Assembly are in place, move the Swing Locks into the locking position, making sure they are flush with the top of the Carrier and the small hole on the Swing Lock is over the Locking Bumps on the Carrier. To allow access to the Swing Locks, depending on the orientation of the Gate, you may need to turn the Gate counter-clockwise enough to gain access to the Swing Locks. Once you have access, with your finger and using the small raised tab on the Swing Lock, slide the Swing Lock to the locking position. Remember to retighten the Gate if you had to move it to gain access to the Swing Locks. Do not over tighten.

c. Using Food Grade Lubricant, apply a thin coating to entire surface of the O-Ring.

d. Place lubricated O-Ring in Channel of the Housing Cap, making sure the O-Ring is properly seated.

e. Place Cap on the SCWD Housing and hand tighten Cap to Housing, turning clockwise, making sure not to over tighten. Tighten the Cap until the O-Ring makes contact with the Housing and causes slight compression of O-Ring.

MAINTENANCE Cont.

3) Removal of Drive Assembly from Carrier (1" Model Only)

To remove the Drive Assembly from the Carrier, please follow the simple steps below.

- a. Once the Carrier and Drive Assembly has been removed from the Housing, as noted on page 13, remove the Gate from the Drive assembly's threaded shaft by turning counter-clockwise.
- b. Gently slide the Drive Assembly out from the bottom of the Carrier. Slight resistance from the Carrier to Drive Assembly interface is normal. Depending on the amount of debris lodged between the Drive assembly and Carrier, additional force or flushing with fresh water may be required to free the Drive Assembly from the Carrier.
- c. Inspect inside of Carrier for debris. Flush out Carrier with fresh water as required.

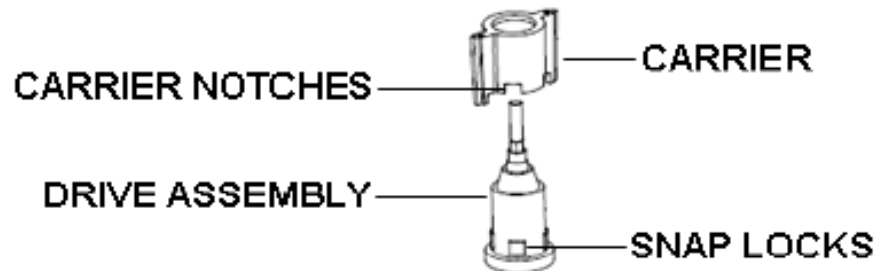
Helpful Tip: To prevent harm to fish and invertebrates, never use soap or detergents when cleaning your aquarium and supporting equipment. Do not subject your SCWD to intense heat, such as boiling or dishwasher, as it will cause parts to warp.

MAINTENANCE Cont.

4) Assembly of Gate, Carrier, and Drive Assembly (1" Model Only)

To re-assemble the Gate, Carrier, and Drive Assembly, please follow the simple steps below.

- a. Slide the Drive Assembly into the Carrier from the bottom side up, until fully seated, making sure Carrier Notches are aligned with Drive Snap Locks at bottom of Drive Assembly (reference diagram below). **Please Note:** There may be slight resistance due to the design of the circular Carrier. This is to hold the Drive Assembly in place during operation and is normal.



- b. Install the Gate onto the Drive Assembly's threaded shaft. By turning clockwise, screw the Gate onto the Drive Assembly's threaded shaft, making sure not to cross-thread the Gate. Keep tightening until the Gate is fully seated and has covered the hex shaped section of the threaded shaft. Caution: Do not over tighten. You will feel increased resistance when the Gate is seated correctly.

- c. To install the Carrier and Drive Assembly into the housing, please refer to the instructions on page 14, Re-installing the Carrier and Drive Assembly.

TROUBLESHOOTING

Most problems related to the proper functioning of the SCWD are attributed to poor, or lack of filtered water entering the SCWD. As mentioned earlier as a *Special Note* in section 1, under Installation, water should always be filtered prior to entering the SCWD. There are very few things that can go wrong with the SCWD. If you should experience difficulties, please use the recommendations for the specific conditions listed below.

SYMPTOMS

1. Switching speed too slow
2. Switching speed inconsistent or stops and starts sporadically
3. SCWD is noisy or stops abruptly

REMEDIES

1. Check pump for proper flow/pressure rating.
2. Check hoses and fittings for algae, slime, and other obstructions.
3. Verify pre-filter is installed and not clogged or restricting flow.
4. Foreign debris lodged in switching mechanism. Flush out or clean SCWD to dislodge debris.
5. For 1" Models, verify Carrier, Gate and Drive Assembly are seated properly in Housing and Swing Locks are in the locked position.

LIMITED WARRANTY

Your total customer satisfaction is our primary goal. 3iQ Ventures LLC is committed to providing only the best quality products in the business. If for some reason you should experience a problem with your product, within 90 days from the date of original purchase, 3iQ Ventures LLC will repair or replace, at its option, any SCWD Wave-Maker which is found to be defective in workmanship or materials. This warranty does not, however, apply to any product that has in any way been modified, cracked, or subjected to negligence or misuse.

3iQ Ventures LLC is not liable for failure of products not manufactured by 3iQ Ventures LLC even though such products may be sold or used in conjunction with 3iQ Ventures LLC products.

Do not return to place of purchase. Please return the unit, together with proof of date of purchase to:

**3iQ Ventures LLC
Aquarium Products Division
1601 N. Sepulveda Blvd.
Manhattan Beach, CA 90266**

Damage or injuries, which are the result of negligence or misuse, are not covered by this warranty, and indirect, incidental or consequential damages are specifically excluded. Since some states do not allow the exclusion or limitation of incidental or consequential damages, this exclusion may not apply to you. This warranty gives you specific rights, which vary from state to state and country to country.

3iQ Ventures LLC

IMPORTANT

Owner's Manual
Supplemental Instructions

1" Model

**Switching Current Water Director
(SCWD)
WaveMaker**

PLEASE READ

Dear Aquarist,

Depending on water flow and specific plumbing configurations, in some cases it may be necessary to install a Flow Extender to get the proper switching response. The Flow Extender will provide a more focused flow of water to the Drive Impeller, which will allow the SCWD to operate under high turbulent, high back pressure, and lower volume applications.

Please reference the supplemental instructions below to install the Flow Extender, which is included with your new SCWD.

Sincerely,

3iQ Ventures LLC

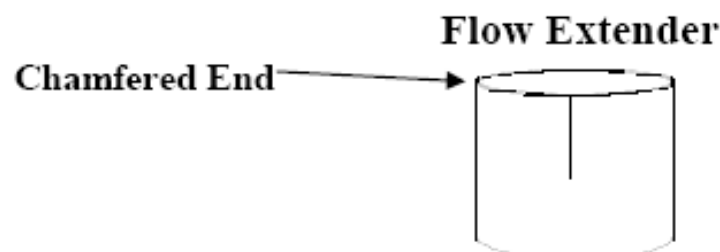
FLOW EXTENDER INSTALLATION

(To familiarize yourself with the parts nomenclature, please reference exploded view of SCWD on Page 5 of your Owners Manual)

Unlock the Swing Locks at both sides of the Carrier shoulders. To remove the carrier assembly without removing the gate, you will need access to the Swing Locks. Depending on the orientation of the Gate, you may need to turn the Gate counter-clockwise enough to gain access to the Swing Locks. With your finger and using the small raised tab on the Swing Lock, slide the Swing Lock to either side making sure the Swing Locks are clear and out of the way.

Gently pull out the Carrier and Drive Assembly.

Install the Flow Extender, *chamfered end*, into the inlet cavity



FLOW EXTENDER INSTALLATION Cont.

pressing down firmly with your fingers or other suitable method. This press fit will adequately hold the Flow Extender in place.

Making sure that Swing Locks are off to the side and completely clear, slide the Carrier and Drive Assembly back into both Channel Rails in the Housing.

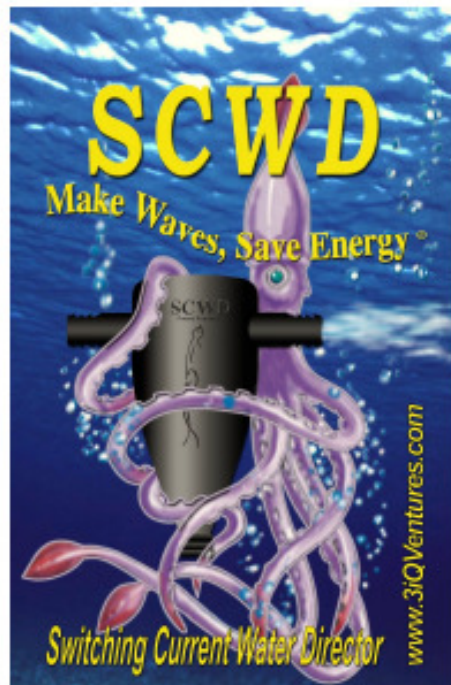
Please Note: Because the Drive Assembly is secured to the Carrier through a slight friction fit, please make sure you seat the Carrier in the Housing by pressing down on the Carrier and not the Drive Assembly or Gate. Otherwise you may force the Drive Assembly out of the Carrier from below.

Please make sure the Carrier is installed in both Channels and is fully seated, verifying the top Carrier surface is flush with the top of the Channel Rail surface.

Once the Carrier and Drive Assembly are in place, move the Swing Locks into the locking position, making sure they are flush with the top of the Carrier and the small hole on the Swing Lock is over the Locking Bumps on the Carrier. To allow access to the Swing Locks, depending on the orientation of the Gate, you may need to turn the Gate counter-clockwise enough to gain access to the Swing Locks. Once you have access, with your finger and using the small raised tab on the Swing Lock, slide the Swing Lock to the locking position. Remember to retighten the Gate if you had to move it to gain access to the Swing Locks. Do not over tighten.

Place Cap on the SCWD Housing and hand tighten Cap to Housing, turning clockwise, making sure not to over tighten. Tighten the Cap until the O-Ring makes contact with the Housing and causes slight compression of O-Ring.

You have completed installation of the Flow Extender. Please refer to Page 12 of your Owner's Manual for start-up.



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