Owners Manual

50Hz Fountains

2400EVX, 3400EVX, 4400EVX

2400EJ, 3400EJ, 4400EJ

Contents

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CE

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 CAUTION

 NOTICE (NOTE)

These international safety symbols are used throughout this manual to inform the owner of important safety information and notices for safe and effective use of the equipment.

Important Safety Instructions

 **CAUTION**

- **Under NO circumstances should anyone enter the water with the electrical equipment connected and/or in operation. It is NEVER recommended to enter the water with the equipment in operation.**
- **Caution should be used when dealing with any electrical equipment with moving parts.**
- **NEVER run the unit out of water. It will damage the seals and create a dangerous situation for the operator.**
- **Extreme caution should be used around water, especially cold water, such as in Spring, Fall, and Winter, which poses a hazard in and of itself.**
- **NEVER lift or drag the unit by the power or light cord. If you need to pull the unit to the side of the pond, use the anchoring ropes.**
- **Do not use waders in deep ponds/lakes or ponds/lakes with drop-offs, drastic slopes, or soft bottom material.**
- **Do not use boats that tip easily for fountain installation, such as a canoe, and follow all boating safety rules and regulations, including wearing a PFD. (Personal Flotation Device)**
- **The unit is supplied with an internal grounding conductor. To reduce the risk of electrical shock, be certain that the unit is plugged/connected to an approved RCD (GFCI) protected circuit.**
- **Means for disconnection must be incorporated in the fixed wiring in accordance with local and national wiring rules.**
- **Consult a qualified electrician for electrical installation.**

General description of equipment and function

Fountain/decorative aerator
Electrically driven submersible pump designed to improve water quality with water movement and aeration in a decorative display.

Intended use and limits of use

Kasco equipment is only intended for specific uses as detailed in this owner's manual. Intentional misuse could result in injury, damage to the product, and surrounding property.

Intended uses are as follows:
Fountains/decorative aerators: To provide aeration and a decorative display to ponds, lakes, and similar bodies of water. Fountains and decorative aerators are provided with additional guarding to prevent accidental contact while operating.

Installation, adjustment, maintenance, and removal of this equipment should be limited to experienced maintenance persons or trained professionals. If you are not sure how to install or operate any Kasco products call your local distributor, contact an electrician, or contact Kasco customer service at www.kascomarine.com for further assistance.

Installation requirements:

- Read and understand all instructions and safety warnings prior to installation and use.
- Equipment must be installed as required by the instructions.
- Do not use this equipment outside of its intended purpose, or if site conditions would pose a dangerous installation.
- To be installed and operated only by an adult. Not to be used by children.
- Never install in areas where swimming is allowed or where people enter the water.
- Never use in a swimming pool.
- Do not use this equipment for intentional weed removal, sediment removal or dredging.
- Follow all local and national electrical wiring rules for the electrical circuit feeding this equipment. Failure to comply may result in injury.
- All equipment must be powered from an RCD (residual current device) or GFCI (ground fault

circuit interrupter) protected circuit.

- Do not modify any mounting hardware or guarding provided with this equipment. All guarding purchased with a unit must be installed.
- This equipment is intended to operate without interaction from personnel. Never to be manipulated, moved, maintained, or adjusted while in operation. Damage or injury could result.
- The general public must be made aware of the installation and warned of the installation to prevent misuse or interference with the equipment.
- This equipment is intended to be used in water only. The equipment should only be operated out of water if required to troubleshoot operation and during initial startup of the equipment. The instructions provide detailed warnings and instructions for such activities and should only be performed by a trained person.

Unit Specs

Model	Voltage range	Operating amps	lock rotor amps
2400EVX	208-240	2.2@220V	6@220V
3400EVX	208-240	3.6@220V	9@220V
4400EVX	208-240	5.9@220V	20@220V
2400EJ	208-240	2.2@220V	6@220V
3400EJ	208-240	3.8@220V	9@220V
4400EJ	208-240	6.5@220V	20@220V

Utility requirements:

The Electrical circuit must be provided to supply sufficient voltage and amperage to the unit. These ratings are listed in the above table (unit specs). This circuit must also include a disconnect means and short circuit protection.

Quick Disconnect Installation

Important – Read Carefully Before Installation

Before using the connector, it is important that these instructions are carefully read and understood to ensure the connector system is completely water tight and electrically safe.
IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN.

The socket (female) insert of the connector must be the live part of the connector from the supply. The pin (male) insert of the connector must lead to the load or electrical device. On 50Hz units, the pin (male) insert of the connector is installed at the factory. To ensure efficient sealing, use only smooth circular cable.

Pin Insert (Installed on Stub Cord)

Socket Insert (User Installed)

Note:
White gland for 9-11mm O.D.
Yellow gland for 13-15mm O.D.

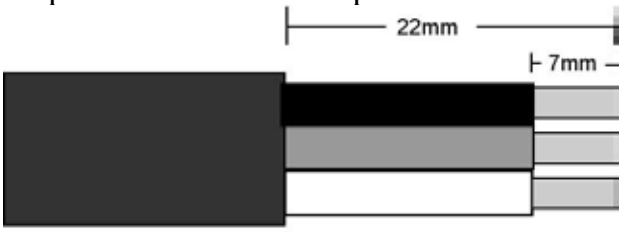
Assembly/Wiring Instructions

1. Remove the socket insert from the housing of the connector. There is a slot for a flat blade screwdriver in the center of the insert.

Note: The inserts have a LEFT HAND THREAD and should be turned clockwise to remove.

2. Remove the gland nut and gland from the rear of the housing and slide on to the cable. Make sure the gland is orientated with the stepped edge facing the gland nut (see picture).

3. Prepare the cable and strip wire ends as shown.



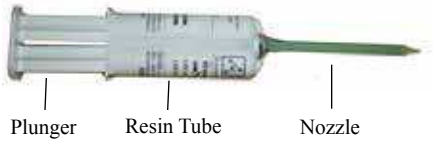
Wire Stripping

4. Insert the stripped wire ends into the terminals on the back of the Pin/Socket insert and fully tighten the wire retention screws. (Refer to figure for correct wire orientation).

Figure 5:
Wire Connections
Brown wire to terminal L
Blue wire to terminal N
Green/Yellow wire to terminal E

After the wires have
been connected securely, pull the cable and insert back into the housing and tighten with a screwdriver to ensure the insert is seated correctly. Note: LEFT HAND THREAD, turn the insert counter clockwise to tighten.

5. Prepare your supplied Resin Kit by removing the cap from the resin tube and pushing the resin nozzle onto the tube. Then twist the nozzle to lock in place.



Before applying to the quick disconnect, use the plunger to evenly push out a small amount of resin to get a proper mix of of the 2-part epoxy. Then apply resin into the housing, enough to cover the wires and contacts. The resin should be about 3mm onto the cord jacket. Note: Adding too much resin may cause excess to be forced into the female end of the pin connector, preventing proper connection of the two halves.

Cut-Away disconnect shown with clear resin. Note amount that is covering cord jacket.

6. Slide the gland and gland nut along the cable into the body and tighten the gland nut securely. No drying time is needed for the epoxy before full assembly.

7. Once the two subassemblies have been completed, they can be joined together. Plug pin assembly into the socket assembly and tighten the large blue nut securely. The blue nut should be hand tightened only. (See figure below).

Note: There is a small gap after tightening

For seasonal removal, your quick disconnect includes an optional water tight cover. Simply separate the quick disconnect and insert the sealing cover into the large blue nut half and tighten firmly.

Strain Relief

The Strain Relief must be installed to protect the Quick Disconnect from damage due to excessive strain. The Strain Relief should be installed on the user supplied cord length (not on the Kasco supplied stub cord). It should be position about 15cm from the Quick Disconnect. To install, insert the narrow end of the elongated clamp with the chain connected into the wide end of the short clamp. Use a rubber mallet to tap the two pieces together securely. A Nylon Tie can be used to keep it attached to the cord. The chain can then be attached to the float.

Wire Sizing & Gland Sizing

The chart below shows the proper Gland to be used with different cord sizes. The measurements are based on the Outside Diameter (O.D.) of the cord. Smooth, round cords should be used.

Kasco Quick Disconnect 50 Hz Size Chart:

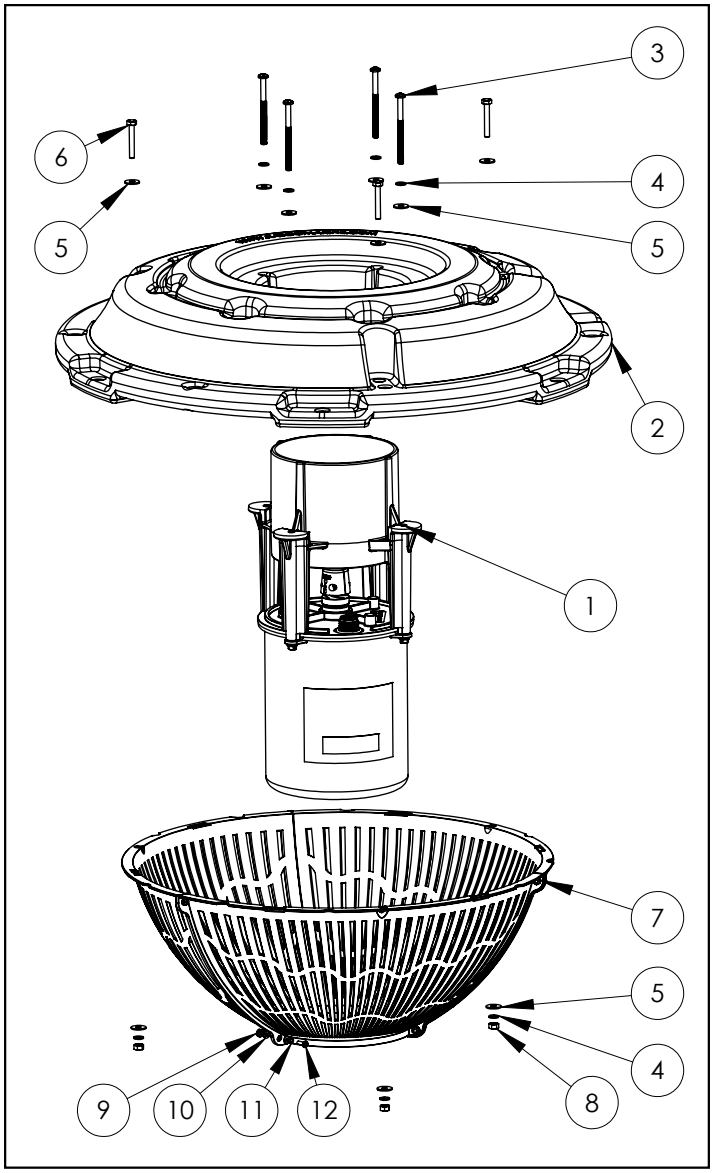
Gland	O.D. of Cord
Grey	7-9mm
White	9-11mm
Black	11-13mm
Yellow	13-15mm

Kasco 50 Hz Equipment Wire Size Chart

Model	Cord Length			
	10m	30m	60m	90m
2400EVX	1.5mm^2	1.5mm^2	2.5mm^2	2.5mm^2
2400EJ	1.5mm^2	1.5mm^2	2.5mm^2	2.5mm^2
3400EVX	1.5mm^2	1.5mm^2	2.5mm^2	2.5mm^2
3400EJ	1.5mm^2	1.5mm^2	2.5mm^2	2.5mm^2
4400EVX	1.5mm^2	1.5mm^2	2.5mm^2	4mm^2
4400EJ	1.5mm^2	1.5mm^2	2.5mm^2	4mm^2

2400EVX, 2400EJ, 3400EVX, 4400EVX Parts

1. EV or EJ Aerating Fountain (Unit with cord or stub cord) (1)
2. Float(with two 50' mooring ropes attached) (1)
3. 1/4-20 x 3 1/4" Phillips Pan Head Screw (4)
4. 1/4" split washers (7)
5. 1/4" (3/4" outer diameter) Flat Washer (10)
6. 1/4"-20 x 1-3/4" Hex Head Bolt (3)
7. Bottom Screen Section (3)
8. 1/4"-20 Nut (2)
9. #8 nut (6)
10. #8 flat washer (12)
11. #8 lock washer (6)
12. #8 x 1/2" Screw (6)



Also included: (not pictured)

- Interchangeable nozzles for 2400EJF only (See 2400EJF Nozzle Options section)
- Nylon Cable Tie

TOOLS & SUPPLIES NEEDED

A. Anchors or stakes for installing unit (2)
B. # 2 Phillips head screw driver
C. 208-240V Electrical Supply near pond on a post
D. 7/16" (12mm) Socket and Ratchet
E. 7/16" (12mm) Wrench

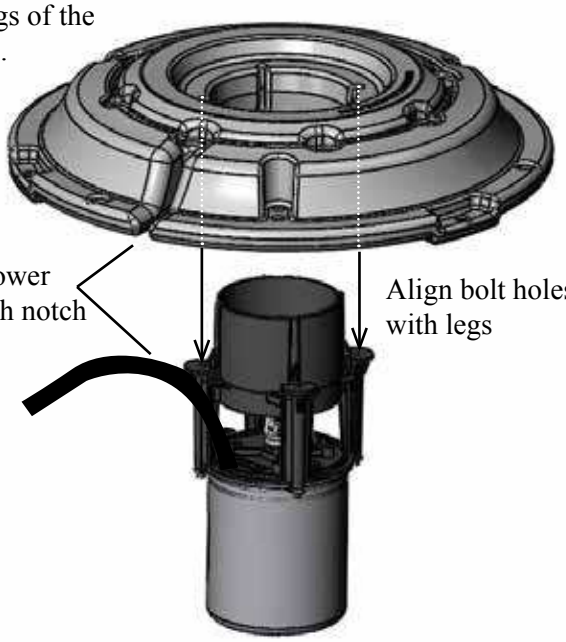
EVFX Pattern Size Chart

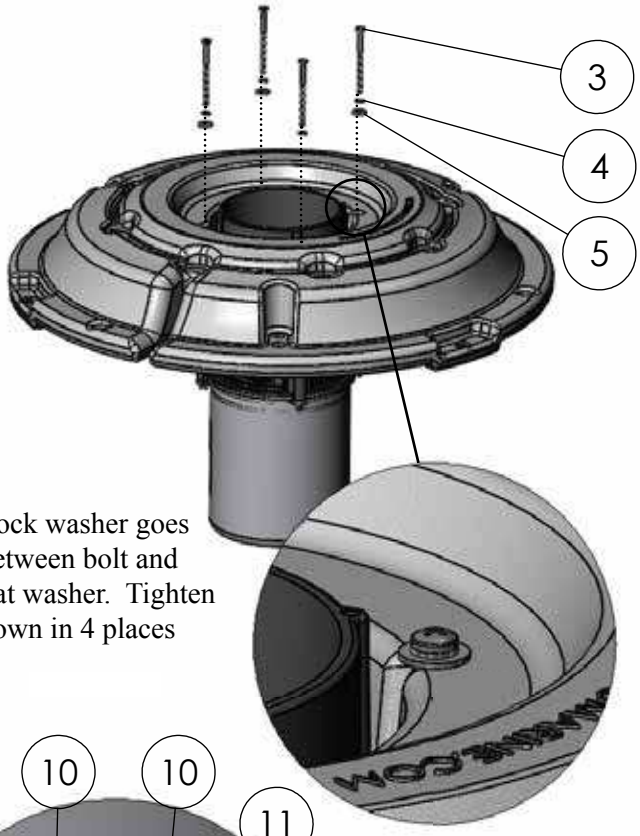
All produce a V-shaped display.

Model	Height	Width
2400EVX	1.15 m	4.3 m
3400EVX	1.7 m	6.1 m
4400EVX	1.7 m	6.7 m

2400EVX, 2400EJ, 3400EVX, 4400EVX Assembly Instructions

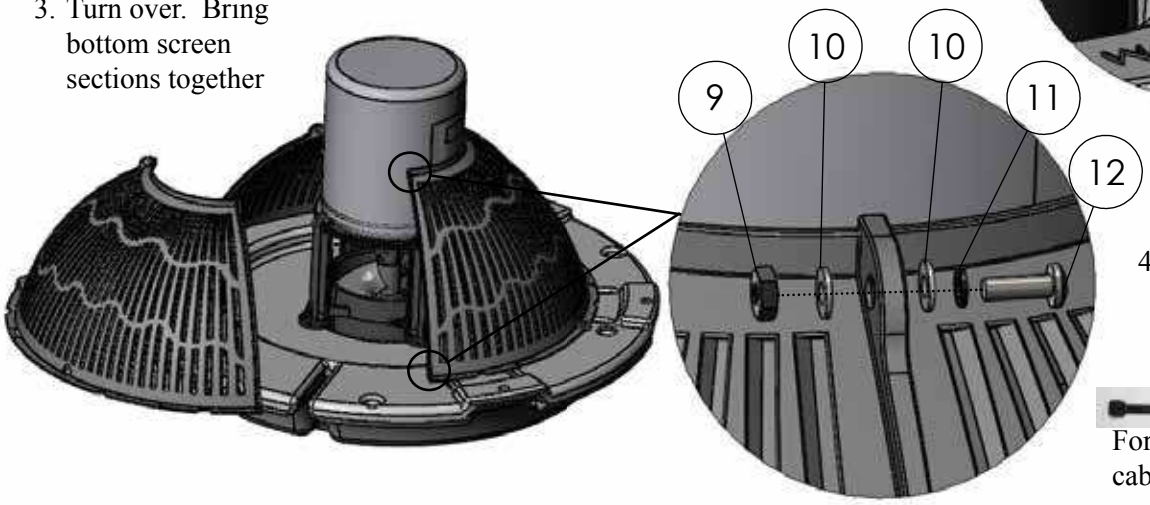
1. Rest the float on the 4 legs of the housing.





2. Lock washer goes between bolt and flat washer. Tighten down in 4 places

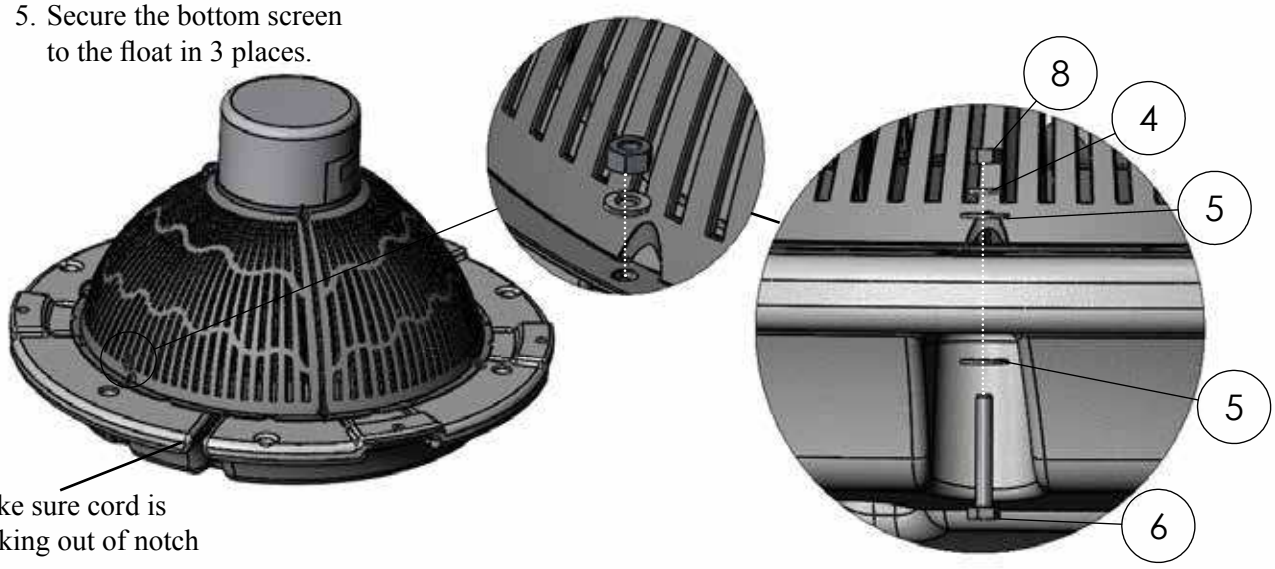
3. Turn over. Bring bottom screen sections together



4. Tighten down in 6 places to hold the screen together.

For quicker assembly, use cable tie instead

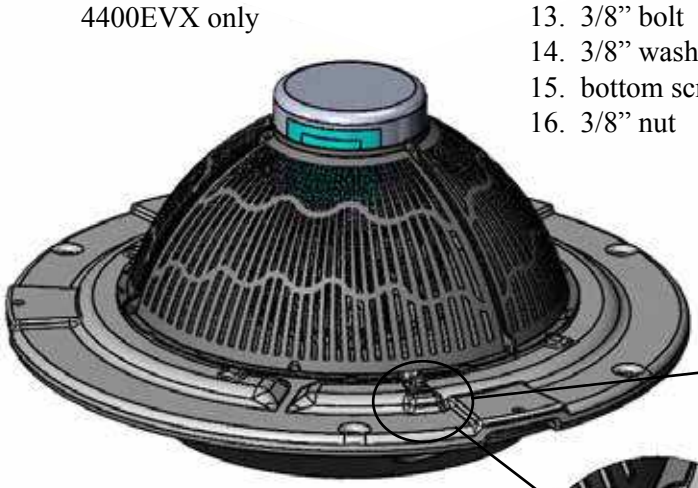
5. Secure the bottom screen to the float in 3 places.

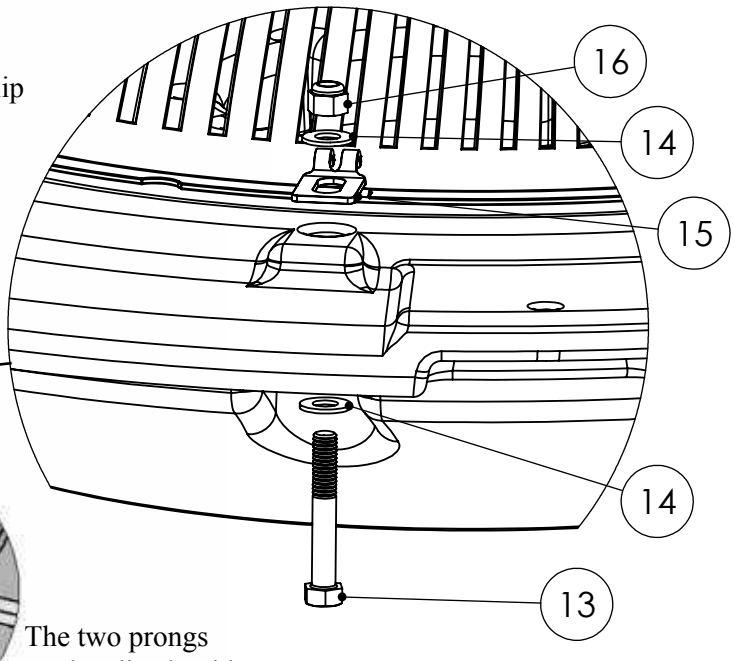


Make sure cord is sticking out of notch

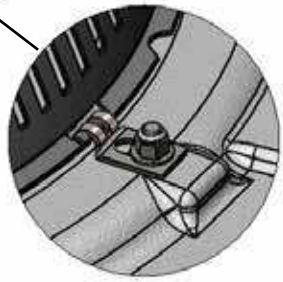
4400EVX only

13. 3/8” bolt
14. 3/8” washer
15. bottom screen clip
16. 3/8” nut



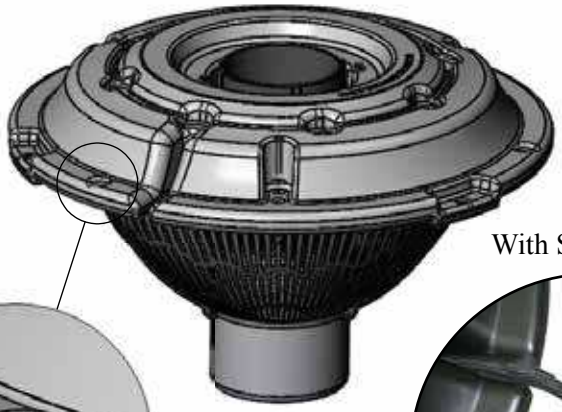


6. Secure the bottom screen to the float with the screen clip and hardware.

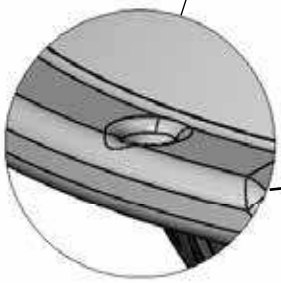


The two prongs on the clip should straddle a wire on the screen

7. Turn upright. Secure power cord to rope hole



With Strain Relief



OR

Without Strain Relief

2400EJ only

8. Choose Nozzle. Fit bolt into the molded socket on the nozzle and thread into the inner cone of the pump.

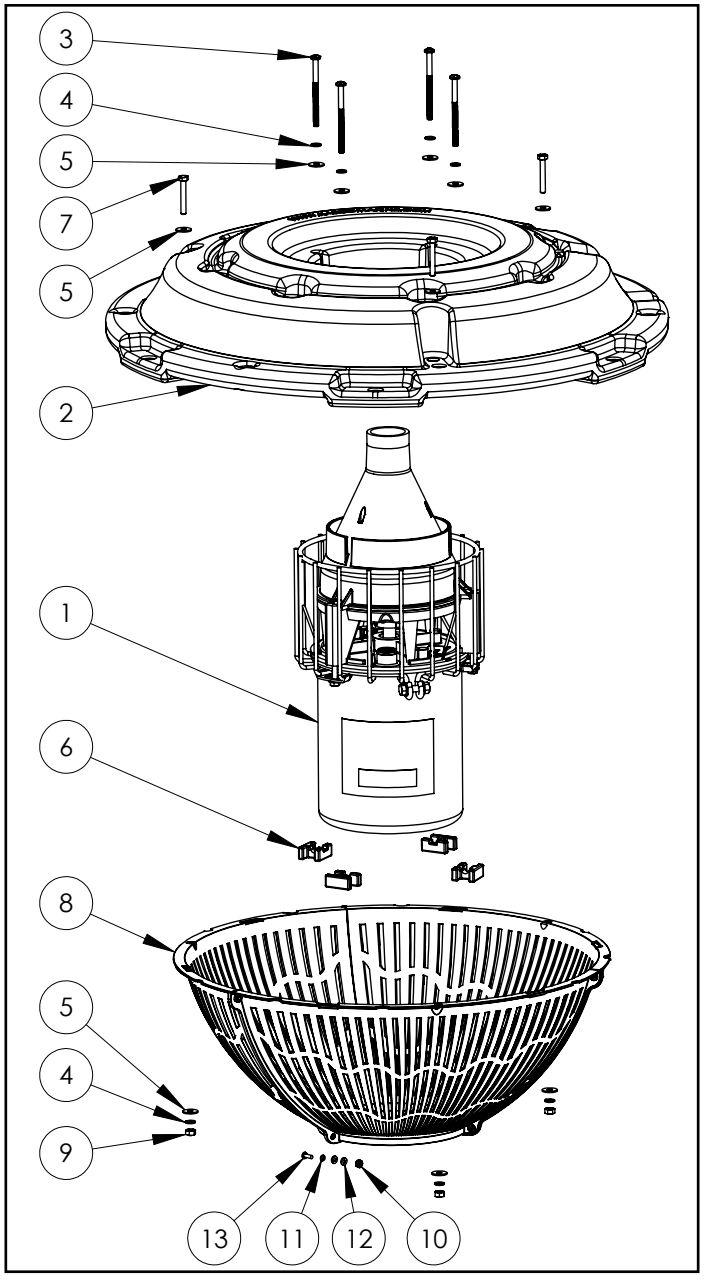
9. If ready to install in the pond, go to Installation instructions.

3400EJ, 4400EJ Parts

1. Aerating Fountain (Unit with cord or unit with Disconnect) (1)
2. Float (with two 50’ mooring ropes attached) (1)
3. 1/4-20 x 4” Phillips Pan Head Screw (4)
4. 1/4” split washers (4)
5. 1/4” (3/4” outer diameter) Flat Washer (10)
6. Float Retaining Clips (4)
7. 1/4” x 1-3/4” Hex Head Bolt (3)
8. Bottom Screen section (3)
9. 1/4”-20 Nut (3)
10. #8 nut (6)
11. #8 flat washer (12)
12. #8 lock washer (6)
13. #8 x 1/2” Screw (6)

4400EJ only:

14. 3/8” bolt (2)
15. 3/8” washer (4)
16. bottom screen clip (2)
17. 3/8” nut (2)

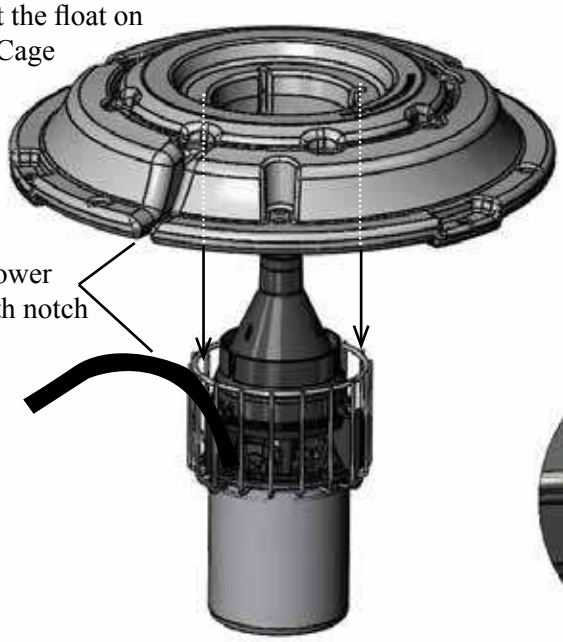


Also included: (not pictured)

18. Interchangeable nozzles
    (See 3400EJ, 4400EJ Nozzle Options section)
19. Nylon Cable Tie

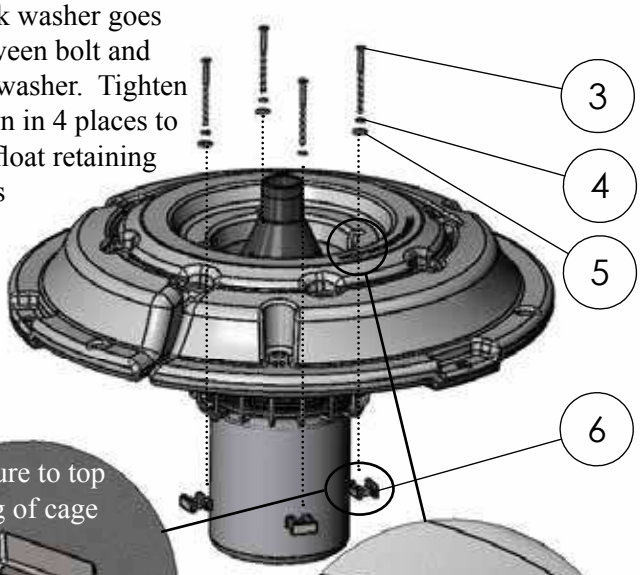
3400EJ, 4400EJ Assembly

1. Rest the float on the Cage

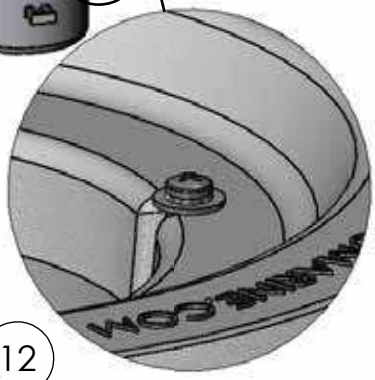


Align power cord with notch

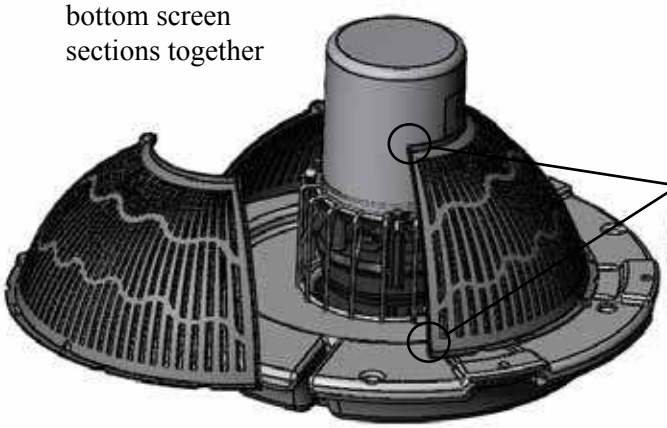
2. Lock washer goes between bolt and flat washer. Tighten down in 4 places to the float retaining clips

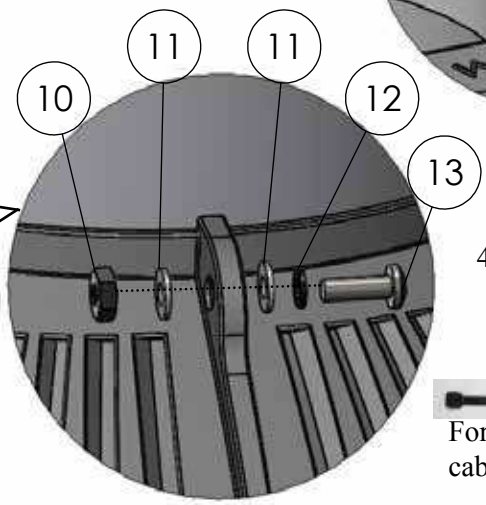


Secure to top ring of cage



3. Turn over. Bring bottom screen sections together



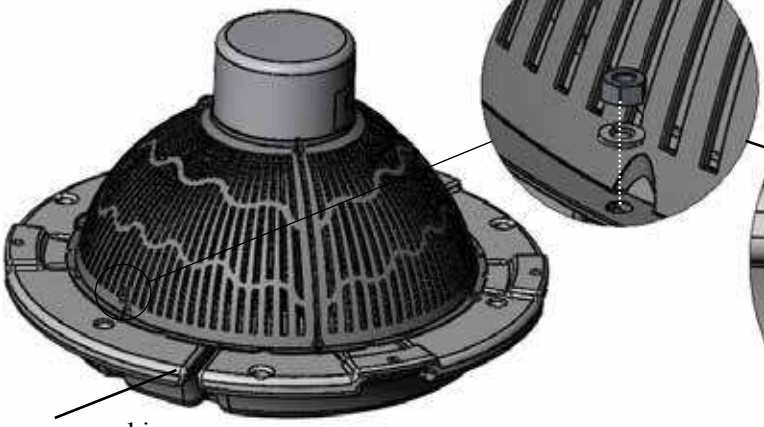


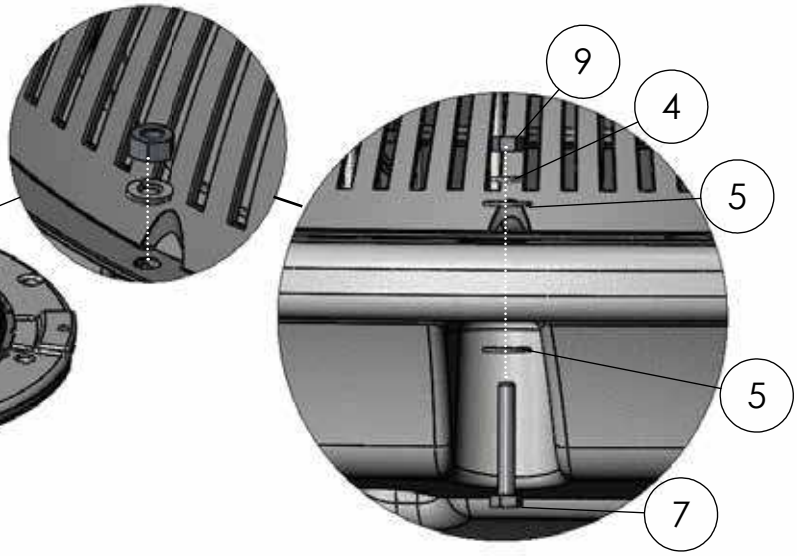
4. Tighten down in 6 places to hold the screen together.

For quicker assembly, use cable tie instead

3400EJ only

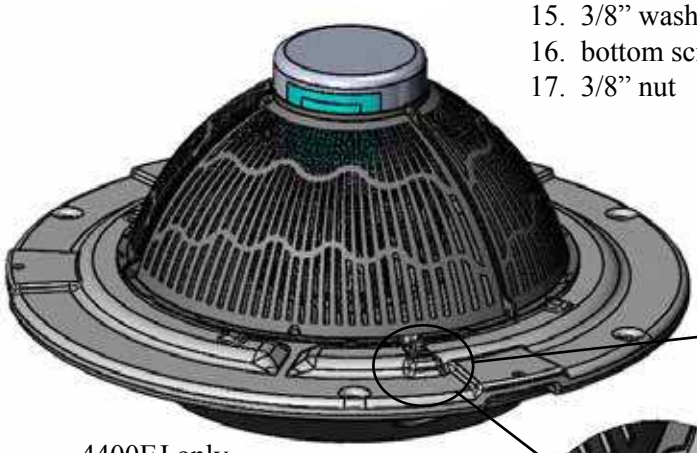
5. Secure the bottom screen to the float in 3 places.

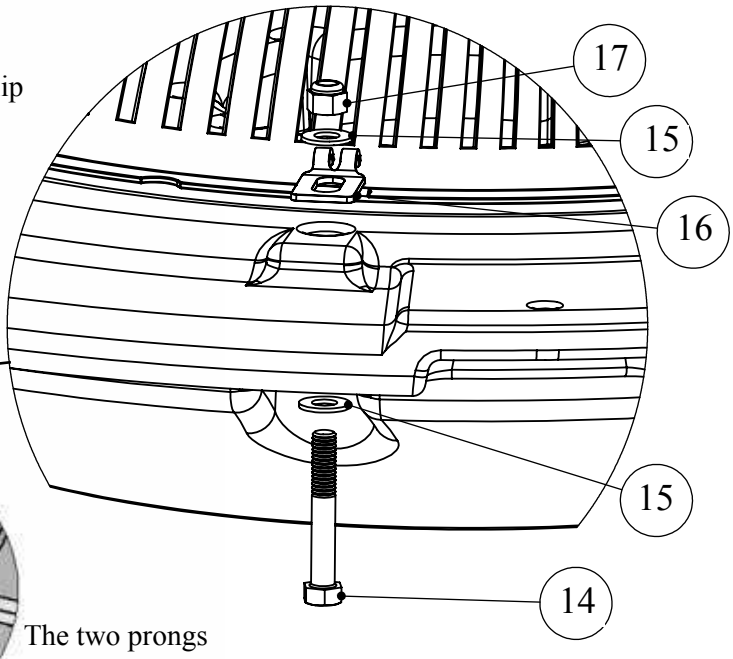




Make sure cord is sticking out of notch

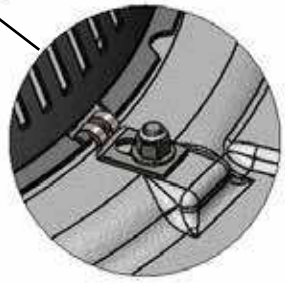
14. 3/8” bolt
15. 3/8” washer
16. bottom screen clip
17. 3/8” nut





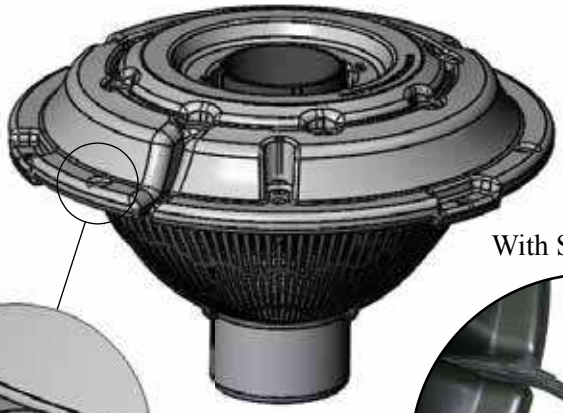
4400EJ only

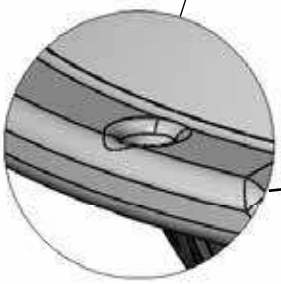
6. Secure the bottom screen to the float with the screen clip and hardware.



The two prongs on the clip should straddle a wire on the screen

7. Turn upright. Secure power cord to rope hole





With Strain Relief

OR

Without Strain Relief

8. Choose Nozzle. Fit bolt into the molded socket on the nozzle and thread into the inner cone of the pump.

9. If ready to install in the pond, go to Installation instructions.

2400EJ, 3400EJ, 4400EJ Nozzle Options

NOTE: Pattern sizes listed are approximate. Variations in voltage caused by regional electrical differences or voltage drop due to long power cords may result in reduced pattern sizes.

- The Cypress is the only nozzle that uses the separate collar labeled C2.
- The Cypress, Linden, Willow, and Juniper nozzles use the 3/8” x 4” bolt.
- The Sequoia nozzle uses the shorter 3/8” x 2.25” bolt.

To install, simply drop the bolt through the nozzle and thread into the top of the cone on the fountain.

Cypress Display: The Cypress nozzle (marked C1 on fin) makes use of the collar (marked C2 on the top rim) and the 3/8” x 4” bolt.



Model	Height	Width
2400EJ	1.3 m	2.8 m
3400EJ	1.8 m	5.3 m
4400EJ	n/a	n/a

Linden Display: The Linden nozzle (marked L inside one of the fins) uses the 3/8” x 4” bolt.





Model	Height	Width
2400EJ	1.3 m	3.7 m
3400EJ	2.1 m	6.1 m
4400EJ	3.4 m	7.3 m

Willow Display: The Willow nozzle (marked W on the inside of the cone) uses the 3/8” x 4” bolt.



Model	Height	Width
2400EJ	0.9 m	3.5 m
3400EJ	1.4 m	5.3 m
4400EJ	2.4 m	7.0 m

Juniper Display: The Juniper nozzle (marked with J on in inside of the nozzle cone) uses the 3/8” x 4” bolt.



Model	Height	Width
2400EJ	0.7 m	3.9 m
3400EJ	0.9 m	6.9 m
4400EJ	1.8 m	8.8 m

Sequoia Display: The Sequoia nozzle is not marked and uses the shorter 3/8” x 2.25”


Model	Height	Width
2400EJ	1.6 m	1.0 m
3400EJ	2.2 m	1.5 m
4400EJ	n/a	n/a

The **Redwood** nozzle uses the 3 self tapping screws to attach over the pump housing and the Y Insert must be installed.

Model	Height	Width
2400EJ	n/a	n/a
3400EJ	n/a	n/a
4400EJ	4.9 m	1.5 m

The **Spruce** nozzle uses the three self tapping screws to attach over the pump housing and the Y Insert must be removed.

Model	Height	Width
2400EJ	n/a	n/a
3400EJ	n/a	n/a
4400EJ	4.1 m	3.0 m

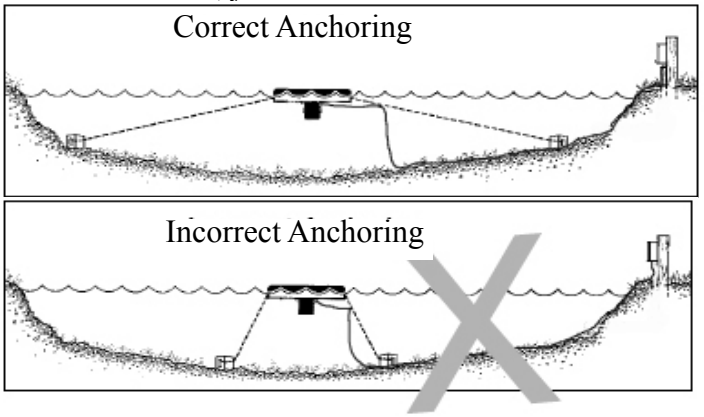
The **Birch** display does not use a nozzle or bolt. It is the fountain unit running without any nozzle and allows for the best flow rate and oxygen transfer!

Model	Height	Width
2400EJ	n/a	n/a
3400EJ	n/a	n/a
4400EJ	2.6 m	1.8 m

Installation Instructions

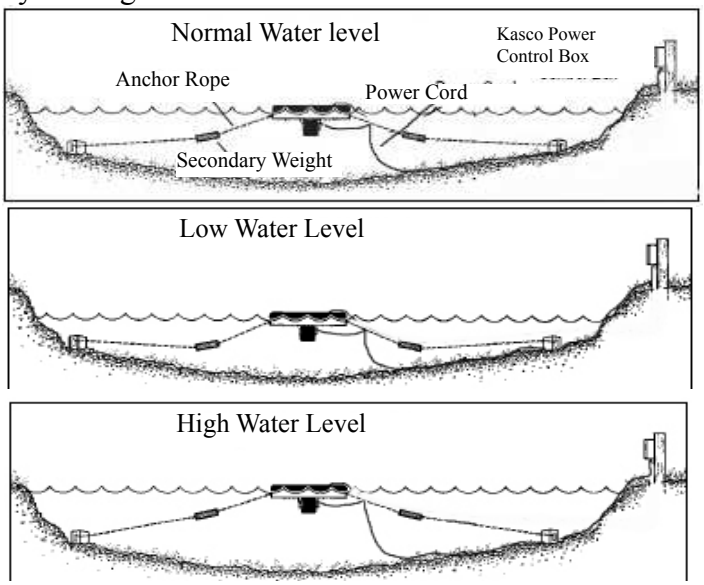
STEP ONE

Use the ropes to position the Unit in the desired location in the pond/lake (secure the cord near power source to prevent it from being dragged into the water). Anchor the ropes or secure them to the shoreline so the ropes are free of slack, but not tight. To prevent twisting of the unit due to torque, you should place the anchor at least 3m from the float for each meter of depth (Ex. A 3m deep pond would require an anchor 9m horizontally from the float.) For ease of removal, you may choose to keep at least one anchor within reach from shore, just below the water's surface.



STEP TWO (ALTERNATE INSTALLATION)

In ponds where the water level fluctuates significantly, you may need to suspend a small weight (30cm of 2.54cm galvanize pipe works well) at the mid-point of the rope to take up any slack as the water level drops. The weight should be light enough so the Unit can rise as the water level rises. This can also help hide ropes by sinking them further below the surface.



STEP THREE

At this time the Fountain or Aerator is ready for operation. The unit can now be connected to the electrical

circuit (fixed wiring) with a plug or direct wire connection. The circuit must be provided with a disconnect switch, short circuit, and ground fault protection (RCD). Refer to unit specs for voltage and amperage ratings. Also, the motor name plate lists the unit's electrical ratings. Electrical installation must follow local and national electrical codes and should be installed by a professional.

Maintenance Recommendations

 Under No Circumstances should anyone enter the water while a fountain is operating. Turn Off and Disconnect electrical power prior to any Maintenance or Servicing

RCD (Residual Current Device) or GFCI are a safety feature that can also alert you to electrical leaks in the equipment. It is extremely important to test the RCD upon installation, each reinstallation, and monthly thereafter to ensure proper operation. If you have repeat, consistent trips on your ground fault, the equipment should be disconnected and removed from the water. The power cord should be inspected for damage and you should call a Kasco Marine distributor or representative for further instructions.

If the supply cord becomes damaged, it must be replaced by an authorized service center, or similarly qualified persons in order to avoid a hazard.

OBSERVATION: Operating equipment should be observed on a regular basis (daily, if possible) for any reduction or variation in performance. Disconnect electrical power and inspect if any reduction in performance is noticed.

WINTER STORAGE: In regions where there is significant freezing in the wintertime, Fountains should be removed from the water to protect them from the expansion pressure of the ice. Storage over winter is best in a location that is out of the sun and cool, but above $0^{O}C$.

CLEANING: Equipment should be removed from the water at least once per year (at the end of the season in cold climates) to clean the exterior of the system, especially the stainless steel motor housing (can). The motor housing is the surface that dissipates heat into the water and any algae, calcium, etc. build-up will become an insulator that blocks heat transfer. In warmer regions it is recommended that the motor is removed and cleaned at least two to three times per year depending on conditions. In most cases a power washer will be sufficient if the unit and algae are still wet.

SEAL AND OIL REPLACEMENT: This is a sealed motor assembly and seals will wear out over time (similar to break pads on a car). Replacement of the seals and a change of oil after three years may add longevity to the operation of the motor, saving you the cost of more expensive repairs. In warmer climates where the equipment runs most or all of the year, it is a good idea to replace seals more regularly than you would need to in colder climates where the unit is removed from the water for several months.

ZINC ANODE: A Sacrificial Zinc Anode is supplied on the shaft of all Kasco 50Hz Fountains for protection of the equipment from corrosion and electrolysis. The zinc anode should be updated (replaced) if reduced to half the original size or if white in color. Corrosion from electrolysis is more commonly associated with saltwater or brackish water, but as a matter of precaution, it is important to periodically check the zinc anode in all installations (at least every two to three months).

Seal replacement and all other repair services should be performed by Kasco Marine or a Kasco trained Authorized Repair Center.

 Pollution of the liquid could occur due to leakage of lubricants. If leakage is detected, shutdown and have the unit removed for repair.

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Troubleshooting tips

The following is provided to help diagnose a probable source of trouble. It is a guideline only and may not show all causes for all problems. For additional troubleshooting help contact your local distributor or visit www.kascomarine.com for additional tips

Problem	Possible Cause	Likely Remedy
Unit does not start	Power is off or disconnected	Ensure unit is connected to the electrical circuit. Verify circuit breakers, timers, and/or interlock switches are turned on and functional.
	RCD (residual current device), or GFCI (Ground fault circuit interrupter) is tripped. RCD continues to trip randomly. Tripped circuit breaker.	Reset the RCD or GFCI and restart the unit. If the unit continues to trip the RCD, this indicates a potential problem with the mains electrical service, power circuit feeding the unit, or the unit may have water in the power cord, or motor assembly. Contact your distributor for assistance to remedy this situation.
	Unit is jammed with debris and will not start.	**Disconnect unit from electrical power.** Check and remove any debris from the unit. Refer to the installation manual for further details on removing any guarding. Reconnect to electrical power and start unit to see if problem is resolved. If not, call your local distributor for assistance.
Reduced performance	Unit is clogged with debris	**Disconnect unit from electrical power.** Check and remove any debris from the unit. Refer to the installation manual for further details on removing any components. Reconnect to electrical power and start unit to see if problem is resolved.
	Damaged propeller or impeller	**Disconnect unit from electrical power.** Check the propeller/Impeller for any chipping or damage that would cause the unit to not operate properly. Refer to installation instructions for assembly. Replace propeller / impeller if damage is found. Contact your distributor for assistance.
	Low voltage to unit	Check the voltage at the power cord connection to verify the unit is receiving sufficient voltage to operate. Refer to installation instructions for voltage requirements. Checking this voltage while the circuit is loaded will verify if the voltage is stable. Remedy the voltage problem prior to operating the unit again.
Unit starts and stops automatically or sporatically	Single phase unit - Internal overload is cycling	Unit is getting too hot and is cycling the internal thermal overload in the motor. **Disconnect Unit from electrical power.** Remove unit from water and inspect for excessive debris buildup on the unit that would prevent heat dissipation into the water. Check the motor shaft can rotate freely. A build up of algae, calcium or organic matter on the stainless steel motor housing will reduce motor cooling. Clean unit and reinstall to test. if the unit continues to cycle on/off sporadically, then turn off and contact your distributor for repair.