ElectroStrainer™ System

Operation Manual

Models: ES-125/ ES-100

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ElectroSea®

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U.S. Patent No. 11,027,991 and other U.S. and Foreign Patents Pending

ElectroSea®

ElectroSea was created when owners of a sportfishing vessel identified a better way to prevent biofouling in their seawater cooling system. Solving complex technical problems is their expertise. With more than 100 issued U.S. patents and 350+ foreign patents in advanced technologies, our Executive Management Team has been developing innovative solutions for more than 50 years. With an experienced team of 'old salts' who eat, sleep, and breathe boating, ElectroSea will improve your time on the water.

ElectroStrainer™ System

ElectroStrainer is a revolutionary seawater biofouling prevention device, a sea strainer, and a smart seawater flow monitoring unit all combined into a single system. ElectroStrainer provides an entirely new way for boaters to prevent biofouling, barnacles and bioslimes from clogging your sea strainers and seawater pipes for air conditioners, chillers and refrigerators. ElectroStrainer provides ease of use never seen before in a sea strainer and completely redefines seawater system maintenance.

- **ElectroStrainer is a Biofouling Prevention Device**

  ElectroStrainer continuously creates a safe and effective level of chlorine to protect your entire seawater system. ElectroStrainer contains a Cell with a proprietary mixed-metal oxide coating; when electrified it acts as a catalyst to generate chlorine naturally from the seawater passing through it. No chemical additives are required.

- **ElectroStrainer is a Sea Strainer**

  Typical sea strainers become clogged as bioslime, algae, and barnacles build-up over time in the strainer pores. ElectroStrainer solves this problem by preventing unwanted marine growth using electrochlorination generated directly in its sea strainer. Strainer pores remain open, free and clear so protected seawater can pass downstream to cooling equipment and decreases the frequency of strainer cleaning.

- **ElectroStrainer is a Smart Seawater Flow Monitoring System**

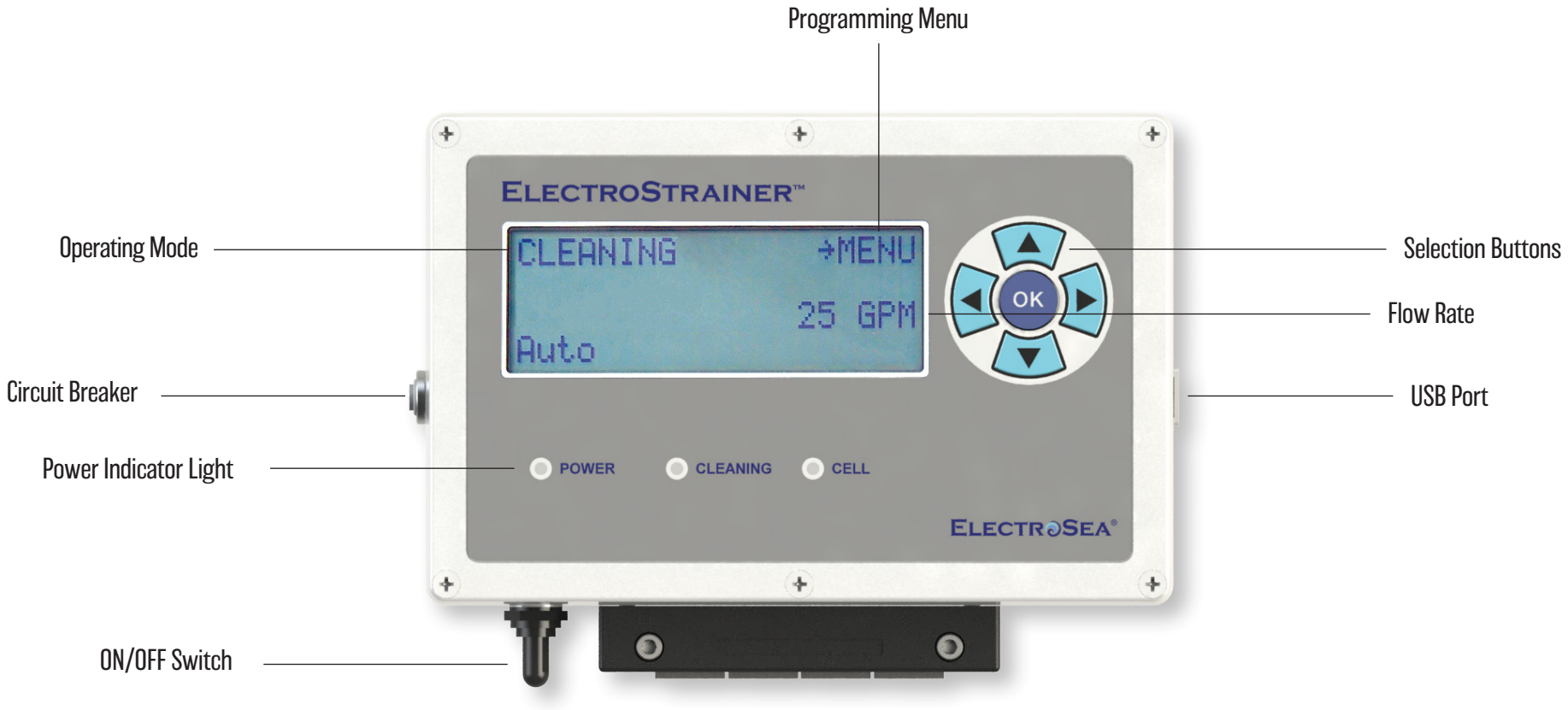
  ElectroStrainer provides real-time monitoring with Smart Strainer Alert technology and automatically notifies you to check the strainer if it requires attention. ElectroStrainer monitors your vessel's seawater flow 24/7/365 days a year and displays the real-time seawater flow rate.

U.S. Patent No. 11,027,991 and other U.S. and Foreign Patents Pending

User Interface

Features and Functions

1. Power on ElectroStrainer. The Control Unit will complete a diagnostic self-test and then the green “POWER” light will be illuminated.
2. The main status screen will be displayed.



Operating Modes

The Operating Mode displays the state of the ElectroStrainer System. Modes include:

- **OFF:** ElectroStrainer is powered, but is in the OFF mode and not Cleaning.
- **START-UP:** ElectroStrainer is performing a diagnostic self-test. This mode lasts for approximately 30 seconds.
- **CLEANING:** ElectroStrainer is ON and Cleaning. This is the normal operating mode for the ElectroStrainer System.
- **STRAINER FLOW ALERT:** ElectroStrainer is ON and Cleaning, but the flow rate measured is less than or equal to the value set in the Strainer Flow Alert feature.
- **CELL INDICATOR:** ElectroStrainer is sensing low salinity (brackish or fresh water), high resistance or disconnection of Cell cable, or Cell is at its end of life.

Feature Overview

- **Flow Rate (GPM):** Monitors the seawater flow rate in gallons per minute (GPM) or liters per minute (LPM) at the output of the ElectroStrainer System.
- **Strainer Flow Alert:** An alert that indicates the sea strainer basket has debris and/or the flow rate is at or below a threshold level for a period of time.
- **Display Contrast, Backlight, Units:** Adjustment of LCD display contrast and backlight levels from Lo to Hi. Selection of Imperial and Metric units for flow in GPM or LPM.
- **Default Update:** Process to restore ElectroStrainer to original factory default settings. Allows the user to update ElectroStrainer Control Unit firmware from a USB memory drive supplied by ElectroSea.

Safety Considerations

WARNING Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE Indicates a hazardous situation which can cause damage to personal property, environment, or equipment.

WARNING **DO NOT PERFORM ACID DESCALING OF SEAWATER CIRCUIT AFTER THE ELECTROSTRAINER SYSTEM HAS BEEN INSTALLED. DESCALING ACIDS OR CLEANING CHEMICALS WILL DAMAGE THE CELL AND CANISTER, AND VOID THE WARRANTY.**

Power ON and Start-up Delay

Power ON the ElectroStrainer System. The Control Unit will complete a self-test and then the green "POWER" LED will be illuminated. "START-UP" will be displayed for 30 seconds.

Cleaning Mode

During normal operation the Control Unit will flash "Cleaning" and the green Cleaning LED will be illuminated. This indicates the ElectroStrainer System is electrochemically generating chlorine to prevent biofouling. The System will display the seawater flow rate at the output of the ElectroStrainer System in gallons per minute (GPM) or liters per minute (LPM). If the flow rate drops below 4 GPM (15 LPM), then the display will indicate Min Flow. The ElectroStrainer System will automatically stop generating chlorine if Min Flow (1-3 GPM/3.8-11.4 LPM), or No Flow (0 GPM).

Auto Mode

The ElectroStrainer System automatically and continuously calculates the optimal level of chlorinated seawater to prevent biofouling using multiple input parameters including seawater flow rate, key electrical parameters, and environmental temperature.

Display Backlight, Contrast and Imperial / Metric Units

Set Backlight, Contrast, or Units: The LCD display backlight, contrast, and imperial / metric units can be set. Use the Up or Down arrows to select and change settings.

Optimal Performance

Constant Chlorinated Seawater Flow: The ElectroStrainer System should be powered ON and have seawater flowing through it whenever possible. This provides the vessel's seawater circuit with constant chlorinated seawater to prevent unwanted marine growth. Intermittent or stagnant seawater that is not continuously electrochemically treated allows growth of marine microorganisms. Barnacles have the innate ability to close themselves off and survive intermittent exposure to biocidal agents.

- DO NOT turn off seawater pumps, air conditioners, or chillers for an extended period of time.

Inspect the vessel for problem areas:

- Pre-existing biofouling in seawater lines prior to ElectroStrainer installation.
- Clogged seawater intakes.
- Impacted, blocked or occluded lines from debris lodged in plumbing.
- Sporadic demand valve areas; depending on the system, valves that turn on and off can foster unwanted marine growth.

Strainer Flow Alert

Strainer Flow Alert: The Flow Alert feature monitors seawater flow through ElectroStrainer. This feature notifies the user that the ElectroStrainer strainer basket contains debris such as seaweed or mud; or part of the seawater circuit such as the intake screen or thru-hull fitting is partially blocked; or the seawater pump is producing low flow and requires maintenance. This allows the user to set a minimum seawater flow rate threshold value and time duration. If the seawater flow rate drops below a minimum value for a period of time, then "Check Strainer / Flow Alert" will flash on the display (no audible alert). Flow rate can be set in GPM or LPM, and time duration in minutes. To set the Strainer Flow Alert value, go to MENU, Flow Alert, and enter desired threshold flow rate and time duration for notification.

NOTICE **Flow Alert feature is default OFF from ElectroSea and must be set by the installer or end user.**

NOTICE **ElectroStrainer will continue generating chlorine even after a Flow Alert occurs.**

If a Strainer Flow Alert occurs:

1. Check vessel intake screens for blockage or debris,
2. Check seawater pump output, impeller or other causes of low flow,
3. Check ElectroStrainer basket for debris, seaweed or mud.

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Canister Assembly Access

Before accessing the Canister Assembly, turn the power off to the ElectroStrainer Control Unit.

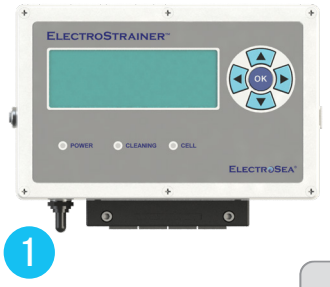
To access Canister Assembly:

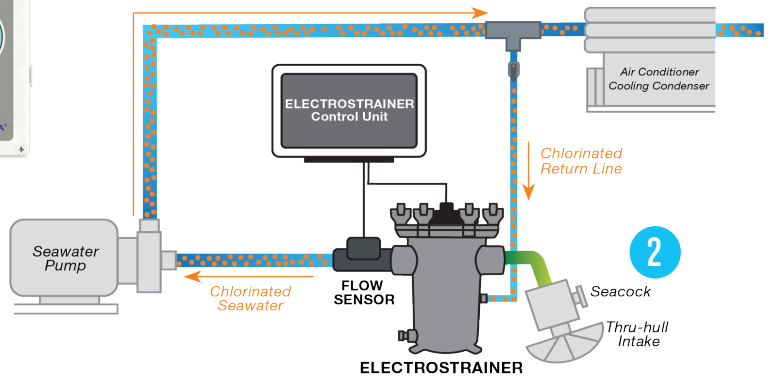
1. Power OFF the ElectroStrainer Control Unit.
2. Turn OFF ALL seacock valves in the seawater circuit at or below the waterline. This includes any output seacocks to prevent back siphoning.

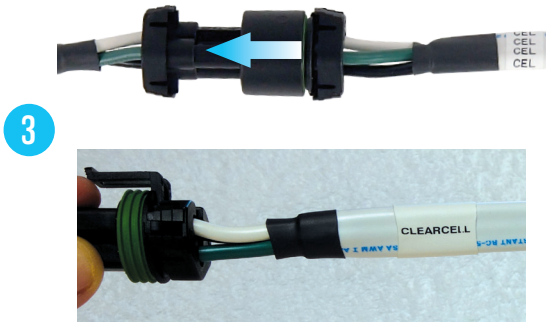
WARNING **Failure to turn OFF ALL seacock valves in the seawater circuit could result in sinking the vessel.**

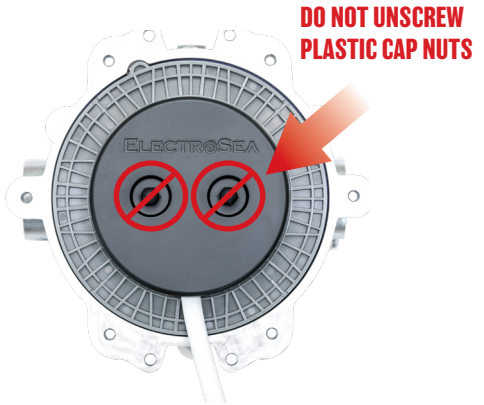
3. Disconnect the 1' (30.5cm) cable labeled CELL that is located at the top of the Canister Assembly. To disconnect this cable, do so at the cable connector.

NOTICE **DO NOT UNSCREW THE TWO BLACK PLASTIC CAP NUTS ON TOP OF THE LID OR TITANIUM HARDWARE UNDER THE LID.**









Maintenance

1. Unsecure the pressure ring by turning the wing nuts counterclockwise.

2. Remove the pressure ring.

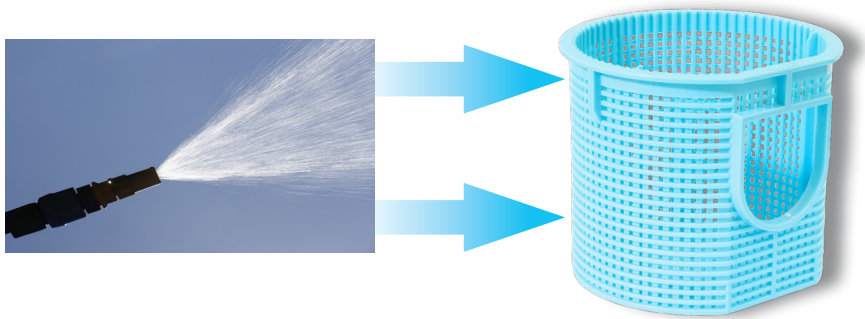
3. Remove the Cell Assembly. Lift straight up by the black plastic cover. Do not lift or pull on the cable. Set the Cell Assembly aside in a safe location.

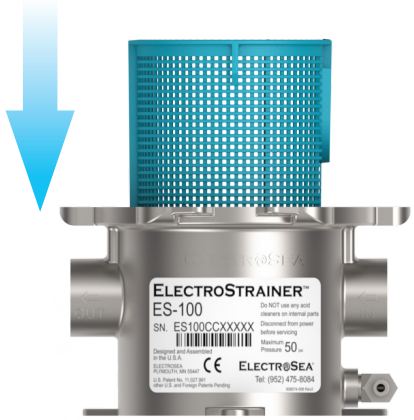
ElectroStrainer Maintenance

4. Remove the strainer basket from the Canister. Spray the strainer basket with freshwater to remove any mud, seaweed or debris caught in the strainer pores.

5. Spray the internal surfaces of the Canister with freshwater.

6. After the strainer basket and Canister are clean, place the strainer basket back into the Canister.





NOTICE THERE MAY BE NEGLIGIBLE GROWTH AT THE INLET OF THE STRAINER, OR INTERIOR OF CANISTER. THIS IS NORMAL AS INCOMING SEAWATER IS NOT YET CHLORINATED AND/OR THERE MAY BE AREAS OF LOW CHLORINATION AT CERTAIN FLOW RATES. THIS IS NOT CAUSE FOR CONCERN AND ELECTROSTRAINER IS WORKING PROPERLY IF "CLEANING" IS SHOWN ON THE DISPLAY.

NOTICE DO NOT PERFORM ACID DESCALING OF SEAWATER CIRCUIT AFTER THE ELECTROSTRAINER SYSTEM HAS BEEN INSTALLED. DESCALING ACIDS OR CLEANING CHEMICALS WILL DAMAGE THE CELL AND CANISTER, AND VOID THE WARRANTY.

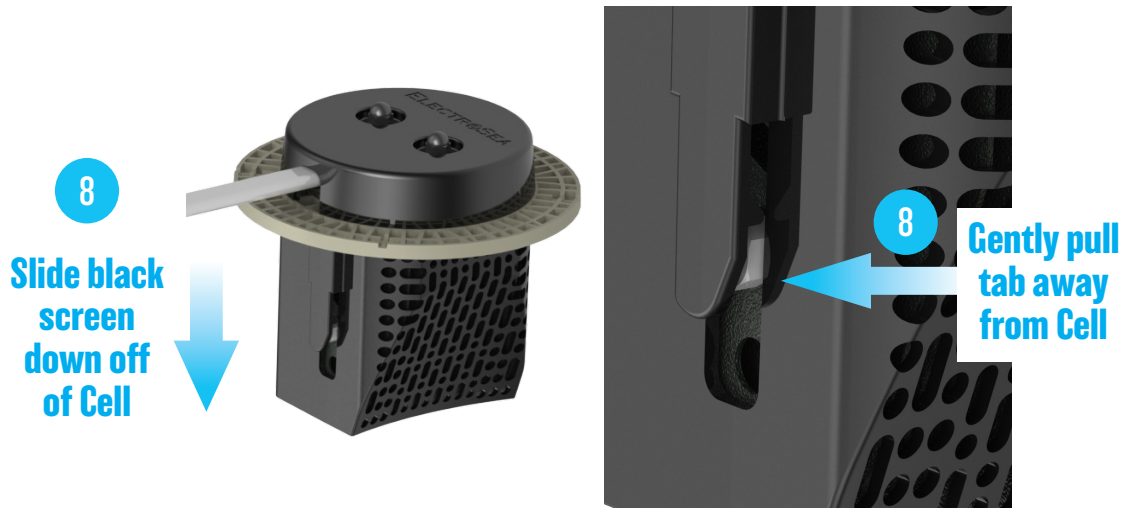
NOTICE Low seawater flow may damage cooling system and other components that depend on this water for proper operation. It is the owner's responsibility to monitor the vessel's seawater flow rate and perform any maintenance on the vessel's seawater pumps and strainers.

7. Spray the plastic screen that covers the Cell Assembly. If there is excessive mud or debris, then the plastic screen can be removed from the Cell. It is NOT necessary to remove the plastic screen from the Cell if debris rinses off and the plastic screen and Cell appear clean.

8. **ONLY if there is excessive mud or debris, then remove the plastic screen from the Cell. To separate these components, hold the round black plastic top in one hand and the bottom plastic screen, then pull lightly in opposite directions. The plastic screen will slide apart from the Cell. DO NOT PUSH IN THE SIDE TAB LOCKS OR THIS WILL MAKE THE PLASTIC SCREEN HARD TO REMOVE. Reassemble the plastic screen on to the Cell after cleaning with freshwater.**

NOTICE

- **DO NOT PERFORM ACID DESCALING OF SEAWATER CIRCUIT AFTER THE ELECTROSTRAINER SYSTEM HAS BEEN INSTALLED.**
- **DESCALING ACIDS OR CLEANING CHEMICALS WILL DAMAGE THE CELL AND CANISTER, AND VOID THE WARRANTY.**
- **DO NOT TOUCH THE CELL PLATES OR USE ANY TYPE OF MECHANICAL BRUSH.**
- **THE CELL PLATES CONTAIN A SPECIAL METAL OXIDE COATING THAT WILL BE PERMANENTLY DAMAGED IF YOU HANDLE IT.**



ElectroStrainer Maintenance

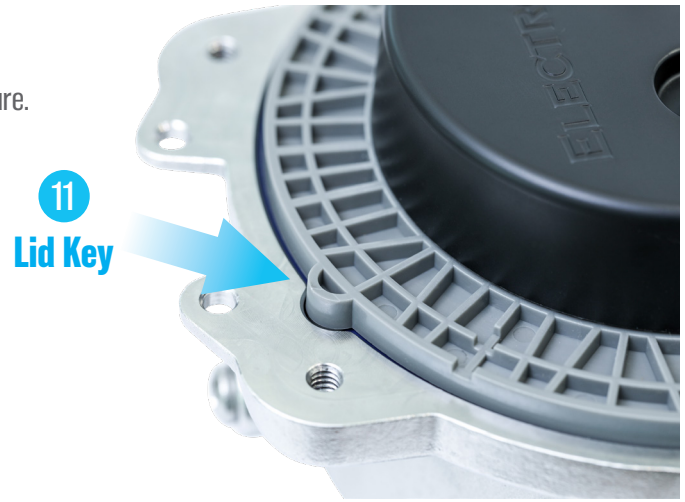
9. Insert the basket into the Canister. Align the flat edge of the basket with the flat edge of the Canister.

10. Confirm the gasket is in the top of the Canister.

11. The Canister and lid are keyed and can be inserted in only one direction. Align the flat edge of the Cell screen and strainer basket. Make sure the lid key is aligned with the Canister. Then insert the Cell Assembly into the Canister.

12. Add the pressure ring to the top of the Canister. Bleed excess air from the Canister, then tighten down the wing nuts evenly. Do not use tools to perform this tightening process. Work in a star pattern so all are evenly secure.

13. Double check all fittings, hose clamps and wing nuts are secure. Open the seacock valves and verify there are no leaks.



14. Reconnect the Cell cable to the ElectroStrainer Control Unit.

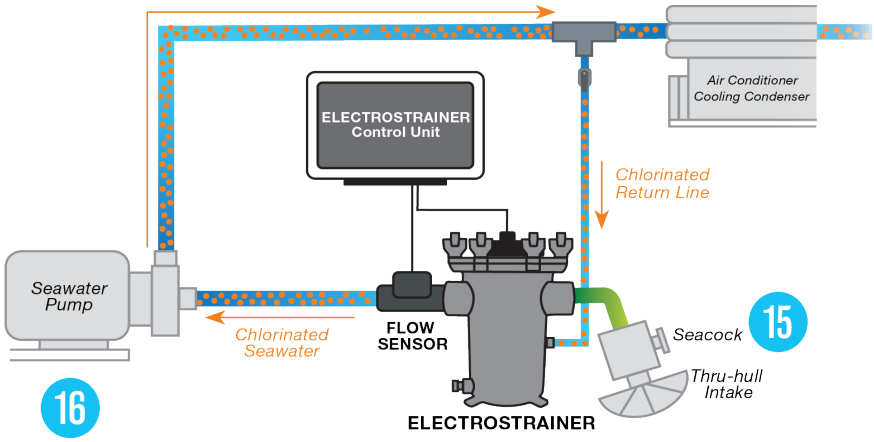
15. Open the seacocks and check for any leaks.

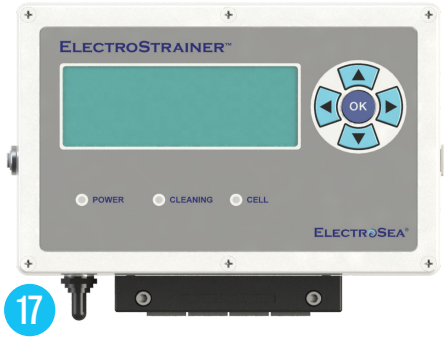
16. Turn the seawater intake pumps ON. The seawater intake pumps must be ON and pumping seawater at normal flow rates for ElectroStrainer to operate.

NOTICE **Any air trapped in the Canister must be bled out. Cycle the seawater pump and/or loosen the Canister wing nuts to bleed out excess air then re-tighten the pressure ring on the Canister.**

NOTICE **DO NOT restrict seawater flow to ElectroStrainer Canister.**

17. Turn ON the ElectroStrainer System on the Control Unit. The Control Unit "CLEANING" LED should be illuminated in green and the display should state it is Cleaning.

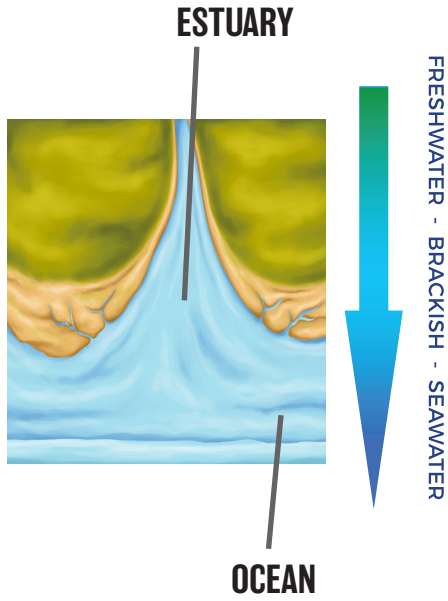




Cell Indicator

CELL Indicator: The Control Unit will display "SALINITY/CELL", "% OUTPUT" and illuminate the red CELL LED in various conditions. This is not an immediate cause for concern and may be temporary depending on seawater salinity level. ElectroStrainer will continuously attempt to generate chlorine and automatically resume standard operation when conditions are resolved. The CELL indicator will be illuminated if any of the following conditions occur for multiple consecutive days:

- Water salinity is below 20 parts per thousand (most common cause of CELL indicator notice).
- ElectroStrainer Cell cable or its connectors have been compromised.
- ElectroStrainer Cell has excessive mud or other debris.
- ElectroStrainer Cell is at the end of its useful life.



Water Salinity

- Vessels often encounter brackish or freshwater when cruising inland, and from extended storms and freshwater run-off.
- Low salinity is the most frequent cause of the CELL Indicator.
- ElectroStrainer will not display "CLEANING" or generate chlorine while vessel is operating in freshwater.

  RESOLUTION: Vessel returns to seawater with adequate salinity.

ElectroStrainer Cell Cable

- The ElectroStrainer Cell cable and connections must not be spliced, cut, compromised, or damaged.
- Inspect the Control Unit to Cell cable carefully. Look for any corrosion at the connectors.

  RESOLUTION: Replace the ElectroStrainer Cell cable if it is compromised.

Excessive Mud or Other Debris

- If there is excessive mud or other debris, then the ElectroStrainer Cell may require a brief rinse with freshwater.

ElectroStrainer Cell at End of Life

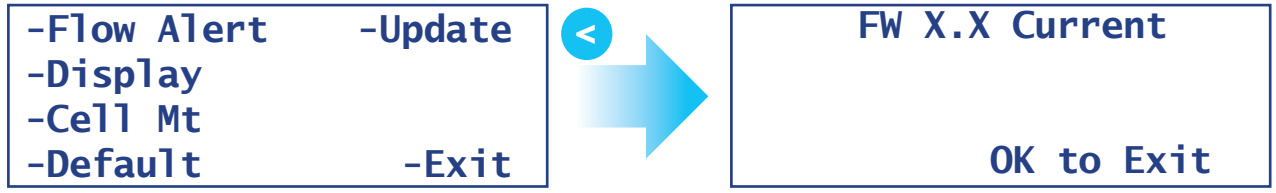
- When the ElectroStrainer Cell has reached the end of its useful life it can no longer generate chlorine. The Cell life is dependent on flow rate, hours of use, seawater quality and other factors. The Cell will be effective for many years before replacement is required.
  RESOLUTION: Contact your ElectroSea dealer.

Factory Default and Firmware Updates

1. **Default:** This is the process to restore ElectroStrainer to its original factory default settings. The user will press and hold the Up & Down arrows simultaneously for 10 seconds to restore factory default settings.

2. **Update:** This allows the user to update the firmware using a USB memory drive supplied by ElectroSea. To perform a firmware update:
   a. Insert the ElectroSea USB memory drive.
   b. Go to the Update menu. Line 1 displays the current firmware version of the unit. Line 2 displays the available firmware version that is on the USB memory drive. It is possible to upgrade or downgrade the firmware version.
   c. Press and hold the Up & Down keys simultaneously for 10 seconds, then release the keys once the update begins.
   d. During the update, the Control Unit is in a locked mode and cannot be used. The bottom line of the display will show the update progress.
   e. Once the update is complete, the Control Unit will reboot.
   f. Confirm the update was successful by going back to the Update menu. The display will show that the FW X.X is up to date.

NOTICE **In the event that the firmware update fails, the Control Unit maintains a redundant copy of the existing firmware. The screen will display a result message at the end of an update attempt to confirm the update was successful. Repeat the steps above to retry the firmware update if required.**



Periodic Inspection

The ElectroStrainer should be viewed during regular inspection of the vessel's engine room. During normal operation, ElectroStrainer status screen will flash the message "Cleaning" and the green LED will be illuminated. This indicates ElectroStrainer is generating a safe and effective low level of chlorine preventing unwanted marine growth, barnacles, and biofilm in the strainer and seawater lines.

If there are any concerns during the regular inspection noted above, then perform a more thorough process:

- Visually inspect all wires and connections between the Control Unit and the Canister Assembly.
- Disassemble the Canister Assembly and thoroughly flush strainer basket and Cell with freshwater.
- Visually inspect the ClearVis Flow Sensor.
- Visually inspect seawater conduits down stream of ElectroStrainer to confirm marine growth prevention.

NOTICE **Inspection and maintenance are the responsibility of the vessel owner.**

Specifications

	ElectroStrainer Model ES-125	ElectroStrainer Model ES-100
ElectroStrainer Control Unit Dimensions (L x W x H)	9.96 x 6.75 x 3.25 inches 252.98 x 171.45 x 82.55 mm	9.96 x 6.75 x 3.25 inches 252.98 x 171.45 x 82.55 mm
Weight	4 lbs 6 oz / (1.98 kg)	4 lbs 6 oz / (1.98 kg)
Power Source	12 or 24 VDC	12 or 24 VDC
Power Consumption	Max power 50 watts Typical power 20 watts	Max power 50 watts Typical power 20 watts
Internal circuit breaker	10 amps	10 amps
ElectroStrainer Canister Dimensions (L x W x H)	8.20 x 7.72 x 6.26 inches 208.28 x 196.00 x 158.89 mm	8.20 x 7.72 x 6.26 inches 208.28 x 196.00 x 158.89 mm
Inlet / Outlet	1.25 inches NPT (DN32)	1.0 inches NPT (DN25)
Flow Rates	Optimal Flow: 6-17 Min/Max Flow: 4-30	Optimal Flow: 3-12 Min/Max Flow: 3-20
Maximum Operating Pressure	50 PSI	50 PSI

Modes and Troubleshooting

Mode	Description	Action
OFF	Unit is powered ON, but is in the OFF state. No seawater is flowing through the system.	This is a normal operating mode provided there is no seawater flow.
Cleaning	The mode for cleaning and preventing biofouling by chlorinating seawater.	This is a normal operating mode. See Pg. 5 for Cleaning Mode.
Auto	The mode for automatically optimizing the level of chlorinated seawater based on multiple input parameters including flow rate, key electrical parameters, and environmental temperature.	This is a normal operating mode. See Pg. 5 for Auto Mode.
Min Flow	The flow rate is 1-3 GPM (3.8-11.4 LPM), and is too low to chlorinate seawater.	The Min Flow indicator will disappear when the seawater flow rate >4 GPM (>15.1 LPM).
No Flow	The flow rate is 0 GPM.	The No Flow indicator will disappear when the seawater flow returns.
Strainer Flow Alert	Strainer Flow Alert is a user defined threshold value for visual alert and notification purposes that there may be debris in the strainer basket and/or the flow rate is below a threshold for a period of time. The user should manually set the desired Flow Alert value and time duration.	ElectroStrainer will continue generating chlorine even after a Strainer Flow Alert occurs. **Note:** If the flow rate is less than or equal to 4 GPM (15 LPM), then a Min Flow alert will occur and ElectroStrainer will stop chlorinating seawater. If a Strainer Flow Alert occurs: 1. Check vessel's strainers and intake grates for blockage. 2. Check seawater pump operation. 3. Check all other components in the seawater intake fluid path. 4. Check Canister Assembly and rinse strainer basket according to instructions starting on Pg. 9.

Modes and Troubleshooting

Mode	Description	Action
CELL Indicator	The Control Unit will display "SALINITY/ CELL", "% OUTPUT" and illuminate the red CELL LED in various conditions. This is not an immediate cause for concern and may be temporary depending on seawater salinity level. ElectroStrainer will continuously attempt to generate chlorine and automatically resume standard operation when conditions are resolved.	**Water Salinity** • Vessels often encounter brackish or freshwater when cruising inland, and from storm run-off. • Low salinity is the most frequent cause of CELL Indicator. • ElectroStrainer will not display "CLEANING" or generate chlorine while vessel is in freshwater. **RESOLUTION: Vessel returns to seawater with adequate salinity.** **Cell Cable** • The Cell cable and connections must not be spliced, cut, compromised, or damaged. • Inspect the Control Unit to Cell cable carefully. Look for any corrosion at the connectors. **RESOLUTION: Replace the Cell cable if it is compromised.** **Excessive Mud or Other Debris** • If there is excessive mud or debris, then the Cell may require a rinse with freshwater. **RESOLUTION: Follow instructions on Pg. 8-13.** **Cell End of Life** • When the Cell has reached the end of its useful life it can no longer generate chlorine. The Cell life is dependent on flow rate, hours of use, seawater quality and other factors. **RESOLUTION: Contact your ElectroSea Dealer.**
High Temperature	ElectroStrainer internal temperature is high.	Contact your installation Dealer or ElectroSea as the Cell may be at the end of its useful life.

ELECTROSEA, LLC

State Law and Implied Warranties: This warranty gives you specific legal rights, and you may also have other rights that vary from state to state. Any implied warranties that apply to you, including implied warranties of merchantability and fitness for a particular purpose, are limited in duration to the Warranty Period defined below. Some states do not allow limitations on how long an implied warranty will last, so the above limitation may not apply to you.

Limited Warranty – What is Covered: ElectroSea, LLC ("ElectroSea") warrants that this product (the "Product") will be free from defects in materials and workmanship when used for its intended purposes under normal usage conditions. **As described below, there are limitations to this Limited Warranty.**

Who is Covered: This Limited Warranty is made only to this purchaser (the "Original Purchaser"):

1. The original end user purchaser of a Product directly from ElectroSea or an authorized ElectroSea Dealer (a "Direct Purchaser"); or
2. The original end user purchaser of a new vessel in which a new Product was installed by the manufacturer (a "Vessel Purchaser").
3. This Limited Warranty is not transferable.

How Long Coverage Lasts – the Warranty Period: This Limited Warranty only applies for a two year period (the "Warranty Period") that begins on:

1. For a Direct Purchaser, the date of the Direct Purchaser's purchase of the Product; or
2. For a Vessel Purchaser, the date the vessel is delivered to the Vessel Purchaser by the manufacturer or one of its dealers.

What ElectroSea will Do: ElectroSea's only obligation under this Limited Warranty is to, at ElectroSea's election:

1. Repair the Product;
2. Replace the Product; or
3. Refund the original purchase price paid by the Original Purchaser for the Product.

This is the sole and exclusive remedy available under this Limited Warranty. ElectroSea's maximum monetary liability under this Limited Warranty is an amount equal to the purchase price paid by the Original Purchaser for the Product.

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ELECTROSEA, LLC

Things Not Covered: This Limited Warranty does not cover:

1. A failure of the Product that results from (a) improper installation of the Product, (b) a failure to follow instructions for use of the Product, (c) jamming or clogging the Product with foreign matter, (d) use of chemicals or other substances not specified by ElectroSea for use in or with the Product, (e) abuse, misuse, or mishandling of the Product, (f) repair or modification of the Product by someone other than ElectroSea, or (g) damage to the Product, however caused;
2. Costs of service to remove the Product for return to ElectroSea or install a repaired or replacement Product;
3. Damage to the Product while in transit to or from ElectroSea; or
4. Damage to the vessel in which the Product is installed or any of its equipment, components, systems, fittings, air conditioners, chillers, wells, pumps, freezers, conduits or pipework.

How to Make a Claim: Call ElectroSea toll free at (888) 384-888. **You must make your claim during the Warranty Period and within 30 days after you first discovered the defect that is the subject of your claim.** You will need a receipt (or similar document) that shows that you are the Original Purchaser and are within the Warranty Period. You will also need the Product's serial number, the type and length of vessel on which the Product is used, and a reasonably complete description of the problem you are having. ElectroSea may require that you send the Product to ElectroSea, at your cost, for examination. If your claim is covered by this Limited Warranty, ElectroSea will pay the cost of sending the Product (as repaired) or a replacement Product to you.

No Other Express Warranties: This Limited Warranty is the only express warranty that applies to the Product. ElectroSea has not given anyone the right to make any warranty or promise of any kind relating to ElectroSea or the Product, so if someone other than ElectroSea makes a warranty or promise relating to ElectroSea or the Product, that warranty or promise is not binding on ElectroSea.

Limitation of Damages: In no event or circumstance will ElectroSea be liable to anyone for any punitive, special, incidental, indirect or consequential damages that relate in any way to the Product, even if ElectroSea has been advised of the possibility of those damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

Product Changes: ElectroSea may change the Product, the materials used in the Product, or the manner in which the Product is made from time to time, but will not have an obligation to incorporate any of those changes into previously manufactured Products or provide notice of any of those changes to purchasers of previously manufactured Products.

U.S. Patent No. 11,027,991 and other U.S. and Foreign Patents Pending

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