

SeaEra Toilet

INSTALLATION AND MAINTENANCE INSTRUCTIONS

(Manufactured after December 2021)

THE FOLLOWING ARE CAUTIONARY STATEMENTS THAT MUST BE READ AND FOLLOWED DURING BOTH INSTALLATION, MAINTENANCE AND OPERATION.

WARNING:



Raritan Engineering Company, Inc. recommends that a qualified person or electrician install this product. Equipment damage, injury to personnel or death could result from improper installation. Raritan Engineering Company, Inc. accepts no responsibility or liability for damage to equipment, injury or death to personnel that may result from improper installation or operation of this product.

WARNING:

HAZARD OF SHOCK OR FIRE



Always use recommended fuse, circuit breaker and wire size.

Motors used with this product are "Ignition Protected". They are not however, explosion-proof.

DO NOT run continuously for more than 30 seconds.

WARNING:

HAZARD OF FLOODING - Always shut off seacock(s) before leaving the boat unattended.

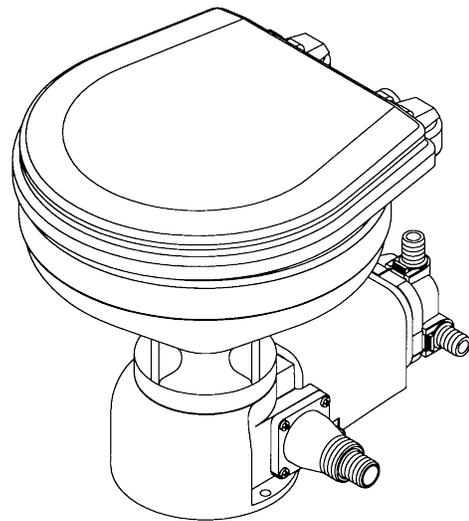


Double clamp all below waterline hose fittings and check frequently for integrity.

The SeaEra toilet is a powerful centrifugal macerating toilet that thoroughly breaks down waste.

SeaEra toilet is available in 12 VDC, 24 VDC and 120/240 VAC. Toilets are available in two sizes, standard or household. The Raw Water Pump Model uses a raw water intake pump to supply raw (outside) water to the bowl.

Raw Water Model (Integral Pump)



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IMPORTANT SAFETY INSTRUCTIONS:**Below-Waterline Installation Requirements**

Toilets installed at or below the vessel's waterline and equipped with an overboard discharge option must have a properly installed vented loop in the discharge line. The vented loop must be installed in accordance with the vented loop manufacturer's installation instructions.

Raw Water Intake Systems

Units installed below the waterline and equipped with a raw water pump must also have a vented loop installed in the intake line between the discharge side of the raw water pump and the toilet bowl inlet connection. Double clamp all below waterline connections.

Always replace circuit breaker and fuses with same rating. Use Raritan parts to maintain ignition protection requirements.

WARNING:

Young children should NOT be left unsupervised around toilet. Serious injury or death could occur. DO NOT place hands in toilet bowl without disconnecting power. A sharp blade is used for maceration of waste. Children can drown in water retained in the bowl. Seat and/or lid could close and strike child.

**Install the Warning Label (L322)
where it can be easily seen.**

**FLUSH GUIDELINES****DO Flush**

Human Waste and Toilet Paper

DO NOT Flush

Feminine Products, Paper Towels, Wet Wipes or Trash

Raritan recommends:

- Kills Odor (K.O.) for holding tank treatment
- Cleans Potties (C.P.) for ceramic bowl cleaning
- Mild soap and water solution to clean all other components

DO NOT: use general purpose cleaners or other harsh chemicals. Damage to toilet may occur and void warranty.



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- No special toilet paper is required.
- Water should appear in the bowl within ten seconds. If not, see troubleshooting section.
- Do not flush feminine products, paper towels, wet wipes or trash.
- Always shut off seacock(s) before leaving the boat unattended.

CLEANING

Raritan C.P. (part #1PCP32) - Cleans Potties, a bio-enzymatic bowl cleaner, will keep the bowl clean and fresh smelling. It is the only factory-recognized cleaning product that may be used in the toilet. A mild soap and water solution can be used for all other components.

DO NOT ADD ANY OTHER CHEMICALS OR CLEANING PRODUCTS TO THE TOILET OR THE TREATMENT SYSTEM.

Recommend Visual Inspection

- ✓ No leaks at toilet and hose connections
- ✓ Hose clamps
- ✓ Condition of hoses
- ✓ Seacocks
- ✓ Condition of wires and connections
- ✓ In-Line Strainer (if installed)

SYSTEM START-UP

1. Open seacock(s).

NOTE: Pressurized fresh water models; open water source valve.

2. Turn on power to toilet.
3. Flush toilet per Operation Instructions.
4. Check for leaks.

IMPORTANT: If toilet does not flush properly or if water does not enter the bowl within 10 seconds, refer to Troubleshooting.

WINTERIZING

- Improper winter lay up is a major cause of marine toilet failure.
- Use only nontoxic antifreeze.
- Flush toilet several times to clear waste from system.
- Dispose of all antifreeze in accordance with local and federal regulations.
- Winterize holding tanks, plumbing, treatment systems (MSD's), etc. independently following manufacturer's instructions.

Parts Required

- 3/4" [9 mm] I.D. intake hose approximately 3 feet [1 m] long.
- 1" [25 mm] or 1 1/2" [38 mm] I.D. discharge hose approximately 3 feet [1 m] long.
- Two buckets
- Nontoxic antifreeze approximately 1 quart [1 Liter]

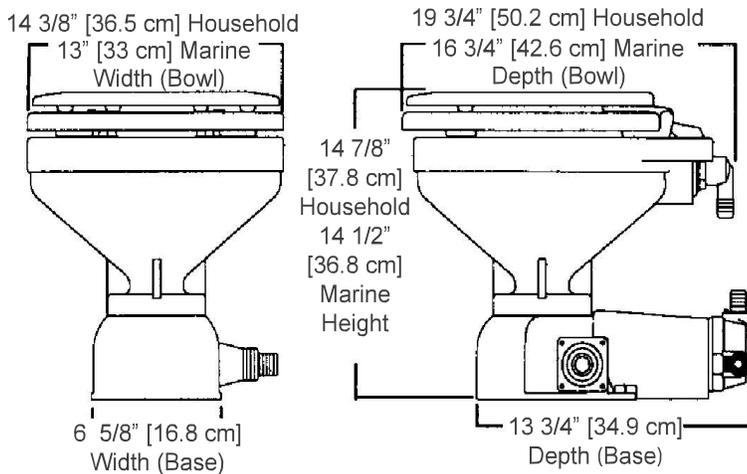
Steps

1. Close the intake and discharge seacocks.
2. Turn off power to unit.
3. Disconnect and drain intake hose, discharge hose and In-Line Strainer.
4. Connect short hoses to toilet's intake and discharge.
5. Place one bucket under hose connected to toilet's discharge.
6. Pour nontoxic antifreeze in other bucket.
7. Place hose connected to intake pump into bucket with antifreeze.
8. Turn on power to unit and flush toilet until antifreeze begins to be discharged from toilet.
9. Disconnect power to toilet.

RECOMMISSIONING

1. Using the buckets, hoses and approximately 1 gallon [3.8 Liters] of clean fresh water, flush antifreeze out of the toilet (see Winterizing). Dispose of antifreeze in accordance with local and federal regulations.
2. Reconnect the intake and discharge hoses and open both seacocks and water source valve.
3. Check all connections for leaks with several test flushes.

Raw Water Model (Integral)



CONVERSIONS

Wire - AWG to mm²

AWG	16	14	12	10	8	6	4	2
mm ²	1.5	2.5	4.0	6.0	10.0	16.0	25.0	35.0

Feet to Meters

Feet	10	15	20	25	30	40	50
Meter	3.1	4.6	6.1	7.6	9.2	12.2	15.2

Plumbing

Maximum suction of Intake pump (Maximum height above waterline)	4' [1.2 m] from Intake Pump
Maximum height of discharge vented loop	6' [1.8 m] from Base of Toilet

NOTES: for Wiring

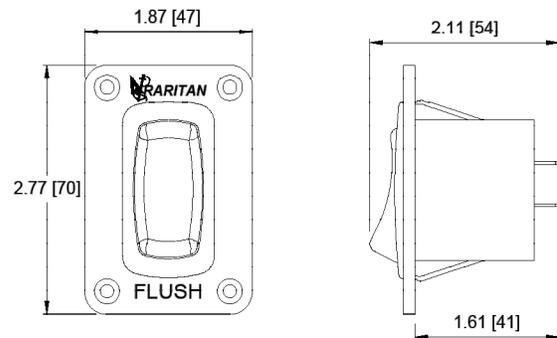
1.	Distances are from source to unit and back to source.
2.	Recommended conductor wire minimum AWG (mm ²) for 3% voltage drop.
3.	Recommended conductor sizes are based on 105°C rated insulation. Refer to ABYC Standards for other insulation ratings.
4.	For 120/240 VAC units, use 12VDC specifications from transformer to unit.

Raw Water Model - Recommended Wire and Fuse/Circuit Breaker Size

Units Voltage	Circuit Breaker/ fuse size (amps)	Integral Pump and lower base Amp. draw @ nominal voltage	15 feet	20 feet	30 feet	40 feet	50 feet
			12 VDC	25	18	10 AWG	8 AWG
24 VDC	15	10	14 AWG	14 AWG	12 AWG	10 AWG	10 AWG

Momentary Flush Switch (PRS) allows momentary operation of toilet by pressing switch.

- IP67 certified sealed front components
- Contact Ratings:
12VDC/20 AMPS, 24VDC/15 AMPS
- 1/4" [6 mm] Quick Connect Terminals
- Stainless Steel mounting plate



Inches [mm]

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Parts Included

All Complete Toilets

Toilet bowl, seat and cover
 Lower base assembly, motor cover
 Straight Discharge, installed
 1 1/2" [38 mm] 90° Discharge Fitting
 Adapter, 1" FPT x Barb
 PRS (Momentary Flush Switch)

90° Rotation of Toilet Bowl

Toilet bowl can be rotated 90° on the base, for installing in confined locations (FIG 1).

NOTE: Rotating bowl may require a longer length of hose.

1. Determine which direction bowl is to be mounted.
2. Remove four vinyl caps at the base of toilet bowl.
3. Remove four nuts and shoulder washers.
4. Carefully remove toilet bowl from base.
5. Rotate toilet bowl to desired position.
6. Replace four shoulder washers, nuts and vinyl caps.

NOTE: Tighten nut carefully and evenly to 20 in-lb [2.26 Nm].

DO NOT OVER TIGHTEN.

Mounting Toilet

Mounting surface must be flat and solid.

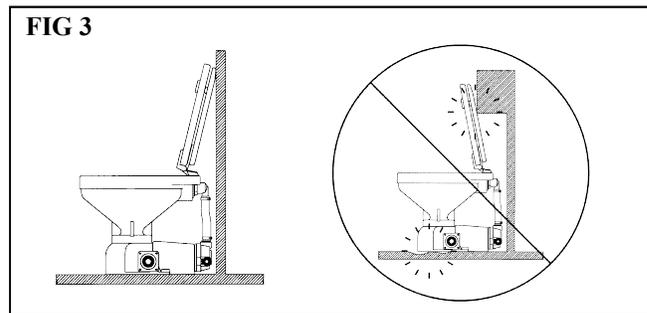
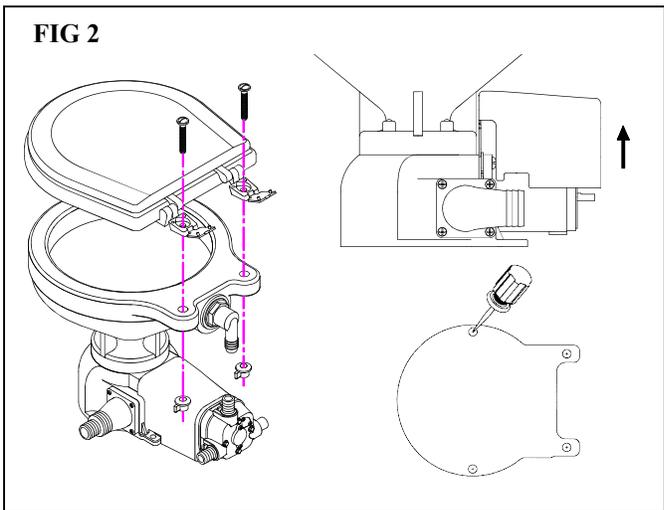
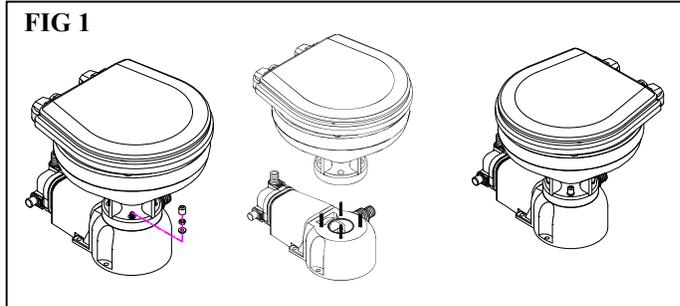
1. Install seat on toilet (FIG 2).
2. Remove motor cover.
3. Place toilet where it will be located.
Make sure there is room to route hoses.
Make sure seat will open properly (FIG 3).
4. Mark location of toilet base mounting holes on mounting surface (FIG 2).
5. Drill holes for toilet mounting bolts/screws.

NOTE: Hole size will depend on type of bolt/screws used (5/16" [8mm] size bolts/screws are recommended).

6. Secure toilet to surface

Additional Parts Required

- Four stainless steel mounting bolts or lag screws (minimum 1/4" [6 mm]) and washers
- 1" [25 mm] or 1 1/2" [38 mm] I.D. discharge hose
- 3/4" [19 mm] I.D. reinforced intake hose
- 3/4" [19 mm] and 1" [25 mm] or 1 1/2" [38 mm] hose clamps (two for each connection below waterline)
- Wire (See specification chart)
- Terminals
- Fuse/circuit breaker (See specification chart)



Mounting Momentary Flush Switch

Part# PRS

- Mount switch in an accessible location.
 - Make certain wires can be routed to switch.
 - Wire terminals must have clearance when installed.
 - **See wiring section of this manual for wiring instructions.**
 - **IMPORTANT:** Make certain that there is adequate clearances behind switch for wire connectors.
 - Mount Momentary Flush Switch in an accessible location.
 - Make certain wires can be routed to Momentary Flush Switch.
 1. Cut out hole for switch.
 2. Use panel to mark screw pilot hole locations.
- NOTE:** #6 screws are provided, pilot hole size is dependent on material of mounting surface.
3. Route wire and connect switch.
 4. Mount switch to wall

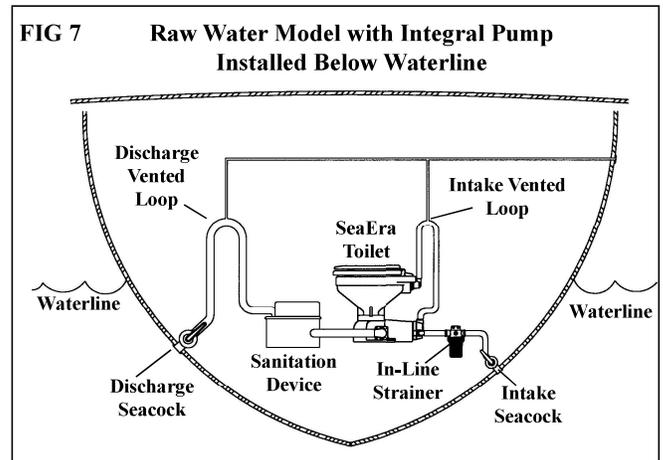
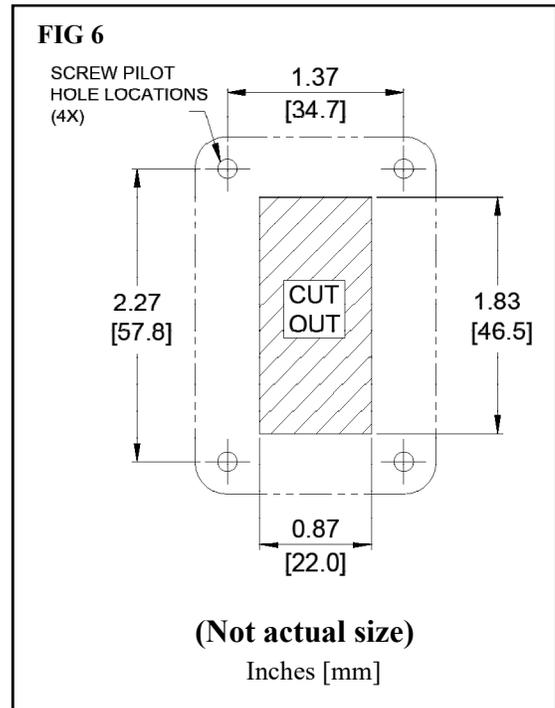
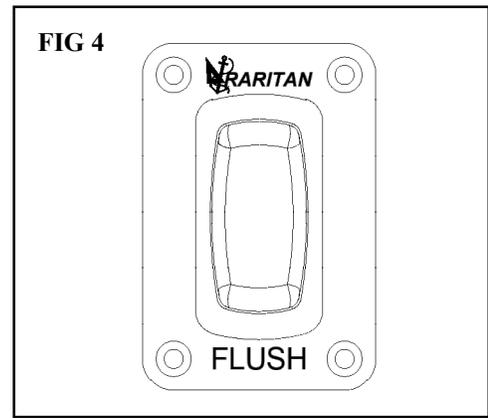
PLUMBING

IMPORTANT

- **Discharging untreated sewage is forbidden in all U. S. waters within the three-mile limit.**
- **Fittings and 90° bends should be kept to a minimum.**
- **In-Line Strainer may be installed on raw water models to prevent clogs.**
- **Thru-hull fittings and seacocks must be installed where they are easily accessible.**
- **Use only quality reinforced hoses such as Raritan SANIFLEX HOSE.**
- **Secure all hoses properly.**

IMPORTANT:

If water retention in the bowl is desired, the addition of a vented loop may be needed in the discharge hose to prevent water draining out of the bowl. Call technical support for additional details.



Discharge Fittings

The SeaEra has a straight discharge fitting installed. A 1 1/2" [38 mm] 90° fitting is also provided. Also provided is a 1" [25 mm] hose adapter for the 90° fitting (FIG 8).

To change the discharge fitting:

1. Remove four screws securing fitting to base.
2. Remove flange adapter from the straight fitting and install it on the 90° fitting.
3. Install 90° fitting to base. Be certain the joker valve is properly in place.
4. If 1" [25 mm] discharge hose will be used, install the 1" [25 mm] hose adapter into the 90° fitting. Use non hardening thread sealant.

IMPORTANT: Do not overtighten!

Discharge Lines

Raritan Sanitation Hose is recommended. Use part number SFH for 1 1/2" [38 mm] hose or SFH1 for 1" [25 mm] hose

1. Connect sanitation hose to discharge fitting on toilet.

NOTE: Discharge fitting is designed for 1" [25 mm] or 1 1/2" [38 mm] hose. 1 1/2" [38 mm] hose is secured at top of fitting and 1" [25 mm] is secured at the bottom.

NOTE: It is not necessary to remove the 1" [25 mm] barb if using 1 1/2" [38 mm] hose. Use the fitting as is.

2. Run hose to appropriate device (e.g.: treatment system, holding tank, etc.).

Intake Lines

Intake pump fittings are interchangeable to allow more flexibility during installation. Inlet ports are located on either side of intake pump. Outlet port (to toilet bowl) is at top of intake pump (FIG 10).

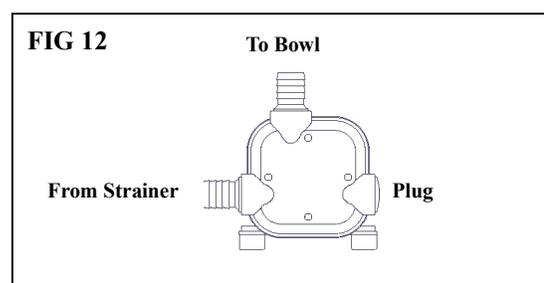
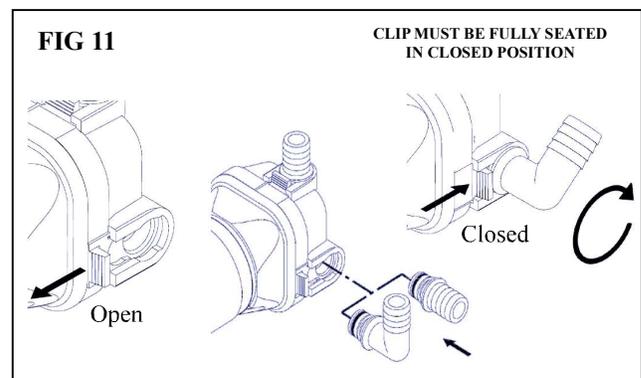
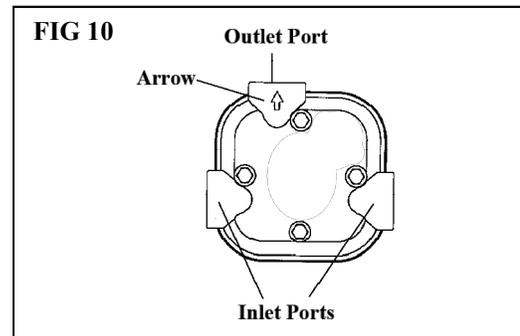
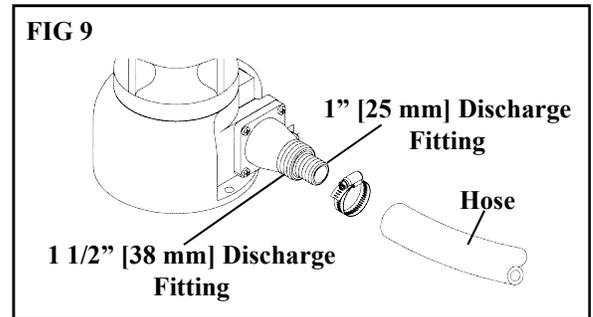
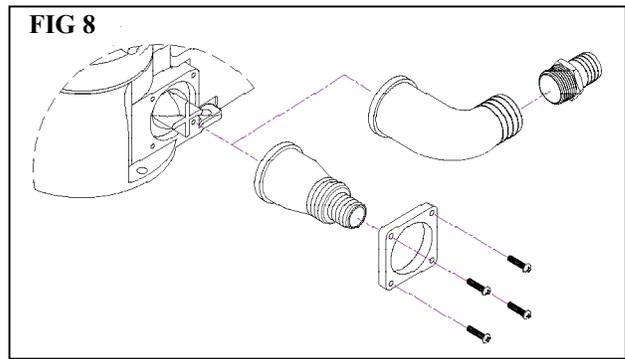
1. Slide fitting clips to open position.
2. Select inlet port to be used.
3. Install appropriate fittings into inlet and outlet ports.

NOTE: The 90° fitting can be rotated 360°.

4. Install the plug fitting into unused inlet port.

IMPORTANT: Be sure not to install plug fitting into outlet port! Damage will occur!

5. Slide fitting clips back to closed position.
6. Connect hose from seacock to inlet port of In-Line Strainer (if used). Use hose clamp provided.
7. Connect hose from outlet port of In-Line Strainer to inlet port of intake pump. Use hose clamp.

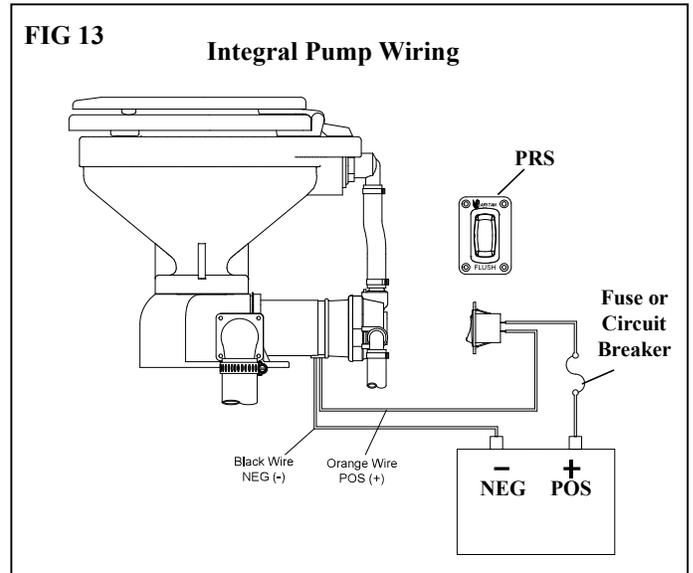


WIRING

WARNING: Hazard of Shock and Fire

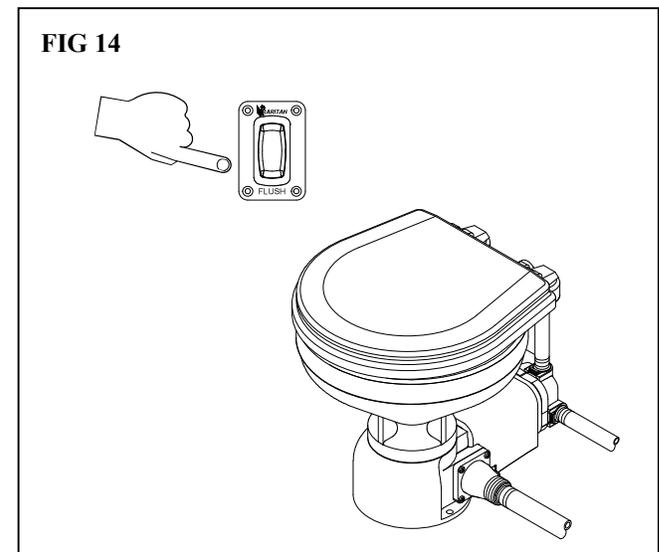
- Always use proper wire, wire connectors and fuse/circuit breaker. See Specification Chart.
- Secure wire properly.
- Do not connect appliances to toilet circuit.
- Make sure power is off before proceeding.
- Use proper wire terminals for all wire connections.

1. Determine proper wire size by measuring distance from:
 - Power source to Switch to toilet motor and back to power source.
2. Select proper wire and fuse/circuit breaker size from Specifications page.
3. Install fuse/circuit breaker in positive line at source.
4. Connect positive wire from fuse/circuit breaker to Switch.
5. Connect wire from Switch to orange wire on motor(s).
6. Connect wire from battery negative or power source ground buss to black wire (negative) on motor(s).



OPERATION

Press switch and hold until all waste is cleared from the toilet bowl.



TROUBLESHOOTING

WARNING: **HAZARD OF ELECTRIC SHOCK** - Before beginning any work on the SeaEra, be sure that all power to the unit has been turned off.



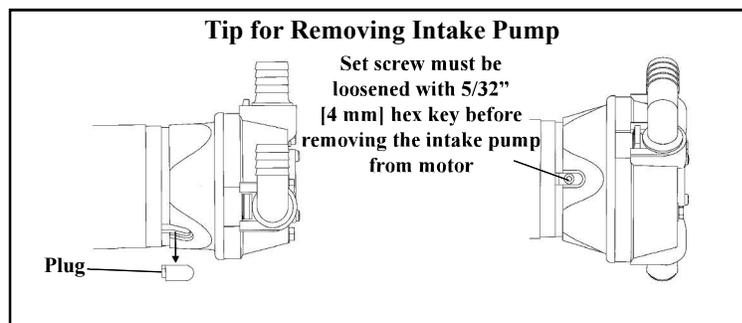
WARNING: **HAZARD OF FLOODING** - Make sure seacocks are in the **CLOSED** or **OFF** position before working on toilet.



NOTE: The following information reflects the most probable causes and solutions to problems although not every possible cause and solution is provided.

Any questions regarding servicing or operation of the SeaEra should be directed to our Technical Support Department in Millville, NJ. Please have model and serial number available before calling.

PROBLEM	POSSIBLE CAUSE	SOLUTION
1. Poor pumpout, especially solids.	1A. Clogged discharge line. 1B. Plumbing restrictions, bends and ells. 1C. Clogged vents. 1D. Mineral buildup in hoses and fittings. 1E. Low voltage.	1A. Be sure discharge seacock is open. Clear line, remove clog. 1B. Replumb to eliminate bends and ells. 1C. Clean holding tank vent and vented loop vents 1D. Clean or replace affected parts. Replace hose if needed. 1E. Check voltage at toilet while toilet is running . If less than nominal voltage of toilet (12, 24, or 32), check condition of batteries and wire sizes. Check terminals and wire connections for corrosion (heat at terminals and junctions indicates a bad or corroded connection).
2. Poor water flow, especially at front of bowl (or no water flow).	2A. Toilet not level. 2B. Restriction in intake line. 2C. Pump sucking air. 2D. Low voltage. 2E. Clogged strainer.	2A. Raise rear of toilet; check with level. 2B. Be sure seacock is open. Clear line-remove clog. 2C. Check all connections from intake thru-hull to intake pump to be sure no air leaks are present. 2D. See 1E, above. 2E. Remove or clear debris from strainer.
3. Foul odors from toilet area.	3A. "Marine life" lodged in rim of bowl. 3B. Permeated discharge hose. 3C. Sewage remaining in discharge line.	3A. Remove and flush bowl with pressure hose to remove all material. Install strainer in intake line to avoid recurrence. Part# 163000 3B. Replace hose with Raritan sanitation hose (#SFH). 3C. Flush toilet longer; replace hose if permeated; reroute hose making a shorter run if possible.
4. Bowl fills while underway.	4A. Pressure buildup at seacocks.	4A. Close intake, then discharge seacock to determine which is causing problem. If discharge, be sure the vent or vented loop is clean. If intake, there is too much pressure on seacock; contact Raritan Technical Support.
5. Water leaking from under unit.	5A. Leaking bowl gasket. 5B. Leak at shaft seal. 5C. Leak from seal plate area.	5A. Tighten (4) bowl mounting nuts (#1226B). 5B. Check seal and motor shaft. 5C. Check seal plate o-ring.
6. Erratic operation/sluggish running.	6A. Worn motor brushes. 6B. Motor bearings damaged by seal leak. 6C. Low or inconsistent voltage.	6A. Return motor to factory for servicing or replacement. 6B. Return motor to factory for servicing or replacement. 6C. See 1E above.



SeaEra PARTS LIST

Item Part# Description

1	1237W	Marine-size Bowl	84	1238SC	Slow Close Marine-size Seat and Cover
1	1244W	Household-style Bowl	84	1245SC	Slow Close Household-size Seat and Cover
2	1236AW	Bowl Spud Assembly			
3	1236E	Bowl Elbow (raw water model)			
4	221361	Sealing Washer	162400		Fittings Kit for Diaphragm Pump (includes 42, 43, 44, 46)
5	1234	Bowl Gasket	163000		Inline Strainer (Optional)
6	VCAP	White Vinyl Cap (4)			
7	1226B	1/4-20 Hex Nut (4)			
8	RNI	Shoulder Washer (4)			
9	CH38	1/4-20" x 2 Threaded stud (4)			
10	161105AW	Base (includes 16, 22 and 23)			
11	C254	Joker Valve			
12	161130	Discharge Fitting			
13	1222D	90° Discharge Fitting			
14	161125	Discharge Mounting Flange			
15	F164	Discharge Mounting Flange Fastener (4)			
16	161107A	Seal Plate O-Ring			
17	1108A	Macerator Nut			
18	M23A	Macerator Lockwasher			
19	53145	Macerator Blade			
20	161120	Impeller/Macerator Housing			
21	161115	Impeller			
22	31-102	Shaft Seal			
23	161110A	Seal Plate			
24	161012	Discharge Motor, 12 VDC			
24	161024	Discharge Motor, 24 VDC			
25	HW1	Mounting Screw Lockwasher (4)			
26	F098	1/4 - 20 x 1" hex (4)			
27	161140	Motor Cover			
28	F165	Lower Housing O-Ring			
29	PLA34	Adapter: 1" MPT x 1" hose			
30	PRS	Momentary Flush Switch			
41	162000W	Intake Pump Assembly (includes 45, 46, 47, 48)			
42	162405	3/4" Hose Barb 90° Fitting (2)			
43	162410	3/4" Hose Barb Straight (2)			
44	162415	Plug Fitting			
45	162420	Fitting Retaining Clip (3)			
46	162425	O-ring (3)			
47	F162VT	Inlet Pump Mounting Bolt (4)			
48	F144	#10 Washer SS Flat (4)			

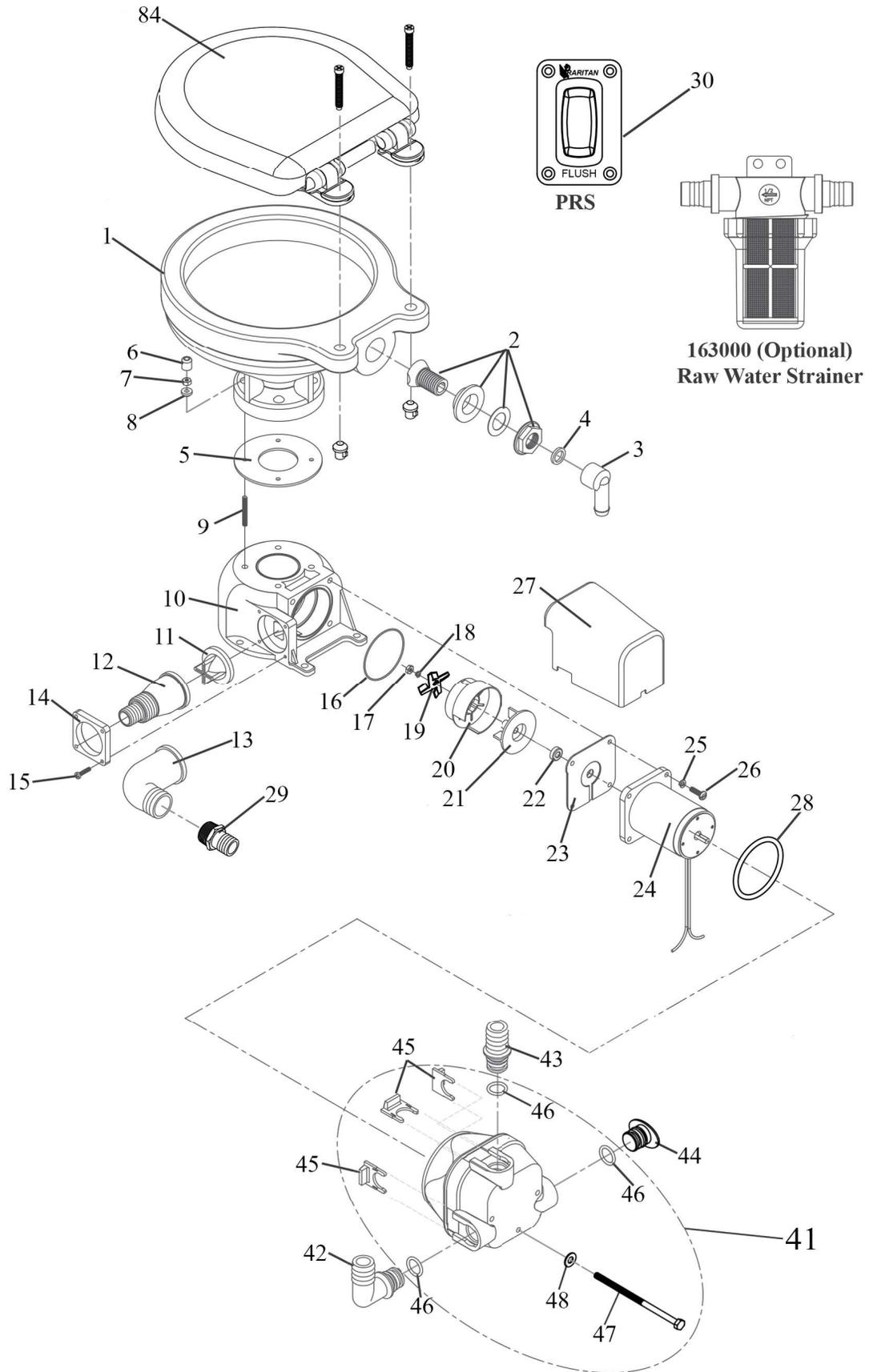
Repair Kits

DIAPUMPRK	Diaphragm Pump Repair Kit
SEADISRK	SeaEra Discharge Repair Kit

NOT SHOWN

CH42	3/4" PVC Hose
CH43	S/S Hose Clamp

SeaEra Exploded Parts View



LIMITED WARRANTY

Raritan Engineering Company warrants to the original purchaser that this product is free of defects in materials or workmanship for a period of one year from the product's date of purchase. Should this product prove defective by reason of improper workmanship and/or materials within the warranty period, Raritan shall, at its sole option, repair or replace the product.

1. TO OBTAIN WARRANTY SERVICE, Consumer must deliver the product prepaid, together with a detailed description of the problem, to Raritan at 530 Orange St., Millville, N.J. 08332. When requesting warranty service, purchaser must present a sales slip or other document which establishes proof of purchase. THE RETURN OF THE OWNER REGISTRATION CARD IS NOT A CONDITION PRECEDENT OF WARRANTY COVERAGE. However, please complete and return the owner Registration Card so that Raritan can contact you should a question of safety arise which could affect you.
2. THIS WARRANTY DOES NOT COVER defects caused by modifications, alterations, repairs or service of this product by anyone other than Raritan; defects in materials or workmanship supplied by others in the process of installation of this product; defects caused by installation of this product other than in accordance with the manufacturer's recommended installation instructions or standard industry procedures; physical abuse to, or misuse of, this product. This warranty also does not cover damages to equipment caused by fire, flood, external water, excessive corrosion or Act of God.
3. ANY EXPRESS WARRANTY NOT PROVIDED HEREIN, AND ANY REMEDY FOR BREACH OF CONTRACT WHICH BUT FOR THIS PROVISION MIGHT ARISE BY IMPLICATION OR OPERATION OF LAW, IS HEREBY EXCLUDED AND DISCLAIMED. ALL IMPLIED WARRANTIES SUCH AS THOSE OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE, IF APPLICABLE, AS WELL AS ANY IMPLIED WARRANTIES WHICH MIGHT ARISE BY IMPLICATION OF LAW, ARE EXPRESSLY LIMITED TO A TERM OF ONE YEAR. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG A LIMITED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.
4. UNDER NO CIRCUMSTANCES SHALL RARITAN BE LIABLE TO PURCHASER OR ANY OTHER PERSONS FOR ANY SPECIAL OR CONSEQUENTIAL DAMAGES, WHETHER ARISING OUT OF BREACH OF WARRANTY, BREACH OF CONTRACT, OR OTHERWISE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.
5. No other person or entity is authorized to make any express warranty, promise or affirmation of fact or to assume any other liability on behalf of Raritan in connection with its products except as specifically set forth in this warranty.
6. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



530 Orange Street, Millville, NJ 08332 USA

Telephone: 856-825-4900

FAX: 856-825-4409

www.raritaneng.com

Thank you for purchasing a Raritan SeaEra

Model and Serial#:

Please have this available if support is needed.

SCAN for
Owners Manual



L318

SCAN for
Warranty Form



If you prefer a printed version of the Owners Materials:

Email: info@raritaneng.com

Questions on installation?

Email: techsupport@raritaneng.com



Do not return this product to store.

PLEASE RETAIN FOR YOUR RECORDS

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