


MODEL AVHW Manufactured after September 2015

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.*



Always use recommended fuse, circuit breaker and wire size.



Motors used with this product are “Ignition Protected”. They are not however, explosion-proof as defined in 46CFR 110.15-65(e), Subchapter J-Electrical Engineering.

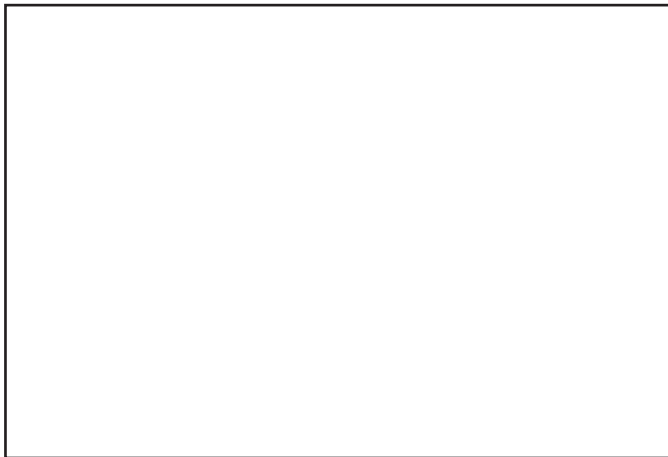
Description:

Atlantes Freedom Vortex-Vac toilet: available in 12V or 24V DC. Fresh water models utilize onboard pressurized freshwater and sea water models utilize a remote pump installed between raw water source and bowl. SeaFresh model allows switching between fresh and raw water source.

Three different control options are available:

1. **Flush Handle Control:** provides momentary operation of flush water and discharge.
2. **Smart Toilet Control:** provides timed operation and independent control of flush water and discharge with handle or wall switch.
3. **Multifunction Momentary Control:** provides momentary operation and independent momentary control of flush water and discharge

Model and Serial#:



IMPORTANT SAFETY INSTRUCTIONS:

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.

Toilets mounted at or below the waterline must have a vented loop installed in the discharge line. The top of the vented loop must be a minimum of 4" (10cm) above the waterline at the boat's greatest angle of heel (see vented loop manufacturer's instructions).

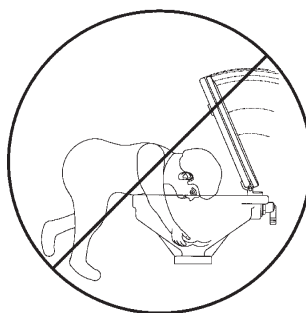
Sea Water Models must also have a vented loop installed between the intake pump and the toilet bowl.

Double clamp all below waterline connections.

WARNING:

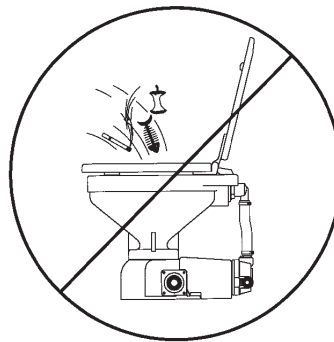
Young children should NOT be left unsupervised around toilet. Serious injury or death could occur. Children can drown in water retained in the bowl. Seat and/or lid could close and strike child.

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



Recommended Visual Inspection

- ✓ For leaks at toilet and hose connections
- ✓ Hose clamps
- ✓ Condition of hoses
- ✓ Seacocks
- ✓ Condition of wires and connections
- ✓ In-Line Strainer (if you have one)



Operation:

Please see instructions included with control to see how to operate your unit

- No special toilet paper is required.
- Water should appear in the bowl within ten seconds. If not, see troubleshooting section.
- Hard objects or stringy substances (paper towels, feminine hygiene products, filter cigarettes, etc.) must not be thrown into the toilet as they will cause damage.
- Always shut off seacock(s) before leaving the boat unattended.

SYSTEM START-UP

1. Open seacock(s).

NOTE: Pressurized freshwater 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.

Pressurized Freshwater Models

Parts Required

- 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 discharge seacock (if one exists).
2. Shut off intake water at source.
3. Turn off power to unit.
4. Disconnect and drain intake and discharge hose.
5. Disconnect intake hoses from toilet and place in one of the buckets.
6. Connect short hose to toilet's discharge and place in other bucket.
7. Pour antifreeze in bowl.
8. Turn on power to unit and flush until antifreeze is removed from the bowl and water is drained from the solenoid and hose.
9. Disconnect power to toilet.
10. Reconnect intake hoses to water solenoid

Intake Pump Models

Parts Required

- 3/4" (19 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 pump suction hose and toilet discharge hose .
4. Connect short hoses to pump's suction intake and to toilet discharge.
5. Place one empty 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 from toilet.

RECOMMISSIONING

1. Using the buckets, hoses and approximately one 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.

Plumbing

Maximum suction of Intake pump (Maximum height above waterline)	4 Ft. (1.2m) from Intake Pump.
Maximum height of discharge vented loop	10 Ft. (3 m) from base of toilet.
Pressurized water source minimum requirements	Minimum flow rate 3 gallons (11.3 liters)per minutes, Minimum Pressure 5 PSI(34.5 Kpa)

NOTES: for Wiring

1.	Distances are from source to unit and back to source.
2.	Distance from power source to remote intake pump MUST be included when determining total distance. Same wire size MUST be used for lower base and remote intake pump.
3.	Recommended conductor wire minimum AWG (mm²) for 3% voltage drop.
4.	Recommended conductor sizes are based on 105°C rated insulation. Refer to ABYC Standards for other insulation ratings.
5.	For 120/240 VAC units use 12VDC specifications from transformer to unit.

CONVERSIONS

Wire - AWG to mm²

AWG	16	14	12	10	8	6	4	2
mm²	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

Recommended Wire and Fuse/Circuit Breaker Sizes

Sea Water Model (sizes based on inlet and discharge added together)

Units Voltage	Circuit Breaker/ Fuse size	Toilet Discharge amps draw	Remote Pump Only amp draw	10 feet	15 feet	20 feet	30 feet	40 feet	50 feet
12 VDC	30	18	10	10 AWG	8 AWG	6 AWG	4 AWG	4 AWG	2 AWG
24 VDC	20	10	5	16 AWG	14 AWG	12 AWG	12 AWG	10 AWG	8 AWG

Pressurized Freshwater Model

Units Voltage	Circuit Breaker/ Fuse size	Amp draw	10 feet	15 feet	20 feet	30 feet	40 feet	50 feet
12 VDC	25	18	10 AWG	10 AWG	8 AWG	6 AWG	6 AWG	4 AWG
24 VDC	15	10	16 AWG	16 AWG	14 AWG	12 AWG	10 AWG	10 AWG

Remote Intake Pump Only

Units Voltage	Circuit Breaker/ Fuse size	Amp Draw	10 feet	15 feet	20 feet	30 feet	40 feet	50 feet
12 VDC	15	10	14 AWG	12 AWG	10 AWG	10 AWG	8 AWG	6 AWG
24 VDC	10	5	16 AWG	16 AWG	16 AWG	16 AWG	14 AWG	12 AWG

Hose Sizes

Inlet:

1/2”(12.7 mm) for freshwater model

3/4” (19 mm) for sea water model

Discharge:

1”(25.4 mm) or 1 1/2”(38 mm)

Water Consumption:

Water Saver : 2 pint*

Regular Flush: 2 quarts

* requires timing adjustment

Parts included with all models

1. Toilet bowl assembly
2. Mounting hardware
3. Seat
4. One of the following flush controls:
 - a. Flush handle control
 - b. Multifunction Momentary Control
 - c. Smart Toilet Control
5. User guides and Installation guides with labels

Additional Parts included with sea water

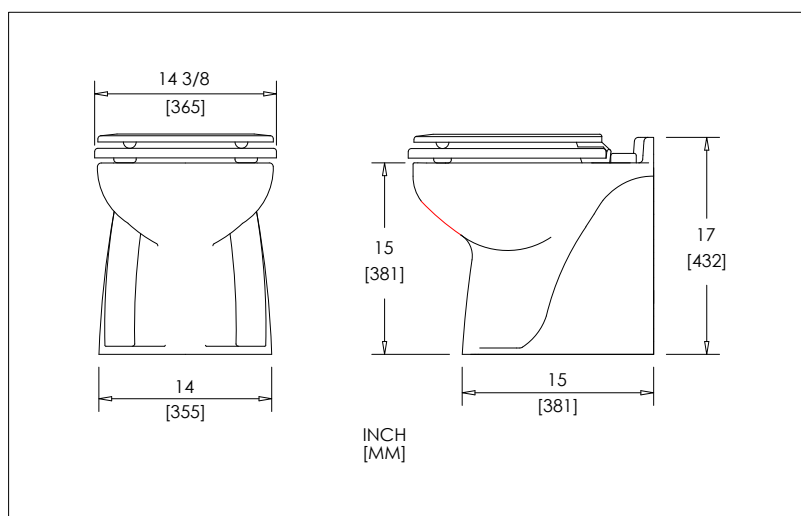
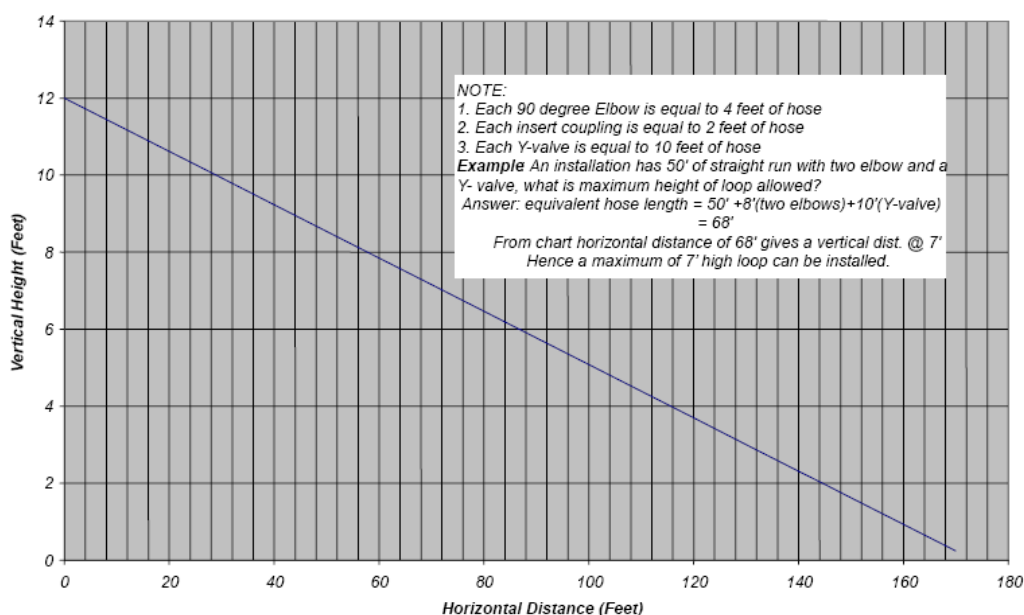
model:

1. Remote pump assy.

Additional Parts Required

- Two stainless steel mounting bolts or lag screws (minimum 1/4" [6mm]) and washers)
- 1" (25 mm) or 1 1/2" (38 mm) I.D. discharge hose
- 3/4" (19 mm) for seawater models or 1/2" (13mm) for freshwater models, reinforced intake hose.
- Hose clamps (two for each connection below waterline)
- Wire
- Terminals
- Fuse/circuit breaker

Atlantes discharge Maximum recommended 1" or 1 1/2" PVC hose length



MOUNTING

Mounting surface must be flat and solid.

1. Place toilet where it will be located.
Make sure there is room to route hoses.
Make sure seat will open properly.
2. Using a pencil, mark location of bowl mounting holes (FIG 2).
3. A. If hoses will be routed through floor, trace one side of toilet on floor.
B. If hoses will be routed through wall, trace one side of toilet on wall.
4. Remove toilet and mark location for hoses and wiring on deck or wall.
5. Cut necessary holes for hoses and wiring.
6. Drill holes for toilet mounting bolts/screws.

NOTE: Use 1/4" [6mm] size bolts/screws. To select proper Screw or Bolt length, measure thickness of deck plus 1 1/8" (29mm).

TIP: Do not install until all wiring and plumbing is done. Secure toilet to floor after installation is complete.

CAUTION: Do Not over tighten mounting bolts. Damage to the toilet bowl may occur. Tighten both mounting bolts evenly and slowly.

Mounting toilet

1. Install mounting bushings, bolts.
2. Tighten bolts being careful to not over-tighten (Do not exceed 30 inch lb. when tightening)
3. Install caps over mounting bolts.

Mounting Remote Pump:

1. Locate remote pump between thru hull fitting and toilet bowl.
2. Locate in an area away from berth to keep noise level down.
3. Use Inline Strainer part# 163000 (optional) to avoid clogs.
4. Secure remote pump to the floor using four bolts through the pump base.

FIG 1

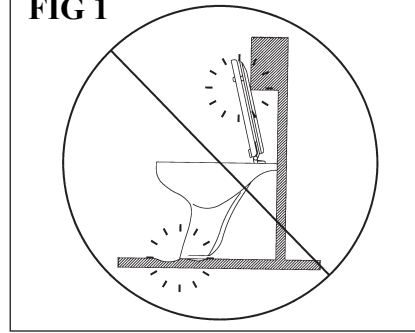


FIG 2

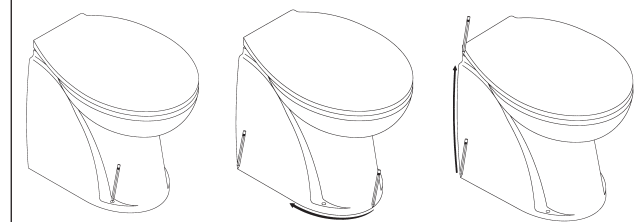


FIG 3

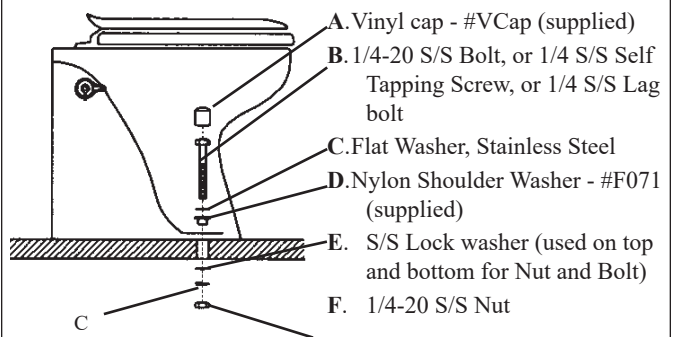
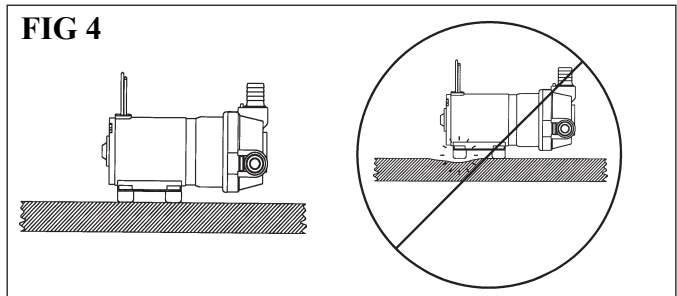


FIG 4



WIRING

FOLLOW THE INSTRUCTIONS INCLUDED WITH CONTROL

PLUMBING

WARNING: HAZARD OF FLOODING

Toilets mounted at or below the waterline, at greatest angle of heel, and connected to a Seacock/Thru Hull Fitting(s) **MUST** have **VENTED LOOPS** installed in toilet discharge plumbing and between raw water intake pump and toilet bowl.

Install vented loops per manufacturer's instructions. Double clamp all below-waterline connections.

IMPORTANT

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

Residual Water in the Bowl

The Atlantes Internal Discharge Hose is equipped with an Integral Vent. The Integral Vent is for toilet installations where the discharge flow is downward and residual water after the flush is desired. A flush control that adds water at the end of the flush cycle, such as our Smart Toilet Control (STC), is required for optimal water retention.. The toilet must be highest connection in the discharge plumbing when using this vent to retain water in the bowl. The maximum height of water retained is approx. 4" from the bottom of the bowl. **IF THE DISCHARGE PLUMBING IS ROUTED UPWARD (such as below water line installations), DO NOT REMOVE THE VENT CAP (FIG 7b).**

To enable Vent, remove Vent Cap. See FIG 8.

FIG 5 Pressurized Freshwater Model Installed below Waterline

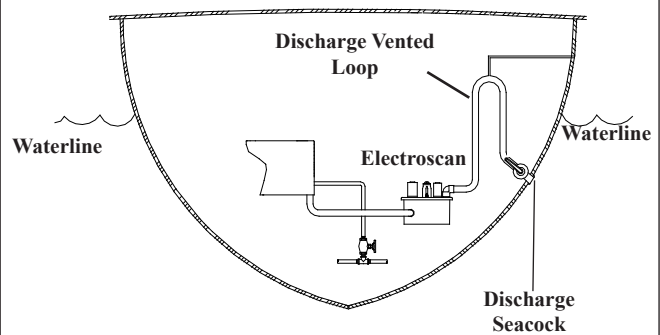


FIG 6 Remote Pump Model Mounted below Waterline

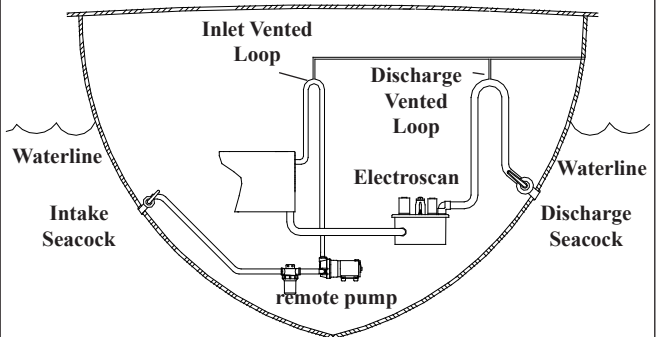
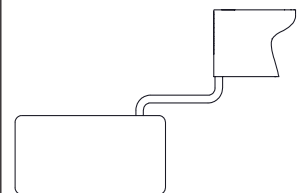


FIG 7a



Toilet Installed above waterline or above Treatment Device and or Holding Tank = Downward discharge flow
Remove vent cap

FIG 7b

Toilet installed below waterline or below Treatment Device and or holding Tank = Upward discharge flow
Do not remove vent cap

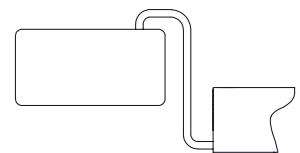
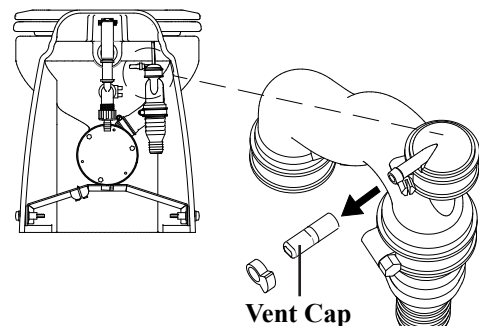


FIG 8



Intake Lines

Pressurized Freshwater Models

Install a shut off valve in intake line before water solenoid valve.

1. Connect hose from shut off valve to inlet port of water solenoid valve at the toilet.

NOTE: To avoid malfunction of water solenoid due to debris in water, installation of Freshwater Strainer (190601) is recommended.

Remote Sea Water Models

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.

NOTE: To avoid poor pump performance installation of strainer (163000) is recommended

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 to pump will occur!

5. Slide fitting clips back to closed position.
6. Connect hose from seacock to inlet port of optional In-Line Strainer if installed.
7. Connect hose from outlet port of In-Line Strainer to inlet port of intake pump.
8. Connect hose from outlet port of intake pump to bowl elbow located on back of toilet bowl.

Connecting Hoses and wiring to toilet

1. Route wire from control per control instruction.
2. Install seat. Install discharge hose support strap between seat nut and the bowl. See FIG 11.
3. Install toilet in place, connect hoses and wire plugs.

Caution: To avoid kinking to not pull on discharge hose, be certain there is no pressure on the discharge line.

FIG 9

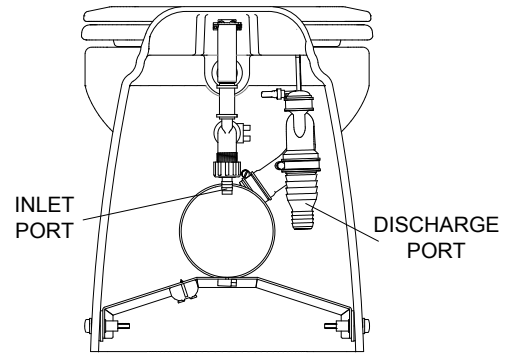


FIG 10

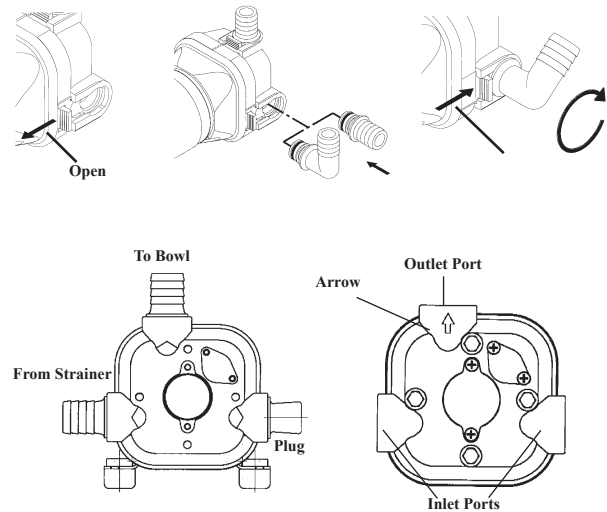
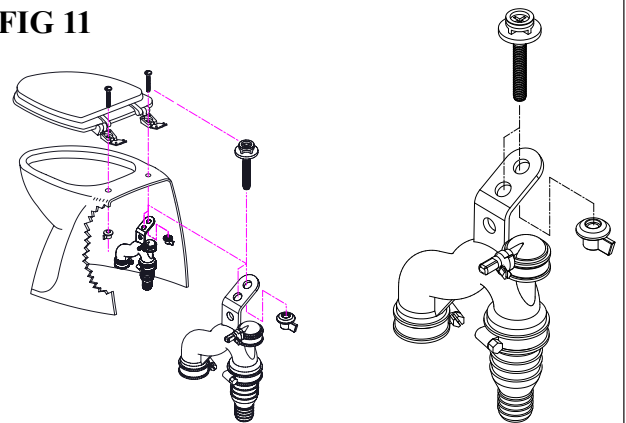


FIG 11



TROUBLESHOOTING

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

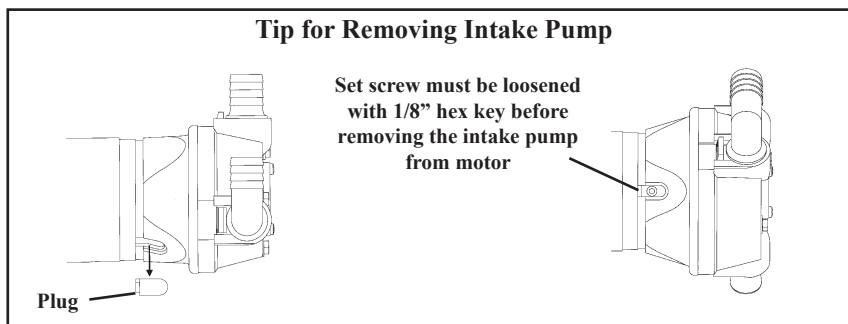
WARNING: HAZARD OF FLOODING - Make sure seacocks are in the **CLOSED** or **OFF** position before working on toilet.

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 Marine Elegance should be directed to our Technical Support Department in Millville, NJ or Ft. Lauderdale, FL. 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 or 24), 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. 3B. Replace hose with Raritan sanitation hose (#SH). 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 Throat adapter. 5B. Leak at shaft seal. 5C. Leak from bowl spud.	5A. Tighten adapter clamps. 5B. Check seal and motor shaft. 5C. Check and reseal bowl grommet

Tip for Removing Intake Pump



ATLANTES FREEDOM VORTEX VAC PARTS LIST

ItemNo.	Part No.	Description
1	1245SC	Seat & Cover (Slow Close)
2	AM003	Atlantes Bowl (White)
3	M23A	#10 Lockwasher SS
4	1108A	10-32 SS Nut
5	161123	Macerator Blade
6	31-102	Motor Shaft Seal
7	221110	Discharge Pump Seal Plate
8	221105	O-Ring
9	161115	Impeller
10	221115	Discharge Pump Macerator Housing
11	31-114	Lock Nut 10-32 W/Nylon (3)
12	221012	Discharge Motor 12 V
12	221024	Discharge Motor 24V
13	221125	Bowl Throat Adapter Clamp - Pump
14	221120	ME: Bowl Throat Adapter
15	221130	ME: Adapter Clamp, Large
16	F035	Isolation Nut (2)
17	CH57	Rubber Washer (2)
19	AM021A	Pump Mounting Bracket
20	221127	Discharge Motor Mounting Clamp
21	AM166W	Discharge Hose
22	221135	Joker Valve (2)
23	221145	Discharge Adapter Fitting
24	221146	Joker Valve Insert
25	221160	Discharge Hose Clamp (small)
26	221165	Discharge Hose Clamp (large)
27	VLVE	Vent Valve Assembly
28	FC001	Vent Valve Hose Clamp
29	221150	Spud Seal
30	F089	Screw: 1/4-20 x 2" (2)
31	F196	ME: Front Mounting Cap (2)
32	F195	Washer: Cup (2)
33	F071	Nylon Shoulder Washer (2)

Remote Intake Pump

40	166012A	Pump Motor 12 VDC
40	166024A	Pump Motor 24 VDC
41	162000W	Remote Intake Pump W/O Motor
42	162405	3/4" Hose Barb 90° Fitting
43	162410	3/4" Hose Barb Straight
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)
50	PLA26	Elbow Adapter 3/4 X 1/2

PRESSURIZED FRESH WATER UNITS

60	221351	Solenoid Valve 12 VDC
60	221352	Solenoid Valve 24VDC
61	221356	ME: Nut 3/4 BSP
62	221357	ME: Hose Adapt. Straight
67	221335	Hose, 1/2"
68	221340	Hose Clamps 1/2" (2)
69	221300	Vacuum Breaker Assembly

BOWL MOUNTED FLUSH HANDLE

70	AM665W	Handle SS W/Set Screw
71	AV600W	Flush Control & Wire Harness
72	ETB3	Terminal Block 3 Poles
73	F108	Screw #4 x 7/8" (2)
74	HLWQB	1/4" Split Lock Washer (4)
75	M31	1/4" Brass Flat Washer (8)
76	31-722	Nylon Shoulder Washer (2)
77	F069	1/4" Fiber Washer (2)
78	HSB1	1/4-20 Brass Screw (2)
79	M30	1/4-20 Brass Nut (4)

SMART TOILET CONTROL UNITS

80	STC548W	Smart Toilet Control (12 & 24 VDC)
81	STC545	Control Cable 7ft
82	221524	Wall Switch Cover Plate - White
82	221524A	Wall Switch Cover Plate - Ivory
83	STC543W	Touch Panel W/Back Plate
84	221525	Touch Panel Gasket

MULTIFUNCTION MOMENTARY CONTROL (NOT SHOWN)

221553	Manual (Relay) Control
W183C	Cable for Multifunction Control
SF71	Frame, Vimar
SF74	Bezel, Vimar White
SF77	Switch, Vimar

SOLENOID VALVE PRESSURIZED SEAWATER UNITS

93	CWPS12B	1/2 GC Solenoid valve 12V
93	CWPS24B	1/2 GC Solenoid valve 24V
94	CWPSMB	Mounting Bracket for CWPS
95	PLA14	1/2" MPT to 3/4" Barbed Nipple (2)

PARTS NOT SHOWN

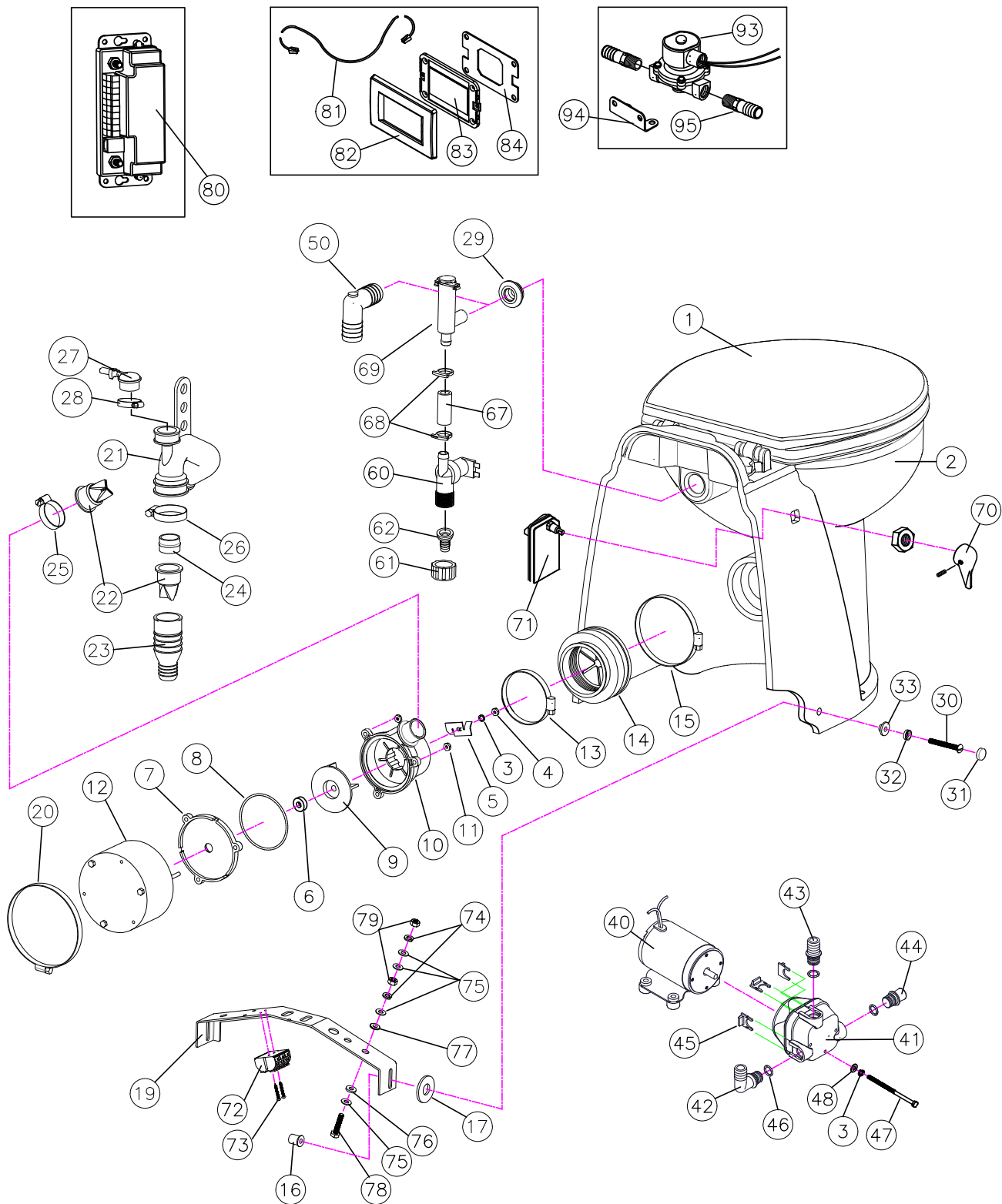
RTME12D	Power Converter for 120/240VAC UNIT
F071	Nylon Shoulder Washer (2)
VCAP	Vinyl Cap (2)

ADDITIONAL ACCESSORIES AVAILABLE FROM RARITAN

221147	1 1/2" Thru Wall Discharge Kit
221148	1" Thru Wall Discharge Kit
1PCP22	C.P. Cleans Potties, 22 OZ
1PCHGAL	Cleans Hoses, Tanks and MSD (gal.)
SFH	Sanitation Hose 1 1/2" (sold by foot)
163000	Seawater Inline Strainer
90323	Vented Loop 1 1/2" (38mm) White
90319	Vented Loop 3/4" (19mm) White
90941	Aquavalue White with (3) Straight Tails

Atlantes Freedom Vortex Vac Exploded Parts View

EXPLODED PARTS



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, or 3101 SW 2nd Ave. Ft. Lauderdale, FL 33315. 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.
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530 Orange Street, Millville, NJ 08332 USA
Telephone: 856-825-4900 FAX: 856-825-4409
www.raritaneng.com

Fort Lauderdale, FL
Telephone: 954-525-0378