

# Marine *Elegance* Comfort Height

## Model 241E with Smart Handle Installation and Maintenance Instructions

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

**WARNING:**



*Raritan Engineering Company, Inc. recommends that a qualified person or electrician install this product. Equipment damage, injury or death could result from improper installation. Raritan Engineering Company, Inc. accepts no responsibility or liability for damage to equipment, injury or death 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** Install in the area requiring ignition protected devices.

**DO NOT** run continuously for more than 30 seconds.

### Description:

Our Marine Elegance Comfort Height Elongated Toilet is available in 12V, 24V DC, and 120V/240V AC. Fresh water model utilizes onboard pressurized fresh water, the raw water model utilizes a remote intake pump to pump raw (outside) water to the bowl. The Sea Fresh model utilizes both and can safely switch between pressurized fresh water and raw water sources.



**Smart Toilet Control:** provides timed operation and independant control of water and discharge.

**IMPORTANT: Discharge and Inlet Pump / Valve MUST BE wired for proper operation and programming.**

#### "02" model:

The "02" model is designed to work as a momentary unit using only microswitches to activate the motors. It is also a "fail safe" mode for the toilet control in the 03 model.

#### "03" model:

The "03" model is a smart toilet control handle which provides timed operation while still having momentary functionality if toilet control is removed.

#### Operation of handle:

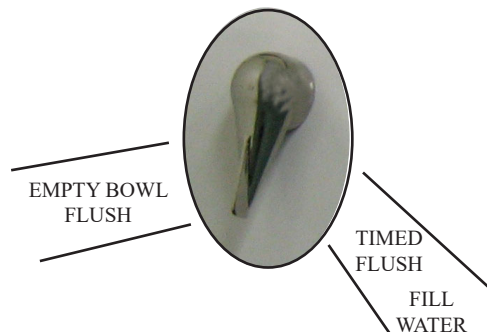
##### Pull Handle Forward:

"02" Pull forward and inlet runs until handle is released.  
"03" Pull forward and release. This will start the timed flush cycle.

##### Push Handle Backward:

"02" and "03" Push and hold: runs just the discharge pump for a "dry bowl" flush.

#### FLUSH LEVER POSITIONS



## IMPORTANT SAFETY INSTRUCTIONS:

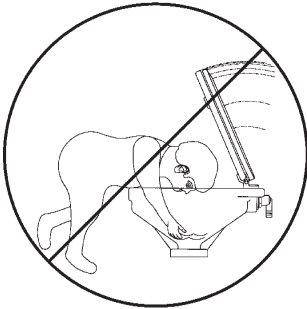
**WARNING:** **HAZARD OF FLOODING** - Always shut off seacock(s) before leaving the boat unattended.



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

**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 lid could close and strike child. Always replace circuit breaker and fuses with same rating.



### Cleaning Instructions

**IMPORTANT:** Do not use cleaners that contain ammonia, ethyl acetate, phosphoric acid or concentrated chlorine bleach. Do not allow acids, such as vinegar, and other cleaners to sit for extended periods of time in the toilet. These may cause damage to the toilet. Do not use abrasive cleaners or cleaning pads. Flushing fresh water through toilet when leaving for extended periods is recommended.

Using C.P. a bio-enzymatic toilet bowl cleaner (available from Raritan Engineering Part# 1PCP32) will keep the bowl clean and fresh smelling.

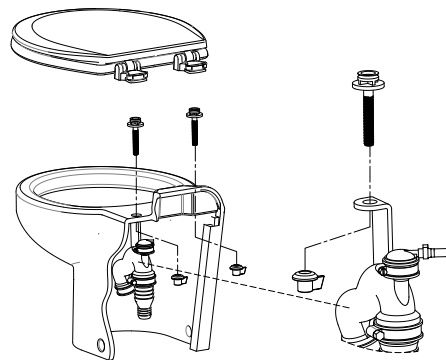
If the toilet is mounted at or below waterline and has an overboard plumbing option, a discharge and intake vented loop may be necessary. The top of the vented loop must be a minimum of 4" (10cm) above the waterline at the boats greatest angle of heel (see vented loop manufacturer's instructions).

Raw water models must also have a vented loop installed between the intake pump and the toilet bowl.

Double clamp all below waterline connections.

### Recommended Visual Inspection

- ✓ No leaks at toilet and hose connections
  - ✓ Hose clamps
  - ✓ Condition of hoses
  - ✓ Seacocks
  - ✓ Condition of wires and connections
  - ✓ In-Line Strainer (if you have one)
- 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, cigarette filters, etc.) must not be thrown into the toilet as they will cause damage.
  - Always shut off seacock(s) before leaving the boat unattended.



## 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.

### Winterizing Pressurized Fresh Water 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 discharge hose.
5. Disconnect intake hose from water solenoid and place in one of the buckets to empty/drain hose.
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.

### Winterizing Remote 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 intake hose and discharge hose.
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 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.

### 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.

# SPECIFICATIONS

## 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 loop
Pressurized water source minimum requirements	Minimum flow rate 5 gallons (19 liters) per minute. 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 (mm <sup>2</sup> ) 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 mm <sup>2</sup>								
AWG	16	14	12	10	8	6	4	2
mm <sup>2</sup>	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	

## Hose Sizes

### INLET

1/2" (12.7 mm) for fresh water model  
3/4" (19 mm) for raw water model

### Discharge

1" (25.4 mm) or 1 1/2" (38 mm)

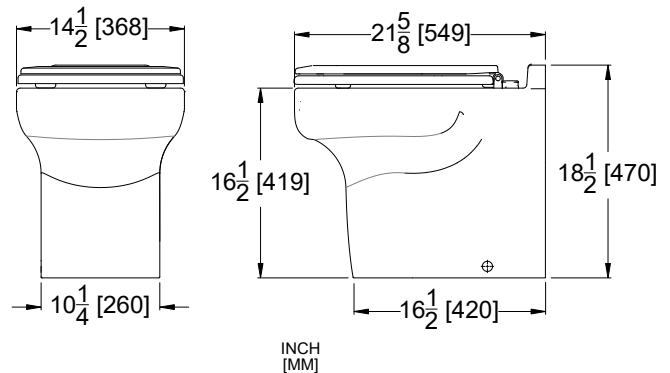
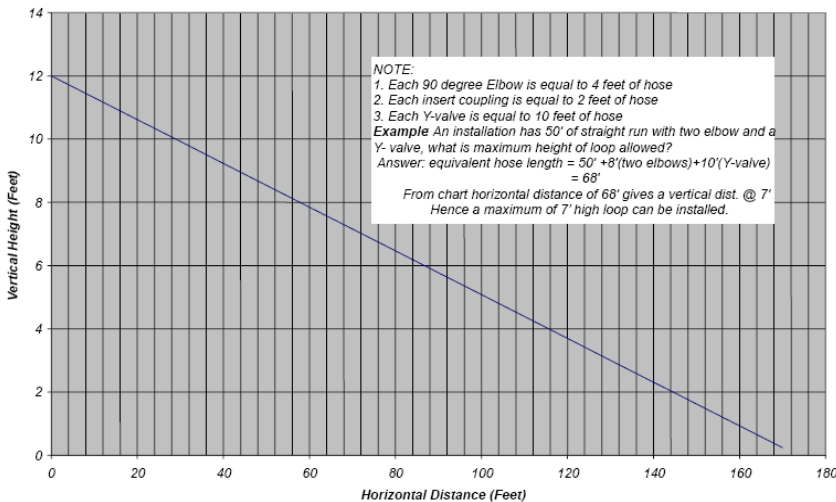
## Raw Water Model - Recommended Wire and Fuse/Circuit Breaker Size

Units Voltage	Circuit Breaker/fuse size (amps)	Toilet Discharge Pump Amp draw	Remote Intake 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	10 AWG	10 AWG	8 AWG

## Pressurized Fresh Water Model - Recommended Wire and Fuse/Circuit Breaker Size

Units Voltage	Circuit Breaker/fuse size (amps)	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

## Discharge maximum recommended 1" or 1 1/2" PVC hose length



**Parts included with all models:**

1. Toilet bowl assembly
2. Mounting bracket kit
3. Seat
4. Flush control - includes User and Installation Guides. (In some cases distribution points may package and sell controls separately.)
5. User guide and Installation guide with labels

**Additional Parts included with raw water model:**

1. Remote pump assy.
2. Sea Fresh models include relay for remote pump

**Additional Parts Required:**

- 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)
- 1/2" (13 mm) I.D. reinforced hose for fresh water
- Wire
- Terminals
- Fuse/circuit breaker

**Caution:** To avoid kinking, do not pull on the discharge hose. Be certain there is no pressure on the discharge line.

**Installing the seat and discharge hose support strapping**

**Discharge Hose Support Strap**

**Important:** Discharge Hose must be supported. Attach support strap to seat bolt as shown in FIG 1.

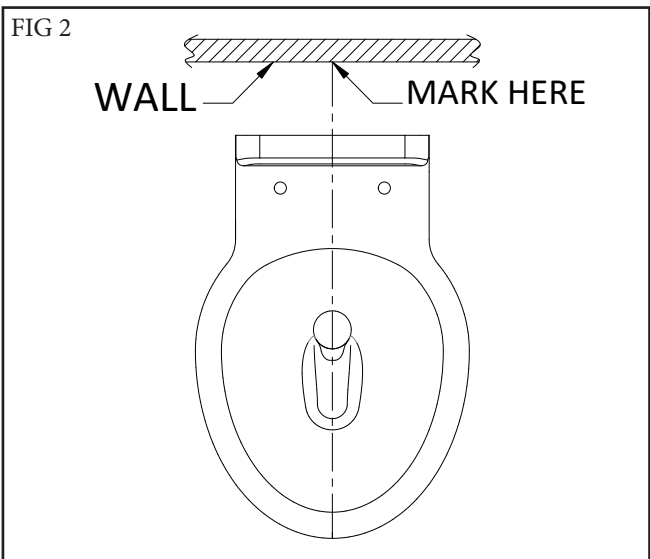
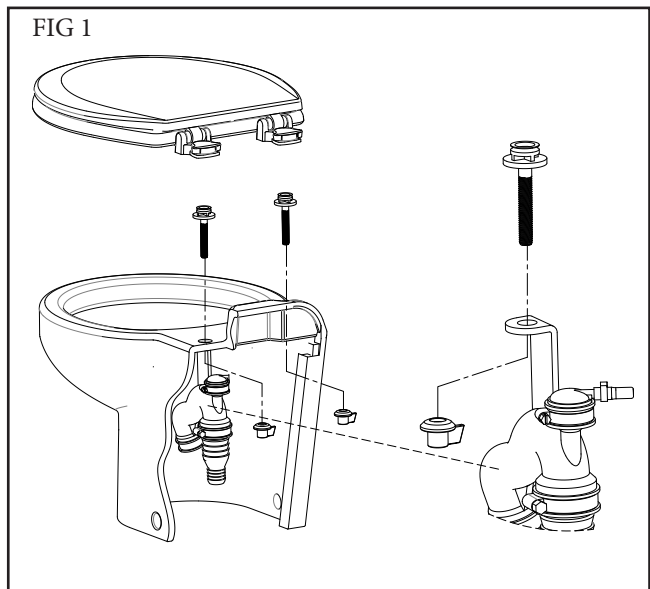
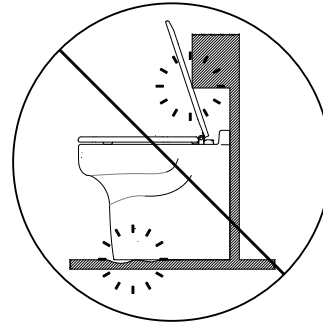
**For pressurized fresh water and remote intake pump models, using through deck plumbing**

**Mounting toilet to deck**

1. Mark deck and walls where center of bowl will be, FIG 2

**Mounting Toilet**

**Mounting surface must be flat and solid.  
Seat must open more than 90 degrees.**



# MOUNTING

2. Place Mounting Template on deck, against the wall with arrow located on center mark and secure with tape (FIG 3)

3. Drill holes for floor mounting brackets at location (FIG 4)

4. Line up outside edges of floor mounting brackets with adjacent lines (Lines A, FIG 3) on mounting template. Secure brackets to deck using mounting screws and flat washer (FIG 5)

5. Drill holes for hoses and wires

1 1/2" Hose: 2" (51 mm)

1" Hose: 1 1/2 (38 mm)

Inlet:

FRESH: 7/8" (22 mm)

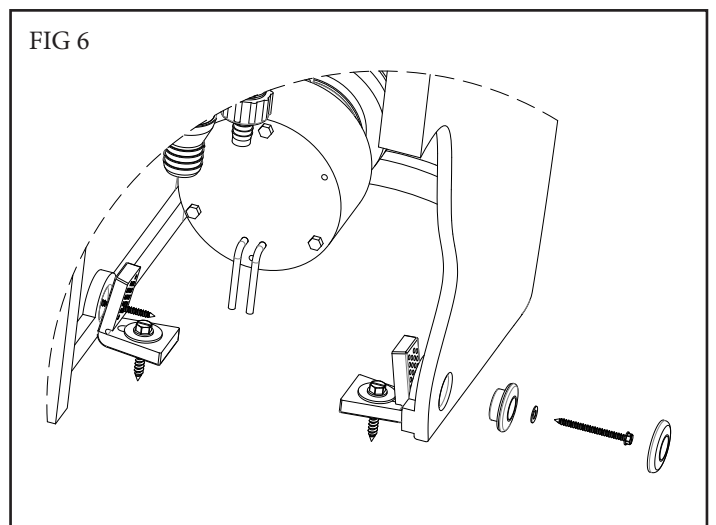
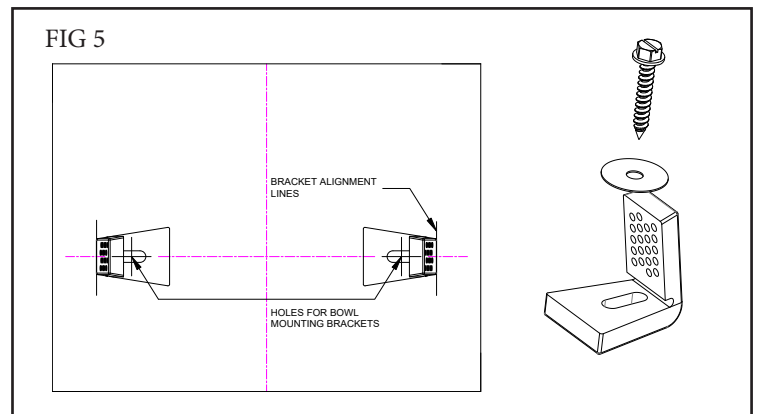
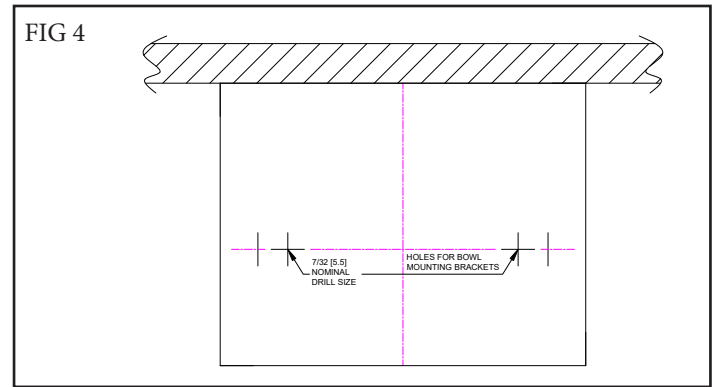
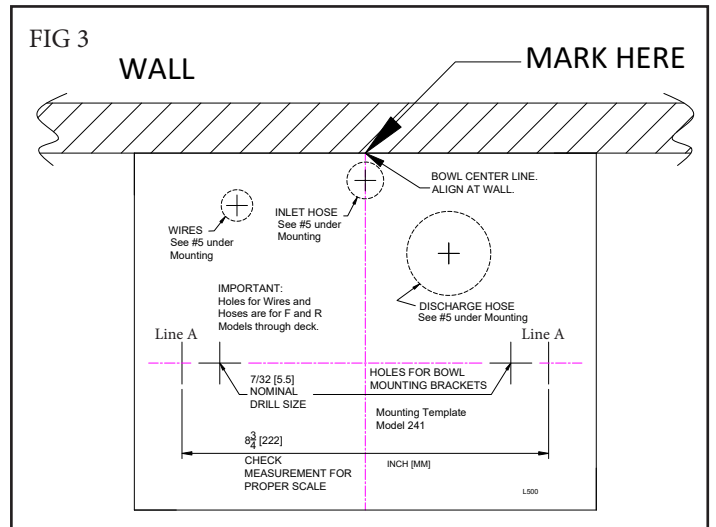
RAW: 1" (25 mm)

Wires: 3/4" (19 mm)

**NOTE:** Check outside diameter of hoses and adjust accordingly.

6. Complete plumbing and wiring before installing toilet.

7. Mount toilet to mounting bracket as shown in FIG 6





## 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.

Raw water models installed below the waterline **MUST** have a vented loop installed between the intake pump and the toilet bowl.

Double clamp all below-waterline connections.

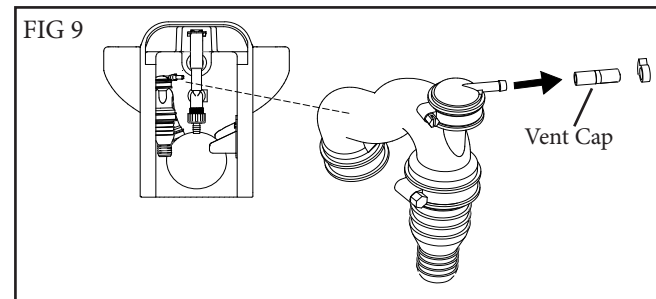
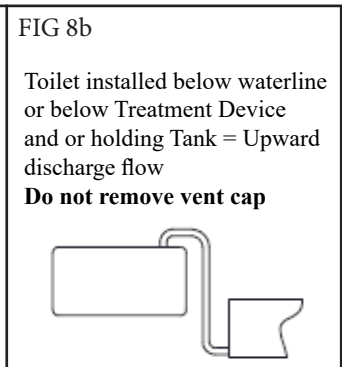
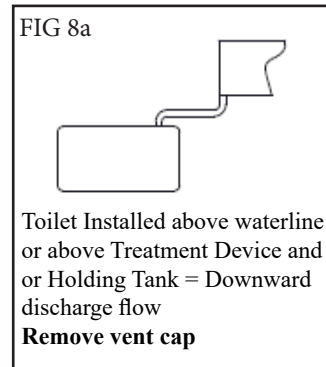
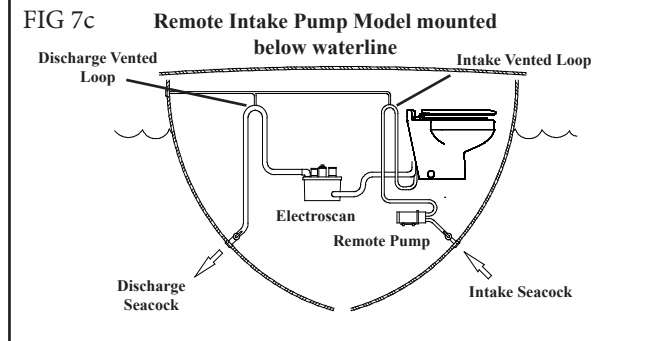
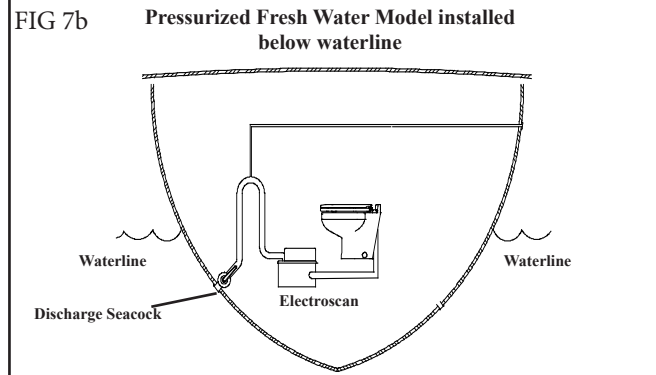
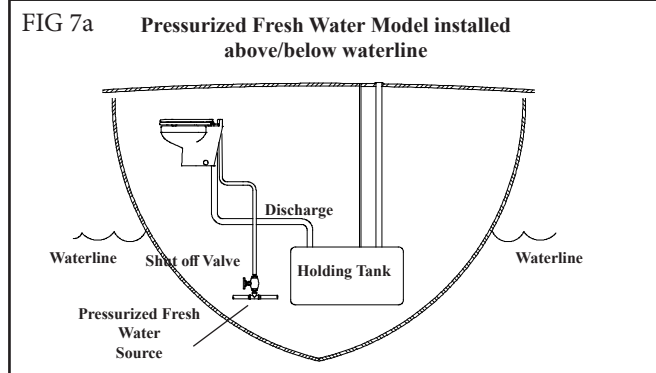
### IMPORTANT

- Fittings and 90° bends should be kept to a minimum.
- In-Line Strainer may be installed on raw water models per Installation Instructions. This will 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 (SFH)
- Secure all hoses properly.
- Do not cut or alter #221145 discharge adapter.

### Residual Water in the Bowl

The Marine Elegance is equipped with an integral vent to maintain water, up to 4" inches, in the bowl when the plumbing lines are routed downward (See FIG 8a and FIG 8b). The Smart Toilet Control (STC) is designed to add water at the end of the flush cycle. For vent to work properly in downward installation, the vent cap must be removed (see FIG 9). If any of the discharge hose runs higher than the internal integral vent, **DO NOT REMOVE THE VENT CAP.**

To enable Integral Vent, remove Vent Cap (FIG 9), connect 1/4" hose and connect hose to a deck vent fitting (Reference FIG 7C). Hose and deck fitting not included.



## Discharge Lines

Raritan Sanitation Hose is recommended. Use part number SFH for 1 1/2" hose or SFH1 for 1" hose

1. Connect sanitation hose to discharge fitting on toilet.  
**NOTE:** Discharge fitting is designed for 1" or 1 1/2" hose. 1 1/2" hose is secured at top of fitting and 1" is secured at the bottom. It is not necessary to remove the 1" barb if using 1 1/2" hose. Use the fitting as is.
2. Run hose to appropriate device (e.g.: treatment system, holding tank, etc.).

**NOTE:** If installation requires routing through the backwall rather than the floor, 90 degree kits are available:

Use part# 221147 for 1 1/2" hose or 221148 for 1" hose.

**Caution:** To avoid kinking, do not pull on the discharge hose. Be certain there is no pressure on the discharge line.

## Intake Lines

### Pressurized Fresh Water Models

1. Connect 1/2 (13mm) I.D. hose to pressurized fresh water supply.
2. Install a shut off valve in intake line before toilet.
3. Connect hose from shut off valve to inlet fitting of water solenoid valve at the toilet.

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

### Mounting Remote Pump

1. Remote pump uses 3/4" (19mm) ID hose for connection.
2. Locate remote pump between thru hull fitting and toilet bowl.
3. Locate in an area away from berth to keep noise level down.
4. Use Inline Strainer (optional) to avoid clogs.
5. Secure remote pump to the floor using four bolts through the pump base (FIG 13).

### Connecting Remote Pump

Remote 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 12).

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

1. Slide fitting clips to open position (FIG 11).
2. Select inlet port to be used.
3. Install appropriate fittings into inlet and outlet ports.

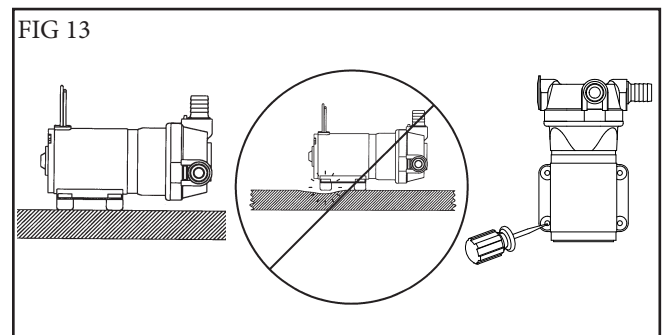
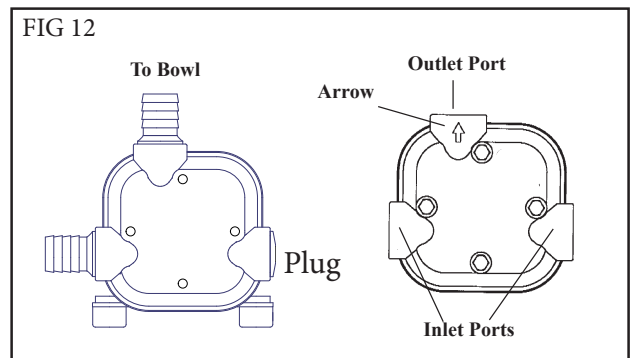
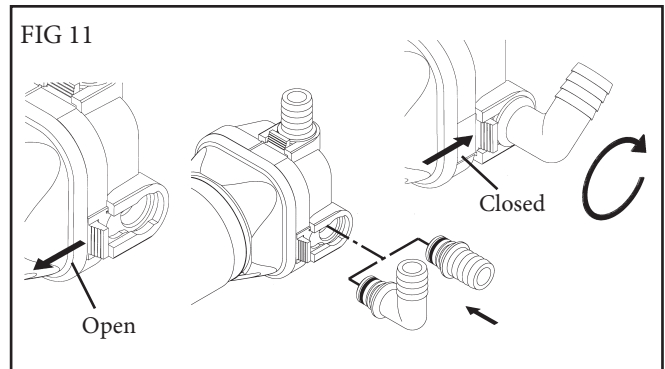
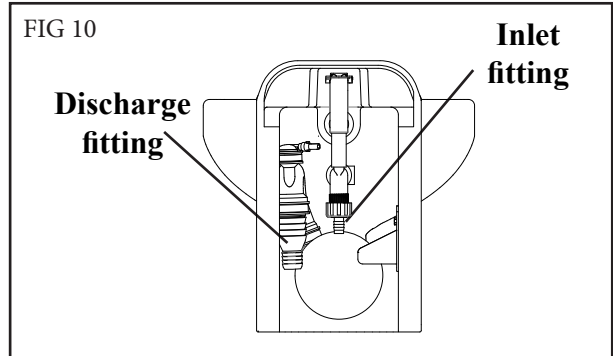
**NOTE:** The 90° fitting can be rotated 360°.

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

4. Install the plug fitting into unused inlet port.
5. Slide fitting clips back to closed position (FIG 11)
6. Connect hose from seacock to inlet port of intake pump. If used, strainer is in-line. Use hose clamp.

**IMPORTANT:** Double clamp all below waterline hose connections!

7. Connect hose from outlet port of intake pump to bowl elbow located on back of toilet bowl.





## Mounting controls:

Refer to instruction enclosed with control.

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

## WIRING

### WARNING: Hazard of Shock and Fire

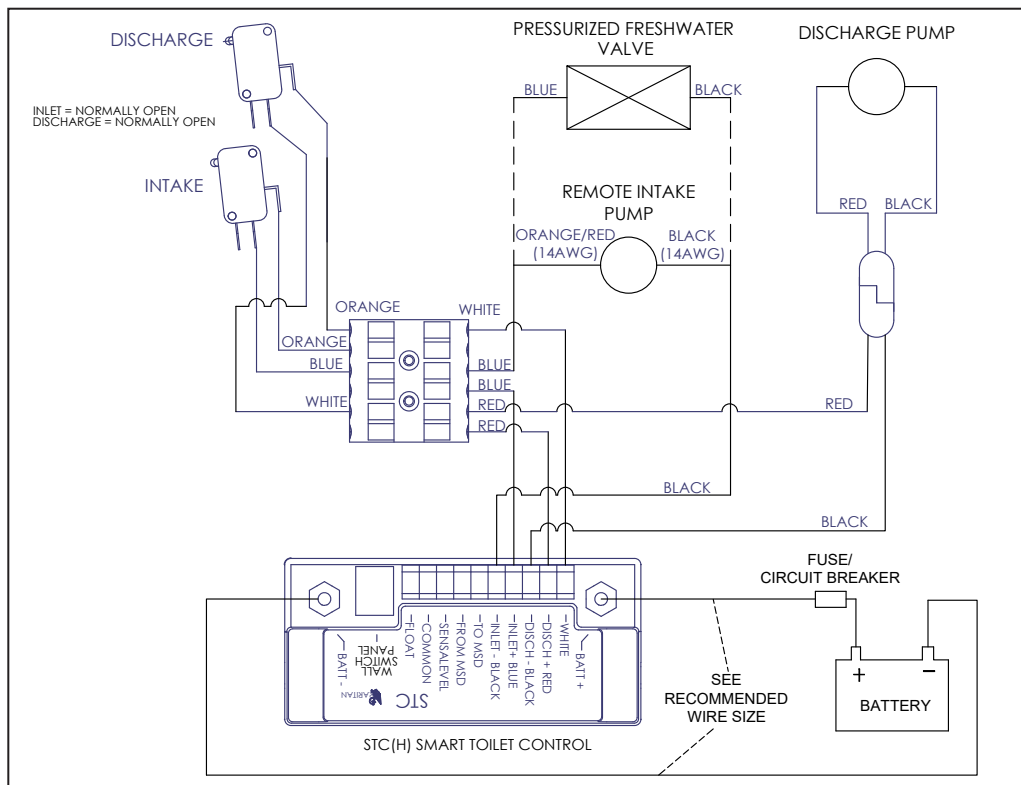
- Always use proper wire, wire connectors and fuse/circuit breaker. See Specification Chart.
- Secure wire properly.
- Do not connect appliances to toilet circuit.
- Make sure power is off before proceeding.
- Use proper wire terminals for all wire connections.

2. Select proper wire and fuse/circuit breaker size from Specifications on Installation page.
3. Install fuse/circuit breaker in positive line at source.
4. Wire control to the toilet and battery using one of the wiring diagrams supplied with the Smart Toilet Control.
5. Route wire from control per wiring diagrams.

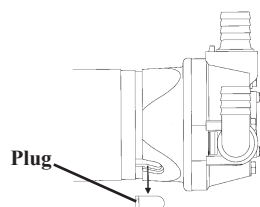
1. Determine proper wire size by measuring distance from:

- Power Source to toilet and back to power source.
- Remote pump units - also include distance from power source for remote pump and back to power source.

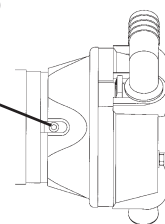
Same wire gauge must be used for both lower base and remote pump.



### Tip for Removing Intake Pump



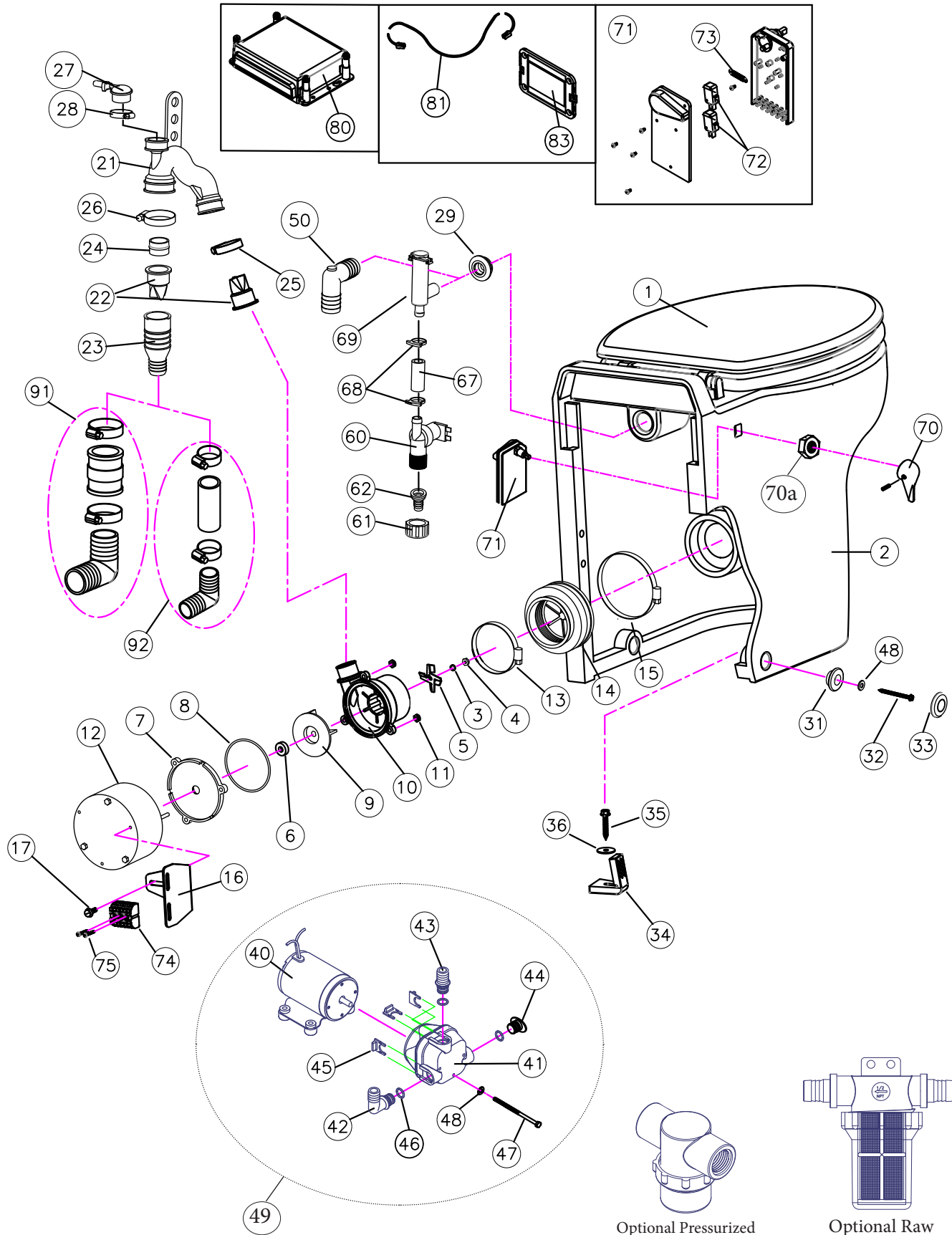
Set screw must be loosened with 5/32" hex key before removing the intake pump from motor





# Marine Elegance Comfort Height Exploded View - Smart Handle

# EXPLODED PARTS



## 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. 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 <b>while toilet is running</b> . 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. Intake 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 Saniflex 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. Be sure the vented loop(s) are installed and vent is functional. If the water pressure from seacock is outside: 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. 5D. Leak at vacuum breaker	5A. Tighten adapter clamps. 5B. Check seal and motor shaft. 5C. Check and reseal bowl grommet 5D. Clean by gently pressing down and turning 1/4 turn clockwise. Remove cap and remove plastic piston, clean. Replace parts if needed.

### 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.

