


# PURASAN® EX Hold n' Treat


## OPERATION, MAINTENANCE AND INSTALLATION INSTRUCTIONS

(Models PST\*EX [\*specify 12,24] Manufactured after December 2013)


### 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 to personnel or death could result from improper installation. Raritan Engineering Company, Inc. accepts no responsibility or liability for damage to equipment, or injury or death to personnel that may result from improper installation or operation of this product.*

**WARNING: HAZARD OF SHOCK AND FIRE**  
  Always use recommended fuse or circuit breaker and wire size.

**WARNING: HAZARD OF FLOODING** - When leaving the boat unattended always be sure seacocks are closed. Any installation made below waterline should have double hose clamps securing lines. **The halogen disinfectant is corrosive to aluminum, copper and steel. The plumbing system must not include any aluminum, copper or steel fittings, piping or holding tanks.**  


### IMPORTANT SAFETY INSTRUCTIONS FOR HANDLING PURASAN® TABLETS AND SOLUTION

**WARNING:**  PURASAN® EX disinfecting tablets are a strong oxidizing agent and highly corrosive. Use or contact with oil, acids, petroleum products, reducing agents or other chlorine compounds such as swimming pool tablets, is extremely dangerous.

**WARNING:**  Fire or explosion could result. Improper use of this tablet may cause personal injury or property damage. Tablets may be fatal if swallowed and tablet dust is irritating to the eyes, nose and throat. Keep out of reach of children and do not allow tablets or solution of tablets to contact skin, eyes or clothing. Handle and store tablets as per instructions provided with packaging. Contact Raritan if handling instructions are missing. Store only in sealed original container in well-ventilated area. Read tablet container label carefully prior to use. It is unsafe and violation of Federal law to use tablets in a manner inconsistent with its labeling.

The PURASAN®EX is a U. S. Coast Guard Certified Type I Marine Sanitation Device for use on uninspected vessels 65 feet and under. It must be operated within navigable waters inside the three mile limit that are not declared Federal No Discharge Zones (NDZ) by the U.S. Environmental Protection Agency (EPA). Other countries - check with local authorities.

The PURASAN®EX is designed for recreational use and accommodates most marine toilets. It can be used with up to two toilets. The PURASAN®EX is available in 12 or 24 VDC.

### DESCRIPTION:

Each time the toilet is flushed an equal amount of previously treated waste is discharged. The flushing action of the toilet pump moves the waste through the PURASAN®EX and out.

Water is diverted to the Tablet Dispenser during the flush cycle, creating a halogen solution during hold time. After the hold time the Drain Manifold and Air Pump turn on and solution drains into the Treatment Unit.

The first chamber macerates to reduce particle size and uniformly mix the waste with injected halogen solution. The second chamber mixes to ensure uniform treatment of contents.

### Model and Serial #

The Hold n' Treat is designed to integrate both a Type I and Type III MSD (Marine Sanitation Device) to provide the user with a system that will be legal in all areas.

All waste is stored in a holding tank and the treatment mode will determine how the waste is processed. This system eliminates the need for pump-out stations in most areas.

**For Warranty Registration link, see page 16**



L519\_0822jlc

## TREAT/NO DISCHARGE MODE;

Press no discharge button on panel once to toggle mode from treat to no discharge.

If position sensing shutoff valve is installed close valve to set no discharge mode

Open Valve and press treat/no discharge button on panel to set treat mode.

If key switch panel is installed, turn key switch to no discharge to set no discharge mode.

Turn key to treat position and press treat /no discharge button on panel to set treat mode.

Note: Pause at least 10 seconds after mode is switched to switch again.

### Basic Operation:

When the Hold n' Treat System is in treatment mode and level in holding tank is above the LOW LEVEL, treatment cycle starts. Macerator pump is activated and moves approximately 1 gallon of waste from the holding tank to the treatment tank. Treatment cycles runs for 2 minutes. At the end of the cycle, system waits in treatment mode for 8 seconds and cycle is repeated until the level in the tank falls below the LOW LEVEL. If the LOW LEVEL is not reached after ten cycles, the system will enter into a COOL DOWN mode for ten minutes. When the system is set to NO DISCHARGE, waste will enter the holding tank and will not be treated until set to treatment mode.

### PROCESSING LED:

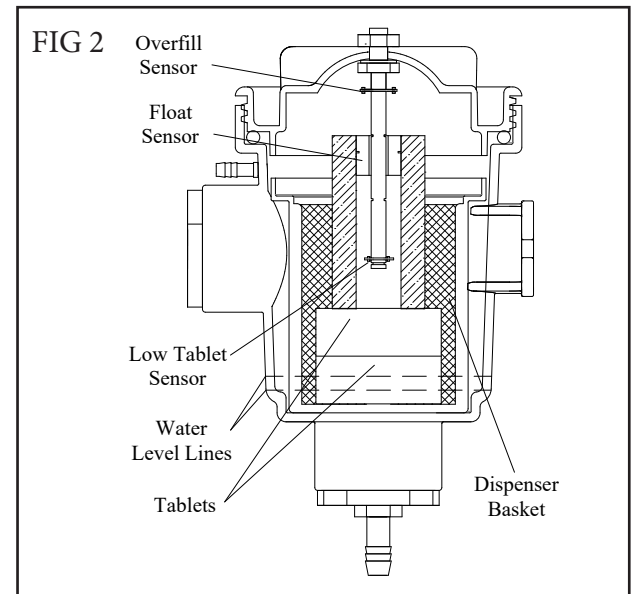
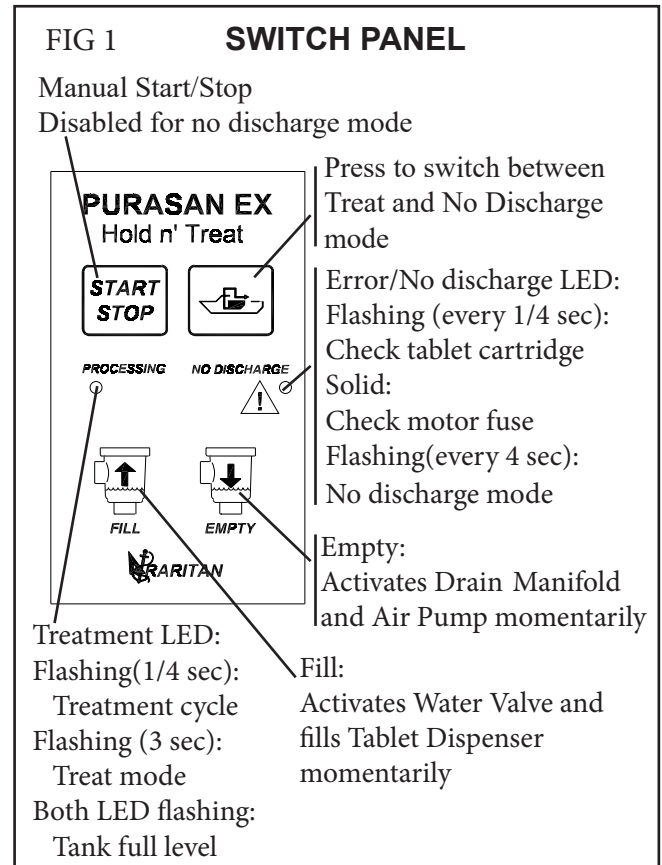
- blinks twice per second when unit is in treatment cycle.
- blinks every 3 second if unit is in treat mode and holding tank level is below LOW level or in between treatment cycle
- blinks twice per seconds with error LED when holding tank level is above HIGH level.

### No discharge LED:

- blinks every 4 seconds when in no discharge mode
- blinks twice per seconds when tablet dispenser needs to checked for tablets or water level.
- on solid when motor fuse is blown

**START/STOP BUTTON:** Press start button to start a cycle during treat mode to process holding tank below LOW level. DO NOT RUN MACERATOR PUMP DRY.

Note: There is 8 seconds pause between cycles.



### OPERATION NOTES:

1. If start/stop button is pressed during first 20 seconds of treatment cycle, motor will stop. A drain cycle will start to empty out and water in the dispenser before stopping the cycle. If waste level is higher than the low level sensor, next cycle will start immediately.
2. A cycle can be terminated by pressing NO discharge mode button. A drain cycle will run to empty out water in the tablet before terminating cycle. Cycle will not restart until mode is changed to treatment mode and Level is higher than low level.
3. If cycle completes normal, there is a 8 second pause before next cycle will start. During this pause none of the buttons except No Discharge mode button is functional.

## MAINTENANCE

### REFILLING TABLETS (#41-135A)

**IMPORTANT: Read all Safety precaution on the tablet container before handling and installing tablets. Use ONLY PURASAN® Tablets.**

When Error LED is flashing it is an indication tablets in the dispenser are depleted to less than one tablet and refill is needed.

1. Remove all water by pressing “empty” button on the panel before opening lid.
2. Turn off power.
3. Unplug connectors on dispenser lid as shown on FIG 3.
4. With adequate ventilation available, unscrew tablet dispenser lid (FIG 4).
5. Gently place two tablets into the cartridge (FIG 4).
6. Tightly replace lid on Tablet Dispenser.
7. Reconnect connectors as shown in FIG 3.
8. Turn on power

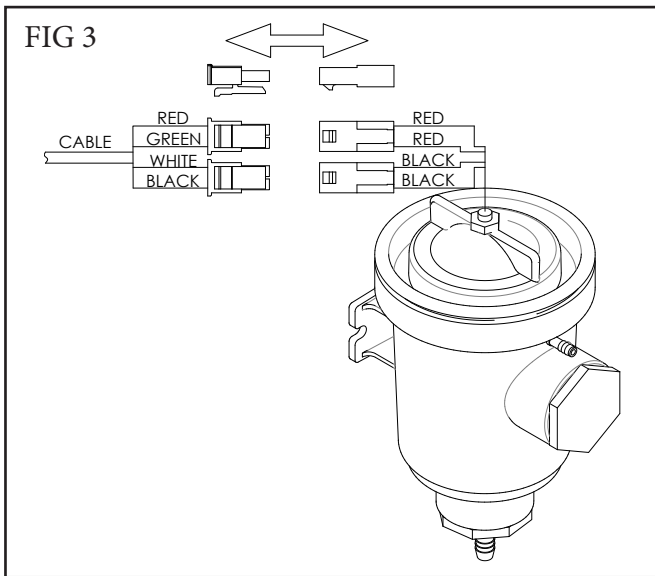
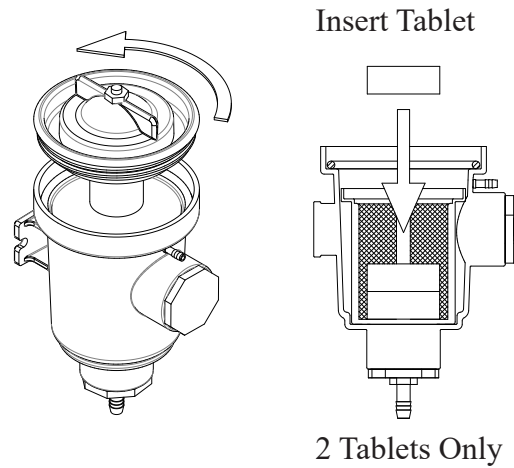


FIG 4

### REFILLING TABLETS



### CLEANING OF TANK CHECK VALVE (41-170) AND ½” HOSE

- A. Raritan recommends that the Tank Check Valve (Part # 41-170, Item 58, Page 12) be replaced after approximately 300 cycles or one depleted bucket.
1. Press fill button till water fills up entire ½” hose just below tablet dispenser.
  2. Press and hold “empty” button until all hoses up to check valve on treatment tank are empty.
  3. Repeat steps 1&2 three more times.
  4. Close sea cocks
  5. Close hose clamp completely (Part #31-304C, Item 59, Page 12). Remove check valve assembly. Thoroughly clean assembly with warm water. Make sure check valve plunger is moving by using a paper clip. If check valve is stuck, replace it.

**CLEANING:** Do not add any other chemicals or cleaning products to the toilet or the treatment system.

Raritan C.P. (part # 1PCP22) - Cleans Potties is the only factory-recognized cleaning product that may be used in the toilet.

## INITIAL START-UP AFTER ALL INSTALLATION STEPS ARE COMPLETE

**CAUTION:** Do not load tablets into Tablet Dispenser until Steps 1-7 are completed.

1. Remove crossover cap from Treatment Unit tower. Pour 3 gallons (11.5 liters) of water into treatment unit. Replace crossover cap.
2. Turn on water to the Water Valve.
3. Turn on power to unit.
4. Priming: Press and hold “FILL” button until water reaches to the water line on the Tablet Dispenser.
5. Press and hold “EMPTY” button until Tablet Dispenser and 3/8” tube to Treatment Unit is empty.
6. Operate the system. Check water level in the cartridge and make sure water is rising to the mark. If starting for first time or if water does not rise to the mark, see instruction in Programming section to adjust timing.
7. Check for leaks.
8. Load the Tablet ( see refilling tablet section).

## WINTERIZATION

### **IMPORTANT:**

Improper winter lay up is a major cause of failure.

### **WARNING:**

**Do not use anti-freeze of any kind to winterize the PURASAN EX system.**

### **Treatment Unit and Tablet Dispenser**

1. Turn off water supply to the toilet and flush toilet as dry as possible.

Note: Check toilet manufacturer's instructions to ensure no damage is done to any components.

2. Activate PURASAN EX several times using start/stop button to empty holding tank.
3. If drain or flushing fittings are installed in plumbing, Flush entire system with fresh water.
4. Shut off water valve feeding Control Module.
5. Press EMPTY button to drain out all water from Tablet Dispenser and tubing.
6. Turn off power and disconnect wires from Purasan EX Control Module.
7. Remove water connection to Control Module and drain tube.
8. Close seacocks.
9. Slowly open crossover plug (#25 page 12)

Caution: If Treatment Unit is the lowest part of the system, water will spill out. Review plumbing carefully before slowly opening plug.

10. Using a pump and 3/8" tube, remove water from each side of partition in Treatment Unit through crossover plug.
11. Disconnect and drain waste hoses.
12. Proceed to toilet winterization by following instructions for that particular toilet.

**Winterizing the Toilet** - Follow the instructions in the Owner's Manual for that particular toilet.

### **Recommissioning**

### **IMPORTANT:**

- Do not open shut-off valve feeding control module until Treatment Tank is full.
- Do not operate PURASAN®EX until Treatment Unit is filled with water.

### **Treatment Tank**

1. Reconnect waste hoses and open seacocks.
2. Reconnect wires to control module

NOTE: Purasan Treatment Unit must be full before activating a cycle.

3. Fill the Treatment Unit: Remove crossover plug from Treatment Unit and fill with a minimum of three gallons of water. Replace crossover plug and o-ring.
4. Turn on power
5. Open water valve feeding control module.
6. Priming: Press and hold "FILL" button until water reaches to the water line on the Tablet Dispenser. Press and hold "EMPTY" button until Tablet Dispenser and 3/8" tube to Treatment Unit is empty.
7. Operate the system. Check water level in the cartridge and make sure water is rising to the mark. If starting for first time or if water does not rise to the mark, see instruction in Programming section to adjust timing.
8. Check for leaks.

### **ANTIFREEZE WARNING -**

If Antifreeze is used to winterize toilet, it must be removed prior to connecting hoses to the Treatment Tank. It **MUST** not pass through the Treatment Unit.

### **Winterization of Holding tank**

Use anti-freeze only if there is a way to pump out contents of holding tank without flushing into purasan treatment tank during recommissioning, else drain or pump out contents of the tank.

**U.S.C.G. Type I MSD Certification #159.015/10133/0**

Maximum Roll/Pitch Angle: 30°

Maximum Temperature Exposure: 120° F (49° C)

Maximum Total Flush Volume: 1.5 gallons/flush (5.7 liters/flush)

Water - fresh, salt or brackish Approximate Number of cycles per tablet--50

Hold n Treat capacity: 6 gallons (23 liters) per hour , 140 Gallon( 530 Liters) per day

**NOTES: for Wiring**

1. Distances are from source to unit and back to source
2. Recommended conductor wire minimum AWG (mm) for 3% voltage drop.
3. Recommended conductor sizes are based on 105°C rated insulation. Refer to ABYC standards for other insulation ratings.

**Recommended Wire and Fuse/Circuit Breaker Size with macerator pump**

Units Voltage	Circuit Breaker/Fuse sizes(AMPS)	Amp. draw @ nominal voltage	Macerator amps @ nominal voltage	10 Feet	20 Feet	30 Feet	40 Feet	50 Feet
12V	30	10	17	8AWG	6AWG	6AWG	6AWG	4AWG
24V	20	8	9	14AWG	12AWG	10AWG	10AWG	8AWG

**Fuse Specifications:**

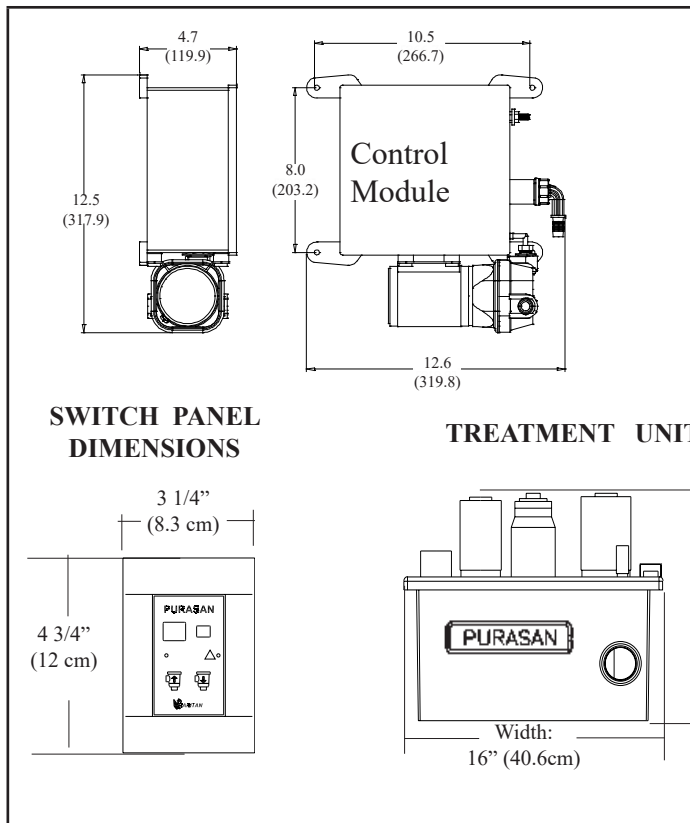
Fuse F1 for Motors (12V and 24V) Located in the SPC Control Box:  
ATO 10 AMPS, Maxi blade type.

**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

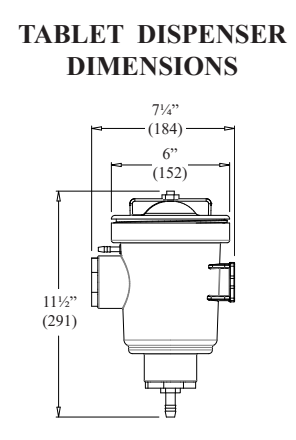
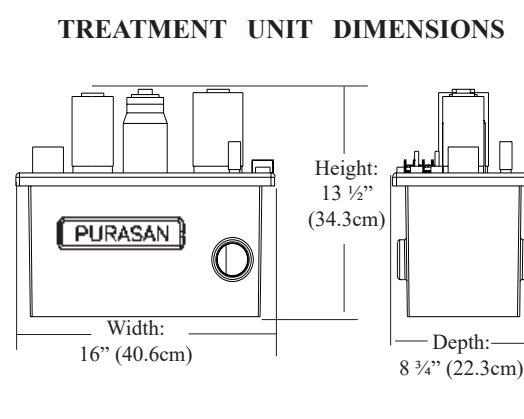


**Wire - AWG to mm<sup>2</sup>**

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

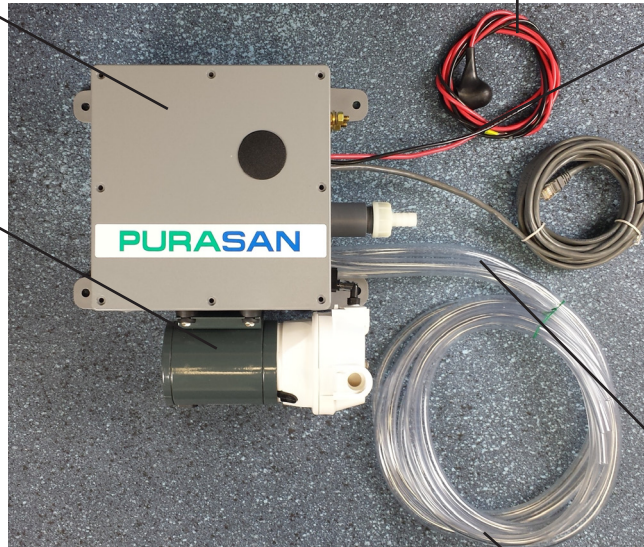


# INSTALLATION

Parts Included in the Box:

Control Module  
 Inside the module:  
 Drain Manifold  
 Water Valve  
 SPC control box

Air Pump



6' black and red  
 wire to connect  
 transfer pump

6' black and orange  
 wire to connect tank

SensaLevel  
 sensor with cable  
 16' of Cable to  
 Connect Switch  
 Panel to Control  
 Box

For Treatment unit:  
 6' 3/8" ID tubing

For Dispenser:  
 6' 1/4" ID tubing  
 6' 3/8" ID tubing



Tablet  
 Dispenser

Switch Panel

Switch Panel  
 Gasket



Treatment unit

Fittings for  
 Treatment  
 Unit

## LOCATION AND MOUNTING

### Treatment Unit:

**WARNING:** Do not locate in an area where ambient temperature exceeds 120° F (49° C).

1. Locate top of treatment tank at or below discharge of toilet and within six feet (1.5 m) of toilet.

**Note:** Longer runs require additional flush time to avoid sewage laying in the hose.

**Note:** If mounting treatment tank higher than discharge, a vented loop must be used between toilet and Treatment Unit.

2. Make and secure mounting frame to flat surface. (FIG 5)
3. Secure tank to frame using 3/4" (1.9 cm) mounting straps.

**Note:** Placing a 3/8" (.9 cm) rubber pad under tank will help to reduce vibration and noise.

### Control Module :

**Note:** Wires supplied are 6 feet between tank and control module

1. Locate control module between Tablet Dispenser and Treatment Unit. Vertical mounting is recommended (FIG 6)
2. Using screws secure manifold to the wall (FIG 6)

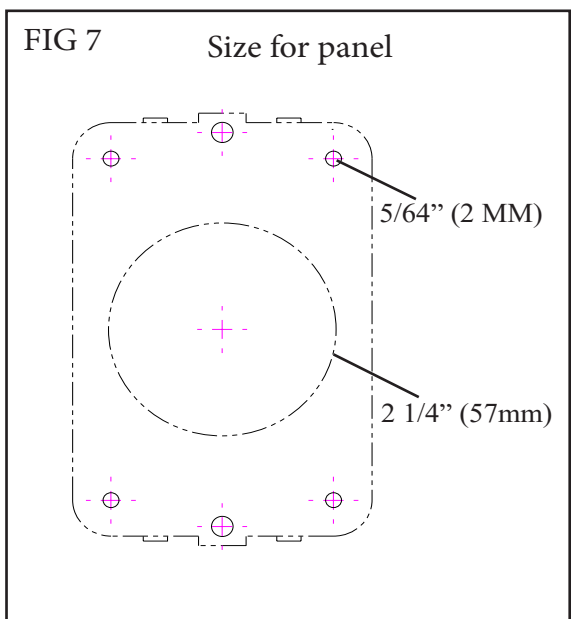
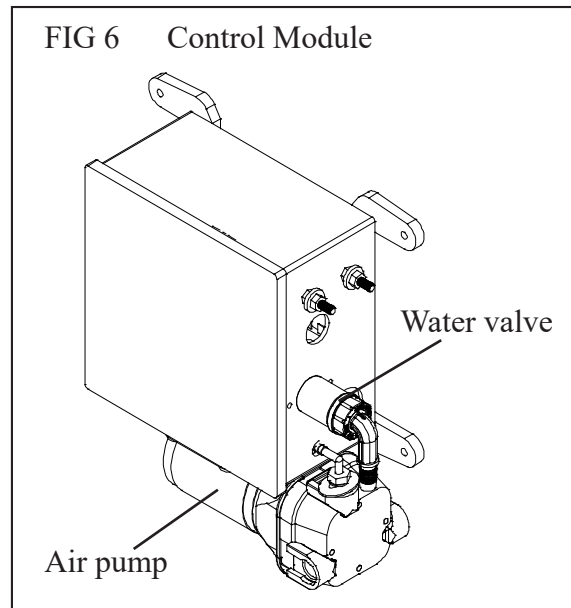
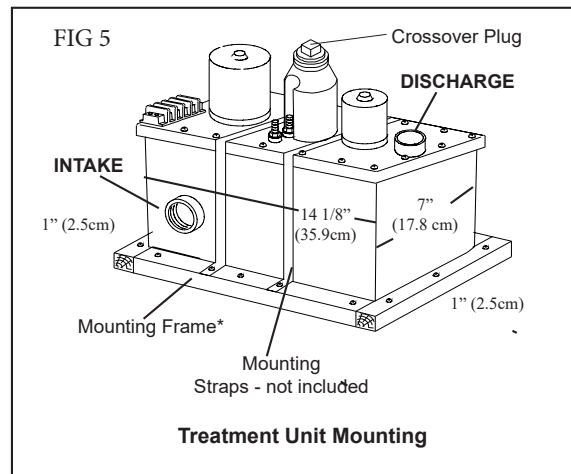
**Switch Panel:** Cable Supplied is 16 feet

1. Locate in head compartment where indicator lights will be visible.
2. Using base plate, mark the cutout for the panel. (See FIG 7)
3. Route cable between switch panel and PURASAN®EX Control module.
4. Attach cable to back of switch panel.
5. After wiring and testing entire system: Mount panel using 4 screws. Apply a bead of nonpermanent sealant around rear edges of panel if located in shower area.

### PURASAN®EX Tablet Dispenser

1. Locate tablet dispenser in a location where refill of tablet is convenient. (To easily remove lid and refill tablets a clearance of 8" from top of lid is recommended.)
2. Attach to wall or suitable structure using 1/4" (6 mm) bolts.

**NOTE:** Do Not load tablets into Tablet Dispenser at this time. Load tablets after completing start up procedure.



## PLUMBING

### WARNING: HAZARD OF FLOODING

- Installations at or below waterline, at greatest angle of heel, **MUST** have a **VENTED LOOP** installed between Treatment Tank and Seacock/Thru Hull Fitting. Install vented loops per manufacturer's instructions.
- **Double clamp** all below waterline hose connections.

Use only non-corrosive fittings

#### A. Macerator pump:

1. Install macerator pump between holding tank and treatment system.

#### B. Pressurized water for Tablet Dispenser:

1. Connect hoses from control module to treatment tank and tablet dispenser as per FIG 8
2. A shutoff valve between source and Water Valve assembly is recommended.
3. Use hose clamps to secure hoses

#### C. Treatment Unit:

**NOTE:** Use PTFE tape or nonpermanent thread sealing compound on threaded PVC fittings and connections. Avoid low areas in hose that would allow untreated waste to collect.

1. Connect discharge of macerator to one intake port.
2. Insert plug or second toilet discharge into other intake port.
3. Determine position and glue discharge elbow to top of tank using PVC cement.

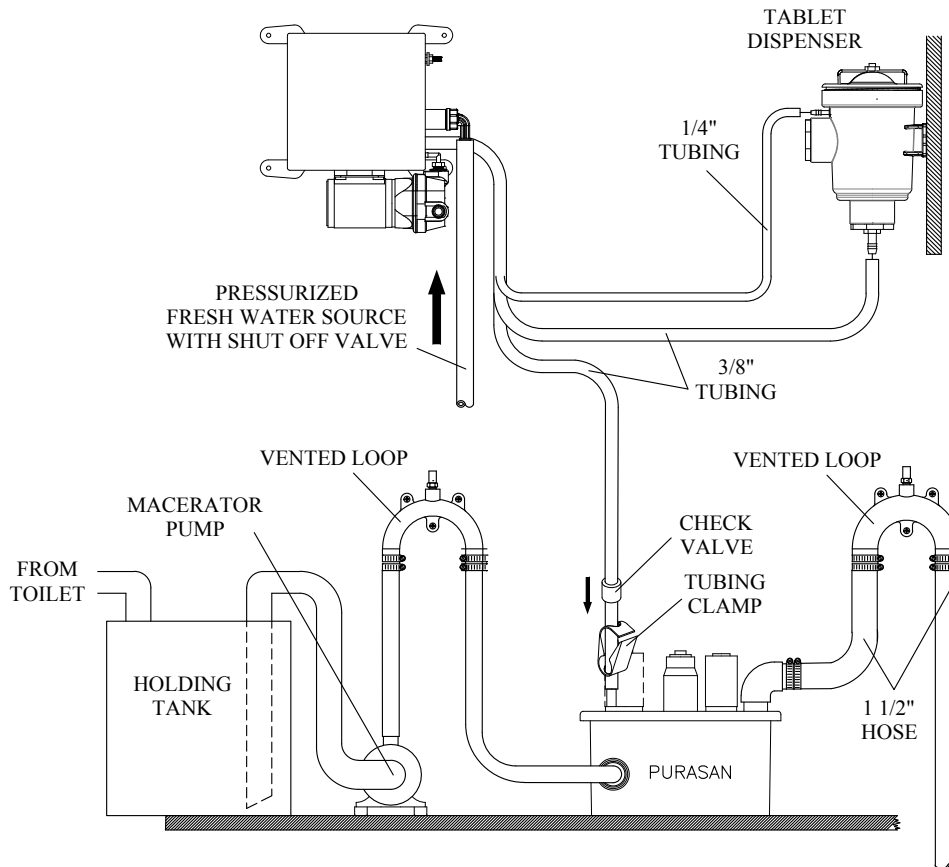
**Note:** Be certain that the discharge elbow is in the correct position before gluing.

4. Connect discharge hose from elbow to thru hull fitting.

#### Fittings for winterization:

It is recommended that T- fitting with a shut of valve or plug should be installed near intake port of the treatment unit or lowest part of the plumbing for draining or flushing system during winterization

FIG 8 Plumbing: Pressurized fresh water to Dispenser





## WIRING (See Fig 10)

### WARNING: Hazard of Shock and Fire

- Always use proper wire, connectors and fuse/circuit breaker. See Specification Chart.
- Secure wire properly.
- Do not connect other appliances to PURASAN® EX circuit.
- Make sure power is off before proceeding.
- Improper wiring can damage the circuit board and void warranty.
- 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.

### Control Module:

**Note: Air pump motor and solenoid coils used in 12V models are marked 24V.**

1. Determine proper wire size from wire chart on specifications page.
2. Fuse or circuit breaker must be installed between source and control module on positive wire.
3. Run supply wire from source POS to Positive (POS) terminal on control module, Install rubber boot on terminal.
4. Run supply wire from source NEG to Negative (NEG) terminals on module.
5. Run and connect two wires supplied between macerator pump and control module.

### Treatment Unit

1. Run and connect two wire supplied from control module to treatment tank terminal studs.

### Switch Panel

1. Connect cable from switch panel to SPC

### Tablet Dispenser:

1. Run float cable from Tablet Dispenser to Control module. Using cable clamp - secure cable on the wall near dispenser.
2. Connect sensor cable to control module SPC.

**Note:** Complete programming for Fill and Empty timing before connecting shutoff valve, key switch panel or Sensors.

### Optional position sensing shutoff valve, Position Monitored Ball Valve part# 90657:

1. Run wires between valve and control module SPC as per wiring diagram

### Optional Key Switch Panel, part# 212B10:

1. Run wire between key switch panel and control module SPC as per wiring diagram

### Dual installation:

Dual installation kit PSTEXHNTDC includes instruction for wiring second switch panel

### SensaLevel™ sensor installation:

(sensors are preinstalled at factory for 21Sxxx systems)

Note: Complete all wiring and programming before installing sensors

1. Turn off power to Control module.
2. Connect wires to the control module as per wiring diagram FIG 10.
3. Turn on power and place finger in the middle of low sensor pad. The treatment cycle will start immediately.
4. Place fingers on both sensor, both LED should start blinking. If LED's do not start blinking, check wiring or contact Raritan technical support.
5. Identify a position outside the tank that will indicate LOW and HIGH level. Low level is the level where treatment starts. (FIG 9)
6. Lightly sand the locations where sensors are to be located to remove oil and dirt.
7. Remove adhesive cover and apply to tank. Press firmly to remove any air bubbles.

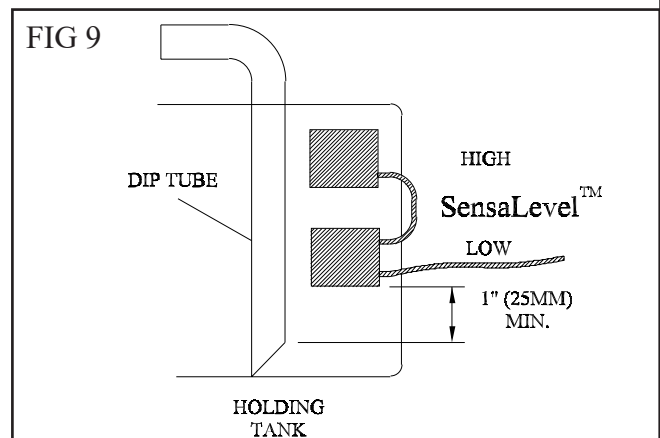
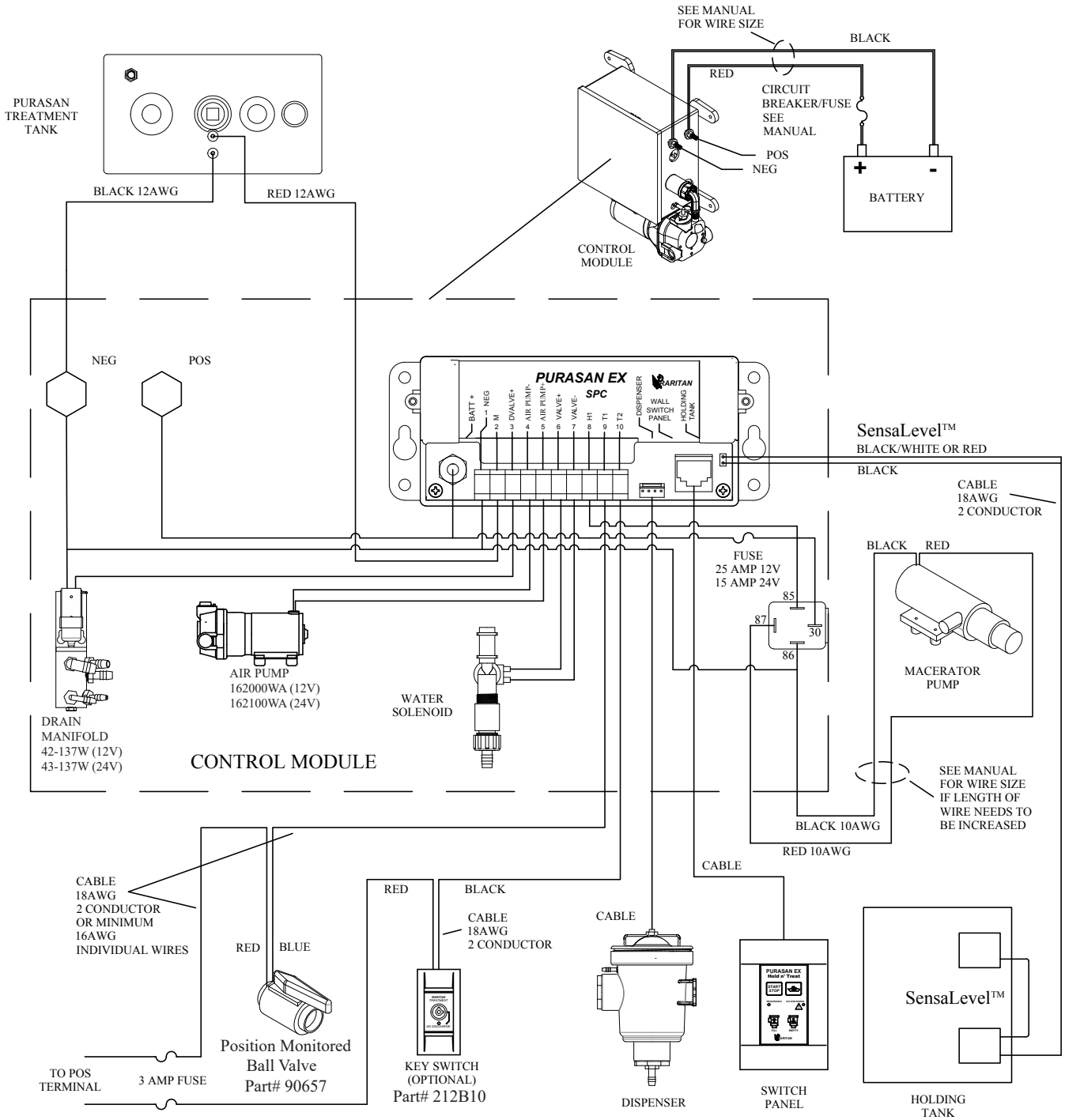


Fig 10

## Purasan Treatment Unit



## INITIAL SETTING OF “FILL” and “EMPTY”

Must be completed during installation to be sure water reaches level mark on dispenser.

1. All settings should be done with water source (on board pressure pump or shore water supply) that will be used with PURASAN. Settings done will only be valid for that source, and may need to be reprogrammed if another source is utilized. Lid must be closed tight during setting and use.
2. Dispenser must not contain tablets during initial set-up. Program “fill” time without tablet to reach 1/4” below top marked lines, Unplug sensor cable at Control Module.
3. With power on, press “fill “and count seconds until water reaches to water level mark on dispenser. Record seconds as fill. If recorded seconds are greater than 18 , Open the hole to approx 1/8” in metering washer between water valve (221352) and check valve (PX50W) and repeat.
4. Empty water below tablet dispenser bottom and entire 3/8” tube till treatment tank while pressing “empty” button and counting seconds. Record seconds as empty

### 5. SET PRELIMINARY “FILL” time:

- Hold the EMPTY & FILL buttons down together for three seconds. The error LED will give three quick flashes indicating you have entered program mode - release both buttons.
- Press “FILL “ button as many times as fill seconds recorded in step 2. example: 8 seconds press 8 times. Note: maximum is 20 and minimum is 2.
- Push the “START/STOP” button to store this value (the unit will flash three times indicating the time has been set and you have left program mode).

### 6. SET PRELIMINARY “EMPTY” time:

- Hold the EMPTY & FILL buttons down together for three seconds. The error LED will give three quick flashes indicating you have entered program mode - release both buttons.
  - Press “EMPTY “ button as many times as empty seconds recorded in step 4.
- Note:** Minimum time is set at 10 seconds. Each press of the EMPTY button will add 1 second to minimum time. Maximum is 20 seconds.
- Push the “START/STOP” button to store this value (the unit will flash three times indicating the time has been set and you have left program mode).

### 7. TEST SETTINGS:

**Without Tablets:** Press start/stop button. Water should fill up in the dispenser at least up to lower line but no higher than half way between line. Hold time of water is 20 seconds and not programmable.

After hold time, air pump and drain valve will drain solution. Make sure that water is drained from entire tube up to treatment tank. Increase empty time using step 6 if drain time is not sufficient. After drain cycle, air pump and water solenoid will stay on for 10 more seconds (non-programmable). This will flush the check valve near the tank. Repeat flush cycle to check fill time. If water level is not filling up between lines, increase or decrease fill time using steps 2 thru 6.

**NOTE:** The cycle after the drain cycle can be stopped by pressing start/stop button at any time.

**With Tablets:** Follow start up procedure. Load tablets and plug sensor cable. Press “START/STOP” button. The water should fill up between level line. Make final adjustment as per above instructions if needed.

### Setting of Transfer/macerator pump on time:

**NOTE:** Pump time is set to 10 seconds as shipped.

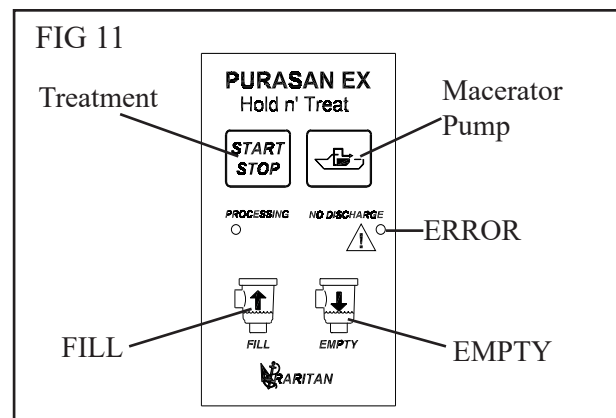
- Hold the EMPTY & FILL buttons down together for three seconds. The error LED will give three quick flashes indicating you have entered program mode - release both buttons.
- Press No Discharge button (FIG 11, next to start/stop button) as many times as needed to set pump time (One push = 1 sec’s, two= 2 sec’s, three= 3 sec’s etc.). The LED will flash once indicating a valid key push.

**NOTE:** Maximum is 20 seconds.

- Push the START/STOP button to store this value (the unit will flash three times indicating the time has been set and you have left program mode).

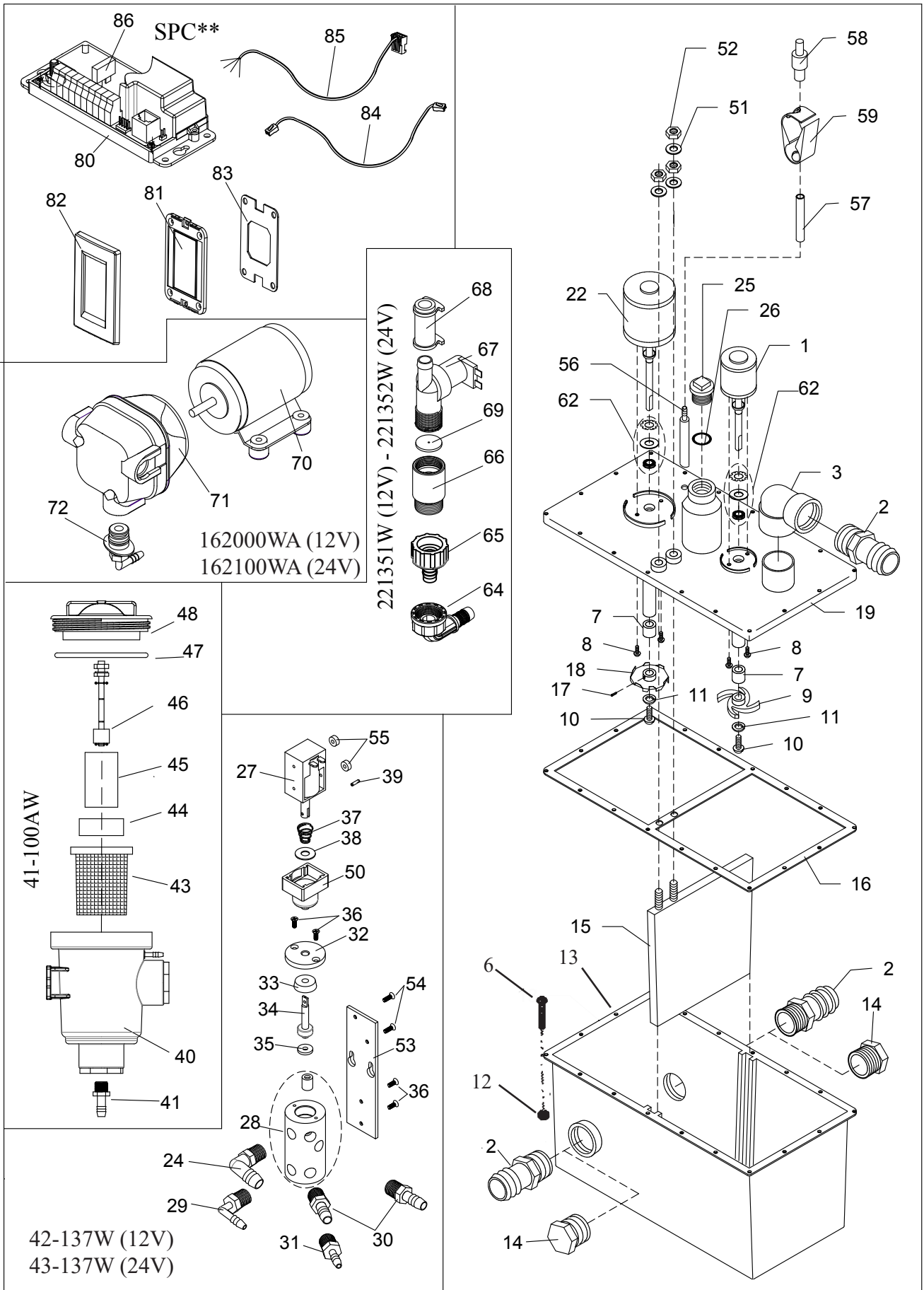
**NOTE:** When the waste/water level in the tank is high enough to activate the treatment cycle and it is in a treatment cycle, the time settings for FILL, EMPTY and/or Transfer/ Macerator Pump can be adjusted by:

- Press START/STOP button
- Within 8 seconds of pressing the Start/Stop button, proceed with reprogramming as instructed. After the Start/Stop button is pressed, the treatment cycle should begin after several seconds. If further adjustments are needed, repeat process.



PURASAN EX EXPLODED VIEW

EXPLODED PARTS



## PURASAN PARTS LIST

Item	Part #	Description
1	32-102AW	Mixer Motor 2 1/2" Dia. 12 V DC
1	33-102AW	Mixer Motor 2 1/2" Dia. 24 VDC (1) includes shaft seals and bushing for mixer motor)
2	31-121	Hose Fitting (2) (Not shown) 90° hose fitting (PLA401)
3	31-120	Discharge Elbow 90°
6	31-134	Cover Hold down Bolt, 10-32 x 1" (18)
7	31-103	Motor Shaft Bushing (2) (see 62)
8	31-106	Motor Hold down Bolt, 10-32x1", S/S (4)
9	31-109	Mixer Impeller
10	31-110-1	Impeller Bolt, 12-24 x 5/8", S/S (2)
11	31-110-2	Impeller Lock Washer, #12, S/S (2)
12	31-114	Cover Hold down Nut, 10-32 (18)
13	31-115PS	Treatment Tank
14	31-122	Intake Plug
15	41-102	Tank Divider
16	31-112	Cover Gasket
17	31-108	Macerator Set Screw
18	31-107	Macerator Impeller
19	41-101W	Treatment Cover (includes 56, 25,26)
22	33-101AW*	Macerator Motor for 12 and 24 VDC unit ( Includes 31-304CW and 31-105 )
25	31-104CW	Crossover Plug with O-ring
26	31-105	O-Ring
51	M31	#14 Brass Flat Washer (4)
52	M30	1/4"-20 Brass Nut (4)
56	31-325A	Adapter Tank Lid
57	221335	Hose
58	41-170	Tank check valve
59	31-304C	Hose clamp

### DRAIN MANIFOLD ASSY 42-137W (12V) 43-137W (24V)

24	41-151A	Adapter 1/4" x 1/2" elbow with check valve
27	42-145	12 Volt Pull Solenoid
	43-145	24 Volt Pull Solenoid
28	41-137	Drain Manifold assy.(with check valve)
29	41-151B	Adapter 1/4" x 1/4" elbow with check valve
30	41-141	Adapter 1/4" NPT x 1/2" barbed
31	PLA3	1/4" Barbed x 1/4" NPT Adapter
32	41-139	Cap, manifold
33	41-138C	1/4" x 3/4" U cup seal
34	41-138 B	Plunger
35	41-138A	Washer for plunger
36	F204	6-32 x 3/8" Flat head mach. screw(4)
37	LWS	Spring
38	F203	Washer 5/16" x 3/4"
39	F233	Spring Roll Pin
50	41-187	Shaft Boot
53	41-152	Base Plate
54	F232	6-32 x 7/16" Flat head mach. screw (2)
55	F231	Spacer 6" x 5/32"

\* 12VDC units are equipped with a 24VDC Macerator Motor

### TABLET DISPENSER 41-100AW

40	41-130A	Dispenser Body.
41	41-177	Adapter 1/2"NPT x 1/2" barb
43	41-153	Dispenser Basket
44	41-135A	Purasan Tablets (sold separately)
45	41-179	Float extension pipe
46	41-178W	Float sensor
47	RWS5A	"O" Ring
48	41-131M	Dispenser Cap (machined)
85	41-505	Cable for Float sensor

### WATER VALVE 221351W (12V) 221352W (24V)

64	221358W	Inlet hose adapter - 90°
65	221356W	Inlet hose adapter - straight
66	PX50W	Double Check Valve assembly
67	221351	Water Solenoid 12V
67	221352	Water Solenoid 24V
68	221335	1/2" Hose
69	41-157	Metering washer

### AIR PUMP for tablet dispenser 162000WA (12V) 162100WA (24V)

70	166012A	12 Volt Motor
	166024A	24 Volt Motor
71	162000W	Intake Pump Assembly,air pump
72	162415A	Plug with barbed fitting
	DIAPUMPRK	Diaphragm Pump Repair Kit

### CONTROLS

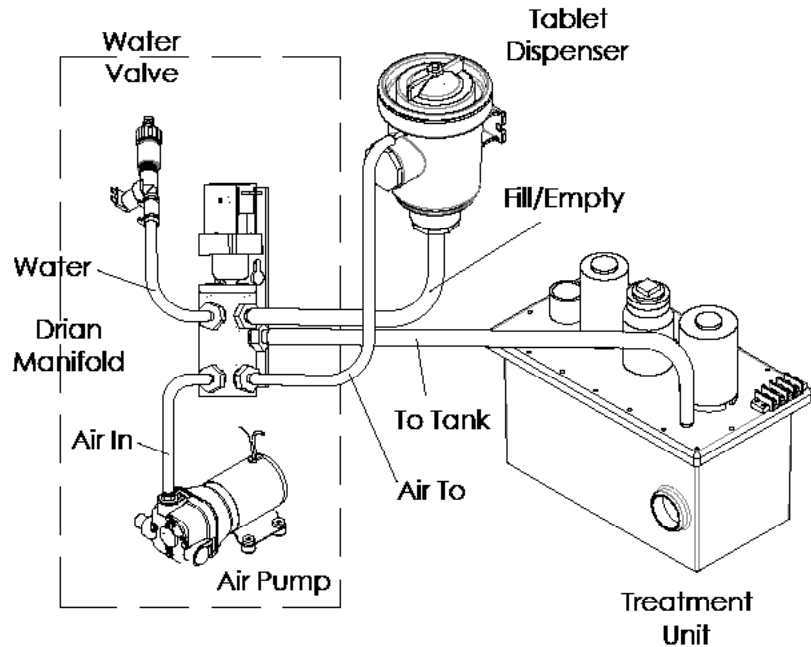
80	SPCCHNT	Purasan Control
81	41-502	Wall Panel circuit board
82	221514	ME: wall panel cover,white
83	221525	ME; wall panel gasket
84	31-618	Cable for SPC wall panel
86	EFC10	ATO fuse 10A
62	<b>ESTRK</b>	<b>EST/PST Repair Kit includes following</b>
	31-102	Motor Shaft Seal (2)
	31-102-1	Macerator Seal Washer
	31-102-2	Macerator Retaining Ring
	31-102-3	Mixer Seal Washer
	31-102-4	Mixer Retaining Ring
	31-103	Motor Shaft Bushing (2)
	31-105	O-Ring
	F351	10-32x7/8" w/ O-ring (4)
	31-112	Cover Gasket
	31-113-2	Terminal Block Bolt (4)
	31-114	Cover Hold Down Nut, 10-32 (4)
	SL1CC	Super Lube

### OTHER (Not shown)

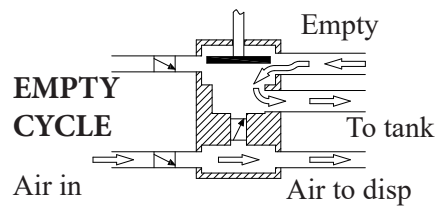
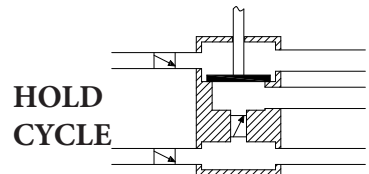
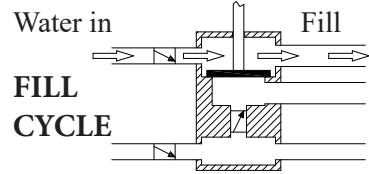
41-135A	Purasan Tablets (Refill)
42-1000A	Treatment Unit Complete 12V
43-1000A	Treatment Unit Complete 24V
212B10	Key Switch Panel
90657	Position Monitored Ball Valve

# EXPLODED PARTS

Fig13



**DRAIN MANIFOLD PORTS**



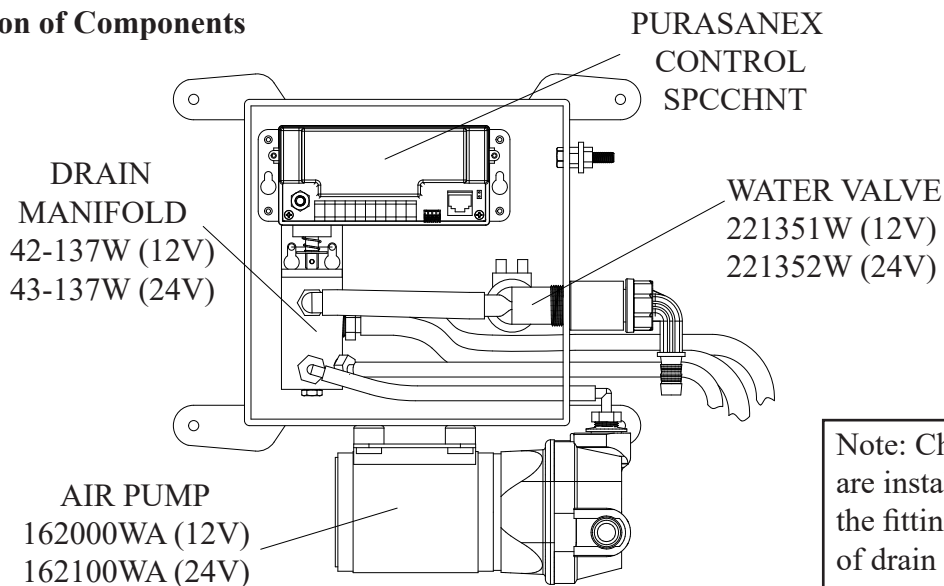
CHECK VALVE SYMBOL

**TIME SEQUENCE**

Note: Fill time and Empty times are programmable. Total treatment time is 120 seconds

Cycle sequence	Motor	Drain Solenoid Air pump	Water Solenoid	H1
Start	ON	OFF	ON	ON (1 second)
Fill cycle	ON	OFF	ON	OFF
Hold cycle (20 seconds)	ON	OFF	OFF	OFF
Empty cycle	ON	ON	OFF	OFF
Wash Cycle (10 sec)	ON	ON	ON	OFF
Treatment cycle	ON	OFF	OFF	OFF

**Location of Components**



Note: Check valves are installed inside the fittings (41-151) of drain manifold

## TROUBLESHOOTING

**WARNING:** After the Tablet Dispenser has had water added, it contains a very strong halogen solution. Always wear protective gloves and ventilate well to work on tablet dispenser. Before doing any maintenance or repairs, follow WINTERIZING/STORAGE procedures .

**CAUTION:** Tablet Dispenser may be under pressure. Open lid slowly to relieve pressure.

See exploded part view for location of parts

### No water to tablet dispenser

- **Control malfunction**  
Check voltage from control to water solenoid valve. Press fill button and check voltage on the terminal for water solenoid
- **Clogged line, check valve or fitting**  
Check for clog between Water valve and Tablet Dispenser. Clean or replace clogged part. Check valve is located inside the fitting 41-151A (#24).
- **Empty time not programmed correctly**  
If Drain Manifold and Air Pump is energized too short to fill the Tablet Dispenser, re programming is needed. See page 11.

### Nothing happens when button is pushed

- **Fuses blown**  
Check fuse on circuit board
- **Water level is too high**  
If water level is high , start and fill button are disabled. Empty button will continue to function.
- **Cable connection:**  
Check if cable for switch panel is corroded or loose.

### Overflow or water level too high in dispenser

- **Clogged discharge fitting in tablet dispenser**  
Press empty button to run air pump and clear any clog.
- **Clogged Check valve (treatment tank adapter)**  
Clean or replace check valve (41-170) located on the tank
- **Water fill time not programmed correctly**  
If Water Valve is energized too long it will overflow the dispenser, re programming is needed. See page 11.
- **Air pump malfunction:**  
Press empty button and check voltage on the air pump terminals. Check the pressure of air pump (should be at least 5 PSI). Check valve for air pump is located inside the fitting 41-151B(#29).
- **Float sensor malfunction:**  
If error LED indicates water level high and actual water level is not high , check float sensor for proper operation.

### Error LED

Error LED	START BUTTON	CAUSE
On	Does not work	Motor fuse blown
Slow flashing	Works	Tablets need refill
Fast flashing	Does not work	Dispenser overfilled

**NOTE:**

**Discharge of raw, untreated sewage is prohibited in all U.S. waters inside the three mile limit except in the Gulf of Mexico where the limit is nine miles. “Y” valves, if installed, must direct toilet discharge to a U.S.C.G. approved treatment system or holding tank and must be secured in that position while inside the three-mile limit.**

The EPA standards state that in freshwater lakes, freshwater reservoirs or other freshwater impoundments whose inlets or outlets are such to prevent the ingress or egress by vessel traffic subject to this regulation, or in rivers not capable of navigation by interstate vessel traffic subject to this regulation, marine sanitation devices certified by the U.S. Coast Guard installed on all vessels shall be designed and operated to prevent the overboard discharge of sewage, treated or untreated, or any waste derived from sewage. The EPA standards further state that this shall not be construed to prohibit the carriage of Coast Guard-certified flow-through treatment devices which have been secured so as to prevent such discharges. They also state that waters where a Coast Guard-certified marine sanitation device permitting discharge is allowed including coastal water estuaries, the Great Lakes and interconnected waterways, freshwater lakes and impoundments accessible through locks, and other flowing waters that are navigable interstate by vessels subject to this regulation (40 CFR 140.3)

Link to online  
Warranty  
Registration



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## 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.
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6. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



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