The PURASAN® EX is a U. S. Coast Guard Certified Type I Marine Sanitation Device for use on un-inspected 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, 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.

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 un-inspected 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 available in 12 or 24 VDC.
OPERATION

Single Button Operation -
Both toilet and PURASAN®EX are operated by one of the following options:

Option #1: (recommended)
Toilet Push Button -
Flushing toilet will activate treatment cycle.
Note: Toilet may be flushed as often as necessary during first 30 seconds. Do not exceed recommended flush volume of 1.5 Gallons (5.7) liters per flush.

Two toilets can activate one PURASAN®EX.

Option #2:
PURASAN®EX Switch Panel
Start/Stop button activates both the toilet and treatment cycle.
Note: Toilet flush time is programmable. Only one toilet can be activated by PURASAN®EX panel.

Pressing Start/Stop during the cycle will stop the cycle.

Independent Operation (toilet and treatment)
1. Press Start/Stop button.
2. Flush toilet as often as necessary. Do not exceed recommended flush volume.

After cycle is started:
• Water is diverted to the Tablet Dispenser and must rise to the water level line (dotted lines) but no higher. (See programming to adjust)
• The PURASAN®EX should not be activated again until the cycle is complete.
Note: Pressing Start/Stop during the cycle will stop the cycle. If water is in the Tablet Dispenser, the Air Pump will activate to remove water after stop button is pressed.
• Flashing Treatment LED indicates treatment cycle in progress.
• Flashing Error LED indicates that Tablet Dispenser is either overfilled with water or tablet refill is needed
• Solid Error LED indicates motor fuse is blown.

SWITCH PANEL

Error LED:
Flashing:
Check tablet cartridge
Solid:
Check motor fuse

Empty:
Activates Drain Manifold and Air Pump momentarily

FIG 2

TABLET DISPENSER
Overfill sensor
Low Tablet sensor
Tablet Holder
Water line

FIG 3
Use ONLY PURASAN® Tablets. 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.

**MAINTENANCE**

**REFILLING TABLET CARTRIDGE**

(#41-135A)

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. With adequate ventilation available, unscrew tablet dispenser lid.
4. Reload with two tablets into the cartridge.
5. Replace lid on Tablet Dispenser.
6. Turn on power

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

![REFILLING TABLETS](image)

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

**CAUTION:**

Do not load tablets into Tablet Dispenser until Steps 1-6 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. Press and hold “EMPTY” button until Tablet Dispenser and 3/8” tube to Treatment Unit is empty.
5. 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 Program- ming section to adjust timing.
6. Check for leaks.
7. Load the Tablet (see refilling tablet section).
Tablet Dispenser
1. Disconnect Water Valve and flush toilet. Activate treatment cycle several times to leave only water in tank.
2. Press “EMPTY” button to drain out all water from Tablet Dispenser and tube.
3. Water Valve
   - Shut off water to valve
   - Remove and drain water from tube
   - Drain water from valve, hoses and strainer

Treatment Unit
WARNING: Do not use anti-freeze of any kind to winterize the PURASAN®EX system.
1. Turn off power and disconnect wires to PURASAN®EX
2. Close seacocks.
3. Slowly open crossover plug (part #31-104C)
   Caution: If treatment tank is at the lowest point of plumbing, water will spill out. Open plug slowly.
4. Using a pump, remove water from both sides of the Treatment Unit through crossover cap.
5. Disconnect and drain hoses.

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

Recommissioning
IMPORTANT:
- Do not connect Tablet Dispenser Water Valve until treatment tank is full.
- Do not operate PURASAN®EX until Treatment Unit is filled with water.

Treatment Tank
1. Reconnect hoses and open seacocks.
2. Reconnect wires (except Water Valve and turn power on.
   NOTE: Purasan Treatment Unit must be full before activating a cycle.
3. Fill the Treatment Unit: (Depends on how unit is activated)
   - Single button operation - Remove crossover plug from Treatment Unit and fill with a minimum of three gallons of water. Replace crossover plug and o-ring.
   - Independent operation - flush toilet allowing three gallons of water to pass into PURASAN®EX
4. Turn on power to PURASAN®EX. Reconnect Water Valve to Tablet Dispenser
5. Check for leaks.
U.S.C.G. Type I MSD Certification #159.015/0010133/0 (12V) 159.015/0010134/0 (24V)

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 flushes per tablet--50

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

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<tr>
<th>Units Voltage</th>
<th>Circuit Breaker/ fuse size (amps)</th>
<th>Amp. draw @ nominal voltage</th>
<th>10 feet</th>
<th>15 feet</th>
<th>20 feet</th>
<th>25 feet</th>
<th>30 feet</th>
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<tr>
<td>12 VDC</td>
<td>20</td>
<td>10</td>
<td>12 AWG</td>
<td>12 AWG</td>
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<td>10 AWG</td>
<td>8 AWG</td>
<td>6 AWG</td>
<td></td>
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<tr>
<td>24 VDC</td>
<td>15</td>
<td>8</td>
<td>14 AWG</td>
<td>14 AWG</td>
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<td>10 AWG</td>
<td>10 AWG</td>
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Fuse Specifications:
Fuse  F1 for Motors (12V and 24V) Located in
the SPC Control Box:
ATO 10 AMPS, Maxi blade type.

CONVERSIONS

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<th>Wire - AWG to mm²</th>
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<td>mm²</td>
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Feet to Meters

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<td>Meter</td>
<td>3.1</td>
<td>4.6</td>
<td>6.1</td>
<td>7.6</td>
<td>9.2</td>
<td>12.2</td>
<td>15.2</td>
</tr>
</tbody>
</table>

† SWITCH PANEL DIMENSIONS

TREATMENT UNIT DIMENSIONS

TABLET DISPENSER DIMENSIONS

7 1/4”  
(18.4cm)

6" (15.2cm)

9 ¾”  
(24.8cm)
INSTALLATION

Parts Included in the Box:

- Switch Panel
- Gasket
- Control Box (SPC)
- 16' of Cable to Connect Switch Panel to Control Box
- Air Pump
- 18" ID tubing
- 1/4" ID tubing
- Plug with barbed fitting for Air Pump
- 6' black and blue wire to connect Water Valve to SPC
- 6' black, red and orange wire to connect tank to Drain Manifold
- 3' black and orange wire to connect tank to SPC
- Fittings for Treatment Unit
- 6' black and orange wire to connect tank to SPC
- 3' black and orange wire to connect tank to SPC
- Fittings for Treatment Unit
- Water Valve
- Tablet Dispenser
- Air Pump
- 12 3/8" ID tubing
- clamps
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.

**Drain Manifold:**

Note: Wires supplied are 6 feet between tank and manifold.

1. Locate Drain Manifold between Tablet Dispenser and Treatment Unit. Vertical mounting with solenoid up is recommended (FIG 6)

2. Using screws secure manifold to the wall (FIG 6).

**Air Pump:** Wire from Pump to Control Box is 6 feet and can be extended if necessary.

1. Slide the clip to open position. Insert 162415A plug with barbed fitting into the port. Slide clip to close position. (see FIG 7)

2. Mount Air Pump in dry location and outside engine compartment.

**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 8)

3. Route cable between switch panel and PURASAN®EX Control Box.

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.

**Control Box:** Cable supplied is 3 feet.

1. Locate and mount control box in a dry and “drip free” location.

**Water Valve:**

Note: Wires supplied are 6 feet between control and valve and can be extended if needed.

1. Mount Water Valve in a dry location between Water Valve supply source and Treatment Unit.
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

WARNINGS:
- All installations made below the waterline MUST be protected by installing vented loops
- Always double clamp fittings below waterline
- Use only non-corrosive fittings

A. Pressurized water for Tablet Dispenser:
1. Connect hoses to Drain Manifold and Tablet Dispenser and Air Pump as per Fig 9.
2. A shutoff valve between source and Water Valve assembly is recommended.

B. 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 toilet 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.

C. Drain Manifold:
1. Connect 3/8” and 1/4” tubes to Tablet Dispenser from Drain Manifold assembly.
2. Connect 3/8” tubes between Drain Manifold and Treatment Unit.
3. Connect 1/4” tubes between Air Pump and Water Valve.
4. Use hose clamps for all connections.
WIRING

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.

NOTE: Raritan recommends that the electric toilet be installed for single touch operation (Option #1 page 2).

SEE FIG. 10 FOR CONNECTIONS:

Treatment Unit
1. Determine proper wire size from wire chart on specifications page.
2. Run supply wire from source to Negative (NEG) terminals on Treatment Unit.

SPC Control:
1. Determine proper wire size from wire chart on specifications page.
2. Run supply wire from source to Positive (POS) terminal on SPC.
3. Fuse or circuit breaker must be installed between source and SPC on positive wire.
4. Connect three wire cable between treatment tank terminal block and SPC per wiring diagram.

Switch Panel
1. Connect cable from switch panel to SPC

Drain Manifold:
1. Run wires from Drain Manifold solenoid to the terminal block on the Treatment Unit.

Water Valve:
1. Run wires from Water Valve to Valve+ and valve- on SPC terminal block.

Air Pump:
1. Run wire from Air Pump to AIR PUMP+ and AIR PUMP- on SPC terminal block.

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

CAUTION: If wiring per Fig. 12, use only the Raritan #CDS (failure to do so will damage to the control board, voiding warranty).

Flushing Option #1: (Recommended)

Toilet Push Button -
Flushing toilet will activate treatment cycle.
Note: Toilet may be flushed as often as necessary, do not exceed recommended flush volume.
1. Mount switch panel near toilet.
2. See Figure 11 for toilets with STC control.
3. See Figure 12 for standard electric toilets.

NOTE: Contact Raritan Tech Support if you have any questions regarding wiring of control.

Flushing Option #2:
PURASAN®EX Switch Panel
Start/Stop button activates both the toilet and treatment cycle.
Note: Toilet flush time is programmable. Only one toilet can be activated by PURASAN®EX panel.
Pressing Start/Stop during the cycle will stop the cycle.

Toilets not utilizing an STC control:
1. See Figure 13 for standard electric toilets.

Toilets utilizing STC control:
1. Run wire from the H1 on SPC to FROM MSD on the STC control.

Dual installation:
Dual installation kit PSTEXDC includes instruction for wiring second switch panel.
Fig 10

Purasan Treatment Unit

Fig 11

Atlantes or Marine Elegance activates PURASAN®EX

16 AWG min.

Fig 12

Electric toilet activates PURASAN®EX

16 AWG min.

Fig 13

PURASAN®EX activates Electric toilet
INITIAL SETTING OF “FILL” and “EMPTY”
Must be completed during installation to be sure water reaches level mark on dispenser.

1. Dispenser must not contain tablets during initial set-up. Unplug sensor cable.
2. With power on, press “fill” and count seconds until water reaches to water level mark on dispenser. Record seconds as fill
3. Empty water below tablet dispenser bottom and the 3/8” tube while pressing “empty” button and counting seconds. Record seconds as empty

4. SET “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).

5. Set “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 3. 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. Test settings:
   • Press “START/STOP” button, water should fill up to the level line. Hold time of water is 20 seconds and not programmable.
   • After hold time air pump and drain valve will drain solution to the bottom of tablet dispenser. IF timing is not correct, reprogram using steps 2 to 6.
   • Note: Cycle can be stopped by pressing start/stop button at any time.

- Follow start up procedure. Load tablet and plug sensor cable.

Setting of Toilet flush 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 small button (see Fig 14)marked “□“ (next to start /stop button) as many times as needed set toilet flush 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 12 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).
## PURASAN PARTS LIST

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<thead>
<tr>
<th>Item</th>
<th>Part #</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>32-102AW</td>
<td>Mixer Motor 2 1/2&quot; Dia. 12 V DC</td>
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<tr>
<td>2</td>
<td>33-102AW</td>
<td>Mixer Motor 2 1/2&quot; Dia. 24 VDC</td>
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<td></td>
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<td>31-134</td>
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<td>Impeller Lock Washer, #12, S/S (2)</td>
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<td>Cover Hold down Nut, 10-32 (18)</td>
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<td>31-115PS</td>
<td>Treatment Tank</td>
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<td>Intake Plug</td>
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<td>Tank Divider</td>
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<td>Macerator Set Screw</td>
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<td>(2) includes shaft seal and bushing for Macerator motor)</td>
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<td>31-105</td>
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<td>M31</td>
<td>#14 Brass Flat Washer (4)</td>
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<td>41-144</td>
<td>Check Valve with hose</td>
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<td>41-159</td>
<td>Connector 3/8&quot; x 1/2&quot; insert</td>
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<td>DRAIN MANIFOLD ASSEMBLY(41-137W)</td>
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<td>41-145</td>
<td>Pull Solenoid</td>
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<td>41-137</td>
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<td>33</td>
<td>41-138C</td>
<td>1/4&quot; x 3/4&quot; U cup seal</td>
</tr>
<tr>
<td>34</td>
<td>41-138</td>
<td>Plunger</td>
</tr>
<tr>
<td>35</td>
<td>41-138A</td>
<td>Washer for plunger</td>
</tr>
<tr>
<td>36</td>
<td>F204</td>
<td>6-32 x 3/8&quot; Flat head mach. screw(4)</td>
</tr>
<tr>
<td>37</td>
<td>LWS</td>
<td>Spring</td>
</tr>
<tr>
<td>38</td>
<td>F203</td>
<td>Washer 5/16&quot; x 3/4&quot;</td>
</tr>
<tr>
<td>39</td>
<td>1305D</td>
<td>Clevis pin</td>
</tr>
<tr>
<td>53</td>
<td>41-152</td>
<td>Base Plate</td>
</tr>
<tr>
<td>54</td>
<td>F202</td>
<td>6-32 x 1/4&quot; Flat head mach. screw(2)</td>
</tr>
<tr>
<td>55</td>
<td>41-135A</td>
<td>Purasan Tablets (sold separately)</td>
</tr>
<tr>
<td>56</td>
<td>41-179</td>
<td>Float extension pipe</td>
</tr>
<tr>
<td>57</td>
<td>41-178W</td>
<td>Float sensor</td>
</tr>
<tr>
<td>48</td>
<td>RWS5A</td>
<td>“O” Ring</td>
</tr>
<tr>
<td>49</td>
<td>41-131M</td>
<td>Dispenser Cap (machined)</td>
</tr>
<tr>
<td>50</td>
<td>41-505</td>
<td>Cable for Float sensor</td>
</tr>
<tr>
<td>65</td>
<td>221356W</td>
<td>Inlet hose adapter</td>
</tr>
<tr>
<td>67</td>
<td>221351</td>
<td>Water Solenoid 12V</td>
</tr>
<tr>
<td>67</td>
<td>221352</td>
<td>Water Solenoid 24V</td>
</tr>
<tr>
<td>68</td>
<td>221335</td>
<td>1/2&quot; Hose</td>
</tr>
<tr>
<td>69</td>
<td>41-158</td>
<td>1/2&quot; x 1/4&quot; Reducer Connector</td>
</tr>
<tr>
<td>85</td>
<td>41-102</td>
<td>WATER Valve (221351W, 12V - 221352W, 24V)</td>
</tr>
<tr>
<td>70</td>
<td>166024A**</td>
<td>Motor</td>
</tr>
<tr>
<td>71</td>
<td>162000W</td>
<td>Intake Pump Assembly,air pump</td>
</tr>
<tr>
<td>72</td>
<td>162415A</td>
<td>Plug with barbed fitting</td>
</tr>
<tr>
<td>85</td>
<td>41-505</td>
<td>Cable for Float sensor</td>
</tr>
<tr>
<td>86</td>
<td>FUSE10</td>
<td>ATO fuse 10A</td>
</tr>
<tr>
<td>80</td>
<td>SPC</td>
<td>Purasan Control</td>
</tr>
<tr>
<td>81</td>
<td>41-500A</td>
<td>Wall Panel circuit board</td>
</tr>
<tr>
<td>82</td>
<td>221514</td>
<td>ME: wall panel cover,white</td>
</tr>
<tr>
<td>83</td>
<td>221525</td>
<td>ME; wall panel gasket</td>
</tr>
<tr>
<td>84</td>
<td>31-618</td>
<td>Cable for SPC wall panel</td>
</tr>
<tr>
<td>86</td>
<td>FUSE10</td>
<td>ATO fuse 10A</td>
</tr>
<tr>
<td></td>
<td>ESTRK</td>
<td>EST/PST Repair Kit includes following</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Not Shown)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-102 Motor Shaft Seal(2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-102-1 Macerator Seal Washer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-102-2 Macerator Retaining Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-102-3 Mixer Seal Washer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-102-4 Mixer Retaining Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-103 Motor Shaft Bushing(2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-105 O-Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-106 10-32 x 7/8&quot; Screws (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-112 Cover Gasket</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DRAIN MANIFOLD ASSEMBLY(41-137W)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Not Shown) 31-102 Motor Shaft Seal(2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-102-1 Macerator Seal Washer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-102-2 Macerator Retaining Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-102-3 Mixer Seal Washer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-102-4 Mixer Retaining Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-103 Motor Shaft Bushing(2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-105 O-Ring</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-106 10-32 x 7/8&quot; Screws (4)</td>
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<td>Purasan Control</td>
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<td>ME: wall panel cover,white</td>
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<tr>
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<td>221525</td>
<td>ME; wall panel gasket</td>
</tr>
<tr>
<td>84</td>
<td>31-618</td>
<td>Cable for SPC wall panel</td>
</tr>
<tr>
<td>86</td>
<td>FUSE10</td>
<td>ATO fuse 10A</td>
</tr>
</tbody>
</table>

**NOTE:** 12VDC units are equipped with a 24VDC Macerator Motor. 24VDC units are equipped with a 32VDC Macerator Motor.

**NOTE:** All models use a 24VDC Motor.
### TIME SEQUENCE

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

<table>
<thead>
<tr>
<th>Cycle sequence</th>
<th>Motor</th>
<th>Drain Solenoid</th>
<th>Water Solenoid</th>
<th>H1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>ON (1 second)</td>
</tr>
<tr>
<td>Fill cycle</td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>Hold cycle (20 seconds)</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Empty cycle</td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Treatment cycle</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>
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 41-151 (#29).
- **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 (41-144) located inside the tube connected to tank adapter (#57)
- **Water fill time not programmed correctly**
  If Water Valve is energized too long it will overfill 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 41-151(#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

<table>
<thead>
<tr>
<th>Error LED</th>
<th>Start button</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>Does not work</td>
<td>Motor fuse blown</td>
</tr>
<tr>
<td>Flashing</td>
<td>Works</td>
<td>Tablets need refill</td>
</tr>
<tr>
<td></td>
<td>Does not work</td>
<td>Dispenser overfilled with water</td>
</tr>
</tbody>
</table>
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)