



# PH SUPERFLUSH AND POWERFLUSH

## Installation, Operation 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 in the case of the POWERFLUSH, 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 Flooding** - Any installation made below the waterline must have vented loops positioned properly and all hose connections should be double-clamped. Both intake and discharge seacocks should always be in the closed position when the toilet is not in use. Failure to do so may result in flooding, property damage and loss of life.

**WARNING:**  Do not operate POWERFLUSH series toilets with handle in place, serious bodily injury may occur.

The power of the legendary PHIIPUMP on a more universal and sleek base.

The PH SUPERFLUSH and PH POWERFLUSH combines the efficient flushing action of the PHII and PHEII with a more "universal base" for easier upgrades from competitive models. They both include a slow close seat.

All models are suitable for use in conjunction with Raritan's Electroscan® and Purasan® Waste Treatment Systems. Both are U.S. Coast Guard Certified Type I flow-thru Marine Sanitation Device (MSD) and/or holding tanks.

PH SUPERFLUSH



PH POWERFLUSH



## OPERATION

**WARNING: DO NOT adjust valve handle (1209BW) while toilet is operating.**

1. With valve handle in the "FLUSH" position pumping the handle will draw water in and discharge the bowl contents.
  2. With valve handle in the "DRY" position pumping the handle will only discharge the bowl contents while drawing air in through the air valve assembly to prevent a build-up of pressure.
- We recommend single ply toilet paper.
  - Water should appear in the bowl within ten seconds. If not, see troubleshooting section.
  - Hard objects or stringy substances (paper towels, feminine hygiene products, filter cigarettes, etc.) must not be thrown into the toilet as they will cause damage.
  - Always shut off seacock(s) before leaving the boat unattended.

## RETURNING POWERFLUSH TO MANUAL OPERATION

**WARNING: Secure circuit breaker in "OFF" position before proceeding.**

1. Remove arm bolt and nut (#1115 and #1115A) from the top of the connecting rod (#1134).
2. Displace connecting rod (#1134) from track.
3. Insert the handle (#1208W) and cotter pin (#1210A).

To return to electrical operation, reverse procedure.

## Cleaning Instructions

**IMPORTANT: Do not use cleaners that contain ammonia, ethyl acetate, phosphoric acid or concentrated chlorine bleach. These may cause damage to the toilet.**

Using C.P. a bio-enzymatic toilet bowl cleaner (1PCP22) will keep the bowl clean and fresh smelling.

## Recommend Visual Inspection

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

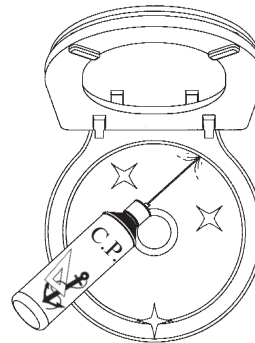
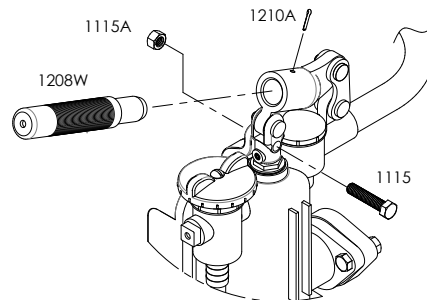
Valve handle must be *fully* in the "FLUSH" or "DRY" position only.



Position for intake of water and discharge of bowl contents



Position for discharge of bowl contents only (no water coming in)



## MAINTENANCE

Super Lube® (#SL1CC) applied to the piston rod will prolong the life of the Piston Shaft Seal. This should be done every spring and fall or more regularly if the head is used frequently. Applying Super Lube to all moving parts is also recommended.

Installation of a Knocks Out Odor Kit (#KO2) will reduce the "rotten egg" smell associated with using salt or brackish water to flush the toilet.

Before attempting repairs, refer to the Troubleshooting section of this manual.

## WINTERIZING

Improper winter lay up is a major cause of marine toilet failures.

### Parts Required

- 3/4" I.D. intake hose approximately 3 feet long.
  - 1 1/2" I.D. discharge hose approximately 3 feet long.
  - Two buckets
  - Nontoxic antifreeze approximately 1 quart
1. Close the intake and discharge seacock. Disconnect and drain the intake and discharge hoses.
  2. Connect short hoses to toilet's intake and discharge.
  3. Place one bucket under short hose on discharge.
  4. Pour nontoxic antifreeze in other bucket.
  5. Place hose connected to intake into bucket with antifreeze.
  6. Flush toilet until antifreeze begins to be discharged from toilet.
  7. Antifreeze should remain in the toilet until recommissioning. This will protect both intake and discharge sides of the pump. Pouring antifreeze into the bowl will only protect the discharge.

**NOTE: Holding tanks, seacocks and treatment systems need to be independently winterized, stored and recommissioned (see manufacturer's instructions).**

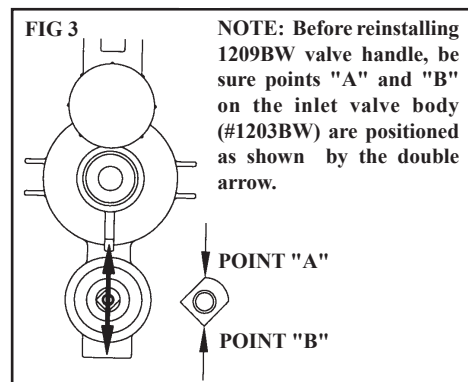
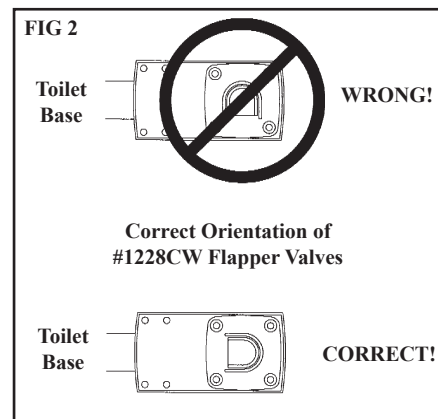
### RECOMMISSIONING

1. Lubricate piston rod with Super Lube®.
2. Using the buckets, hoses and a gallon (3.8 liters) of clean water, flush the antifreeze out of the toilet. Dispose of antifreeze properly, in accordance with local and federal regulations.
3. Reconnect the hoses and open both seacocks.
4. Check all connections for leaks with several test flushes.

### INSTALLATION OF REPLACEMENT PARTS

1. Refer to Fig. #2 when replacing part #1228CW.
2. If valve body (#1203BW) is removed it must be positioned as in Fig. #3 for proper operation.

Overhaul kits and individual parts for your toilet may be ordered through your dealer or direct from the factory.



# INSTALLATION

## Tools Required

- 5/16" nut driver
- Wrench or screw driver
- Bit for drilling mounting surface
- Hose cutters
- Tape measure

## Additional Parts Required

- Four stainless steel mounting bolts or lag screws (minimum 1/4" [6mm]) and washers
- 1 1/2" I.D. discharge hose
- 3/4" I.D. reinforced intake hose
- Hose clamps (two for each connection below waterline)

## MOUNTING TOILET

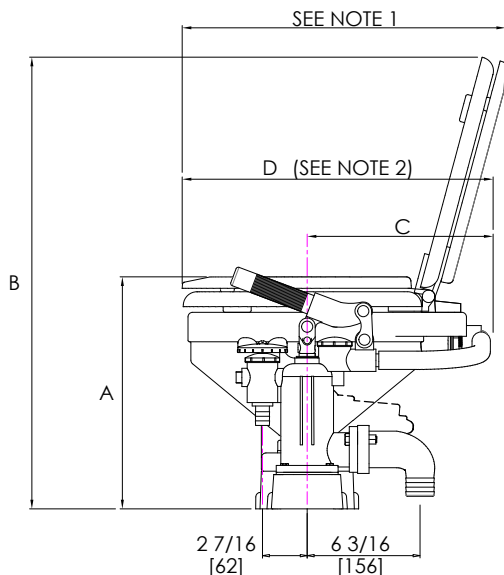
Mounting surface must be flat and solid.

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

**IMPORTANT: Hole size is dependent on the type of fasteners selected to secure toilet to surface.**

5. Secure toilet to surface.

## Raritan PH SuperFlush Marine Toilet Front View, Side View and Footprint



BOWL TYPE	A	B	C	D	E	F
MARINE	13 (330)	24 3/4 (629)	10 3/8 (264)	17 1/4 (438)	17 3/4 (451)	6 1/2 (165)
HOUSEHOLD	13 1/8 (334)	27 7/8 (708)	11 1/2 (292)	20 (508)	18 1/4 (464)	7 (179)

INCHES  
(MM)

## POWERFLUSH Units Require

- Wire
- Wire cutters
- Wire terminal crimpers
- Terminals
- Fuse/circuit breaker

## SPECIFICATIONS

### Electrical

Nominal Voltage (Volts DC)	12V	24V
Amperage Draw @ Nominal Voltage	15	8
Circuit Breaker/Fuse Size (Amps)	20	15

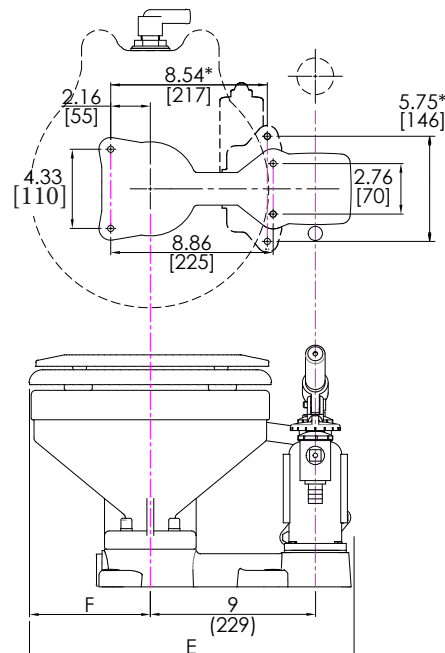
### Wire Sizes

NOTE: Recommended conductor sizes based on 105C rated insulation.

Refer to ABYC Standards for other insulation ratings.

UNIT'S VOLTAGE	Distance from source to unit and back to source [feet (m)]						
	10' (3.1)	15' (4.6)	20' (6.1)	25' (7.2)	30' (9.2)	40' (12.2)	50' (15.2)
	Minimum recommended conductor wire AWG (mm <sup>2</sup> ) for 3% voltage drop						
12	12 (6.0)	10 (6.0)	10 (10.0)	8 (16.0)	8 (16.0)	6 (16.0)	6 (25.0)
24	16 (1.5)	16 (2.5)	14 (4.0)	12 (4.0)	12 (6.0)	10 (6.0)	10 (10.0)

**NOTE: Never mount POWERFLUSH where it may be subject to shower spray or other sources of external water.**



NOTE:

1. THE SEAT WILL OPEN WITHIN THE DEPTH OF THE BOWL (D), HOWEVER, IT MAY BE DESIRABLE TO INCREASE THIS ANGLE BY ALLOWING MORE ROOM AT THE BACK OF THE BOWL FOR THE SEAT TO OPEN.
2. MARINE STYLE BOWL, D DIMENSION IS 17 3/8 [442MM] WITH HANDLE EXTENDED.
3. DIMENSIONS ARE FOR REFERENCE AS VITREOUS CHINA DIMENSIONS MAY VARY +/- 5%.

\*: ELECTRIC FLUSH OPTION

## PLUMBING

### WARNING: HAZARD OF FLOODING

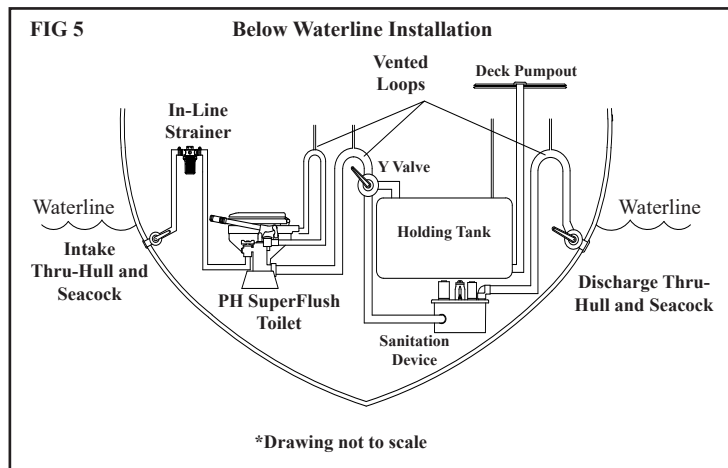
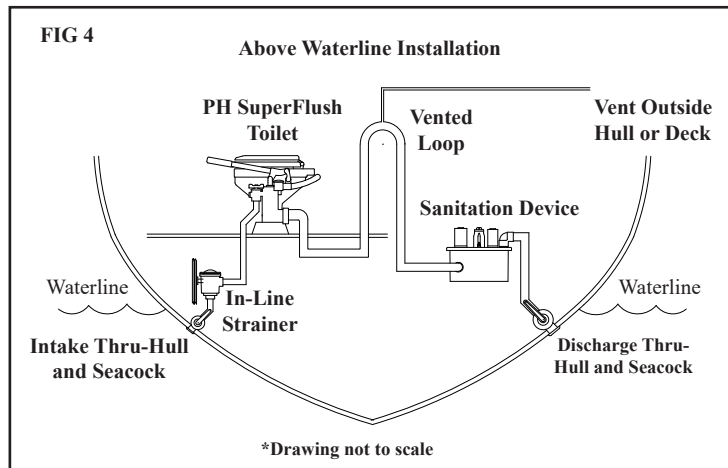
Toilets mounted at or below the waterline, at greatest angle of heel, and connected to a Seacock/Thru Hull Fitting(s) **MUST** have **VENTED LOOPS** installed in toilet discharge plumbing and between raw water intake pump and toilet bowl.

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

### IMPORTANT

- Fittings and 90° bends should be kept to a minimum.
- In-Line Strainer (Raritan part # 163000) may be installed. This will help 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.

1. Route discharge hose above discharge outlet with a vented loop. This will enable the toilet to discharge more efficiently and will help to prevent backflow.
2. An In-Line Strainer (#163000) is recommended. This will help minimize odors and help prevent clogging.
3. Intake and discharge thru-hull fittings should be located far enough apart to prevent discharge water from being drawn through the intake.
4. The optional Raritan Knocks Out Odors Kit (#KO2) enables the use of Cleans Potties (#1PCP22). Raritan Cleans Potties deodorizes the bowl and lubricates internal parts.
5. Flush and check for leaks.



## WIRING

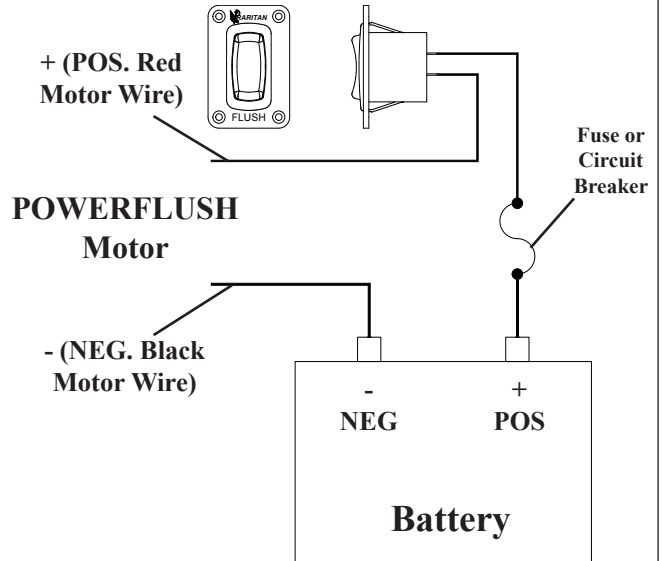
### WARNING: Hazard of Shock and Fire

- Always use proper wire, wire connectors and fuse/circuit breaker. See Specification Chart.
  - Secure wire properly.
  - Do not connect appliances to toilet circuit.
  - Make sure power is off before proceeding.
  - Use proper wire terminals for all wire connections.
1. Determine proper wire size by measuring distance from:
    - Power Source to push-button to toilet motor and back to power source.
  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. Connect positive wire from fuse/circuit breaker to 1/4" Q.C. Switch.
  5. Connect wire from Push Button Switch to red wire on motor(s).
  6. Connect wire from battery negative or power source ground buss to black wire (negative) on motor(s).

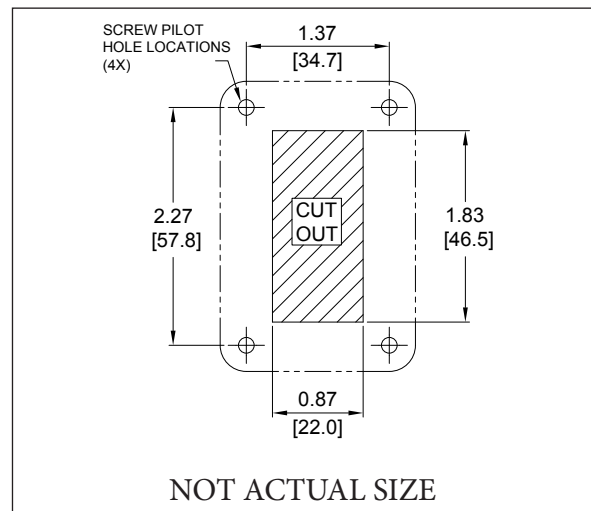
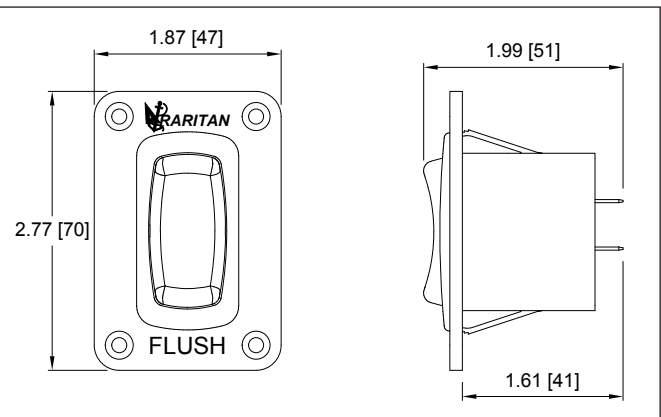
### MOUNTING SWITCH

1. Cut out hole for switch. (Actual size template available on page 10)
2. Use panel to mark screw pilot hole locations. **NOTE:** #6 screws are provided, pilot hole size is dependent on material.
3. Route wire and connect to switch.
4. Mount switch to wall.

### Wiring the POWERFLUSH (DC Unit with POWERSWITCH Switch)



See Specifications on Installation Page for proper wire and fuse/circuit breaker size.



**Water not being drawn in**

- **Check Ball Stuck**  
Shutoff seacock and remove intake hose  
Using an eraser end of pencil be sure check ball is moving freely
- **Debris lodged in intake valve body**  
Check and clean valve body
- **Piston O-ring worn**  
Replace Piston O-ring
- **Inlet valve in wrong position**  
Inlet valve should only rotate 1/4 turn

**Leak around piston shaft**

- **Cartridge seal worn**  
Replace cartridge seal  
Inspect and replace piston shaft if scored

**Odor comes from head area when flushed**

- **Marine vegetation lodged in bowl**  
Remove bowl and attach pressure water at spud assy.  
Install strainer in intake line
- **Intake water is foul (most common in salt and brackish)**  
Install Knocks Out Odors Kit (KO2) to help deodorize intake water
- **Back pressure from holding tank**  
Tank full or vent clogged, inspect and clean
- **Permeated discharge hose**  
rub with warm damp rag if smell transfers to rag  
replace hose

**Water accumulates in the bowl too fast**

- **Flapper valve not seated properly**  
Close intake valve and pump dry - clean or replace flapper valve as necessary
- **Joker valve not closing or opening properly**  
Clog or restriction in discharge line  
Close intake valve and pump dry - clean or replace joker valve as necessary

**Not enough water to rinse bowl**

- **Intake valve positioned improperly**  
Be sure inlet knob only turns 1/4 see fig. #3
- **Debris around intake or discharge check balls**  
Remove check balls, clean and replace as necessary
- **Scored pump housing or worn piston "O" ring**  
Inspect inside of housing replace "O" ring and housing as necessary
- **Intake line or strainer clogged**  
Clean line and strainer

**Water rises in bowl**

- **Vented loop(s) not breaking siphon**  
Close discharge seacock, then intake seacock to determine which is causing the problem. Clean or replace vented loop(s) parts.
- **Joker valve worn**  
Inspect, clean or replace as needed

**Electric motor labors or manually hard to pump**

- **Low voltage at motor while running**  
Check condition of batteries, terminals and wire connections for corrosion. Check gauge of wire to be sure it is not undersized.
- **Holding tank vent clogged or tank full**  
Clean holding tank vent or empty tank
- **Discharge line obstructed**  
Test by putting a short piece of hose on discharge fitting and pump into bucket if OK then - Check thru-hull fitting and hose for clog
- **MSD Clogged**  
Test as above if OK - then see the MSD instruction manual
- **Discharge seacock closed**  
Open discharge seacock

Units requiring extensive repairs may be returned to the Millville, NJ or Fort Lauderdale, FL office for overhaul. Instructions, including name, address and phone number MUST accompany returned units to ensure proper handling.

## PARTS FOR RARITAN PH SUPERFLUSH AND PH POWERFLUSH

<u>Part No.</u>	<u>Description</u>
3 25101	Base
4 25102	Base Plug
5 25103	Base O-Ring
6 25104	Base mounting plug
8 F081	Bowl Bolt 1/4"-20 x 2 S/S Hex head
9 RNI	Nylon Shoulder Washer
10 1226B	Nut, 1/4"-20 S/S (8)
12 1208W	Retractable handle
13 1236E	Bowl Elbow
14 CH43P	Hose Clamp (2)
15 CH42	Hose (3/4" I.D.)
17 221361	Sealing Washer
19 F408	Screw: 1/4-20 x 5/8
20 1200CW	Pump Housing
21 1214W	Piston Shaft Seal Cartridge Assy (1214, 1214A, 1214B)
23 1214A	Cartridge Shaft seal
24 1214B	Cartridge O-ring
25 1203BW	IntakeValveBodyw/"O"Rings, (Includes 1203B, 1203B1, 1203B2, 1203B3)
29 1204B	Intake Valve Cap
30 1202	Intake and Discharge Valve Gasket (2)
31 1209BW	Valve Handle
32 1124	1/4"- 20 x 1/2" R.H. Machine Screw
33 1217	Discharge Valve Cap
34 LWS	Intake and Discharge Valve Spring (2)
35 1201	Intake and Discharge Valve Ball (2)
36 1212W	Piston Rod Assembly w/"O" Ring (1232MS)
37 1232MS	Piston "O" Ring
38 1203W	Air Valve Assembly
39 1228CW	Flapper valve with embedded weight
40 C253	Joker Valve
41 1222AW	90° Discharge w/Flange (Std.)
42 1222B	Straight Discharge (Opt.)
43 1115	3/8"-16 x 1 1/2" Hex Head S/S Bolt(2)
44 1223B	Flange Nut 3/8"-16 S/S (2)
45 1210	Handle Socket
46 1211PL	Piston Rod Yoke
47 F005	1/4" - 20 x 5/16" S/S set screw
48 1218	Fulcrum Link (2)
49 1216	Clevis Pin (3)
50 1210A	Cotter Pin

### **BOWL & SEAT**

<u>Part No.</u>	<u>Description</u>
16 1236AW	Spud assy.
1 1237W	Marine-size Bowl assy.
1 1244W	White Household-style Bowl assy.
7 25105	Bowl Gasket
2 1238SC	Marine-size seat & cover; Slow Close
2 1245SC	Household-style seat & cover; Slow Close
11 VCAP	Vinyl Cap

### **ADDITIONAL PARTS FOR RARITAN PH SUPERFLUSH AND PH POWERFLUSH**

#### **RARITAN INSTALLATION ACCESSORIES**

<u>Part No.</u>	<u>Description</u>
163000	In-Line Strainer
1PCP22	C.P., Cleans Potties, Bio-enzymatic, 22oz.
CHTII	Compact holding tank - 5 gallon
SFH	Sani-Flex Hose
SL1CC	Super Lube 1cc tube
KO2	Knocks Out Odor Kit
TD90319	Vented Loop 3/4"
TD90323	Vented Loop 1 1/2"
TD90314W	"Y" Valve

#### **OVERHAUL KITS**

<u>Part No.</u>	<u>Description</u>
PHRKIIC	PHII&PHEII-Repair kit
PHIIPUMP	PHII Pump replacement assembly

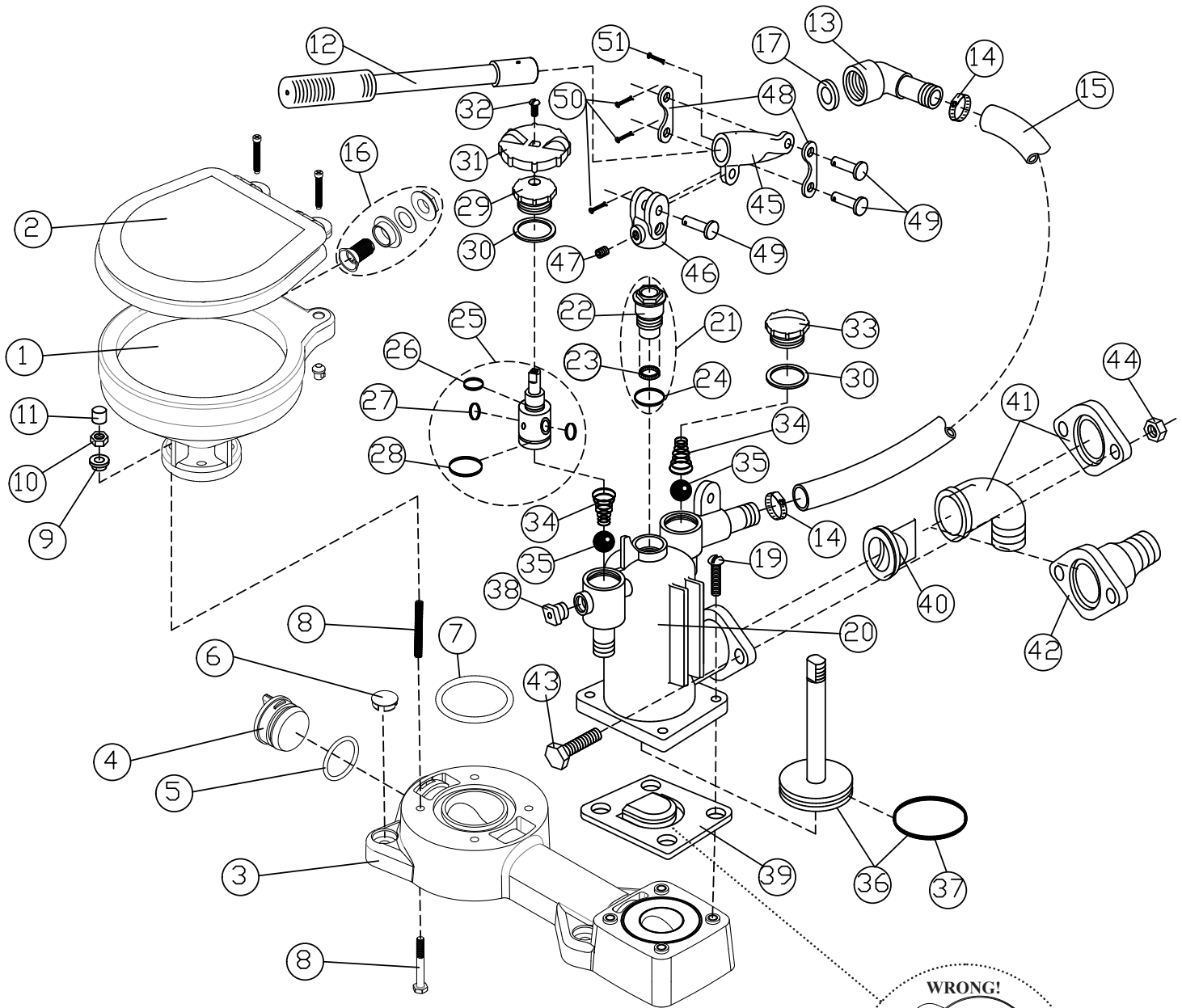
#### **CONVERSION KIT**

P104E**	PH SUPERFLUSH to PH POWERFLUSH Conversion Kit
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\*\*Voltage:  
12 (12VDC)  
24 (24VDC)  
12T (115V/230V AC)



# PH SUPERFLUSH EXPLODED VIEW

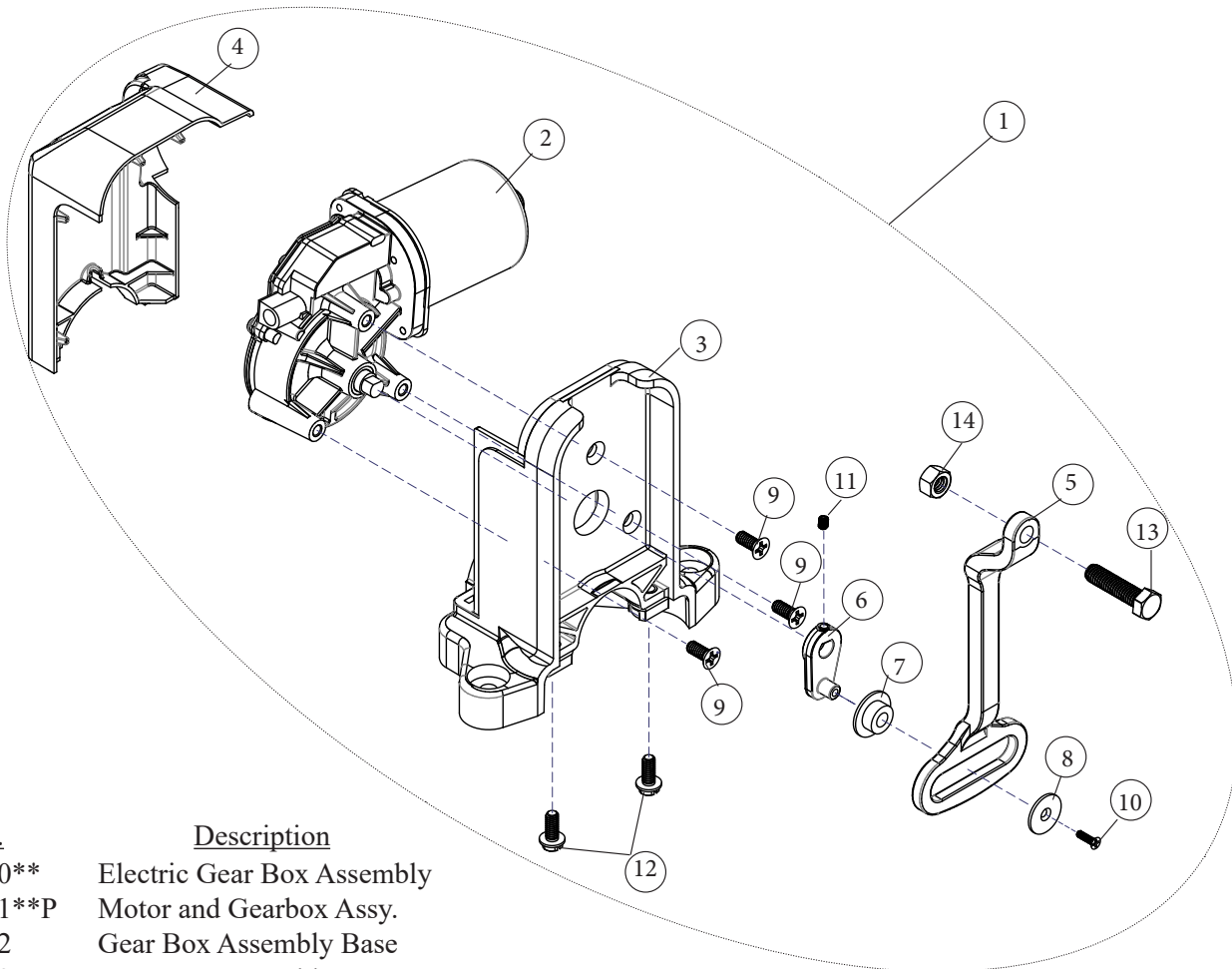


## ORDERING INFO:

Sample Part: P101E12 = Marine size bowl, Electric drive, 12V DC

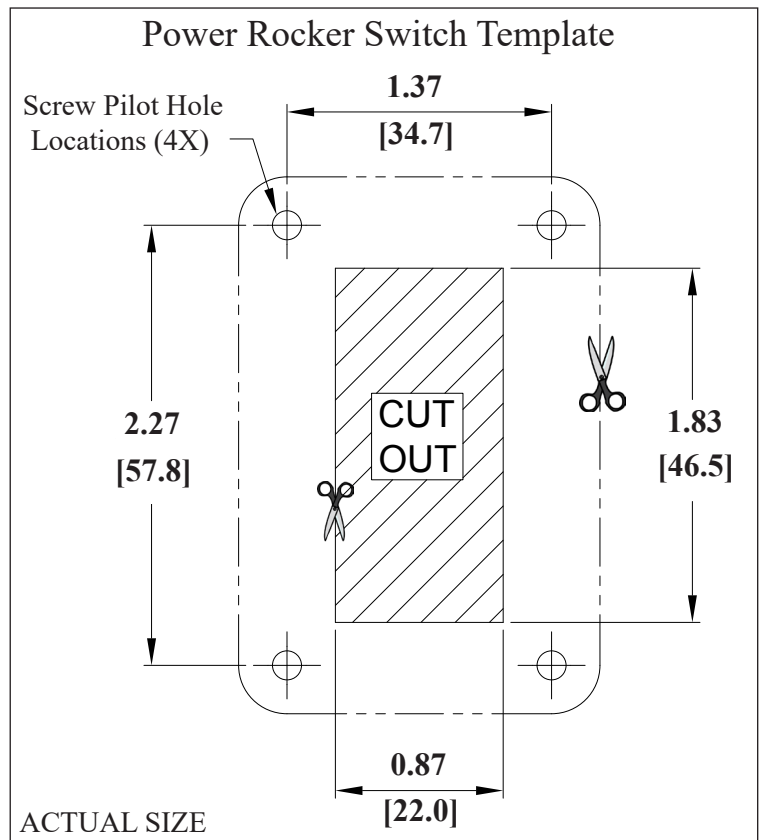
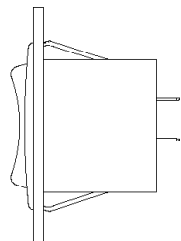
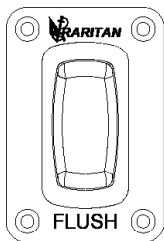
Model	Bowl (white) Size	Operation	Voltage
P10	1 -Marine Size 2 -Household Size 3 -Lower Assy (no bowl) 4 -Electric Conversion Kit	None -Manual E -Electric	None -Manual 12 -12V DC 24 -24V DC 12T -115V/230V DC

# POWERFLUSH EXPLODED VIEW



Part No.	Description
1 1130**	Electric Gear Box Assembly
2 1131**P	Motor and Gearbox Assy.
3 1132	Gear Box Assembly Base
4 1133	Gear Box Assembly Cover
5 1134	Connecting Rod
6 1135	Link
7 1136	Roller
8 1137	Roller Washer
9 F359	Gear Box Mounting Screws (3)
10 F360	Roller Screw
11 F149VT	Set Screw
12 F408	Assembly Mounting Screws (2)
13 1115	3/8-16 x 1 1/2" Bolt
14 1115A	3/8-16 Nut

PRS  
Power Rocker Switch



\*\*Voltage:  
12 (12VDC)  
24 (24VDC)  
12T (115V/230V AC)

**The PHRKIIC Repair Kit Includes:**

- 1201: 3/4 Valve Ball (2)
- 1202: Valve Cap Gasket (2)
- 1203BW: Intake Valve Body w/"O" Rings  
(includes: 1203B, 1203B1, 1203B2, 1203B3)
- 1214W: Piston Shaft Seal Cartridge Assembly  
(includes: 1214, 1214A, 1214B)
- 1226C: Plastic Spacer Washer (4)
- 1228CW: Flapper Valve Assembly
- 1232MS: Piston Multi-Seal O-Ring
- 1234: Bowl Gasket (White)
- C253: Joker Valve
- RNI: Nylon Shoulder Washer (4)
- SL1CC: Super Lube: 1cc Packet (3)



**Inlet Valve/ Handle Orientation and Repair**

**Tools you will need:**

- Channel type pliers.
- Flatblade (med) screwdriver

Gaining access to the inlet valve

To clean out debris or dismantle the valve it is necessary to access the inlet valve spring (part# LWS) and ball (#1201).

It is only necessary to unscrew the inlet valve cap (part #1204B) approximately 5 revolutions with channel type pliers. *Note: It is not necessary to remove or loosen any other part.*

Then by grasping the 1209BW handle and gently lifting upwards, the entire assembly (down to part #1203BW) can be removed.

Clean out any debris in this area.

Replace gasket (part#1202) if necessary and apply a small amount of Super Lube (#SL1CC) to the O-ring area of the 1203BW.

Reassemble in the reverse order making sure that the alignment post of the 1200CW housing protrudes **between** the two limiting stops in the underside of the 1209BW. This allows for the proper position of the inlet valve.

If installed properly this creates a maximum of a 1/4 turn from "Dry" to "Flush" **not** 3/4 turn.

*Note: Do not overtighten #1204B as gasket #1202 will displace*

