

# Model 21P\* Macerator Pump Installation, Operation & Repair Manual

## 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:** **RISK OF SHOCK OR FIRE** - If the pump is operated in an area containing flammable vapors, the wire leads must be joined by insulated mechanical locking connectors. Loose or inadequate wire connections can spark, resulting in an explosion resulting in property damage, injury, or death. Always use recommended fuse/circuit breaker and wire size.

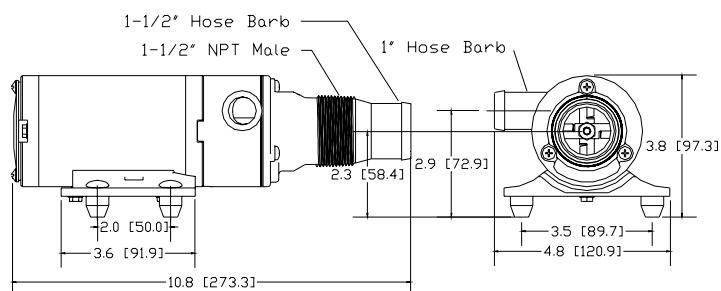


Motors in this product are "Ignition Protected". They are not however, explosion-proof as defined in 46CFR 110.15-65(e), Subchapter J-Electrical Engineering.

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



Whenever possible hose connections should be secured using two stainless steel hose clamps. Integrity of clamps, hoses and fittings should be checked periodically.



Raritan's macerator pump is designed to empty marine and RV holding tanks of normal waste. It is also an excellent choice for emptying fish boxes of scales and residual waste. A flow rate of up to 13 gallons per minute conveniently empties any tank in minutes. The unique dual-cut blade design ensures waste is ground up thoroughly. The pump is self-priming to a five foot lift when impeller is wet, four foot lift when impeller is dry, but for optimum performance and life, it should be mounted as close to the tank as possible. **Marine pump out must be in proper discharge zones only.** This macerator will not handle hard objects, rags, or feminine napkins.



**1-800-352-5630**  
**www.raritaneng.com**

## INTERMITTENT DUTY ONLY!

- Pump switch must be near pump and tank so operator can hear pump running.
- Make sure shut-off valve to pump and dump valve [if equipped] are both open. Turn on momentary switch and pump out tank.
- When tank is empty, pump will get louder with a high pitch sound. Immediately turn pump off, or damage to impeller and housing will occur.
- Do not run pump dry for more than 15 – 20 seconds. Flush tank and pump with water after each use. This macerator will handle normal waste, tissues, cigarettes, fish scales, etc. It is not designed to handle large hard objects such as large bones or fruit pits.

**Periodic Maintenance and Storage:** Flush with water after each use. Check wire connections occasionally. After periods of non-use, impeller can stick. To loosen, open rear shaft cover and turn motor shaft clockwise with a flat tip screwdriver. Then replace shaft cover. For extended periods of non-use, pump impeller can be lubricated by running a small amount of mineral oil through holding tank system.

### **Maintenance: Turn off all power!**

#### **Rear end cap/ motor shaft slot access:**

Loosen end cap screws (17). Rotate shaft cover (16) to access slot on motor shaft.

#### **Pump disassembly:**

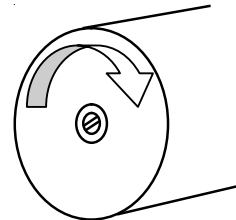
Remove 3 cover screws (1). Remove cutter housing (2) and o-ring (3). Remove hex nut (4) and cutter blades (5) & (6). It may be necessary to hold the motor shaft steady. Insert a screwdriver into slot on motor shaft (see slot access above), or slip a thin wrench (9/32" [7mm]) behind blades onto flat of motor shaft. Remove top wear plate (7), gasket (8), impeller (9) and bottom wear plate (10). Remove impeller housing (11) and shaft seal (12). It is not necessary to remove slinger (13).

#### **Pump reassembly:**

Make sure slinger (13) is on shaft. Make sure shaft seal (12) is inserted properly into rear of impeller housing (11). Slide impeller housing (11) onto motor shaft. Seat bottom wear plate (10) into housing. Twist impeller (9) onto shaft and into housing with a counterclockwise motion. Install gasket (8) and top wear plate (7). Install cutter blades (6) & (5) with tab on bottom blade aligned with motor shaft flat. Secure motor shaft with screwdriver or wrench (9/32" [7mm]) and tighten hex nut (4). Position o-ring (3) and cutter housing (2) in place, and install cover screws (1).

#### **Maintenance Tip!**

Loosen stuck impeller by turning motor shaft clockwise from rear with a flat-tipped screwdriver.



## Electrical Installation Checklist

- √ Separate circuit from power source
- √ Proper size momentary switch mounted near pump
- √ Proper wire size to length
- √ Proper fuse size and type
- √ Insulated wire connectors

### **WARNING:**

Pump should be operated on a separate circuit. Pump should be connected to properly sized momentary switch. This prevents pump from damage due to dry run condition. Switch should be near pump. This will allow operator to hear change in pump sound when tank is empty.

**NOTE: For proper operation motor must rotate counterclockwise when viewed from pump end.**

## **Plumbing Connections**

Pump should be mounted as near as possible to tank to minimize dry run. Pump is self-priming to a five-foot lift when impeller is wet, four foot lift when impeller is dry. Pump is more efficient if mounted near the holding tank.

**INLET:** Always install pump with a shut-off valve between pump and holding tank.

**Hose:** Use 1-1/2" ID [non-collapsible vacuum rated] hose on inlet [suction] side. Use stainless steel hose clamps on all sanitation connections.

**Flange:** To mount to 1-1/2" female flange, inlet barb must be cut off just before threads. Seal threads and hand tighten.

**Warning:** **Any air leak on inlet side can cause pump to run dry and can damage impeller and impeller housing. Check all inlet side connections, even those on deck plates. All runs should be smooth with no kinks or sharp angles.**

**OUTLET:** Use 1" minimum ID hose on discharge side of pump. Connect to thru-hull fitting above highest heeled point above waterline. Vented loop installations must vent at least 10" above highest heeled point above waterline. Use stainless steel hose clamps on all sanitation connections.

## Product Specifications

Motor: Seamless can motor, 1/8 hp  
Thermally protected

Lead wires: 14 GA

Fuse: See motor label for fuse size

Pump Type: Flexible impeller

Duty Cycle: Intermittent duty only

Ports:

- Inlet: 1-1/2" hose barb & 1-1/2" NPT Male
- Outlet: 1" hose barb

Impeller: Globe-Blue

Blade: 316 stainless "Double-cut"

Dimensions: See drawing

Weight: 5 lbs.

Approvals: UL ignition protected, ISO 8846  
CSA, CE styles available

Typical Flow: Dependent on fluid viscosity  
Chart below based on water

Head	Flow gpm[lpm]		Max DC Amps	
Ft [m]	12 V	24V	12V	24V
0 [0]	13 [49]	13 [49]	17	8

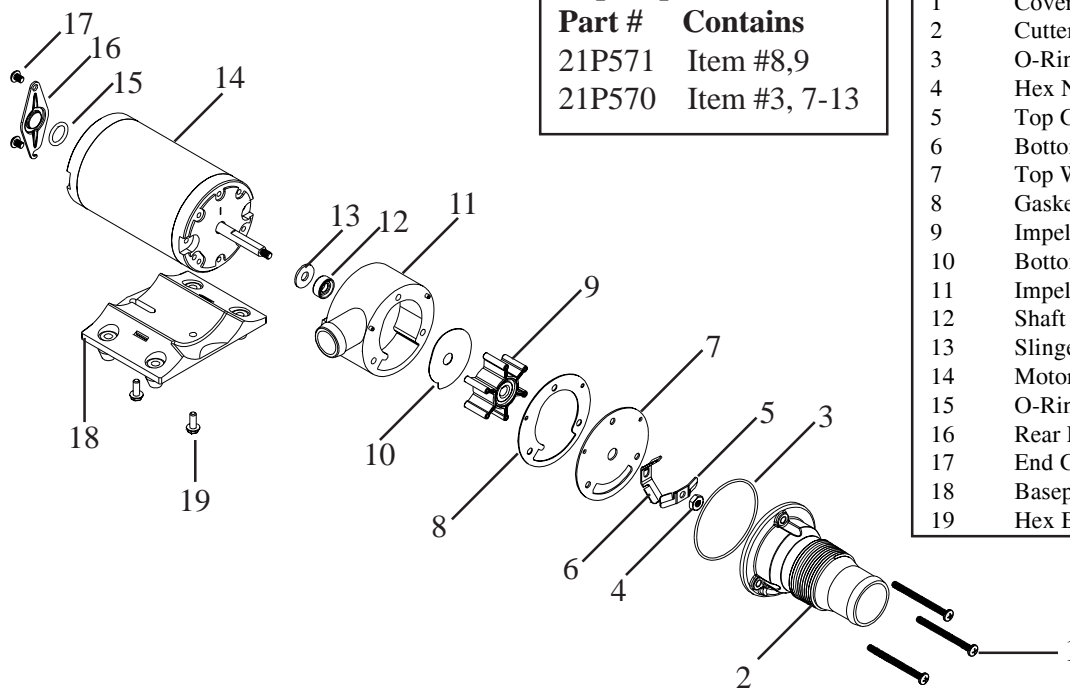
### **12 Volt System**

#### **Min. Wire Size (20 Amps)**

<u>Total Wire Length *</u>	<u>3% Drop</u>	<u>10% Drop</u>
<u>feet [m]</u>	<u>GA</u>	<u>GA</u>
1-10 [.3-3]	#10	#16
11-20 [3.3-6]	#8	#14
21-30 [6.4-9.1]	#6	#12
30-60 [9.1-18.2]	#4	#10

\*length from power source to motor and back to ground.

**Maximum Operating Head = 30 feet**



Repair parts	
Part #	Contains
21P571	Item #8,9
21P570	Item #3, 7-13

Item	Description	Qty.
1	Cover Screw	3
2	Cutter Housing	1
3	O-Ring	1
4	Hex Nut	1
5	Top Cutter Blade	1
6	Bottom Cutter Blade	1
7	Top Wear Plate	1
8	Gasket	1
9	Impeller	1
10	Bottom Wear Plate	1
11	Impeller Housing	1
12	Shaft Seal	1
13	Slinger	1
14	Motor Assembly	1
15	O-Ring	1
16	Rear End Shaft Cover	1
17	End Cap Screw	2
18	Baseplate Assembly	1
19	Hex Bolt	2

### LIMITED WARRANTY

Raritan Engineering Company warrants to the original purchaser that this product is free of defects in materials or workmanship for a period of one year from the product's date of purchase. Should this product prove defective by reason of improper workmanship and/or materials within the warranty period, Raritan shall, at its sole option, repair or replace the product.

1. TO OBTAIN WARRANTY SERVICE, Consumer must deliver the product prepaid, together with a detailed description of the problem, to Raritan at 530 Orange St., Millville, N.J. 08332, or 3101 SW 2nd Ave. Ft. Lauderdale, FL 33315. When requesting warranty service, purchaser must present a sales slip or other document which establishes proof of purchase. THE RETURN OF THE OWNER REGISTRATION CARD IS NOT A CONDITION PRECEDENT OF WARRANTY COVERAGE. However, please complete and return the owner Registration Card so that Raritan can contact you should a question of safety arise which could affect you.
2. THIS WARRANTY DOES NOT COVER defects caused by modifications, alterations, repairs or service of this product by anyone other than Raritan; defects in materials or workmanship supplied by others in the process of installation of this product; defects caused by installation of this product other than in accordance with the manufacturer's recommended installation instructions or standard industry procedures; physical abuse to, or misuse of, this product. This warranty also does not cover damages to equipment caused by fire, flood, external water, excessive corrosion or Act of God.
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