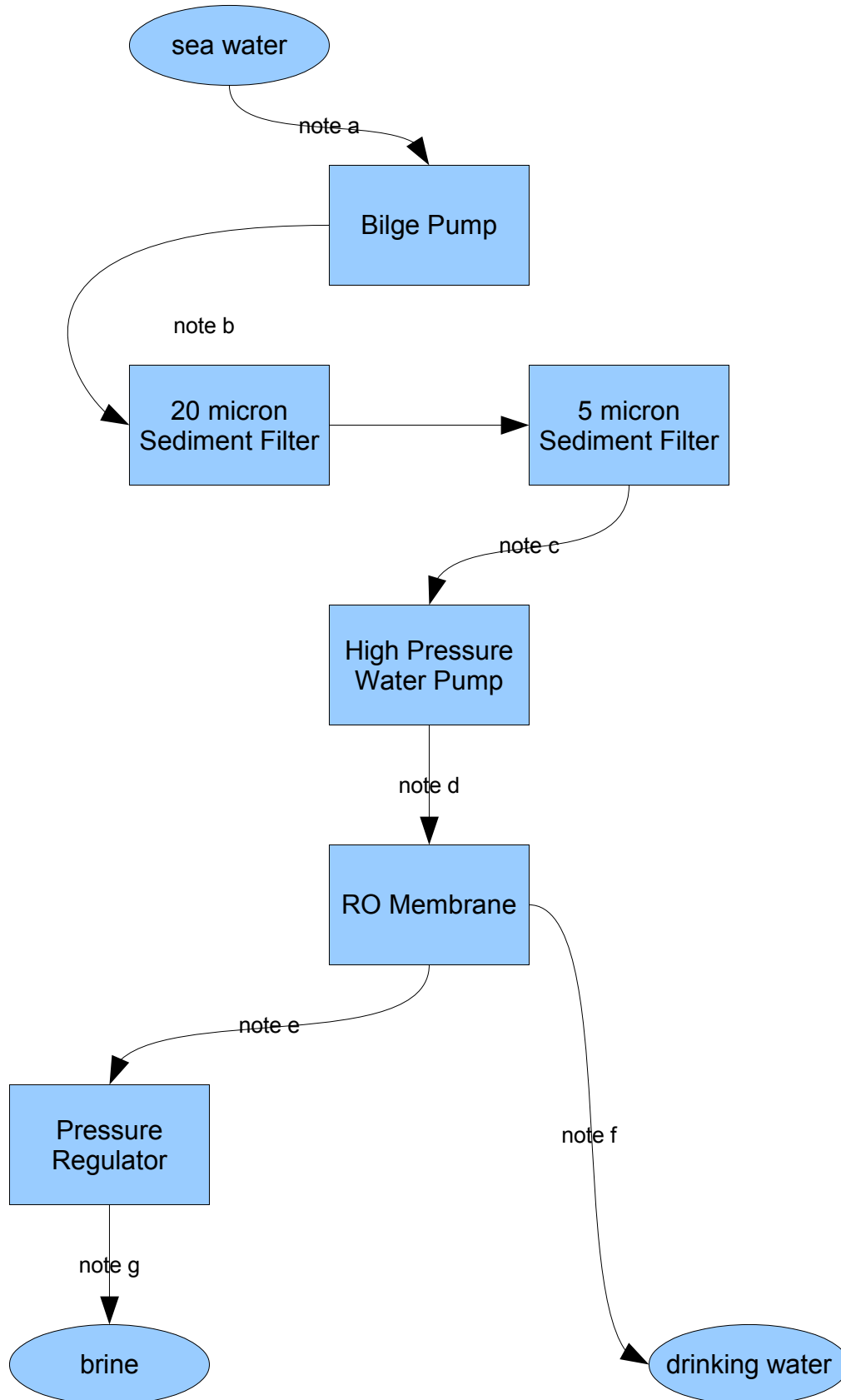


# SV Buenasea Water Maker



## Notes:

- a. Sea Water. On “water making days” we toss a spare bilge pump overboard. You could also collect raw sea water through a spare through hull.

Bilge Pump - This could be any water pump. We use a spare 500 GPM Rule

- b. Nylon hose from bilge pump through sediment filters is fine.

Sediment Filters - We use filters and housings from [filtersfast.com](http://filtersfast.com). See SKU's

filter 1: SDF-25-2005,

filter 2: SDF-25-2020,

housing: 150564

- c. Nylon hose from sediment filter to High Pressure Water pump is fine. Verify that the flow rate from sediment filters is adequate. High pressure water pump will suck up to 14 liters per minute. If it is not getting enough water it will pull on a vacuum and damage itself.

High Pressure Water Pump - We use General Pump Series 50 Model T991. It fairly corrosion proof with aluminium body, brass manifold, ceramic plungers. Max water flow: 3.5 gallons per minute. Max PSI 1500. We purchased ours from [pressure-washer-parts.com](http://pressure-washer-parts.com). This pump is mounted on engine and belt driven by pulley added to the fly wheel. Pump demands about three horsepower at 1500 RPM. Size pulleys on engine and pump so that pump drives at 1450 RPM when engine is at idle speed. Our engine's pulley is about double the size of the pump's pulley so we run engine at 800 RPM to make water.

- d. Hydraulic line and brass fittings from high pressure water pump to RO membrane. This line pulsates so wherever you place it, be prepared to accommodate chafe. Our hydraulic line is nylon inside stainless steel braid. Make sure the person you buy hydraulic line from knows it's going to be used for drinking water.

RO Membrane - We use DOW FILMTEC Seawater RO Membrane, SW30-2450. You will need membrane and housing. We purchased ours from [thepurchaseadvantage.com](http://thepurchaseadvantage.com). DOW has a number of good manuals on their website that are worth reading. They are pdf files that all start with the name DOW\_FILMTEC. For example:

DOW\_FILMTEC\_MembraneStartUpPerformanceAndStabilization.pdf.

It is worth searching for and reading these manuals.

- e. Hydraulic line and brass fittings to pressure regulator.

Pressure Regulator - We use liquid filled bronze pressure regulator.

- f. This can be nylon hose as pressure is not high. Water temperature effects output but once system is running at 800 psi, about 20 % of output will be fresh water for drinking. Expect 90 liters / 24 gallons per hour.

- g. This can be nylon hose running overboard. There is a bit of pressure but nothing dangerous. About 80% of output comes out as brine.

## **Startup procedure:**

Verify pressure regulator on RO membrane is open. Start engine with pulley disengaged from high pressure water pump. Start bilge pump and watch raw sea water work its way through sediment filters to high pressure water pump. Once water reaches high pressure water pump, engage pulley to drive pump. Watch water pump through RO membrane; all of it will come out through the “brine” line. Slowly pressurize system with pressure regulator to 800 PSI. As pressure reaches 800 PSI, water will divert from the “brine” hose to the “fresh” hose. Let system run for a couple minutes then pour fresh water into clear glass. When water looks clean and tastes good, start filling water tanks, washing clothes, cleaning decks, etc.

## **Shutdown procedure:**

For us, water making days span more than two weeks so we lightly pickle the system after every use. For pickling, we use Sodium Metabisulfite (SMBS). You can find this at beer brewing store. This stuff kills living things. Keep chlorine far away because it will kill your RO membrane. If you're going to use system again within the next two weeks, forget the pickling solution but you'll still want to flush the system as described below.

Fill 20 liter fresh water bucket with drinking water and a tablespoon or two of SMBS. Transfer bilge pump from sea to bucket. This will flush entire system with fresh water. Watch drinking water output from RO membrane increase to much more than 20% as fresh water flows through system. Slowly depressurize system with pressure regulator. Disengage pulley to high pressure water pump or turn off engine before bilge pump empties fresh water bucket. Enjoy the view from your boat free and untied to land while savoring another refreshing taste of fresh clean water I bet you'll notice is better than anything you've tasted from a hose at a marina.

## **Key points to remember:**

High pressure pump is not happy pulling on water; it needs to be fed. No vacuum!  
Fast pressure changes hurt RO membrane. Pressure up and down slowly!  
No chlorine. It will kill the RO membrane.

Our water maker is as simple and basic as I could envision. Using components mentioned in notes, it cost about \$1500 in 2010. I'm glad you're considering making one too. Burning less than a liter of fuel per hour, it's very efficient compared to other turnkey systems on the market you'll pay far more for. See video of water maker on our website: <http://www.fgood.org>

Good luck,  
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