

Rainman Water Maker Installation Manual

 rainmandesal.com/rainman-water-maker-installation-manual

Introduction

Contents

1. [Introduction](#)
2. [Video Tutorial](#)
3. [Cased System Installation](#)
 1. [Pressure Supply Unit](#)
 2. [Reverse Osmosis Unit](#)
4. [Naked System Installation](#)
 1. [Pressure Supply Unit](#)
 2. [Reverse Osmosis Unit](#)
5. [Plumbing Into Vessel](#)
 1. [Plumbing Overview](#)
 2. [Stage 1 – Seawater Intake](#)
 3. [Stage 2 – Brine Outlet \(Waste Overboard\)](#)
 4. [Stage 3 – Product \(Fresh\) Water Connections](#)
 5. [Extra Items That May Be Required](#)
6. [Extra Level Of Membrane Protection](#)

The Rainman installation system consists of parts that will allow you to install your AC electric or 12VDC watermaker. This is a guide only. Installation will vary from vessel to vessel.

All electric Rainman systems can be installed. The systems in the traditional blue case can be either installed or run as portable. The Rainman Naked systems are specifically designed for a minimum footprint installation. The plumbing hardware described in this manual is included with a Rainman Naked system, or available as an optional item for the classic Rainman system in a blue case.

A system installation can be divided into the physical installation process and then plumbing the system into your vessel.

The mounting system is moulded from rugged fiberglass filled nylon and has been designed to make the physical installation of your system as quick and easy as possible. The white blemishes that may exist on some parts are normal residual from the moulding process.

Video Tutorial

A Rainman customer made an excellent tutorial video about his Rainman installation.

[Sail Life Video](#)

Cased System Installation

Pressure Supply Unit

The cased PSU can be mounted using the mounting seat and strap provided.



When selecting a suitable mounting position, consider the following points:

- The mounting seat should be secured to a level surface.
- Ensure that both the high pressure output fitting and the on/off switch are accessible.
- The motor on PSU is air cooled and has a fan to push air over the motor. The motor is rated to stay under its max operating temperature in a max surrounding air temperature of 40C (104F). If the unit is mounted in an enclosed space without adequate ventilation, the air in the space will heat to over 40C (104F) very easily. If you are mounting the PSU in an enclosure with other machinery (e.g. in an engine room), it is very important to ensure that the ambient temperature remains below 40C (104F) whilst your watermaker is running at the same time as other machinery.
- The PSU should be placed in the mounting assembly in the correct orientation. The embossed diagram on the mounting seat shows the correct position.

Instructions

1. Fasten the mounting seat using all four holes with the self-tapping screws provided or your choice of alternate fastener.
2. Slide the strap through the slot on the underside of the mounting seat.
3. Place the PSU in the seat.
4. If the pickup hose is coiled in the side pocket, pass the strap outside the pocket. If the pickup hose is not in the side pocket, pass the strap through the pocket. The external pocket of the case can be removed if desired to slightly reduce size.
5. Tighten the strap.

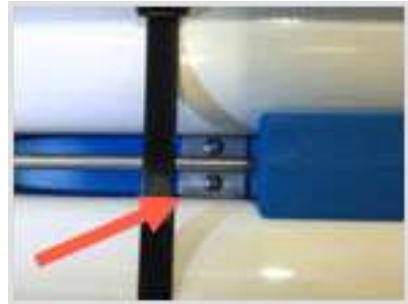
Reverse Osmosis Unit

The cased RO units include plates and screws to assist with mounting the systems while in the case.



Instructions

1. Place each mounting plate inside the case, over the two holes in the rear. Use double sided tape or other adhesive to hold the plates in position during installation.
2. Fasten the unit to the surface using the screws provided, or your choice of appropriate fastener.



Naked System Installation

Pressure Supply Unit

The mounting system for the Naked PSU has three parts. The mounting seat on the base and two mounting frames on each side.



The PSU needs to be correctly oriented when placed in the mounting assembly. The embossed diagram on the seat shows the correct orientation. The two side frames are labelled A or B, and must be used on the correct sides of the base seat. There are notches to prevent you from installing them on the incorrect side.



When selecting a suitable mounting position, consider the following points:

- The mounting kit should be secured to a level surface and positioned in such a way that there is a minimum 100mm (4") of clearance on one side to allow for working space to complete the assembly.
- Each hose run between the PSU and the pre-filter should be no more than 2 meters (six feet).
- Ensure that both the high pressure output fitting and the on/off switch are accessible.
- The motor on PSU is air cooled and has a fan to push air over the motor. The motor is rated to stay under its max operating temperature in a max surrounding air temperature of 40C (104F). If the unit is mounted in an enclosed space without adequate ventilation, the air in the space will heat to over 40C (104F) very easily. If you are mounting the PSU in an enclosure with other machinery (e.g. in an engine room), it is very important to ensure that the ambient temperature remains below 40C (104F) whilst your watermaker is running concurrently with other machinery.

Instructions

1. Before you fasten the mounting seat to the surface, attach the frame to the seat on the side that will have the least clearance when the unit is installed. Use two of the countersunk M6X20mm machine screws supplied for this.



2. Fasten the mounting seat to a level surface using all four holes. Use the self-tapping screws provided, or your choice of alternate fastener.



3. Slide the PSU into the mounting seat as shown. Ensure the PSU orientation matches the embossed diagram on the mounting seat.



4. As you place the unit in the mounting seat, taking care to align the black rubber vibration isolators on the PSU with the corresponding holes in the side frame.



5. Slide the other mounting frame onto the mounting seat, taking care to align the holes in the frame with the black rubber vibration isolators on the PSU. This may require lifting the PSU slightly.



6. Fasten the side rail to the mounting seat using the remaining two countersunk machine screws.

7. Mount the prefilter bracket as close to the PSU as possible, not exceeding two meters (six feet). Before installing the prefilter, consider how you will run the tubing to the 'IN' and 'OUT' sides of the prefilter. It is very important that the tube from the brass lift pump runs to the "IN" side and the tube from the "OUT" side runs to the high pressure pump. Note that the screws mounting the bracket to the wall are larger than the ones mounting the housing to the bracket.



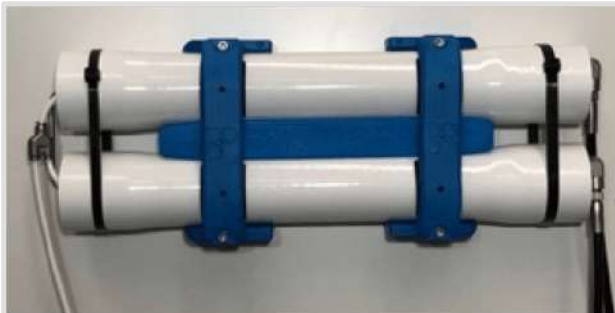
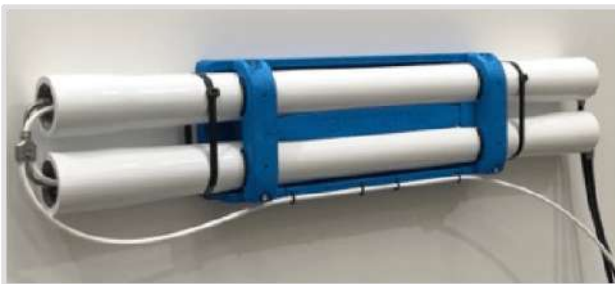
8. Using the white ½" tube supplied, connect the 'IN' side of the prefilter to the corresponding fitting on brass lift pump on the PSU. Now connect the 'OUT' side to the push fitting on the side of the high pressure pump.

Reverse Osmosis Unit

The mounting system for Rainman RO High Output (twin 40" membranes) or Economy (single 40" membrane) are the same and consist of three parts. One back bracket and two mounting saddles. The Compact unit (twin 21" membranes) consists of four parts, including two abbreviated back brackets and two mounting saddles.



The RO units can be mounted either horizontally or vertically.



Instructions

1. Fasten the back bracket using the appropriate fasteners. It is usual to mount against a wall, but the back bracket also has angled holes for mounting on a floor if desired. If you have a Compact RO unit (2 x 21" membranes), the abbreviated back brackets should be mounted 250mm (10") apart as in the photo above. The lower part of the back bracket extends further so you can rest the RO unit while attaching the mounting saddles.



2. Ensure all four rubber pads are in place.



3. Place RO assembly in the back bracket.
Note that the Economy RO unit (single 40" membrane) will only occupy one slot in the mounting bracket.



- Secure the RO unit by attaching the two saddles firmly using the four M6 x 40 cap screws provided.



- Use slots on the back bracket with zip ties to tie off hoses, keeping the set up tidy.



- Mount the product water flow meter at a convenient location in line with the white product water hose. Two screws hold the bracket in place and the flow meter itself slots in. The hose from the RO unit inserts into the bottom of the flow meter push-fit connector. The hose from the top of the flow meter connects to the product water three way valve.



- Mounting the pressure control valve / gauge assembly can be up to 5 meters (15 ft) away from the RO unit. This configuration allows for a minimalist installation or integration with a broader control function. It provides significant flexibility on how to physically install the assembly, as per sample images.

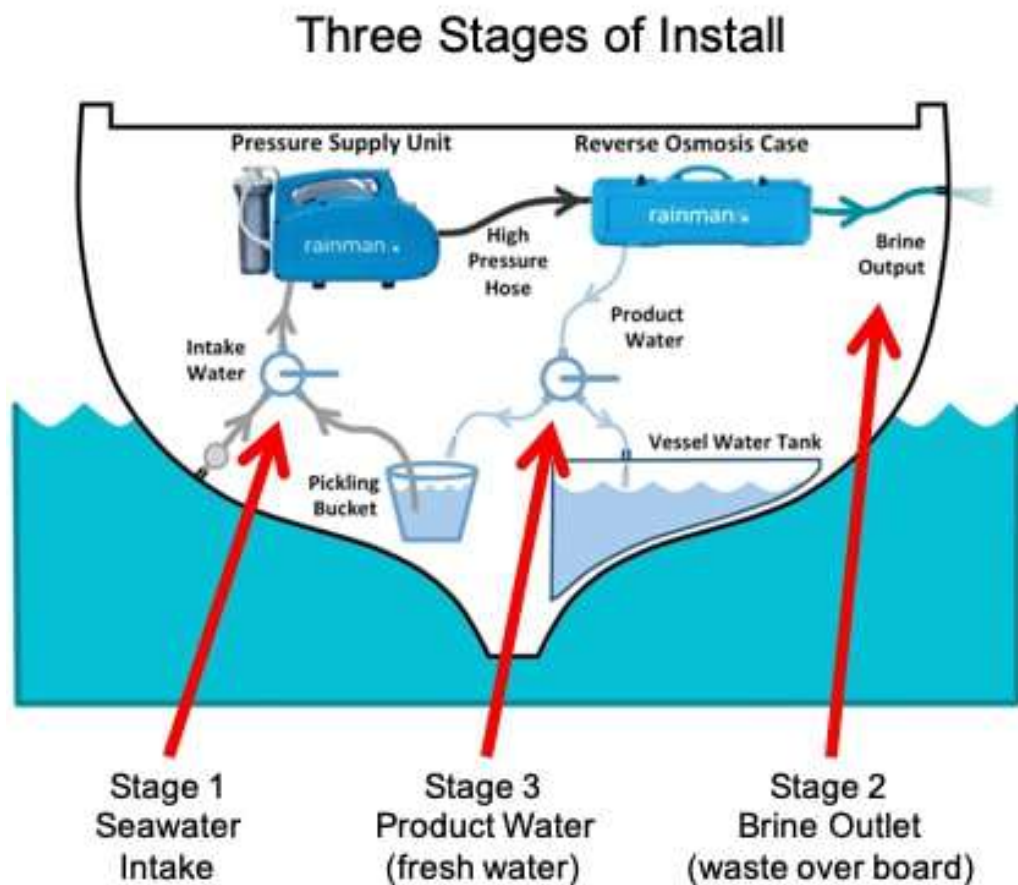


Plumbing Into Vessel

Plumbing Overview

Regardless of whether you have a Rainman Naked system or the traditional Rainman in the blue case, the process of plumbing it into your vessel is the same. The plumbing installation is broken into 3 stages.

1. Seawater intake
2. Brine outlet (waste over board)
3. Product (fresh) water connection to fresh water tank



Stage 1 – Seawater Intake

- 5 x 3/4" hose barbs
- 1 x 3/4" BSP tee female
- 1 x 3/4" BSP 3 way valve 316 S/S with reversable handle sleeve
- 12 x Hose clamps
- 1 x 1/2" hose barb
- 1 x 1/4"-1/2" hex nipple



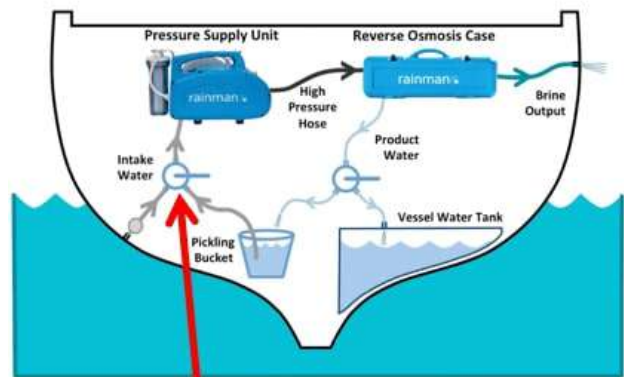
The installation kit provides enough hose clamps to double clamp each hose barb. You will need to use sealant (example SikaFlex or similar) on each hose barb before connecting hoses.

Option 1 – Dedicated Through Hull

If you already have a spare through hull or plan to install a new 3/4" through hull fitting with valve for your Rainman seawater intake, follow these steps to complete the intake install.

1. Make sure the through hull fitting and valve are 3/4" inner diameter.
2. Connect the intake hose non-return valve from the PSU to the middle port (**Port A**) of the 3 way valve. Use thread sealant to ensure no leaks.
3. You will need a sea strainer fitted directly to or off the 3/4" valve. (not supplied by Rainman)
4. Plumb the 3/4" 3 way valve supplied from the sea strainer to the seawater intake port of the 3 way valve (**Port B**).
5. Connect a loose hose to the fresh water / pickle intake. (**Port C**)

**Intake hose installation – 3 way valve
Dedicated through hull**

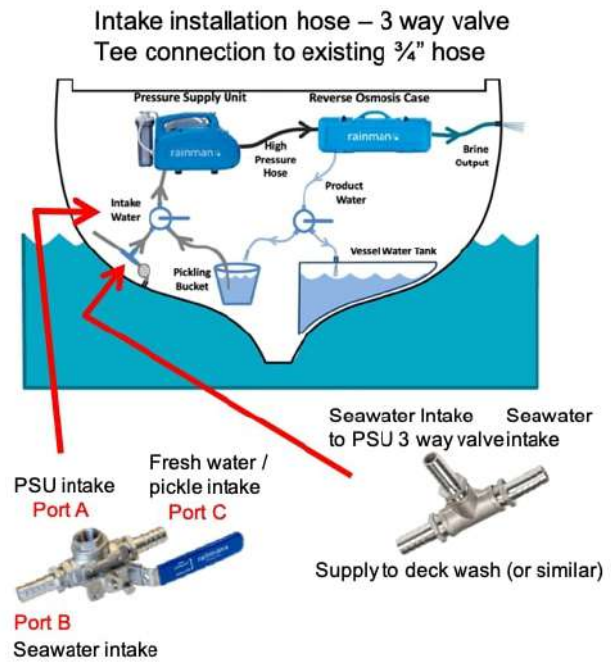


Option 2 – Shared Through Hull

If you do not plan to install a new through hull or have a spare 3/4" through hull fitting and valve, you can also explore teeing into a seawater supply hose that already exists. For example, teeing into the 3/4" supply hose for a deck water pump or similar.

Ensure your Rainman system is not competing for water while running with a shared through hull.

1. Cut the existing 3/4" supply hose (example: deck wash pump) and add the tee piece supplied.
2. Connect the intake hose non-return valve from the PSU to the middle port of the 3 way valve (**Port A**). Use thread sealant to ensure no leaks.
3. Plumb the tee piece to the seawater inlet of the 3 way valve. (**Port B**)
4. Connect a loose hose to the fresh water / pickle Inlet. (**Port C**)



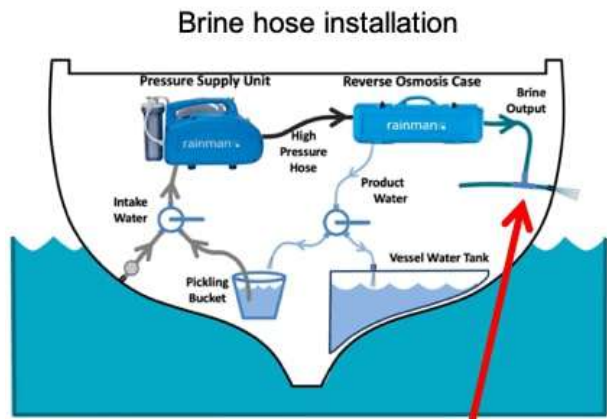
Stage 2 – Brine Outlet (Waste Overboard)

- 2 x 3/4" hose barbs
- 1 x 3/4" BSP tee female
- 1 x 3/4"-1/4" bush
- 1 x 1/4" – 10mm push-fit
- 4 x Hose clamps

The brine waste water hose will come from the RO unit in the traditional blue cased version of the system. If you have a Rainman Naked system, the green brine hose will come from the remote pressure control valve / gauge assembly.

Run the green brine hose from the RO unit to an above water through hull fitting, cable tying along the way to secure. Parts are supplied so you can easily connect to an existing 3/4" hose connected to an above water through hull fitting. Tee into the existing 3/4" hose with the tee supplied and plug the green brine hose into the brine push-fit (**Port D**).

If you have a spare above water through hull fitting, you may need to source parts to connect to the 1/4" – 10mm push-fit.



Brine water Tee fitting

Port D



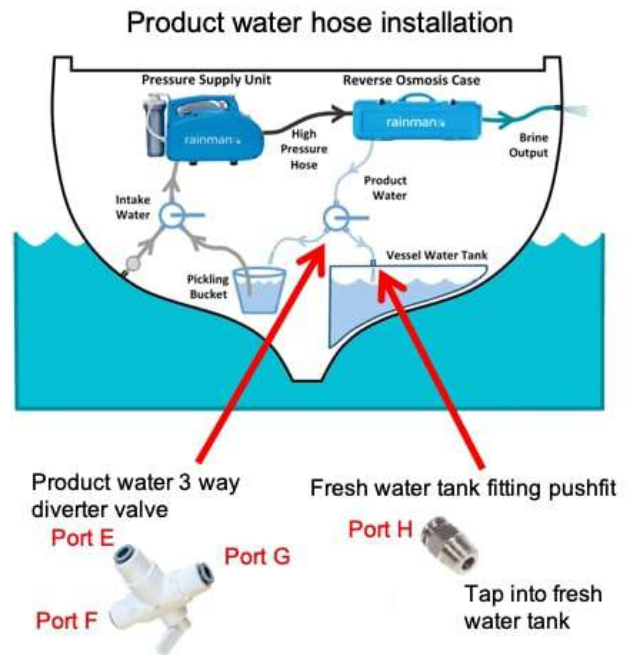
Tee into an existing 3/4" hose and above water through hull fitting

Stage 3 – Product (Fresh) Water Connections

1 x Plastic 3 way valve (diverter valve fresh water tank and for testing)

1 x 8mm push-fit

1. Run the white product water hose from the RO unit to your fresh water tank, cable tying along the way to secure.
2. Tap the 8mm push-fit into the tank and push the end of the white product water hose into the push-fit (**Port H**).
3. In a convenient place, cut the white product water hose and install the 3 way valve by pushing one side of the hose into the “in” (**Port E**) and the other side into the “out” (**Port F**) In the other out port (**Port G**) connect a loose hose (this loose end will become your testing hose).



Use a sharp knife to cut the white product water hose. Make sure the hose is cut straight to ensure correct fitting into the push-fit fitting.

The white product water hose can be plumbed different ways, such as:

1. Direct to your fresh water tank by tapping the supplied fitting as described above.
2. Connecting it to the filler hose to your fresh water tank.
3. Leave the white product water hose loose and manually putting it into your deck filler each time you use your Rainman watermaker.

Extra Items That May Be Required

There are some items you may require for your installation that are not part of the plumbing installation kit.

1. Sea strainer
2. Extra 3/4" hose
3. 3/4" through hull fitting and valves

Extra Level Of Membrane Protection

This section specifically applies to charter vessel owners, but can be useful for others as well.

In normal Rainman operation, the operator slowly increases pressure when starting to make water, then slowly decreases pressure when finishing. If power is inadvertently cut off from the Rainman (eg. turning off generator), pressure will drop quickly. While this is not best practice, it is unlikely to damage the membranes. However, if power is applied again before opening the pressure control valve, there will be a strong pressure surge that can damage the membrane.

If this is a risk in your vessel, we recommend installing a “no volt release switch” as an additional level of protection. When configured correctly, it will require a manual reset if a loss of power occurs. A note can be kept by the switch to remind the user to open the pressure control valve before resetting. This is not a Rainman part, but options are commonly available through your electrician ([click here for example image](#)).