



## **Watermaker Installation Guidelines**

**Rainman Technology Pty Ltd**  
**[www.rainmandesal.com](http://www.rainmandesal.com)**

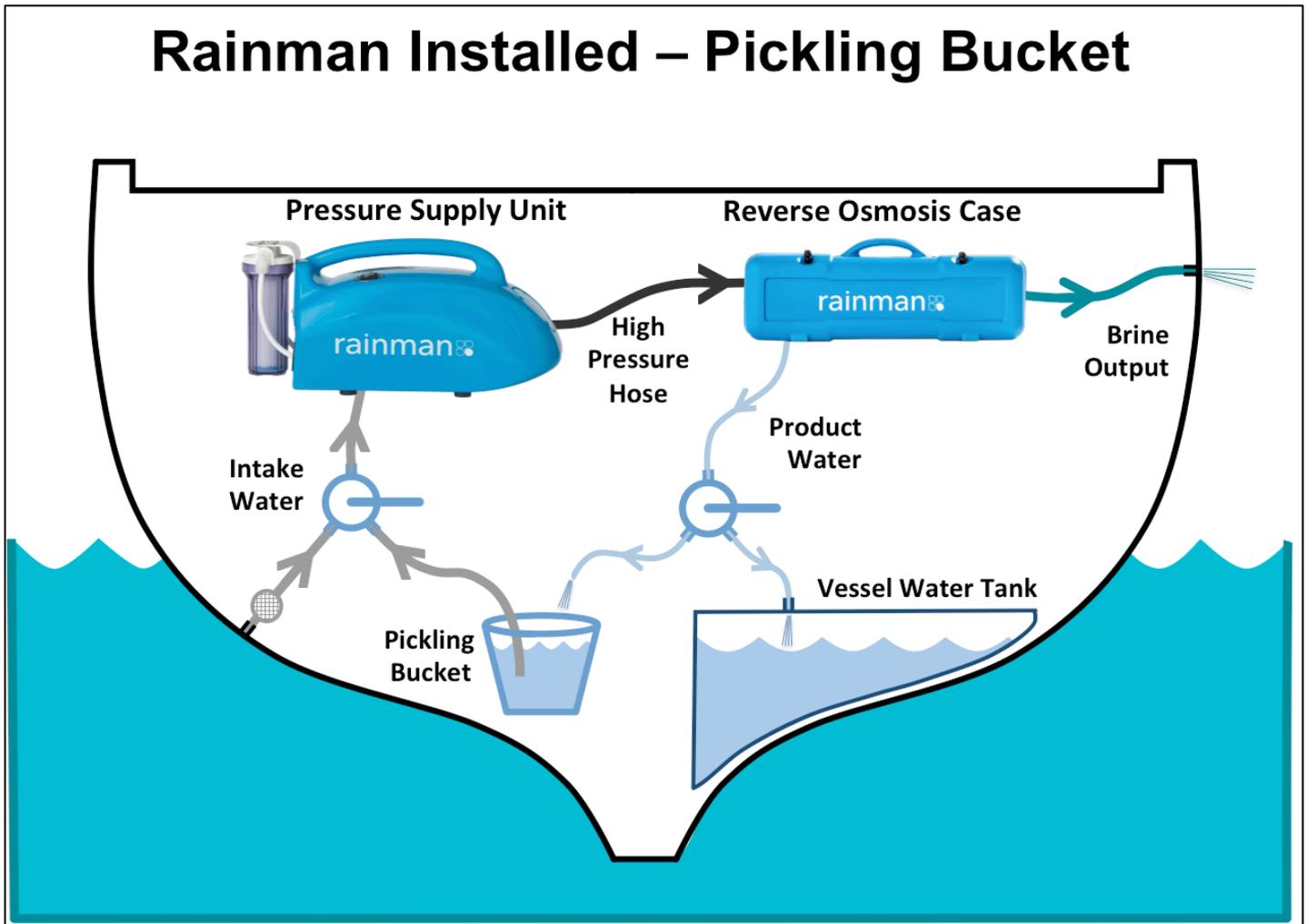
Installation Guidelines v2.0

# Rainman Watermaker – Installation Guidelines

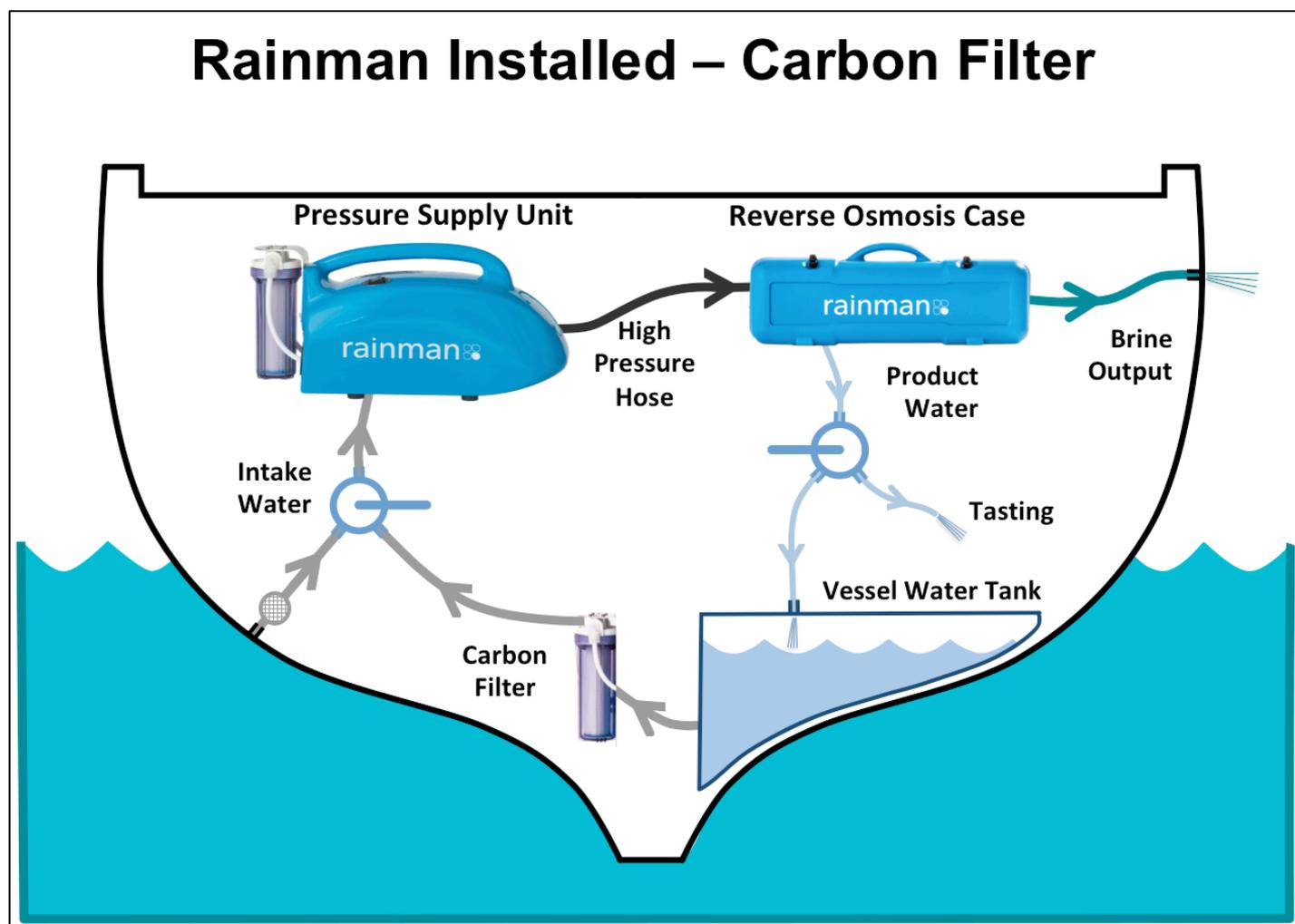
Although the Rainman watermaker was originally designed as a portable system not requiring installation, many of our customers choose to partially or fully install the system in their boat. The variations can range widely, including installation of either the pressure supply unit or reverse osmosis unit, to installing both of the units. For most customers, the largest benefit to be gained for an installation is in taking water in through the hull. This may be a dedicated through hull, or a T junction off of a deck wash, among other options.

An install process should be undertaken by a skilled and experienced technician. This is not a comprehensive guide but a document of tips and issues for consideration. Two of the possible scenarios for installation include:

**Pickling bucket.** Use a bucket of at least 10 litres (2.5 gallons) for flushing and pickling of the system. The bucket would be used to hold water made directly from the watermaker to avoid water from the vessel's water tank getting fed directly in to the watermaker. The tank may have chlorinated water from the last time it was filled at a marina. This can damage the reverse osmosis membranes.



**Active carbon filter.** If your preference is to avoid using a pickling bucket, you must ensure chlorine that may reside in the vessel's water tank does not get fed in to the watermaker. Installing an active carbon filter will neutralise chlorine and ensure the tank water can be safely utilised for flushing and pickling purposes.



## Installation Notes

### Pressure Supply Unit

- If taking water in from through hull, ensure a sea strainer is in place to catch coarse matter prior to getting in to pre-filter assembly.
- Ensure through hull location will not let air into the system. Account for heeling of sailing vessel and avoid through hull too near the bow.
- Mount pressure supply unit in a cool, dry, and ventilated location.
- Ensure you leave access to easily view and change the pre-filter.
- Extra fittings related to the intake should be 3/4" inner diameter.
- The pressure supply unit has an integrated lift pump. Do not exceed 2 metres (~6 ft) vertical above the water line. Horizontal intake hose does not affect the lift.
- Do not installing any petrol powered device in an enclosed area.
- A bucket to hold at least 10 litres (2.5 gallons) of fresh water can be used and accessible through a T valve for rinsing and membrane pickling purposes. Vessel tank water should not be used for fresh water rinsing or membrane pickling with a bucket as there may be residual chlorine in the tank from previous filling with municipal water. This chlorine may damage your reverse osmosis membrane.

- If you wish to draw water from the vessel tank for fresh water rinsing, an inline active carbon filter can remove the residual chlorine.
- A dedicated through hull is best. If shared with other appliances, it is critical to ensure your Rainman watermaker is not being starved of feed water by competing with other appliances.

### Reverse Osmosis Case

- The brine output should be above the water line to avoid back pressure. Use the easiest method to dump brine overboard, including internal sinks, etc.
- The product water hose should have T valve for water testing, fresh water flushing, and membrane pickling.
- The product water hose should feed into top of vessel tank to avoid back pressure.
- There is practically no limit on length of high pressure hose, product water hose, or brine output hose.
- RO membranes may be mounted horizontally or vertically.
- The reverse osmosis pressure vessel housings may be mounted within the Rainman case or removed and mounted on its own. Fittings are provided for both options.
- If you wish to have the valve/gauge control assembly physically separated from the RO pressure vessels, you should purchase the “naked” version of the Rainman RO unit.

## **Notes To Prevent Technical Issues:**

### Intake Flow Restriction

Most support issues we receive with installed systems are caused by flow restrictions in, or inadequate, intake plumbing. Every plumbing fitting you add, including through hulls, elbows, nipples, valves, strainers, etc. will add resistance to the flow of water and cause the intake pressure to be reduced at the pressure supply unit. If the intake pressure drops low enough, the high pressure pump will cavitate and damage to the pump and/or membranes will occur. Remember that the particle filter will add resistance to flow as it clogs up, so you might get away with smaller fittings when you first install the machine, only to have it start cavitating once the filter starts to collect particles from the source water. If you are installing a through hull, we recommend a minimum internal diameter of 3/4" (19mm). Similarly any valves, elbows and other fittings you install should be minimum 3/4" from the point where our pickup hose plugs into it all the way through to the source water.

### Reverse Osmosis Unit

When mounting the black high pressure hose to a hard surface, or coiling excess length, care must be taken to ensure that the normal vibration does not cause wearing of the hose casing. If it is in contact with any hard surface the hose will wear. Saddles and cable ties are particularly prone to causing wear. If permanently coiled, the hose may even wear against itself. Foam tubing or other protective material can assist in protecting vulnerable hose sections contacting hard surfaces. We recommend regular inspection of permanently mounted hoses for wear.