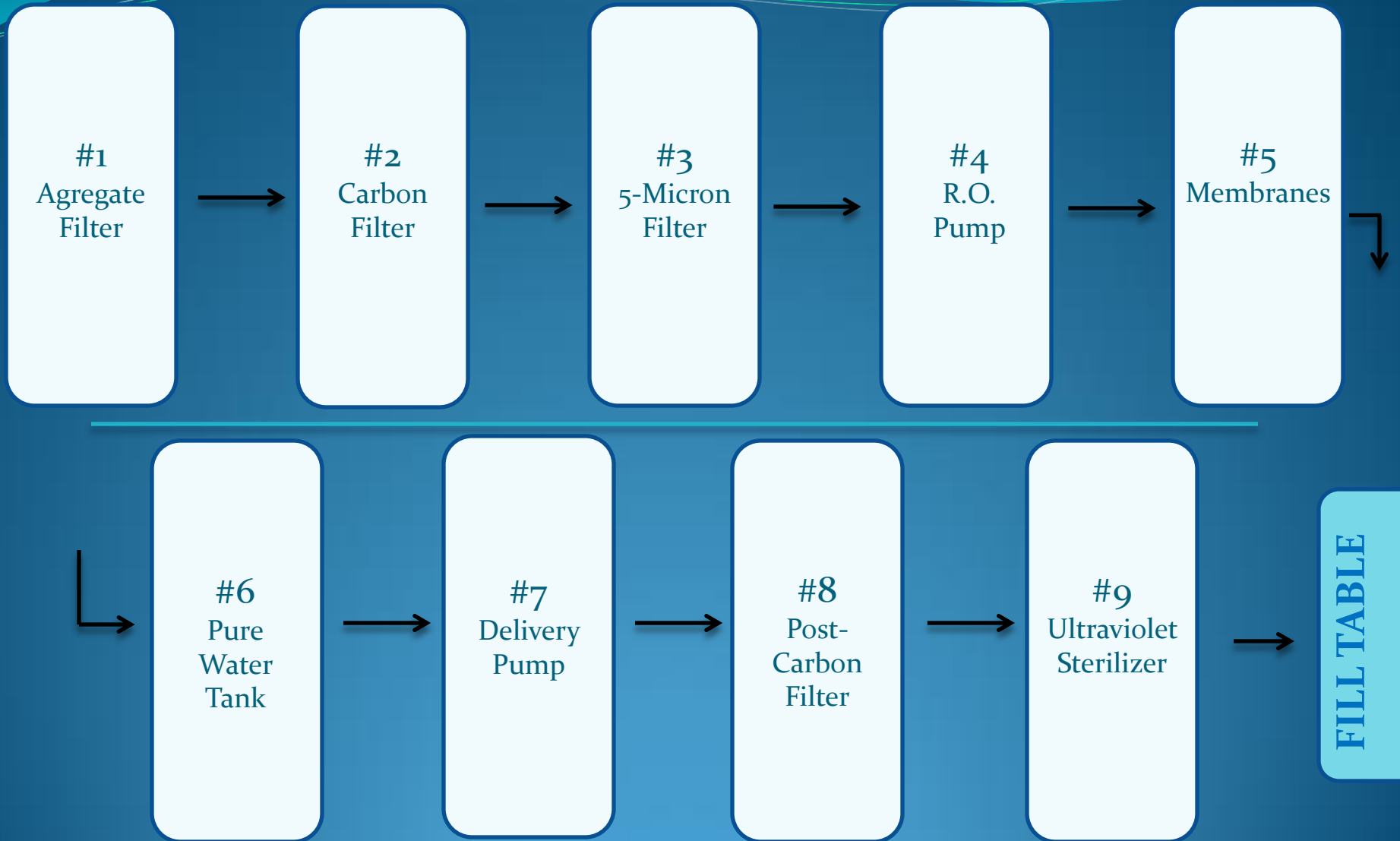


DiamondSkid Reverse Osmosis System



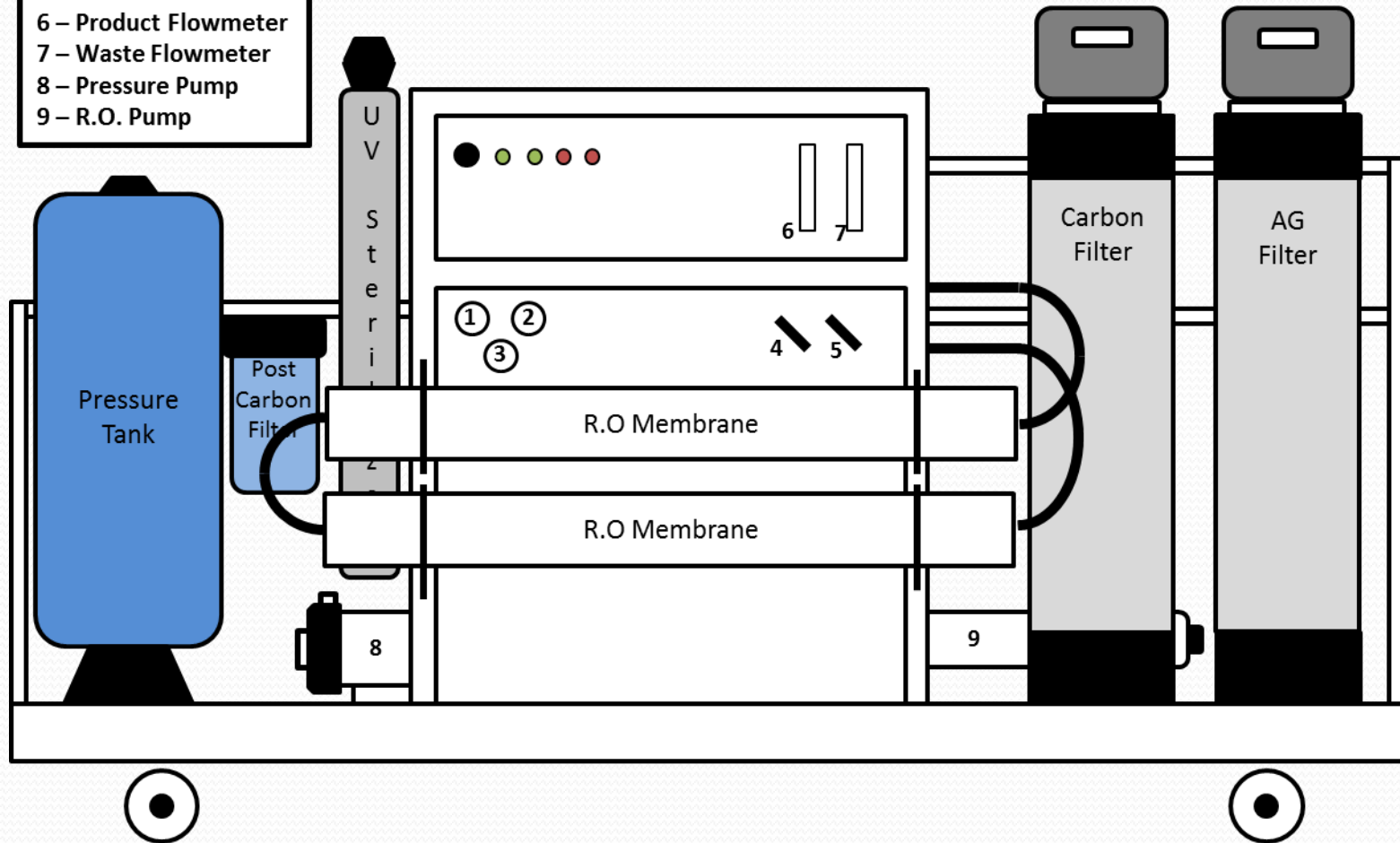
-Filtration Process-



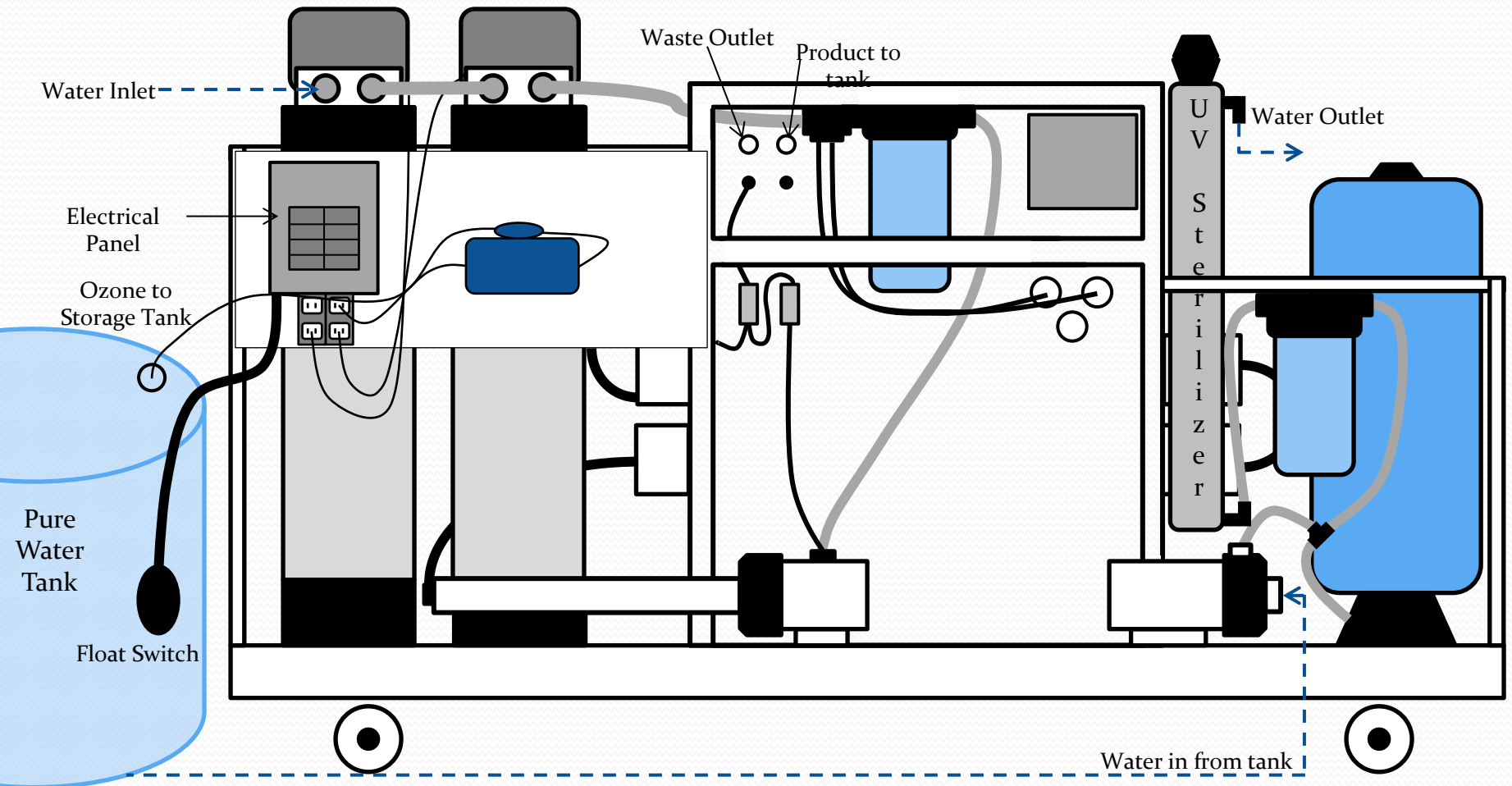
*Process pictured in next slide

- 1 – Prefilter Inlet
- 2 – Prefilter Outlet
- 3 – System Pressure
- 4 – Recycle Valve
- 5 – Waste Valve
- 6 – Product Flowmeter
- 7 – Waste Flowmeter
- 8 – Pressure Pump
- 9 – R.O. Pump

Front View



Back View



#2) Carbon Filter

This unit has a dual purpose. First, water goes through a chamber that bonds the calcium particles together so that they pass through the membrane. Second, the activated carbon is used to protect the reverse osmosis membranes from chlorine. If not protected, your membranes will become damaged. The MAXI-CURE filter also removes organic compounds, pesticides, and other chemicals found in water supplies. This filter should be backwashed every three to five days and should not backwash the same day as the AG filter.



#1) Agregate Filter

This filter will remove large particles down to approximately 20 – 30 microns depending on filter media. A programmable clock preforms automatic backwashing. Backwashing for the filter should be set for every three to five days based on amount of water production. Refer to the 5000se valve manual in the component specification section for instructions on programming the clock.

#3) 5-Micron Prefilter

This pre-filter is used to remove particles in the water that are five microns or larger. The cartridge should be replaced when outlet pressure is eight to ten PSI lower than the inlet pressure, or the system will shut off due to low pressure. When changing the micron filter it is very important to lubricate the o-ring with some type of FDA approved silicone gel.



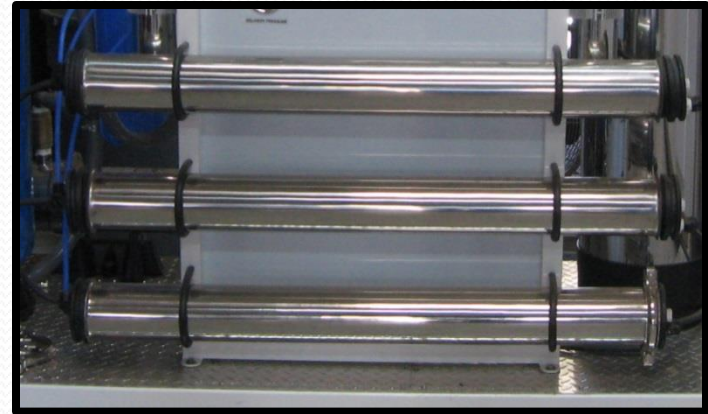
#4) R.O. Pump



This pump is responsible for creating the high pressure needed for efficient RO operation. Pressure is adjusted by the waste and recycle control valves.

#5) Membranes

The DiamondSkid uses high pressure to pass the raw (source) water through the RO membrane(s) to separate out the clean water, dissolved solids and particulate materials which are harmful. The five main factors affecting the operation and the useful life of RO membrane are excessive pressure, hydrolysis, bacteria, temperature and surface coating or fouling.



Excessive pressure tends to deform or compact the membrane. The compaction causes the membrane to become less porous, thus decreasing the amount of product water.

Hydrolysis is the effect of chemicals in the feed water on the membrane. In general, this happens when the water temperature is high and the pH is below 2.5 and above 7. For optimum life of the membrane, the pH should be between 5 and 6

Bacteria, if allowed to grow on the membrane will digest the top layer of the membrane and reduce the ability of the membrane to reject salt.

Temperatures above 95° F are generally avoided because of problems in the membrane support structures and the accelerated compaction and hydrolysis rates. Membrane production rates will go up with higher temperatures and down with lower temperatures.

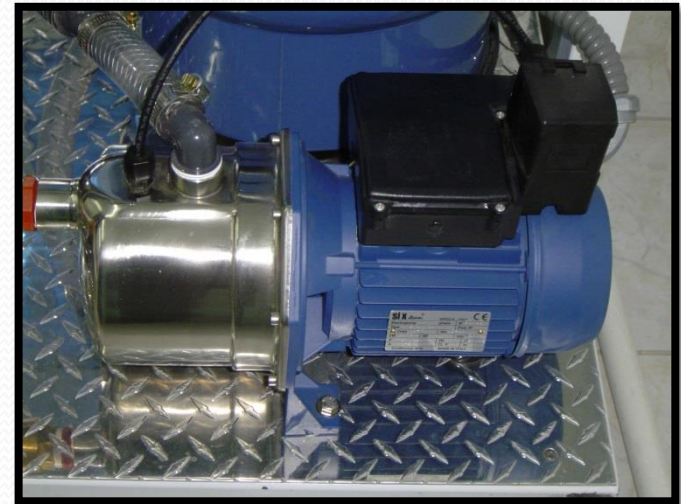
Surface Coating or Fouling is one of the most common problems with reverse osmosis. It is the salts (calcium carbonate, etc.) that precipitate on the membrane. These salts plug the pores and channels, reducing the water production rate.

#6) Pure Water Tank



This tank stores the RO water

#7) Delivery Pump



This pumps function is to transfer RO water from the storage tanks through post-treatment to the final destination (fill-table or bottlerinse).

#8) Post Carbon Filter



This filter is used to remove any taste or odor in the water due to growth of microorganisms in the storage tank(s).

#9) Ultraviolet Sterilizer

The UV is the final process used to disinfect the RO water after leaving the storage tank(s). It will kill microorganisms in the water.



Filtration is complete and water is ready for **filling**.

