HOW IT WORKS

REVERSE OSMOSIS DEIONIZATION

WATER WATER:
Water contaminated with impurities, often discarded down a drain.

FLUSH VALVE:
Typically sealed during operation, this valve can be opened before and after each water production cycle to extend the lifespan of the RO membrane by flushing away debris and buildup.

FLOW RESTRICTOR:
Positioned within the tubing, this component controls the pressure within the membrane to ensure optimal purification.

PRESSURE GAUGE:
Monitors water pressure as it exits the second stage and enters the RO membrane. A decrease in pressure signals that the carbon block or sediment filter may require replacement.

TRIPLE TDS METER:
Assesses the Total Dissolved Solids (TDS) at three points: water input, RO output, and DI output.

OUTPUT WATER @ 0 TDS:
Ultra-pure water with 0 TDS (Total Dissolved Solids), completely free of impurities, suitable for aquariums.

INPUT WATER:
Water sourced from a tap faucet or alternative water supply feeding into the system.

STAGE 1- SEDIMENT FILTER:
Eliminates silt and large particulate matter, preventing potential clogging in subsequent stages.

STAGE 2 & 3 CARBON BLOCK:
Eliminates organics, chlorine, and chloramines, which could harm the RO membrane if they remained during this phase.

STAGE 4 - RO MEMBRANE:
The backbone of the system, removing 95% of impurities including salts, bacteria, heavy metals, and other organic compounds.

STAGE 5 & 6 - DEIONIZATION:
These cartridges feature both positively and negatively charged resins, effectively eliminating any remaining contaminants such as silicas, nitrates, and phosphates down to zero.

WHAT IS AN

REVERSE OSMOSIS DEIONIZATION

An RO/DI system effectively removes contaminants from tap water, making it safe for use in aquariums. You may come across either an RO or RO/DI system when it comes to home water filtration. While RO and RO/DI systems are similar, the latter has an extra "DI" or Deionization stage, which reduces the total dissolved solids (TDS) in the water to 0.

RO stands for Reverse Osmosis, and RO/DI stands for Reverse Osmosis Deionization. The significant difference between them is the level of purity the produced water has, to cater to different applications. RO systems are ideal for producing drinking water and purifying water for freshwater aquariums. On the other hand, RO/DI systems excel in producing 99.9% pure water that is suitable for scientific purposes and saltwater aquariums. This article will primarily focus on RO/DI systems.

UNDERSTANDING YOUR RO/DI SYSTEM

No matter the number of filtration stages, all RO/DI systems function similarly, filtering water to achieve 0 TDS (Total Dissolved Solids).

STAGE 1: SEDIMENT FILTER

Captures larger debris particles and should be changed every 6-8 months.

STAGE 2: CARBON FILTER

Removes organics and dissolved contaminants like chlorine; change every 6-8 months.

STAGE 3: RO MEMBRANE

Filters out up to 98% of contaminants; monitor pressure gauge and TDS meter, replace every 12-24 months.

STAGE 4: DEIONIZATION (DI) CARTRIDGE

Removes remaining traces of contaminants; ensures 0 TDS water for aquarium use.

MONITORING YOUR SYSTEM

- Use pressure gauge to monitor input water pressure.
- Utilize TDS meter to ensure proper filtration levels.
- Consider booster pump for low tap water pressure.
- Employ water saver upgrade for reduced wastewater.
- Replace RO membrane or DI cartridge as TDS levels rise.

Keep your RO/DI system functioning optimally for pure water production!

HOW MANY STAGES?

When selecting an RO/DI system, consider the number of filtration stages based on tap water conditions and the demand for pure water production.

4 STAGE:

Popular and affordable, suitable for beginners, offering 0 TDS water for nano tanks and budget-conscious users.

5 STAGE:

Recommended for its extra carbon block filter, ensuring protection against disinfectants like Chloramines, ideal for reefers.

6 STAGE:

Includes dual carbon blocks and two DI resin filters, perfect for serious hobbyists with larger tanks.

7 STAGE:

The ultimate system with dual carbon filters and three DI resin filter stages, minimizing resin waste for dedicated hobbyists.