DEPARTMENT OF HEALTH

Point-of-Use Reverse Osmosis Installations

CROSS CONNECTION CONTROL

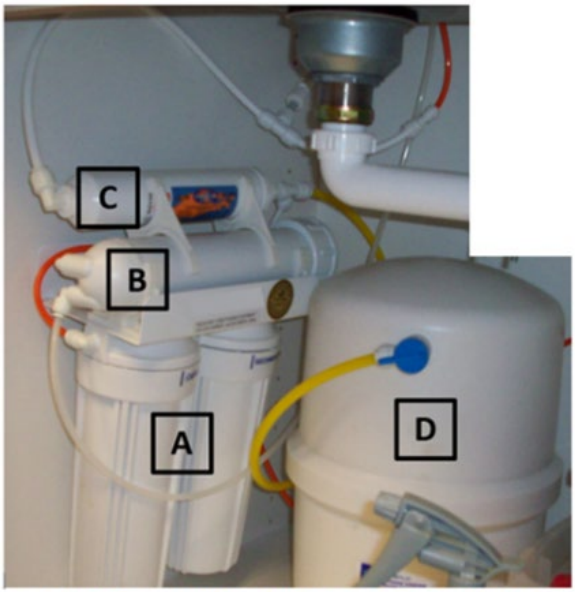
Any connection between a drinking water supply and a potential source of contamination is called a cross-connection. Preventing contamination from entering the drinking water supply is cross-connection control. Point-of-use (POU) reverse osmosis (RO) systems must include an air gap or air gap device for cross-connection control. The drawings starting on the next page show examples of correct and incorrect installations of under-sink RO systems using air gaps and air gap devices.

You must include an air gap or air gap device when installing an RO system.

RO systems have waste lines, also called concentrate lines, containing the contaminants removed from the water. **The waste line from a reverse osmosis unit must enter the sewer plumbing through an approved air gap or air gap device. The air gap is a method of cross-connection control and prevents contamination of the drinking water supply.**

What does a POU RO system look like?

Pictured below, a POU RO system will typically contain the following components, along with some method of sending wastewater into the sewer.



POU RO osmosis installation under a sink with air gap faucet on countertop

- [A] Carbon and/or sediment pre-filters
- [B] Membrane filter
- [C] Post-filter (optional)
- [D] Pneumatic bladder/storage tank (typically downstream of membrane)

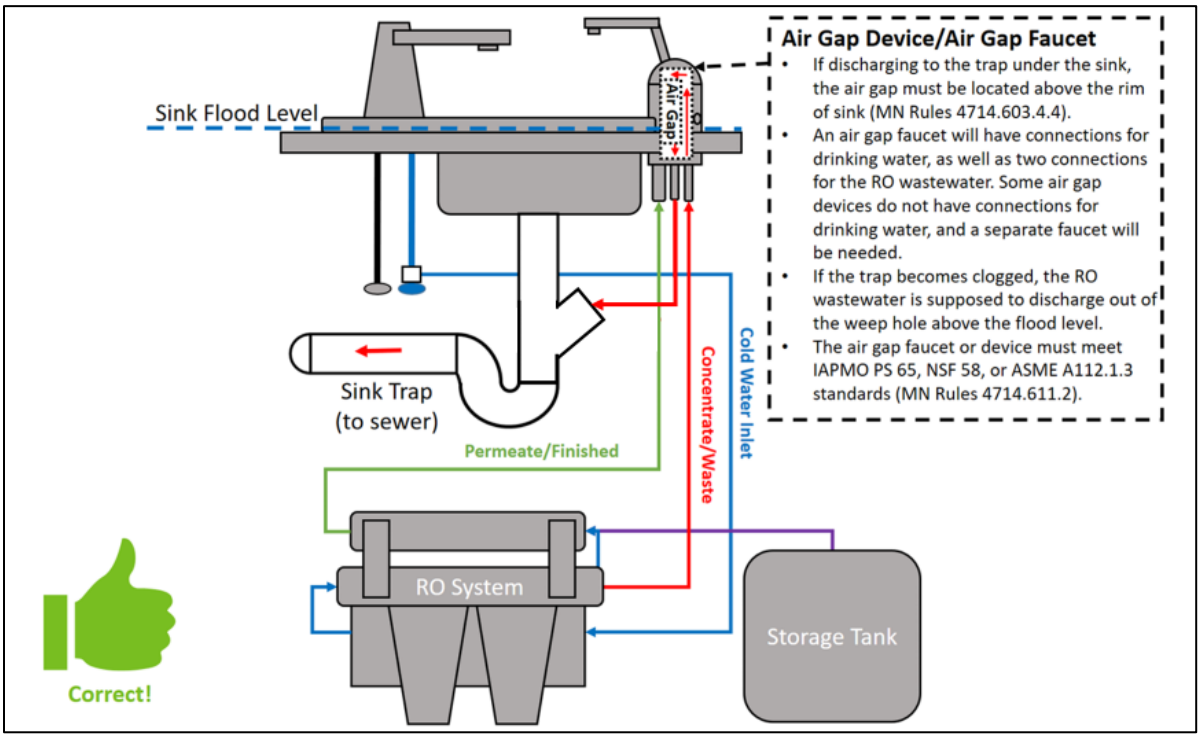


Figure 1: Air Gap Device Installation Example for Waste Connection to Sink Trap as described below.

Air Gap Device/Air Gap faucet

- If discharging to the trap under the sink, the air gap must be located above the rim of sink (MN Rules 4714.603.4.4).
- An air gap faucet will have connections for drinking water, as well as two connections for the RO wastewater. Some air gap devices do not have connections for drinking water, and a separate faucet will be needed.
- If the trap becomes clogged, the RO wastewater is supposed to discharge out of the weep hole above the flood level.
- The air gap faucet or device must meet IAPMO PS 65, NSF 58, or ASME A112.1.3 standards (MN Rules 4714.611.2).

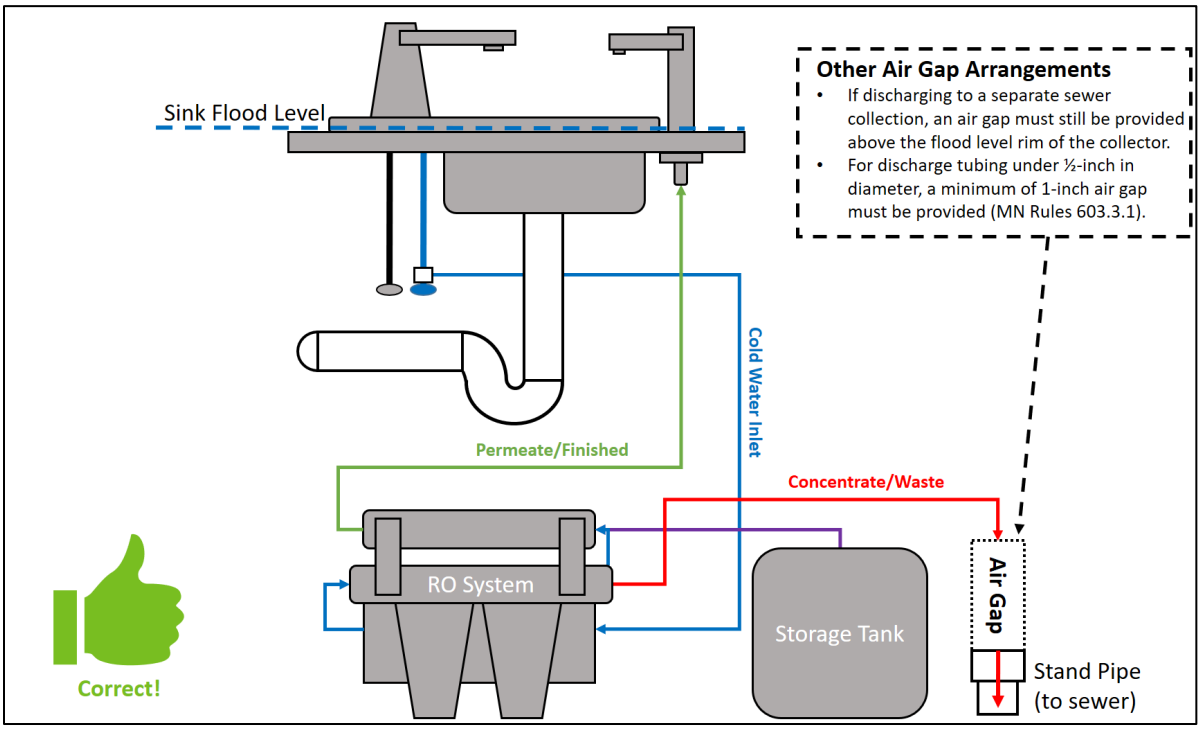


Figure 2: Air Gap Installation Example for Separate Waste Connection as described below.

Other Air Gap Arrangements

- If discharging to a separate sewer collection, an air gap must still be provided above the flood level rim of the collector.
- For discharge tubing under ½ inch in diameter, a minimum of 1 inch air gap must be provided (MN Rules 603.3.1).

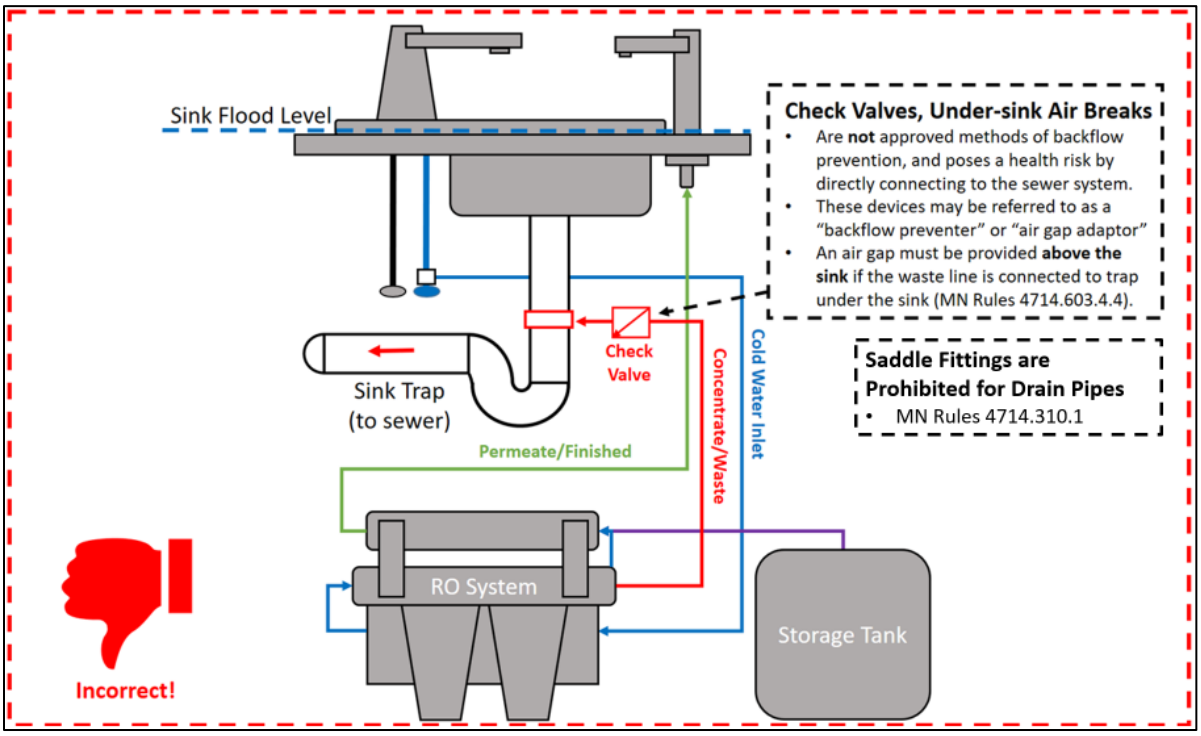


Figure 3: Incorrect Installation with Direct Connection to Sewer as described below.

Check Valves, Under-sink Air Breaks

- Are **not** approved methods of backflow prevention and poses a health risk by directly connecting to the sewer system.
- These devices may be referred to as a "backflow preventer" or "air gap adaptor".
- An air gap must be provided **above the sink** if the waste line is connected to trap under the sink (MN Rules 4716.603.4.4).

Saddle Fittings are Prohibited for Drain Pipes

- MN Rules 4714.310.1

Minnesota Department of Health
Drinking Water Protection
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To obtain this information in a different format, call: 651-201-4700.