REVERSE OSMOSIS WATER TREATMENT FOR STEAMERS / COMBI OVENS

Most water-fed cooking equipment uses steam for cooking, proofing, or glazing food products. All have one thing in common, they evaporate water by heating it to produce steam and this process leads to mineral scale formation. Poor water quality may cause the following:

* Mineral scale build up on heat transfer surfaces from hard water.
* Mineral scale build up on level sensing probes.
* Chlorine/Chloramine induced corrosion in boiler / cooking cavity.
* Chloride induced corrosion in cooking cavity

all leading to costly equipment repairs and reduced equipment life.

Evaporation - Where do the minerals go?

When water is heated and evaporated, the dissolved minerals must go somewhere. In boiler-based equipment, the dissolved minerals stay behind in the boiler. As steam is produced, the mineral content in the boiler will increase along with mineral scale formation. In flash steam or boiler-less applications, the dissolved minerals will either immediately precipitate out of solution as a tiny particle or remain in solution in the water vapor, steam or condensate thus coming in contact with the stainless steel cooking cavity and its components often leading to corrosion.

Many recent combination oven designs use flash steam technology. Flash steam is the process where water is sprayed or introduced in small amounts to hot environments instantly flashing or converting the water to steam eliminating the need of a boiler. The main draw back to this design is that the dissolved minerals are in direct contact with the stainless steel components which is a cause for concern due to mineral scale deposits and corrosion potential.

Although mineral scale is a concern in flash steam equipment, these deposits are accessible for removal during cleaning cycles, either automatic cleaning during hours of use or at the end of the day when the equipment is cycled off.

Of more concern is the corrosion potential from chlorine, chloramine, and chlorides found in many water supplies. Although filtration exists that will remove, chlorine and chloramine, there is only one viable technology for use in food service applications that will address both chlorine and chlorides - Reverse Osmosis.

Reverse Osmosis (RO) is the process by which most if not all dissolved minerals are removed from the water by filtering it through special membranes designed to reject most water impurities. CookSpec RO systems are specifically designed to meet the needs of boiler and boiler-less cooking equipment where both mineral scale deposits and equipment corrosion are a concern. CookSpec RO Systems greatly reduces:

* Minerals that are responsible for mineral scale deposits (calcium & magnesium)
* Chlorine and chloramine responsible for corrosion of wetted stainless components.
* Chloride which also causes pitting and corrosion in wetted stainless components.

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CookSpec RO Systems Features

* Clean cabinet design either wall mounted or stand alone with "plug and play" bulkhead connections.
* Small space requirements facilitating placement and installation.
* Non-electric (electric booster optiona) operation allowing for more flexibility of placement.
* Integrated TDS Meter for system performance checks.
* High Volume RO water production.
* Integrated storage tank (RO-175NE)
* Internal TDS Bleed Valve (RO-250/450NE)
* Optional Internal Bypass System (RO-250/450NE)
* Quick Disconnect Cartridges for ease of maintenance.

Sizing Guidelines

CookSpec RO Systems provide excellent quality water for specialty equipment requirements. The following system performance parameters are based on water pressure at 60psi and water temperature at 60°F. Higher water pressure and water temperature will increase performance. Conversely, lower water pressure and temperature will decrease performance.

Recommended Primary /Secondary change interval is 3 months .
Recommended RO Membrane replacement interval is 12 months.

CookSpec RO System	Item #	Water Production Galls/Day	Minimum Pressure	Maximum Pressure	System Dimensions W"xH"xD"	Ship Weight in lbs
RO-175NE	310060	175	40psi	80psi	17x16x5.5	18
RO-250NE	310062	250	40psi	80psi	21x23x5.5	28
RO-450NE	310064	450	40psi	80psi	21x23x5.5	32

Note: If pressure exceeds 80 psi, use a pressure regulator prior to the system avoiding possible damage to the product water storage tank. If pressure is below 40 psi, and external booster pump may be needed in order to produce the needed quantity of product water.

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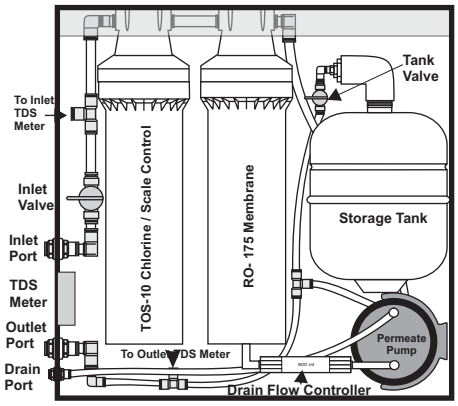
RO-175 NE



RO-175 NE / Item #310060

The CookSpec RO-175NE is specifically designed for low water demand applications such as flash steam (boiler-less) combination ovens. The RO-175NE incorporates a small product water storage tank capable of delivering roughly 32 ounces of on demand water. The RO-175NE is capable of producing 7.25 gallons of water per hour allowing the storage tank to refill in 2-3 minutes. If higher on demand water volumes are required, an external storage tank may be installed to accommodate water usage requirements.

Specifications:

RO Dimensions	16"h x 17"w x 5.5" d
Water Production incoming pressure	175 gpd / 7.25 gph (Based on 60 psi @ 65°F water temp.)
Max. Temperature	100°F
Min/Max Pressure pressure	40-80 psi (if pressure exceeds 80 psi, use a regulator)
Filter requirements	(1) CS-TOS10 Primary Cartridge (1) CS-RO175 Membrane
Storage Tank (standard)	.5 Gallon / .27 Gallon draw down (total amount of water that can be used at one given time. If more water is required, a larger storage tank may be used inline with the equipment external from the RO-175 system.)
Connection Sizes	Inlet/Outlet - 3/8" Push Connect Fittings Drain - 1/4" Push Connect Fitting
Shipping Weight	15lbs

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RO-250 NE

The CookSpec RO-250NE provides 10.25 gallons per hour of high-quaility water for both boiler based and boiler-less water treatment equipment including steamers, combination ovens, deck ovens, rack ovens and proofers. The system features integrated TDS meter, TDS bleed valve, panel mounted pressure gauge and internal bypass valve system.

RO-450 NE

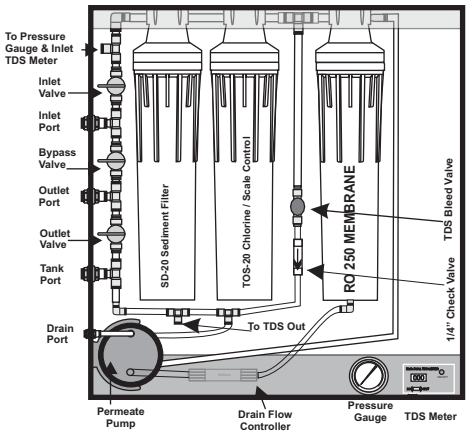
Similar to the RO-250NE, the CookSpec RO-450NE adds an additional membrane increasing high-quality water production to 18.75 gallons per hour. Both the RO-250NE and RO-450NE feature quick disconnect filter cartridges and "plug and play" bulk head fitting connections simplifying installation and scheduled maintenance.

Both the RO-250NE and RO-450NE systems require external product water storage tanks. The standard tank is a 20 gallon tank with a total on demand volume (draw down) of 13 gallons at an incoming pressure of 60psi. Refer to the parts list for additional tank options.

Specifications:

RO Dimensions	23"h x 21"w x 5.5" d
Production	RO-250NE -250 gpd / 10.4 gph (Based on 60 psi incoming pressure @ 65°F temp.) RO-450NE - 450 gpd / 18.75 gph (Based on 60 psi incoming pressure @ 65°F temp.)
Max. Temperature	100°F
Min/Max Pressure pressure	40-80 psi (if pressure exceeds 80 psi, use a regulator)
Filter requirements	(1) CS-SD20 Primary Sediment Cartridge (1) CS-TOS20 Secondary Chlorine/Scale (1) CS RO250 Membrane (RO-250NE) (2) CS RO250 Membranes (RO-450NE)
Storage Tank (standard)*	20 Gallon / 13 Gallon draw down (total amount of water that can be used at one given time. If more water is required, a larger storage tank may be used.
Connection Sizes	Inlet/Outlet/Tank - 3/8" Push Connect Drain - 1/4" Push Connect Fitting

RO-250 NE



RO-450 NE

Tank Selection Guide

Model	Item#	Volume	Draw Down @ 60psi	Diameter in inches	Height Ship in inches	weight in lbs
ROST-14	310065	14 gal	8.4 gal	16	22	28
ROST-20	310066	20 gal	13.2 gal	16	29	36
ROST-32	310067	32 gal	19.2 gal	21	27.5	54
ROST-40	310068a	40 gal	29 gal	16	52	67

20 Gallon Storage Tank