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Model: Thunder 1000CP (with Pump)

Model: Thunder 1000C

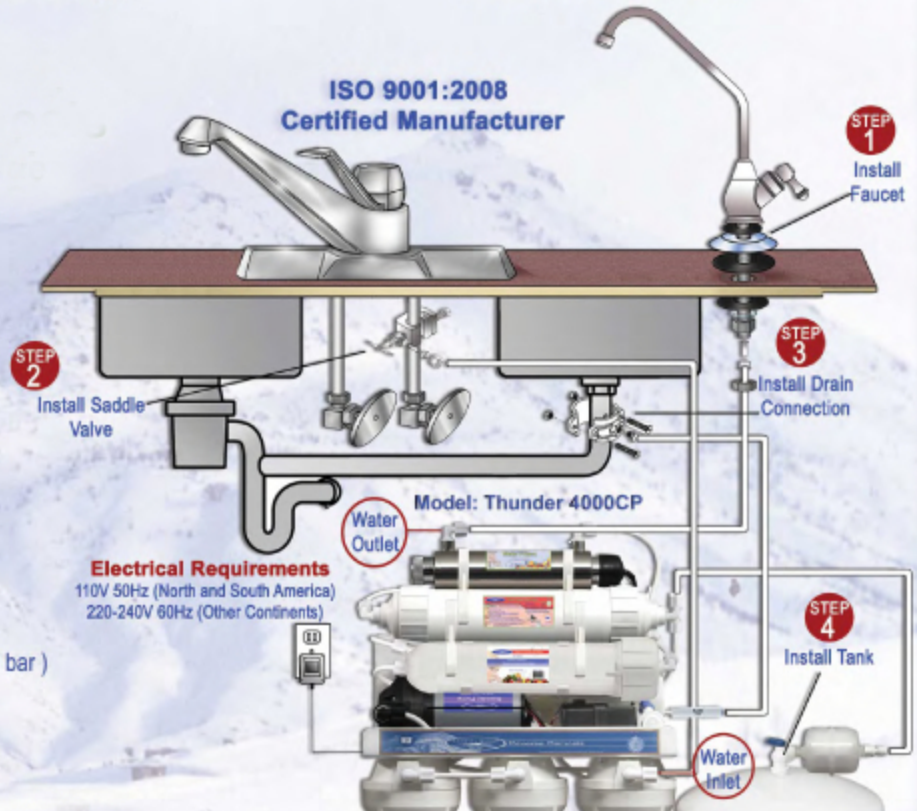
ISO 9001:2008
Certified Manufacturer

Important Notice

All Crystal Quest® water filtration systems should be installed by a qualified, licensed plumber. Not using the services of a licensed plumber will void warranty. Crystal Quest® assumes no liability whatsoever for systems improperly installed or those installed by anyone other than a qualified, licensed plumber.

Operating Specifications

Pressure Range:	30-60 psi (2.1-4.1 bar)
Temperature Range:	40-100°F (4.4-37.7°C)
Optimum Service Flow:	0.30 gpm at 60 psi (1.1 lpm at 4.1 bar)



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- Inspect the carton and unit for evidence of rough handling and concealed damages. If contents appear damaged, report damage to the carrier. Notify Shipper immediately.
- Remove components from shipping carton. Check that all installation parts are present, which includes the unit, storage tank, faucet, installation hardware and tubing.
- Check that the air supply in the empty tank is approximately 7 psi. Adjust if necessary.
- Read the instructions carefully and learn the specific details regarding installation and use. Failure to follow them could cause serious property damage. Crystal Quest® accepts no liability for property damage.
- The system should be installed to meet local, state and federal plumbing codes, and health department rules and regulations. These guidelines must be followed as the Reverse Osmosis system is installed.
- All equipment should be plumbed into the water system by a qualified, licensed plumber.
- Check with your local public works department for plumbing codes.
- Use the system on a potable (safe to drink) COLD water supply only.

Tools and Materials *(varies with each installation)*

- Safety glasses
- 3/8" variable speed electric drill, 1/8" and 1/2" bits
- 1-1/4" porcelain hole cutter (if hole for second faucet is not provided)
- Extension cord, drop light or flashlight
- Plastic anchors and screws
- Plastic tube cutter
- Air pressure gauge (low pressure)
- Pliers
- Phillips head and flat head screwdrivers
- 1-1/4" wood bit
- Household bleach (liquid)
- Adjustable wrench
- Crescent wrench
- Teflon® tape
- Air pump (hand)

STEP 1 Install the Faucet (Fig 1)

The faucet to be used for your reverse osmosis system (RO) should be placed near the sink where drinking/cooking water is normally required. A 2" flat surface is required to mount the faucet if an existing hole for a second faucet is not available. The mounting thickness should not exceed 1-1/4". If the sink has a sprayer, it may be disconnected for faucet installation. A pipe cap or plug will be necessary to seal the sprayer connection. If making the faucet mounting hole (if sprayer or second hole is not used), check to make sure the drill does not interfere with anything below. Center punch a small indent at the desired faucet location (2" flat surface is required, not exceeding1-1/4" in thickness). Drill the required pilot hole with the chassis punch and tighten nut to cut the desired hole size. Clean up sharp edges. The faucet should be positioned so it empties into the sink and the spout swivels freely for convenience. If sink has a hole that can accommodate the RO faucet, no drilling is required. Proceed with mounting the faucet.

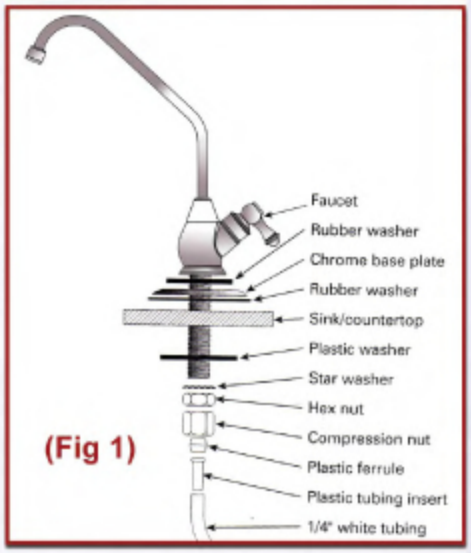
Installation procedures for stainless steel sinks:

Tools required:

• Center punch • Variable speed drill • High speed drill bits • Greenlee chassis punch 7/8" (9/16" for non air gap faucets) • Protective gloves and eye protectors

Procedures:

1. Center punch small indent for hole.
2. Drill the required pilot hole.
3. Set up the chassis punch per instructions and tighten nut to cut the desired hole size.
4. Smooth sharp edges with file.



(Fig 1)

Installation procedures for porcelain, enamel, ceramic on metal or cast iron sinks:

Precautions must be taken to penetrate the porcelain through to the metal base and prevent it from chipping or scratching.

Tools required:

• Variable speed drill • Relton porcelain cutter tool set (7/8" or 9/16" alternative size) • Plumber's putty

Procedures:

1. Mark the center for the 7/8" hole.
2. Form shallow putty around hole area and fill with enough water to lubricate carbide drill bit.
3. Carefully drill pilot hole through all layers (use light pressure and slow speed).
4. Insert pilot tip of spring-loaded porcelain cutter into pilot hole.
5. Drill porcelain or enamel using spring-loaded porcelain cutter, making certain a complete ring has been cut through the porcelain or enamel to the metal base.
6. Cut away the inner porcelain or enamel disc down to the base metal. Make certain the cutter does not touch outer rim of the cut porcelain/enamel. Continue with this bit to cut through metal until sink has been completely penetrated.

Note: Always use sharpened porcelain cutter to eliminate chips and cracks.

Mounting the faucet:

Disassemble hardware from the threaded nipple, except for chrome base plates and rubber washers (rubber washers may be replaced with a bead of plumber's putty for neater appearance). Feed the threaded nipple through sink or counter mounting hole and position the faucet. From below sink or counter, assemble the black plastic flat washer, star washer, and hex nut on threaded nipple and tighten by hand (open end up; open side toward air gap). After checking faucet orientation, tighten with a wrench until secure (Fig 1).

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STEP 2 Install the Saddle (Feedwater) Valve and Tubing (Fig 2)

Choose the Valve Location

- Choose a location for the valve that is easily accessible. It is best to connect into the side of a vertical water pipe. When it is necessary to connect into a horizontal water pipe, make the connection to the top or side, rather than at the bottom, to avoid drawing off any sediment from the water pipe.
- Disconnect the cold water supply line. Attach and tighten the saddle-tapping valve connector assembly, being careful not to pinch or crimp any tubing or water supply line while tightening. Use Teflon® tape to ensure a tight fit.

NOTE: The saddle valve clamps onto soft or hard tubing or pipe. It will make its own hole in copper tubing, but not in iron or brass. For brass or galvanized iron pipe, drill a 1/4" hole in pipe before mounting saddle-tapping valve. If possible, use a hand or cordless drill when drilling water pipe. If using an electric drill, be sure that drill, cord and outlet are all properly grounded.

NOTE: Do not turn handle before installing or while installing saddle-tapping valve. To prevent damage to piercing needle, make sure that piercing lance does not project beyond the rubber gasket.

NOTE: Leave handle in this position (valve closed) until filter installation is complete.

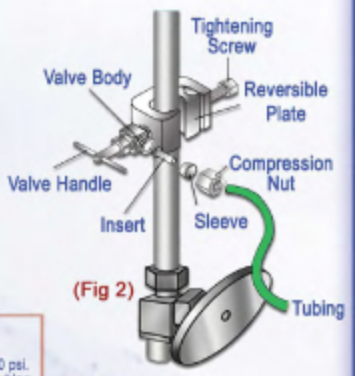
1. Hold backplate against tube.
2. Hold saddle-tapping valve against tubing in a position directly opposite back plate.
3. Tighten screw enough so saddle-tapping valve and back plate are held securely against tube.
4. Tighten screw firmly. Do not crush tube.

Connect source water feed tubing to valve body using compression fitting.

1. Slide nut and sleeve onto tubing (in that order).
2. Install insert into tubing.
3. Install tubing with insert and sleeve into valve body.
4. Thread compression nut onto valve body. Tighten.
5. Turn saddle-tapping valve handle clockwise until it is firmly seated and piercing lance is fully extended.

CAUTION: When the supply line is pierced, the valve should be closed. Do not open valve until system is activated. Turn on cold water supply. Check saddle-tapping valve installation for leaks. Allow water to run from faucet for a few minutes to clear any debris in the line caused by installation.

NOTE: If flow from sink faucet is reduced, clean faucet aerator.



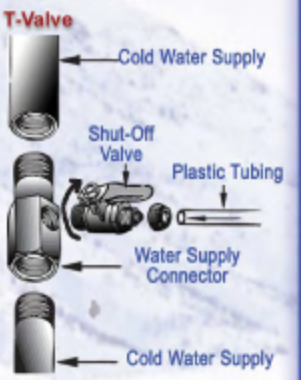
(Fig 2)

T-Valve Installation

WARNING: Water supply pressure must not exceed 60 psi.
NOTE: T-Valve is designed for installation on flex line tubing.
NOTE: Always check the local plumbing codes before tapping into a water line.

1. Turn off cold water supply.
2. Assemble T-Valve by screwing and tightening the shut-off valve into the water supply connector (use thread tape on threads).
3. Disconnect source water feed tubing from cold water supply.
4. Install T-Valve assembly in line with water feed tubing and water supply.
5. Remove nut from feed end of shut-off valve and slide over filter supply tubing.
6. Press end of tubing over exposed nipple on shut-off valve. Ensure it is completely seated.
7. Slide nut down tubing and tighten securely to shut-off valve.
8. Slowly turn cold water supply on and check for leaks.
9. Open T-Valve shut-off valve slowly to supply water to filter.

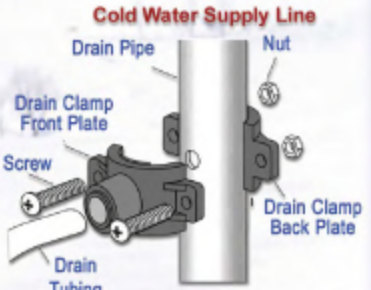
For further instructions on T-Valve assembly, see T-Valve product label.



STEP 3 Install the Drain Connection (Fig 3)

IMPORTANT: Before starting this procedure, inspect the condition of the drain piping, especially in older homes where the traps and tailpieces can be thin and frail. If in poor condition, it is wise to inform the customer that the condition should be remedied. The drain saddle assembly is designed to fit around a standard 1-1/2" OD drain pipe. The drain saddle should always be installed above (before) the trap and on the vertical or horizontal tailpiece. Never install the drain saddle close to the outlet of a garbage disposal, or plugging of the RO drain line may occur.

1. Peel adhesive covering from the back of foam square gasket, line up with the hole in the drain saddle, and apply. This gasket provides a leakproof seal on the drain pipe.
2. Position both halves of drain saddle at desired location on drain pipe.
3. Use screws and nuts to clamp drain saddle onto drain pipe. Do not overtighten, and make sure there is equal space between saddle halves on each side.
4. Carefully drill hole through the fitting front hole of drain saddle, being careful not to drill through opposite side of drain pipe.
5. Wrap Teflon® tape on threads of fitting (if any), insert drain tubing into drain saddle, and tighten nut if it is a compression fitting.



(Fig 3)

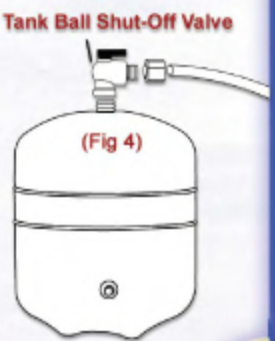
STEP 4 Install the Storage Tank (Fig 4)

Hand tighten tank ball shut-off valve to tank, then connect tubing.

Prefill and Sanitize the Storage Tank

Prefilling the tank is always recommended so there is pressure to check for leaks and several gallons of water to flush the carbon post-filter. Tanks are furnished with a special disinfectant and only require filling with water for 15 minutes to be completely sanitized. It is important to use a sanitizer when prefilling the tank so the solution can sanitize the tubing, fittings, and faucet at the time of installation and startup.

1. Insert free end of feedwater tubing into the fitting on the storage tank.
2. Open feedwater valve and tank valve and allow tank to fill (about 3 minutes).
3. Turn off feedwater valve and tank valve. Remove tank from tubing and set the tank aside (15 minutes minimum).



(Fig 4)

Install the Reverse Osmosis and Storage Tank

The RO is usually mounted to the right or left sink cabinet sidewall, taking into consideration the space available and the tank location. Generally, the tank is placed in the rear of the cabinet while the RO is positioned toward the front for cartridge accessibility. To mount the RO, elevate at least 2" off the cabinet floor and, while keeping level, mark the location of the mounting holes on cabinet sidewall. Make small pilot holes with an awl or drill, and screw in the two mounting screws, leaving just enough protrusion to allow bracket mounting slots to slide over them.

NOTE: If the cabinet sidewalls are not of solid construction, the unit can be set on the cabinet floor and held against the sidewall with the mounting screws. The tank may be oriented either vertically or horizontally. It is generally placed to the rear of the cabinet but can be set in the front center (between the sink basins) for ease of access, if space permits.

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Make Final Tubing Connections

With all of the components in place, the final tubing connections can be made. When routing tubing between components, several guidelines should be observed.

- Tubing runs should generally follow the contour of the cabinets rather than interfere with the cabinet storage area.
- Strive for neatness and an orderly tubing "flow" using fasteners to secure the tubing. Cut tubing to the desired length.
- Arrange the tubing so there are no sharp bends and leave some "play" in the tubing for ease of servicing.
- Keep the tubing from the RO to the tank and faucet as short as practical for good flow.

Install Icemaker Hookup (Optional)

The RO drinking water appliance can be connected to any standard refrigerator icemaker or icemaker/water dispenser. It should never be connected to a commercial icemaker. Hooking up an icemaker involves connecting a tee with shut-off valve into the faucet tubing and routing tubing to the refrigerator. Do not hook up to existing copper tubing. Before turning off the existing tap water supply to a refrigerator icemaker, always shut off the icemaker first (usually by lifting the lever arm above the bin to the uppermost position). The icemaker should only be turned on again after the RO system has been drained several times and the tank has a full supply of water.

NOTE: Before any service is performed on the RO system, always turn off icemaker valve and the icemaker unit. Turn on only when system is operating and tank is full.

Start Up the System

- Double check that all connections are secure.
- Turn on feedwater valve and check for leaks. If any leaks are noted, turn off valve and correct before proceeding.
- Turn on storage tank valve and open faucet until a steady stream of water flows. Close faucet. Wait at least 5 minutes and carefully check for leaks.

Flush System of Sanitizing Solution and Check Operation

- Lift faucet handle and allow tank to drain completely of sanitizing solution. DO NOT USE THIS WATER. When tank is empty, the faucet will steadily drip. This is the rate water is processed by the RO system.
- With faucet handle in "off" position, measure the rate of the steady drip from spout. Use a graduated cylinder (in milliliters) and watch with a second hand to calculate approximate product in gallons per day (milliliters per minute X 0.38 = gpd). Proceed to check reject flow rate by disconnecting tubing at drain connection and measure as per above. The ratio should be a minimum of 2.5 (reject) to 1 (product).
- Close faucet and re-inspect system for leaks. Instruct customer to wait at least 4 hours and drain tank again. The water should be discarded, as it may contain some sanitizing/disinfectant solution.
- System should be ready to use as soon as the tank refills. If any objectionable taste is noticed after second tank draining, instruct customer to wait and drain tank the following day. Only at this time should an icemaker be turned on if one is connected to the system.

Operation and Maintenance

Normal Operation

- It is normal for the Total Dissolved Solids (TDS) of the water to be higher than normal during the first 5 gallons of operation. This is due to the sanitizing solution and the new post filter. After this rinse water has drained, the removal rate should stabilize at a value greater than 75%. Water pressure affects the production rate and quality.
- RO systems produce drinking water at relatively slow rates. It can take up to 8 hours or more to fill the holding tank. Normal operation is to let the holding tank fill with water and then draw water as needed. When the pressure in the holding tank falls to a given pressure (as the water is being used), the automatic shutoff valve will start water production and the system will refill the holding tank. When the holding tank is full and no water is being used, the automatic shutoff valve will automatically shut off the feedwater to conserve water. The more water that is used (up to the capacity of the system), the better the RO system will function. Utilize the water for other uses, such as flowers, pets, and rinsing glassware. After periods of non-use, such as a week's vacation, empty the holding tank and allow the system to produce fresh water. If the system is not used for 3-4 weeks or longer, it is a good idea to re-sanitize the system and to change the carbon and sediment cartridges.

Changing Post Filter Cartridges (Figs 5 and 6)

1. Loosen the connector fitting counterclockwise (Fig 5).
2. Pull the cartridge out of the main fold.
3. Wrap the connector fitting with Teflon® tape and connect it to a new cartridge (Fig 6).

(Fig 5)

(Fig 6)

Please note all drawings, pictures, colors and sizes are approximate for illustrative purposes only and may not exactly resemble the end product.