FORBES

Healthier is Happier

UNDER SINK RO

Concealed Reverse Osmosis Water Purifier

User Guide

Fresh & Safe Water

Dear Customer,

Congratulations! By choosing a Forbes Water Purification System for your family, you've given them the most precious gift of all, the gift of good health. As many as 80% of all human diseases are waterborne and Forbes water keeps your family safe from them. Forbes is the only water purification system that has been tried and tested by over 105 laboratories in the USA, UK, India and South Africa. More importantly, it has the complete trust of 40 million people, who drink only Forbes Water.

Your new Forbes Under Sink RO is equipped to not only give you pure drinking water, but also revive the original taste of water. What's more, it is designed to fit under the kitchen sink and be invisible.

For more information on your new Forbes Under Sink RO please go through this manual.

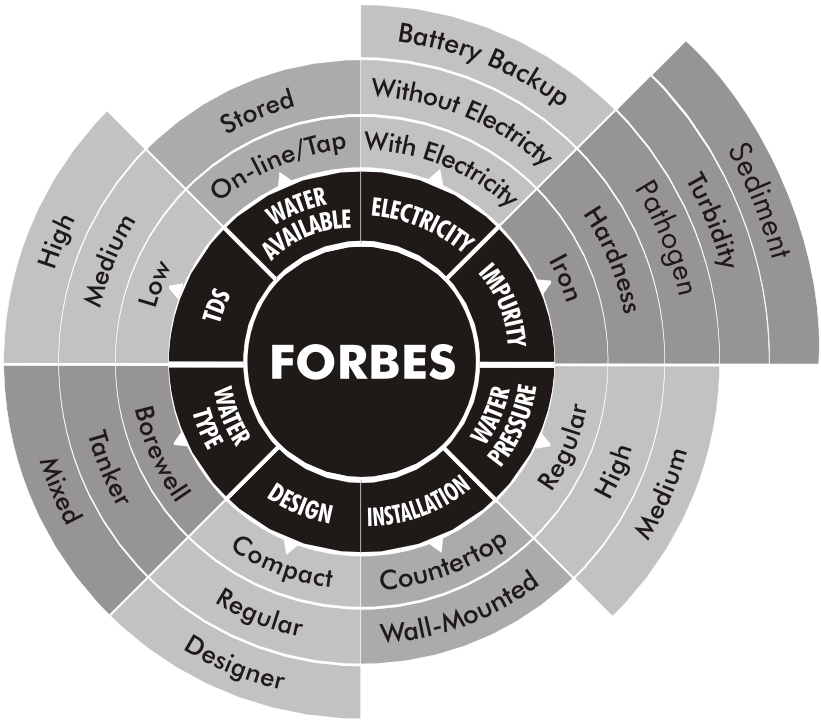
Contents

Why Forbes Under Sink RO?

Only Forbes has,

- 7 technologies that cure 17 water problems
- Over 29 years of experience
- Backing of 105 water testing labs worldwide
- Technology equipped to purify borewell, mixed, tanker, stored and tap water
- The trust of 8 million families across the world
- Guaranteed purity in every drop

Why Forbes Under Sink RO?

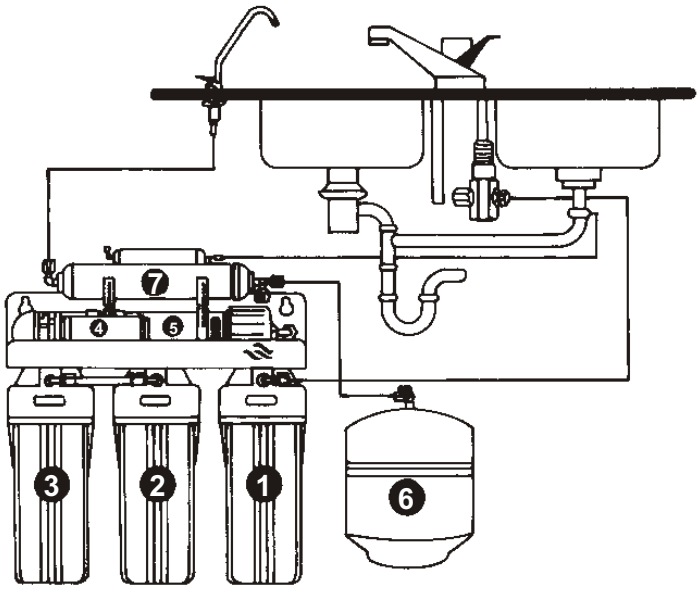


Enjoy pure water and pure space in your kitchen.

Forbes brings you the revolutionary Under Sink RO. A state-of-the-art RO purifier, designed to fit under your kitchen sink! Which means that apart from giving you pure, sweet water, it doesn't occupy space on your counter or wall.

Equipped with Reverse Osmosis technology, Under Sink RO removes pesticides, chemicals, bacteria, viruses and the excess TDS from your water, and stores the purified water in a 12 litres high-pressure tank. Ensuring that you get purified water, without your purifier even being seen. After all, it's invisible!

Know your Forbes Under Sink RO



1) Pre-Filter
2) GAC or Pre-Filter – Granule Carbon Filter
3) ACB Filter – Activated Carbon Filter
4) Booster Pump
5) Membrane
6) Tank
7) Post-Carbon Filter
   a) Connect the tube from water supply valve to 1st housing
   b) Connect the tubing from post-carbon filter to faucet
   c) Drain tubing to drainage

The unique RO (Reverse Osmosis) process

Your Forbes Under Sink RO is equipped with a multi-stage unique RO (Reverse Osmosis) purification process, to give you pure, fresh water. Reverse Osmosis is a membrane filtration process in which the water is passed under high pressure through an advanced Thin Film Composite (TFC) Membrane with a 0.0001 micron pore size. The output of the membrane is purified water, free from micro-organisms and with reduced Total Dissolved Solids.

Here's how your Forbes Under Sink RO works

Your Forbes Under Sink RO has a multi-stage filtration and purification process for water that's pure, with improved quality and taste.

1. First, the water passes through a 5 micron polypropylene sediment pre-filter which removes suspended material such as sediments, insects, asbestos, fibre, rust and dust particles bigger than 5 microns in size (Replace every 1 year).

2. Then the Granular Activated Carbon (GAC) filter absorbs heavy chlorine and chlorine by-products such as chloramines, THM and TCE (Replace every 1 year).

3. After this, the Carbon block filter removes any additional chlorine and organic matter from water without release of carbon fines. This prepares the water to enter the reverse osmosis element (Replace every 1 year).

4. Post this, a thin film composite (TFC) Reverse Osmosis (RO) Semi-permeable membrane with booster pump pressure separates the purified water from the rejected impurities like arsenic, lead, fluoride and dissolved solids, bacteria and viruses down to 0.0001 micron. The water is stored in the storage tank, while the reject water is automatically flushed down the drain.

5. In the final stage, a 6 inch post-carbon one-micron removes any dissolved gases, bad taste and odour from the water. Now, you have drinking water that is pure and absolutely safe.

Here's what makes your Forbes Under Sink RO truly unique

Invisible
The unit is designed to fit under the sink, thereby it is not seen.

Saves Space
The unit can be stored under the sink, thereby saving kitchen space.

High Storage Capacity
12-14 litres storage capacity.

Self-cleaning System
Ensures superior and effective membrane performance by auto-cleaning regularly.

High Pressure Switch
Automatically shuts off the pump and stops the flow of water when the storage tank is full.

Installing your Forbes Under Sink RO

Preparation:

Before you install, check the following list of components to ensure that all parts are packed with your Forbes Under Sink RO unit.

1) Storage Tank
2) RO System
3) Faucet and Faucet mounting bracket
4) Installation Kit

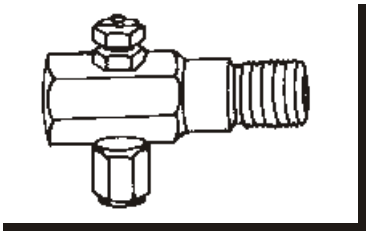
After this:

- Determine the location for the faucet. Check to see that drilling the faucet hole will not damage pipes or wires running underneath the sink.
- For upper sink fitting, use the faucet mounting bracket.
- Determine the location for the storage tank. A maximum distance from the tank to the faucet is 15 feet. The system will produce a faster flow at the faucet with the shortest tubing run from tank to faucet.
- Do not place the unit where it will be exposed to freezing and/or direct sunlight. Mount the unit on the side of the cabinet using bracket (attached to the unit) and two screws (provided in the kit).

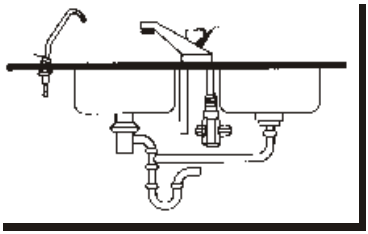
Installation of Water Supply Connector

Make sure that you hook up to the cold water tap. Determine the location for the installation of the RO system. Avoid locations where the system might come in contact with hot water pipes or other hazards like sunlight.

The water supply connector comes with the Forbes Under Sink RO unit in the installation kit.

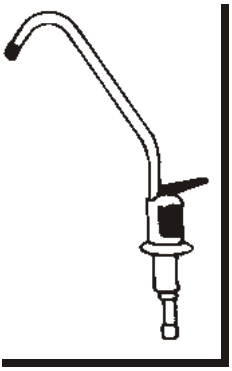


1) Disconnect the water supply line from the cold water tap, attach and tighten water supply connector assembly.



2) If you install above the sink, then remove your existing overhead water tank top, attach and tighten water supply connector assembly.

Mounting the Product Water Faucet



Your Forbes Under Sink RO unit comes complete with a long reach faucet. The product water faucet may be installed on any flat surface at least 2 inches in diameter. Check the inside of the location for interference.

Faucet mounting bracket is provided in the installation kit. This can be mounted on any wall. Install the mounting bracket on wall, then mount the faucet.

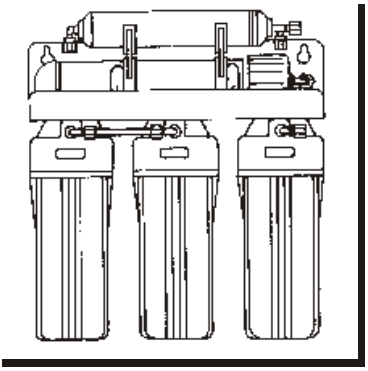
1) Slide the chrome cover plate and rubber gasket on to the stem of the faucet and place faucet on to the sink/mounting bracket on wall, then mount the faucet. For mounting on sink, you may need to drill a hole.

2) Place metal washer and lock washer over threaded stem of faucet and tighten nut from under the counter surface to lock the faucet into place. DO NOT OVERTIGHTEN.

3) Connect the tube to the faucet stem under the count/faucet bracket.

NOTE: Use an insert when connecting the tube to the faucet.

Installation of RO Membrane



CAUTION: Original packing is to prevent membrane damage during transit.

1) Remove the membrane housing cap.
2) Install the membrane by carefully pushing the spigot end into the socket at the far end of the housing until completely in. BLACK 'O' ring end should be on cap side.
3) Replace housing cap.

MOUNTING THE PURIFICATION ASSEMBLY

1) Mark screw location at the desired positions with the use of provided label of marker guides.
2) Screw wood/plastic screws supplied with the unit into marked positions. Leave screw head out a little.
3) Adjust the plant cover on the screw with hole on cover, then mount the RO plant assembly onto screws.

Maintaining your Forbes Under Sink RO

1) With everything connected, turn on the water to check for any leakage.
2) Make sure the storage tank shut-off valve is OFF. Open the sink top faucet.
3) Within a few minutes (up to 15 minutes) the water will start to run from the faucet slowly.
4) Let the water run for at least 30 minutes. This flushes the carbon filters on first-time use.
5) After the initial flushing, open the shut-off valve of the tank and close the sink top faucet.
6) Tank will not get filled (it takes usually 1 to 2 hours). After the tank has filled, open the sink top faucet and drain all the water until the storage tank is empty and there is only a small flow from the sink top faucet. **DO NOT USE FIRST TANK WATER.**
7) Close the sink top faucet. The system is now ready for use.

Service Instructions

Pre-filter replacement

1) Turn off water supply and open flush valve.
2) Unscrew the WHITE pre-filter with wrench.
3) Replace pre-filter.
4) Clean housing, if necessary with a mild chlorine/soap solution. Rinse away all chlorine/soap before reassembly. Use a soft cloth, do not use abrasive material.
5) Before reinstalling pre-filter, make certain 'O' ring is seated in housing.

RO Membrane element replacement

1) Turn off water supply.
2) Determine type of membrane needed.
3) Disconnect tubing and unscrew RO housing end cap.
4) With a pair of pliers, grip membrane end and pull out. A small amount of twisting may be needed.
5) Clean housing, if necessary with a mild chlorine solution. Rinse away all chlorine before re-assembly.
6) Insert membrane in housing and firmly push while also rotating slightly. When pushing in you will feel the membrane has stopped. With a little more pressure and turning action the membrane will go in further about '3/8' of an inch. When this occurs the 'O' ring has been properly seated.
7) Wet and install the 'O' ring on the housing end-cap. Glycerine, if available, may be used as a lubricant if necessary.

Post-filter replacement

1) Turn off water supply.
2) Close ball valve on holding tank and then open RO faucet.
3) Disconnect tubing to filter.
4) Lift plastic retainer clamps on post-filter and rotate clamp clear.
5) Remove end fitting.
6) Remove all Teflon tapes from inlet/outlet post-filter fittings.
7) Replace post-carbon filter.
8) Re-wrap with new Teflon tape.
9) Re-install end fitting.
10) Reconnect faucet line.
11) Secure clamp.
12) Turn on raw water and open storage tank ball valve.
13) Open and close faucet rapidly to discharge all traces of carbon.

Sanitising Instructions

1) Make a mild cleaning solution of chlorine bleach and potable water in the plastic bowl.
2) Turn off RO system, drain storage tank and remove membrane element and pre-filter and post-filter.
3) Membrane element must remain wet. Put membrane element in a plastic bag.
4) Fill empty pre-filter housing with sanitising solution and turn on raw water. After the tank is full, let the system stand idle for approximately 10 minutes
5) Turn off water.
6) Drain storage tank via the RO Faucet.
7) Re-install new pre-filters and membrane element.
8) Replace post-filter.
9) Disconnect lines to faucet and put approximately 10 drops of sanitising solution in these lines and reconnect.
10) Flush carbon fines and bleach from lines after the system has started purifying water again.

Troubleshooting Guide For Your Forbes Under Sink RO

No.	Symptom	Probable Cause	Solution
1.	No water production, low production	1. Tank Air Pressure too high 2. Water supply turned off 3. Low water pressure a. Pre-filter clogged b. RO Element damaged or fouled 4. Plugged post-filter 5. Increased raw water TDS level 6. Low raw water temperature 7. System undersized for application 8. Flow restrictor clogged	1. Set tank at 5-7 psl (empty) 2. Turn on water supply 3. a. Change pre-filter b. Change or replace RO element 4. Change post-filter 5. Increase raw water pressure 6. Increase raw water pressure or install 10 feet coil or ¼" tubing prior to pre-filter in heated space 7. Replace element with large capacity unit and/or add second storage tank 8. Clean or replace flow restrictor check for biological or iron fouling
2.	Low or poor water quality	1. All of the above with particular emphasis on flow restrictor, TDS, water temperature and pressure 2. RO Water stood too long in tank 3. Bacteriological fouling 4. Membrane fouling a. Brine seal linking b. Product water 'O' ring leaking c. Product water check valve failure	1. See number 1 solution 2. Open faucet to drain tank 3. Sanitise system 4. Requires further pre-treatment and/or new membrane a. Check membrane Brine seal b. Check product water 'O' ring c. Replace check valve
3.	Bad Taste	1. Post-carbon filter exhausted 2. System fouled by micro-organisms 3. Storage tank bladder ruptured	1. Change post-carbon filter 2. Change post-carbon filter/sanitize system 3. Replace bladder and sanitise

No.	Symptom	Probable Cause	Solution
4.	Flow restrictor clogging	1. Bacteria fouled 2. Raw water excessively turbid	1. Sanitise system 2. One or more additional micron
5.	Carbon fines in production water	1. Coming from post-carbon filter	1. Cycle faucet on/off until carbon is flushed clean
6.	Bad odour in production water	1. System biologically contaminated 2. Post-filter exhausted 3. Raw water excessively turbid	1. Sanitise system 2. Replace post-filters
7.	Low product water pressure	1. Final filter clogged 2. Low air charge in storage tank a. Water temperature has dropped	1. Change final filter 2. Increase tank air charge a. Same as above
8.	External leaks	1. Tubing not cut square before inserting into parker fast and title fitting 2. 'O' rings need more lubricant a. 'O' rings need more lubricant 3. Fitting loose	1. Cut off 3/8" of tubing and assemble 2. Replace 'O' rings a. Use silicon based lubricant on all 'O' rings except flush valve. It requires Vaseline, Petroleum Jelly as Lubricant 3. Tighten fitting

HELPFUL INFORMATION

RO production is based on water TDS of 1000 ppm NaCL, 80 psl, 77 F. When checking water quality, ALWAYS check it directly for the membrane element, NOT the RO faucet. To do this, turn off ball valve on storage tank. Keep RO faucet closed. Disconnect line on storage tank. Wait for 5-10 minutes and check product quality.

Waste water to product ratio should run approximately 3:1. This ratio can vary and is dependant on TDS, water temperature, raw pressure and membrane performance.

Recommended Maintenance

1. **MEMBRANE FLUSHING**

   The manual flushing valve system enhances a membrane's life. Daily, switch on the membrane flushing valve for 2 to 5 minutes to flush the membrane.

   WARNING: Shut the membrane flushing valve immediately, after flushing, to get the best result, otherwise the unit may fail in giving its utmost performance.

2. **SEDIMENT PRE-FILTER**

   The pre-filter protects the system and should be maintained regularly. A clear housing has been provided for your convenience. The snow-white pre-filter should be changed when the outside discolours. The life of the pre-filter will depend upon the condition of your water supply and should be checked at a 6 months' interval until the filter's life is established.

3. **GAC AND CARBON BLOCK**

   Designed to remove chlorine from the water supply, as well as organic and inorganic substances before entering the TFC membrane (average life - 12 months).

4. **POST-CARBON**

   The post-filter should be changed when you experience unusual taste and/or odour to the water. It has a normal life of 12 months.

5. **MEMBRANE**

   The high quality thin film composite membrane should last for 12 months depending on the quality of your local water.

6. **STORAGE TANK**

   Drain your storage tank twice each month to extend the membrane life and have the freshest water in the storage tank. To drain, lift the faucet handle into the parallel position with the spigot until the water flow stops from the tank. Return the faucet handle to the closed position and the tank will refill in 2 hours. It is best to drain the system before retiring for the night.

Automatic control system with low and high pressure

When the storage tank has reached capacity, the automatic shut-off valve stops the flow of water entering the system thereby conserving water. As the water is drained from the storage tank, the flow is allowed to resume through the system. The cycling procedure works automatically by the water pressure difference.

Stores up to 12-14 litres of purified water
Produces enough purified water

Special Safety Valve in RO

The safety valve is a multi-functional element which can carry out all the functions to regulate the flow rate. So, if a safety valve is fitted in a system, it eliminates the need of a check valve, a 4-way shut off valve as well as a flow restrictor. The flow restrictor's function is to regulate the flow rate.

A 4-way shut-off valve is not required as the high pressure switch gets operated at 35/40 psi at the tank and will switch off the booster pump so the waste flow gets stopped. This avoids unnecessary wastage of water because the safety valve allows water to come out only at 55/60 psi which will never happen as it enhances the life of the filter.

Check valves work as non-return valves, to avoid final water from entering again in the membrane as the maximum pressure at tank is 35/40 psi, and the safety valve gets operated 55/60 psi so the function of N.R.V. is done by the safety valve itself.

Recommended Filter Change Schedule

FILTER	FREQUENCY
1st stage 5 micron sediment pre-filter	12 months
2nd stage GAC filter	12 months
3rd stage Carbon pre-filter	12 months
4th TFM membrane	12 months
5th stage Final carbon	12 months

Recycling water flushed by your Forbes Under Sink RO

Water is a rapidly depleting resource. It is our moral responsibility to ensure that water is recycled as much as possible. The water flushed by your Forbes Under Sink RO can be used for several purposes

Flushed water can be used for

Watering plants

Daily household cleaning, like mopping floors, cleaning bathrooms, kitchen sinks etc.

Flushed water cannot be used for

Washing clothes

Drinking

The Forbes Advantage

Certified by over 105 labs internationally.

Recipient of UNESCO-Water Digest Award for Best RO.

Manufactured at ISO 9001 certified manufacturing facilities.

Selected as Reader's Digest Most Trusted Brand - Platinum Category.

Technical Specifications*

S. No.	Parameter	Specification
1	Dimensions (W x D x H) in mm	370 x 190 x 470
2	Net Weight	14.5 kg
3	Tank Capacity	12 litres
4	Purifying Technology	Reverse Osmosis
5	Stages of Purification	Particulate Filter
		Pre-active Silver Carbon Cartridge
		Clarity Cartridge
		RO Membrane
		Post-active Silver Carbon Cartridge
6	RO Membrane	TFC Spiral
7	Power Rating	36 watts
8	Input Water Pressure	0.6 - 2 kg/sq.cm
9	Input Voltage	230 V AC / 50 Hz
10	Input Water Temperature	Min. 5^0 C and Max. 45^0 C

Notes: *Technical Specifications are subject to change without prior notice

Questions you may have about RO technology

What is Reverse Osmosis?
Reverse Osmosis (RO) is the reversal of the natural flow of osmosis. In water purification systems, Reverse Osmosis is used to separate the salts and other heavy metals from pure water.

What is Forbes Under Sink RO?
Forbes Under Sink RO is a domestic RO system that uses Reverse Osmosis to remove TDS, lead, microbiological contaminants, heavy metals, etc. dissolved in water. The result is pure, safe water that tastes good and is healthy to drink.

How do I know which purifier I need for my home/office?
Water treatment is like any other treatment of your health - you first need to know what's wrong with your water, before you treat it. Forbes, the leader in water purification for 29 years, has a range of products using different technologies - ranging from RO, NF to UV to UF.

Is RO better technology compared to Ultraviolet (UV)?
Different water quality needs different treatment technology. So if your water has microbial, organic and physical contamination, a UV purifier is ideal. However, if your water, in addition to the above, also contains TDS, heavy metals and other pollutants, you will need to install a RO purifier. Both technologies are good and they each serve a different purpose.

Why does the Forbes Under Sink RO need frequent cleaning/service?
The Forbes Under Sink RO is your family's protection against waterborne diseases. Its various filters and the membrane cartridge inside your water purifier are constantly working to remove/trap physical impurities, organic and inorganic contaminants, bacteria, viruses and heavy metals, TDS, lead, arsenic, etc. and keep your family healthy. This is why your purifier needs to be routinely cleaned and serviced.

How is Forbes Under Sink RO different from other RO purifiers in the market?
The Under Sink RO uses a multi-stage Reverse Osmosis+ process to provide pure, sweet tasting water. Its Unique Membrane Cleaning System ensures superior and effective membrane performance. The purifier also has a powerful pump that delivers a high flow rate, providing 8 litres of purified water in approx. 60 minutes with a storage capacity of 8 litres.

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