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New

KENT Crystal Star

With Display of Minerals & Purity

RO + UV + UF + UV IN TANK + TDS CONTROL

Instructions Handbook

Digital Display of Minerals & Purity

KENT TECHNOLOGY

Removes Dissolved Impurities
 Retains Essential Minerals
 Multiple Purification

RO + UV + UF + TDS Control + UV in Tank

Sabse Shudh Paani

Piyo aur Healthy Raho

Mineral RO © 2005 - KENT RO SYSTEMS LTD.
 The process & purifier is patented vide patent no. 199716.
 KENT Crystal Star design is registered vide registration no.



Welcome to KENT



Dear Customer,

At the outset, allow us to thank you for your trust in **KENT** water purifier. We take pride in our reputation for product quality and industry proven performance. We are certain that your decision to own **KENT** Crystal Star Mineral RO™ Water Purifier will go a long way towards keeping you and your family in good health. We are confident that you will be satisfied with its performance and that it will serve your need for safer and cleaner drinking water without any compromise.

This guide will help you in getting the best out of your water purifier. Please go through this booklet to familiarise yourself with its operation and maintenance.

You can look forward to years of trouble-free service. In case you need any further information, contact your nearest **KENT** dealer or branch.

Best Wishes,

KENT RO SYSTEMS LTD.

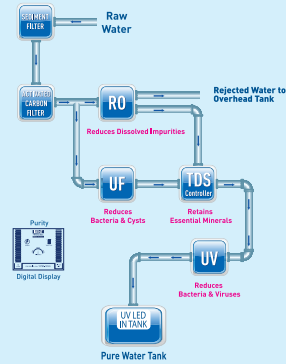
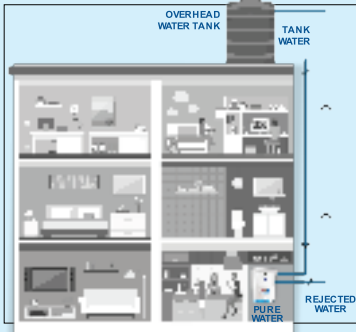
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KENT TECHNOLOGY - A Breakthrough in Water Purification*

Presenting the KENT Crystal Star Mineral RO™ Smart RO Water Purifier. It uses futuristic and state-of-the-art technology to provide purer and healthier drinking water.

At the heart of the KENT Crystal Star Mineral RO™ Water Purifier is a Reverse Osmosis membrane having capillaries as small as 0.0001 microns, which reduce dissolved impurities (salts and heavy metals) and convert hard water to sweet and pure drinking water. With a patented mineral retention system, the KENT Crystal Star Mineral RO™ Water Purifier allows the user to control the Total Dissolved Solids (TDS) level in the purified water.



KENT is pleased to introduce **Zero Water Wastage Technology™** that recirculates rejected water to overhead tank with its own pump to make it a Zero Water Wastage RO. This unique technology helps you make water pure, without wasting any water while retaining essential minerals.

Salient Features of KENT Crystal Star Mineral RO™ Water Purifier



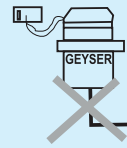
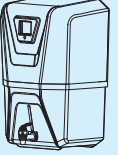

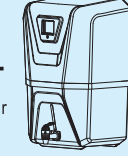
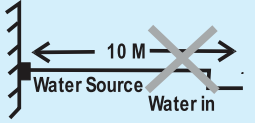

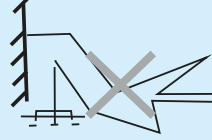
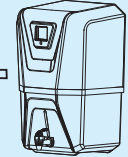
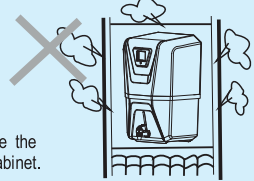


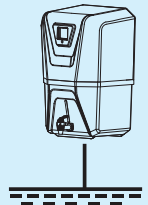


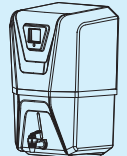
- Water purifier with UV disinfection in tank for absolute purification
- Zero Water Wastage**
- Purification by RO + UV + UF + TDS Control + UV in tank makes water pure
- Real time monitoring and display of purity on a digital screen
- Suitable for purification of brackish/ tap water/ municipal corporation water supply
- Wall mounted design, best suited for Indian homes and offices
- Fully automatic operation, with auto-on/off function
- Computer controlled operation for enhanced purity and long life
- RO Membrane fused inside membrane housing to prevent tampering
- Vertically mounted SMPS for protection from water
- Use of push-fit fittings for leakage and maintenance free performance
- An aesthetically appealing design
- ABS construction for corrosion free use
- Inbuilt Auto-flushing system
- 11L storage tank with water level indicator
- High purification capacity of 20 L/hr.

Items in the Box

- | | | | |
|---|--------------|-----------------------------|------------|
| 1. KENT Crystal Star Mineral RO™ Water Purifier | : 1 N | 6. Screws & Plastic Inserts | : 2 N each |
| 2. 3-Way Connector | : 1 N | 7. Sticker Center Drill | : 1 N. |
| 3. S.S. Ball Valve | : 1 N | 8. Warranty Card | : 1 N |
| 4. Food Grade Pipe (White) 0.952 cm | : 2.5 Meters | | |
| 5. Food Grade Pipe (White) 0.952 cm | : 2.5 Meters | | |

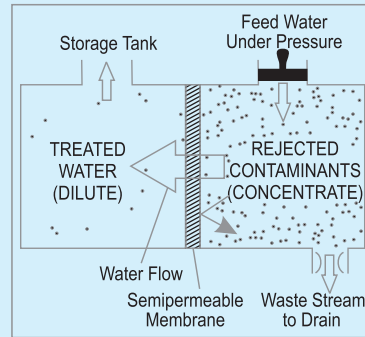
* Tested & certified by TUV-SUD South Asia (P) Ltd. **Zero Water Wastage is based on the standard testing conditions

Important Instructions

 <p>Avoid exposure to direct sunlight and installation in damp areas.</p> 	 <p>Make sure that the temperature of water entering the purifier is within 10°C-40 °C.</p> 
 <p>Rejected Water</p> <p>The rejected water can be re-circulated to overhead tank for Zero Water Wastage.</p> 	 <p>The maximum distance between the water source and the purifier should not be more than 3 meters.</p> 
 <p>Avoid sharp bends in the pipe. Do not bend or block the reject water pipe.</p> 	 <p>Do not confine the purifier in a cabinet.</p>
 <p>In case of not using the purifier for more than two days, kindly switch off the power supply and drain the storage tank.</p> 	<p>To keep the storage tank clean, it should be drained once in 15 days.</p> 
<p>KENT</p>  <p>Use Genuine KENT Spares for optimum performance.</p>	 <p>Do not try to service the purifier on your own. Instead, call service technician for help.</p> 

Reverse Osmosis Process

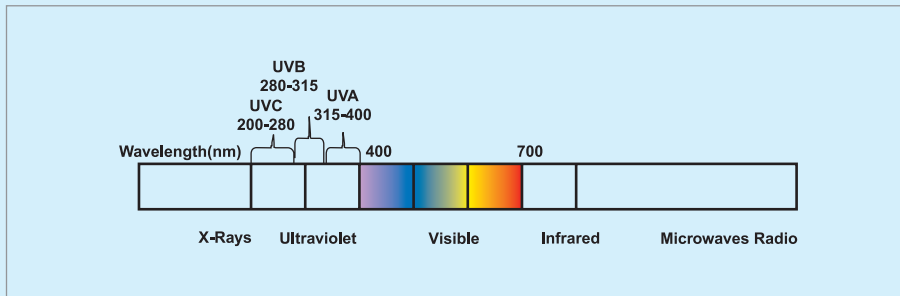
The Reverse Osmosis process, also known as hyper filtration, is the finest filtration process known till date. The process ensures the reduction of particles as small as ions from a solution. Reverse Osmosis uses a semi-permeable membrane to reduce salts from potable / brackish water. In Reverse Osmosis, water pressure applied to the concentrated side forces the process of osmosis into reverse. Under enough pressure, treated water is "squeezed" through the membrane from the concentrated side to the diluted side. Salts dissolved in water as charged ions are repelled by the RO membrane. The rejected impurities on the concentrated side of the membrane are washed away in a stream of waste water, and thus do not get accumulated as in a traditional filter.



UV Process

The UV light has shorter wavelength (higher energy) than the visible light. It is called ultra-violet because it is just beyond the violet light in the light spectrum. Technically, the ultra-violet light is defined to be any wavelength of light, which is shorter than 400 nanometer.

UV rays, which penetrate into the micro-organisms, are absorbed by the DNA of the pathogen in the water. The DNA is altered in such a way that the pathogen cannot reproduce. Thus, they are essentially killed and cannot cause infection. This process of DNA modification is called inactivation.



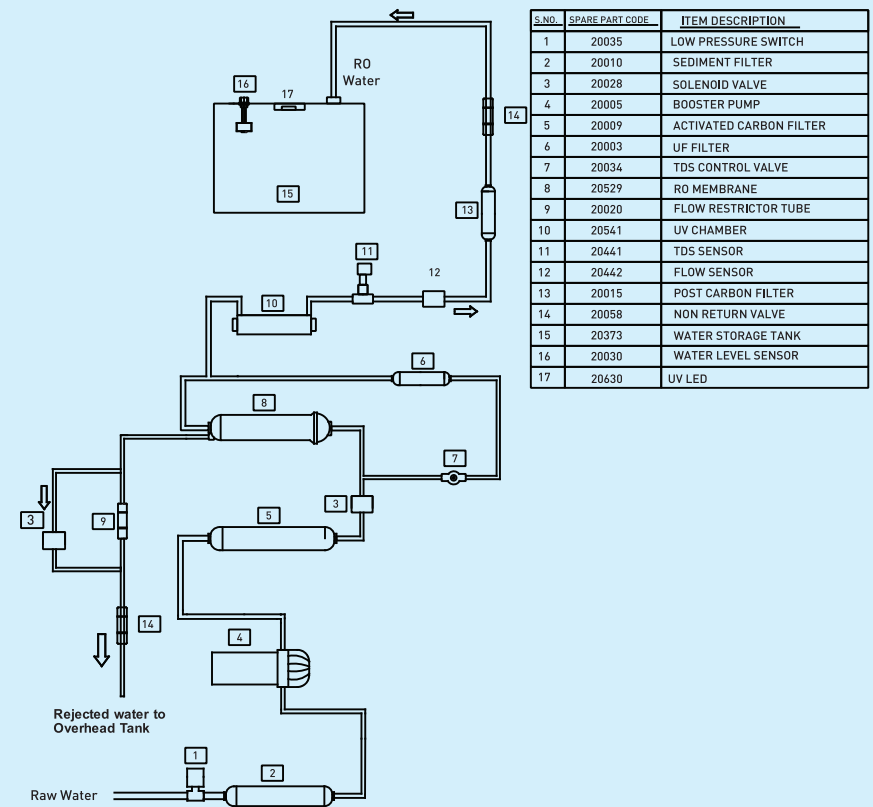
Note: The purified water stored in the tank is disinfected using UV LED, which automatically switches on for 30 minutes in a two hour cycle.

Auto-flushing System

The purpose of the Auto-flushing system is to help prevent scaling or fouling of the RO membrane by providing a rapid rinse which washes away impurities from the membrane's surface and keeps the membrane clean. It offers following benefits.

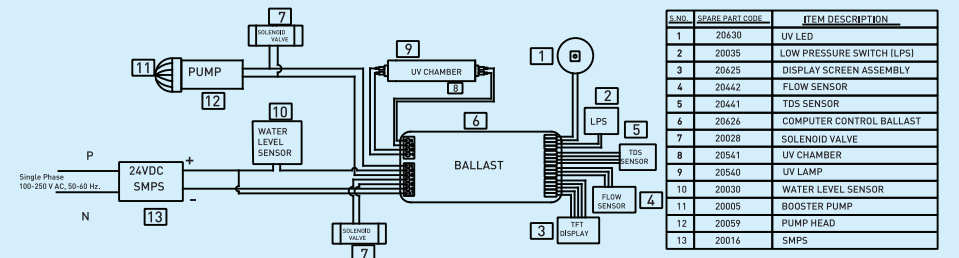
- Lowers rejected water outflow
- Improves "TDS" rejection rate i.e increases RO membrane efficiency
- Extends life of RO membrane

Water Flow Diagram



S.NO.	SPARE PART CODE	ITEM DESCRIPTION
1	20035	LOW PRESSURE SWITCH
2	20010	SEDIMENT FILTER
3	20028	SOLENOID VALVE
4	20005	BOOSTER PUMP
5	20009	ACTIVATED CARBON FILTER
6	20003	UF FILTER
7	20034	TDS CONTROL VALVE
8	20529	RO MEMBRANE
9	20020	FLOW RESTRICTOR TUBE
10	20541	UV CHAMBER
11	20441	TDS SENSOR
12	20442	FLOW SENSOR
13	20015	POST CARBON FILTER
14	20058	NON RETURN VALVE
15	20373	WATER STORAGE TANK
16	20030	WATER LEVEL SENSOR
17	20630	UV LED

Electrical Circuit Diagram



S.NO.	SPARE PART CODE	ITEM DESCRIPTION
1	20630	UV LED
2	20035	LOW PRESSURE SWITCH (LPS)
3	20425	DISPLAY SCREEN ASSEMBLY
4	20442	FLOW SENSOR
5	20441	TDS SENSOR
6	20426	COMPUTER CONTROL BALLAST
7	20028	SOLENOID VALVE
8	20541	UV CHAMBER
9	20540	UV LAMP
10	20030	WATER LEVEL SENSOR
11	20005	BOOSTER PUMP
12	20059	PUMP HEAD
13	20016	SMPS

[NOTE: The above specifications are subject to modifications for improvement without notice].

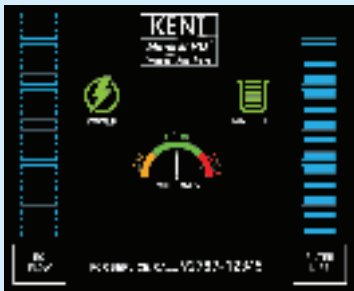
Crystal Star Operations

Screen Explained



1. RO Flow Indicator
2. Filter Life Indicator
3. Power On/Off
4. RO Pump On
5. Tank Full
6. Auto Flushing On
7. Mineral Content in Purified Water
8. Warning Signs

Normal Running Conditions



Under normal running conditions and without any fault, the users would be greeted with a screen as shown in figure, with Power, Tank Full, Filter Life and Water Quality Indicator On.
 Since the tank is full, the RO flow rate would not be displayed.

Emptying of Tank



When water is drawn from the tank, thus emptying it, the water tank sign would turn Off, and instead RO Flow, Purification and Mineral Quality would turn On.
 Depending upon the mineral contents in the water, the indicator would display Low, Good or High.

Mineral Content - Low



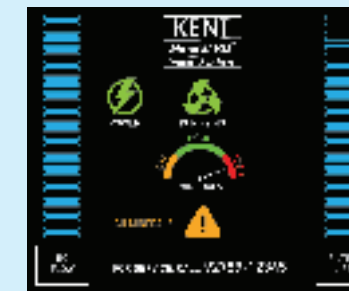
If the TDS level in the purified water is less than the permissible range, the indicator would be in Yellow zone i.e Low
 The warning sign would be displayed as shown in the figure

Mineral Content - Good



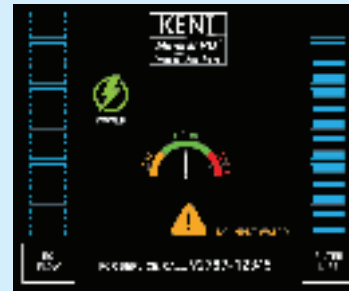
If the TDS level in the purified water is within the permissible range, the indicator would be in Green zone i.e Good

Mineral Content - High



If the TDS level in the purified water is more the permissible range, the indicator would be in Red zone i.e High
 The warning sign would be displayed as shown in the figure

No Water Input



In case of No Water Input, the warning would be displayed, as shown in the figure.
 The water purifier would automatically shut off and will remain off till regular water supply is not restored.

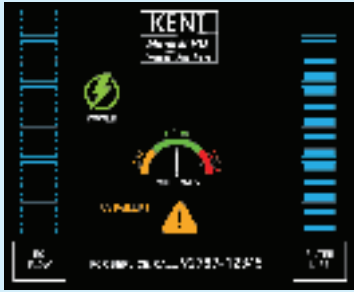
Auto-flushing



Auto Flush sign as shown in the figure indicates that RO Membrane is getting flushed automatically
 Once Auto-flushing is complete, the light would turn Off.

What to do if Mineral Content is Low or High? Call Customer Care or Login to App
 *Mineral Content is displayed based on TDS levels in the purified water

UV Lamp Failure/LED Failure

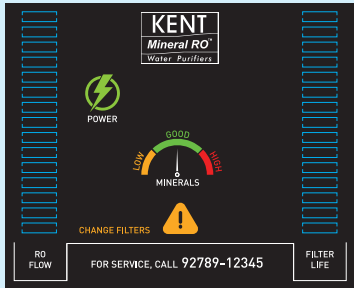


If UV Lamp fails, machine will display a blinking warning signal of UV failure and an alarm with a single beep. will be audible The purifier would stop purifying water till the UV lamp is replaced.

If UV LED fails, machine will display a blinking warning signal of UV failure and an alarm with two beeps will be audible.

If the interface shows a UV failure message, switch off the purifier and call a service technician for help.

Filter Replacement



On exhaustion of filter life, 'Replacement Filter message' will be displayed on screen with a continuous buzzer and the purifier will stop purifying water till filters are not replaced.

If the interface shows 'Replace Filter Message', switch off the purifier and call a service technician for help.

Low RO Flow



Low RO flow warning sign indicates reduced capacity of RO Membrane.

All though the water purifier will continue working till the membrane failure happens, it is recommended to call the KENT Customer Care and ask for Membrane Replacement.

Computer Controlled Operation

To ensure delivery of purer and healthier water, a micro-processor is installed in the purifier that performs the following functions:-

UV Stabilization Delay: To ensure that the UV lamp is pre-heated and is working at its optimum level before it starts disinfecting water, the controller provides a two second delay to the UV lamp when the purifier is switched on. During this period, only the UV lamp is switched on and other electrical devices of the purifier are switched off.

Purification Delay: To ensure that the idle water lying in the internal pipes and in the UV chamber is disinfected before being passed into the storage tank, the system provides a 5 second delay when the purifier is switched on. During this time, the UV lamp kills all micro-organisms that may be in the water inside the UV chamber. After this delay, all other electrical devices such as the booster pump and solenoid valve are switched on to start normal purification process.

Alarm: To ensure delivery of purer water, KENT Crystal Star in-built micro controller controls and senses various vital components and displays their status on the digital interface.

Automatic Operation

- The purifier automatically shuts off when the storage tank is full
- The purifier does not start if the inlet water supply pressure falls below 0,3 kg/cm²
- The purifier automatically restarts when the water level drops below the maximum
- The purifier does not allow any water rejection in absence of electricity/when tank is full

Installation Instructions

The KENT Crystal Star Mineral RO™ Water Purifier is a product of advanced technology, which ensures safe and clean drinking water. The purifier is easy and convenient to install.

Recommended Site Preparations:

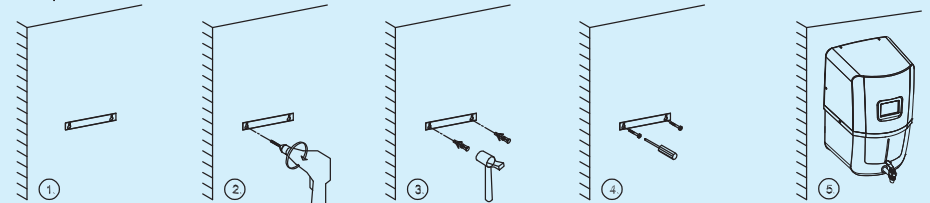
- Single Phase 100-250 V AC, 50-60 Hz, connection not more than 3m away from the point of installation of the purifier
- Raw water supply with ½ inch nipple not more than 3m away
- Space as per the dimensions of the purifier
- Wall/plane surface for mounting two screws and holding the machine
- The system and installation must comply with state and local laws & regulations

Specific Instructions:

- KENT Crystal Star Mineral RO™ Water Purifier is a wall mountable purifier. Make sure that it is only mounted on a wall. Avoid installation on wooden and metallic stands
- For optimum performance and minimum inlet pressure required, ensure that the raw water supply tank is at least 10 ft. above the purifier

Installation Procedure:

Step-1

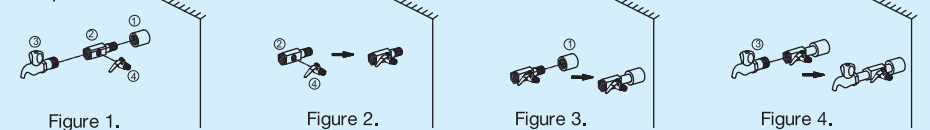


1. Paste the central drill sticker on a wall at 3,6 Feet to 4,0 Feet from the ground as per your convenience.
2. Ensure that the sticker is pasted straight on the wall, then drill holes as per the space provided on the sticker.
3. Now, insert the puff up with the help of a hammer
4. Screw in two 10X50 self-taping screws, 5,4 inches (138 mm) apart horizontally
5. Carefully hang the purifier on the wall with the help of wall-mounting slot holes provided on back side of the purifier

Note:

1. If the wall is not straight or the screws are not properly drilled in an even position, it will damage your purifier.
2. Keep the device away from heat or direct sunlight

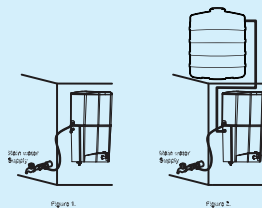
Step-2



1. First fix the SS ball valve (marked as no. 4) to the 1/4 inch port of the 3-way connector (marked as no. 2) as shown in figure 2.
2. Connect the 3-way connector to the raw water supply (marked as no. 1) as shown in the figure 3. The 3-way connector is fit in line with the raw water supply.
3. The other end of the 3-way connector can be connected to a tap (marked as no.3) as shown in figure or can be plugged off if not required.

Step-3

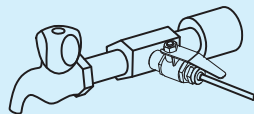
1. another end to the upper push-fit elbow fitting to the left hand side of the purifier labelled as WATER IN, as shown in fig 1.
2. Similarly, connect one end of the white pipe to the lower elbow fitting connector in tank labelled as REJECT WATER and leave the other end in the overhead tank, as shown in fig 2.



Step-4

Before connecting the power supply, it is important that you perform the following functions:

1. Open the SS ball valve (Handle parallel to the ball valve) to start the flow of water into the purifier, as shown in the figure.
2. Wait for 2-3 minutes to ensure that the filters are soaked in water.



Step-5

1. Connect the power supply.
2. Installation is complete.

TDS Adjustment*

The unique TDS Controller enables customers to retain the contents of natural minerals in purified water, as per their requirement.

- Turning the screw of the valve anti-clockwise results in an increased mineral content
- Turning the screw of the valve clockwise results in a decreased mineral content

 We recommend keeping the TDS at the lowest possible level but not below 50mg/l.

Starting-up the Purifier

- Switch on the power supply
- Wait till the storage tank completely fills up**
- Switch off the power supply
- Drain the storage tank by opening the drain plug present at the bottom of the storage tank, so as to remove any dust particles present in the pipes and storage tank
- Close the drain plug and switch on the power supply
- The purifier is ready to use

Maintenance

To ensure that the purifier operates at its best, a routine maintenance must be performed. The frequency of the maintenance will greatly depend upon the raw water quality and consumption of purified water.

- The storage tank must be drained once in 2 weeks. To do so, switch off the power supply, open the drain plug at the bottom of the tank and allow the water to drain. Then, screw back the plug and switch on the power supply
- Replace the sediment, activated carbon and post carbon filter when the filter change alarm is audible, or after every 12 months. It is recommended to change the FRT when the filters are replaced
- Replace the RO membrane once every year
- Replace the UV Lamp once in a year
- If you are not going to use the purifier for a long time (in case you are on a holiday, tour or out of home), make sure that you disconnect the power supply, turn off the raw water supply and drain the storage tank

* Tested & Certified by TUV-SUD South Asia (P) Ltd.

** Tested or certified flushing time - 24hrs.

The Reverse Osmosis System contains a replaceable treatment component critical for the effective reduction of total dissolved solids and that product water shall be tested periodically to verify that the system is performing properly.

Replacement of spare parts are as under:-

-20010	SP	Inline Sediment Filter 8"
-20529	SP	RO Membrane
-20009	SP	Inline Carbon Filter 8"
-20015	SP	Post Carbon Filter (Blue)
-20003	SP	Hollow Fibre Membrane
-20020	SP	FRT 300/450


Important Safety Instructions

- If the supply cord is damaged, it must be replaced by the original part in order to avoid hazard.
- Children should be supervised to ensure that they do not play with the appliance
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety

Warning

- Do not operate the UV-C emitter when it is removed from the appliance enclosure.
- Read the maintenance instructions before opening the appliance.
- The appliance must be disconnected from the supply before replacing the UV-C emitter.

Technical Specifications

Product	KENT Crystal Star
Product Code	111123
Product Generic Name	Water Purifier
Product Colour	White
Applications	Suitable for Purification of Brackish / Tap Water / Municipal Water Supply
Purification Production Rate	Upto 20 L/hr.*
Body Material	ABS Food Grade Plastic
Mounting	Wall-mounted
Dimensions (mm)	380 (L) x 280 (W) x 535 (H)
Inlet Water Pressure/Temp (Min.)	0.3 kg/cm ² / 10°C
Inlet Water Pressure/temp (Max.)	4 kg/cm ² / 40°C
Min./Max. Operating pH	6.5-8.0
Filter Cartridge	Sediment, Carbon Filter, UF and Post Carbon
UV Lamp Wattage	11 W
UV LED wattage	0.7 W
Life of UV Lamp	5000 hrs. of operation
Net Weight	8.40 kg
Storage Capacity	11 L
Maximum Duty Cycle	100 L/day
Membrane Type	Thin Film Composite RO
Booster Pump Voltage	24 V DC
Total Power Consumption	60 W
Input Power Supply	Single Phase 100-250 V AC, 50-60 Hz. 
IP Rating	IPX1

* Purification capacity tested for raw water having TDS level of 750 ppm at room temperature.

Testing Information

The System has been tested according to IS 10500:2012 (Standards for drinking water as per Bureau of Indian Standards) for reduction of the hazardous substances.