Filter Selection



Proper filter selection is essential for maintaining water flow, extending cartridge life, and minimizing filtration costs. **Always select the cartridge first and the housing second.** An undersized filter can restrict flow, clog prematurely, and require frequent replacement.

THE FIVE REQUIRED STEPS

1. Test the water

Before selecting a filtration system, test the water to identify specific quality concerns, confirm microbiological safety for drinking and cooking, and determine the type and size of particulate present. Water testing helps establish the appropriate cartridge type and micron rating.

2. Determine the Required Cartridge Type

Water Quality Concern	Recommended Cartridge
Sediment, sand, rust and suspended particles	Spun Polypropylene (SP), Pleated Polyester (PPE) or String Wound (SWP, SWBC)
Taste and odour, including chlorine	Carbon Block (CB), Granular Activated Carbon (GAC) or Carbon Wrap (CW)
Specific contaminants, including cysts or certain VOC's	Cartridge specifically rated and certified for the intended contaminant (CB, GAC, CW)

Sediment cartridges remove particulate, while activated carbon cartridges reduce certain dissolved contaminants, taste and odour. Performance depends on cartridge design and the contaminant being targeted. Always verify the manufacturer's ratings and certifications.

3. Determine the Required Flow Rate

Calculate the peak water demand in gallons per minute (GPM), considering fixtures and appliances that may operate simultaneously. Daily water consumption alone does not determine the required filter flow rate.

Fixture or Appliance	Typical Flow
Dishwasher	2-3 GPM
Washing Machine	4-5 GPM
Bathtub	3-8 GPM
Shower	2-5 GPM
Faucet	2-3 GPM
Toilet	2.5-5 GPM

4. Select the Cartridge Size / Micron Rating

Choose a cartridge with a rated flow capacity above the required peak demand. Clean cartridge flow ratings may decrease as sediment accumulates.

Recommended sizing guidelines:
•Light sediment load: at least 1.5x the required flow
•General applications: approximately 2x the required flow
•Heavy sediment load: up to 3x the required flow where appropriate

Larger cartridges generally provide greater dirt holding capacity and may extend service life.

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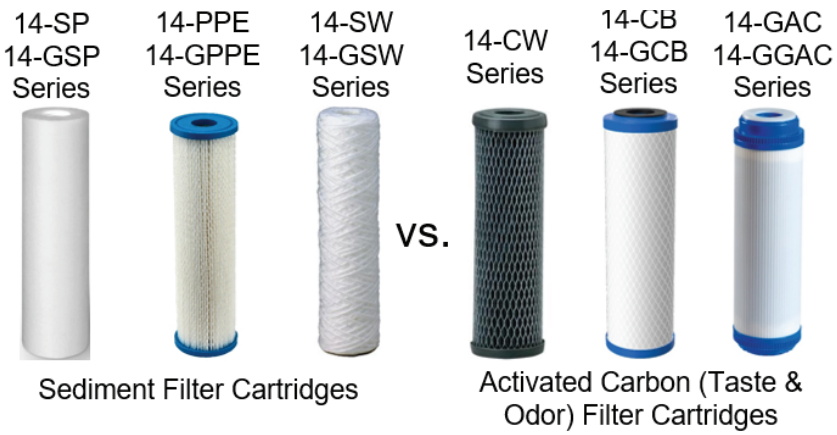
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Available cartridge sizes:
Standard: 2-1/2" & 2-3/4" outside diameter
Giant: 4-1/2" outside diameter
Nominal Lengths: 5", 10" & 20"

Always verify cartridge dimensions, end configuration, and rated capacity. Replace cartridges according to manufacturer recommendations and actual operating conditions.

A 5-micron filter is sufficient for standard whole-house sediment removal and general appliance protection, while a 1-micron filter is best if you need to catch very fine silt or use it as a pre-filter for a drinking water or UV system.



5. Select the Filter Housing

Once the cartridge has been selected, choose a housing that accommodates it's dimensions and meets the system's flow, pressure, temperature, and material requirements.

Housing options include:
•Slim
•Standard
•Giant
•Stainless Steel
•High Temperature models

Material options include:
•Polypropylene
•Polypropylene / Styrene- Acrylonitrile
•Polypropylene / Styrene- Acrylonitrile with Stainless Steel Thread Inserts
•Stainless Steel
•Glass Reinforced Nylon (High Temp)

Bowl Options:
•Clear (5-year lifespan) must not be used in direct sunlight
•Blue (10-year lifespan) suitable for use where there is UV exposure
•Red (High Temp) suitable for use where there is UV exposure
•Stainless Steel (High Temp, High Pressure) suitable for use where there is UV exposure



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Consider the following when selecting a housing:
•**Material and Temperature:** Select materials compatible with the water chemistry and operating temperature. High temperature or high pressure applications may require specialized housings
•**Bowl Selection:** Clear bowls allow visual inspection but must be protected from direct sunlight where specified. Blue, red and stainless steel options have different UV, temperature and pressure capabilities. Confirm the individual model ranges
•**High Flow Demand:** A larger housing or multiple housings installed in parallel may be necessary
•**Flow velocity:** Match connection sizes to the required flow and acceptable pressure loss. As a general design guideline, limiting water velocity to approximately 5 ft/second is ideal, while 8 ft/second would be the maximum. This corresponds to:

Housing Connection Sizes (FPT)	GPM Range / Flow Velocity (fps) Chart	
	Ideal (5 fps)	Limited to Max (8 fps)
3/4”	7 GPM	11 GPM
1”	12 GPM	19.5 GPM
1-1/2”	27.5 GPM	44 GPM

It is recommended to maintain a flow velocity of 5 to 8 fps approximately 1.5 to 2.44 m/s to prevent excessive pressure drop, erosion/ corrosion, excessive noise/ vibration, cavitation and damage piping and system components due to water hammer. A flow rate of 9 to 10 ft/s to 2.743 to 3.048 m/s could potentially have the above mentioned issues.

SELECT THE RIGHT FILTRATION APPLICATION

Application	Typical Configuration
Point-of-Entry (POE) - Whole House	Sediment filtration at the water supply entry to protect plumbing, fixtures and treatment equipment. Add a carbon stage when whole house taste and odour treatment is required.
Point-of-Use (POU) - Drinking Water	Typically a 10” standard or slim line housing is installed at a drinking water faucet. Smaller 5” systems may be suitable for RV’s, boats, and other space limited applications.
Reverse Osmosis (RO) Pre-Filtration	Sediment and, where specified, carbon cartridges to protect the RO membrane. Follow the RO manufacturer’s micron and compatibility requirements.
Ultraviolet (UV) Pre- Filtration	Sediment filtration to the UV manufacturer’s specified rating, commonly 5 microns or finer, to reduce particles that can shield microorganisms from UV light.

Boshart supplies filtration components for pre and post filtration applications, but does not offer the complete RO or UV treatment systems

NOTE: Cellulose is a natural organic material. Under favourable conditions, it may support microbial growth and biofilm formation, including nuisance bacteria commonly found in untreated water and well water supplies, such as iron and sulfur related bacteria.

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FILTER CARTRIDGES

Boshart offers a variety of water filter cartridges designed to address common water quality concerns, including sediment, taste, and odour. Selecting the proper cartridge depends on the water condition, required flow rate, cartridge size, and filtration application.

WARNING: Always Test Water - Never use sediment/ taste and odour cartridges with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the filtration system. These cartridges will not remove harmful contaminants/ bacteria. An NSF 53 certified water filter has been independently tested and certified by NSF International (or another accredited organization like the Water Quality Association) to reduce specific health-related contaminants rather than just aesthetic traits like taste or odour.

CARTRIDGE TYPES

Sediment Filtration - Designed to remove particulate such as sand, silt, dirt, scale, and rust.

These include:
•spun polypropylene (14-(G)SP)
•pleated polyester (14-(G)PPE)
•string wound polypropylene (14-(G)SWP)
•string wound bleached cotton (14-(G)SWBC) (not for potable water)
•string wound natural cotton (14-SWNC) (not for potable water)

Taste & Odour Filtration - Used to reduce undesirable taste and odour and, in certain applications, nuisance compounds.

These include:
•carbon block (14-(G)CB)
•carbon briquette (14-(G)CCR) Cryptosporidium and Giardia cyst reduction (not certified to NSF 53)
•granular activated carbon (14-(G)GAC)
•carbon wrap (14-(G)CW)
•in-line ice maker cartridges (14-IM)



NSF/ANSI/CAN Standard 42 - Drinking Water Treatment Units (Aesthetic Effects) - Covers point-of-use and point-of-entry (POU / POE) systems designed to reduce specific aesthetic, or non-health effects contaminants (chlorine, TDS, particulates) that may be found in drinking water that is considered to be microbiologically safe.
Change Out - Replacement filter cartridges have a limited service life. Changes in taste, colour and flow of the water (other liquid) being filtered are signals that replacement of the cartridge may be necessary.

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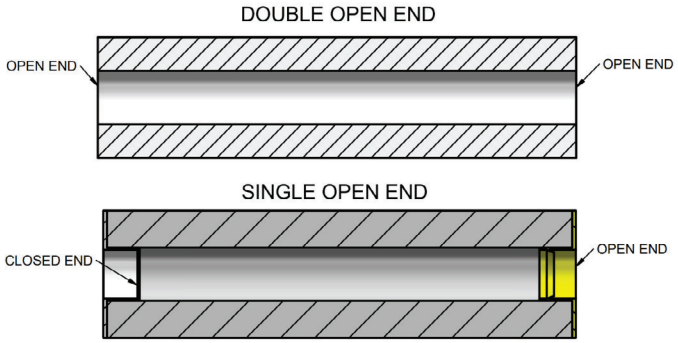
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STANDARD CARTRIDGE SIZES

Standard cartridges feature a Double Open End (DOE) configuration and fit most North American filter housings.

Compatible brands and systems include:
•Ametek / US Filter (The historical precursor to Pentek)
•American Plumber
•Culligan
•Whirlpool
•GE (General Electric)
•3M / Aqua-Pure
•Watts
•Hydronix
•Aqua Flo / Canature
•Axeon
•Omnipure
•NuvoH2O (For their standard 2.5” diameter systems)
•Home Master
•iSpring
•Express Water
•Apec Water Systems
•Geekpure



Not compatible with Rainfresh filter housings. Rainfresh standard housings require special Single Open End (SOE) filter cartridges.

Cartridge Diameters: 2-1/2” & 2-3/4”

5” Nominal Length — compact applications and limited-space installations
10” Nominal Length — standard cartridge length
20” Nominal Length — double-length cartridge for increased capacity

GIANT CARTRIDGE SIZES

Giant cartridges feature a double open end (DOE) configuration and are compatible with most North American filter housings including Rainfresh. Rainfresh giant housings use standard double open end (DOE).

Compatible brands and systems include:
•Culligan: Fits all heavy-duty models like the HD-950A or WH-HD200-C
•iSpring: Fits their entire lineup of high-flow whole-house systems (e.g., the WGB21B or WGB32B series)
•Home Master: Fits their high-capacity whole-house systems
•Aqua-Pure / 3M: Fits heavy-duty models like the AP801, AP801-C, or AP802
•American Plumber: Fits all heavy-duty lines like the W10-PR or W20-PR.
•Hydronix: Fits their HX-HF45 series of 10” and 20” wide-body sumps
•Watts: Fits their “Big Bubba” and heavy-duty generic commercial housings
•Geekpure & Express Water: Fits their heavy-duty multi-stage whole-house filtration arrays
•Apec Water Systems: Fits their 10” and 20” giant main-line filter housings
•Omnifilter: Fits their heavy-duty BF series housings (like the BF7 or BF35)
•Flomatic & neoPure: Universal commercial-grade giant filter sumps

Cartridge Diameter: 4-1/2”

10” Nominal Length — standard cartridge length
20” Nominal Length — double-length cartridge for increased capacity

Larger diameter/ longer cartridges provide greater flow capacity and filtration capacity. When selecting a cartridge, choose a flow capacity significantly higher than the system’s required flow rate. As a general rule, select a cartridge rated for approximately 2× the desired flow, with 1.5× potentially suitable for light sediment loads and up to 3× recommended for heavy sediment loads.

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14-(G)GAC SERIES GRANULAR ACTIVATED CARBON TASTE & ODOUR CARTRIDGE



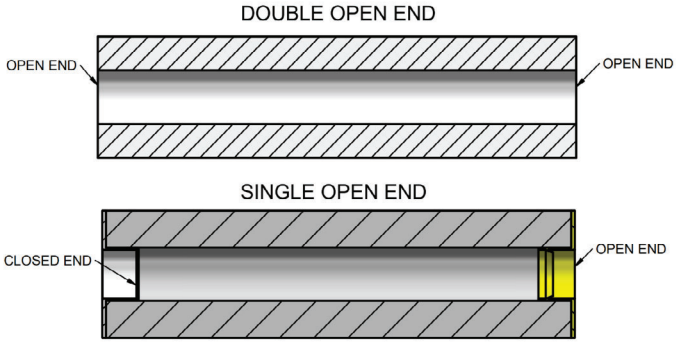
APPLICATIONS:

- Activated Carbon made from 100% premium coconut shell
- Capable of removing small amounts of sediment
- Suitable for residential, commercial and industrial applications
- Suitable for reverse osmosis system or Poin-of-Use (POU) water dispensing system

WARNING: Always Test Water - Never use sediment/ taste and odour cartridges with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the filtration system. These cartridges will not remove harmful contaminants/ bacteria. An NSF 53 certified water filter has been independently tested and certified by NSF International (or another accredited organization like the Water Quality Association) to reduce specific health-related contaminants rather than just aesthetic traits like taste or odour

FEATURES/SPECIFICATIONS:

- Canister design ensures maximum carbon contact time for removal of unpleasant taste and odour
- Low pressure drop and steady flow rates
- Integral post filter to remove small carbon fines and other sediment
- Polyether cushion to absorb against watter hammer spikes
- Designed to seal on a knife seat to prevent bypass
- Cartridges are compatible with the majority of brands of filter housings using double open end (DOE) **CAUTION:** Standard size cartridges are not compatible with Rainfresh Single Open End (SOE), however the giants are compatible with Rainfresh Double Open End (DOE) cartridges
- Efficiency:



CERTIFICATIONS:

- NSF/ANSI/CAN 42 - Drinking Water Treatment Units - Aesthetic Effects

*Covers Point-of-Use and Point-of-Entry (POU / POE) systems designed to reduce specific aesthetic, or non-health effects contaminants (chlorine, TDS, particulates) that may be found in drinking water that is considered to be microbiologically safe.

RATINGS:

- Operating Pressure: 10-120 PSI (0.7-8.2 bar)
- Operating Temperature: 35°F to 130°F (2°C to 55°C)

SHELF LIFE / STORAGE:

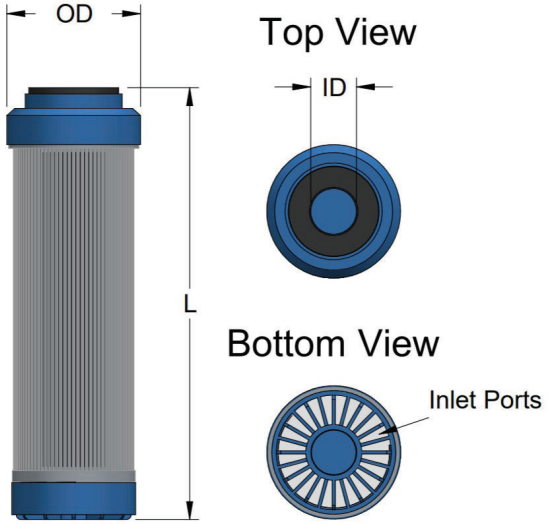
- Carbon cartridges contain activated carbon media designed to reduce taste, odour and certain contaminants. Exposure to moisture, humidity and airborne chemicals or odours during storage may affect the condition or absorption performance of the carbon media. Supplier specified shelf life is 2 years
- Unused filter cartridges should be stored in their original, unopened packaging until ready for installation. For -2PK part number cartridges, once the package has been opened, the remaining unused cartridge should be wrapped in plastic wrap or in a sealed bag to prevent exposure to moisture, dust and environmental contaminants

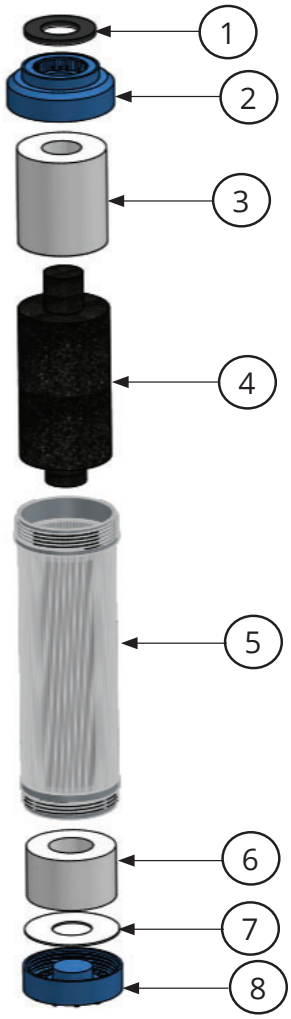
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MATERIAL LIST		
No.	**Item**	**Material**
1	Gasket	NBR (Nitrile Butadiene Rubber)
2	Top End Cap	Polypropylene
3	5 Micron Post Filter	Spun Polypropylene
4	Filter Media	Granular (Loose) Activated Coconut Shell Carbon
5	Filter Cartridge Shell	Polypropylene
6	20 Micron Cushion	Polyether Foam
7	Pre Filter Pad	Spun Polypropylene
8	Bottom End Cap	Polypropylene





DIMENSIONS											
Part No.	**Flow Rate PSI Drop @ GPM**	**Micron Rating**	**Service Lifespan**	**Inner Diameter (I.D.)**		**Outer Diameter (O.D.)**		**Length (L)**		**Weight**	
				in	**mm**	**in**	**mm**	**in**	**mm**	**lbs**	**grams**
STANDARD, NOMINAL SIZE 2-1/2" x 10"											
14-GAC1-05	5 PSI @ 1 GPM	5	4,000 Liters @ 80% Chlorine Reduction Rate	1.00	25.40	2.99	76.00	9.84	250.00	0.08	35
STANDARD, NOMINAL SIZE 2-1/2" x 20"											
14-GAC2-05	10 PSI @ 2 GPM	5	10,000 Liters @ 80% Chlorine Reduction Rate	1.00	25.40	2.99	76.00	20.00	508.00	1.96	870
GIANT, NOMINAL SIZE 4-1/2" x 10"											
14-GGAC1-05	10 PSI @ 2.5 GPM	5	10,000 Liters @ 80% Chlorine Reduction Rate	1.00	25.40	4.45	113.00	9.84	250.00	2.20	998
GIANT, NOMINAL SIZE 4-1/2" x 20"											
14-GGAC2-05	10 PSI @ 2.5 GPM	5	20,000 Liters @ 80% Chlorine Reduction Rate	1.00	25.40	4.45	113.00	20.00	508.00	4.88	2215

* Life span capacity is tested based on 2 ppm chlorine influent with 80% reduction as life definition and 50% reduction by NSF42 7.3.3. All followed by the test standard NSF42 7.3.3.
* The result of service lifespan and pressure drop could be varied in field.

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FILTER CARTRIDGE REPLACEMENT:

NOTES:

- **Micron Rating:** The lower the micron rating, the smaller the particle size cartridge filters remove.
- **Filter Life:** Filter life varies depending on usage and water conditions. Changes in tastem colour and flow of the water being filtered are signs that replacement of the cartridge may be necessary.
- **Flow Rates:** Actual maximum flow rates versus pressure drop will depend on cartridge selections and fluid viscosity.
- **Carbon Powder:** An activated carbon cartridge may contain a small amount of carbon dust, and a newly installed cartridge should be flushed with sufficient water to remove the fines before using the water.
- **Cellulose:** Cartridges containing cellulose may seem to disintegrate, produce a “sewer” or “rotten egg” odour, or form a black precipitate due to a reaction with some types of harmless bacteria. If you notice any of the above problems while using cellulose cartridges, switch to a synthetic cartridge.

Instructions

1. Shut off the inlet and outlet valves and depress the air release button on the housing the eliminate system pressure.

2. Place and bucket directly under the filter housing to collect water.

3. Using a filter wrench, remove the bowl by gently unscrewing counter-clockwise.

4. Remove and discard the used cartridge. Empty the filter bowl into the bucket.

5. Remove O-Rings and wipe clean of any dirt and lubricant. Inspect for damage and set aside. If O-Ring is damaged, discard and replace it.

6. Fill the bowl 1/3 of the way with water and add 1 Tbsp of bleach. Scrub thoroughly with a non-abrasive sponge or cloth to remove any build up of rust and scale particles. Rinse and ensure the O-Ring groove seating area is free of dirt.

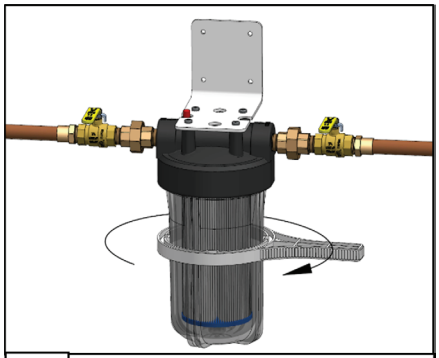
7. Remove protective packaging from new cartridge and place it into the bowl, fitting it over the post.

8. Lubricate new or cleaned O-Ring with a silicone based lubricant and place it into the groove. Make sure it is seated level and evenly.

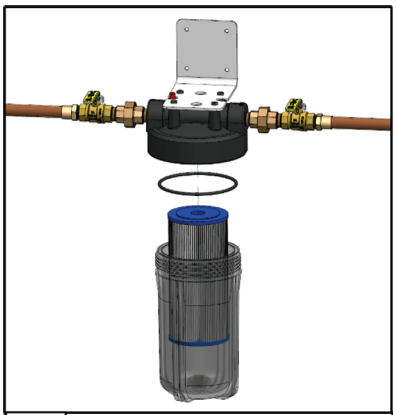
9. Install the bowl clockwise, turning slowly until the cartridge aligns with the post in the filter head. Hand tighten. Do not over tighten.

10. Depress and continue to hold the red air release button while slowly opening the inlet valve as water fills the housing. Continue until water flows out of the release button. Open the outlet valve slowly to purge air from the line.

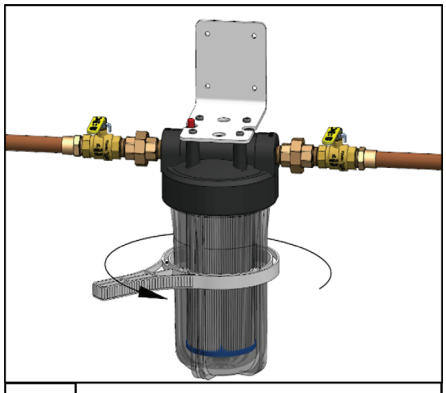
11. Flush the system for several minutes before use. Check for leaks.



3.	Remove the filter bowl.



5.	Remove and clean O-ring.



9.	Install filter bowl and hand tighten.

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