



Gemline

Economy Grade Automatic Backwash Carbon Filters

Built with Coconut Shell Carbons
and Catalytic Carbons



Features and Benefits

- Whole Home reduction of Organics, Chlorine and Chloramines on city water supplies. Designed to reduce the HIGH levels of chlorine and chloramines in the city water supply before they enter your softener.
- Electronic, Digital display, Automatic Backwash Control Valve with Bypass Valve & 1" MPT or 1.25" MPT plumbing adapter tail kit.
- Simple installation with inlet, outlet and drain. (System requires a drain line - not provided by manufacturer.)
- No chemical regeneration.
- Great solution for a low maintenance & cost-effective filter to be used as the Pre-filtration to a water softener that is installed on city water supply with Chlorine and/or Chloramines in the city water. These filters will prolong the life of your water softener resins. (Systems must be maintained properly with the carbon media being replaced on a regular schedule.)
- High levels of Chlorine and Chloramines will drastically reduce the life of your water softening resin & rubber components on all fixtures in your home.
- Carbon also reduces organics that can cause unpleasant tastes and smells in the water.
- The Media is a combination of Coconut Shell Carbon and Catalytic Coconut Shell Carbon mix.
- Average Carbon Life of 2-10 years, depending on filter size, raw water Chlorine & Chloramine levels and gallon usage of the filter. (Life expectancy calculation based off the size of the filter and raw chlorine and chloramine levels in the water = expected total gallons of treated water/life of the carbon filter media.)
- 10-year warranty on the mineral tank. (Against manufacturer defect only.)
- 5- year warranty on control valve parts. (Against manufacturer defect only.)
- All components carry ANSI NSF Certifications.
- The filter systems & filter media listed in this manual do NOT remove or kill bacteria. Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before and after the system.
- Not for installation in California.



Specifications and Model Numbers

MODEL NUMBER	BYPASS SIZE	CUBIC FEET	FOOTPRINT	SERVICE/ PEAK FLOW RATES
BF-ETB-CAR/CAT-1	1" MPT	1.0	10" Width X 52" Height	3 GPM/8 GPM
BF-ETB-CAR/CAT-1.5	1" MPT	1.5	10" Width X 62" Height	3 GPM/9 GPM
BF-ETB-CAR/CAT-2	1" MPT	2	12" Width X 60" Height	5 GPM/12 GPM
BF-ETB-CAR/CAT-2.5	1.25" MPT	2.5	13" Width X 62" Height	6 GPM/14 GPM

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Flow Rates listed above on SERVICE flows are conservative & are based off of the Carbon Manufacturer specifications. Best reduction of contaminants and best media performance is at SERVICE flow rates.

Peak Flow Rates listed are calculated & based off of the peak flow scenarios inside of a typical home. Peak flow rates should only be run for very short periods of times and not sustained as common flows in a home. The reduction of contaminants will be reduced at higher flow rates/peak flow rates.

Note: These filter systems will out flow the flow rates shown above if the demand from the home is at a higher flow rate than listed above; but, at these higher flow rates, it will drastically reduce the reduction of the contaminants in the water. It is very important to properly size the filter for the specific home application and potential sustained flow rates.

Catalytic- High Activated Carbon (CAT-HAC)

Clack Catalytic Activated Carbon is a high activity coconut shell based granular carbon that is specifically designed for the reduction of chloramines and hydrogen sulfide from potable water.

The catalytic activity of CAT-HAC makes it highly effective for the reduction of chloramines and hydrogen sulfide from potable water. Its large micropore volume also makes it particularly well suited for the removal of low molecular weight organic compounds and their chlorinated by-products such as chloroform and other trihalomethanes (THMs).

CAT-HAC has a surface area of 1,060 square meters per gram. This results in high efficiency and greater system economy. Clack has for many years provided activated carbon as a pre-treatment for other water purification systems as well as for use in individual treatment equipment for the removal of specific impurities.

CAT-HAC requires dissolved oxygen concentration of 4ppm (mg/L) to insure effective removal of iron and hydrogen sulfide.

CAT-HAC requires periodic backwashing to eliminate accumulated suspended matter and to re-grade the filter bed.

Coconut Shell - High Activated Carbon (CS-HAC)

Clack Granular Activated Carbon is designed for reduction of tastes, odors and dissolved organic chemicals from municipal and industrial water supplies.

One of the most common applications for Clack Coconut Shell-High Activated Carbon (CS-HAC) is the reduction of the undesirable tastes and odors present in many chlorinated water supplies. CS-HAC has been successful for many years in the reduction of free chlorine from water supplies. The end product is clean, fresh water with no objectionable taste or odor characteristics.

CS-HAC has a surface area of 1,050 square meters per gram. This

results in high efficiency and greater system economy. Clack has for many years provided activated carbon as a pre-treatment for other water purification systems as well as for use in individual treatment equipment for the removal of specific impurities.

CS-HAC requires periodic backwashing to eliminate accumulated suspended matter and to re-grade the filter bed. CS-HAC has an extremely high capacity but must be replaced when the filter bed loses the capacity for reduction of taste and odor. CS-HAC may be used in either domestic or industrial applications using gravity flow or pressurized filter vessels.

Both are manufactured from select grades of coconut shell coal to produce a high density, durable granular product capable of withstanding the abrasion and dynamics associated with repeated hydraulic transport, backwashing and mechanical handling. Activation is carefully controlled to produce exceptionally high internal surface area with optimum pore size for the adsorption of a broad range of low molecular weight organic contaminants and oxidizing agents like chlorine and ozone.

To obtain maximum efficiency of the activated carbon in the adsorption process, it is desirable to have the greatest possible surface area in the smallest practical volume. This is necessary because the rate of adsorption is proportional to the amount of surface area of the adsorbing media.

Both have an extremely high capacity but must be replaced when the filter bed loses the capacity for reduction of chloramines and hydrogen sulfide. And both may be used in either domestic or industrial applications using gravity flow or pressurized filter vessels.

Advantages

- CAT-HAC is an outstanding coconut shell based material for applications requiring chloramine, hydrogen sulfide and dissolved organic compound reduction. This product can be used for filtering water having a wide range of pH levels.

Physical Properties

- Color: Black
- Mesh Size: 12 x 40
- Bulk Density: 28 lbs./cu. ft.
- Effective Size: 0.55-0.75 mm
- Ash Content: Max 4%
- Iodine Number: 1,000 mg/g
- Moisture as packed: Max 5%
- pH 10

Certifications & Approvals

- NSF/ANSI Standard 61
- AWWA B604-96
- EN12915



Conditions for Operation

- Bed depth: 26-30 in. Freeboard: 50% of bed depth (min.) Empty bed contact time 3 minutes minimum
- Dissolved Oxygen Concentration 4 ppm (mg/L)
- Service flow rate: 5 gpm/sq. ft.
- Backwash flow rate: 8-10 gpm/sq. ft.
- Backwash bed expansion: 30-40% of bed depth
- Upon installation, backwash to remove carbon fines before placing unit into service

Advantages

- CS-HAC is an outstanding material for applications requiring taste, odor and dissolved organic chemical removal from water with suspended matter present. This product can be used for filtering waters having a wide range of pH levels.

Physical Properties

- Color: Black
- Mesh Size: 12 x 40
- Bulk Density: 28 lbs./cu. ft.
- Effective Size: 0.55-0.75 mm
- Ash Content: 2.5%
- Iodine Number: 1,000 mg/g
- Moisture as packed: 3%
- pH 10

Certifications & Approvals

- NSF/ANSI Standard 61



Conditions for Operation

- Freeboard: 50% of bed depth (min.)
- Service flow rate: 5 gpm/sq. ft.
- Backwash flow rate: 10-12 gpm/sq. ft.
- Backwash bed expansion: 30-40% of bed depth
- Upon installation, backwash to remove carbon fines before placing unit into service

Advantages of Both:

- Large surface area results in an exceptionally high capacity and efficiency.
- Balanced pore structure gives a more efficient adsorption range.
- Is very durable so losses due to attrition are kept to a minimum.
- Has a very high carbon, low ash content.
- Will impart a high "polish" to the filtered water.

Conditions for Operation on both:

- Water to be filtered should preferably be free of oil and suspended matter
- The water to be filtered should be relatively free of turbidity for maximum service life
- Water pH range: wide range

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Carbon Media Life

- The carbon media in this filter system **MUST** be replaced on a regular basis.
 - It is important to keep record of the dates that the carbon filter media has been replaced.
 - Average life of the carbon filter medias will range between 2 years and 10 years. Life of carbon medias are all based off of the incoming chlorine/chloramine levels and water usage in gallons in the home.
 - To figure out the life expectancy of the carbons, you must know what the raw chlorine/chloramine levels are in your water, along with knowing how much water your home is using per year.
 - The carbon media itself will give roughly: 1 million gallons of treated water- per cubic foot of carbon media @ 1 ppm of chlorine in the influent/incoming water.
 - It is **VERY** important to properly maintain this carbon filter system and replace the carbon media on a set service schedule.
- To help you better understand daily your water usages, you can refer to the following estimated average water usage per person, per day:
 - The national average of total water used per person- per day will range between 50 to 100 gallons per person per day.
 - That is an average of 18,250 to 36,500 gallons of water- per person- per year. Use the above averages, along with the incoming chlorine/chloramine levels, and size of carbon filter system to figure out the "Average Life" of your carbon filter medias:

Example:

- 3 people in your home. 300 total gallons of water usage per day
(3 × 100=300)
- 109,500 total gallons of water used per year
(300 × 365 = 109,500)
- 2 PPM of chlorine in your influent/incoming water.
- One cubic foot of carbon media
- Estimated life of carbon= 4.5 years
- Change your carbon media every 4 years

****Never overrun the service life of the carbon filter system. Not for installation in California.***



Manufacturer's Warranty - Filter Systems

Congratulations on purchasing one of the finest water filter systems on the market today.

To the original purchaser at the original installation site:

Your new water filter system carries a comprehensive warranty on some of the components on the filter system.

10-Year Warranty Items:

- Mineral tank only (not including filter media) carries a manufacturer's 10-year Warranty against manufacturer's defects and workmanship.

5-Year Warranty:

- Control valve head carries a 5-year Warranty against manufacture defects and workmanship, and not for wear items.

Warranty Exclusions:

- Defective parts will be repaired or replaced at manufacturer's option, F.O.B. Lindon, Utah.
- All service must be performed by an Authorized factory-trained technician.
- Manufacturer's warranty does not cover or include any freight or service charges.

- This warranty does not apply to filter systems that have been neglected, wrongfully applied, incorrectly installed, or have had hot water run through or back feeding through unit, or where a vacuum or reverse flow has happened.
- This warranty does not apply to filter systems that have been installed on water pressure below 40-PSI or over 90-PSI.
- Manufacturer is not liable for any freight, loss & damage, service and/or labor charges due to defective part.
- This warranty does not apply due to any of the following: Installation Errors, Neglect of Maintenance, Vacuum, Hot Water Back Feed, Flooding, Fire, Freezing, UV Exposure, Weather, Earthquakes, or any other natural disaster.

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