



HYDROCHAIN™ VORTEX FILTER AND FILTER CARTRIDGES

TWO-STAGE TECHNOLOGY TREATS ANY VOLUME OF STORMWATER

The HydroChain Vortex Filter and HydroChain Filter Cartridges combine sedimentation and an upflow filter process to remove liquid-bound and sediment-bound nutrients and metals, hydrocarbons, heavy metals and solids from stormwater. Both when installed as a unit (Vortex Filter) and installed separately (Filter Cartridges), a variety of filter options are available to fit a range of sites and stormwater volumes, including high-traffic areas and rooftops. The filters incorporate a variety of media to remove pollutants:

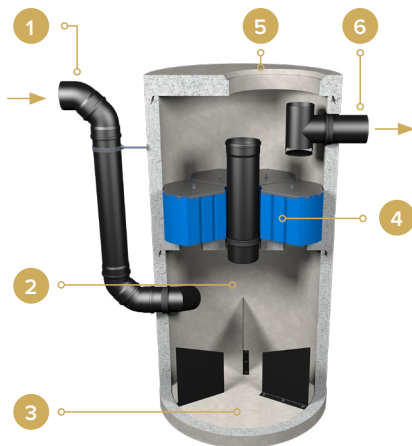
- Active coal for adsorption of hydrocarbons and herbicides
- Calcium carbonate for precipitation of dissolved phosphorous)
- Synthetic zeolite for ion exchange of heavy metals

PROTECTING THE ENVIRONMENT

Stormwater runoff is a significant cause of water pollution. Engineered to meet the most stringent North American and global standards, this separator removes contaminants and produces water clean enough to re-enter surface water, waterways and groundwater infiltration systems. The following certifications and approvals are in process:

- NJ Corporation for Advanced Technology (NJCAT)
- NJ Department of Environmental Protection (NJDEP)
- WA Department of Ecology (WADOE)

HOW THE VORTEX FILTER WORKS



1. The stormwater feeds into the lower end of the filter housing, or the bottom of the manhole or tank. The angled inlet pipe generates a radial flow pattern.
2. The hydrodynamic separator shifts turbulent stormwater into a radial laminar flow, which generates particle sedimentation.
3. The larger particles settle at the bottom of the housing, manhole or tank. Suspended and settled solids are periodically cleaned out.
4. In the central section of the unit, HydroChain Filter Cartridges filter out fine particles in an upward flow process. The majority of dissolved pollutants are precipitated and adsorbed.
5. The Filter Cartridges can be flushed from street level and, when needed, are easily exchanged. The cartridges are easily removed (with lifting eyes) through the access opening.
6. The clean water (above the filter elements) passes through an oil separator and flows through the outlet pipe into the groundwater or surface water.

NOTE: This shows the HCVF-5 model in a concrete manhole. The Vortex Filter is also available in a fiberglass manhole.

Installed in
manholes, tanks
or vaults

that are designed
to withstand
H-25/HS-25 axle loads

Sedimentation +
filtering

= high removal performance

Removal efficiency
verified

in both laboratory
and field conditions

Simple
Maintenance

- Check the sludge level
- Flush the filter

As needed:

- Remove solids as needed
- Replace filter cartridges at an average of every 3-5 years

FLEXIBLE DESIGN FOR STORMWATER SYSTEMS OF ANY SCOPE

The Vortex Filter can be installed in a concrete or fiberglass manway. Multiple Vortex Filter units can be installed in a series as part of a large stormwater management system. Any number of Filter Cartridges can be installed in a fiberglass tank or concrete vault. The Filter Cartridges are a component of the HydroChain Complete, which also includes the HydroChain Prime Separator and a HydroChain FRP Tank.

BACKED BY DECADES OF SUCCESSFUL INSTALLATIONS

- 20+ years of stormwater treatment technology
- Site-specific product design by in-house engineers
- Stringent quality-control of manufacturing
- Comprehensive installation instructions

FILTER CARTRIDGE REMOVAL PERFORMANCE

Material	Removal %
Trash and debris	> 90%
Total suspended solids	> 80%
Petroleum hydrocarbons	> 80%
Total heavy metals	> 80%
Total phosphorous	> 60%
Total nitrogen	> 40%



Contact watersales@shawcor.com for more information on specific material removal.

INSTALLATION AND PERFORMANCE DATA

MODEL Number = manhole diameter	Max. Treatment Flow Rate NJDEP – 80% TSS Cu. ft. per second / liters per second	Max. Filtration Capacity < 60% TSS Cu. ft. per second / liters per second	Max. Hydraulic Capacity Variable based on inlet size Cu. ft. per second / liters per second
HCVF-2	0.02 / 0.6	0.07 / 1.9	NA
HCVF-4 (four HCFC-4 cartridges)	0.12 / 3.5	0.39 / 10.7	1.24 / 35
HCVF-5 (six HCFC-5 cartridges)	0.28 / 7.9	0.85 / 24.0	2.79 / 79
HCFC-4 single cartridge	0.03 / 0.88	0.10 / 2.7	.31 / 8.8
HCFC-5 single cartridge	0.05 / 1.32	0.14 / 4.0	.46 / 13.2

Contact watersales@shawcor.com for information on configuring Vortex Filters and Filter Cartridges for projects of any size.

OUR ENGINEERS ARE READY TO DESIGN YOUR NEXT PROJECT

Flow rate for treatment → Volume to be treated → Treatment requirements → Engineered filter configuration

Shawcor Ltd. is a leading global company specializing in products, services and solutions for the water, energy, infrastructure and transportation markets. We continually pursue sustainable solutions that protect the environment, conserve resources and extend asset life. Headquartered in Toronto, Canada, Shawcor operates in over 20 countries and employs approximately 5,000 people.

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FOR NEW AND RETROFIT STORMWATER SYSTEMS

- Industrial and commercial sites
- State, provincial and municipal transportation facilities
- Housing developments
- Government facilities
- Highway lane expansion
- Parking ramps and lots
- Schools and athletic facilities
- Health care facilities
- Airports
- Retail fuel and truck stops
- Grocery stores and convenience stores