

High Capacity (HC) Kraken[®] Filter
Operation & Maintenance Manual



HIGH CAPACITY KRAKEN OPERATION & MAINTENANCE MANUAL

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OVERVIEW

This operation and maintenance (O&M) manual is for the High Capacity (HC) Kraken system. Please read the instructions and equipment lists closely prior to starting. It is important to follow all necessary safety procedures associated with state and local regulations. Please contact Contech for more information on pre-authorized third-party service providers who can provide inspection and maintenance services in your area or visit www.conteches.com/maintenance.



WARNING

Confined space entry may be required. Contractor to obtain all equipment and training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to always proceed safely.

SAFETY NOTICE AND PERSONAL SAFETY EQUIPMENT

Job site safety is a topic and a practice addressed comprehensively by others. The inclusions here are merely reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s), and Service Provider(s). OSHA and Canadian OSH, Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Service Provider's responsibility and outside the scope of Contech Engineered Solutions.



Safety Boots



Gloves



Hard Hat



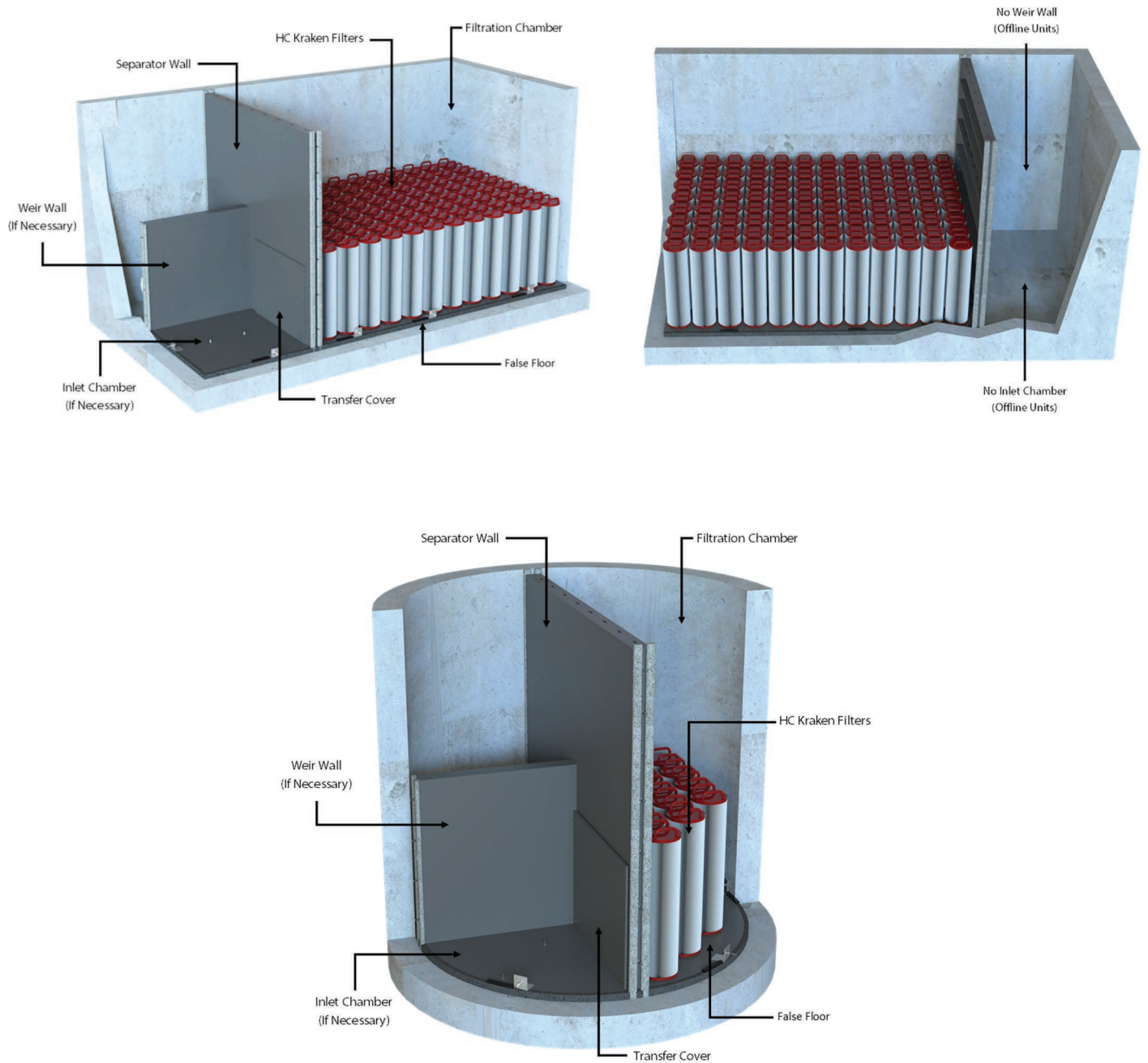
Eye Protection



Maintenance and Protection
of Traffic Plan

HIGH CAPACITY KRAKEN COMPONENTS LIST

The HC Kraken system comes in multiple configurations, including both Peak Diversion and offline vault units as well as manhole units. The components per the shop drawings (plans) typically include:



INSPECTION SUMMARY & EQUIPMENT LIST

Stormwater regulations require BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site-specific loading conditions. This is recommended because pollutant loading and pollutant characteristics can vary greatly from site to site. Variables such as nearby soil erosion or construction sites, winter sanding on roads, amount of daily traffic and land use can increase pollutant loading on the system. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided. Without appropriate maintenance, a BMP will exceed its storage capacity which can affect its continued performance in removing and retaining captured pollutants.

- Average inspection time is approximately 15 minutes. Always ensure appropriate safety protocol and procedures are followed.

The following is a list of equipment required to allow for simple and effective inspection of the HC Kraken:



Contech HC Kraken
Inspection Form



Flashlight



Tape Measure/Measuring
Pole



Access Cover Hook

INSPECTION AND MAINTENANCE NOTES

1. Following maintenance and/or inspection, it is recommended that the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics, and sediments to approved facility for disposal in accordance with local and state requirements.
4. The HC Kraken can be inspected through visual observation without entry into the system. Maintenance requires entry into the system, which may require confined space training based on state and local regulations.
5. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and nearby pedestrians from any dangers associated with an open access hatch or manhole.

INSPECTION PROCESS

1. Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other information (see inspection form).
2. Observe the inside of the system through the access hatches/covers. If minimal light is available and vision into the unit is impaired, utilize a flashlight to see inside the system and all its chambers.
3. Look for any out of the ordinary obstructions in the inflow pipe, inlet chamber (if applicable), filtration chamber, discharge chamber, or outflow pipe. Write down any observations on the inspection form.
4. Through observation and/or digital photographs, estimate the amount of trash and debris accumulated in the inlet chamber (if applicable). Utilizing a tape measure or measuring pole, estimate the amount of sediment accumulated in the inlet chamber (if applicable). Record this depth on the inspection form.
5. Through observation and/or digital photographs, inspect the condition of the filter cartridges. Look for excessive buildup of sediments on the surface and any buildup on top of the cartridges. Utilizing a tape measure or measuring pole, estimate the amount of sediment accumulated in the filtration chamber. Record this information on the inspection form.
6. Finalize the inspection report for analysis by the maintenance manager to determine if maintenance is required.

MAINTENANCE INDICATORS

After inspection is complete, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components or cartridges
- Obstructions in the system or its inlet or outlet
- Accumulation of floatables and/or sediment in the inlet chamber (if applicable) obstructing the transfer opening
- Accumulation of sediment in the filtration chamber of more than 4" on average
- Substantial buildup of sediments on the filter membrane of the filter cartridges or $>1/4$ " build up on top of cartridges, which will have a very dark appearance indicating that the membrane may be fully saturated with sediment

MAINTENANCE SUMMARY & EQUIPMENT LIST

The time has come to maintain your HC Kraken system. It is recommended that maintenance occurs at least three days after the most recent rain event to allow for drain down of the system and any upstream detention systems designed to drain down over an extended period of time. Maintaining the system while flows are still entering it will increase the time and complexity required for maintenance. All necessary pre-maintenance steps must be carried out before maintenance occurs. Once traffic control has been set up per local and state regulations and access hatches and/or covers have been safely opened, the maintenance process can begin. It should be noted that some maintenance activities require confined space entry. All confined space requirements must be strictly followed before entry into the system. In addition, the following is recommended:

- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and maintenance equipment.
- Ensure traffic control is set up and properly positioned.
- Prepared pre-checks (OSHA, safety, confined space entry) are performed.
 - A gas meter should be used to detect the presence of any hazardous gases prior to entering the system. If hazardous gases are present, do not enter the vault/manhole. Following appropriate confined space procedures, take steps, such as utilizing a venting system, to address the hazard. Once it is determined to be safe, enter the system utilizing appropriate entry equipment such as a ladder and tripod with harness.

The following is a list of equipment required for maintenance of the HC Kraken:



Contech HC Kraken
Maintenance Form



Flashlight



Access Cover Hook

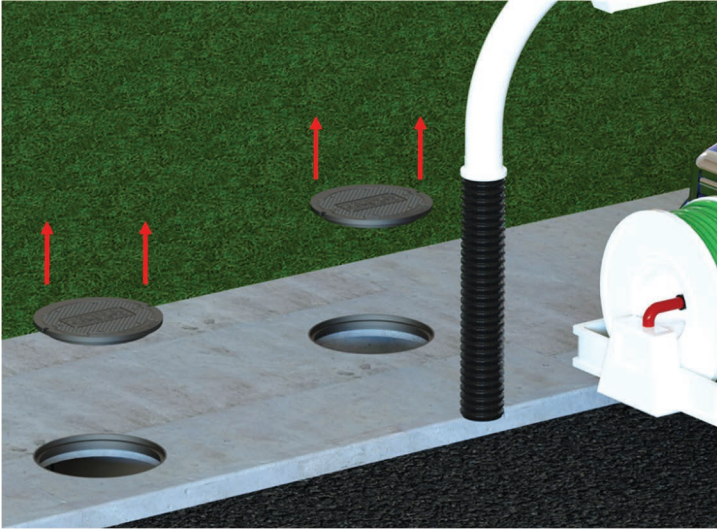


Trash Can



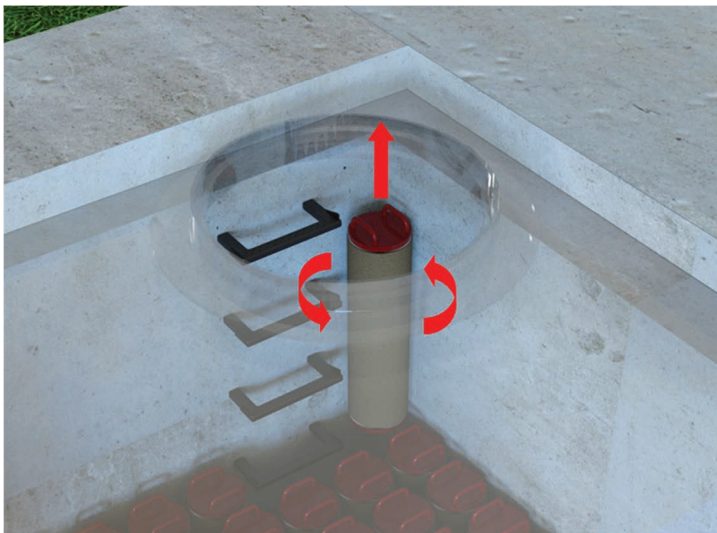
Vacuum Assisted Truck with
Pressure Washer

MAINTENANCE INSTRUCTIONS



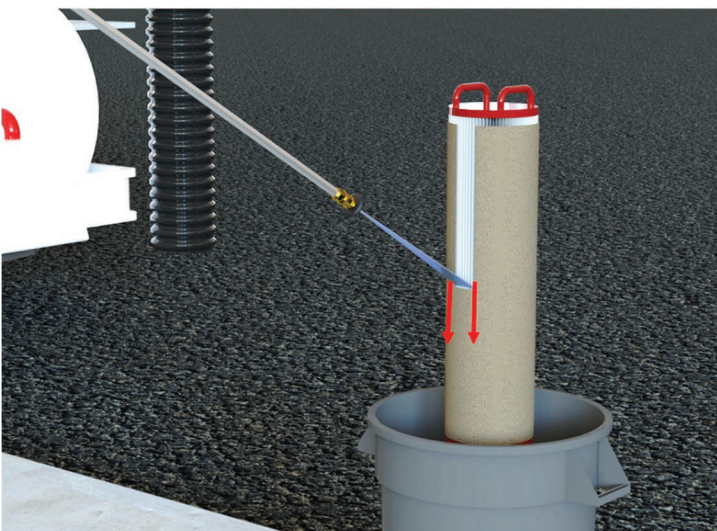
1. ACCESS HATCH/COVER REMOVAL

Upon determining that the vault/manhole is safe for entry, remove all access hatches and/or covers to enter the system. The maintenance technician should position themselves to stand in the treatment chamber. From here, the removal of the cartridges can commence.



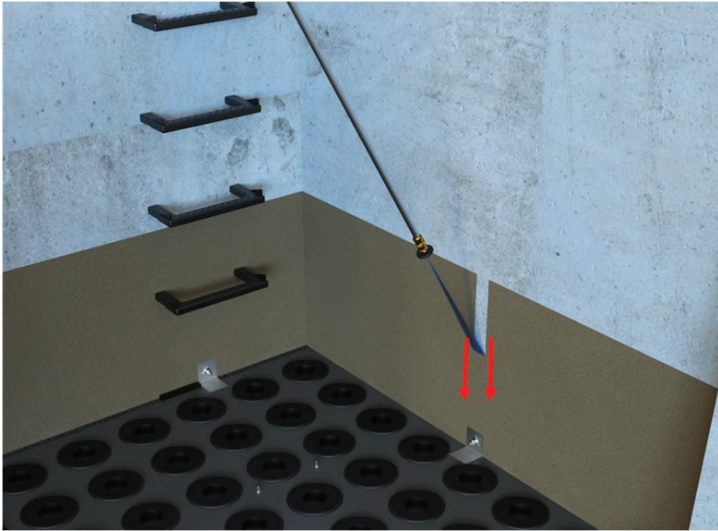
2. CARTRIDGE REMOVAL

These cartridges utilize a quarter-turn coupling. To remove a cartridge, simply grab the handles at the top of the cartridge, twist left to unlock the quarter-turn, and pull straight up. Removal of the cartridges should be done by hand with minimal effort and requires no tools.



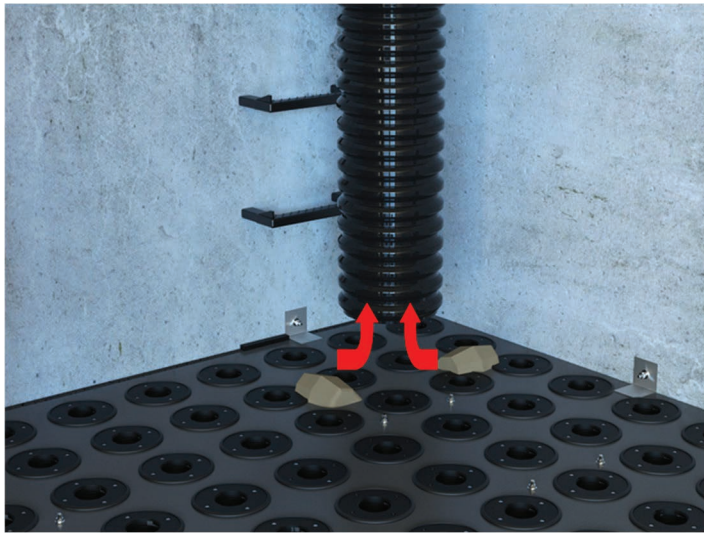
3. CARTRIDGE WASHING

Once the cartridges have all been removed, they should be lifted out of the vault/manhole and brought up to finish surface for cleaning. Using a large garbage can and the pressure washer from the vacuum truck (with low pressure nozzle, max 50 psi), each cartridge should be rinsed off from the outside to remove accumulated sediments and debris. For cartridges with heavy sedimentation caked on the filter membrane, fill up the garbage can with water and dunk the filter prior to pressure washing it. This dunking will help loosen sediment and debris. Cartridges should be washed over the trash can to contain all sediment accumulated on the cartridges. Set aside each cartridge once it is rinsed.



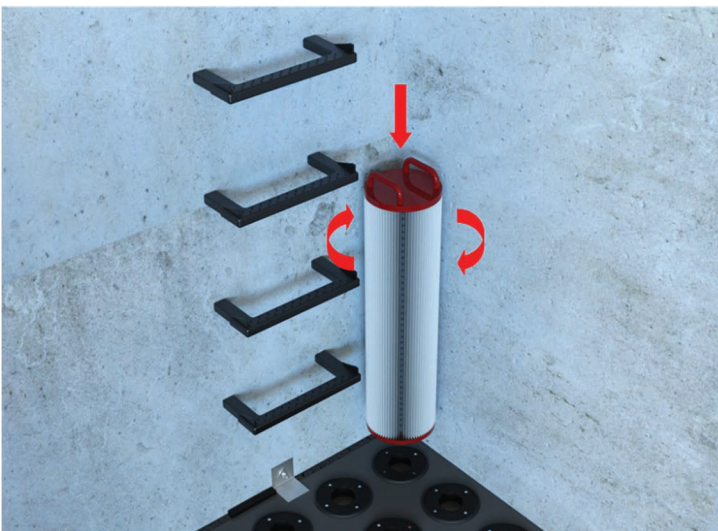
4. PRESSURE WASH SYSTEM CHAMBERS

Using the pressure washer, spray down larger pollutants accumulated on the walls of the inlet chamber (if applicable), filtration chamber, and discharge chamber. Be sure to wash down the separator wall and weir wall (if applicable).



5. VACUUM SYSTEM CHAMBERS

Vacuum out any sediment washed loose during **Step 4** in all chambers of the system. Be sure to vacuum the floor until the floor of each chamber is visible and clean. All removed debris and pollutants shall be disposed of following local and state requirements.



6. CARTRIDGE RE-INSTALLATION

After all cartridges have been washed at surface level and each chamber of the system has been properly cleaned, they can be replaced back into the vault/manhole. To do so, simply line up the quarter-turn tabs with the cutouts in the couplers on the floor, push the filter down, and twist right until the cartridges lock in place. Once properly locked in, the bottom of the cartridge should be flush with the top of the coupler. If experiencing difficulty, O-ring lubricant can be applied to gasket at the base of the cartridge prior to insertion. Exit the system and replace all access hatches and/or covers.

REPLACEMENT KRAKEN CARTRIDGES

As with all membrane filtration systems, at some point the cartridges will need to be replaced due to physical wear and tear. In the event that visible wear and tear of the membrane is observed during the inspection process, and it is determined that a cartridge must be replaced, contact one of Contech's Maintenance Team members at <https://www.conteches.com/maintenance> to order a replacement cartridge.

Inspection and Maintenance Report High Capacity Kraken Filter

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone () - _____

Inspector Name _____ Date ____ / ____ / ____ Time _____ AM / PM

Type of Inspection Routine Follow Up Complaint Storm Storm Event in Last 72-hours? No Yes

Weather Condition _____ Additional Notes _____

For Office Use Only

(Reviewed By) _____

(Date) _____
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Vault	Model #	Sediment Accumulation Sedimentation Chambers (lbs) & Filter Chambers (lbs)	Condition of Filter Cartridges & Were Filter Cartridges Cleaned	Structural Notes	Operational Per Manufactures' Specifications (If not, why?)
	Lat: _____ Long: _____					
	Lat: _____ Long: _____					
	Lat: _____ Long: _____					

Comments: _____



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SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

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