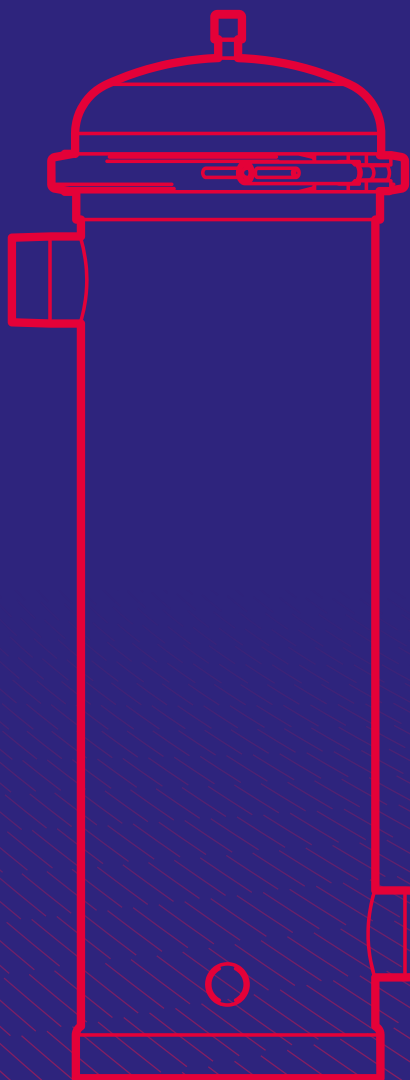




MagnaClean™

CMX

Installation and servicing



MagnaClean CMX™ Filter

The *MagnaClean CMX™* range of 316L stainless steel filters deliver adaptive, market leading water system filtration, offering a completely flexible, custom approach to addressing the needs of closed loop commercial and industrial heating and chilled water systems.

The filter range has been specifically designed for use within small to large commercial and heavy industrial applications as side-stream or by-pass filters. Each model within the range provides adaptive filtration options - magnetic only or combined magnetic and non-magnetic dual-filtration, combining powerful, neodymium magnets with superior spun-bonded filter cartridges and needlefelt bag filters.

Each *MagnaClean CMX* filter can be configured and re-configured according to specific system needs and requirements. At point of installation, they should be configured to filter magnetic debris only in order to capture as much magnetite from the system as possible while also ensuring that non-magnetic cartridge filters aren't needlessly blocked with magnetic material. Once magnetic capture rates begin to reduce, cartridge filters and filter bags from 5-50-microns in size can then be introduced to the filter housings to begin the capture of non-magnetic debris within the system.

Compliance Information

The Midi and Maxi filters within the *MagnaClean CMX* range conform to the requirements of Pressure Equipment Directive, (PED) Category 1 and relevant UK & EU product legislation. The Nano filter conforms to the requirements of PED 2014/68/EU and is designed and manufactured according to Sound Engineering Practice, (SEP) Article 4, Paragraph 3 and Table 4 of the PED.

NOTE: The *MagnaClean CMX* range does not comply with ASME Code, Section VIII relating to pressure vessels and as such, should only be installed in US States where regional or local exemptions to ASME Code, Section VIII relating to pressure vessels are in place. If you are in any doubt about compliance requirements for pressure vessels in your state/region, please consult your local inspector.

Important

CAUTION:

The ½" AAV is rated to 145 PSI and 110°C / 230°F and is supplied with a ½" butterfly ball valve and a female to female, (Midi & Maxi models) or male to female, (Nano model) ¼" to ½" adapter to allow the AAV to fit to the specific ¼" vent ports on each filter model. (Please see the Technical Drawings section at the rear of this document for further info). NOTE: The white EPDM O-ring supplied with the Nano filter housing vent port plug should be removed from the port plug and installed onto the male to female ¼" to ½" adapter prior to fitting. Teflon tape should also be applied to the ¼" to ½" adapter, ball valve and AAV threads to help ensure leaks are prevented.

Where this filter is being installed on a commercial heating system with a working temperature above 110°C / 230°F, the AAV provided should not be installed under any circumstances.



This *MagnaClean* filter contains a strong magnet. Keep away from all electrical devices, bank cards and other magnetic devices.



This *MagnaClean* filter contains a strong magnet. Caution should be taken at all times when handling if you have a pacemaker.



This *MagnaClean* filter is a pressurized device. Always release pressure before servicing.



This unit may be hot in operation. Handle with care.



THIS PRODUCT COMPLIES WITH CURRENT UK & EU PRODUCT LEGISLATION

Technical Specification

MagnaClean CMX			
Product Code	FL1-03-05010-US	FL1-03-05013-US	FL1-03-05014-US
Model	NANO	MIDI	MAXI
System Capacity (US Gallons)	11,412	24,727	85,592
Connection Size & Type	1" BSPP Female	2" BSPT Male	2" BSPT Male
Adapter Type	1" BSPP M to 1" NPT F Adapter	2" BSPT F to 2" NPT M Adapter	2" BSPT F to 2" NPT M Adapter
Vent Port Size & Type	¼" BSPP Female	¼" BSPT Male	¼" BSPT Male
Drain Port Size & Type	¼" BSPP Female	½" BSPT Male	½" BSPT Male
Material Specification			
Body	316L Stainless Steel		
Lid Clamps	304 Stainless Steel		
Finish	Polished		
NPT Adapters	316L Stainless Steel		
Design Specification			
Maximum Working Pressure	145 PSI		
Minimum Working Temperature	-10°C / 14°F		
Maximum Operating Temperature	150°C / 302°F without AAV or 110°C / 230°F with AAV		
Dry Weight (lbs)	<6.6	<25.1	<38.5

Box Contents

- MagnaClean CMX NANO**
- 1 x MAGNACLEAN CMX NANO FILTER
 - 1 x MAGNACLEAN CMX NPT ADAPTER PACK (1")
 - 1 x AUTOMATIC AIR VENT PACK
 - 1 x INSTALLATION & SERVICING GUIDE

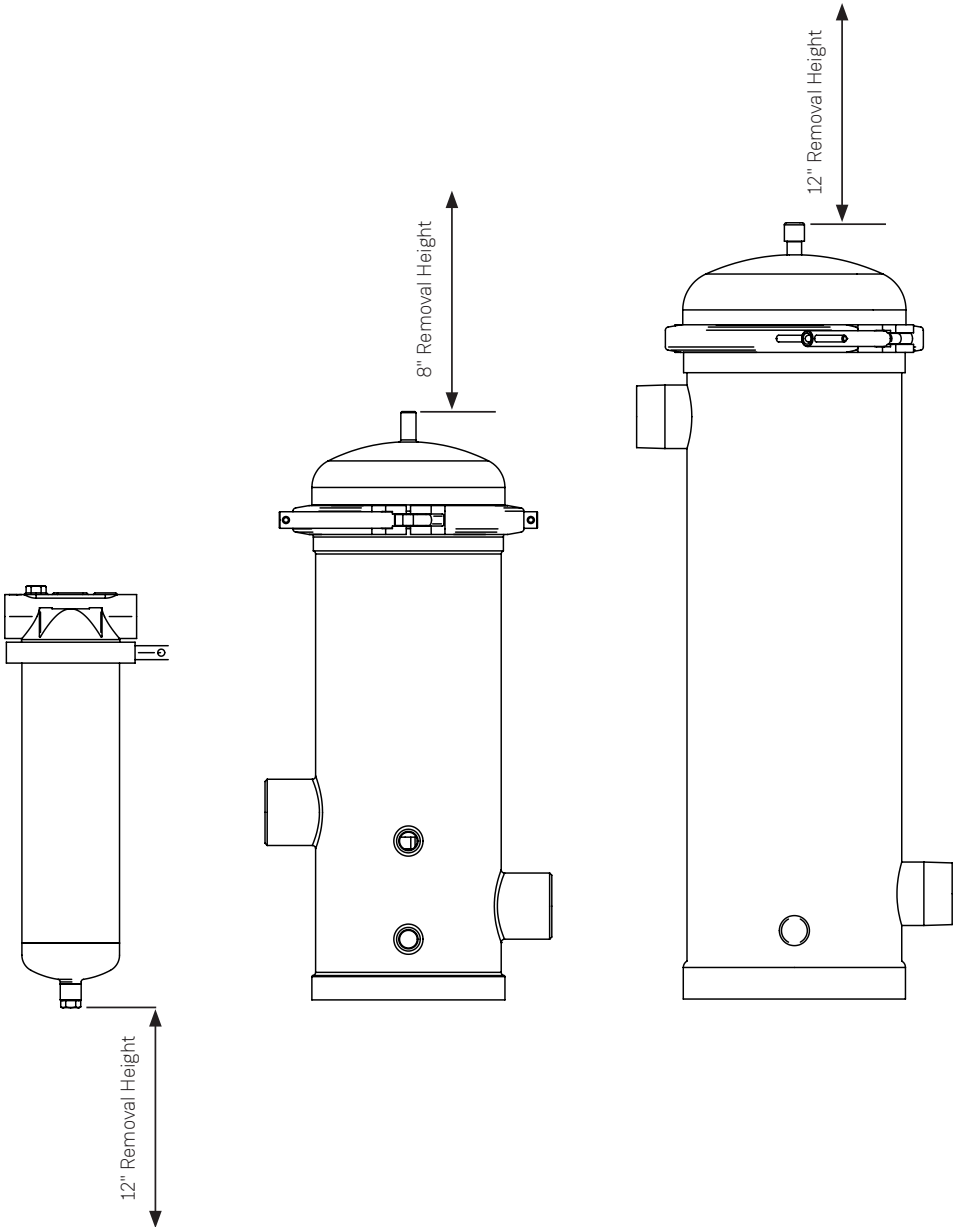
- MagnaClean CMX MIDI**
- 1 x MAGNACLEAN CMX MIDI FILTER
 - 1 x MAGNACLEAN CMX NPT ADAPTER PACK (2")
 - 1 x AUTOMATIC AIR VENT PACK
 - 1 x INSTALLATION & SERVICING GUIDE

- MagnaClean CMX MAXI**
- 1 x MAGNACLEAN CMX MAXI FILTER
 - 1 x MAGNACLEAN CMX NPT ADAPTER PACK (2")
 - 1 x AUTOMATIC AIR VENT PACK
 - 1 x INSTALLATION & SERVICING GUIDE

Installation & Maintenance

General Checks – Pre-Installation

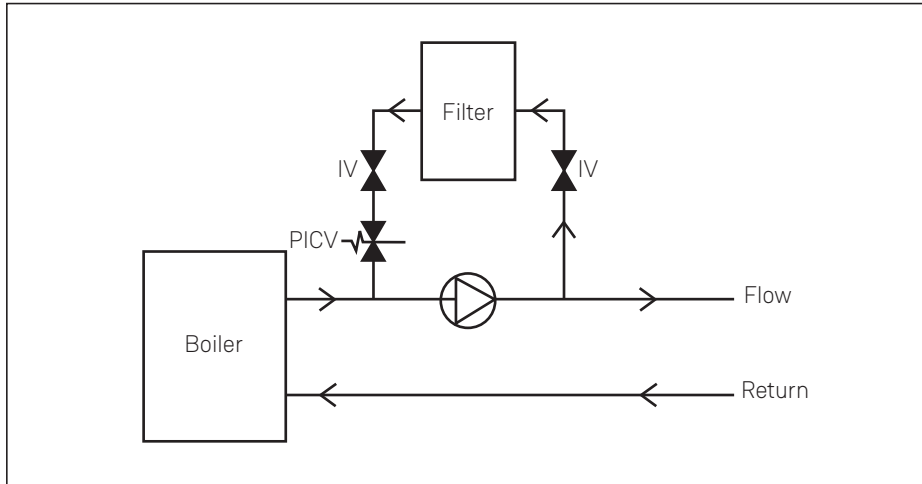
It is recommended that there is a clearance zone of approximately 16" around the device to allow for ease of access for product maintenance. Each device has a required minimum clearance to allow it to be opened for servicing.



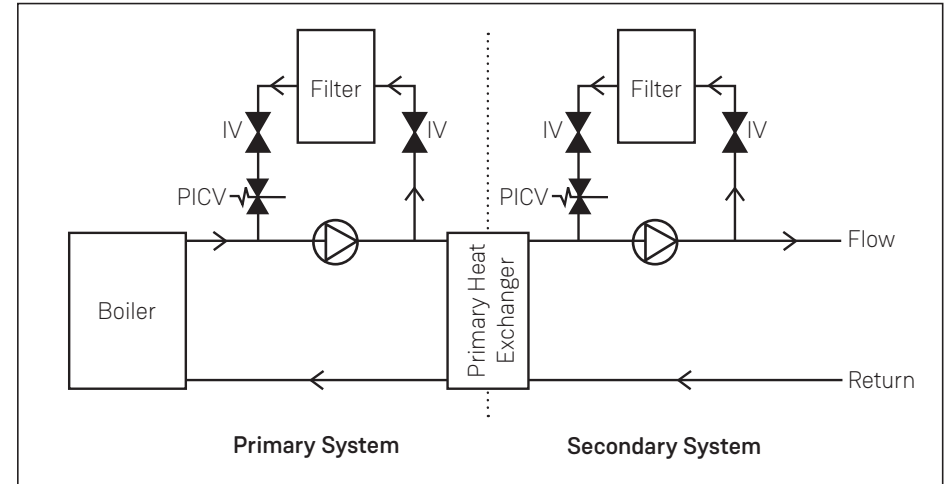
Installation

Correct installation of the filters is essential to ensure optimum operating performance of both the filter and the heating or chilled system. Typical side-stream or by-pass installation schematics are shown below for information purposes only. **KEY:** IV = Isolation Valve; PICV = Pressure Independent Control Valve. (PICV's are optional accessories, not essential).

Commercial Heating Systems

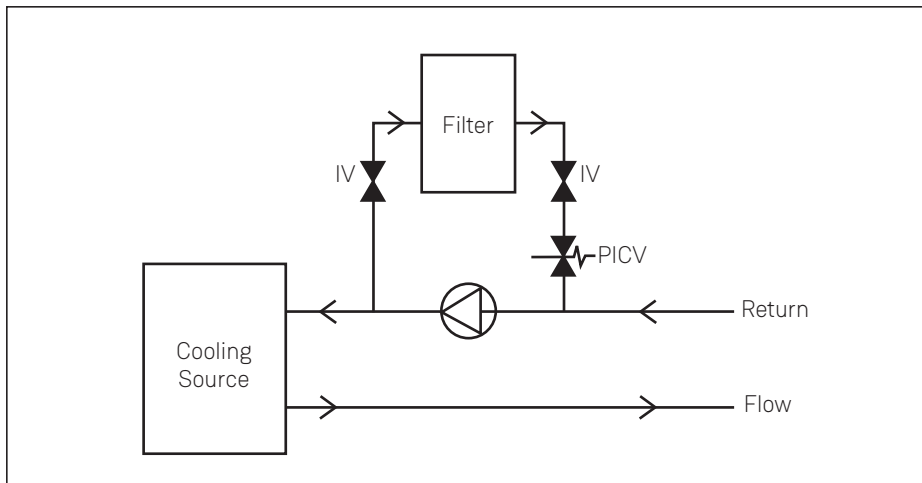


Commercial Primary & Secondary Systems



Once installation is complete, all isolation valves should be opened to allow system water to flow through the filter housing to check for any potential connection or pipework leaks.

Commercial Chilled Systems



Operation

Where the *MagnaClean CMX* filters are being retro-fitted onto an existing heating or chilled system, it is recommended that the filter is configured to filter magnetic debris only in order to capture as much magnetite from the system as possible, while also ensuring that the non-magnetic cartridge filters aren't needlessly blocked with magnetic material.

It is recommended that the filter housings are checked within the first few days after installation to review the level of magnetite capture and clean if required. Depending on the level of capture rate, service intervals can be adjusted as necessary.

Once magnetic capture rates begin to reduce, 5, 10, 20 or 50-micron cartridge filters (for Nano and Midi models) or 5, 10, 25 & 50-micron needlefelt filter bags, (for Maxi model only) can then be employed to begin the capture of any non-magnetic debris within the system. Within the *MagnaClean CMX* Midi filter, it is possible to combine different micron-sized filters, e.g. two 10-micron cartridge filters and one 20-micron cartridge filter can be combined to help maintain flow and pressure performance across the filter by reducing the likelihood of all three cartridges blocking with debris from the system.

We would suggest that both the magnet assemblies and filter cartridge(s)/bag are then checked once a month or as required.

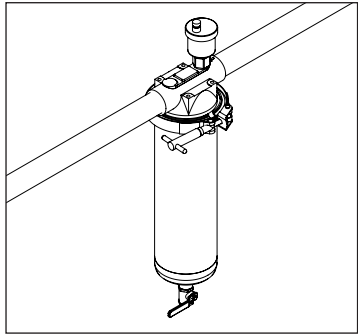
Recommended cartridge filter/bag filter micron usage:

Very dirty systems	-	50-micron
Medium systems	-	10, 20 & 25-micron
New/newly flushed systems	-	5-micron

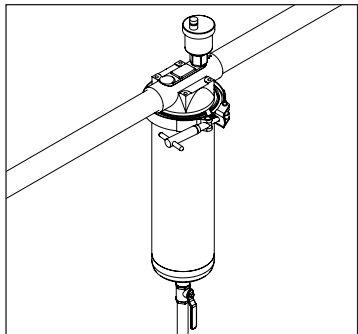
Servicing Instructions

The following steps should be followed when servicing each model of the *MagnaClean CMX* range:

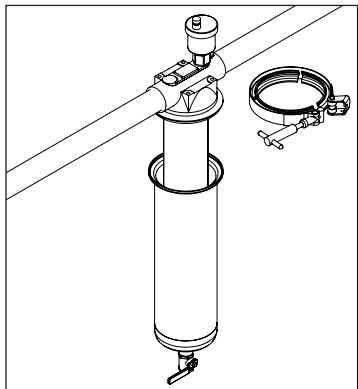
MagnaClean CMX - NANO



1. Isolate the filter from the main system.



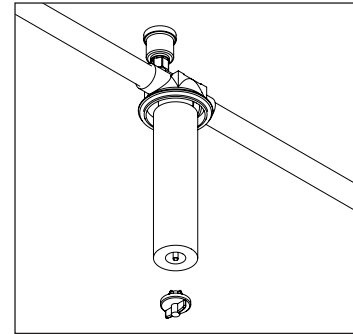
2. Connect a hose to the drain port and slowly open the drain valve, (drain port valves are not provided with the filter) to release any residual pressure remaining within the housing body. Drain the filter.



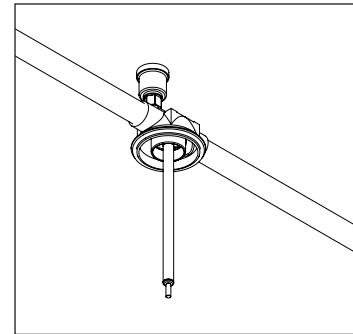
3. Loosen lid clamp, remove and lower the body away from the housing lid.



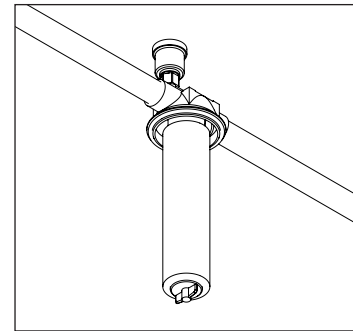
This unit may be hot in operation. Handle with care.



4. Unscrew compression nut, remove cartridge filter, (if installed) and put safely to one side.



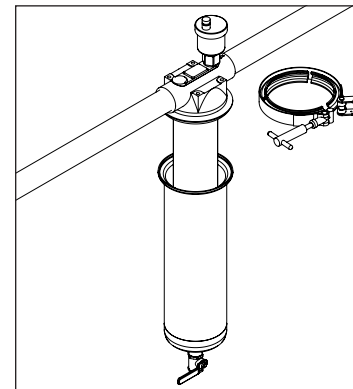
5. Clean the magnet assembly thoroughly.



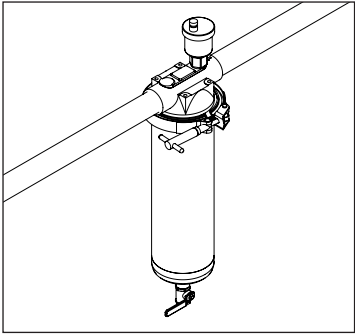
6. If filter cartridge is blocked with system debris, install a new filter cartridge and tighten the compression nut.



Used cartridge filters may be hot. Handle with care.

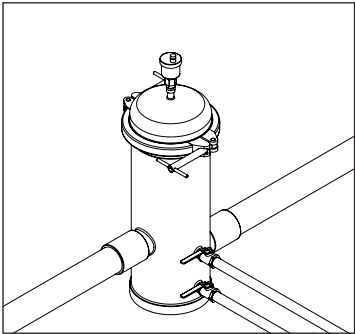


7. Match the filter body to the lid assembly, ensuring that the O-ring is positioned and re-installed correctly.

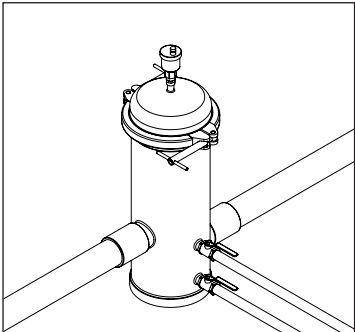


8. Re-assemble the lid clamp and tighten. Re-check all connections and open isolation valves.

MagnaClean CMX - MIDI

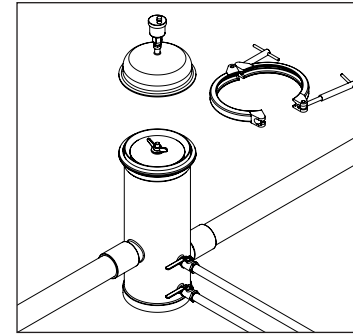


1. Isolate the filter from the main system.



2. Connect a hose to the upper drain port and slowly open the drain valve, (drain port valves are not provided with the filter) to release any residual pressure remaining within the housing body. Drain the filter.

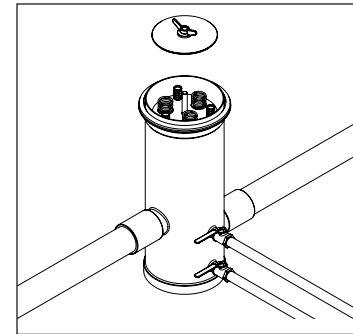
NOTE: In most instances, it will not be necessary to drain via the lower drain port as the water contained within this part of the housing body has already passed through the main filtration chamber and will not affect servicing of the filter.



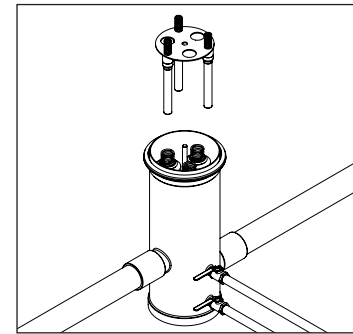
3. Loosen and remove lid clamp and carefully remove housing lid.



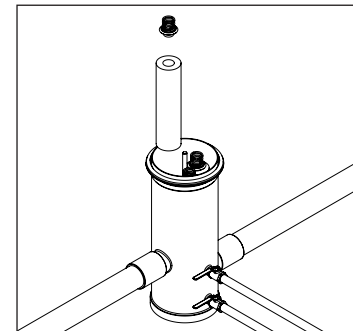
This unit may be hot in operation. Handle with care.



4. Undo the wing nut and remove the compression plate. Carefully remove the magnet assembly from the filter housing.



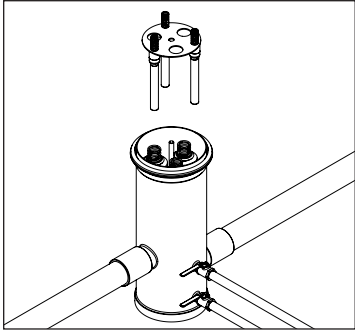
5. Clean all three magnets thoroughly.



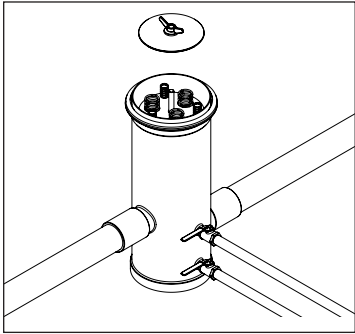
6. If filter cartridges are installed, carefully remove the spring and seal assemblies and the three cartridges from the filter housing. If the cartridges are blocked with system debris, install new filter cartridges.



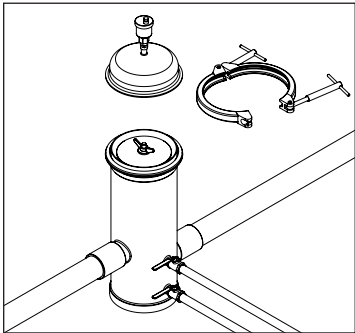
Used cartridge filters may be hot. Handle with care.



7. Replace the spring seal assemblies on top of each filter cartridge and re-insert the cleaned magnet assembly, ensuring that the spring seal assemblies are seated properly within the three magnet assembly apertures.

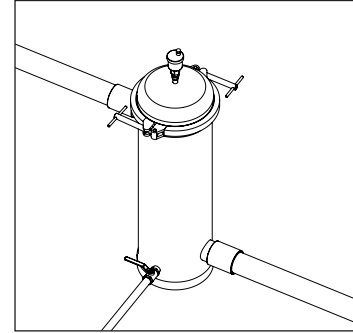


8. Replace the compression plate, tightening the wing nut to secure the whole assembly within the filter housing.

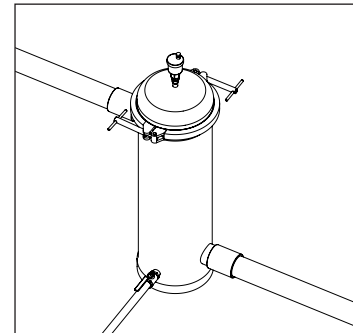


9. Replace lid, ensuring that the gasket is positioned and installed correctly. Re-assemble lid clamp and tighten. Re-check all connections and open isolation valves.

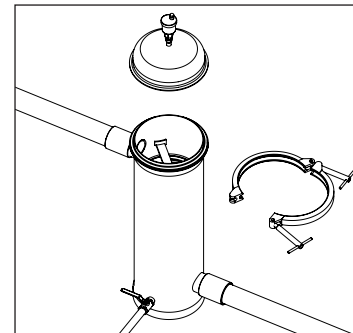
MagnaClean CMX - MAXI



1. Isolate the filter from the main system.



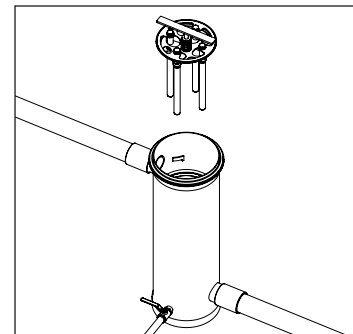
2. Connect a hose to the drain port and slowly open the drain valve, (drain port valves are not provided with the filter) to release any residual pressure remaining within the housing body. Drain the filter.



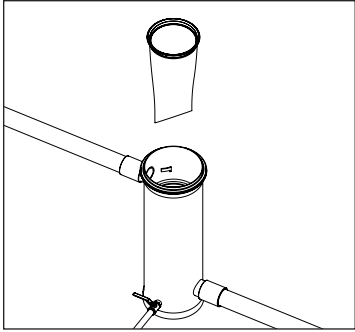
3. Loosen and remove lid clamp and carefully remove housing lid.



This unit may be hot in operation. Handle with care.



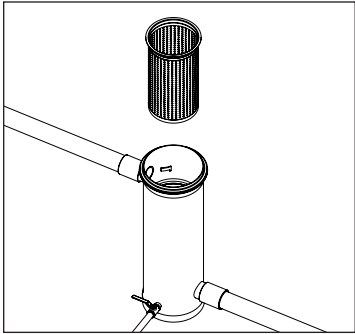
4. Push down and rotate the magnet assembly handle counter-clockwise and carefully remove from the filter housing. Clean all four magnets thoroughly.



5. If a bag filter is installed, carefully remove and put to one side.



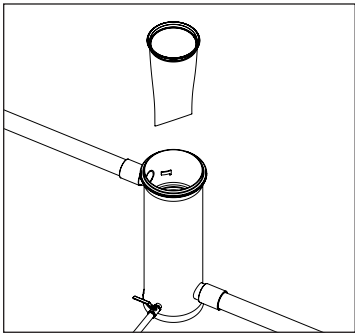
Used bag filter may be hot. Handle with care.



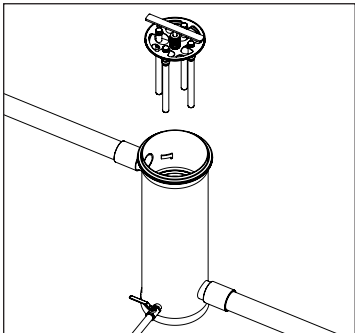
6. Remove the stainless-steel filter basket from the housing, clean thoroughly and then re-install into the filter housing.



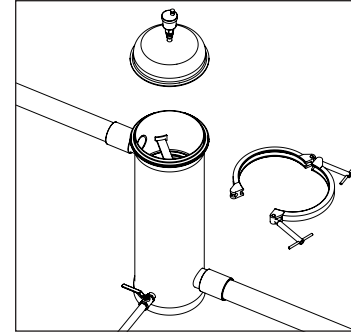
Basket filter may be hot. Handle with care.



7. If the bag filter is blocked with system debris, re-install a new bag filter



8. Re-install the magnet assembly, pushing downwards while rotating the assembly handle clockwise until it is secured under the tabs to secure the assembly within the filter housing.



9. Replace lid, ensuring that the gasket is positioned and installed correctly. Re-attach the lid clamp and fully tighten. Re-check all connections and open isolation valves to resume filter operation.

Chemical Dosing

To dose a system through a **Midi** or **Maxi** filter, the following steps should be taken:

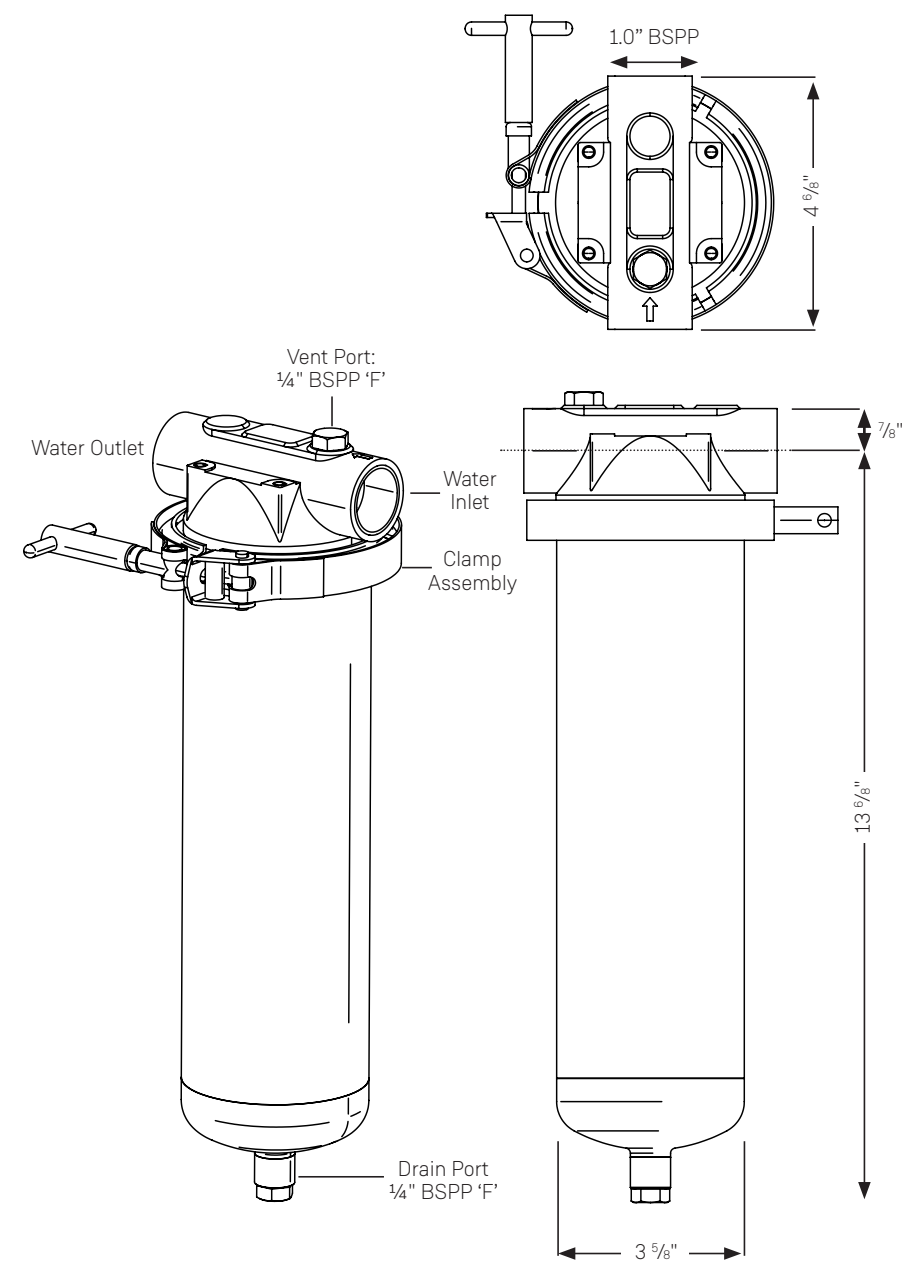
1. Isolate, vent and drain the filter housing.
2. Loosen and remove the lid clamp and remove housing lid.
3. Remove the magnet assembly, filter cartridges or filter bag & stainless steel basket as appropriate and put safely to one side.
4. Dose the filter housing with the required level of chemical(s).
5. Replace the lid, secure with the lid clamp and open the isolation valves to allow the chemical to be drawn into the system. If further dosing is required, re-isolate, vent and drain the filter housing and repeat the dosing process as necessary.
5. Once all chemical dosing is complete, if required, reinstall new filter cartridges, (Midi) or a new bag filter together with the stainless steel basket, (Maxi) and re-insert the (cleaned) magnet assembly.
6. Secure the magnet assembly in the filter housing as appropriate to the filter version being used.
7. Replace the lid, secure with the lid clamp and open the isolation valves to resume normal filter operation.

When dosing through a **Nano** filter, after isolating, venting and draining the filter housing, extra precautions should be taken when dosing chemical directly into the housing body due to the 0.6 US Gallon standing capacity and bottom loading design of the filter. If a cartridge filter is installed, this should be removed before dosing is attempted.

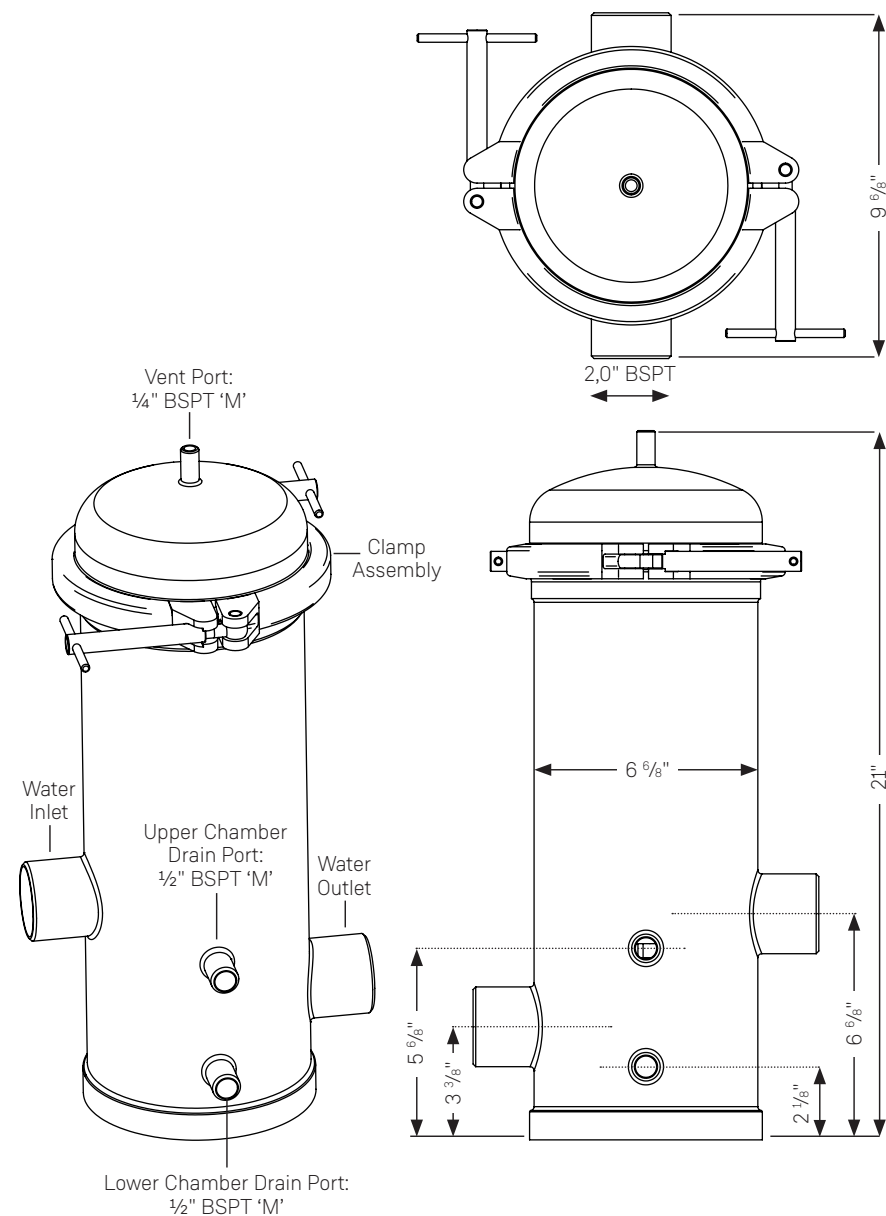
After the required level of chemical has been added to the housing body, the Nano filter should then be re-assembled as per the servicing instructions. Isolation valves can then be opened to allow the chemical to be drawn into the system. If further dosing is required, re-isolate, vent and drain the filter housing and repeat the dosing process as necessary.

Technical Drawings

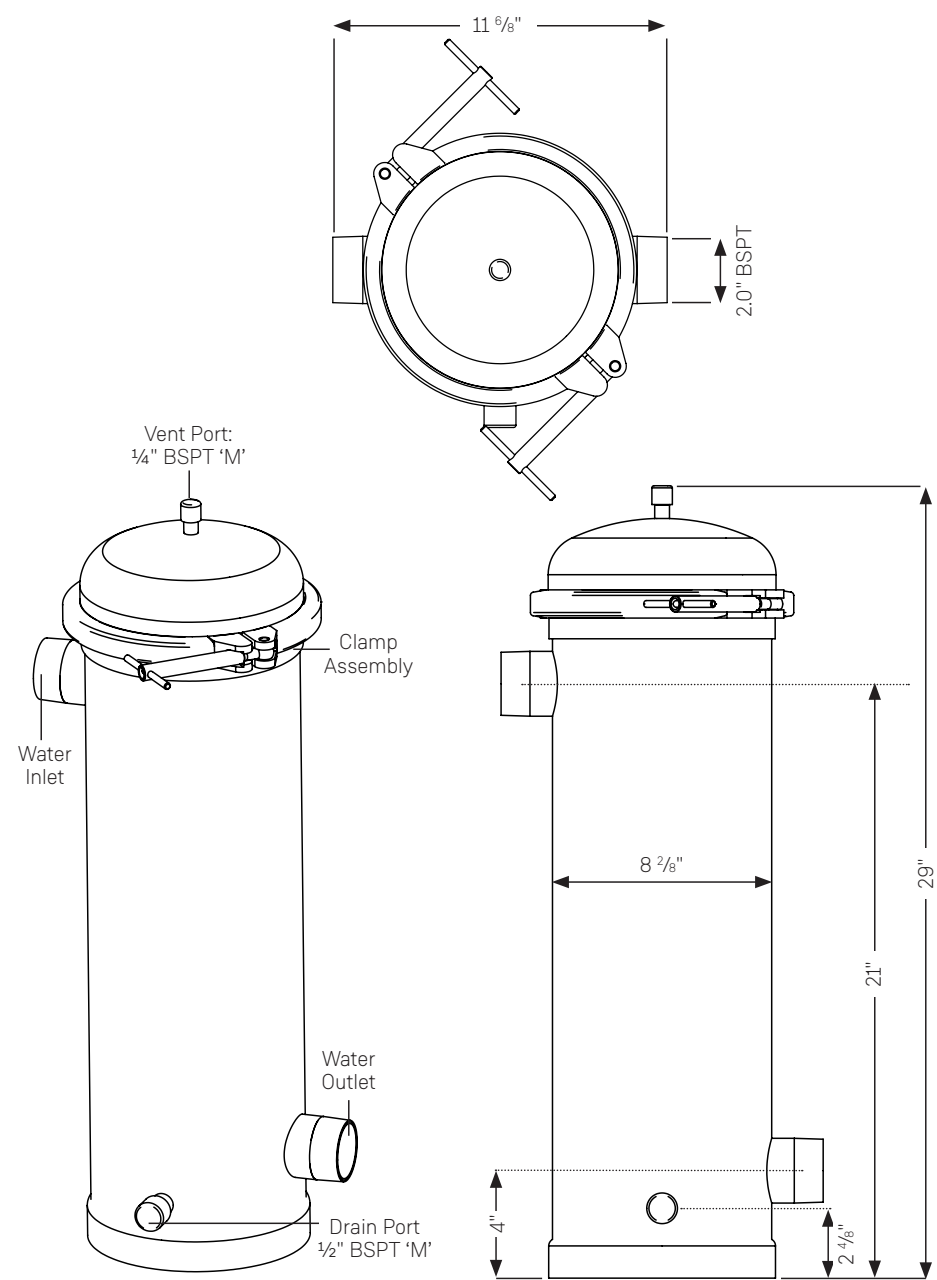
MagnaClean CMX - NANO



MagnaClean CMX - MIDI



MagnaClean CMX - MAXI





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