



COMMERCIAL SAND FILTER MANUAL

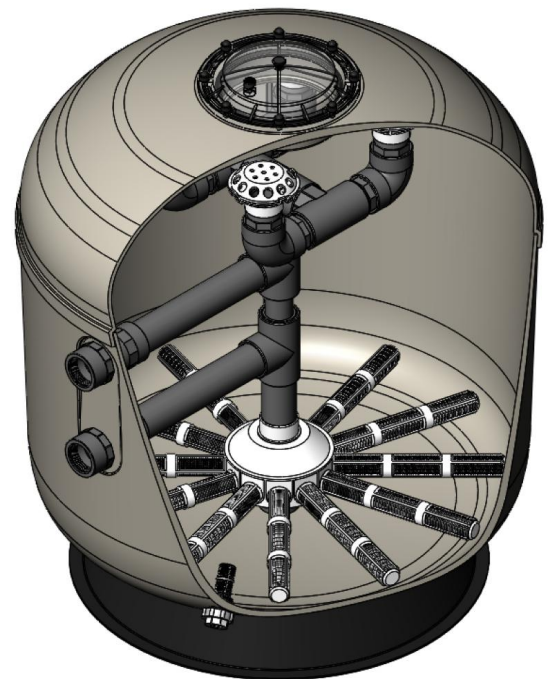


Models:

HCF230, HCF234, HCF236

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Section 1. Important Safety Instructions

Basic safety precautions should always be followed, including the following:
Failure to follow instructions may result in injury.

▲ This is the safety-alert symbol. When you see this symbol on your equipment or in this manual, look for one of the following signal words, and be alert to the potential for personal injury.

▲ **WARNING** warns about hazard that could cause serious personal injury, death or major property damage and if ignored presents a potential hazard.

▲ **CAUTION** warns about hazards that will or can cause minor or moderate personal injury and/or property damage and if ignored presents a potential hazard. It can also make consumers aware of actions that are unpredictable and unsafe.

The **NOTICE** label indicates special instructions that are important but not related to hazards.



▲ **WARNING** – Read, understand and follow all instructions in this owner’s manual and on the equipment. Failure to follow instructions can cause severe injury and/ or death.

NOTICE– This product should be installed and serviced only by qualified professionals.

▲ **WARNING** – Falling Hazard -To reduce risk of injury, do not permit children to use or climb on this product. Closely supervise children at all times. Components such as the filtration system, pumps, and heaters must be positioned to prevent children from using them as a means of access to the pool.

▲ **WARNING** – Pool and spa components have a finite life. All components should be inspected frequently and replaced at least every seven years, or if found to be damaged, broken, cracked, missing, or not securely attached.

▲ **WARNING** – Suction Entrapment Hazard. Suction in suction outlets and/ or suction outlet covers, which are damaged, broken, cracked, missing, or unsecured cause severe injury and/ or death due to the following entrapment hazards (symbols compliments of APSP):



Hair Entrapment – Hair can become entangled in suction outlet cover.

Limb Entrapment – A limb inserted into an opening of suction outlet sump or suction outlet cover that is damaged, broken, cracked, missing, or not securely attached can result in mechanical bind or swelling of the limb.



Body Suction Entrapment – A differential pressure applied to a large portion of the body or limbs can result in an entrapment.



Evisceration/ Disembowelment – A negative pressure applied directly to the intestines through an unprotected suction outlet sump or suction outlet cover which is damaged, broken, cracked, missing, or unsecured can result in evisceration/ disembowelment.



Mechanical Entrapment – There is potential for jewelry, swimsuits, hair decorations, fingers, toes, or knuckles to be caught in an opening of a suction outlet cover resulting in mechanical entrapment.

▲ **WARNING** – To Reduce the Risk of Entrapment Hazards:

- When outlets are small enough to be blocked by a person, a minimum of two functioning suction outlets per pump must be installed. Suction outlets in the same plane (i.e. floor or wall), must be installed a minimum of three feet (3') [1 meter] apart, as measured from center to center.
- Dual suction fittings shall be placed in such locations and distances to avoid “dual blockage” by a user.
- Dual suction fittings shall not be located on seating areas or on the backrest for such seating areas.

- The maximum system flow rate shall not exceed the flow rating of as listed on Table 1, or as qualified by the suction outlet covers.
- Never use Pool or Spa if any suction outlet component is damaged, broken, cracked, missing, or not securely attached.
- Replace damaged, broken, cracked, missing, or not securely attached suction outlet components immediately.
- In addition two or more suction outlets per pump installed in accordance with latest ASME, APSP Standards and CPSC guidelines, follow all National, State, and Local codes applicable.
- Installation of a vacuum release or vent system, which relieves entrapping suction, is recommended.



▲ WARNING – Hazardous Pressure. Pool and spa water circulation systems operate under hazardous pressure during start-up, normal operation, and after pump shut-off. Stand clear of circulation system equipment during pump start-up. Failure to follow safety and operation instructions could cause property damage, severe personal injury, or death. Before servicing pool and spa water circulation system, all system and pump controls must be in off position and filter manual air relief valve must be in open position. Before starting system pump, all system valves must be set in a position to allow system water to return back to the pool. Do not change filter control valve position while system pump is running. Before starting system pump, fully open filter manual air relief valve. Do not close filter manual air relief valve until a steady stream of water (not air or air and water mix) is discharged from the valve. All suction and discharge valves **MUST** be OPEN when starting the circulation system. Failure to do so could result in severe personal injury and/ or damage. Never operate or test the circulation system at more than 50 PSI maximum.



▲ WARNING – Separation Hazard. Failure to follow safety and operation instructions could result in violent separation of pump components. Strainer cover must be properly secured to pump housing. Before servicing pool and spa circulation system, all system and pump controls must be in off position and filter manual air relief must be in open position. Do not operate pool and spa circulation system if a system component is not assembled properly, damaged, or missing. Do not operate pool and spa circulation system unless manway cover is in seated position in filter body. All suction and discharge valves **MUST** be OPEN when starting the circulation system. Failure to do so could result in severe personal injury and/ or property damage.



- ▲ WARNING – ELECTROCUTION HAZARD.** High voltage electricity is present in the pool and spa equipment. High voltage electricity can cause shock and electrocution. Shock and electrocution can result in severe personal injury or death. All electrical wiring **MUST** be in conformance with all applicable local codes, regulations, and the National Electrical Code (NEC).
- Before performing any service or maintenance on electrical equipment turn off all electrical power.
 - Contact a licensed electrician or building inspector for information on local electrical codes for bonding requirements.
 - Verify water discharge from the filter manual air relief valve is directed away from electrical devices.
 - Do not locate pump controls over or near filter.

Section 2. General

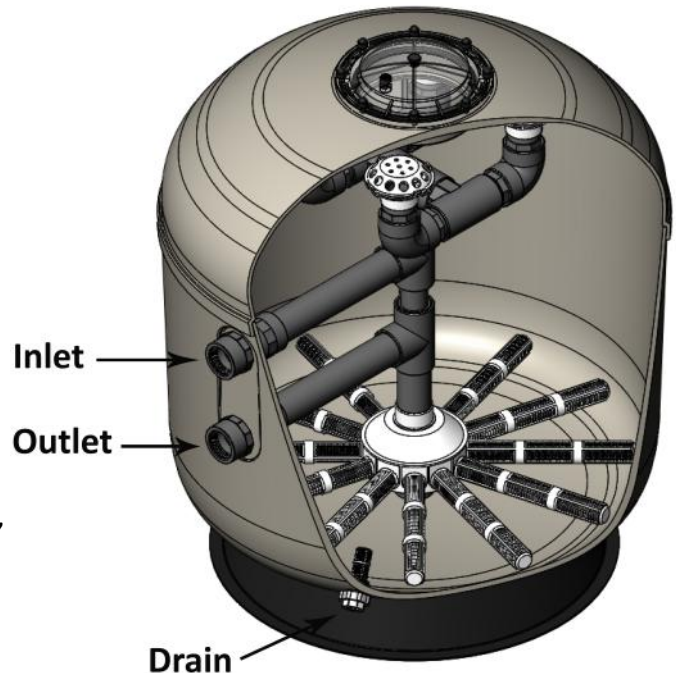
NOTICE – Standards for public and private pools vary by jurisdiction. It is the responsibility of the installer to be aware of these codes before designing, specifying or installing any piece of equipment for a swimming pool or spa.

2.1 Swimming Pool Filters

Filters are, without a doubt, the most important accessory used in the treatment of swimming pool water. Their purpose is to eliminate suspended particles from the circulating water, thus clarify the water.

The principle operation consists of passing the swimming pool water through a bed of sand which will retain particles that are suspended in the water.

It should be kept in mind that the filtration system consists of a number of elements, such as metering equipment, pumps, pool shell fittings and pipe work, which ensure the correct suction and return flows that will affect the resultant condition of the treated water.



The quality of filtration depends on various factors, the size and shape of the sand, the sand bed depth, characteristics of the sand such as granular size, density, etc. An important parameter is the water filtration rate. Other factors affecting the selection of a filter are the materials used for its construction, the working temperature, and the operating pressure.

2.2 Hayward® Filters

Manufactured from proprietary resins and fiberglass, they are virtually corrosion-proof. The internal fittings (diffuser and lateral system) are manufactured from PVC and ABS. They are unaffected by salt water and are manufactured for a working pressure up to 50 PSI and a maximum air temperature of 122° F.

2.3 Selection of Filters and Installation

2.3.1 Filter Characteristics

Choose the filter or filters that meet the local turnover time requirements. Remember it is possible to add filters together to obtain the correct amount of filtration area required. Note: when using multiple filters, they must be plumbed in parallel configuration. It is also a good idea to oversize the surface area required by 10% or more, this will allow for better water quality. When possible, use more than one filter in conjunction, this may allow one filter to be serviced while one is still functioning.

When sizing the plumbing for a filtration package be sure to keep in mind that the velocity of the water in the pipes is very important. Each country or state may have different maximums for velocity in the plumbing. The recommendations of APSP-7 should be followed.

2.3.2 Installation Characteristics

To insure selection of the correct pump size, the required flow must be obtained by taking the system head into consideration. The system head is the added difficulty to move water through the system presented by using, elbows, piping, tees, changes in elevation, etc.

It is recommended that the discharge from each pump is brought together in a single manifold to the filters. This will allow for greater flow rates for the backwash cycle.

- Install a check valve ahead of filter inlet to prevent contaminants from draining back into the pool.
- Install a check valve between filter and heater to prevent hot water from backing up into filter and damaging internal components.
- Disposal of “waste water” must meet local, state and national codes.
- See Chart on Page 8 for vertical and horizontal clearance.

2.3.3 Piping Connection Kits

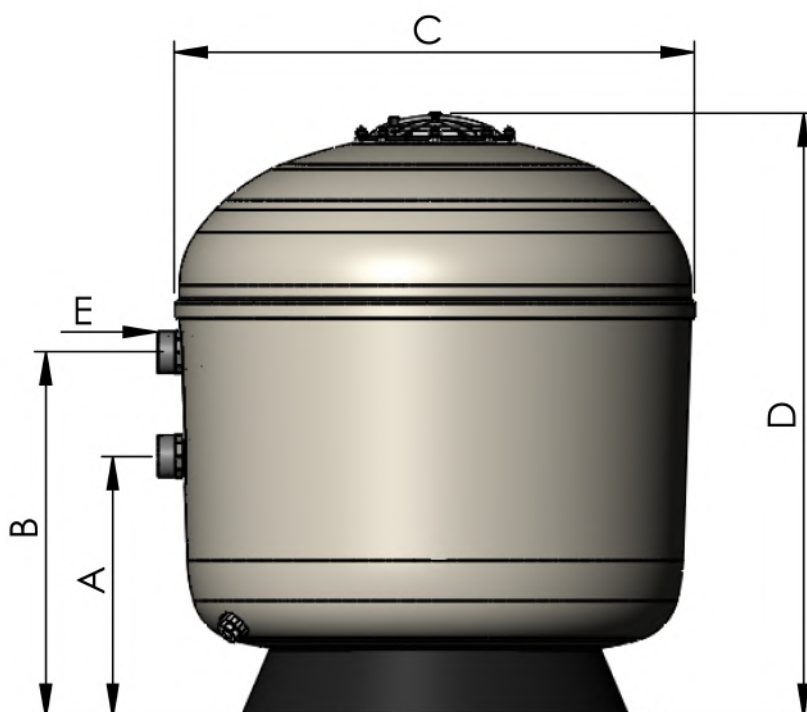
Hayward Recommended Filter Piping Connections:				
Filter Model:	Port Size	Multi-Port Valve	Piping Kit	Flange P/N
HCF230	2"	HCV275	W/ Valve	N/A
HCF234	2"	HCV275	W/ Valve	N/A
HCF236	2"	HCV275	W/ Valve	N/A

Section 3. Characteristics and Dimensions

3.1 Dimensions and Sand Requirements

Use only High Rate Sand No. 20 Silica Sand (.45mm - .55mm)

Figure 3-1



Filter Model Number	Dimensions (Inches)					Filter Area		Max Flow Rate		Filter Sand Qty (Lbs)	Clearance (Inches)	
	A	B	C	D	E	Sq. Ft.	Sq. M	GPM	LPM		Vertical	Horizontal
HCF230*	16.5	24.0	31.49	43.48	2	4.9	.46	100	378	600	18	18
HCF234	18.75	26.25	33.85	43.48	2	6.0	.56	120	454	750	18	18
HCF236	18.75	26.25	37.4	43.48	2	7.2	.67	143	541	900	18	18

* Pending confirmation of NSF test data

Section 4. Installation

4.1 General Installation Notes

NOTICE– This product should be installed and serviced only by a qualified professional.

Note: Filters are supplied in a box and on a pallet with accessories included. Due to their weight and size it is recommended that mechanical means be employed to move the filter into position. It is also very important to inspect the filters carefully before installing. Make note on the shipping paperwork if there is any damage to the packaging. FRP filters can be damaged during transportation and it is the responsibility of the installer to inspect at the time of delivery.

Damages to filters from transportation that are not noted on the bill of lading are not covered by Hayward's warranty policy and all costs to repair will be the responsibility of the owner.

Never put the sand into the filter until it is in its final working position and all prior steps are complete.

The filter should be accessible for periodic maintenance or media change. It is absolutely necessary to leave a minimum access space around the filter(s), as defined on page 7.

The equipment room should be well ventilated and provided with adequate drainage capabilities so that should an emergency occur, resulting in flooding from a pipe, filter or pump, the water can be easily removed to avoid property damage. If drainage cannot be supplied directly from the equipment room, consideration should be given to the installation of alternate system to remove water from the mechanical room, per federal, state and local codes.

4.2 Filter Installation

When moving the filter(s) into place, not use the manway cover or opening to maneuver the filter. Be sure to use care if moving by hand. Before continuing, be sure that the filter(s) are in the desired location with the connections facing the direction necessary for proper installation. It is also very important to make sure that the filter is sitting on a level, hard surface.

It is possible that during transportation, some internal components have loosened. It will be necessary to remove the filter manway cover and enter the filter, being careful not to break any of the connections. By hand, check the tightness of all the laterals in the bottom of the filter making sure they are firmly tightened. By hand, check the tightness of all the distributors in the top of the filter making sure they are firmly tightened.

4.2.1 Tank Positioning

Chalk lines are recommended for multiple tank installations and should be laid for positioning each tank.

Attention must be paid to the location and routing of the influent, effluent and waste line plumbing when planning the proper location of the filter system. The tanks must be level and parallel to each other or damage may occur to filter tanks, operating valves or connecting piping.

4.3 Installation of the Pressure Gauge

The pressure gauge assembly will come in a bag hanging from a diffuser within the filter. Remove all the parts from the bag and apply Teflon tape to all threaded connections. Thread the pressure gauge (1) into gauge tee (2). Screw vent valve (3) into other side of the gauge tee (2). Thread nipple (4) into gauge tee (2) and into manway cover (not shown).

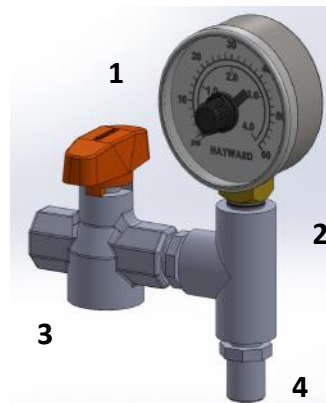
Once the system is started, open vent valve (3) to bleed any air that might have been trapped in the filter during startup.

1 - Pressure Gauge

2 - Gauge Tee

3 - Bleeder Valve

4 - Nipple



4.4 Removing the Manway Cover

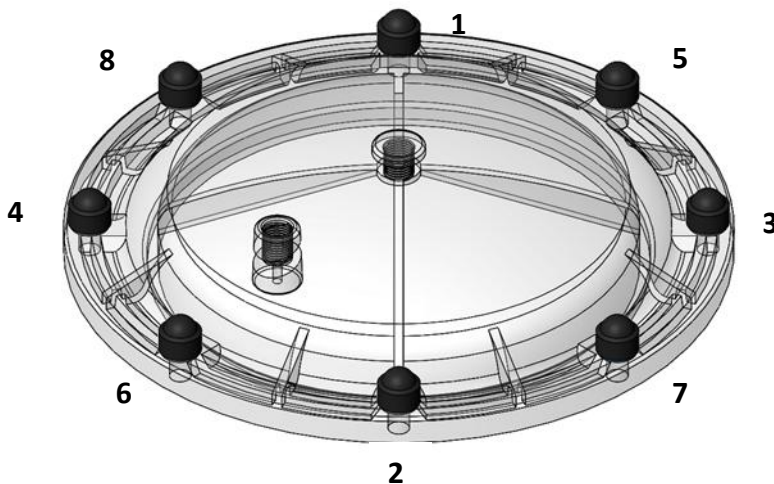
NOTICE- This product should be installed and serviced only by a qualified pool professional.

For qualified pool professionals only: If filter manway cover needs to be serviced, follow these instructions carefully:

1. Turn off all system circulation pumps and all electrical power in the equipment controls.
2. Set all system valves in a position to prevent water from flowing to the filter.
3. The manual air bleed valve (vent valve) must be placed in the OPEN position. Wait until all water leakage has stopped.
4. Remove the nut covers, nuts and washers. Keep them in a safety place.
5. Remove the polycarbonate manway cover and o-ring, ensuring the o-ring does not fall into the filter.

4.5 Re-installing the Manway Cover

1. Inspect the manway cover and o-ring, replace as needed.
2. With a clean cloth, wipe upper filter body manway seat. Remove all dirt and debris.
3. Seat the o-ring into the groove on the bottom of the manway cover.
4. Align the manway cover (ensuring o-ring is intact) with cover screws and lower onto manway seat.
5. Place a washer and nut over each manway screw, securing nuts loosely by hand.
6. Sequentially tighten manway cover nuts in the order indicated in the diagram below to 35-40 in. lb. Please note that the lid is sealed by the o-ring, DO NOT OVERTIGHTEN NUTS.
7. Place the nut covers over the nuts.
8. Verify that the air bleeder discharge points away from electrical equipment.



Manway Cover Nut Tightening Sequence

4.6 Filter Testing

Before adding any sand to the filter, it is very important to test the system with water only. All filters are tested with high pressure before leaving the factory. It is important to test the system without sand first, to check for leaks. Open the air bleeder valve. Fill the system with water. When water, not water and air, is discharged from the air bleeder valve, close the air bleeder valve. Run system as normal and check for leaks. If there is a problem with the test, contact Hayward customer service immediately. If sand is added before the test and there is a problem with the filter, the sand will need to be evacuated in order to inspect for potential damage. Hayward® will not be responsible for the removal and replacement of the sand for warranty or repair work, nor will Hayward provide labor to evacuate and replace the sand for repair work done due to transportation or installation damage. This is also a good chance to check all of the system plumbing. Do not drain the water from the filter after the testing sequence.

4.7 Installation of the Sand

▲ CAUTION - After testing has been finished and the system is 100% operational, add the filtration sand required. Use #20 silica sand (.45 - .55 mm). Open the vent valve, remove the manway cover and seal from the filter. See section 4.4 (page 11). Ensure the filter is full of water up to the inlet port. The proper amount of sand is listed in Fig. 3-1, page 8. If a diffuser head is directly underneath the manway opening, cover it with plastic and tape to prevent sand from entering the plumbing.

Notice - Remove any plastic and tape from the diffuser after the sand is poured in the filter and before starting the system.

Now, replace the manway cover and seal into the filter tank. See section 4.5 (page 11). Be sure that the manway cover is free of debris. If the manway cover is not free of sand, the seal will not seat properly and could cause the filter to leak at the manway cover. Use the air bleeder valve to remove air from the filter. Put the filter valves into the backwash mode, turn the pump ON, (see next section) and run for about 3 to 5 minutes. This will level the sand inside the filter. Turn pump OFF, put the valves into filter position and the system is ready for operation.

Section 5. Normal Operation

5.1 Filtration

Note: Hayward Commercial offers a complete line of valves and connection kits for the Hayward line of Commercial Pool Filters.

Use the Hayward 2" Multi-Port valve (HCV275) for the HCF230, HCF234, HCF236 filters.

With the pump turned OFF, arrange the valve(s) for filtration. Start pump, open air relief vent valve until solid stream of water is coming out. Close the vent valve and read the pressure gauge. This is the normal start up pressure when the filter sand is clean. Make a note of the start up pressure.

When the pressure gauge shows a pressure rise of 8 to 12 psi above the start up pressure, it is time to backwash the filter.

5.2 Backwash

NOTICE – Check the water level in the skimmer opening before and after backwashing. Replace water after backwashing to at least 2 inches above the bottom of the skimmer opening.

To backwash the filter, stop the pump, set the valve(s) into the "Backwash" position and restart the pump. The backwash cycle should be run for 3 to 5 minutes. Once backwash is complete, turn pump off and set valve(s) to the "Filter" position and start pump.

▲ CAUTION- Pressure Surge Hazard- Failure to turn off filter pump before changing valve position can result in personal injury or property damage. It is very important to turn off the filter pump(s) prior to changing valve(s) position.

Section 6. Changing of the Sand

The procedure for changing the filter sand is as follows:



1. **WARNING** - Turn pump(s) OFF. Open vent valve. Close necessary valves to isolate filter.
2. Remove manway cover and seal from filter. See section 4.4. Open drain port to drain the water from the filter.
3. Using a shop vacuum or a small bucket remove the sand.
4. Using a hose, spray the sand to loosen if necessary.
5. Clean remaining sand from the walls as best as possible with a hose and vacuum.
6. Add the new sand as required in Figure 3-1 (Page 8) of this manual.
7. Replace the manway cover and seal. See section 4.5 (Page 11).

Section 7. Winterization



Where freezing can occur, be certain to drain the water from the filter tank prior to freezing conditions.

Section 8. Head Loss Tables

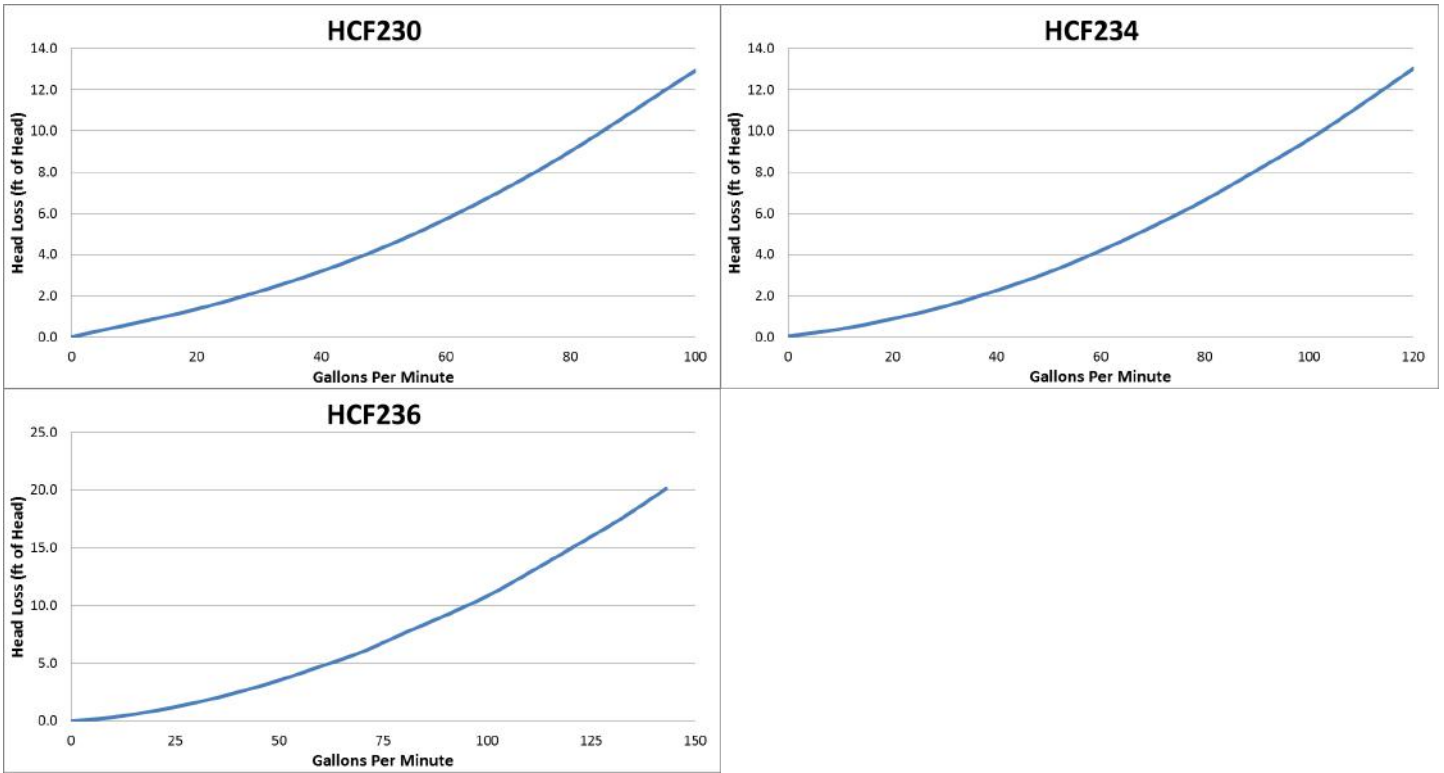


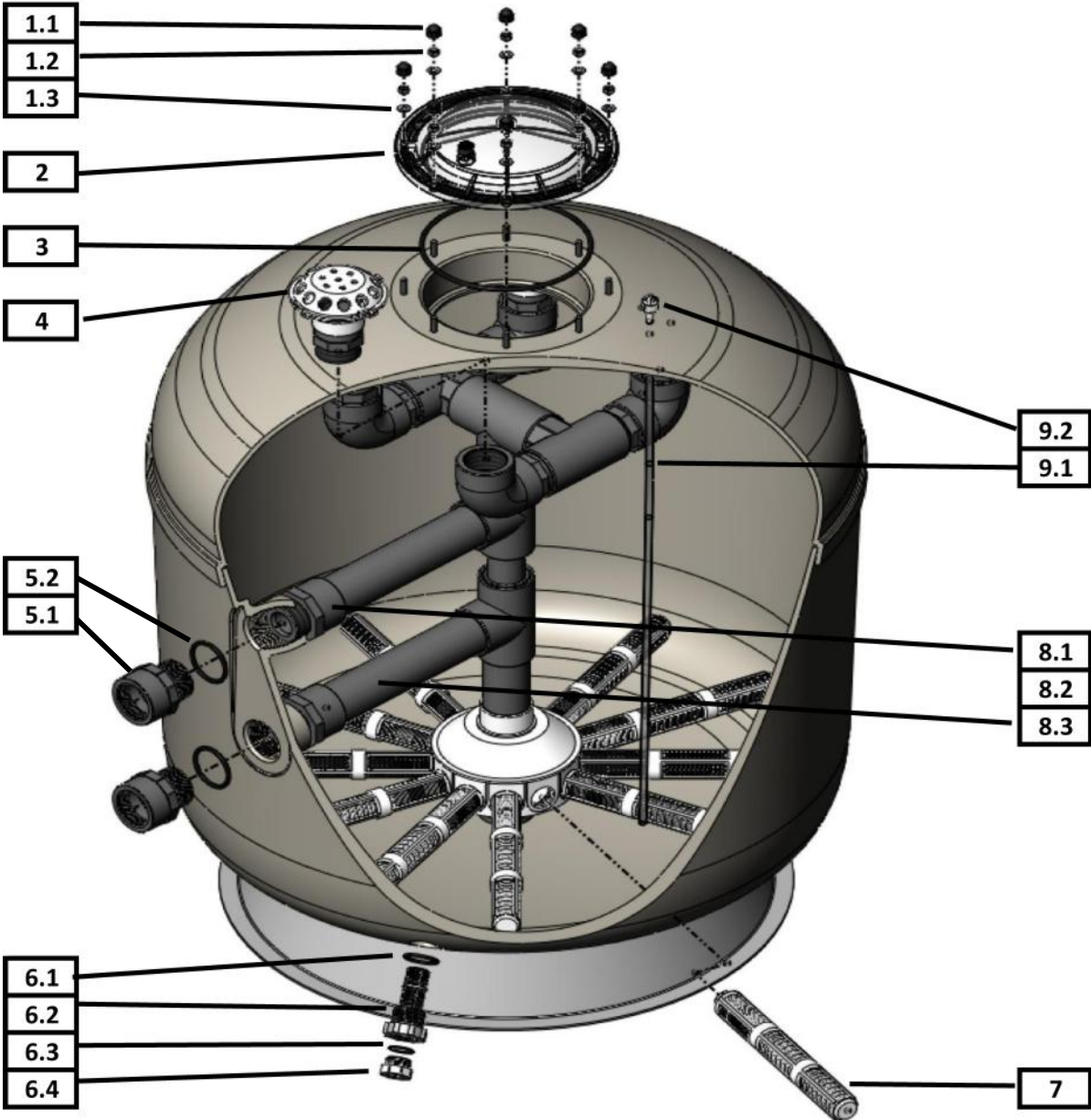
Figure 8-1

Acceptable Pipe Size For Maximum Recommended System Flow Rate			
Pipe Size	Flow Rate GPM	Pipe Size	Flow Rate GPM
2" (63 mm)	90 (340 lpm)	4" (100mm)	350 (1325 lpm)
3" (90 mm)	200 (757 lpm)	6" (150mm)	800 (3028 lpm)

* Pending confirmation of NSF test data

Section 9. Replacement Parts

Exploded Diagram and Parts List



FILTER SERVICE PART LIST

NO.	SUB-NUMBER	DESCRIPTION	PART NUMBER	QTY PER FILTER	QTY		
					HCF230	HCF234	HCF236
1	LID HARDWARE KIT (CONTAINS 8 SETS PER KIT)		HCXFMCH1000		1	1	1
	1.1	NUT COVER		8			
	1.2	NUT		8			
	1.3	WASHER		8			
2	POLYCARBONATE MANWAY COVER		HCXFMCL1000		1	1	1
3	MANWAY COVER O-RING		HCXFMCG1000		1	1	1
4	DIFFUSER		HCXFDIF1000		2	4	4
5	BULKHEAD FITTING KIT		HCXFBHE1000		2	2	2
	5.1	BULKHEAD			2	2	2
	5.2	BULKHEAD O-RING			2	2	2
6	DRAIN KIT		HCXFDK1000		1	1	1
	6.1	DRAIN BODY O-RING		1			
	6.2	DRAIN BODY		1			
	6.3	CAP O-RING		1			
	6.4	CAP		1			
7	8.25" LATERAL KIT (CONTAINS 2 LATERALS PER KIT)		HCXFLAT0825		6		
	7.1	8.25" mm LATERAL		12			
	10.5" LATERAL KIT (CONTAINS 2 LATERALS PER KIT)		HCXFLAT1050			6	
	7.2	10.5" LATERAL		12			
	12.5" LATERAL KIT (CONTAINS 2 LATERALS PER KIT)		HCXFLAT1250				6
	7.3	12.5" LATERAL		12			
8	INTERNAL BULKHEAD KIT (INCLUDES O-RING AND COUPLING)		HCXFBHI1000		2	2	2
	8.1	INTERNAL BULKHEAD		2			
	8.2	BULKHEAD O-RING		2			
	8.3	PIPE COUPLING		2			
	8.4	PIPE SECTION (Not Shown)		2			
9	COLLECTOR AIR RELIEVE KIT		HCXFARK1000		1	1	1
	9.1	COLLECTOR TUBING		1			
	9.2	PIPE CUP		1			

Section 10. Warranty

Hayward® Limited Warranty

To buyer, as original purchaser of this equipment, Hayward Pool Products, 620 Division Street, Elizabeth, New Jersey, warrants its products free from defects in materials and workmanship for a period of FIVE (5) years from the date of purchase.

Parts which fail or become defective during the warranty period, except as a result of freezing, negligence, improper installation, use, or care, shall be repaired or replaced, at our option, without charge, within 90 days of the receipt of defective product, barring unforeseen delays.

To obtain warranty replacements or repair, defective components or parts should be returned, transportation paid, to the place of purchase, or to the nearest authorized Hayward service center. For further Hayward dealer or service center information, contact Hayward customer service department, or visit our website at www.Hayward.com for an authorized service center near you. No returns may be made directly to the factory without the express written authorization of Hayward Pool Products.

Hayward shall not be responsible for cartage, removal and/ or reinstallation labor or any other such costs incurred in obtaining warranty replacements.

Some states do not allow a limitation on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Hayward Pool Products, 620 Division Street, Elizabeth, NJ 07207

**Supersedes all previous publications*

Section 11. Product Registration

DATE OF INSTALLATION _____

INITIAL PRESSURE GAUGE READING (CLEAN FILTER) _____

PUMP MODEL _____ HORSEPOWER _____

* Retain this Warranty Certificate in safe and convenient location for your records.

Section 12. Warranty Registration

DETACH HERE: Fill out bottom portion completely and mail within 10 days of purchase/installation or register online.

Mail to: Hayward Pool Products, 620 Division Street, Elizabeth, NJ 07207; Attention Warranty Dept or, register your warranty online at <http://www.hayward.com>

Please Print Clearly:

COMMERCIAL SAND FILTER

First Name _____ Last Name _____

Street Address _____

City _____ State _____ Zip _____

Phone Number _____ Purchase Date _____

E-Mail Address _____

Serial Number (10-17 digit number) _____

Model Number _____

Pool Capacity _____ (U.S. Gallons)

Please include me on all e-mail communications regarding Hayward® equipment or promotions.

WARRANTY CARD REGISTRATION

Years Pool has been in service: 1< year _____ 1-3 _____ 6-10 _____ 11-15 _____ >15 _____

Purchased from _____

Builder ___ Retailer ___ Pool Service ___ Internet/Catalog ___

Company Name _____

Address _____

City _____ State _____ Zip _____

Phone _____

Type of Pool: Concrete/Gunite ___ Vinyl ___ Fiberglass ___ Other _____

New Installation ___ Replacement ___

Installation for: In-Ground ___ Above-Ground ___ Spa ___