Helena Memorial Park
Helena, MT

PRESSURE SAND FILTER - 2 cell Verticel, Central Header, With Manual Linkage Control

Introduction

The filter on your pool is a 2 cell verticel pressure filter, which utilizes sand as a filtering medium. A pressure sand filter is one in which the water to be filtered is pumped through a layer of sand contained within a pressure vessel. High flow sand filters are designed for filtering rates of up to 20 gallons per minute per square foot of filtering area. This filter system will, with proper care and maintenance, give trouble-free and efficient operation.

The filtering principle is simple. Fine sand is used to filter out all of the dirt suspended in the water. Pool water is forced by the pump through a distributor system in the top of the filtering tank. This distributor system is designed to maintain a uniform flow downward through the sand and out a second collector system in the bottom of the tank.

In high rate sand filtration, penetration or depth filtration occurs within the sand; the dirt in the water passes down several inches into the sand rather than being collected on the surface of the sand or in a bed of alum as in the lower rate rapid sand pressure filters.

When dirt accumulates in the sand the influent pressure increases, causing a decrease in flow. If the desired flow rate can no longer be maintained, the filter is cleaned by simply reversing the flow. High rate sand filtration is made possible by the proper internal design of the filter. So long as the flow is uniform, without jets or eddy currents, these high rates may be maintained without disrupting the filter bed.

This system is designed to run 24 hours a day. Filter cycles will vary. Bathing loads, suntan lotions, and wind conditions among other things create variances in the filter cycle. Health departments in many areas maintain and exercise sanitary procedures; nevertheless, even though the flow rate is maintained, we recommend that the filters be put through the backwash cycle when the differential pressure between the influent and effluent reaches 10+ psi or when the designed flow rate cannot be maintained (whichever occurs first). This will keep the filter in excellent, healthful, maintenance-free operation year round. Any backwash requirements of local or state regulatory agencies should also be met. The filters are usually cleaned in two to four minutes by reversing the flow of the water.

Initial Start-Up:

The following steps are to be taken when you place your high flow filter in operation for the first time:

- ☑ 1. Check pump strainer. Make sure it is clean and full of water.
- ☑ 2. Check pump rotation to ensure that the motor has been correctly wired.

  Note: The impeller should rotate in a clockwise direction when viewed from the motor end. If rotation is opposite, the motor has been incorrectly wired.

- ☑ 3. Set the filter for backwash (see operating instructions). Backwash a minimum of five (5) minutes to clean the filter media. Backwash until the sight glass runs clear.

In many areas when a new pool is filled, the water will appear green and/or cloudy. This green and/or cloudy appearance can be caused by plaster fines present in the water, traces of iron or organic matter, algae in the make-up water, or by a combination of all. This type of contamination always will clog any type filter in a relatively short period of time. It is recommended that the pool be super-chlorinated immediately after filling and that the filter be backwashed promptly when the differential pressure between the influent and effluent reaches 10 ± psi or when the designed flow rate cannot be maintained. If this procedure is followed, the pool will be cleaned up in a minimum of time. After super-chlorination, do not enter the pool until chlorine level has returned to normal.

If any appreciable amounts of iron are present, they will turn brown upon chlorination and may stain the interior finish of the swimming pool. Chlorinate a small sample of water first. If it turns brown, the water should be treated to remove the iron.

The backwash operation may be required daily or several times a day for the first few days until the water becomes a sparkling blue. After the cloudiness and/or green appearance is gone, you need only backwash as covered elsewhere in this manual.

Check the pump strainer, the converter strainer basket and any skimmer baskets daily and clean as required, establishing regular schedules.

Valve Legend:

All normal functions of the filter are controlled by wafer valves. It is good practice to stop the pump and motor before changing the position of the valves. For convenience in operation, all valves have been tagged:

1. Main suction (at pump)
2. Return to pool*
3. Backwash to waste*
4. Filter influent*
5. Backwash influent*

***These valves are connected by linkage and change position simultaneously. Valves 2 and 4 are both open for filter mode and closed during backwash mode. Valves 3 and 5 are opposite.**

All valves are considered closed unless otherwise stated in these instructions. Pools equipped with the Paddock pipeless recirculating systems will have only a single suction valve. The pump will draw water from either an open top balancing tank, or from the main drain and balancing line.

Checking The Flow Rate:

The recirculating pump is designed to deliver the designed flow rate of _____ gpm at a total dynamic head of _____ feet. Total head on the pump is the combination of the vacuum and discharge pressure losses.

The conversion factors for the vacuum and pressure reading to feet of head are:

1. One inch of mercury vacuum equals 1.13 feet of head.

2. One psi equals 2.31 feet of head.

Procedure For Checking:

(Assume a freshly backwashed filter)

1. Set the system to filter with all valves fully opened.

2. Read the vacuum gauge.

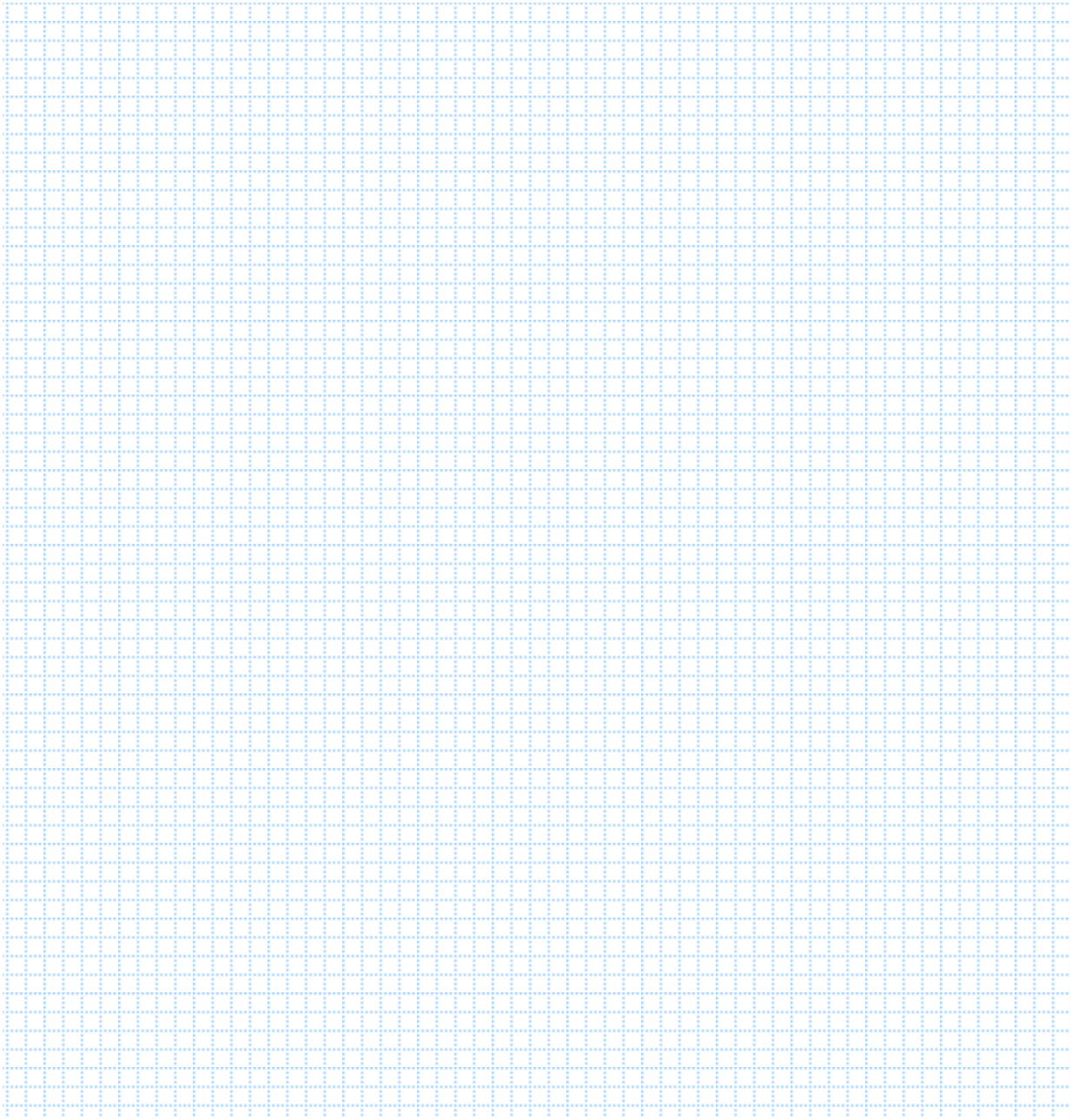
3. Convert vacuum reading to feet of head by multiplying by 1.13.

4. Subtract the results of No. 3 from the design head of your pump.
5. Divide the results of no. 4 by 2.31. This gives the pump discharge pressure to obtain the desired total dynamic head and, hence, the designed flow rate.

6. Should the vacuum reading drop appreciably, repeat steps 2 through 5.

Like a properly installed flowmeter, a pump performance curve is guaranteed accurate within 5%. Flowmeter installations vary, thus when pump pressures are set as described here, the flowmeter reading should be noted as the proper recirculation rate, regardless of its actual reading.

Calculations & Notes



The differential pressure on a clean filter is _____.

To Filter Pool: **Filter rate is _____** **Influent Pressure _____.**
Effluent Pressure _____.

Open valve #1 and move linkage handle to the Filter (up) position, insert locking pin in linkage, and start pump.

To Filter With Balancing Line (Pipeless Pools):

With system set to filter pool and the proper flow rate established, restrict the main drain valve just upstream of the connection with the balancing line until the Minimum Operating Level (MOL—the red line on the water level gauge) has been established in the balancing line. This level should be set when there is no activity in the pool and all water is being drawn from the main drain. As water enters the gutter and fills the balancing line, the pressure in this line will increase, resulting in less flow from through the main drain line. When the perimeter overflow channel is running nearly full, most of the water required for the full recirculating rate will be taken from the surface of the pool through the balancing line.

To Filter Pool With Balancing Tank (Pipeless Pools):

With system set to filter and the proper recirculating rate set, the suction valve on the pump connected to the tank is opened fully. With no water entering from the perimeter overflow channel, the main drain valve, at its entrance to the balancing tank, is adjusted until there is about 6" of water over the pump suction line. This establishes the minimum level in the balancing tank and the point at which all of the water is being supplied by the main drain.

To Filter Pool And Vacuum - Portable Vacuum:

Open valve #1 and place linkage handle in the filter position. Discharge portable pump into the overflow channel. If a considerable amount of dirt is being vacuumed and the pressure builds up in the filter tank, it should be backwashed.

To Clean Strainer:

Stop pump. Close strainer isolation valves. Remove strainer cover and remove and clean basket. Do not bang on basket. Be sure strainer is filled with water after cleaning. Replace cover tightly. Open valves for desired operation. Start pump.

To Backwash Filter: **Backwash rate is _____** **Influent Pressure _____.**
Effluent Pressure _____.

When the differential pressure between the influent and effluent reaches 10 ± psi, or if the flow rate can no longer be maintained, the filter should be backwashed.

Remove linkage lock pin, and move linkage handle to Backwash (down) position. Continue the backwashing until the water runs clear in the sight glass. This normally takes two (2) to four (4) minutes. Move linkage handle to the Filter (up) position and replace linkage lock pin.

To Empty Pool with Pump and Motor:

Open the balance line (or tank) bypass valve. Close the main drain influent valve supplying the balance line (or tank). Move the linkage handle to the Backwash (down) position and drain the pool through the filter in the backwash mode.

Exercise every possible precaution in this operation to prevent air from entering the main drain line or other piping, as this will cause the pump to lose its prime. It is advisable, when emptying the pool (unless the pump is located beneath the lowest point of the pool) to complete the operation without interruption, because turning off the pump motor will normally result in loss of prime.

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