

# OWNER'S MANUAL

## **VACLEEN™** **SELF-CLEANING AG FILTER** **MODEL 5210, 5212** **A2000**



**VACLEEN®**  
Improving Water Quality



**OLSON  
IRRIGATION  
SYSTEMS**

U.S. Pat 6,959,818, US 8,028,841;  
EU 1,446,213, and 1,758,667; Israel 161727,  
and Germany 602 13 277. 0-08  
Other US and foreign patents pending

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## OLSON VACLEEN<sup>®</sup> FILTER

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## OLSON A2000 VACLEEN® AG FILTER

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### SECTION I INTRODUCTION

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#### 1.1 Description

The Olson VACLEEN® is an automatic, self-cleaning, screen-type water filter. The filtration system consists of a tank body with either 10- or 12-inch inlets and outlets (see Section 2.2), a 2-inch backflush outlet, and containing a removable filtration mechanism consisting of a prestrainer, a fine screen and controlled-travel reciprocating cleaning nozzles.

#### 1.2 Theory of Operation

Pressurized water enters the filter inlet and travels through a prestrainer, then passes through the inside of a fine stainless steel screen where contaminants (down to 10 micron) are filtered out. The clean water then exits the outlet.

When the fine screen becomes contaminated, a pressure differential is sensed, causing the automatic controller to open the flushing valve. When the flushing valve opens, the cleaning nozzles begin to rotate and reciprocate. The clean water then flows through the filter element as the reciprocating nozzles rotate in both directions across the entire surface of the screen, removing contaminants through the nozzles. The contaminants then pass through the water-driven reactionary motor and out through the flush valve.

The Olson VACLEEN® system uses small flush nozzles that reciprocate across the filter screen allowing the use of a small flush valve. A reversing screw causes the traversing of the nozzles back and forth across the screen insuring 100% screen coverage. An important advantage of the small flush valve is that the pressure drop is minimal, thereby increasing the filter's efficiency and using less flush water.

The entire cleaning cycle may take as few as six seconds and may use as little as 6 gallons of water, depending on the filter size. ***It should be noted that even during the backflush cycle the filtration process continues uninterrupted.***

#### 1.3 Recommended Applications

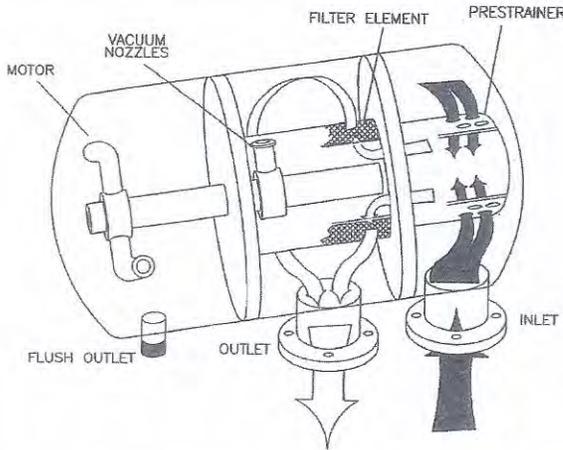
The Olson VACLEEN® filter is appropriate for use in both agricultural irrigation and industrial applications. It is effective in filtering out silt, scale, sand, rust, dirt and organic material, like algae, from virtually all types of water sources.



## OLSON VACLEEN® FILTER

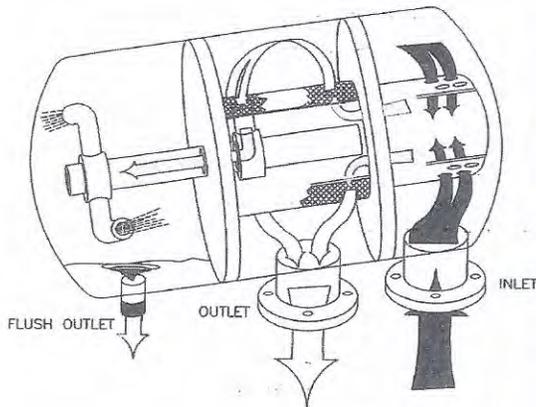
### SECTION I INTRODUCTION (Continued)

#### 1.4 FILTERING AND FLUSHING SEQUENCE



#### FILTERING MODE

Dirty water enters the filter and passes through the coarse prestrainer screen where large particles are removed. Pre-strained water then flows into the filter chamber and through the fine mesh filter element. Clean water exits the filter.

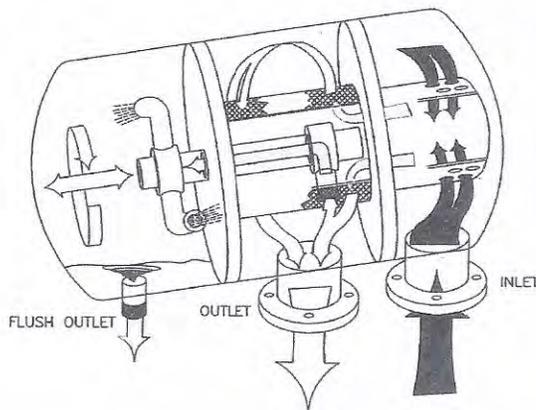


#### FLUSHING MODE

During filtration, debris accumulates inside the filter element, reducing the pressure across the screen. This reduction of pressure is sensed by the controller which opens the flush valve, reducing the pressure at the cleaning nozzles. This causes reverse flow across the screen, taking the dirt into the nozzles.

The forceful flow of dirt and water through the nozzles drives the reactionary motor causing nozzles to rotate and reciprocate, cleaning 100% of the screen surface. **Filtration continues uninterrupted throughout the cleaning process.**

When the cleaning cycle is complete and full pressure returns, the flush valve closes.



U.S. Pat 6,959,818, EU 1,446,213 and  
ES602 13 277.0-08; Israel 161727.  
Other US and foreign patents pending.

## OLSON VACLEEN® FILTER

### SECTION II DESIGN FEATURES AND SPECIFICATIONS

#### 2.1 Design Features

Among the many features of the Olson VACLEEN® filter is its avoidance of the danger of forcing contaminated water back into the system, which can happen with a sand media filter. The Olson filter will deliver **clean** water or **no** water.

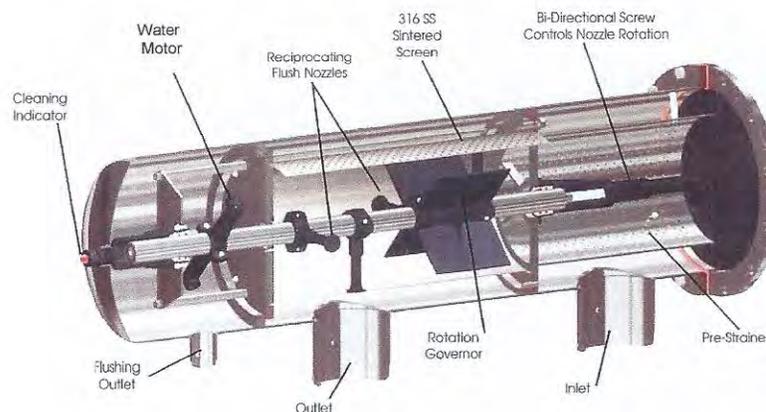
The filter can remove organics such as algae and other suspended particles. **However, if there are extraordinary quantities of long stringy algae or large quantities of sand, leaves and/or other debris, an intake screen must be used. This will protect the filter as well as prevent unnecessary and expensive wear on pumps.** There are many commercial intake screens available.

The controlled reciprocating action of the cleaning nozzles ensures 100% cleaning coverage of the screen.

Flows are uninterrupted, even during the backflush cycle, making the Olson VACLEEN® especially suited for sustaining operability in flow-critical applications.

The entire back-flushing mechanism and fine screen assembly are modular and can be removed from the filter body without disruption of the plumbing, allowing easy maintenance outside the filter body. In the event of a catastrophic event, where the mechanism cannot be repaired, a complete new or rebuilt internal assembly can be furnished usually within a 24-hour period.

The cleaning mechanism is driven hydraulically by a water motor and requires no outside power source for operation.



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**OLSON A2000 VACLEEN® AG FILTER**

SECTION II DESIGN FEATURES AND SPECIFICATIONS (Continued)

**2.2. Design Specifications**

**Materials:** Tank Stainless Steel  
Rotor Assembly Engineering-grade Polymer and Stainless Steel  
Filter Screen Sintered Stainless Steel

**Length:** 82 in

**Weight:** 692 lb (Shipping Weight, crated 520 lb)

**Weight with Water:** 1590 lb

**Tank Diameter:** 20.0 in

**Inlet/Outlet:** 10 or 12 in, flanged or grooved

**Backwash Outlet:** 2 in threaded NPT

**Screen Element:** Sintered stainless steel, available in sizes as follows:

Mesh Size*	Contaminant Size	Width of Opening
50	Down to 280 microns	.0110 in
100	Down to 140 microns	.0055 in
150	Down to 104 microns	.0041 in
200	Down to 74 microns	.0029 in

*\*Finer meshes are available on special order.*

**Screen Area:** 1650 in<sup>2</sup>

**Filter Capacity:** 2000 gpm\* (Depending on water quality.)

**Backflush Required:** 12 gpm with approximately 15-second cycle time

**Flush Controls:** Electric or hydraulic

**Pressure Range:** 35 psi to 150 psi maximum *Note:* A minimum of 30 psi on outlet backpressure is required to assure proper actuation of backflush mode.

**Temperature Range:** 32° F to 180° F maximum

\*Maximum flow rate can vary depending on dirt load and screen micron size.

When comparing manufacturers' flow rates, divide flow rate by screen square inches. Then compare each manufacturer's gallons per square inch of screen to evaluate equivalent capacities.



## **OLSON VACLEEN® FILTER**

### **SECTION III SAFETY AND REGULATION**

#### **3.1 Requirements**

Abide by applicable OSHA and industrial standards for your particular application. Wear, as required, hard hat, safety goggles, rubber gloves, steel-toed boots, respirator mask and protective clothing when servicing the filter unit. Olson VACLEEN® filters are designed for safe operation when used according to instructions, specifications, procedures and requirements contained in this manual. It is the responsibility of the filter owner to verify that the filter is operating accordingly. Assure that all applicable rules, regulations, requirements, standards and codes, either local, national or industrial, are followed in installation, erection, operation, maintenance, servicing and moving of the filter. Consult our technical staff with your questions on safe operation of the filter.

#### **3.2 Structural Support and Retention**

Depending on the size of standard filter models, a flooded (filled with water) VACLEEN® filter weighs between 125 and 2000 pounds. Exercise caution when transporting, installing or taking a filter out of service as the weight of the filter may cause serious injury or death from falling on persons. When erecting the filter during installation (or taking filter out of service), use a sling for lifting and retention. Remove the retention sling only after filter has been properly secured to piping and is adequately supported. When designing filter supports, be sure to provide adequate strength for the filter's flooded weight. If the existing piping arrangement is used as structural support for the filter, check to assure that it is structurally adequate considering the flooded weight of the filter.

Due to the methods used to construct the VACLEEN® filter, it is recommended that the filter be supported primarily by the inlet and outlet piping (Figure 1).



Figure 1: Inlet/outlet piping support



Figure 2: Saddle-type filter support

If this configuration is not possible, a saddle type support is recommended (Figure 2). Never support the filter body with a small contact area between the filter and support. It is also important that piping out of the flush valve is in a semi-rigid configuration to prevent twisting of the body due to torque created by the flush water exiting the piping. Failure to follow these guidelines may cause the filter body to warp or dent and will void the warranty.



## OLSON VACLEEN® FILTER

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### SECTION III SAFETY AND REGULATION (Continued)

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#### 3.3 Operating Pressure

Periodically check welds and hydraulic connections as part of general maintenance. Follow applicable power piping code. For standard filter models, keep the operating pressure below the maximum pressure stated in Section 2.2 of this manual. Ensure bolts and nuts of covers and flanged connections are uniformly tightened before pressurizing the filter. Before servicing filter internals, slowly open the filter bypass valve, then slowly close the filter isolation valves. Manually backflush the filter to depressurize. Before servicing the filter, make sure it is depressurized in all three compartments: the prestrainer chamber, the fine screen chamber, and the water motor chamber. Measure the internal pressure separately in all three chambers using a pressure gauge mounted to the filter outlet. ***Do not remove cover or any pressure fitting until you are sure the pressure in the filter is zero.***

#### 3.4 Discharge Water

Conform to all applicable standards, codes and regulations for your particular industry and application. Follow USEPA regulations when discharging backflush water.

#### 3.5 Electrical

When wiring an electronic controller, follow the instructions in the manual provided by the electronic controller manufacturer along with local code and National Electrical Code. An explosion-proof solenoid (available as an alternate part) is required when the filter is used in a potentially flammable atmospheric environment. A filter installed with a general-purpose solenoid can ignite combustible fluids. Avoid touching a solenoid that has been electrically energized as heat from operation may cause personal injury. Turn off electrical power to the controller and solenoid before servicing either the controller or the filter.



## OLSON 5210 5212 VACLEEN® AG FILTER

### SECTION IV INSTALLATION AND HOOK-UP

#### 4.1 Mechanical Hook-Up and Orientation

Positioning of the filter tank should be determined by the disposal of waste water and to allow easy access and removal of the internal assembly. A minimum of 60 in of clearance at the lid end is required.

Install the flushing valve on the flushing outlet in accordance with the valve manufacturer's instructions.

Assuming the filters are installed on a horizontal plane, the flushing valve should be installed on the 2-in diameter backflush nipple with the "arrow" pointing downstream.

Check the pipes on the manifold or stand on which the filter is to be installed to make sure they are on the same plane and center distance is 24 in. If improperly aligned, when the filter clamps are tightened, this could distort the tank causing problems with the filtering and cleaning process. (See Para. 3.2).

The tank can rest on the inlet/outlet pipes or can be mounted on a stand if desired.

#### 4.2 Plumbing Hook-Up

Backflush discharge pipe should be 2 in. diameter if line is less than 20 ft long with no more than one elbow. Pipe with 2-1/2 in or 3 in. diameter should be used if line length is greater. **Any restrictions in the backflush line will reduce the cleaning ability of the filter.**

The backflush discharge line should never run uphill. This will reduce the filter's cleaning effectiveness.

### SECTION V OPERATION AND ADJUSTMENTS

#### 5.1 Start-Up



**Screen filters require back pressure (pressure on the outlet side of the screen) in order to clean the screen. When pressurizing the system, if the screen plugs before the system is pressurized, the filter cannot clean itself and damage will occur.** During the initial filling of the main pipeline, there may not be enough back pressure downstream at the outlet. Therefore, it is necessary to install a valve on the outlet line.

**A pressure-sustaining valve is strongly recommended.** Alternatively, a manually-operated valve may be used. The valve should be partially closed while pressurizing, creating minimum 35 psi pressure on the clean water (outlet) side of the screen, then open when the system pressure is attained. **During startup and normal operation, it is always necessary to maintain 35 psi outlet pressure.**

**The flush valve should remain open during system filling, and there should be zero back pressure on the flush line.**

**Avoid a water-hammer effect which could exceed the pressure rating of the filter.**

**WHEN FILLING THE SYSTEM, THE FLOW SHOULD NOT EXCEED THE RECOMMENDED FLOW AND PRESSURE RATING FOR THE FILTER.**

## OLSON VACLEEN® FILTER

### SECTION VI MAINTENANCE

#### 6.1 DISASSEMBLY

Required Tools:

- 3/4", 15/16" and 7/16" wrenches or sockets and ratchet
- Large flathead screwdriver
- Needlenose pliers
- Set of allen wrenches

1. Isolate the filter by first turning off the water supply.
2. Relieve pressure inside of the filter body by initiating a manual flush, opening a drain valve or slightly opening the filter lid.
3. Remove the nuts, bolts and washers, securing the lid (Figure 10). Remove the lid.
4. Store the lid convex side down to prevent seal damage (Figure 11).



Figure 10: Removal



Figure 11: Correct Lid Storage

5. Remove prestrainer cap (Figure 12) and prestrainer (Figure 13).



Figure 12: Removal of prestrainer cap.

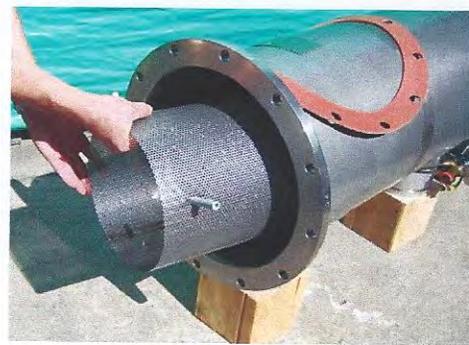


Figure 13: Removal of prestrainer.

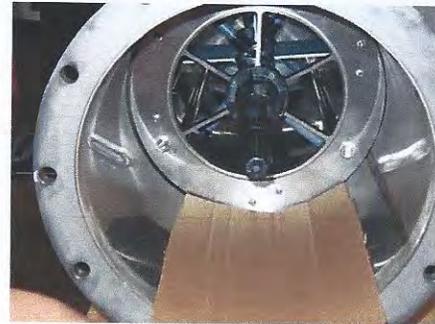
6. Make note of the circular grooved channel in which the prestrainer must sit, located in both the upper bulkhead and the prestrainer cap.

## **OLSON VACLEEN® FILTER**

### SECTION VI MAINTENANCE

#### 6.1 DISASSEMBLY (Continued)

7. Place a section of cardboard over the filter inlet to prevent parts or tools from falling into the inlet line (Figure 14).



8. Using the 3/4" wrench or socket, loosen the three clamp nuts (Figure 15).



Figure 15: Loosening clamp nuts

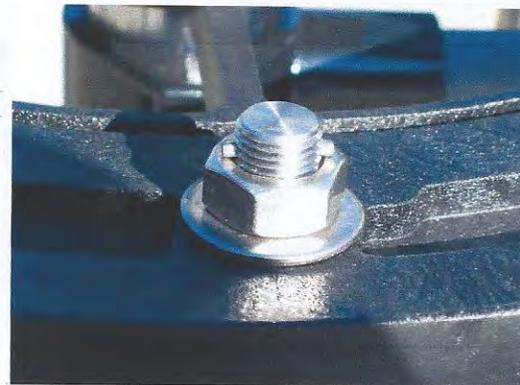


Figure 16: Clamp bolt in unlocked position

9. With the large flathead screwdriver, turn the three bulkhead clamp bolts 1/4 turn counterclockwise to free the internal assembly. Pins must be diagonal as shown in (Figure 16).

10. Use the reverser as a handle to partially remove the internal assembly (Figure 17).



Figure 17: Internal Assembly Removal



Figure 18: Supporting the internal assembly

**Note:** The next step may require 2 people to support the weight of the assembly as it is removed from the body.

11. Use one of the standoff rods on the lower bulkhead to support the internal assembly before the lower bulkhead exits the body to prevent damage to the body or denting the screen (Figure 18).

**Note:** Filter assembly must be horizontal for the next two steps.  
Failure in doing so may result in damage to assembly components

## **OLSON VACLEAN® FILTER**

### SECTION VI MAINTENANCE

12. Remove the pawl retainer cap (Figure 19). When assembling, check that the retainer o-ring is in place.
13. Remove the pawl with needle nose pliers (Figure 20).



Figure 19: Removing pawl retainer cap



Figure 20: Removal of the pawl

14. Using the 3/16" allen wrench, remove 4 allen screws from the upper bulkhead (Figure 21).
15. Lift the upper bulkhead off the support rods. (Figure 22).



Figure 21: Removal of allen screw



Figure 22: Upper bulkhead removal

16. To remove the reverser housing, unscrew four 3/16" allen head screws from the base of the upper bulkhead (Figure 23) then remove the reverser housing (Figure 23a).



Figure 23: Remove reverser housing screws



Figure 23a: Remove reverser housing



## OLSON VACLEEN® FILTER

### SECTION VI MAINTENANCE

#### 6.1 DISASSEMBLY (Continued)

17. Lift the screen from the assembly (Figure 24).



Figure 24: Screen removal

**NOTE:** Before performing the next step, note the orientation of the water motor. Incorrect assembly will result in malfunction and potentially damaged internal parts.

18. Unscrew two 9/64" water motor allen screws and remove the water-driven motor (Figure 25).



Figure 25: Removal of the water motor



Figure 26: Rotor removal

19. Slide the rotor assembly out of the lower bulkhead (Figure 26)

20. To remove the flush indicator, unscrew the Indicator housing (Figure 27).



Figure 27: Flush Indicator



## OLSON VACLEEN® FILTER

### SECTION VI MAINTENANCE

#### 6.2 DISASSEMBLY OF INTERNAL ASSEMBLY

Required tools:

- 15/16", 7/16" and 5/16" wrenches or sockets and ratchet
- Phillips and small flathead screwdriver
- Needlenose and regular pliers
- Set of allen wrenches

1. Partially remove the internals from the tank as described in the "Disassembly" section of this manual (See Figure 17).
2. To remove the reverser, use pliers to loosen and remove the stainless reverser retaining nut (Figure 28 and 29). Be careful to avoid scoring the retaining nut.



Figure 28: Removal of the retaining nut

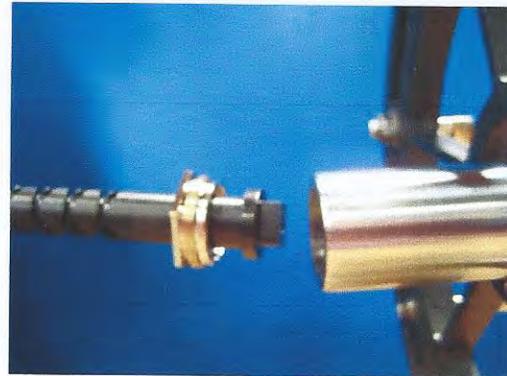


Figure 29: Reversal removal

3. The rotational governor paddles are removed by unscrewing the Phillips screws and 5/16" nut and bolt (Figure 30).



Figure 30: Removing the rotor paddles

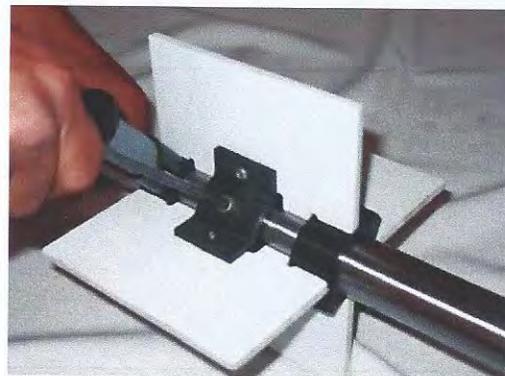


Figure 31: 3/16" allen head screw

4. The rotational governor can be removed by unscrewing the 3/16" allen screw placed between two paddles (Figure 31), and sliding it off the shaft.

## **OLSON VACLEEN® FILTER**

### **SECTION VI MAINTENANCE**

#### **6.2 DISASSEMBLY OF INTERNAL ASSEMBLY (Continued)**

5. To remove the dirt collector nozzles, remove the two 9/64" allen screws located at the bases of the nozzles (Figure 32).



Figure 32: Nozzle removal

#### **6.3 REASSEMBLY OF INTERNAL ASSEMBLY AND PAWL INSTALLATION**

Follow disassembly of internal assembly in reverse order.

#### **MUST READ BEFORE ASSEMBLING:**

1. When installing the pawl, hold it in place by applying pressure with your thumb, with the teeth aligned correctly. Rotate the shaft until the pawl is seated properly in the reverser threads. Ensure that the o-ring is present in the pawl retainer cap. Install the pawl retainer. Once the pawl is installed, rotate the shaft several times to ensure that it is functioning properly.
2. The water-driven motor must be installed to generate *COUNTER-CLOCKWISE* rotation of the scanner shaft when in operation. Rotation is determined when looking at the internal assembly from the filter cover opening while assembly is installed in the filter body.
3. Tighten all nuts and bolts in a star pattern until snug. Do not over-torque.



## OLSON VACLEEN® FILTER

### SECTION VI MAINTENANCE

#### 6.4 REASSEMBLY

Follow disassembly instructions in reverse order.

#### **MUST READ BEFORE ASSEMBLING:**

When assembling the VACLEEN® filter, the following **MUST** be considered:

1. Do not lubricate the pawl and reverser at any time. Lubricating may damage the reverser material.
2. Filter elements must fit into the grooves in the differing bulkheads before securing the filter assembly to the filter frame. If this step is done incorrectly, the bulkheads may misalign causing the rotor assembly to rub or not rotate.
3. When mounting the rotor assembly into the filter assembly, the screen filters may be slipped out of the bulkhead grooves to ease installation. Ensure that the filters are placed properly into the grooves when complete.
4. Tighten all nuts and bolts in a star pattern until snug. Do not over-torque.
5. Never attempt to seat the internal assembly by tightening the cover nuts and forcing the unit in with the cover.



## **OLSON VACLEEN® FILTER**

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### **SECTION VII      TROUBLE SHOOTING GUIDE**

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- |            |                        |   |
|------------|------------------------|---|
| <b>7.1</b> | <b>PROBLEM</b>         | <b>THE RED INDICATOR DOES NOT MOVE BACK AND FORTH DURING THE CLEANING CYCLE.</b>  |
|            | <b>POSSIBLE CAUSE</b>  | Cleaning mechanism is jammed by large particle lodged between the cleaning nozzle and screen.   |
|            | <b>SOLUTION</b>        | Pull the assembly forward to the upper bulkhead. See Para. 6.1. Visually inspect the area between the cleaning nozzles and screen. Remove any particles which might cause jamming.  |
|            | <b>POSSIBLE CAUSE</b>  | Reverser is not working properly.   |
|            | <b>SOLUTION</b>        | Remove the reverser housing and check the reverser screw. If threads are damaged, the screw needs to be replaced. See Para. 6.3.  |
| <b>7.2</b> | <b>PROBLEM</b>         | <b>FLUSHING VALVE IS NOT CLOSING DURING START-UP.</b>   |
|            | <b>POSSIBLE CAUSE</b>  | System pressure is too low to close.  |
|            | <b>SOLUTION</b>        | Partially close a mainline valve downstream of the filter to maintain 35 psi on filter gauges. This pressure will ensure valve closure and also supply back pressure necessary to clean the screen.                                     |
| <b>7.3</b> | <b>PROBLEM</b>         | <b>EXCESSIVE PRESSURE DROP THROUGH FILTER WITHOUT FLUSHING</b>  |
|            | <b>POSSIBLE CAUSES</b> | (1) Flushing valve is installed backwards.<br>(2) Filter is installed backwards.  |
|            | <b>SOLUTIONS</b>       | (1) Install according to directional arrow.<br>(2) Install pressure line to leg marked inlet.   |
| <b>7.4</b> | <b>PROBLEM</b>         | <b>FLUSHING VALVE CHATTERS</b>  |
|            | <b>POSSIBLE CAUSE</b>  | Air in the valve bonnet.  |
|            | <b>SOLUTION</b>        | (1) Point bonnet "skyward" to vent trapped air.<br>(2) Manually flush filter several times to flush air from the bonnet, the controller tank and the filter tank.<br>(3) Add a 1/2 in or 1 in air vent/vacuum relief to the flush line. |



## OLSON VACLEEN® FILTER

### SECTION VII TROUBLE SHOOTING GUIDE (Continued)

<b>7.5</b>	<b>PROBLEM</b>	<b>FREQUENT, CONTINUOUS FLUSHING WHILE FILLING MAIN PIPELINE</b>
	<b>POSSIBLE CAUSE</b>	Downstream pressure isn't available to provide vacuum cleaning power. Rapid-filling flow rate exceeds the controller's pressure differential.
	<b>SOLUTION</b>	Partially close downstream mainline valve. Filter gauges should read 35 psi.
	<b>POSSIBLE CAUSE</b>	Filter may have been shut down "dirty" with a contaminant that is difficult to remove after it dries on the screen.
	<b>SOLUTION</b>	A super flush needs to be performed as follows: a downstream main line valve should be adjusted providing that the static pressure against the valve does not exceed 80 psi. After the valve is adjusted, cycle the filter through several "long" flushings. This process uses the entire available differential pressure in the filter cleaning process.
<b>7.6</b>	<b>PROBLEM</b>	<b>FREQUENT FLUSHING DURING NORMAL OPERATION</b>
	<b>POSSIBLE CAUSE</b>	The controller pressure differential is set too low, causing vibration to initiate a flush cycle.
	<b>SOLUTION</b>	Increase pressure differential (see Solution 7.1)
	<b>POSSIBLE CAUSE</b>	Screen may be partially plugged.
	<b>SOLUTION</b>	Perform super flush as described in Solution 7.4.
	<b>POSSIBLE CAUSE</b>	Rotor may be jammed which results in only cleaning the screen area that is directly in front of the nozzles.
	<b>SOLUTION</b>	Open tank and check for free movement of rotor mechanism.
<b>7.7</b>	<b>PROBLEM</b>	<b>WHEN CHANGING BLOCKS, FILTER FLUSHES RAPIDLY.</b>
	<b>POSSIBLE CAUSE</b>	The flush cycle may be set too short (20 seconds is normal). Flushing valve is not opening fully.
	<b>SOLUTION</b>	Re-adjust controller for highest flow rate.
	<b>POSSIBLE CAUSE</b>	Filter was shut down "dirty" with contaminant drying on the screen.
	<b>SOLUTION</b>	Perform super flush as described in Solution 7.4. If unsuccessful, remove filter element, see Page 7 and soak in swimming pool acid solution (1qt. muriatic acid to 5 gal. water) for 15 minutes. Then spray the filter with a high pressure hose to remove the contaminant. After reinstalling the filter, perform another super flush.



OLSON IRRIGATION SYSTEMS

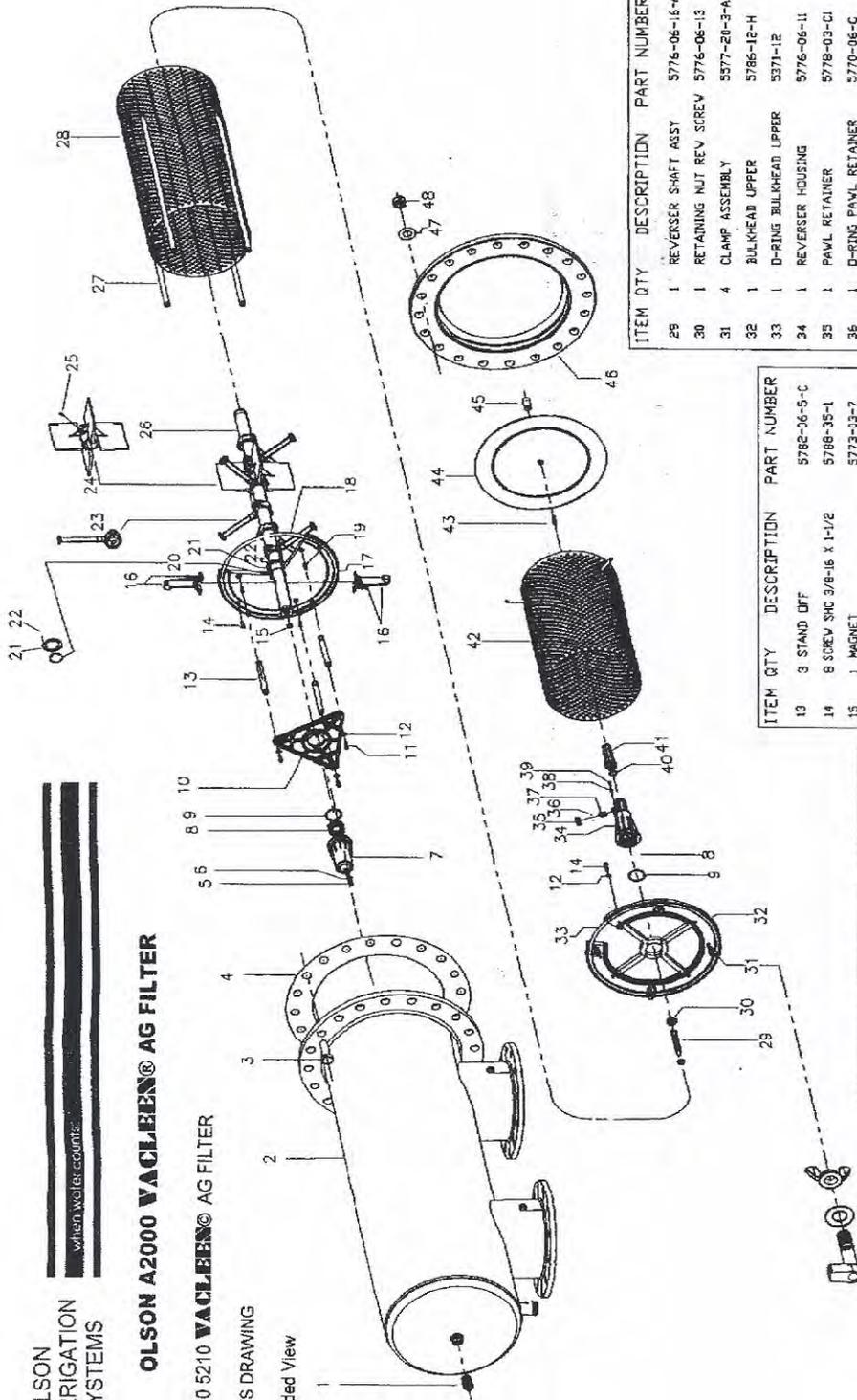
when water counts.

**OLSON A2000 VACLREEN® AG FILTER**

OLSON 5210 5210 VACLREEN® AG FILTER

VIII PARTS DRAWING

8.1 Exploded View



ITEM QTY	DESCRIPTION	PART NUMBER
13	3 STAND OFF	5782-06-5-C
14	8 SCREW SHC 3/8-16 X 1-1/2	5786-35-1
15	1 MAGNET	5773-03-7
16	1 WATER MOTOR ASSY	5763-08-C2
17	1 BULKHEAD LOWER	5785-12-H
18	1 D-RING BULKHEAD LOWER	5371-12-1
19	3 SCREW SET CUP PNT 3/8-16	5782-06-7-C
20	1 SEAL WASHER	3585-06-1-C
21	1 WASHER RETAINER	3585-06-2-C
22	3 SCREW FHC 8-32 X 1/2	3565-06-3
23	6 ASSY VACUUM NEZZLES	5774-20-C-A
24	1 SPEED REDUCER	5773-06-8
25	1 SCREW SHC 1/4-20 X 1/2	5773-10-03
26	1 DIRT COLLECTOR	5773-06-C1-A2
27	4 TIE BAR A2000-1500	5788-20-H
28	1 FILTER SCREEN ELEMENT	5754-XXX-20

ITEM QTY	DESCRIPTION	PART NUMBER
1	1 SENSOR ASSY	5811-06-A-C
2	1 FILTER TANK A2000-XX	5801-20-XX-H-F
3	20 LID BOLT	5341-1-12
4	1 TANK SEAL	5372-20-C2
5	4 SCREW SHC 1/4-20 X 5/8	5774-4-06
6	4 LOCK WASHER	5765-06-1
7	1 CYLINDER	5812-05-C
8	2 BUSHING ASSY	5776-06-5-C-A
9	2 RETAINING RING	5776-06-10-C
10	1 MOUNTING PLATE	5782-05-4-C2
11	3 SCREW 3/8-16 X 3/4	5782-06-6
12	3 LOCK WASHER	5765-06-2

ITEM QTY	DESCRIPTION	PART NUMBER
29	1 REVERSE SHAFT ASSY	5776-06-16-A
30	1 RETAINING NUT REV SCREW	5776-06-13
31	4 CLAMP ASSEMBLY	5577-20-3-A-C2
32	1 BULKHEAD UPPER	5786-12-H
33	1 D-RING BULKHEAD UPPER	5371-12
34	1 REVERSE HOUSING	5776-06-11
35	1 PAWL RETAINER	5778-03-C1
36	1 D-RING PAWL RETAINER	5770-06-C
37	1 PAWL REVERSE	5778-06-C
38	4 LOCK WASHER	5572
39	4 SCREW SHC 1/4-20 X 7/8	5765-06
40	1 COVER D-RING	5779-06-3-C1
41	1 COVER REVERSE	5779-06-C1
42	1 PRESTRAINER ASSY	5321-20-H-A
43	1 SCREW SHC 3/8-16 X 1-1/2	5788-35-1
44	1 PRESTRAINER CAP	5587-12
45	1 SPACER PRESTRAINER CAP	5587-12-1
46	1 LID	5312-1-12-H
47	20 LID WASHER	5341-2-12
48	20 LID NUT	5341-3-12

8.2 Parts List



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