

OWNER'S MANUAL

VACLEEN®

SELF-CLEANING AG FILTER MODELS 5103 - 5104 5203—5204



VACLEEN®
Automatic Filtration®

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® AG FILTER Models 5103, 5104, 5203, 5204

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OLSON 5103, 5104, 5203, 5204 VACLEEN® AG FILTER

SECTION I INTRODUCTION

1.1 Description

The Olson VACLEEN® is an automatic, self-cleaning, screen-type water filter. The filtration system consists of a tank body with a 3- or 4-inch inlet, a 3- or 4-inch outlet (see Section 2.2), a 1-1/2-inch backflush outlet, and containing a removable filtration mechanism consisting of a pre-strainer, a fine screen and a controlled-travel reciprocating cleaning device.

1.2 Theory of Operation

Pressurized water enters the filter inlet and travels through a pre-strainer, 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 pressure differential is reversed on the area being swept by the rotating cleaning nozzles. This causes the clean water to flow through the filter element as the reciprocating nozzles rotate back and forth across the entire surface of the screen, removing contaminants through the nozzles, then passing 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 less, 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.***

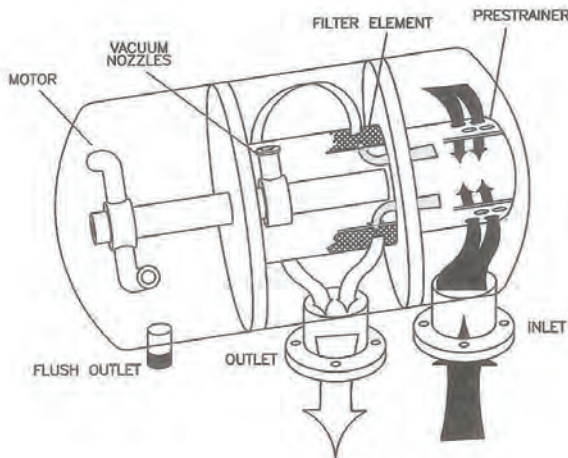
1.3 Recommended Applications

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.



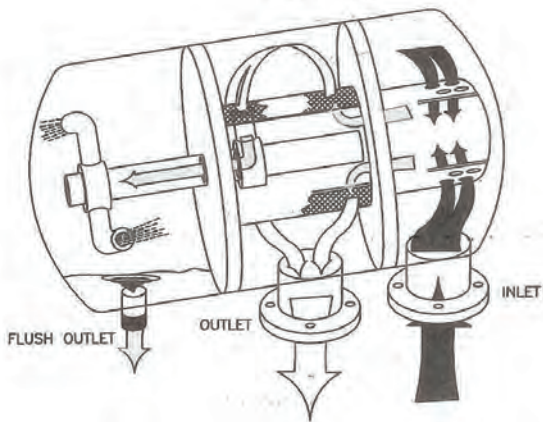
OLSON VACLEEN® FILTER

1.4 FILTERING AND FLUSHING SEQUENCE



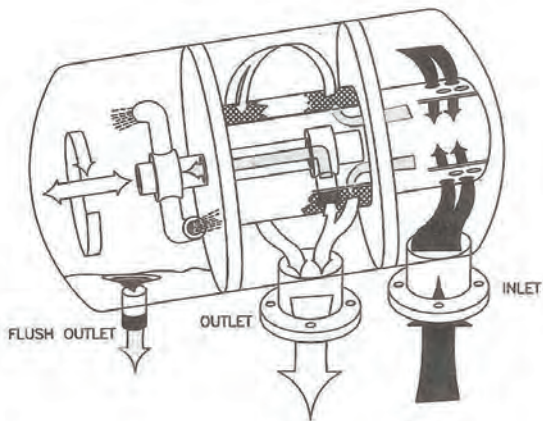
FILTERING MODE

DIRTY WATER ENTERS THE FILTER AND PASSES THROUGH THE COARSE PRE-STRAINER SCREEN WHERE LARGE MATTER IS REMOVED. PRE-STRAINED WATER THEN FLOWS INTO THE FILTER CHAMBER, THROUGH THE FINE MESH FILTER ELEMENT, AND EXITS THE FILTER CLEAN AND USABLE.



FLUSHING MODE

DURING FILTRATION, DEBRIS ACCUMULATES ON THE INSIDE OF THE FILTER ELEMENT, SLOWING THE FLOW OF WATER TO THE OUTLET. THIS REDUCTION OF FLOW IS SENSED BY A CONTROLLER WHICH OPENS A VALVE AT THE FLUSH OUTLET, CAUSING SUCTION TO BE PRODUCED AT THE VACUUM NOZZLES. DIRT IS PULLED OFF OF THE INSIDE OF THE FILTER ELEMENT BY THE VACUUM NOZZLES AND IS TRANSPORTED TO THE FLUSH CHAMBER VIA THE WATER DRIVEN MOTOR. THE FILTERING ACTION (INLET TO OUTLET) REMAINS UNINTERRUPTED DURING THE FLUSHING CYCLE.



THE FORCEFUL FLOW OF DIRT AND WATER THROUGH THE MOTOR CAUSES ROTATION OF THE VACUUM NOZZLES AROUND THE INSIDE OF THE FILTER ELEMENT. THIS ROTATING ACTION ALSO CAUSES THE ROTATING VACUUM NOZZLES TO TRAVERSE BACK AND FORTH ACROSS THE SCREEN. THE TRAVERSING MOTION IS CONTROLLED BY A BI-DIRECTIONAL SCREW CREATING NOZZLE OVERLAP, CLEANING 100% OF THE SCREEN SURFACE. WHEN THE FLUSHING CYCLE IS COMPLETE, THE VALVE CLOSES STOPPING THE ACTION OF THE VACUUM NOZZLES AND MOTOR.



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 often happens with a sand media filter. The Olson filter will deliver **clean** water or **no** water.

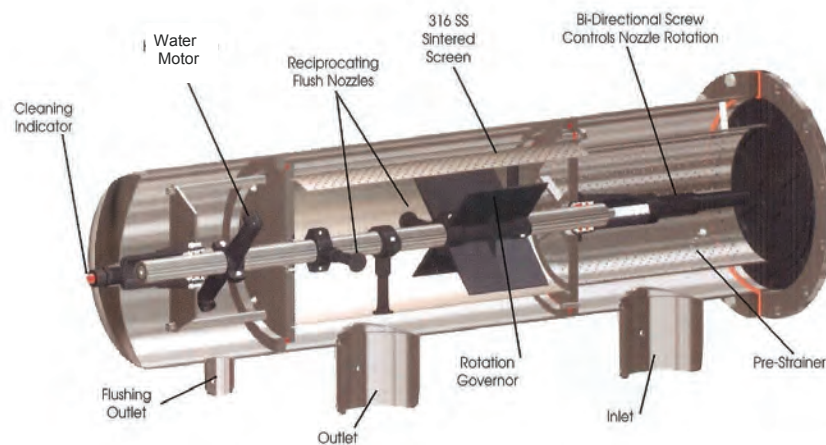
The filter can remove organics such as algae and other suspended particles. *Note:* Filtering large quantities of heavy sand or large stringy algae, is not recommended for this filter. Heavy sand or debris may wedge itself into the fine screen and jam the nozzles, preventing motor rotation and proper cleaning.

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.

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



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OLSON 5103 and 5203 VACLEEN® AG FILTER

SECTION II DESIGN FEATURES AND SPECIFICATIONS (Continued)

2.2.1 Design Specifications

Materials:	Tank	Stainless Steel
	Reactionary Water	
	Motor and Nozzle	
	Assembly	Engineering-grade Polymer
	Filter Screen	Sintered Stainless Steel
Length:	39.2 in	
Weight:	49 lb	
Weight with Water	140 lb	
Tank Diameter:	10.0 in	
Inlet/Outlet:	3 in grooved	
Backwash Outlet:	1-1/2 in threaded NPT	
Screen Element:	Sintered stainless steel, available in sizes as follows:	
	Mesh Size*	Contaminant Size Width of Opening
	80	Down to 177 microns .0070 in
	120	Down to 125 microns .0049 in
	150	Down to 104 microns .0041 in
	200	Down to 74 microns .0029 in
	<i>*Finer meshes are available on special order.</i>	
Filter Area:	224 in ²	
Flush Nipple:	NPT 1-1/2 in Thread	
Inlet-Outlet:	3 in Grooved	
Filter Capacity:	250 gpm* (Depending on water quality.)	
Backflush Required:	12 gpm with approximately 10-second cycle time	
Pressure Loss		
Through Filter:	Approximately 1.4 psi @ 250 gpm	
Controls:	Electric, Hydraulic or Battery	
Pressure Range:	35 psi to 80 psi maximum <i>Note:</i> 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.

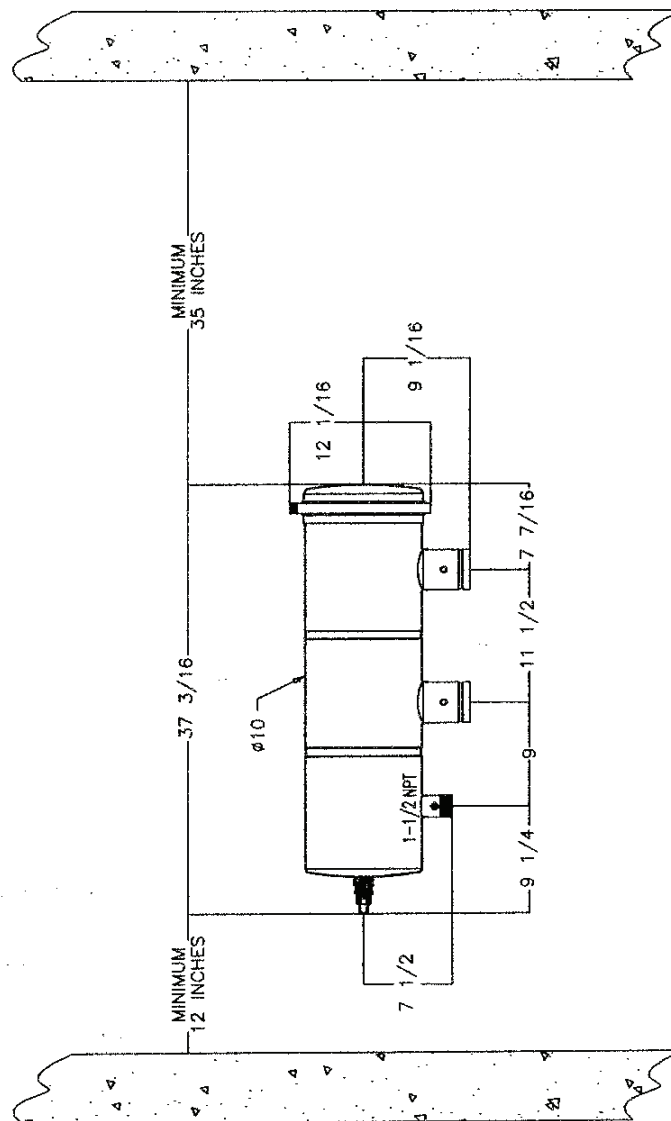
When comparing manufacturers' flow rates, divide flow rate by screen square inches. Then compare each manufacturer's gallons per square inch of screen to evaluate equivalent capacities.



OLSON 5103 and 5203 **VACLEAN®** AG FILTER

SECTION II DESIGN FEATURES AND SPECIFICATIONS (Continued)

2.3.1 Specification Drawing, A250



Model 5103

U.S. Pat 6,959,818, US8,028,841;
EU 1,446,213 and 1,758,667;
Israel 161727, and Germany 602-13-277,0-08
Other US and foreign patents pending.



OLSON 5104 and 5204 VACLEEN® AG FILTER

SECTION II DESIGN FEATURES AND SPECIFICATIONS (Continued)

2.2.2 Design Specifications

Materials:	Tank Reactionary Water Motor and Nozzle Assembly Filter Screen	Stainless Steel Engineering-grade Polymer Sintered Stainless Steel
Length:	49.4 in	
Weight:	80 lb	
Weight with Water	200 lb	
Tank Diameter:	10.0 in	
Inlet/Outlet:	4 in grooved	
Backwash Outlet:	1-1/2 in threaded NPT	
Screen Element:	Sintered stainless steel, available in sizes as follows:	
	Mesh Size*	Contaminant Size Width of Opening
	80	Down to 177 microns .0070 in
	120	Down to 125 microns .0049 in
	150	Down to 104 microns .0041 in
	200	Down to 74 microns .0029 in
	<i>*Finer meshes are available on special order.</i>	
Filter Area:	448 in ²	
Flush Nipple:	NPT 1-1/2 in Thread	
Inlet-Outlet:	4 in Grooved	
Filter Capacity:	500 gpm* (Depending on water quality.)	
Backflush Required:	12 gpm with approximately 10-second cycle time	
Pressure Loss Through Filter:	Approximately 2.5 psi @ 500 gpm	
Controls:	Electric, Hydraulic or Battery	
Pressure Range:	35 psi to 80 psi maximum <i>Note:</i> 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.

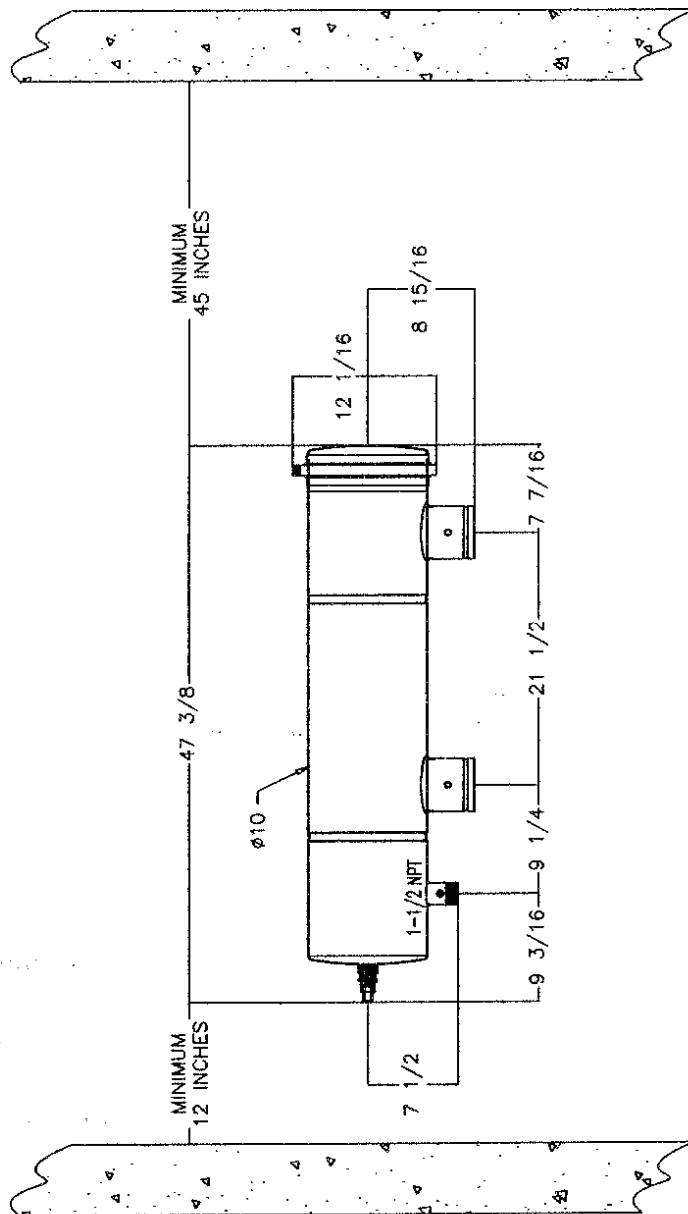
When comparing manufacturers' flow rates, divide flow rate by screen square inches. Then compare each manufacturer's gallons per square inch of screen to evaluate equivalent capacities.



OLSON 5104 and 5204 **VACLEAN®** AG FILTER

SECTION II DESIGN FEATURES AND SPECIFICATIONS (Continued)

2.3.2 Specification Drawing, A500



Model 5104

U.S. Pat 6,959,818, US8,028,841;
EU 1,446,213 and 1,758,667;
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Other US and foreign patents pending.

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

SECTION III SAFETY AND REGULATION (Continued)

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 pre-strainer 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 the 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 5103 and 5203 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 filter element. A minimum of 3 ft 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 1-1/2 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 11-1/2 in. If improperly aligned, when the filter clamps are tightened, this could distort the tank causing problems with the filtering and cleaning process.

The tank can rest on the inlet/outlet nipples 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 affect the required pressure differential and reduce the 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 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 pressure of 35 psi 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 5104 and 5204 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 filter element. A minimum of 4 ft 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 1-1/2 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 21-1/2 in. If improperly aligned, when the filter clamps are tightened, this could distort the tank causing problems with the filtering and cleaning process.

The tank can rest on the inlet/outlet nipples 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 affect the required pressure differential and reduce the cleaning effectiveness.

SECTION V OPERATION AND ADJUSTMENTS

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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 5103, 5104, 5203, 5204 VACLEEN® FILTER

SECTION VI MAINTENANCE

6.1 DISASSEMBLY

Required Tools:

- 7/16" wrench
- Adjustable wrench
- 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. Unbolt the clamp that secures the lid (Figure 10).

4.

Remove the lid (Figure 11).



Figure 10: Unbolt Clamp



Figure 11: Remove Lid

5. Remove pre-strainer cap and pre-strainer (Figure 12).



Figure 12: Removal of prestrainer.



Figure 13 Grasping Housing Assembly

6. Firmly grasp housing assembly (Figure 13)

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SECTION VI MAINTENANCE

6.2 DISASSEMBLY INTERNAL ASSEMBLY

7. Pull housing assembly forward in tank (Figure 14).



Figure 14 Pulling Internal Assembly

8. Unscrew pawl retainer (Figure 15) and remove pawl using needlenose pliers (Figure 16).



Figure 15: Removing Pawl Retainer



Figure 16: Removing Pawl

9. Lift internal assembly from tank and set it in a vertical position on the pre-strainer (Figure 17).



Figure 17 Using
Pre-Strainer for
Support



Figure 18 Removing
Housing Screws

10. Using an Allen Wrench, remove the 4 housing screws (Figure 18).

OLSON 5103, 5104 5203, 5204 VACLEAN® FILTER

SECTION VI MAINTENANCE

6.2 DISASSEMBLY INTERNAL ASSEMBLY (Continued)

11. Lift housing (Figure 19). 12. Unscrew Reverser Nut. 13. Remove Reverser (Figure 21).



Figure 19 Lifting Housing



Figure 20 Loosening Nut



Figure 21 Removing Reverser

14. Using 7/16" wrench, remove 4 bulkhead nuts. (Figure 22).



Figure 22 Removing Bulkhead Nuts



Figure 23 Removing Bulkhead

15. Lift the upper bulkhead off the support rods. (Figure 23).

Please note that the Model 5103 (250 gpm) unit has one screen and no center bulkhead. Directions for removal of the center bulkhead and second screen are for Model 5104 (500 gpm) unit only.

OLSON 5103, 5104, 5203, 5204 VACLEEN® AG FILTER

SECTION VI MAINTENANCE

6.2 DISASSEMBLY INTERNAL ASSEMBLY (Continued)

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



Figure 24 Removing Screen

Note: Steps 16 through 18 apply to the Model 5104 (500 gpm) unit only.

16. Remove 4 spacers (Figure 25).



Figure 25 Removing Spacers



Figure 26 Removing Bulkhead



Figure 27 Removing Screen

17. Lift center bulkhead off the support rods (Figure 26)

18. Remove second screen (Figure 27)

OLSON 5103, 5104, 5203, 5204 VACLEEN® AG FILTER

SECTION VI MAINTENANCE

6.1 DISASSEMBLY INTERNAL ASSEMBLY Continued)

19. Remove 2 screws from water motor (Figure 28) 20. Remove water motor arms (Figure 29)



Figure 28 Remove Screws

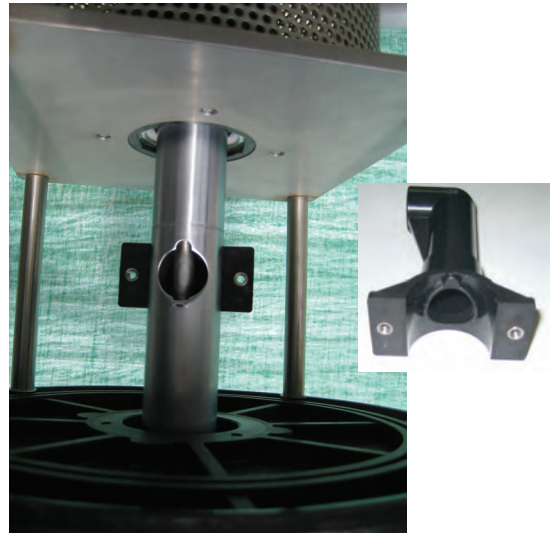


Figure 29 Remove Arms

Important: Figure 29-A shows the proper alignment of notch to arm when reassembling water motor.

20. Remove collector tube (Figure 30). *(On Model 5104, to remove collector tube, you must first remove the upper bulkhead, spacers, screen, center bulkhead and water motor.)*



Figure 30 Lifting collector tube



Figure 31 Removing nozzles

21. To remove the dirt collector nozzles, remove the two 9/64" Allen screws located at the bases of the nozzles (Figure 31).

OLSON VACLEEN® FILTER

SECTION VI MAINTENANCE

6.3 REASSEMBLY OF INTERNAL ASSEMBLY

Follow disassembly 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 with the arm notch properly aligned (See Figure 29-A) to generate the proper rotation of the scanner shaft.
3. Tighten all nuts and bolts in a star pattern until snug. Do not over-torque.

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. Check the the lid o-ring to make sure it is still properly seated.
5. Tighten all bulkhead nuts and bolts in a star pattern until snug. Do not over-torque.
6. Never attempt to seat the internal assembly by tightening the cover nuts and forcing the unit in with the cover.



OLSON VACLEEN® FILTER

6.5 NOTES



OLSON VACLEEN® FILTER

SECTION VII TROUBLE SHOOTING GUIDE

7.1	PROBLEM	THE RED INDICATOR DOES NOT MOVE BACK AND FORTH DURING THE CLEANING CYCLE.
	POSSIBLE CAUSE	Cleaning mechanism is jammed by large particle lodged between the cleaning nozzle and screen.
	SOLUTION	Pull filter cleaning assembly forward to the upper bulkhead. See Para. 6.1, Page 13. Visually inspect the area between the cleaning nozzles and screen. Remove any particles which might cause jamming.
	POSSIBLE CAUSE	Reverser is not working properly.
	SOLUTION	Remove and check the pawl. If teeth are damaged, screw needs to be replaced. See Para. 6.1, Page 13.
7.2	PROBLEM	FLUSHING VALVE IS NOT CLOSING DURING START-UP.
	POSSIBLE CAUSE	System pressure is too low to close.
	SOLUTION	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.
7.3	PROBLEM	EXCESSIVE PRESSURE DROP THROUGH FILTER WITHOUT FLUSHING
	POSSIBLE CAUSES	(1) Flushing valve is installed backwards. (2) Filter is installed backwards.
	SOLUTIONS	(1) Install according to directional arrow. (2) Install pressure line to leg marked inlet.
7.4	PROBLEM	FLUSHING VALVE CHATTERS
	POSSIBLE CAUSE	Air in the valve bonnet.
	SOLUTION	(1) Point bonnet "skyward" to vent trapped air. (2) Manually flush filter several times to flush air from the bonnet, the controller tank and the filter tank. (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)

7.5	PROBLEM	FREQUENT, CONTINUOUS FLUSHING WHILE FILLING MAIN PIPELINE
	POSSIBLE CAUSE	Downstream pressure isn't available to provide vacuum cleaning power. Rapid-filling flow rate exceeds the controller's pressure differential.
	SOLUTION	Partially close downstream mainline valve. Filter gauges should read 35 psi.
	POSSIBLE CAUSE	Filter may have been shut down "dirty" with a contaminant that is difficult to remove after it dries on the screen.
	SOLUTION	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.
7.6	PROBLEM	FREQUENT FLUSHING DURING NORMAL OPERATION
	POSSIBLE CAUSE	The controller pressure differential is set too low, causing vibration to initiate a flush cycle.
	SOLUTION	Increase pressure differential (see Solution 7.1)
	POSSIBLE CAUSE	Screen may be partially plugged.
	SOLUTION	Perform super flush as described in Solution 7.4.
	POSSIBLE CAUSE	Rotor may be jammed which results in only cleaning the screen area that is directly in front of the nozzles.
	SOLUTION	Open tank and check for free movement of rotor mechanism.
7.7	PROBLEM	WHEN CHANGING BLOCKS, FILTER FLUSHES RAPIDLY.
	POSSIBLE CAUSE	The flush cycle may be set too short (20 seconds is normal). Flushing valve is not opening fully.
	SOLUTION	Re-adjust controller for highest flow rate.
	POSSIBLE CAUSE	Filter was shut down "dirty" with contaminant drying on the screen.
	SOLUTION	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.

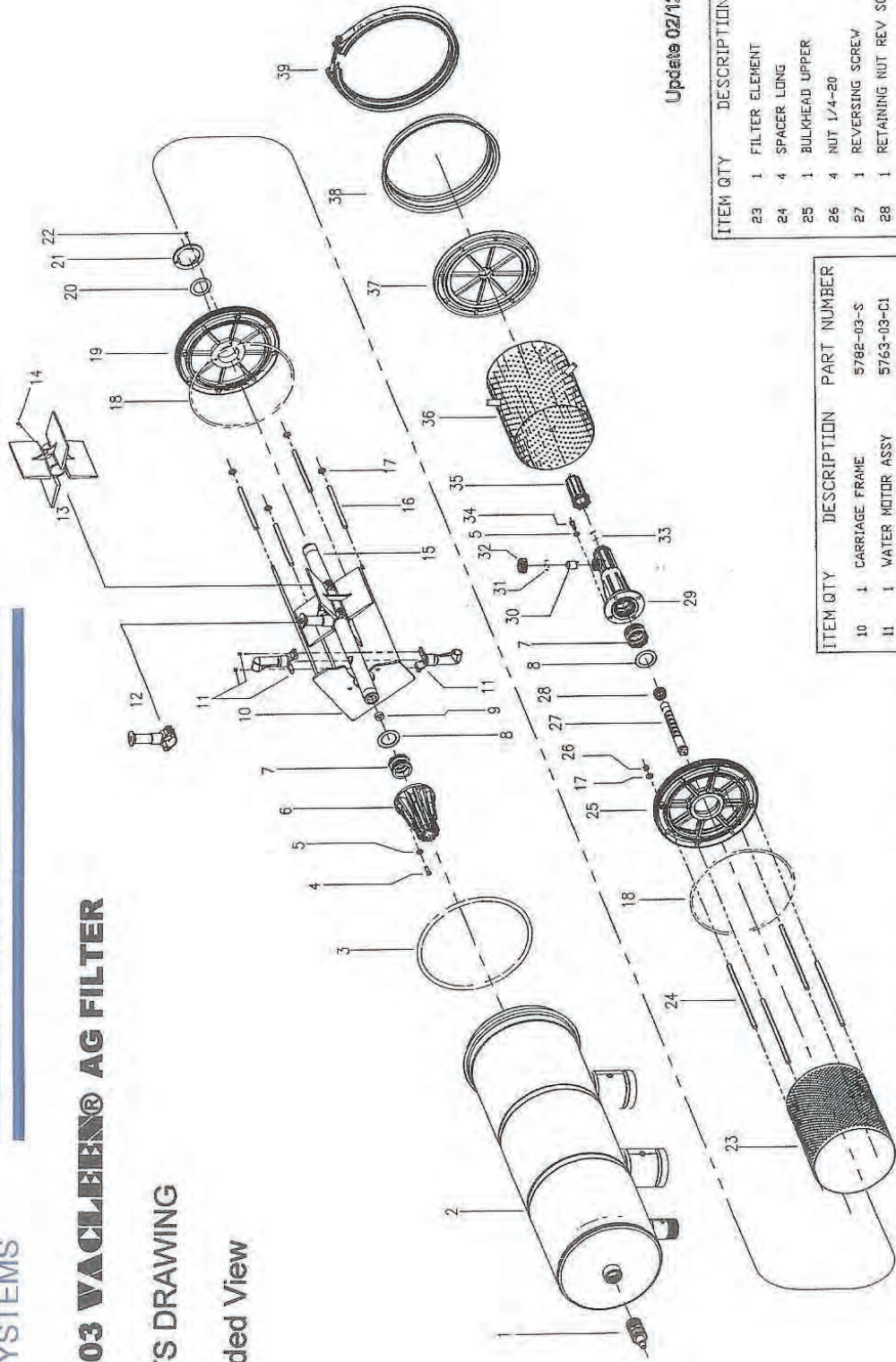


when water counts®

OLSON 5103 VACLEEN® AG FILTER

VIII PARTS DRAWING

8.1 Exploded View



Update 02/12

ITEM QTY	DESCRIPTION	PART NUMBER	
10	1	CARRIAGE FRAME	5782-03-S
11	1	WATER MOTOR ASSY	5763-03-C1
12	2	ASSY VACUUM NOZZLES	5774-03-C
13	1	SPEED REDUCER ASSEMBLY	5773-03-I-A
14	1	SCREW SHC 1/4-20 X 1/2	5773-9-03
15	1	DIRT COLLECTOR	5773-03-C1-A1
16	4	SPACER SHORT	5772-03-S
17	8	WASHER	3574-316
18	2	BULKHEAD O-RING	3371-C
19	1	LOWER BULKHEAD	5785-03-HL
20	1	SEAL WASHER	3565-03-I-C
21	1	WASHER RETAINER	3565-06-2-C
22	3	SCREW FHC 8-32	3565-06-3

ITEM QTY	DESCRIPTION	PART NUMBER	
1	1	SENSOR ASSY	5811-06-4-C
2	1	FILTER TANK A250-03	5801-03-03-S-G
3	1	O-RING LID TANK	3372
4	4	SCREW SHC 1/4-20 X 5/8	5774-4-06
5	8	LOCK WASHER	5765-06-I
6	1	CYLINDER	5812-03-C
7	2	BUSHING ASSEMBLY	5776-03-5-A-C
8	2	RETAINER RING	5776-03-10-C1
9	1	MAGNET	5773-03-7

ITEM QTY	DESCRIPTION	PART NUMBER	
23	1	FILTER ELEMENT	3754-XXX
24	4	SPACER LONG	3571
25	1	BULKHEAD UPPER	3584-03-H1
26	4	NUT 1/4-20	3573-316
27	1	REVERSING SCREW	5776-03-16-A
28	1	RETAINING NUT REV SCREW	5776-03-13
29	1	REVERSER HOUSING	5776-03-11
30	1	PAWL REVERSER	5772-06-C
31	1	O-RING PAWL RETAINER	5770-06-C
32	1	PAWL RETAINER	5778-03-C1
33	1	COVER O-RING	5779-06-3-C1
34	4	SCREW SHC 1/4-20 X 7/8	5765-06
35	1	REVERSER COVER	5779-03-C1
36	1	PRESTRAINER ASSY	5321-03-S-A
37	1	PRESTRAINER CAP	3587
38	1	LID	3311
39	1	MARKEN CLAMP LID	3341

U.S. Pat 6,959,818, US 8,028,641;
 EU 1,446,213 and 1,758,667,
 Israel 161727, and Germany 602 13 277 0-8
 Other US and foreign patents pending



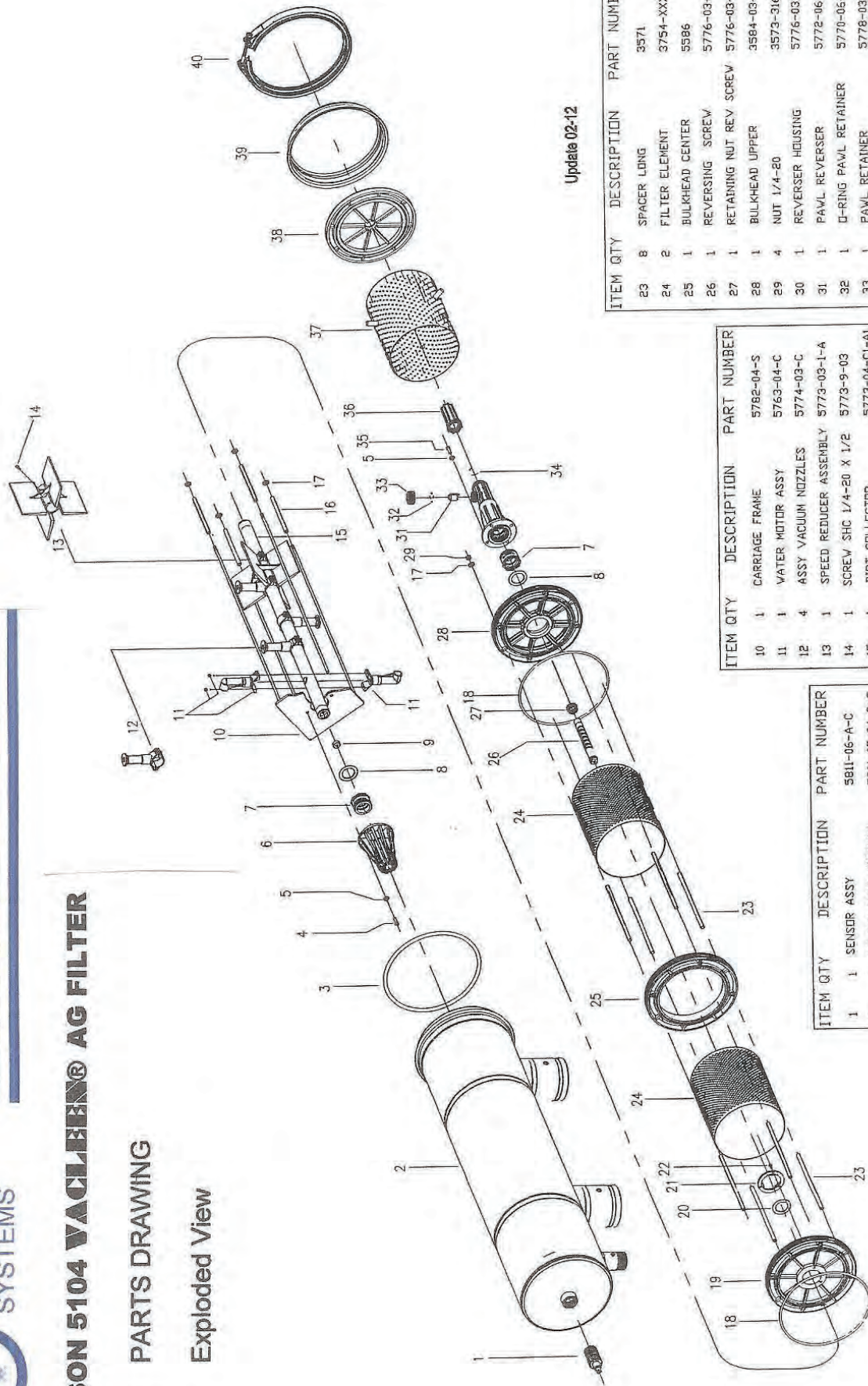
**OLSON
IRRIGATION
SYSTEMS**

when water counts®

OLSON 5104 VACLEEN® AG FILTER

VIII PARTS DRAWING

8.1 Exploded View



Update 02-12

ITEM QTY	DESCRIPTION	PART NUMBER
10	CARRIAGE FRAME	5762-04-S
11	WATER MOTOR ASSY	5763-04-C
12	ASSY VACUUM NOZZLES	5774-03-C
13	SPEED REDUCER ASSEMBLY	5773-03-1-A
14	SCREW SHC 1/4-20 X 1/2	5773-9-03
15	DIRT COLLECTOR	5773-04-CI-A1
16	SPACER SHORT	5772-03-S
17	WASHER	3574-316
18	BULKHEAD O-RING	3371-C
19	BULKHEAD LOWER	5785-03-H1
20	SEAL WASHER	3565-03-1-C
21	WASHER RETAINER	3565-06-2-C
22	SCREW FHC 8-32	3565-06-3

ITEM QTY	DESCRIPTION	PART NUMBER
1	SENSOR ASSY	5811-06-A-C
2	FILTER TANK A500-04	5801-05-04-S-G
3	O-RING LID TANK	3372
4	SCREW SHC 1/4-20 X 5/8	5774-4-06
5	LOCK WASHER	5765-06-1
6	CYLINDER	5812-03-C
7	BUSHING ASSEMBLY	5776-03-5-A-C
8	RETAINER RING	5776-03-10-CI
9	MAGNET	5773-03-7

ITEM QTY	DESCRIPTION	PART NUMBER
23	SPACER LONG	3571
24	FILTER ELEMENT	3754-XXX
25	BULKHEAD CENTER	5586
26	REVERSING SCREW	5776-03-16-A
27	RETAINING NUT REV SCREW	5776-03-13
28	BULKHEAD UPPER	3584-03-H1
29	NUT 1/4-20	3573-316
30	REVERSER HOUSING	5776-03-11
31	PAWL REVERSER	5772-06-C
32	O-RING PAWL RETAINER	5770-06-C
33	PAWL RETAINER	5778-03-CI
34	COVER O-RING	5779-06-3-CI
35	REVERSER COVER	5765-06
36	PRESTRAINER ASSY	5779-03-CI
37	PRESTRAINER CAP	5321-03-S-A
38	LID	3587
39	MARDON CLAMP LID	3311
40	MARDON CLAMP LID	3341

U.S. Pat 6,959,818, US 8,028,641;
EU 1,446,213 and 1,758,667,
Israel 161727., and Germany 602 13 277 0-8
Other US and foreign patents pending

TERMS AND CONDITIONS OF SALE

General: All quotations and orders are subject to the following conditions of sale. Clerical errors are subject to correction. All prices are subject to change without notice. Orders become contracts only upon acceptance by Olson Industrial Systems (herein called Olson), at Santee, CA, USA. Any terms and conditions contained in the Purchaser's purchase order or request for quotation, written or oral, which differ from Olson's terms and conditions shall not be binding upon Olson. Any agreements or other understandings modifying the conditions of the contract resulting from Olson's acceptance of a customer's order will not be binding unless made in writing by Olson's home office.

Changes in Orders: Purchaser shall not have the right to change quantities and items on orders prior to the date of shipment, unless: 1) Olson agrees to such changes in writing; 2) time for delivery is extended as required by Olson; 3) items being changed are not specially constructed for Purchaser and, if so, a cancellation charge acceptable to Olson has been agreed upon in writing.

Cancellations: Purchaser shall not have the right to cancel items on order prior to the date of shipment unless: 1) Olson agrees to such cancellation in writing; 2) items being cancelled are not specially constructed for Purchaser and, if so, a cancellation charge acceptable to Olson has been agreed upon in writing.

Returns: Olson will not accept any return of any product unless such return has been authorized by Olson in writing. All such authorized returns of good material must be shipped freight prepaid and, upon their receipt and inspection, if they are found to be saleable, credit will be issued on the basis of invoiced price or the current selling price, whichever is lower, less a 20% handling and restocking charge. If found to be unsaleable, returnee will be given the option of paying for return of goods to his place of business or accepting scrap value from Olson.

Limited Warranty: Products are warranted to be free from material or manufacturing defects for a period of one (1) year from date of installation or 18 months after shipment, whichever occurs first. Any alleged defect must be reported to Olson, in writing, within 5 days after discovery thereof or this warranty shall be void. If, upon inspection, Olson determines that the product is defective and has not been subject to abusive treatment or faulty installation, or used with fluids, gases or in atmosphere not compatible with the materials of manufacture, the product, at Olson's option, will be repaired or replaced at no charge to the customer. This warranty does not apply to any consequential damages, including, but not limited to lost profits, labor charges, in and out charges, freight charges, or any other such expenses or loss resulting from an allegedly defective product and such damages are not the responsibility of Olson. Olson shall not be liable for any injury or damages other than to the goods themselves. In the event that a defect is claimed, the alleged defective product must be received, freight prepaid, by Olson. Olson, in its sole discretion, shall determine whether such product was defective and not damaged by misuse or improper installation or use. The preceding sole warranty is given by Olson. Any implied warranty of merchantability and fitness for a particular purpose are specifically excluded from the transaction. Any warranty made by the Purchaser or any successor-in-interest to the Purchaser shall be the responsibility of that party and Olson shall have no duties with respect to such warranty.

Promises of Delivery: The delivery date is only an estimate of the date of shipment. Olson does not guarantee shipping dates and notwithstanding anything contained herein to the contrary, Olson will not be responsible for damages suffered by the Purchaser because of late delivery. Olson will not be responsible for delays due to reasons beyond its control such as fire, flood, earthquake, strikes, Acts of God, war, material shortages, insurrection, government regulations, etc.

Product Modification: Olson reserves the right to modify its products at any time without notice. Olson also reserves the right to deliver such modified products, as long as they meet the original performance specifications of the Purchaser.

Claims: All claims regarding product or shortages must be received in writing by Olson within 10 days of receipt of the product by Purchaser. All shipments are made F.O.B. the carrier at Olson's dock, with risk of loss passing to the Purchaser at that point.

Terms: Payment will be due net 30 days after date of invoice on all orders with appropriate credit. A 1.5% per month service charge will be added to the unpaid balance to all accounts in excess of 30 days from date of invoice.

Price: All prices are subject to change without notice unless guaranteed by Olson in writing. In the event that it becomes necessary to increase prices after acceptance of Purchaser's order, Purchaser's approval will be obtained before shipment is made, otherwise the order will be cancelled.

Freight: Charges for transportation of the goods are the responsibility of the Purchaser unless specifically agreed to in writing by Olson. If Olson accepts responsibility for shipping charges, Olson reserves the right to ship by any carrier of its choice. If special transportation is requested by the Purchaser, all such related charges shall be for the Purchaser's account.

Taxes: No deductions are allowed for federal, state or other taxes. Any manufacturers or sales tax applicable to any order will be added to prices and terms on Olson's price and discount schedule.

Collection: In the event it becomes necessary to incur any expense for collection of any overdue account, reasonable collection charges, including reasonable attorney's fees will be added to the balance due and Purchaser shall pay any such charges.

Applicable Law: The laws of the State of California shall govern any transaction.



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