

SandMaster

Sand Filter

Owner's Manual

Installation, Operation and Service

Models: SM16, SM19, SM24, SM31

WARNING

This equipment must be installed and serviced by a qualified technician in accordance with all applicable codes and ordinances. Improper installation can create hazards which could result in property damage, serious injury or death. Improper installation will void the warranty.

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



Notice to Installer

This manual contains important information about the installation, operation and safe use of this product. Once installation is complete, this manual must be given to the owner/operator of this equipment.

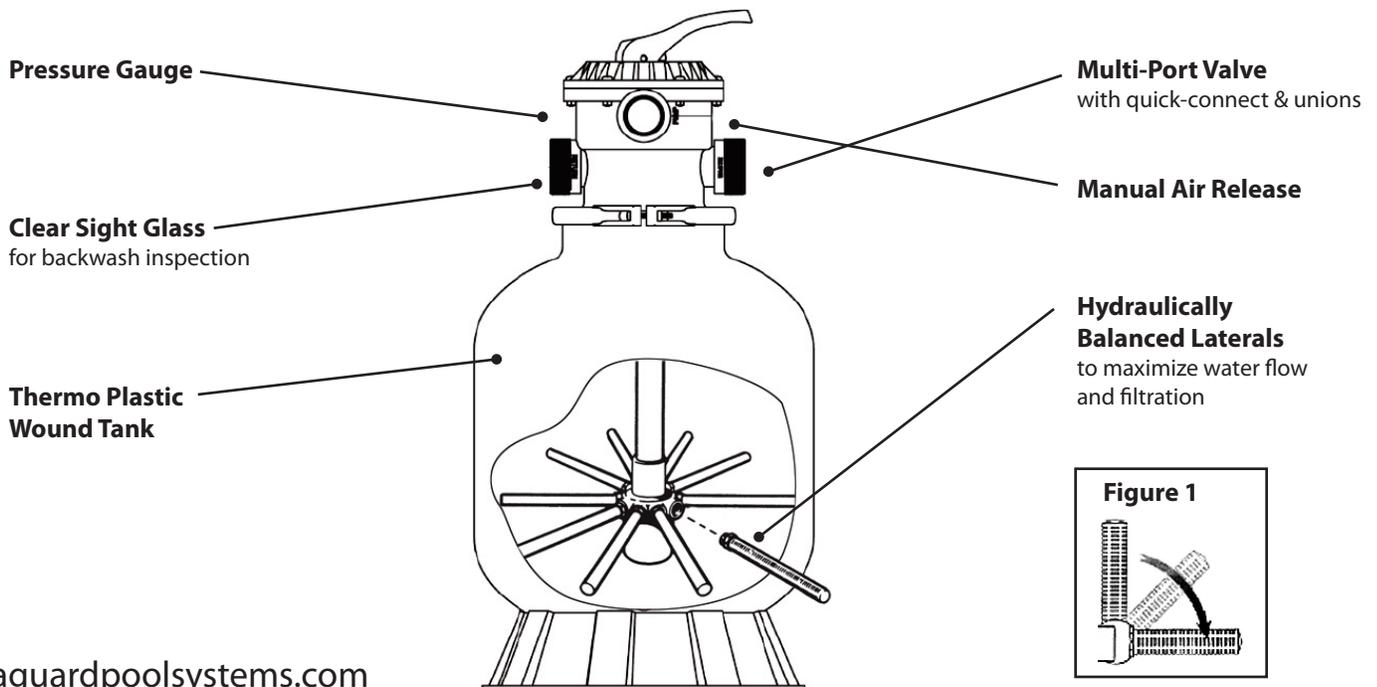
Table of Contents

Safety Information	2	Maintenance	5
SandMaster Filter Breakdown	2	Trouble Shooting	6
Installation	3	Winterizing	6
Multi-Port Valve Operation	4	Specifications	6
Initial Startup of Filter	4	SandMaster Parts Listing	7
Backwashing	5	Warranty	8

■ Safety Information

1. Sand Filters are designed to work with water at a temperature > than 32° F and < than 113° F. The filter should never be operated outside of these temperatures or damage may occur.
2. The installation should be carried out in accordance to the safety instructions of swimming pools and the specific instructions for each facility.
3. The user should make sure that the installation is carried out by qualified authorized persons and that these persons have first carefully read the following instructions.
4. The operating safety of the filter is only guaranteed if the installation and operation instructions are correctly followed.
5. To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
6. Incorrectly installed equipment may fail, causing severe injury or property damage.
7. Chemical spills and fumes can weaken Swimming Pool. Corrosion can cause filters and other equipment to fail, resulting in severe injury or property damage. Do not store pool chemicals near your equipment.
8. Any modification of the filter requires the prior consent from the supplier's original replacement parts and accessories authorized by the manufacturer ensure a high level of safety. The supplier assumes no liability for the damage and injuries caused by unauthorized replacement parts and accessories.
9. In the event of defective operation or fault, contact the supplier or it's nearest authorized service agent.

■ SandMaster Filter Breakdown



Sand Filtration

Incoming water from the piping system is automatically directed by the Multi-Port Valve to the top of the filter bed. As the water is pumped through the filter sand, dirt and debris are trapped by the filter bed, and filtered out. The filtered water is returned from the bottom of the filter tank, through the Multi-Port Valve and back through the piping system.

■ Installation

1. Position the filter as close to the Swimming Pool as possible.
2. Position the filter so that it is free from flooding, away from sumps, guttering, garden hollows, etc.
3. Position the filter so that the piping connections, Multi-Port Valve and winter drain is convenient and accessible for operation, servicing and winterizing.
4. Ensure that the compliance label is facing the front to allow easy identification in the case of service difficulties.
5. The filter should be placed on a level concrete slab, very firm ground, or equivalent. Ensure that the ground will not subside, preventing any strain from the attached plumbing.
6. Ensure that there is no movement of the filter during operation of the Multi-Port Valve.

Filling the Filter Media

1. Before filling the filter media into the filter vessel, do a visual check of the laterals. Look for broken or loose laterals. Replace if necessary. Install laterals, aligning the raised point of the laterals to the raised indicator point on the lateral holder/hub. Turn 90 deg clockwise. After hearing the locking sound, the lateral is well installed.
Please refer to picture on page 2.
⚠ NOTE: For SandMaster model SM31, check to confirm all laterals are in the down position. (See figure 1)
2. Check that the air release hose is fixed well on the body of lateral holder, and that the other end of the air release hose is out of the sand. DO NOT embed the air release hose in sand.
3. To eliminate stress on the laterals, fill the filter vessel with enough water to provide a cushioning effect when the sand is poured in.
4. The Sand Filter is supplied with a perforated plastic locator, which centers the stem and prevents media from entering the stem pipe. Place the perforated plastic locator on the center stem of the filter and carefully pour in the filter media via the perforated holes of the plastic locator. Remove the plastic locator once completed.
⚠ NOTE: If a template is not provided or is lost you must center the stem and cover the stem opening to prevent non-alignment and media entering the stem pipe.
5. Wash all the filter media and debris away from the tank neck of the filter vessel before installing Multi-Port valve.

Plumbing

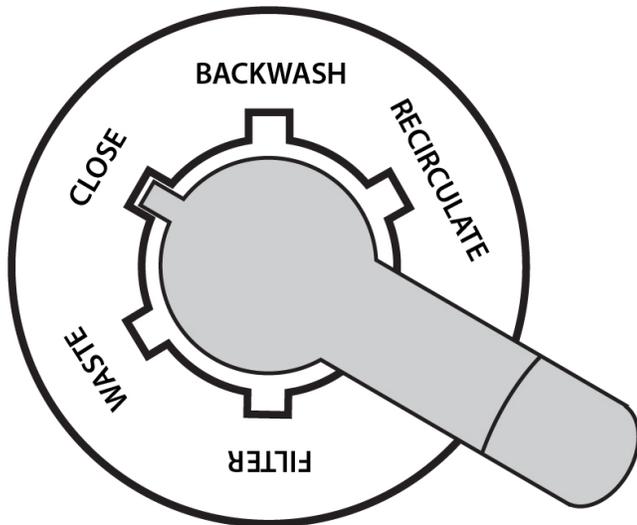
1. Check that the incoming water pressure is within the filter's recommended working pressure and ensure that a pressure limiting valve is installed if using mains water or a high pressure pump.
2. Ensure that a foot valve (non return valve) is installed if the pump is installed 10 ft. above the water level.
3. If the sand filter is installed below the water level or connected to mains water, isolation valves should be installed before the filter and after the valve. This will prevent water flow during any routine maintenance that may be required.
4. Minimize the length of pipe and the number of fittings to minimize friction loss to ensure maximum efficiency.
5. Connect all plumbing to the Multi-Port Valve. Ensure all joints are glued or tightened securely to prevent leaking.
6. To prevent breakage and damage to the pump and Multi-Port Valve, use only pipe sealants specifically formulated for plastics.
7. Ensure solvents are not excessively applied to fittings as this could run into O-Rings and create sealing problems.
8. Do not over tighten fittings or adapters.

Installation of the Multi-Port Valve

Top Mount Sand Filters are supplied with a screw down Multi-Port Valve, flange clamp, screws and O-Ring.

1. Loosely pre-assemble both halves of the clamp with one screw and nut, turning nut 2-3 turns. Do not tighten.
2. Insert filter control valve (with flange clamp and O-Ring in place) onto the tank neck. Make certain that the center pipe slips into the hole in the bottom of the valve.
3. Install clamp around tank and valve flange and assemble second screw and nut Tighten just enough so that the valve can be rotated on the tank for final positioning.
4. Connect pump to control valve opening marked PUMP. After connections are made, tighten valve flange clamp with screwdriver.
5. Wrap Teflon tape on the pressure gauge threads and insert into the tapped hole on the valve body. Do not over tighten.
6. Make return to pool pipe connection to control valve opening marked RETURN and complete other necessary plumbing connections, suction lines to pump, waste, etc.

■ Multi-Port Valve Operation



1. Filter - Position for filtering the body of water.

Incoming water from the piping system is automatically directed by the Multi-Port Valve to the top of the filter bed. As the water is pumped through the filter sand, dirt and debris are trapped by the filter bed, and filtered out. The filtered water is returned from the bottom of the filter tank, through the Multi-Port Valve and back through the piping system.

2. Backwash - Position for cleaning the filter media.

Water flow is reversed by the Multi-Port Valve through the filter bed so that water flow is directed to the bottom of the tank and up through the filter bed, flushing the previously trapped dirt and debris out the waste line.

3. Rinse - Position for flushing the filter system.

The water flow is directed by the Multi-Port Valve through the filter bed and out the waste line. This process settles the filter media bed into place and ensures any dirt or debris is rinsed out of the filter, preventing possible return to the Swimming Pool.

4. Waste - Position for bypassing the filter bed to Waste.

The water flow is directed by the Multi-Port Valve straight to the backwash outlet, bypassing the entire filter bed. This Multi-Port Valve position is used lower the water level or for vacuuming water with high dirt loads.

5. Re-circulate - Position for bypassing the filter bed to the Swimming Pool.

The Multi-Port valve recirculates water flow directly back to the Swimming Pool, bypassing the filter.

6. Closed – Position for closing all flow to the filter.

This position is not to be used with the pump operating.

⚠ **CAUTION:** Operation of the Multi-Port Valve or mode selection is to be always done with the pump switched off.

■ Initial Startup of Filter

Be sure correct amount of filter sand media is in tank and that all connections have been made and are secure.

1. Depress Multi-Port Valve handle and rotate to the BACKWASH position.
⚠ **NOTE:** To prevent damage to control valve seal, always depress handle before turning.
2. Switch on the Pump/ Open the Inlet Valve allowing the filter tank to fill with water.
⚠ **CAUTION:** All suction and discharge valves must be open when starting the pump. Failure to do so could cause severe personal injury and/ or property damage.
⚠ **NOTE:** If a pump is installed, switch the pump on and off, instead of closing and opening the Inlet Valve.
3. Once water flow is steady out the waste line, run the pump for at least 1 minute. The initial backwashing of the filter is recommended to remove any impurities or fine sand particles in the sand media.
4. Turn the pump off, Multi-Port Valve to the RINSE position. Switch on the Pump/ Open the Inlet Valve until water in sight glass is clear — approximately 10 to 15 seconds.
5. Switch off the Pump/ Close the Inlet Valve, set the Multi-Port Valve to the FILTER position and Switch on the Pump/ Open the Inlet. Your filter is now operating in the normal filter mode.
6. Adjust pool suction and return valves to achieve desired flow. Check the plumbing and filter for water leaks and tighten connections, bolts, and nuts, as required.
⚠ **NOTE:** During initial clean-up of the pool water, it may be necessary to backwash frequently due to the unusually heavy initial dirt load in the water.
7. Record the pressure gauge reading (start up pressure) during initial operation. After a period of time, the accumulated dirt and debris in the filter causes a resistance to flow, and the flow diminishes. The pressure will start to rise and the flow of water will start diminishing. When the pressure gauge reading is 10psi higher than the initial "Start up" pressure, it is time to backwash (clean) the filter (see Backwashing).

■ Backwashing

The function of backwashing is to separate the deposited particles from filter media grains and flush them from the filter bed. Backwashing is achieved by reversing the flow of water through the filter bed at a fairly high flow rate. This high flow rate expands the filter bed and the water collects the debris taking it to waste.

Conditions for Backwashing

Time for backwashing is determined by the following conditions:

1. The flow rate through the filter bed decreases until it is insufficient to meet the demand.
2. The removal efficiency of the filter bed decreases to the point where the effluent quality deteriorates and is no longer acceptable.
3. When the pressure gauge reading is 10psi higher than the start up pressure.
4. If the filter is connected to mains water, pressure rise is not an accurate indicator as mains pressure tends to fluctuate. It is best to rely on the actual flow rate.
⚠ NOTE: We recommends that you backwash a swimming pool sand filter in a residential installation at least once a month.

Importance of Backwashing

The importance of backwashing cannot be overstated. Dense filter media can become "packed" without proper and frequent enough backwashing. Debris will remain trapped and create channeling within the filter bed. This will result in the filter bed exhausting early. If debris is not flushed from the media grains, the filter bed will become dirtier and dirtier as time goes on until the filter operation fails.

Backwashing Instructions

1. Switch off the Pump/ Close the Inlet Valve.
⚠ NOTE: If a pump is installed, switch the pump on and off, instead of closing and opening the Inlet Valve.
2. Release the filter's pressure by loosening Pressure Release Valve until the Pressure Gauge needle drops to zero <0>.
3. Re-tighten Pressure Release Valve.
4. Depress and turn Handle 180° to the BACKWASH position. In the BACKWASH position, the water flow is automatically reversed through the filter so that it is directed to the bottom of the filter vessel, up through the sand, flushing the previously trapped dirt and debris out the waste line.
5. Switch on the Pump/ Open the Inlet Valve. Backwash water will flow out through drain pipe.
6. When the backwash water in the sight glass appears clear, Switch off the Pump/ Close the Inlet Valve.

7. Depress and turn the handle to the RINSE position. In the RINSE water flow is directed through the filter bed and out of the filter through the backwash outlet. This process settles the filter media bed into place and ensures any dirt or debris is rinsed out of the filter, preventing possible return to the pool.
8. Switch on the Pump/ Open the Inlet Valve. Rinse water will flow out through the drain pipe.
9. When the rinse water in the sight glass appears clear. Switch off the Pump/ Close the Inlet Valve.
10. Depress and turn the handle to the Filter position and Switch on the Pump/ Open the Inlet Valve for normal operation.

■ Maintenance

The filter media will only require replacement once it has reached the limits of its designated life. Refer to the product information of the particular filter media used.

To ensure the maximum life of the selected filter media, please follow the procedures below:

1. Backwash the filter regularly according to the instructions set under "Backwashing".
2. Refer to the specifications of the filter media used and implement regeneration procedures accordingly.
3. Maintain a correct chemical balance your pool/spa water. The chemical balance of water is a relationship between its Ph, total alkalinity, calcium hardness and water temperature. The water must be maintained at all times to the following:
PH LEVEL: BETWEEN 7.2 & 7.8.
TOTAL ALKALINITY: BETWEEN 80 & 150ppm.
CALCIUM HARDNESS: BETWEEN 150 & 300ppm.
And within these tolerances be balanced to the Langelier Saturation Index within a range of -0.2 to +0.2.
⚠ NOTE: Testing kits are available to test the water yourself or alternately bring a sample of the water to a professional pool and spa shop.
4. Mains water and rural water supplies need to be monitored. Saturation (life) in mains water or bore (rural) will vary depending on water quality.
5. To prevent damage to the pump and filter and for proper operation of the system, clean pump strainer and skimmer baskets regularly.

■ Trouble Shooting

Above normal or excessive force to operate the Multi-Port Valve	Scoring or jamming with foreign matter or debris. If this condition persists after rinsing, disassemble the valve to clear. Continued operation of the valve may result in a non-sealing condition (damage to spider gasket). This will lead to water loss to the backwash line or to inefficient filtration.	Filter Media in the backwash	<ol style="list-style-type: none"> 1. Excessive quantity of media in the filter. 2. Excessive water flow. 3. Incorrect sized or grade of filter media.
Dirty Water	<ol style="list-style-type: none"> 1. Insufficient filtration time. 2. Heavy contaminants or dirt load. 3. Dirty filter, requires backwashing. 4. Air leaking on suction. 5. Pump impeller vanes blocked. 6. In sufficient water supply (water level low, blockage). 7. Pump not primed. 8. In correct water chemistry. 9. Excessive flow of water for filter size. Foreign matter or debris forced through filter bed and through the under drain. 	Filter Media returning to Swimming Pool/ Spa	<ol style="list-style-type: none"> 1. Filter is on recirculate. 2. Verify it is the filter media and not from another source. 3. Damage to the under-drain laterals. 4. Damage or incorrect fit of Multi-Port Valve are correct. 5. Incorrect or mixed grades of media in the filter.
	<ol style="list-style-type: none"> 10. Other restrictions including (pool suction cleaners) resistance from other inline equipment such as strainers. Operating the filter on recirculate will determine if the restriction is in the filter. 11. Clogged or channeled filter media. Perform backwash or regeneration. Refer to maintenance section. 	Short filtration cycles	<ol style="list-style-type: none"> 1. Presence of algae or a scale builds up. 2. Check water chemistry. 3. Excessive water flow, check pump size, mains water flow. 4. Filter blocked through calcium etc. clean filter media.

■ Winterizing

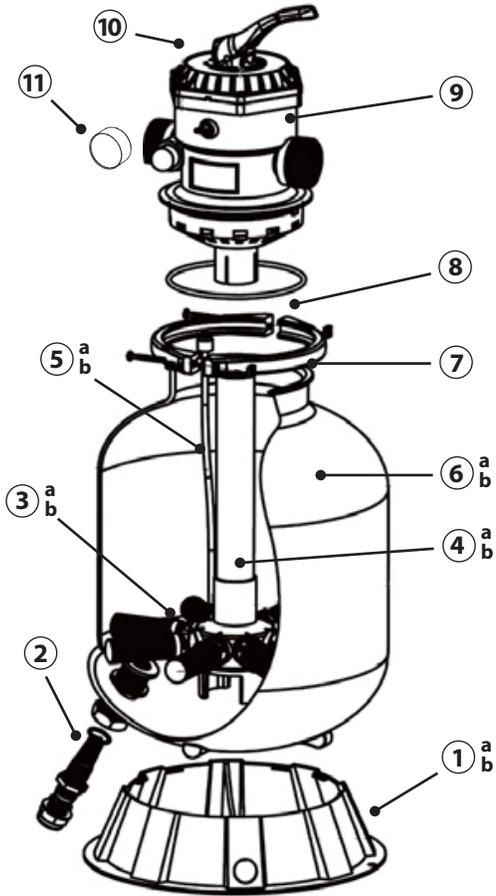
1. Completely drain tank by unscrewing drain cap at the base of the filter tank. Leave cap off during winter.
2. Depress control valve handle and rotate to set pointer on valve top between any two positions. This will allow water to drain from the valve. Leave valve in this "inactive" position.
3. Drain and winterize pump according to pump instructions.

■ Specifications

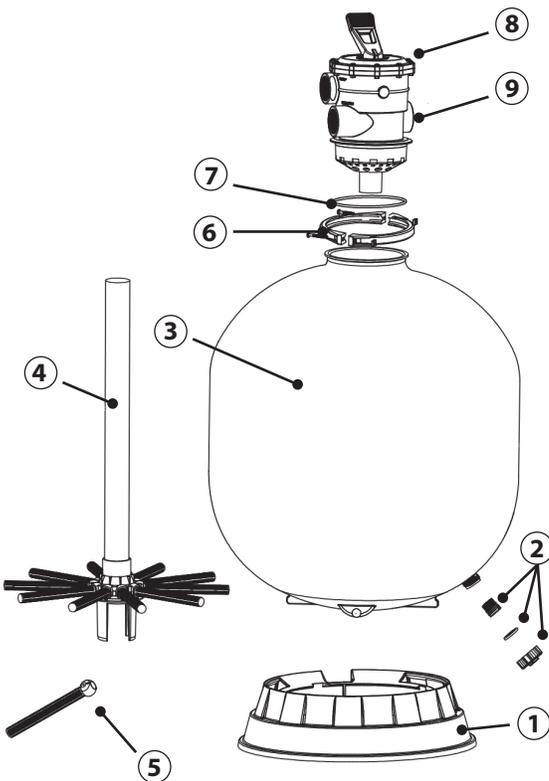
Model Number	Design-Flow Rate		Maximum Working Pressure		Filtration Area		Sand Required		
	GPM	M ³ /H	PSI	BAR	Ft ²	m ²	Type	Amount	
							#20 Pool Filter Sand	LBS	KG
SM16	35	7.9	50	3.5	1.35	0.12	0.45-0.56mm (0.018-0.022in)	100	45
SM19	40	9	50	3.5	2.10	0.20		200	90
SM24	50	11.3	50	3.5	3.04	0.28		300	136
SM31	98	22.3	50	3.4	4.90	0.45	0.45-0.55mm (0.016-0.021in)	500	227

SandMaster Parts Listing

Models: SM16, SM19, SM24



No.	Part Number	Description	Req'd Qty
1a	AGX304009	Filter Base for SM16	1
1b	AGX305009	Filter Base for SM19, SM24	1
2	AGX304073	Tank Drain Assembly	1
3a	AGX304017	Lateral for SM16, SM19	8
3b	AGX306016	Laterals for SM24	8
4a	AGX304079	Center Pipe for SM16	1
4b	AGX305071	Center Pipe for SM19	1
4c	AGX306072	Center Pipe for SM24	1
5a	AGX304172	Air Relief Assembly for SM16	1
5b	AGX305173	Air Relief Assembly for SM19	1
5c	AGX306173	Air Relief Assembly SM24	1
6a	AGX304008	16" Tank Only for SM16	1
6b	AGX305008	19" Tank Only for SM19	1
6c	AGX306008	24" Tank Only for SM24	1
7	AGX304072	Flange Clamp	1
8	AGX310120	Flange Clamp O-Ring	1
9	AGX304071	7-Way Multi-Port Valve	1
10	AGX6VLS00	7-Way Multi-Port Valve Handle Assembly	1
	AGX6VL000	7-Way Multi-Port Valve Label	1
11	AGXB88240	Pressure Gauge	1



Model: SM31

No.	Part Number	Description	Req'd Qty
1	AGX309010	Filter Base	1
2	AGX309074	Drain Cap Kit	1
3	AGX308072	Filter Tank Assembly (Skirt, Drain, Laterals)	1
4	AGX308071	Folding Lateral Assembly with Center Pipe	1
5	AGX309009	Lateral for SM31	10
6	AGX304072	Flange Clamp	1
7	AGX310120	Flange Clamp O-Ring	1
8	AGX309071	2" 7-Way Multi-Port Valve	1
9	AGX2INVLS	2" 7-Way Multi-Port Valve Handle Assembly	
	AGX2INVLO	2" 7-Way Multi-Port Valve Label	

■ Limited Warranty

For one (1) year from the date of purchase, will repair or replace, at its option, for the original owner any parts of its filters ("Product") which are found upon examination to be defective in materials or workmanship. This Limited Warranty covers parts only for a period of one (1) year.

Please contact the store you purchased the filter from for instructions. Be prepared to provide a receipt, the model number and serial number when exercising this limited warranty.

Purchaser must pay all transportation charges on Products or parts submitted for repair or replacement.

All non-warranty service charges are the responsibility of the original owner. Failure to pay for non-warranty service charges will void this Limited Warranty.

This Limited Warranty does not cover Products that have been damaged as a result of accident, freezing, abuse, misuse, neglect, improper installation, improper maintenance or failure to operate in accordance with written instructions. All maintenance and service must be performed by service agents approved. Any unauthorized alteration or repairs will void this Limited Warranty.

THERE IS NO OTHER EXPRESS WARRANTY. IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO ONE (1) YEAR FROM THE DATE OF PURCHASE. THIS IS THE EXCLUSIVE REMEDY AND ANY LIABILITY FOR ANY AND ALL INDIRECT OR CONSEQUENTIAL DAMAGES OR EXPENSES WHATSOEVER IS EXCLUDED.

Some states do not allow limitations on how long an implied warranty lasts, or do not allow the exclusions or limitations of incidental or consequential damages, so the above limitations might not apply to you. This limited warranty gives you specific legal rights, and you may also have other legal rights which vary from state to state.

In no event, whether as a result of breach of contract warranty, tort (including negligence) or otherwise, shall its suppliers be liable for any special, consequential, incidental or penal damages including, but not limited to loss of profit or revenues, loss of use of the products or any associated equipment, damage to associated equipment, cost of capital, cost of substitute products, facilities, services or replacement power, downtime costs, or claims of buyer's customers for such damages.

This Limited Warranty does not include freight charges for equipment or component parts, to and from the factory, services such as maintenance or inspection, repair or damage due to negligence such as freezing conditions, incorrect installation, nor acts of God. The liability shall not exceed the repair or replacement of defective parts under this Limited Warranty.

This Limited Warranty also does not include unnecessary service calls due to erroneous operational reports, external valve positions, or electrical service. If a non-warranty service call is made, and the homeowner is unwilling to pay for the service call, this Limited Warranty will be voided. This Limited Warranty is voided if the product is repaired or altered by any persons or agencies other than those authorized. This Limited warranty applies only within the continental USA. For warranty outside the continental USA.

You MUST retain your purchase receipt along with this form. In the event you need to exercise a warranty claim, you MUST present a copy of the purchase receipt at the time of service. Please contact the store you purchased the filter from for service or return authorization and instructions.

DO NOT MAIL THIS FORM. Use this form only to maintain your records.

MODEL NO. _____ SERIAL NO. _____ INSTALLATION DATE _____

Thank you for choosing AquaGuard!