ISLS311SX1 Rev B

LS Series AQUATIC SAND FILTER

Owner's Manual

MODELS: LS311SX & LS360SX

IMPORTANT SAFETY INSTRUCTIONS

Basic safety precautions should always be followed, including the following: Failure to follow instructions can cause severe injury and/or death.

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

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

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

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

SAVE THIS INSTRUCTION MANUAL

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HAYWARD®

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1. IMPORTANT SAFETY INSTRUCTIONS

⚠ **WARNING** - **Read and follow all instructions in this owner's manual and on the equipment. Failure to follow instructions can cause severe injury and/or death**.

⚠ **CAUTION – This FILTER is not intended to be used in swimming pools or spas. It is specifically designed to be used where bathers are NOT subjected to suction outlets while the pump is in operation.**

⚠ **WARNING – Hazardous Pressure.** Water circulation systems operate under hazardous pressure during start up, normal operation, and after pump shut off. Stand clear of circulation system equipment during pump start up. Failure to follow safety and operation instructions could result in violent separation of the pump housing and cover, and/or filter housing and clamp due to pressure in the system, which could cause property damage, severe personal injury, or death. Before water circulation system, all system and pump controls must be in off position and filter manual air relief valve must be in open position. Before

starting system pump, all system valves must be set in a position to allow system water to return back to the system. Do not change filter control valve position while system pump is running. Before starting system pump, fully open filter manual air relief valve. Do not close filter manual air relief valve until a steady stream of water (not air or air and water) is discharged.

⚠ **WARNING – Separation Hazard.** Failure to follow safety and operation instructions could result in violent separation of pump and/or filter components. Strainer cover must be properly secured to pump housing with strainer cover lock ring. Before servicing circulation system, filters manual air relief valve must be in open position. Do not operate circulation system if a system component is not assembled properly, damaged, or missing. Do not operate circulation system unless filter manual air relief is in fully screwed into filter cap. **Never operate or test the circulation system at more than 50 PSI. Do not purge the system with compressed air**. Purging the system with compressed air can cause components to explode, with risk of severe injury or death to anyone nearby. Use only a low pressure (below 5 PSI), high volume blower when air purging the pump, filter, or piping.

⚠ **WARNING** – **Risk of Electric Shock.** All electrical wiring MUST be in conformance with applicable local codes, regulations, and the National Electric Code (NEC). Hazardous voltage can shock, burn, and cause death or serious property damage. To reduce the risk of electric shock, do NOT use an extension cord to connect unit to electric supply. Provide a properly located electrical receptacle. Before working on any electrical equipment, turn off power supply to the equipment. To reduce the risk of electric shock replace damaged wiring immediately. Locate conduit to prevent abuse from lawn mowers, hedge trimmers and other equipment. Do NOT ground to a gas supply line.

⚠ **WARNING – Risk of Electric Shock.** Failure to ground all electrical equipment can cause serious or fatal electrical shock hazard. Electrical ground all electrical equipment before connecting to electrical power supply.

⚠ **WARNING** – **Risk of Electric Shock.** Failure to bond all electrical equipment to system structure will increase risk for electrocution and could result in injury or death. To reduce the risk of electric shock, see installation instructions and consult a professional electrician on how to bond all electrical equipment. Also, contact a licensed electrician for information on local electrical codes for bonding requirements.

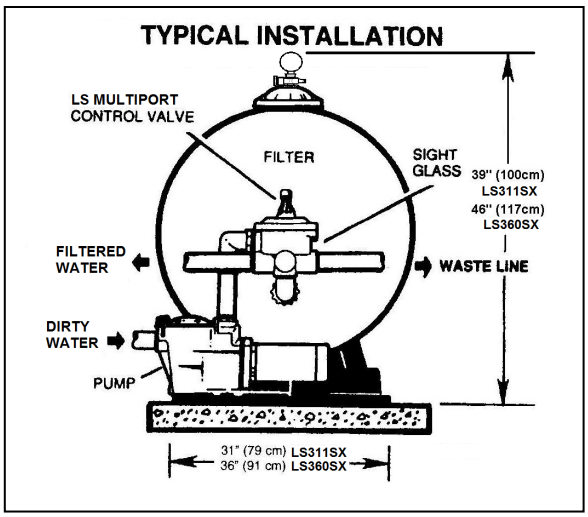
⚠ **WARNING** – **Risk of Electric Shock** . The electrical equipment must be connected only to a supply circuit that is protected by a ground-fault circuit-interrupter (GFCI). Such a GFCI should be provided by the installer and should be tested on a routine basis. To test the GFCI, push the test button. The GFCI should interrupt power. Push reset button. Power should be restored. If the GFCI fails to operate in this manner, the GFCI is defective. If the GFCI interrupts power to the electrical equipment without the test button being pushed, a ground current is flowing, indicating the possibility of an electrical shock. Do not use this electrical equipment. Disconnect the electrical equipment and have the problem corrected by a qualified service representative before using.

2. Introduction

Your Hayward LS Series high-rate sand filter is a high performance, corrosion-proof filter that blends superior flow characteristics and features with ease of operation. It represents the very latest in high-rate sand filter technology. It is virtually foolproof in design and operation and when installed, operated and maintained according to instructions, your filter will produce clear, water with only the least attention and care.

3. How It Works

Your filter uses special filter sand to remove dirt particles from the water. Filter sand is loaded into the filter tank and functions as the permanent dirt removing media. The system water, which contains suspended dirt particles, is pumped through your piping system and is automatically directed by the patented filter control valve to the top of the filter tank. As the system water is pumped through the filter sand, dirt particles are trapped by the sand bed, and filtered out. The cleaned system water is returned from the bottom of the filter tank, through the control valve and back to the system through the piping system. This entire sequence is continuous and automatic and provides for total recirculation of system water through your filter and piping system.



After a period of time, the accumulated dirt in the filter causes a resistance to flow, and the flow diminishes. This means it is time to clean (backwash) your filter. With the control valve in the backwash position, the water flow is automatically reversed through the filter so that it is directed to the bottom of the tank, up through the sand, flushing the previously trapped dirt and debris out the waste line. Once the filter is backwashed (cleaned) of dirt, the control valve is manually sequenced to Rinse, and then Filter, to resume normal filtering.

4. Installation

Only simple tools (screwdriver and wrenches), plus PTFE tape manufactured for plastic adapters, are required to install and/or service the filter.

1. The filter system should be installed, not more than 6 feet above system water level, on a *level* concrete slab, very firm ground, or equivalent, as recommended by your dealer. Position the filter so that the piping connections, control valve, and drain are convenient and accessible for operation, and service.
2. Assemble the filter control valve to filter. Align the two (2) valve pipe connections, with O-rings in place, with the two openings in the side of the filter tank and press in firmly. Secure the assembly to the tank connections with the two bulkhead locknuts. ***Do not overtighten.***
3. Loading sand media. Filter sand media is loaded through the top opening of the filter.
   a. Remove the top diffuser from the internal diffuser elbow pipe and place flexible, automatic air relief tube to the side, out of the way, inside the tank.
   b. Cap the internal diffuser elbow pipe with the sand shield provided to prevent sand from entering it.
   c. It is good practice to fill tank approximately 1/2 way with water to provide a cushioning effect when the filter sand is poured in. This helps protect the under-drain laterals from excessive shock. (Be sure the drain cap is securely in place on drain pipe.)
      Note: Confirm all laterals are in the down position before loading with sand. (See Diag A on Page 7.)
   d. Carefully pour in correct amount and grade of filter sand, as specified. Sand surface should be leveled and should come to about 6” from the top of the filter tank. Use no more than the recommended amount of sand.
   e. Remove the sand shield from internal diffuser elbow pipe.
   f. Replace diffuser on internal diffuser elbow pipe, positioning automatic air relief tube through the hole

provided in the diffuser.

g. Wipe filter flange clean.

h. Insert top closure dome (with flange O-ring in place) into the tank neck. Place clamp around dome flange and tank flange and tighten with screwdriver, tapping around clamp with screwdriver handle to help seat flange clamp.

***Do not overtighten*.**

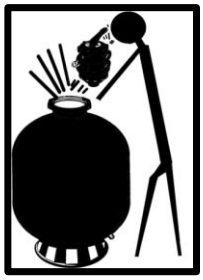
4. Connect pump to control valve opening marked PUMP according to instructions. Make return to system pipe connection to control valve opening marked RETURN and complete other necessary plumbing connections, suction lines to pump, waste, etc.
5. Make electrical connections to pump per pump instructions.
6. To prevent water leakage, be sure drain cap is securely in place and all pipe connections are tight.

5. Initial Start-Up of Filter

1. Be sure correct amount of filter sand media is in tank and that all connections have been made and are secure. **IMPORTANT: To prevent unnecessary strain on piping system and valving, always shut off pump before switching Filter Control Valve positions.**
2. Depress LS control valve handle and rotate to BACKWASH* position. (To prevent damage to control valve seat, always depress handle before turning.)
3. Prime and start pump according to pump instructions. (be sure all suction and return lines are open), allowing the filter tank to fill with water.

⚠ WARNING– **SEPARATION HAZARD: All suction and discharge valves must be open when starting the system. Failure to do so could cause severe personal injury and/or property damage**.

4. Once water flow is steady out the waste line, run the pump for at least 2 minutes. This initial backwashing of the filter is recommended to remove any impurities or fine sand particles in the sand media.



5. Turn pump off and set LS valve to RINSE position. Start pump and operate until water in sight glass is clear—about 1/2 to 1 minute. Turn pump off, set valve to FILTER position and restart pump. Your filter is now operating in the normal filter mode, filtering particles from the system water.

6. Adjust system suction and return valves to achieve desired flow. Check system and filter for water leaks and tighten connections, bolts, nuts, as required.

7. Note the initial pressure gauge reading when the filter is clean. (It will vary from system to system depending upon the pump and general piping system.) As the filter removes dirt and impurities from the system water, the accumulation in the filter will cause the pressure to rise and flow to diminish. When the pressure gauge reading is 6-8 PSI (0.41-0.55 BAR) higher than the initial "clean" pressure you noted, it is time to backwash (clean) the filter (see BACKWASH under Filter Control Valve Functions).

NOTE: During initial clean-up of the system water it may be necessary to backwash frequently due to the unusually heavy initial dirt load in the water.

To prevent damage to the pump and filter and for proper operation of the system, clean pump strainer regularly.

6. Filter Control Valve Functions

FILTER — Set valve to FILTER for normal filtering. Also use for regular vacuuming.

BACKWASH — For cleaning filter. When filter pressure gauge rises 8-10PSI (0.55-0.69 BAR) above start-up (clean pressure): Stop the pump, set valve to BACKWASH. Start pump and backwash until water in sight glass is clear. Proceed to RINSE.

RINSE — After backwashing, with pump off, set valve to RINSE. Start pump and operate for about 1/2 to 1 minute. This ensures that all dirty water from backwashing is rinsed out to the filter to waste, preventing possible return to the system. Stop pump, set valve to FILTER, and start pump for normal filtering.

WASTE — To bypass filter for draining or lowering water level and for vacuuming heavy debris directly to waste.

RECIRCULATE — Water is recirculated through the system, bypassing the filter.

CLOSED — Shuts off flow from pump to filter.

VACUUMING — Vacuuming can be performed directly into the filter. When vacuuming heavy debris loads, set valve to WASTE position to bypass the filter and vacuum directly out to waste.

WINTERIZING

1. Completely drain tank by unscrewing drain cap at base of filter tank. Leave cap off during winter.
2. Depress the LS control valve handle and rotate so as 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.

7. Specifications

MODEL NUMBER	EFFECTIVE FILTRATION AREA		MAXIMUM WORKING PRESSURE		REQUIRED CLEARANCE				MEDIA REQUIRED		
					SIDE		ABOVE		TYPE	AMOUNT	
	FT^2	M^2	PSI	BAR	INCH	MM	INCH	MM	FILTER SAND**	LBS	KG
LS311SX	5.0	.46	50	3.45	18	460	18	460	0.45-0.55mm	350	160
LS360SX	6.7	.62	50	3.45	18	460	18	460	0.45-0.55mm	700	318

Table 1 ****Also known as No. 20 Silica Sand**

8. Replacement Parts

REPLACEMENT PARTS LISTING
LS311SX LS360SX

REF NO	PART NO.	DESCRIPTION	NO. REQ
1	DEX2400S	Relief Valve/Gauge Adapter Assy	1
2	SX200Z5	O-Ring, 13/16" O.D.	1
3	SX244K	Top Closure Dome	1
4	GMX600F	Valve/tank O-ring	1
5	LSX310NS	Flange Clamp, 316 stainless	1
6	SX311AA2FW	Filter Tank w/Base (LS311SX)	1
7	SX244G	Top Diffuser	1
8a 8b	SX311CD1FW LSX360CDFW	Top Elbow Assy (LS311SX) Elbow Assy (LS360SX)	1 2
9	SX311CD2FW	Bottom Elbow Assy (LS311SX)	1
10	SX310HNPAK	Lateral Pack of 10	1
11a 11b	SX311DA SX242MA3	Lateral Holder Assy (LS311SX) Lateral Holder Assy (LS360SX)	1 1
12a 12b	CX1100Z4 SX360Z2	Plastic Air Tube (LS311SX) Plastic Air Tube (LS360SX)	1 1
13	LSX200Z2S	Air Tube Lock Screw 316 SSTL	1
14	SX180LA	Drain Cap Assy	1
15	LSXGAUGE	Pressure Gauge 2 ½" 316 SSTL	1
16	SX310J	Filter Stand Support	1
17	SX244Z1	Square Seal	2
18	SX244PX	Bulkhead Fitting	2
19	LS0715X62	2" LS Multiport Valve/no Gauge	1
20	SX200Z4	O-Ring	2

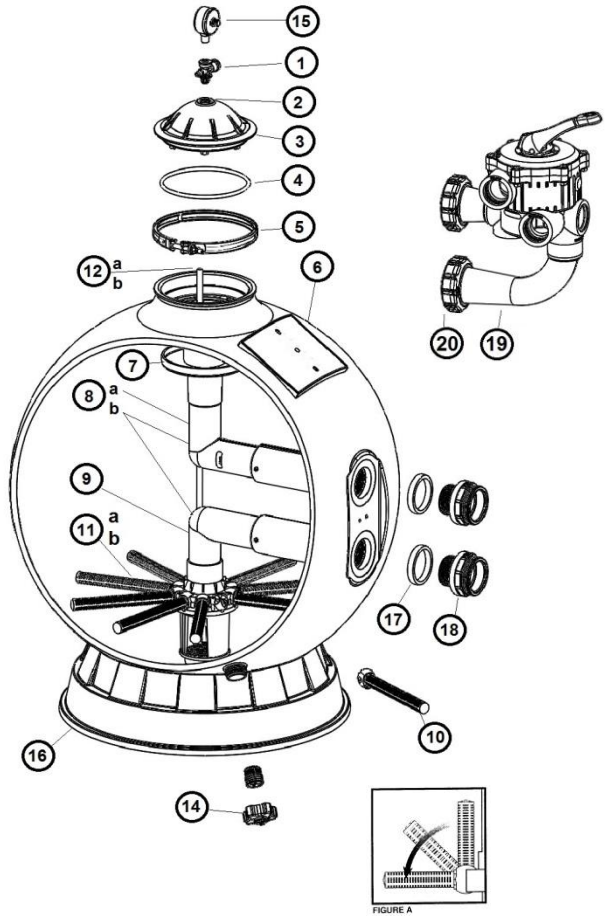
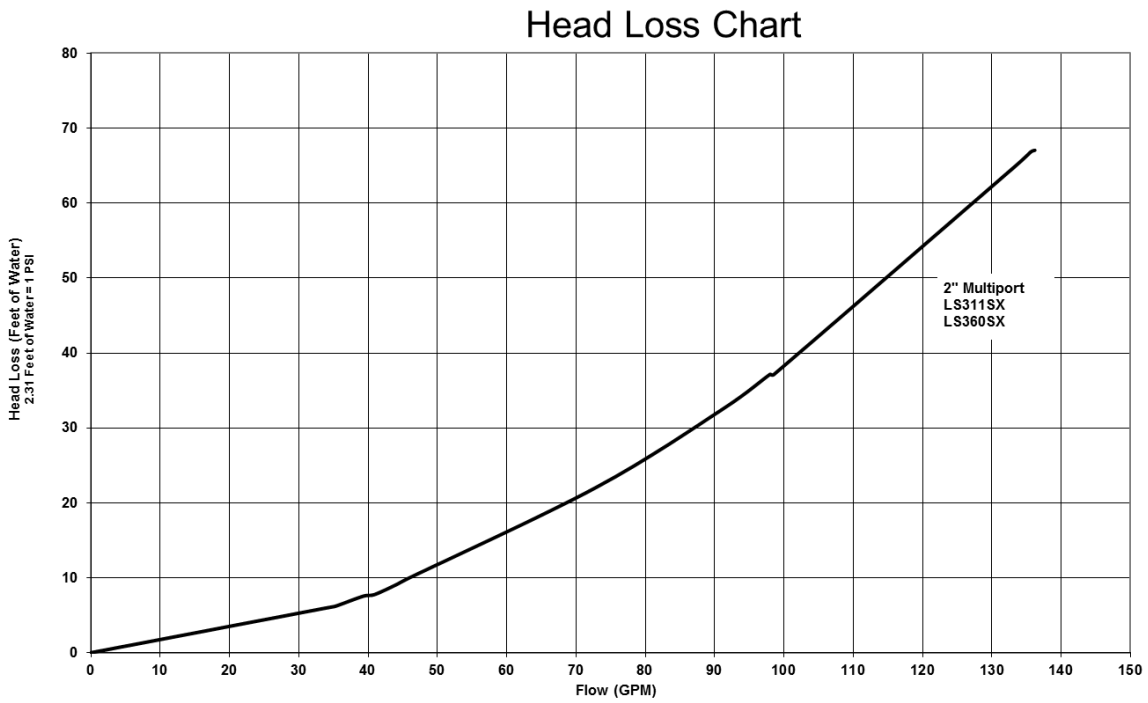
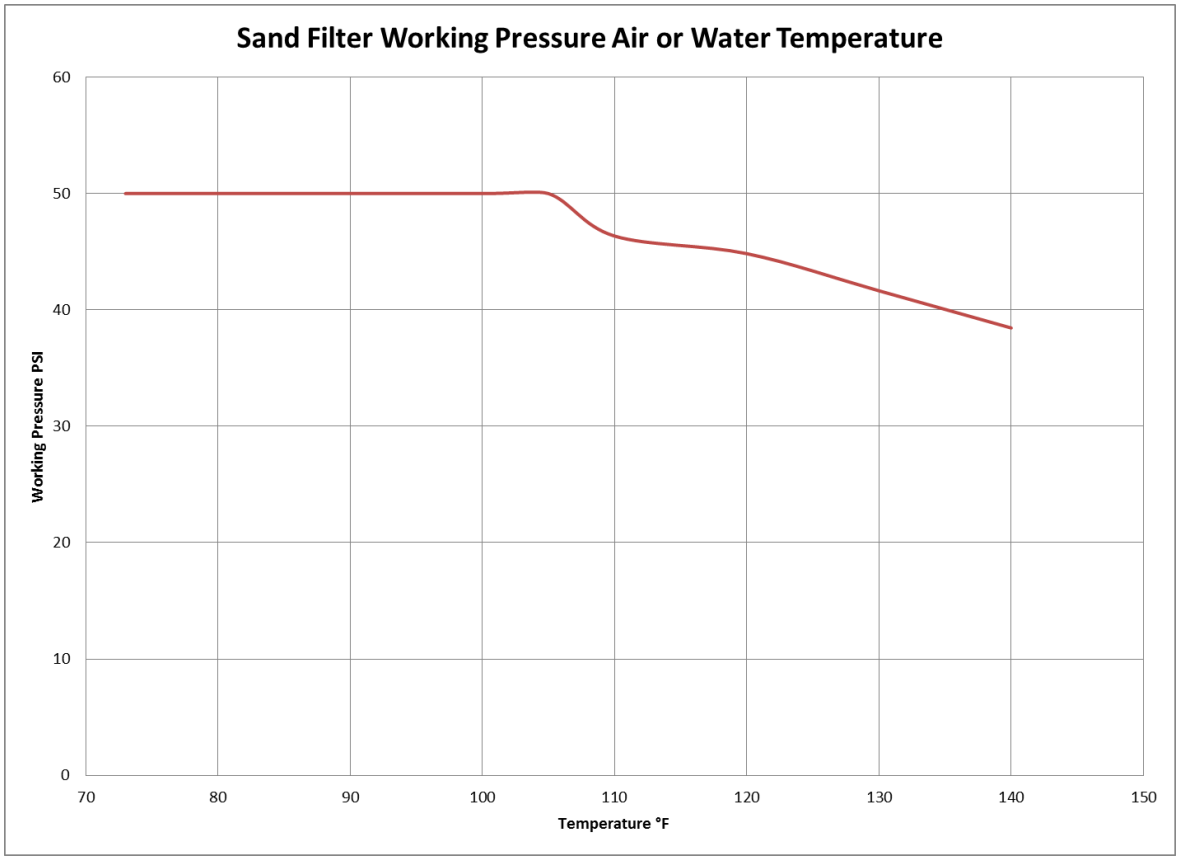


FIGURE A





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