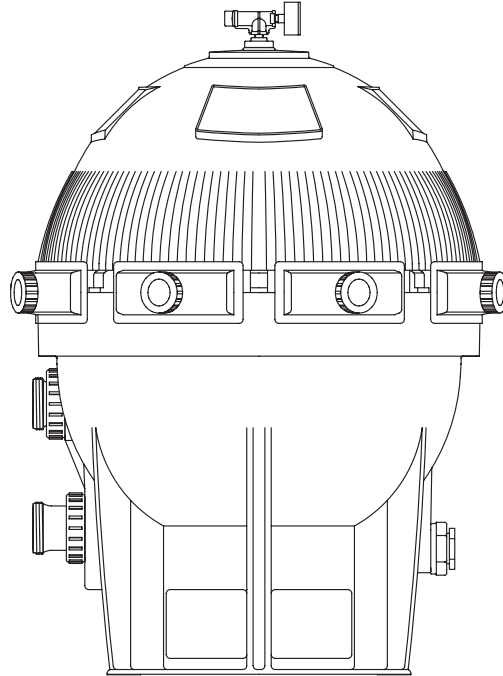


# STA-RITE®

## SYSTEM 3® MODULAR MEDIA FILTER

O W N E R ' S M A N U A L



U.S. Patent No. 3988244, 4537681, 5190651; other patents pending.

### INSTALLATION, OPERATION & PARTS MODELS

S7M120    S8M150  
S7M400    S8M500

Furnish this manual to the end user of this filter; its use will reduce service calls and chance of injury and will lengthen filter life.



#### **Pentair Water Pool and Spa, Inc.**

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1620 Hawkins Ave., Sanford, NC 27330 • (919) 566-8000

10951 West Los Angeles Ave., Moorpark, CA 93021 • (805) 553-5000

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# SYSTEM 3™ MODULAR MEDIA FILTERS:

To avoid unneeded service calls, prevent possible injuries, and get the most out of your filter, READ THIS MANUAL CAREFULLY!


The Sta-Rite System 3™ Modular Media Filter:

- Is designed to filter water for swimming pools, spas and hot tubs.
- Is an excellent performer; durable, reliable.

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## READ AND FOLLOW SAFETY INSTRUCTIONS!

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

**DANGER** warns about hazards that will cause serious personal injury, death or major property damage if ignored.

**WARNING** warns about hazards that can cause serious personal injury, death or major property damage if ignored.

**CAUTION** warns about hazards that will or can cause minor personal injury or property damage if ignored.

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

Carefully read and follow all safety instructions in this manual and on filter.

Keep safety labels in good condition.

Replace missing or damaged safety labels.

**WARNING** Incorrectly installed equipment may fail, causing severe injury or property damage. Read and follow operational parameters given below when installing equipment described in this owner's manual.

1. Follow instructions and procedures in owner's manual for installation, operation, and maintenance of equipment.
2. Do not connect any part of pool or spa system to city water system, well water system, or to any other type of high pressure water system or supply.
3. Do not attempt to use pool or spa equipment in any type of installation other than a pool or spa.
4. Trapped air under pressure in system can cause explosion and serious injury. Follow instructions in owner's manual or on equipment to make sure that no air is trapped in the system before testing or operating equipment.

**WARNING** Equipment that is incorrectly pressure tested may explode, causing severe injury or property damage. Pressure testing should only be done by trained pool professionals, following test parameters given below when testing the equipment described in this owner's manual.

1. Make physical check for correct tightness of all clamps, bolts, lids, and system accessories prior to test. See owner's manuals covering equipment being tested for this information.
2. Make sure there is no air entrapped in system. Release all air in system before testing.
3. When using a Sta-Rite pump and trap, tighten pump trap lid to 30 ft. lbs. (4.1 kg-m.) torque before testing.
4. Water pressure for testing must be 25 PSI (172 kPa) or less.
5. Water temperature for testing must be 100°F (38°C) or less.
6. Test length must be 24 hours or less.
7. After test, make visual check of system to make sure that it is ready for operation. Remove Sta-Rite pump trap lid and retighten hand-tight only.
8. Exceeding any one of limits 2 through 6 or omitting physical checks specified in Steps 1 and 7 can result in equipment and property damage or physical injury.

NOTICE: These parameters apply to Sta-Rite pool and spa equipment only. For non-Sta-Rite equipment, consult manufacturer.

# GENERAL INFORMATION

**▲ WARNING** Hazardous pressure. Can cause severe injury or major property damage from tank blow up. Release all pressure and read instructions before working on filter.

Clean a new pool as well as possible before filling pool and operating filter. Excess dirt and large particles of foreign matter in the system can cause serious damage to the filter and pump.

With a cartridge filter system in place and operating correctly, clean water is returned to the pool faster than the pool water is being contaminated. A typical pool installation will require approximately one week to obtain and maintain the sparkle that your filter is capable of giving you.

Keep pool water pH at recommended level (7.2 to 7.6).

Be sure clamps are in place and knobs are securely tightened before starting filter.

Maintain pressure gauge in good working order. Replace gauge if it fails or is damaged.

Make sure internal air bleed tube and air bleed filter (Key Nos. 9 and 10, Page 10) are in place before operating filter. Clean air bleed periodically.

Cleaning interval is based on pressure differential, not on length of time filter is operated. Different areas and water conditions will have different normal cleaning intervals.

**NOTICE:** Some pool disinfectants may clog filter media. To maximize media-life and filter cycle time, closely follow disinfectant manufacturers instructions when cleaning pool or filter.

**▲ WARNING** If filter is improperly disassembled or assembled, it may explode under pressure! To avoid danger of severe injury or major property damage, always follow service instructions in this manual when working on filter!

**▲ WARNING** NEVER operate this filter system at more than 50 pounds per square inch (50 PSI/345kPa) pressure!

On a new pool installation, we recommend:

1. Disassemble the filter after the initial cleanup.

**▲ WARNING** To prevent severe injury or major property damage, follow exactly "Filter Disassembly/Assembly Procedure" on Page 5.

2. Hose down the element assembly to remove contaminants.

## INSTALLATION - GENERAL

Installation of filter should only be done by qualified, licensed personnel.

### Filter mount must

Provide space and lighting for easy access for routine maintenance.

Provide adequate ventilation and drainage for pump.

Be protected from weather and reasonably level.

Be less than three feet above pool water level.

Be as close to pool as possible to reduce line loss from pipe friction.

### Piping

All piping must conform to local and state plumbing and sanitary codes.

Never use pipe joint sealing compound on pipe and fittings that are plastic or may come into contact with plastic. Use only Teflon tape, Plasto-Joint Stik\* or Silastic RTV #732\*\* on PVC pipe and fittings; pipe joint compound may cause stress cracking of plastic components. Use pipe joint compounds only on metal-to-metal joints.

Support pipe independently to prevent strains on filter or pump.

Use 2" or larger pipe to reduce pressure losses.

**NOTICE:** High flow rates may require larger pipe to produce adequate flow through filter.

Check local codes.

Fittings restrict flow; for best efficiency use fewest possible fittings.



If filter clamps are adjusted or removed under pressure, tank may explode, causing severe injury or major property damage.

- BEFORE WORKING ON PUMP FILTER:**
1. Stop pump.
  2. Open air release valve.
  3. Release all pressure from system.



Filter pumps require hazardous voltage which can shock, burn, or cause death

- BEFORE WORKING ON PUMP OR MOTOR:**
- Disconnect power to motor.

Keep piping tight and free of leaks: pump suction line leaks may cause trapped air in filter tank or loss of prime at pump; pump discharge line leaks may show up as dampness or jets of water.

Either plug drain fitting with a 2" NPT pipe plug or run piping from drain fitting to an acceptable waste water disposal point. Provide plug or valve for wastewater line.

**Valves**

Provide isolation valves to allow for easy servicing of filter.

A check valve installed between pool and filter inlet will prevent contaminants from draining back into pool.

A check valve installed between filter and heater will prevent hot water from heater from backing up into the

filter and deforming filter elements.

**NOTICE:** Damaging filter elements through excessive heat voids the warranty.

Do not use selector valves (i.e., slide or multiport etc.) with this filter. Filter cannot be backwashed. See Page 6 for cleaning information.

**Electrical**

BE SURE filter grounding and bonding meets local and National Electrical Code standards. All wiring, grounding and bonding of associated equipment must meet local and National Electrical Code standards.

\* Lake Chemical Co., Chicago, IL

\*\* Dow Corning

**SPECIFICATIONS**

TABLE I - SPACE REQUIREMENTS in inches (mm)

Model No.	A	B	C*	D	E
S7M120, S7M400	28-1/2 (724)	42 (1067)	7	36 (914)	68 (1730)
S8M150, S7M500	32-1/2 (826)	42-1/4 (1073)	8	40 (1020)	68 (1730)

\* Number of clamps.

TABLE II - FILTER SPECIFICATIONS AND OPERATING INFORMATION

Filter Model:	S7M120	S8M150	S7M400	S8M500
Filter Area	300 Sq. Ft. (27.9 Sq. M)	450 Sq. Ft. (41.8 Sq. M)	400 Sq. Ft. (37.2 Sq. M)	500 Sq. Ft. (46.5 Sq. M)
Maximum Flow Rate	100 GPM (378 l/min.)	125 GPM (473 l/min.)	115 GPM (435 l/min.)	130 GPM (492 l/min.)
Max Operating Pressure	50 PSI (345 kPa)	50 PSI (345 kPa)	50 PSI (345 kPa)	50 PSI (345 kPa)

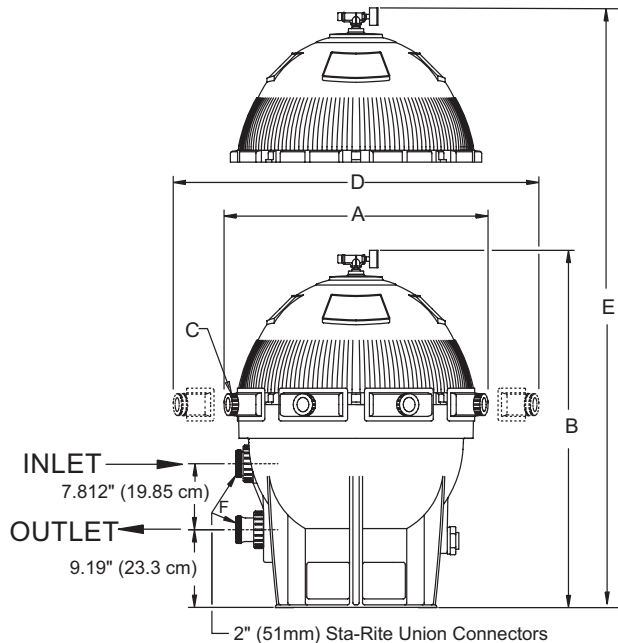


Figure 1 - Dimensions in inches (mm)

## INITIAL START-UP

Turn pump OFF before starting procedure.

Properly seat filter clamps and securely tighten clamp knobs before proceeding.

Read "Warning Instructions For Clamp Assembly" decal on tank.

Water pressure in filter must not exceed 50 PSI (345 kPa) under any circumstances.

1. Open air release valve (Key No. 3, Page 12) located on top of filter tank head.
2. Start pump.
3. When a steady stream of water comes from air release valve, close valve.
4. After filter is operating, record filter pressure gage reading in owner's manual for future use.

NOTICE: When installed on a new pool, filter element may need cleaning after approximately 48 hours of operation.

NOTICE: A new or recently cleaned filter element may pass some foreign material until it builds up a sufficient coating to stop all "fines". This is normal; a short operational period should correct the condition.

Check pressure gauge; if pressure has risen more than 10 PSI (70 kPa) above startup pressure, remove and clean element.

## FILTER DISASSEMBLY/ ASSEMBLY PROCEDURE

Before Disassembling Filter:



1. STOP PUMP.
2. OPEN air release valve.
3. WAIT until all pressure is released from filter tank and system before loosening clamp knobs.

Disassembly:

1. Stop pump.
2. Open air release valve (Key No. 2, Page 10) on top of filter tank to release all pressure from inside of tank and system.
3. Close plumbing inlet and return valves to prevent flooding.
4. Remove filter drain plug (Key No. 17 or 18, Page 10) and drain all water from tank.
5. To equalize flange stresses, loosen clamps alternately (that is, on opposite sides of tank) around tank. Remove clamps.
6. Being careful not to damage Cord ring (Key No. 23, Page 10), lift upper tank half (Key No. 24, Page 10) off of lower tank half (Key No. 22, Page 10).

Assembly:

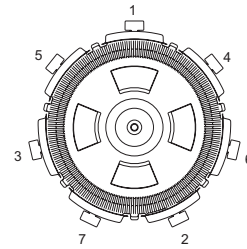
1. Remove Cord Ring slowly to avoid stretching or tearing it.
2. Inspect Cord Ring (Key No. 23, Page 10) for cuts, nicks, etc. If damaged, replace with a new one.
3. Clean Cord Ring area of tank half (both halves) and Cord Ring.
4. Carefully install Cord Ring and upper tank half (Key No. 24, Page 10).

NOTICE: Be sure upper tank half contacts Cord Ring surface evenly and seal area is clean and free from dirt. Do not lubricate Cord Ring; lubricants may cause the Ring to swell.

5. Install clamps. Do not tighten clamps yet.
6. See Figures 2 and 3 for clamp tightening sequence. Tighten all clamp knobs securely hand tight.

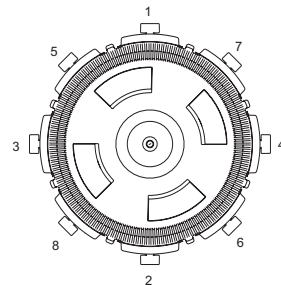
NOTICE: To equalize stresses on tank, be sure to tighten clamps in sequence shown. DO NOT work your way around the filter tightening adjacent clamps.

7. Open isolation valves.
8. Follow directions under "Initial Startup".



21" Filter

Figure 2 - 21" Filter clamp tightening sequence.



25" Filter

Figure 3 - 25" Filter clamp tightening sequence.

## FILTER CLEANING PROCEDURE

**NOTICE:** When sanitizing your pool using PHMB (poly-hexamethylene biquanide based) cleaners, use only PHMB cleaners to clean the module. When using PHMB sanitizers, the filter module **MUST** be cleaned more thoroughly and frequently than for a pool using chlorine. Follow manufacturer's instructions carefully. Use of any other type of cleaners with PHMB pool sanitizers will void the filter's warranty.

With hose, wash foreign material from inside of tank. Avoid washing debris into outlet port.

Be sure inside surface of tank is clean.

Keep track of filter operating pressure. When pressure reaches 10 PSI (70 kPa) above initial operating pressure, clean filter element.

If filter is used with a spa, soak element (see "Special Cleaning Instructions," Page 9) at each regular cleaning.

**▲ WARNING** Filter elements are too heavy for safe lifting when wet and dirty. To avoid back injury, clean and drain elements as far as possible in operating position in filter tank. Have two people lift elements and lift with care. Follow cleaning procedure given below.

### A. Cleaning in Place Procedure:

1. Follow steps one through six under "Disassembly", Page 5.
2. With a garden hose, hose as much dirt as possible off of filter elements while they are still in place inside the tank (See recommendations, below, right). Allow tank to drain completely. Make sure that waste water disposal complies with local codes and ordinances.
3. Lift out center element and hose it down thoroughly. Allow to drain.
4. With large element still in tank, hose down both inner and outer pleats
5. Inspect large element. If it is still dirty, allow it to drain thoroughly, lift it out of tank and repeat washing operation; then go to Step 6. If it is clean, got to Step 7.

**▲ WARNING** Filter elements are heavy when wet and dirty. To avoid back injury, allow filter element to drain completely before removing from tank. Have two people lift element and lift with care.

6. Once it is clean, allow large element to drain thoroughly, then reinstall in filter tank.

**NOTICE:** If this cleaning method does not remove stubborn deposits, use "Special Cleaning Instructions", at right.

7. Reinstall center element
8. Follow steps one through eight under "Assembly", Page 5.

### B. Special Cleaning Instructions:

Use this procedure to clean scale or oils which are not removed by simply hosing down and scrubbing element. Be sure to dispose of spent chemicals according to all applicable codes and waste disposal ordinances. Use a soft stream nozzle to minimize flying water and spray.

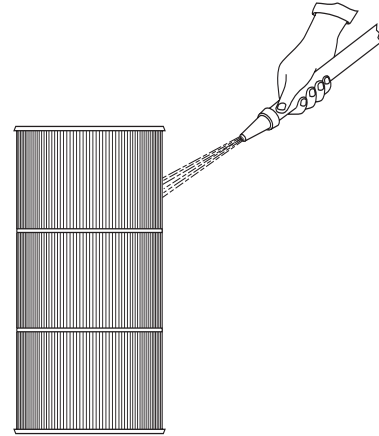


Figure 4 - Hose down elements thoroughly.

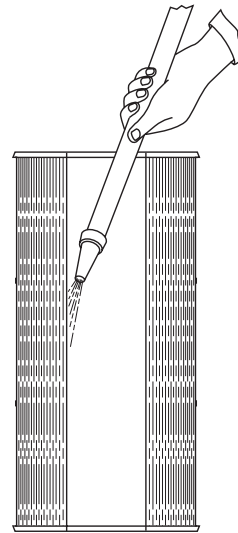


Figure 5 - Clean inside as well as outside of elements.

Follow these recommendations for easier cleaning with a garden hose:

1. Prepare to get wet!
2. Use a soft flow nozzle which will reduce spray around filter.
3. Move around element while spraying to reach entire surface.
4. Repeat wash-down process for inside of element. Hold nozzle as close to inside of pleats as possible.

**NOTICE:** BE SURE all dirt and foreign material is washed away from **INSIDE** pleats of element.

5. Drain elements as much as possible before trying to lift them.



1. Clean filter elements first according to cleaning procedure above.
2. Use one of the commercial filter cleaners listed (see Table III)

TABLE III - Specialty Filter Cleaners  
(for Degreasing and Scale Removal)

Filter Cleanse	Great Lakes Biochemical Co. 6120 West Douglas Avenue Milwaukee, WI 53218
Filter Kleen	GFC Chemical Co. P.O. Box 3827 West Palm Beach, FL 33402
Filter Kleen	Haviland Products Co. 421 Ann St. NW. Grand Rapids, MI 49504
Spa Cartridge Filter Clean	Leisure Time Chemical Corp. Los Angeles, CA
KLEEN-IT or Kwik-Strip	Biolab Inc. P.O. Box 1489 Decatur, GA 30031

**▲ DANGER** Risk of fire or explosion. Isolate filter from system before chemical cleaning; rinse filter and elements completely before returning to service. If filter cannot be isolated, remove media and clean at another location. Follow chemical manufacturer's instructions for use. Do not mix chemicals except as directed by manufacturer. Do not allow cleaning chemicals to mix or to come in contact with chlorines, bromines, other chemicals, or chemical feed devices.

3. Sponge or spray elements according to chemical manufacturer's directions. Leave elements in operating position or remove and clean elsewhere, depending on filter location, chemicals used, and chemical manufacturers instructions (see warning above).
4. If soaking is required, remove elements from filter body and submerge in a separate tank. Follow cleaner manufacturer's instructions to mix enough chemical cleaner to soak element. Soaking may require four to six hours or more.
5. After soaking, drain and rinse elements completely. Dispose of cleaners in accordance with codes and waste disposal ordinances.
6. Rinse inside of filter tank completely and re-install elements (have two people lifting - lift with care).
7. Follow instructions under "Assembly", Page 5.
8. Restore valving and other plumbing to service position; return system to service (see "Initial Startup", Page 5).

## SYSTEM INSPECTION

### General

Wash outside of filter with a mild detergent and water. Rinse off with hose.

NOTICE: DO NOT use solvents to clean filter; solvents may damage plastic components in system.

NOTICE: Open air bleed valve and bleed all air from filter each time pump is stopped and restarted.

### Weekly Inspection:

1. Skimmer basket - remove debris.
2. Stop pump, release all pressure. Remove trap cover and basket, remove debris.
3. Bleed air from filter each time system is started.
4. Check pump for leaks. If found, see pump owner's manual.
5. Check pump strainer lid for tightness. Do not over-tighten!

NOTICE: Filter must be protected from the weather and drained if freezing is anticipated. Allowing filter to freeze can cause damage to filter and WILL VOID THE WARRANTY!

### Winterizing

1. Stop pump.
2. Open air release valve.
3. Remove both drain plugs from lower tank half; loosen union connection to inlet and outlet ports to allow internal piping to drain. Leave unions loose over winter.
4. Drain ALL piping to and from filter.
5. Disassemble filter.



To avoid severe injury or major property damage, exactly follow instructions under "Disassembly" (Page 5)!

6. Remove filter elements and store in a warm, dry area.



Do not remove or damage safety and instruction labels during cleaning. Replace any decals which may have been damaged.

# TROUBLESHOOTING GUIDE

## A. Short Cycle:

Time between cleanings will vary with each installation and between different areas of the country. The following causes and remedies are for cycle times shorter than normal for your area.

NOTICE: Some pool disinfectants may clog filter media. To maximize media-life and filter cycle time, closely follow disinfectant manufacturers instructions when cleaning pool or filter.

1. Chlorine residual too low; maintain proper residual (consult pool professional for recommendation).
2. Flow rate too high; restrict flow to rated capacity of filter (see instruction decal on filter).
3. Filter too small; install larger filter or additional filter.
4. Unstable water; consult pool professional.
5. Filter element not cleaned properly or plugged with algae, iron, calcium, etc. - see "Special Cleaning Instructions", Page 6.
6. Iron in water - use oversize filter running at a flow rate of 3/8 to 1/2 GPM/sq. ft.; see cleaning instructions, Page 6.
7. Heavy or improper application of powdered chlorine or chlorine pills using a binder; see "Special Cleaning Instructions", Page 6.
8. Algae in pool - Apply heavy dose of chlorine or algicide as recommended by pool manufacturer. Continue until algae is controlled.

## B. Low flow:

1. Element is plugged; see "Special Cleaning Instructions", Page 6.
2. Pipe blocked downstream from filter; remove obstruction.
3. Piping too small; replace with larger pipe (consult dealer for recommendation).
4. Pump hair and lint trap is plugged - empty and clean.
5. Pump impeller and diffuser worn - replace with new parts. Consult pump owner's manual for information.
6. Pump too small for system - consult pool professional; if recommended, replace pump with larger pump.

## C. Pool Water Not Clear:

1. Chlorine dosage too low; maintain adequate chlorine residual (consult pool professional for recommendation).
2. Element cloth torn or punctured; replace element.
3. Filter too small, flow too low, or daily operating time too short, giving inadequate turnover rate; consult dealer to verify that equipment is properly sized for your pool.
4. Pump too large - overpumping - reduce flow rate.
5. Filter installed backward - replumb.

## D. Long Recovery Time After Heavy Usage:

1. Residual Chlorine level is too low - add chlorine.
2. Filter too small - replace with larger unit.
3. Pump too large - reduce flow rate.

## E. Filter Bypasses Dirt:

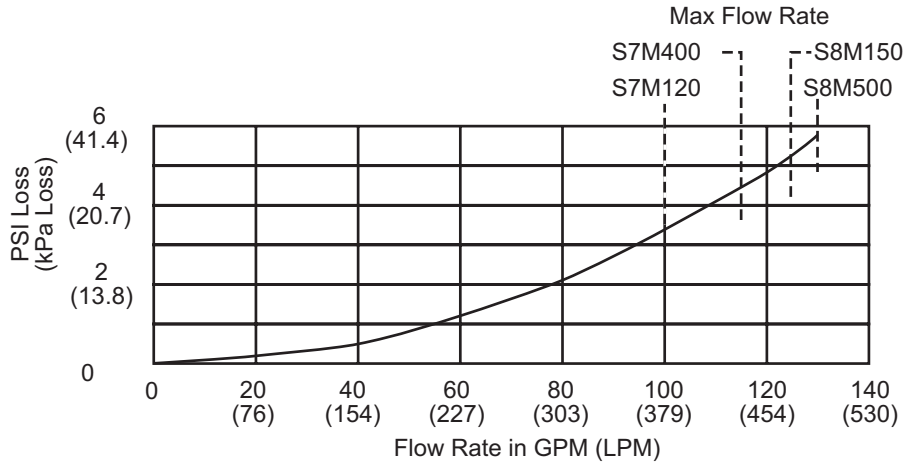


To avoid severe injury or major property damage, exactly follow instructions under "Disassembly" and "Assembly" (Page 5)!

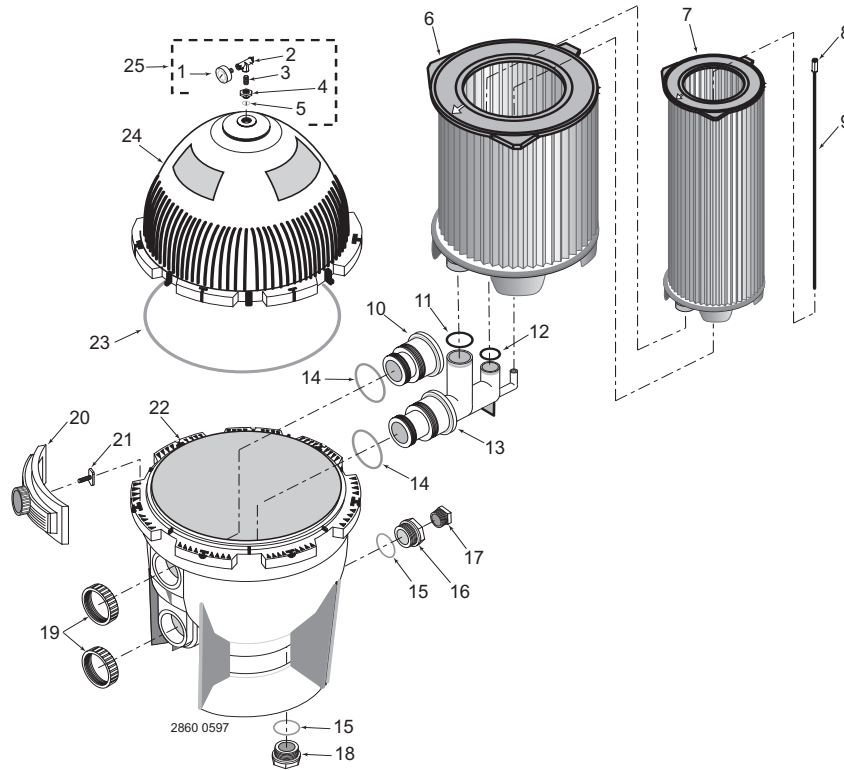
1. Air bleed tube and/or tube filter not in position. Exactly follow instructions in "Filter Disassembly/Assembly Procedure", Page 5, and reinstall correctly.
2. Element cloth torn or punctured; replace element.
3. Filter element is not seated properly in lower tank half; follow instructions under "Filter Disassembly/Reassembly", Page 5, and reposition properly.
4. Filter is plumbed backwards and element cloth is ruptured - replumb properly and replace element.
5. Colloidal fines (very small suspended dirt particles) are present and passing through element covering. Floc with alum, or if fines have already settled, vacuum to waste.



# PRESSURE DROP CURVE



3102 1097



## REPAIR PARTS LIST

Key No.	Part Description	Qty.	Model No.			
			S7M120 300 Ft <sup>2</sup> Filters	S7M400 400 Ft <sup>2</sup> Filters	S8M150 450 Ft <sup>2</sup> Filters	S8M500 500 Ft <sup>2</sup> Filters
1	2 Inch Gauge	1	33600-0023T	33600-0023T	33600-0023T	33600-0023T
2	Air Release Valve	1	WC212-120P	WC212-120P	WC212-120P	WC212-120P
3	Close Nipple 1/4 In.	1	35202-0959	35202-0959	35202-0959	35202-0959
4	Adapter Bushing	1	24900-0504	24900-0504	24900-0504	24900-0504
5	O-Ring	1	35505-1423	35505-1423	35505-1423	35505-1423
6	Large Cartridge	1	25022-0201S	25022-0224S	25022-0203S	25022-0225S
7	Small Cartridge	1	25021-0200S	25021-0223S	25021-0202S	25021-0224S
8	Air Bleed Filter	1	25021-0004	25021-0004	25021-0004	25021-0004
9	Air Bleed Tube	1	25021-0003	25021-0003	25021-0003	25021-0003
10	Baffle and Bulkhead Fitting	1	25021-0101	25021-0101	25021-0101	25021-0101
11	O-Ring	1	35505-1428	35505-1428	35505-1428	35505-1428
12	O-Ring	1	35505-1429	35505-1429	35505-1429	35505-1429
13	Elbow and Bulkhead Assembly	1	25021-0100	25021-0100	25021-0100	25021-0100
14	O-Ring	2	35505-1425	35505-1425	35505-1425	35505-1425
15	O-Ring	2	35505-1424	35505-1424	35505-1424	35505-1424
16	Adapter Fitting	1	24900-0509	24900-0509	24900-0509	24900-0509
17	1-1/2" NPT Plug	1	27001-0022S	27001-0022S	27001-0022S	27001-0022S
18	Drain Plug	1	24900-0503	24900-0503	24900-0503	24900-0503
19	Bulkhead Retaining Nut	2	24752-0050	24752-0050	24752-0050	24752-0050
20	Clamp Assembly	*	24850-0200	24850-0200	24850-0200	24850-0200
21	Clamp Bolt	*	24850-0010	24850-0010	24850-0010	24850-0010
22	Lower Tank Half	1	24850-0102S	24851-0103S	24851-0103S	24851-0103S
23	Cord Ring	1	24850-0008	24850-0008	24850-0009	24850-0009
24	Upper Tank Half Kit***	1	24851-9000	24851-9000	24851-9001	24851-9001
25	Valve and Gauge Assembly (Includes Key Nos. 1-5)	1	24850-0105	24850-0105	24850-0105	24850-0105
**	Model Plate	1	32155-4036	32155-4144	32155-4038	32155-4145
**	Instruction Label	1	32155-4037	32155-4037	32155-4039	32155-4039
**	Warning Label	1	32165-4004	32165-4004	32165-4005	32165-4005
**	2" Slip 1/2 Union Kit	1	PKG 188	PKG 188	PKG 188	PKG 188

\* Models S7M120 and S7M400 require 7 clamps and clamp bolts; Models S8M150 and S8M500 require 8 clamps and clamp bolts.

\*\* Not Illustrated \*\*\* Includes all decals and labels.

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