

# HAYWARD®

## S166T

### HIGH-RATE SAND FILTER



Your Hayward S166T high-rate sand filter is a high performance, totally 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, sparkling water with only the least attention and care.

#### HOW IT WORKS

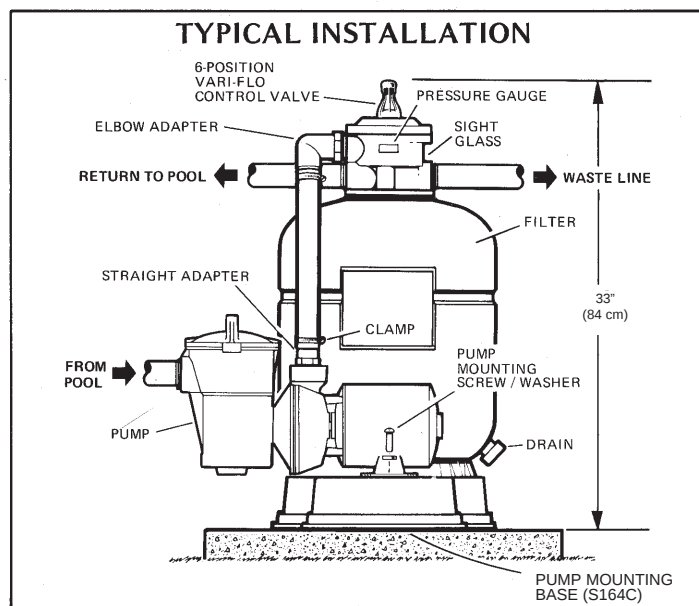
Your filter uses special filter sand to remove dirt particles from pool water. The sand is loaded into the filter tank and functions as the permanent dirt removing media. The pool water, which contains suspended dirt particles, is pumped through your piping system and is automatically directed by the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

#### INSTALLATION

Only simple tools (screwdriver and wrenches), plus pipe sealant for plastic adapters, are required to install and/or service filter.

1. The filter should be placed on a level concrete slab, very firm ground, or equivalent as recommended by your pool dealer. Position the filter so that the piping connections, control valve and winter drain are convenient and accessible for operation, servicing and winterizing.
2. Your filter is supplied complete with an optional pump mounting base which is pre-drilled for use with Hayward Power-Flo LX series pumps. The pump to filter connecting hoses supplied will accommodate Power-Flo LX pumps used with the mounting base, and Max-Flo or Super Pump installed at surface level. To connect pump to filter:
  - a. Screw straight adapter, using Teflon pipe sealant tape or Permatex No. 2, securely into pump discharge. (Do not overtighten.)
  - b. Screw elbow adapter, using Teflon pipe sealant tape or Permatex No. 2, securely into opening in control valve marked PUMP. (Do not overtighten.) Elbow should point just over RETURN opening.



## SPECIFICATIONS

| MODEL<br>NUMBER | EFFECTIVE<br>FILTRATION AREA |      | DESIGN<br>FLOW RATE |     | MAXIMUM WORKING<br>PRESSURE |      | REQUIRED CLEARANCE |     |       |     | MEDIA REQUIRED |        |     |
|-----------------|------------------------------|------|---------------------|-----|-----------------------------|------|--------------------|-----|-------|-----|----------------|--------|-----|
|                 |                              |      |                     |     |                             |      | SIDE               |     | ABOVE |     | TYPE           | AMOUNT |     |
|                 | FT²                          | M²   | GPM                 | LPM | PSI                         | BAR  | INCH               | MM  | INCH  | MM  | FILTER SAND*   | LBS    | KGS |
| S166T           | 1.4                          | 0.13 | 35                  | 133 | 50                          | 3.45 | 18                 | 457 | 18    | 457 | 0.45-0.55      | 100    | 45  |

\*Also known as No. 20 or No. 1/2 Silica Sand.

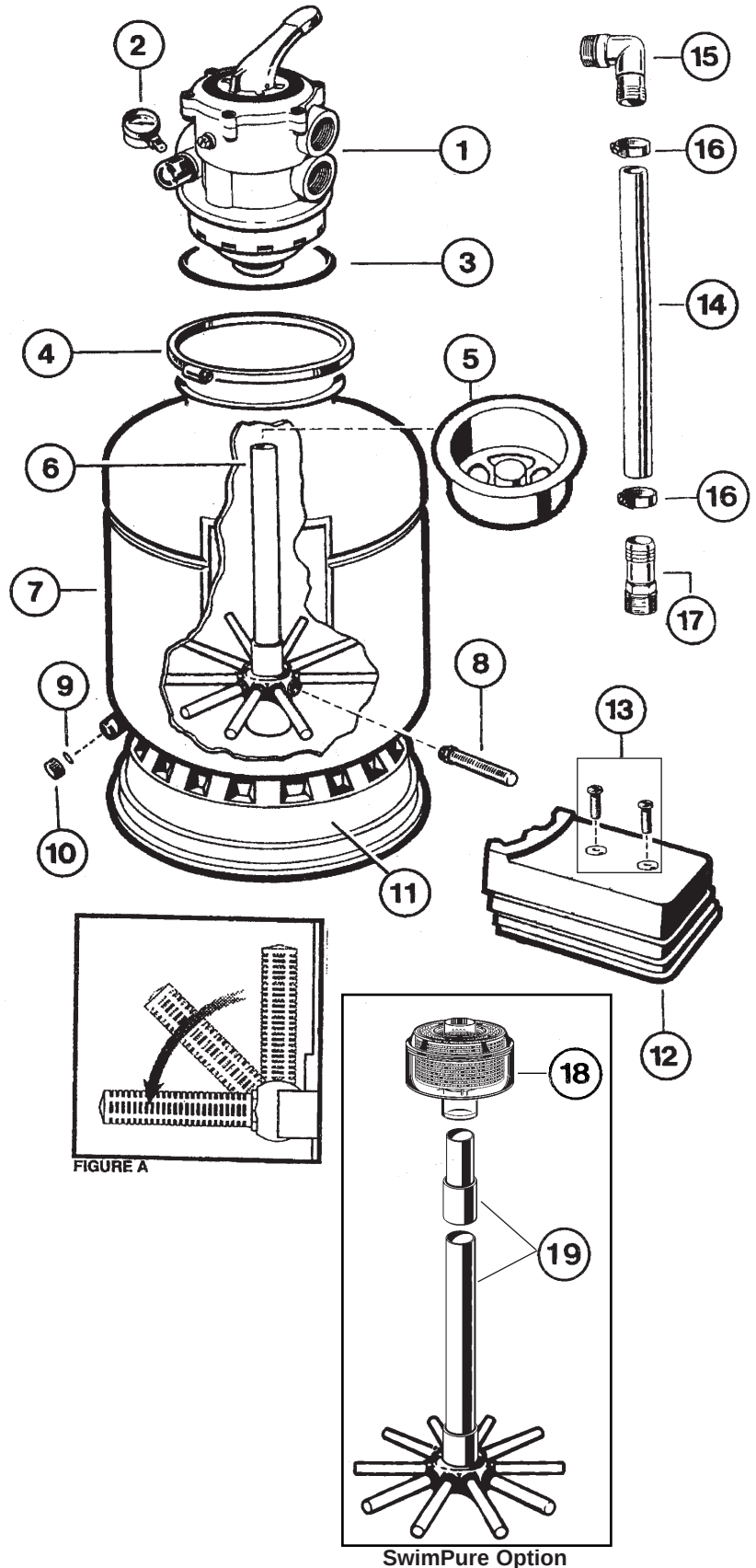
**NOTE:** ANSI/NSPI-4 Article V, standard for above-ground and on-ground pools, advises that components such as the filtration system, pumps and heater be positioned so as to prevent their being used as a means of access to the pool by young children.

### PARTS Model S166T S166T1575XS S166T1575XSN2

| REF.<br>NO. | PART NO.     | DESCRIPTION                                                                      | NO.<br>REQ'D. |
|-------------|--------------|----------------------------------------------------------------------------------|---------------|
| 1           | SP071113     | Vari-Flo Control Valve Assembly                                                  | 1             |
| 2           | ECX27081     | Pressure Gauge                                                                   | 1             |
| 3           | GMX600F      | Valve/Tank O-Ring                                                                | 1             |
| 4           | GMX600NS     | Flange Clamp (Valve-Tank)                                                        | 1             |
| 5           | SX202S       | Sand Shield                                                                      | 1             |
| 6           | SX164DA      | Lateral Assembly with Center Pipe                                                | 1             |
| 7           | SX164AA1     | Filter Tank with Skirt, Complete Lateral Assembly                                | 1             |
| 8           | SX200Q       | Lateral                                                                          | 10            |
| 9           | SX180G       | Gasket                                                                           | 1             |
| 10          | SX180H       | Drain Cap                                                                        | 1             |
| 11          | SX164B       | Filter Support Stand (Skirt)                                                     | 1             |
| 12          | SX164C       | Pump Base                                                                        | 1             |
| 13          | ECX1108A     | 5/16" x 3/4" Mounting Screw Kit                                                  | 2             |
| 14*         | SX160Z5      | 1-1/2" Hose                                                                      | 1             |
| 15*         | SPX1105Z4    | 1-1/2" Elbow Adapter                                                             | 1             |
| 16*         | ECX18028     | Hose Clamp                                                                       | 2             |
| 17*         | SPX1091Z2    | 1-1/2" Straight Hose Adapter                                                     | 1             |
| 18**        | N2SABG       | Nature <sup>2</sup> Canister                                                     | 1             |
| 19**        | SX164DAN2KIT | Folding Umbrella Lateral Assembly w/Center Pipe for Nature <sup>2</sup> Canister | 1             |

\*Furnished with PAK or System only.

\*\*Included only on filters supplied with SwimPure Canister



STOP here and load media per instructions (No. 3).

- c. Place hose clamps on clear hose and fit hose over straight and elbow adapters and secure with clamps. If it is difficult to fit hose over the adapters, place hose in hot water for several minutes.

**NOTE:** To prevent breakage and damage to pump and control valve, use only pipe sealants specifically formulated for plastics. Do not overtighten fittings or adapters.

3. Loading sand media. Filter sand media is loaded through the top opening of the filter.

- a. Loosen flange clamp and remove Filter Control Valve (if previously installed).
- b. Cap internal pipe with sand shield to prevent sand from entering it. Be sure pipe is securely in place in bottom underdrain hub.
- c. We recommend filling tank approximately 1/2 way with water to provide a cushioning effect when the filter sand is poured in. This helps protect the underdrain laterals from excessive shock. (Be sure the winter drain cap is securely in place on drain pipe.) **Note: Check to confirm all laterals are in the down position before loading with sand. (See Figure A on Page 2.)**
- d. Carefully pour in correct amount and grade of filter sand, as specified. (Be sure center pipe remains centered in opening). Sand surface should be leveled and should come to about the middle of the filter tank. Remove sand shield from center pipe.

**NOTE:** If your sand filter is equipped with the SwimPure system or you are installing the SwimPure Retrofit Kit, then please follow the steps in the Instruction Sheet included in the SwimPure carton.

4. Assemble Filter Control Valve to filter tank.
  - a. Wipe filter flange clean.
  - b. To install clamp, loosely preassemble both halves of the clamp with one screw and one nut, turning the nut two or three times. Place clamp assembly on the filter neck.
  - c. Insert filter control valve (with valve/flange O-ring in place) into the tank neck, taking care that the center pipe slips into the hole in the bottom of the valve.
  - d. Install clamp around tank and valve flange and assemble second screw and nut. Tighten both sides of clamp alternately and evenly. Make sure you tighten just enough so that the valve may be rotated on the tank for final positioning.
  - e. Carefully screw the pressure gauge, with pipe tape, into 1/4" tapped hole in valve body. Do not overtighten.
  - f. Connect pump to control valve opening marked "PUMP" according to the instructions.
  - g. Tighten both sides of clamp alternately and evenly. Use a correctly sized large screw driver and tighten firmly to obtain a good seal.
  - h. Please be sure to place vinyl protector caps over ends of screws.
5. Make return to pool pipe connection to control valve opening marked RETURN and complete other necessary plumbing connections, suction lines to pump, waste, etc.
6. Make electrical connections to pump per pump instructions. Be sure all circuits are protected by a

properly-sized ground fault circuit interrupter (GFCI).

7. To prevent water leakage, be sure winter drain cap is securely in place and all pipe connections are tight.

**NOTE:** If you have installed a SwimPure system, then please refer to Step 2 in the SwimPure Instruction Sheet ("Balance the Pool Water").

#### 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.
2. Depress Vari-Flo control valve handle and rotate to BACKWASH position. (To prevent damage to control valve seal, always depress handle before turning.)
3. Prime and start pump according to pump instructions 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.** 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 pump off, set 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 pool water.
5. Adjust pool suction and return valves to achieve desired flow. Check system and filter for water leaks and tighten connections, bolts, nuts, as required.
6. Note the initial pressure gauge reading when the filter is clean. (It will vary from pool to pool depending upon the pump and general piping system). As the filter removes dirt and impurities from the pool water, the accumulation in the filter will cause the pressure to rise and flow to diminish. When the pressure gauge reading is 6-8 lbs. (2.7-3.6 kgs.) 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 pool water, it may be necessary to backwash frequently due to the unusually heavy initial dirt load in the water.

**CAUTION:** To prevent unnecessary strain on piping system and valving, always shut off pump before switching Filter Control Valve positions.

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

#### 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 6-8 lbs. (2.7-3.6 kgs.) above start-up (clean pressure):

Stop the pump, set valve to BACKWASH. Start pump and backwash, approximately 2 minutes or less, depending on dirt accumulation, 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 of the filter to waste, preventing possible return to the pool. Stop pump, set valve to FILTER and start pump for normal filtering.

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

**RECIRCULATE**—Water is recirculated through the pool 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 Vari-Flo 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.

## SERVICE & REPAIRS

Consult your local authorized Hayward dealer or service center. No returns may be made directly to the factory without the expressed written authorization of Hayward Pool Products, Inc.

## PLEASE REALIZE . . .

Pure, clear swimming pool water is a combination of two factors—adequate filtration and proper water chemistry balance. One without the other will not give the clean water you desire.

Your filter system is designed for continuous operation. However, this is not necessary for most swimming pools. You can determine your filter operation schedule based on your pool size and usage. Be sure to operate your filtration system long

enough each day to obtain at least one complete turnover of your pool water.

To properly sanitize your pool, maintain a free chlorine level of 1 to 3 ppm and a pH range of 7.2 to 7.6. Insufficient chlorine or an out of balance pH level will permit algae and bacteria to grow in your pool and make it difficult for your filter to properly clean the pool water.

## PROBLEM SOLVING LIST

| REMEDY | LOW WATER FLOW                                                                                                                                                                                                                                                                                  | SHORT FILTER CYCLES                                                                                                                                                                                                                                                                                  | POOL WATER WON'T CLEAR UP                                                                                                                                                                                                                                                                              |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | <ol style="list-style-type: none"> <li>1. Check skimmer and pump strainer baskets for debris.</li> <li>2. Check for restrictions in intake and discharge lines.</li> <li>3. Check for air leak in intake line (indicated by bubbles returning to pool).</li> <li>4. Backwash filter.</li> </ol> | <ol style="list-style-type: none"> <li>1. Check for algae in pool and superchlorinate as required.</li> <li>2. Be sure chlorine and pH levels are in proper range (adjust as required).</li> <li>3. Check surface of filter sand for crusting or caking (remove 1" of sand if necessary).</li> </ol> | <ol style="list-style-type: none"> <li>1. Check chlorine, pH and total alkalinity levels and adjust as required.</li> <li>2. Be sure flow rate through filter is sufficient.</li> <li>3. Operate filter for longer periods.</li> <li>4. Be sure Vari-Flo valve is set on "Filter" position.</li> </ol> |

## POOL CHEMISTRY GUIDELINES

| SUGGESTED POOL CHEMISTRY LEVELS     |                | ACTION REQUIRED TO CORRECT POOL CHEMISTRY |                                                                                                   |
|-------------------------------------|----------------|-------------------------------------------|---------------------------------------------------------------------------------------------------|
|                                     |                | TO RAISE                                  | TO LOWER                                                                                          |
| pH                                  | 7.2 to 7.6     | Add Soda Ash                              | Add Muriatic Acid or Sodium Bisulphate                                                            |
| TOTAL ALKALINITY                    | 100 to 130 ppm | Add Sodium Bicarbonate                    | Add Muriatic Acid                                                                                 |
| CHLORINE (UNSTABILIZED)             | 0.3 to 1.0 ppm | Add Chlorine Chemical                     | No action - chlorine will naturally dissipate                                                     |
| CHLORINE (STABILIZED)               | 1.0 to 3.0 ppm | Add Chlorine Chemical                     | No action - chlorine will naturally dissipate                                                     |
| CHLORINE STABILIZER (Cyanuric Acid) | 40 to 70 ppm   | Add Stabilizer                            | Dilution - partially drain & refill pool with water that has not been treated with Cyanuric Acid. |



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