

# hidrotermal<sup>®</sup>

## Filtration Combo Series

### PC Series



**USER MANUAL**

## 1. Filter Parameters

Model	Filter Model	Pump Model	Valve Connection		0.5-0.8mm Sand Weight	Flow Area	Design Flow
HT-PC350-6w	HT-PG350	Hidro-BPS050	1.5	50mm	25	0.10m <sup>2</sup>	4.5m <sup>3</sup> /h
HT-PC450-6w	HT-PG350	Hidro-BPS050	1.5	50mm	34	0.13m <sup>2</sup>	6.5m <sup>3</sup> /h
HT-PC350-6w	HT-PG350	Hidro-BPS050	1.5	50mm	150	0.16m <sup>2</sup>	8m <sup>3</sup> /h
HT-PC500-6w	HT-PG350	Hidro-BPS075	1.5	50mm	80	0.23m <sup>2</sup>	11.5m <sup>3</sup> /h
HT-PC650-6w	HT-PG350	Hidro-BPS100	1.5	50mm	160	0.32m <sup>2</sup>	16m <sup>3</sup> /h

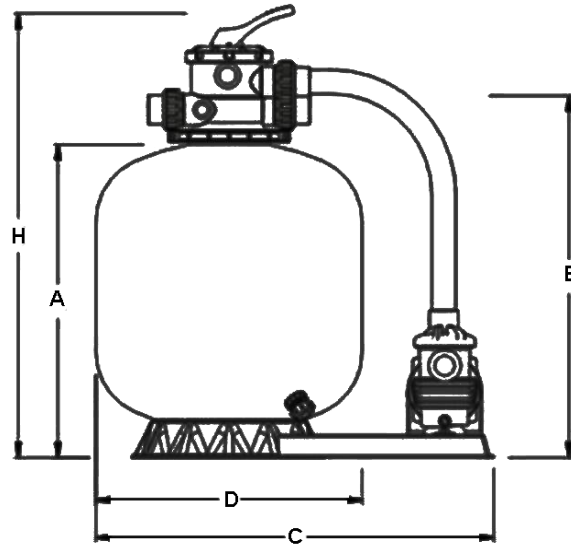


Figure 1

## 2. Function

The filter uses special filter sand to remove dirt particles from pool water. The filter 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 the 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 the filter and piping system.

After a period of time the accumulated dirt in the filter causes a resistance to flow, and the flow diminishes and the reading of pressure gauge rises. This means it is time to clean 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 of dirt, the control valve is manually positioned to Rinse, and then positioned to filter to resume normal operation.



### 3. Installation

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

1) The filter must be placed on level, very firm, ground. Position the filter so that the piping connections, control valve and winter drain are convenient and accessible for operation, service and winterizing.

2) Assemble the Pump to the platform base. The adapters must now be installed to connect the pump/filter system.

a. Apply Teflon pipe sealant tape or Permatex No. 2 sealant to straight adapter. Screw adapter into pump discharge port. (Do not over tighten.)

b. Apply Teflon pipe sealant tape or Permatex No. 2 sealant to elbow adapter. Screw adapter securely into opening in control valve marked Pump. (Do not over tighten.)

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 under drain 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 under drain laterals from excessive shock. (Be sure the winter drain cap is securely in place on drain pipe)

 **Check to confirm all laterals are in the down position before loading with sand.**

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 internal pipe.


4) Assemble Filter control Valve to filter tank.

a. Place valve flange clamp around neck of tank. Do not tighten. Wipe filter flange clean.

b. 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. Place clamp around valve flange and tank flange just enough so that the valve may be rotated on tank for final positioning.

c. Carefully screw pressure gauge, with pipe tape, into 1/4 trapped hole in valve body. Do not over tighten.

d. 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 adapters, place hose in hot water for several minutes. Connect pump to control valve opening marked PUMP according to instructions. After connections are made, tighten valve flange clamp with screwdriver, tapping around clamp with screwdriver handle to help seat valve flange clamp.

 **To prevent breakage and damage to pump and control valve, use only pipes sealants specifically formulated for plastics. Do not over tighten fittings or adapters.**

5) Connect pool return line to control valve opening marked RETURN. Complete suction line and waste plumbing connections.

6) Refer to Pump owners Guide for electrical connections.

7) Check all connections including winter drain cap for leaks.



## 4. Filter's Start-Up

1. Make sure the correct amount of filter sand is in tank and that all connections have been correctly made and are secured.
2. Push the down control valve handle and rotate to BACKWASH position. (To prevent any damage to control valve seal, always push down the handle before turning.)
3. Start the pump according to the pump manual (Make sure all suction and return lines are opened), allowing the filter tank to fill in with water.)



**All suction and discharge valves must be open before operating the filter system. 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 2 minutes. An initial backwashing of the filter is recommended to remove any impurities or fine sand particles in the sand media.**

4. Turn pump off and set valve to RINSE position. Start pump and operate until water in sight glass is clear-about to 1 minute. Turn pump off and set valve to FILTER position and restart pump. The filter is now operating at the normal filtering mode, removing dirt particles from the pool water.
5. Adjust the pool suction and return valves to achieve desired flow. Check the system and the filter for water leaks and tighten connections, bolts, nuts, as required.
6. Acknowledge the initial pressure gauge reading when the filter is clean. (It will vary from each pool depending on 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 8-10 PSI (0.55-0.69 BAR) higher than the initial "clean" pressure you noticed, it is time to backwash (clean) the filter (see BACKWASH under Filter Control Valve Functions).



**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.**



**To prevent unnecessary strain on piping system and valves, 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.

## 5. BACK WASHING

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.

### 1. CONDITIONS FOR BACKWASHING

Time for backwashing is determined by the following conditions:

- a. The flow rate through the filter bed decreases until it is insufficient to meet the demand.
- b. The removal efficiency of the filter bed decreases to the point where the effluent quality deteriorates and is no longer acceptable.
- c. When the pressure gauge reading is 50 kPa (7.2 psi) higher than the start up pressure.
- d. 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.



**Recommends that you backwash a swimming pool sand filter in a residential installation at least once a month.**



## 2. 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. Moreover, 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.

## 3. BACKWASHING INSTRUCTIONS

a. Switch off the Pump | Close the Inlet Valve.



**If a pump is installed, switch the pump on and off, instead of closing and opening the Inlet Valve.**

b. Release the filter's pressure by loosening Pressure Release Valve until the Pressure Gauge needle drops to zero <O>.

c. Retighten Pressure Release Valve.

d. 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.

e. Switch on the Pump | Open the Inlet Valve. Backwash water will flow out through drain pipe.

f. When the backwash water in the sight glass appears clear, Switch off the Pump | Close the Inlet Valve.

g. 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.

h. Switch on the Pump | Open the Inlet Valve. Rinse water will flow out through the drain pipe.

i. When the rinse water in the sight glass appears clear. Switch off the Pump | Close the Inlet Valve.

j. Depress and turn the handle to the Filter position and Switch on the Pump | Open the Inlet Valve for normal operation.

## 6. 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.



**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.

6. Replace the pressure gauge if faulty readings are observed.

## 7. Filter Structure

### 1) Filter Replacement Parts

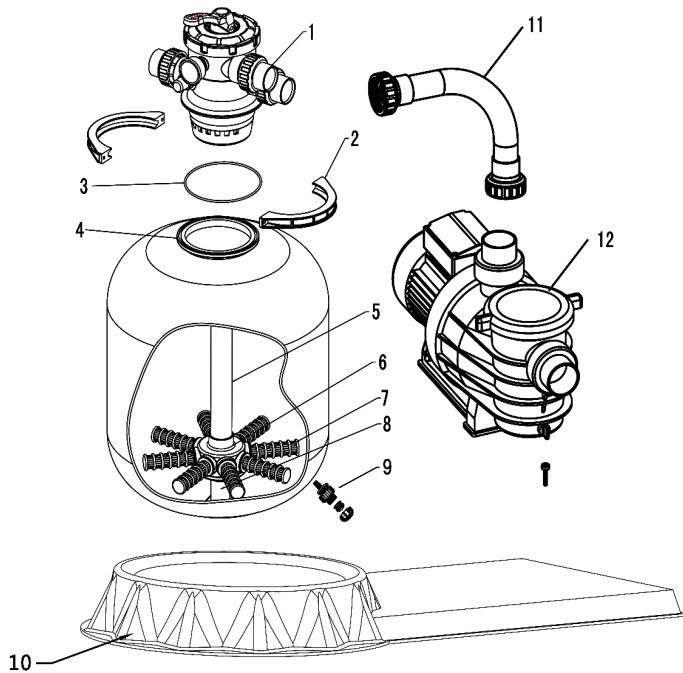


Figure 2

Key No.	Product Description	Qty
1	1.5" Top Mount Valve	1
2	Clip-L	1
	Clip-R	1
	Screw-clip	2
	Nut-clip	2
3	O-ring	1
4	14" Tank	1
	16" Tank	1
	18" Tank	1
	21" Tank	8
	25" Tank	1
5	PVC pipe	1
6	Lateral Assembly	1
7	Lateral	8
8	Support pipe	1
9	Drain	1
10	Filter support stand	1
11	House	1
12	Pump	1

### 2) Pump Replacement Parts

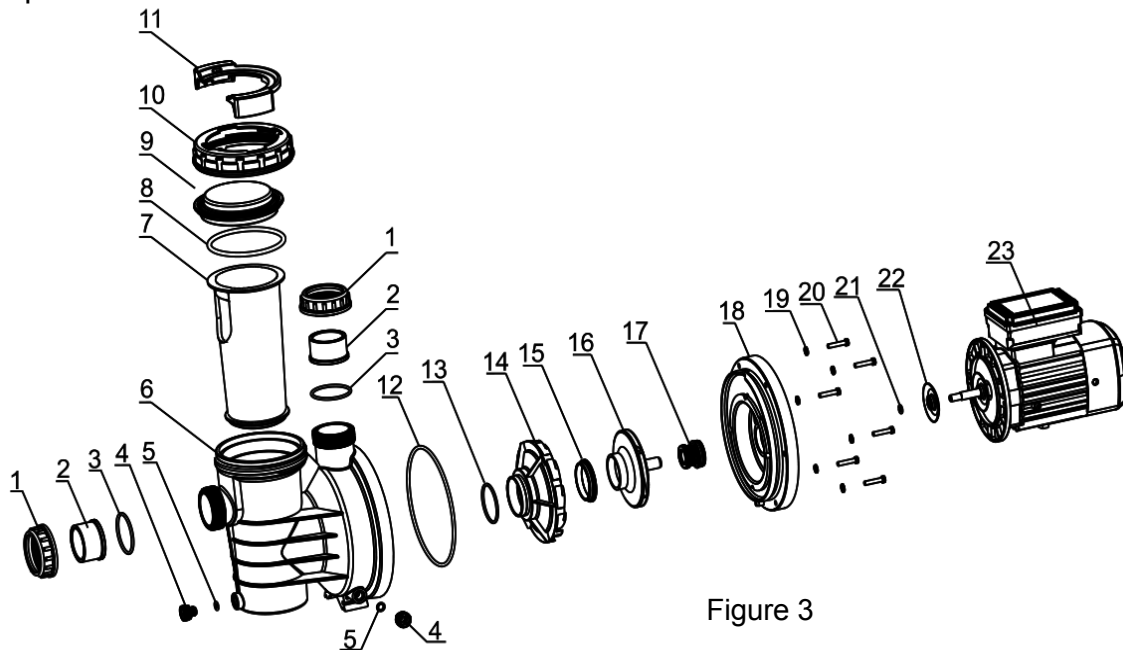


Figure 3

Item	Product Description	Item	Product Description	Item	Product Description
1	Tie-in Nut	9	Transparent cover	16	Impeller
2	Tie-in	10	Gland cover of Transparent cover	17	Mechanical seal
3	O-Ring			18	Pump cover
4	Drainage Plug	11	Open Cover Wrench	19	Pad
5	O-Ring	12	O-Ring	20	Hexagon bolt
6	Pump casing	13	O-Ring	21	O-Ring
7	Filter	14	Difusser	22	Retaining block
8	O-Ring	15	Activities Rings	23	Motor

## 8. TECHNICAL APPENDIX

### 1).INSTALLATION INSTRUCTIONS

The installation of the valve is carried out by screwing or slipping in, of the available connections according to the installation scheme.



It is recommended to use adapter unions. Maintenance works and replacement are also easier by using adapter unions.

### 2).FUNCTION AND INSTALLATION SCHEME

#### I. Filtration of Medium (i.e. Water)

Pool => Pump => Valve (to filter) =>  
filter => Valve (from filter) => Pool

#### III. No Circulation

Do not operate pump.  
Pool => Pump => Valve

#### V. Recirculation of Fluid Without Filter (by pass filter)

Pool => Pump => Valve => Pool

#### II. Drainage of Pool with Pump

Pool => Pump => Valve => Canal

#### IV. Cleaning of Filter Medium (i.e. Sand) in upstream (reserved flow in filter)

Pool => Pump => Valve (from filter) =>  
filter => Valve (to filter) => Waste

#### VI. Cleaning of Filter Medium (i.e. Sand) after Backwash

Pool => Pump => Valve (to filter) => filter  
=> Valve (from filter) => Waste

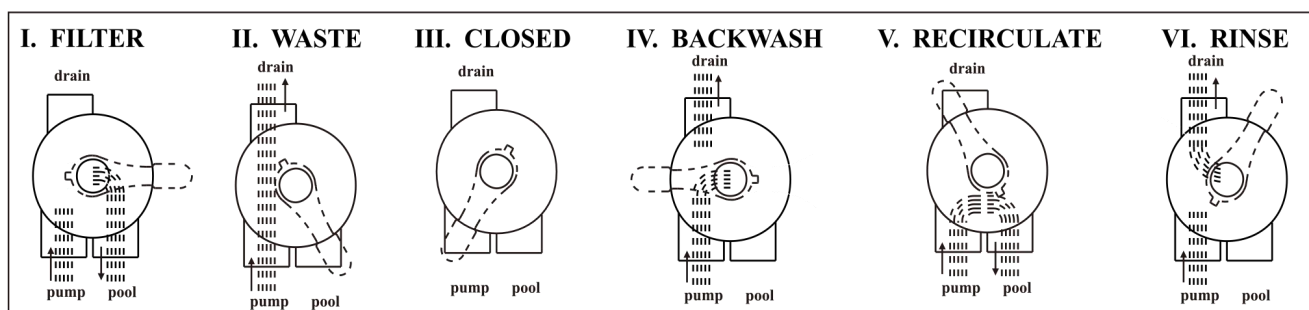


Figure 4

## 9.Warning



### NOTE

1. THIS FILTER OPERATES UNDER HIGH PRESSURE. WHEN ANY PART OF THE CIRCULATING SYSTEM (e.g. CLAMP, PUMP, FILTER, VALVES, ETC.) IS SERVICED, AIR CAN ENTER THE SYSTEM AND BECOME PRESSURIZED. PRESSURIZED AIR CAN CAUSE THE LID OR VALVE TO BE BLOWN OFF WHICH CAN RESULT IN SEVERE INJURY, DEATH, OR PROPERTY DAMAGE. DO NOT UNSCREW SCREWS OF FLANGE CLAMP WHILE FILTER OPERATING.

2. TURN PUMP OFF BEFORE CHANGING VALVE POSITION.

3. TO PREVENT DAMAGE TO THE PUMP AND FOR PROPER OPERATION OF THE SYSTEM, CLEAN PUMP STRAINER AND SKIMMER BASKET REGULARLY.