

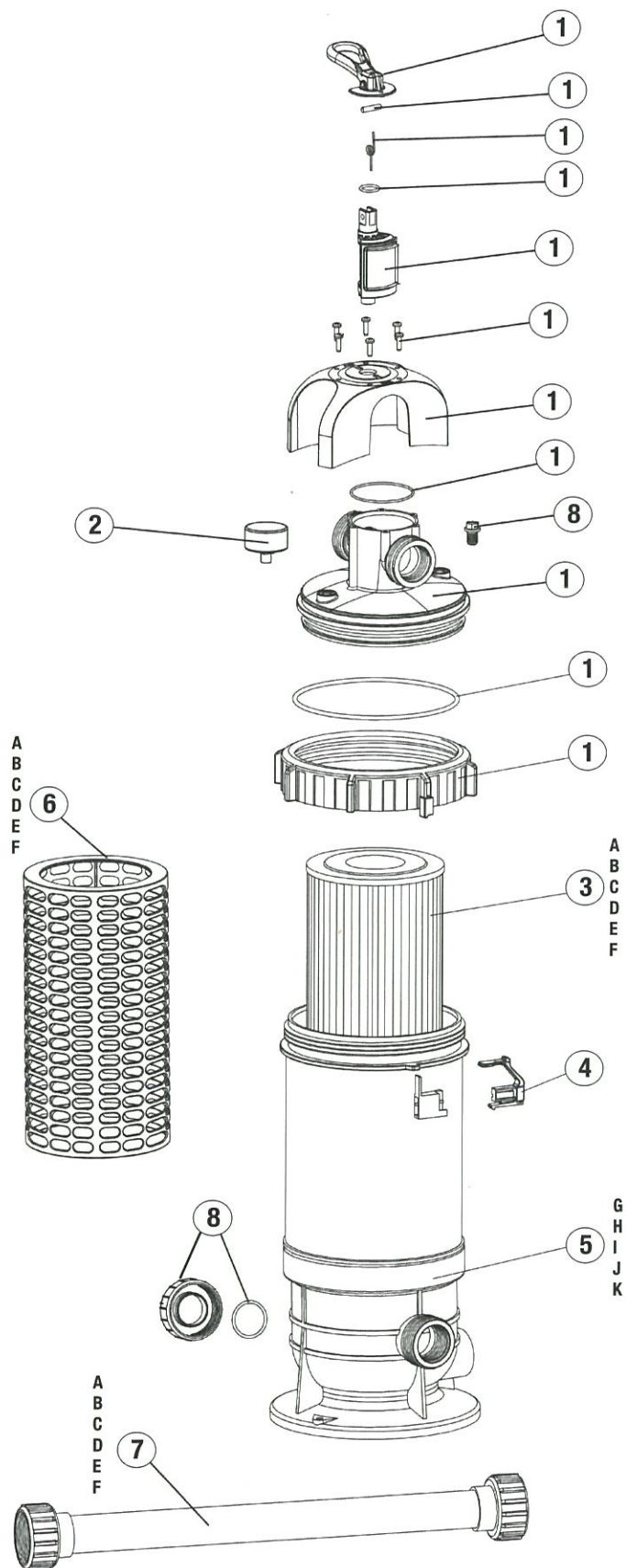
# POWER CLEAN BLACK DIAMOND FILTER SYSTEMS

**FOR ABOVEGROUND POOLS**



This Filter is designed for use with Aboveground pools that are equipped with a **DUAL PORT PUMP**. This filter system is engineered to filter pool water without any filter media.

# POWER CLEAN BLACK DIAMOND PARTS BREAKDOWN





## POWER CLEAN BLACK DIAMOND PARTS BREAKDOWN

PART #	MODEL #	DESCRIPTION	QTY
1	AC 52689	Power Clean Lid	1
2	AC 39349	Pressure Gauge	1
3A	AC BDPK30	Element 30	1
3B	AC BDPK60	Element 60	1
3C	AC BDPK90	Element 90	1
3D	AC BDPK120	Element 120	1
3E	AC BDPK150	Element 150	1
3F	AC BDPK180	Element 180	1
4	AC 61123	Lid Latch	1
5G	AC 09644	Body 60	1
5H	AC 09687	Body 90	1
5I	AC 15873	Body 120	1
5J	BS PRC150DB	Body 150	1
5K	BS PRC180DB	Body 180	1
6A	AC 54089	Eco Skeleton 30	1
6B	AC 54100	Eco Skeleton 60	1
6C	AC 54119	Eco Skeleton 90	1
6D	AC 54127	Eco Skeleton 120	1
6E	AC 54135	Eco Skeleton 150	1
6F	AC 54143	Eco Skeleton 180	1
7A	AC 52590	Connection Hose 30	1
7B	AC 52604	Connection Hose 60	1
7C	AC 52612	Connection Hose 90	1
7D	AC 52620	Connection Hose 120	1
7E	AC 52639	Connection Hose 150	1
7F	AC 52647	Connection Hose 180	1
8	AC 55875	Port Cap with O-Ring	1
9	AC 33499	Power Clean Discharge Union/Slide	1
10	AC 55875	Valve Black Handle (Not shown) Power Clean Pump Union/Valve Green Handle (Not shown)	1

# ASSEMBLY INSTRUCTIONS

## PRE-ASSEMBLY

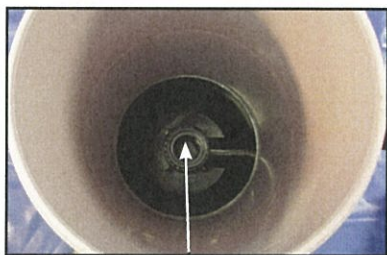


- Open the filter tank and inspect internal components. In order to do this, you will need to unscrew the lid.
- This filter features a lock tab, which is designed to protect from over-tightening the lid and causing leaks and/or damage to the o-ring.
- The Lid O-Ring has been pre-installed at the factory.

- To open the lid, push down on the lock tab as shown (above) and turn the lid to the left.
- To close the lid, center the lid over the opening of the tank and turn to the right. Keep turning right until the lid stops turning. You will see that the lid reaches a point where it is caught past the lock tab and you will not be able to turn any further (see right).



**NOTE** To ensure a proper seal at the lid, lubricate the O-ring inside the lip of the lid with o-ring lube (sold separately).



Center element over rounded opening

- The element inside the unit filters the water. The exoskeleton surrounding the element supports it during the cleaning cycle

- Check to ensure that the pre-installed element is sitting properly inside the tank. The bottom of the tank has a round opening that the element must sit on in order for the lid to close.
- When reinstalling the element, place the lid onto the element, pushing the center flange of the lid into the center port of the element. Take the element with the lid attached and place it into the filter tank. Make sure the center port of the element is placed over the center flange at the bottom of the tank. Push the element down firmly so it fits snugly onto the flange on the bottom of the tank. The element must be centered on both the top and bottom flange for the filter to function properly.





## PUMP CONNECTION



Mounting Plate

- The dual port pump comes with a mounting plate attached to the motor. This mounting plate has holes that correspond to bolt holes in the filter base itself. Since the filter base is universal you will align the holes in the pump mount as follows: the 2 holes closest to the front of the pump align with the 3rd holes from the front of the filter base. The 2 holes in the back of the pump mount align with the 3rd set of holes from the rear of the filter base. Use the bolts packed in the base pack to secure the pump to the base.

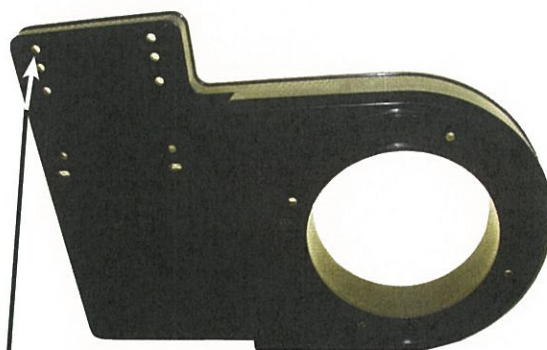
## SIDE-MOUNT PUMP INSTALLATION



- Dual port pumps (see left) allow you to attach the pump directly to the filter tank. Prior to attaching the pump, you must attach the tank to the base.
- Thread the union valve onto the horizontal discharge port of your Dual Port pump. Be sure to install the valve "O"-ring into the groove at both ends of the valve. Once the union valve is installed you are ready to install the filter tank



- Thread one of the slide valves on to the front threaded opening of the dual port pump. Prior to doing this you will need to wrap Teflon tape around the male threads of the slide valve. Give to slide valve approximately 8-12 wraps – clockwise- over the threads. This will eliminate leak in the future.



Raised area of the base

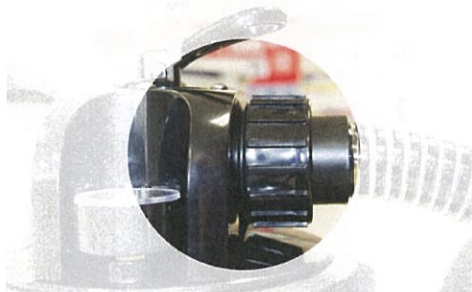
Place the tank on top of the base and rotate the tank until the holes in the tank bottom align with the holes in the filter base. Be sure the "to pump" port of the tank also aligns with union valve that is attached to the Dual Port Pump. Once aligned secure the tank to the base using the bolts

## FITTING ATTACHMENT



- Your filter has 3 ports on the bottom portion of the filter. One port is already hooked up to the pump via the union valve. One has a threaded plug installed from the factory. The third port is the drain port.
- Thread the drain valve into this opening. Wrap the male threads of the drain valve with Teflon tape – 8-12 wraps. Thread the valve into the port until it is secure. Hand tighten only.
- Capped port is to remain capped.

## VALVE CONNECTION



- Locate the vertical hose and install the 2 hose “O” rings into the grooved channels on each end of the hose. Once the ‘O’ rings are installed. Thread one end of the vertical hose onto the vertical port of the Dual Port pump. Thread until hose is secure. Wrap all threads with Teflon tape.
- The other end of the vertical hose will be threaded onto the pump side port of the **Power Clean valve**. Hand tighten until it is secure. (See left)

- Locate your hose connection fitting. Wrap Teflon tape around the male threads (8-12 wraps) and thread the fitting onto the remaining open port of the **Power Clean valve**. (See right)



- Thread the fitting removed from the return (or provided with your thru-wall skimmer) into the threaded opening of the slide valve. Remember to cover threads with Teflon tape to protect from leaks.
- Instructions on how to use the slide valves can be found under Using Slide Valves.



## ATTACHING FILTER SYSTEM TO POOL

- Attach the filter system to your pool by using the 2 silver hoses packed in the base carton along with 4 stainless steel hose clamps also packed in base carton.
- Secure one end of the first silver hose to the hose connection fitting on the power clean valve. Slide the hose onto the fitting until it reaches the top. Secure the hose with one of the stainless steel hose clamps. Attach the other end of the hose to the slide valve attached to return fitting of your swimming pool. Secure the hose the same way you secured it to the power clean valve. To ease connection it is recommended to soak ends in hot water.
- Attach one end of the second silver hose to the port on your thru the wall skimmer. Secure hose with hose clamp provided. Attach the other end of the hose to the hose fitting attached to the slide valve installed on the suction port of your Dual Port Pump. Secure with stainless steel clamp.

## USING SLIDE VALVES



Closed No Flow

- The slide valves are used to stop the flow of water to the filter for routine maintenance. While the filter is in operation, the slide valves **MUST** remain in the open position. To open the valve, turn the red handle to the left and pull straight up [or out depending on position of valve] (see right).
- When you need to clean the element you will have to move the slide valves into the closed position. First, turn off your pump to avoid damage due to excessive pressure. Next, push the red handle straight down [or in] and turn it to the left to lock valve in place (see left).
- Remember to open **BOTH** valves again prior to restarting pump after cleaning.



Open Full Flow

## FINISHING UP



- Check to ensure that you replaced the element and lid properly in the first step.
- Hand-tighten the air relief valve to make sure that it is closed securely.
- Locate the pressure gauge and cover the threads with Teflon tape to prevent leaks at the connection. Screw the gauge into the small threaded opening on the lid and hand-tighten.

- Fill the water in the pool to the middle of your thru-wall skimmer **BEFORE** operating your filter. Once the water has reached mid-skimmer you may turn on the pump.
- Be sure **BOTH VALVES** are in the **OPEN** position **PRIOR** to **TURNING ON PUMP**.
- You **MUST** bleed the air out of the system using the air relief valve on the top of the tank. Turn the valve to the left and you will hear a hiss of air. When water starts to spurt out, close the valve.



## IMPORTANT SAFETY NOTES

- **NEVER** attempt to remove the lid of the filter while the pump is running.
- Make sure to follow proper electrical precautions as advised by pump manufacturer. Failure to do so may result in injury or death.
- Allowing too much pressure to build in the system can be dangerous and may cause damage to the filter and pump.
- Any time that the filter system is started, you **MUST** bleed the air from the system. Failure to do so may result in damage to the system or cause an explosion.
- **NEVER RUN FILTER UNIT** with one or more valves closed. You will permanently damage your Filter.



## FILTER OPERATION/FILTER MODE

- Always make sure pump motor is off before changing any valve positions. To start the filter make sure the Power clean valve handle is in the FILTER position



- Make sure the green handle on the union valve is in the up position. Lock it in place with the green valve lock. Make sure the drain valve is closed and the black handle is down in the closed position.
- Once all 3 valves are in the correct position and there is water in both the thru wall skimmer (half way up skimmer opening) and pump basket you can start your filter. Once started you may want to add a small amount of filter powder/DE as a release agent for debris to shorten the cleaning cycle. This is not required but by doing this you will greatly reduce the time spent in Cleaning Mode and reduce the amount of water lost when cleaning. Once you complete this step your filter is FILTERING.

## FILTER OPERATION/CLEANING YOUR FILTER

- Always make sure your pump motor is off before changing any valve positions. To clean your filter first move the handle of the Power Clean valve to the CLEAN position



- Close the union valve between the pump and the tank by removing the green valve lock and pushing the green handle down into the closed position.
- Open the drain valve on the tank by pulling the black handle up and locking it into position using the black valve lock. Once the valves are in position, turn your pump motor on. The used filter powder (if added) and debris will flow out of the drain port. Once the drainage is clear (after approximately 20 seconds) turn off the pump and reset filter to filter mode.

### NOTE

Filter cycles will vary based upon pool usage and conditions. Clean element as necessary to protect filter system.

Whenever algae is present in the pool, it will significantly reduce the length of the filter cycle. The filter will be most effective when proper water chemistry is maintained.

## POOL CHEMISTRY GUIDELINES

SUGGESTED POOL CHEMISTRY LEVELS	ACTION REQUIRED TO CORRECT POOL CHEMISTRY	
	TO RAISE	TO LOWER
pH 7.2 to 7.6	Add pH UP	Add pH DOWN
TOTAL ALKALINITY 100 to 130 ppm	Alkalinity Up	Add pH DOWN
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 (Cyanuric Acid)	Dilution — partially drain & refill pool with water that has not been treated with Cyanuric Acid

## TROUBLESHOOTING

### LOW WATER PRESSURE

- **Air is getting into system**
  - a) Check to ensure that all hose connections are tight
  - b) There is a crack present in filter, pump, or pump basket
    - i) Inspect tank and pump for cracks as these would allow air to enter system.
    - ii) If a crack is found, replace the part which has been cracked. You **CANNOT** fix cracks, air will continue to leak through.
  - c) Check O-Ring on pump hair lint basket to make sure it is properly lubricated or else air will be pulled into the filter.
- **Perform filter maintenance**
  - a) Refer to Maintenance & Cleaning section.
- **If algae is present, it will increase the amount of filter maintenance necessary as it will clog up filter. To clear up pool:**
  - a) Adjust pH and Alkalinity then shock pool with double the normal dosage.
  - b) Continue running filter system and cleaning system as necessary.
  - c) Use an algaecide strong enough to kill live algae the evening following the shock treatment.
  - d) If necessary, add clarifier to clear up cloudiness caused by dead algae.
  - e) Refer to Pool Chemistry Guidelines section and maintain proper water chemistry to avoid this issue in the future.



## **EXTREMELY SHORT FILTER CYCLES**

- **Element may be dirty and not allowing water to flow through properly.**
- **Improper water chemistry**
  - a) Follow instructions for water chemistry as outlined in Pool Chemistry Guidelines section or consult your local pool dealer.

## **DEBRIS RETURNING TO THE POOL**

- **Hoses are hooked up incorrectly**
  - a) If the hoses are hooked up improperly, it can lead to debris being pushed into the pool. Check hook up against instructions and correct if necessary.
- **Damaged element**
  - a) Rips or wear and tear on element will allow dirt to pass through the element and return to the pool. There is only one solution, purchase new element.
- **Element is not sitting properly in tank**
  - a) While difficult to detect if the lid is closed, it is possible that the element is not sitting properly.
  - b) Turn off pump, close slide valves, bleed air from system and open lid to check that cartridge has been placed inside properly.
  - c) See Step 1 of instructions for proper element installation.

## **POOL WATER IS NOT CLEAR**

- **Filter system is clogged with dirt, debris and/or algae**
  - a) Perform cleaning of filter system and restart
- **Pool chemistry is off**
  - a) The alkalinity or pH being off may cause cloudiness on its own. Test levels and increase or decrease as necessary.
  - b) Low chlorine may also cause cloudiness. Shock pool regularly to avoid low chlorine levels.
- **Particles are too small for filter to catch**
  - a) Add a coagulant. This type of clarifier will cause the small particles to bind together becoming larger particles that are large enough to catch

## FILTER DISASSEMBLY



### **DANGER**

#### **Hazardous Pressure**

Releasing lid ring with pressure on system will cause tank or tank lid to blow off base, causing severe injury or property damage. NEVER adjust, tighten or loosen ring when tank is under pressure. If filter leaks at the ring, do not adjust the ring. Instead, follow instructions under "Filter Disassembly", below and "Filter Assembly".



Regularly inspect clamp assemblies for cracked, corroded or broken welds and worn or stripped threads. If any wear or damage shows, replace the complete ring.



Tension stresses and aggressive pool chemicals can aggravate mechanical wear. Tank clamp assemblies and nuts or plastic knobs should be replaced every five years.



Do not use a filter that shows cracks, corrosion or distortion.

## FILTER DISASSEMBLY

### **1. TURN OFF PUMP.**

**2. CLOSE** suction and return line valves (if used).

**3. OPEN** air release valve on top of filter.

**4. WAIT** until all pressure is released from filter tank and system before loosening either clamp.



### **WARNING**

To prevent injury, make sure that all pressure has been released from filter tank BEFORE proceeding.

5. Remove drain plug or open drain valve at "Tank Drain Port" and drain filter.

6. Loosen lid ring; remove clamp by lifting it straight up over tank.

7. Remove tank lid from tank body. Be careful not to damage O-Ring. Place tank lid in clean area.

### **NOTICE**

If heavy dirt deposits have collected around bottom of filter element and base, wash out base before removing element.

8. Remove the O-Ring from the filter. Clean the O-Ring and inspect it. If you see cuts, cracking, deformation or wear, replace it.

9. Rock filter element to one side to free seal.

10. Lift element out of tank body. Do not drop filter element. Place element in clean area where it can be cleaned with hose and spray nozzle attachment.



## FILTER REASSEMBLY

1. Replace plugs or close valves in Tank Drain and Auxiliary Drain ports.
2. Set filter element on base.
3. Make sure filter element is flush with base of filter to avoid damaging element when you replace the filter lid (Figure 3).
4. Inspect and clean the tank flanges and O-Ring seats. If flanges are deformed, cracked or corroded, replace entire filter.
5. Re-install Filter Head and Locking Ring assembly on tank.
6. Tighten Locking Ring by turning clockwise until it stops. Hand Tighten Only.
7. Clean pump strainer basket.
8. **OPEN SYSTEM VALVES AS NEEDED.**
9. Proceed to "Startup".

LIFT FILTER ELEMENT  
STRAIGHT UPWARD  
TO REMOVE

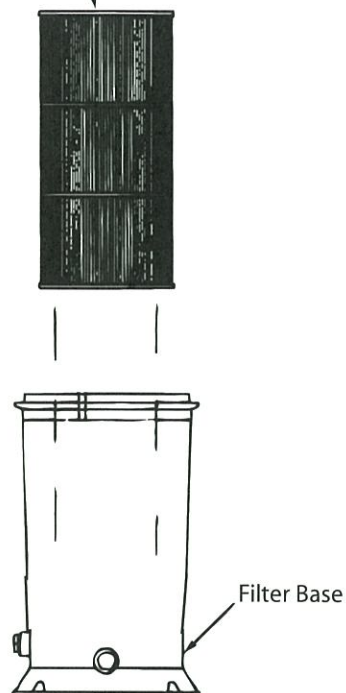


FIGURE 3

## MANUAL FILTER CLEANING PROCEDURE

**NOTICE** Keep track of filter operating pressure. When pressure reaches 10 pounds per square inch (PSI) (70kPa) above initial operating pressure, clean filter element.

**NOTICE** If filter is used with a spa, soak element at each regular cleaning. With hose, wash foreign material from inside of base. Try to avoid washing debris into outlet port.

**NOTICE** Be sure inside surface of base is clean.

### WASHING FILTER ELEMENT

1. Use a garden hose with straight flow nozzle to wash down filter element. For best results use a spray nozzle cleaning system.
2. Work from the top down; wash down all pleats. Wash between all pleats.
3. Turn element while spraying to wash down entire outside of element.
4. Repeat wash down process for inside of filter element. Hold nozzle as close to inside of pleats as possible.

- NOTICE**
- BE SURE all dirt and foreign materials are washed away from INSIDE pleats of element.
  - TIP — Have a second cartridge on hand and ready to use; this will avoid filter down time.

## WINTERIZING FILTER SYSTEM

- To winterize the filter, start by turning off the pump and closing the slide valves
- Purge air from the system using the air relief valve on the lid
- Install winter plate on skimmer and winter plug in return (items sold separately, see your local pool dealer)
- Remove drain plug from bottom of filter to allow water to escape tank
- Remove lid from filter tank and pull element out
- Clean the element thoroughly
  - a) Rinse element well after soaking and allow it to dry entirely prior to storing for the winter. Failure to allow the element to dry will result in the growth of mildew and/or mold on the element
- Disconnect hoses from pool and filter and rinse well
- Run fresh water through the pump to remove chemical residue
  - a) Store pump **INDOORS** in a warm, protected environment to protect from cracking
- Rinse filter tank (inside and out) using fresh water and dry off
  - a) Store filter tank and element in an area where they will be protected from the elements, preferably indoors
  - b) Keep components of tank disassembled during storage to protect from condensation forming during fall and causing cracks in the winter
  - c) Keep drain plug off tank to allow any trapped water to drip out through the winter

**NOTE** Failure to winterize and store filter properly will **VOID** warranty. Cracks due to improper care and/or winterization are **NOT** covered under warranty.

## TROUBLESHOOTING GUIDE

### SHORT CYCLE:

**NOTICE**

Time between cleaning will vary with each installation. The following causes and remedies are for cycle times shorter than normal

**NOTICE**

Some pool disinfectants may clog filter media. To maximize media life and filter cycle time, closely follow manufacturer's instructions when cleaning pool or filter

### POSSIBLE CAUSES:

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.**
6. **Heavy or improper application of powdered chlorine or chlorine pills that contain a binder**
7. **Algae in pool** — apply heavy dose of chlorine or algaecide as recommended by pool manufacturer. Continue until algae is controlled.



## **LOW FLOW:**

### **POSSIBLE CAUSES:**

1. Element is plugged
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 — replace with larger pump
7. Pump pulling in air — lube hair and lint trap O-Ring

## **POOL WATER NOT CLEAR:**

### **POSSIBLE CAUSES:**

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 — over pumping — reduce flow rate
5. Filter installed backward — re plumb

## **LONG RECOVERY TIME AFTER HEAVY USAGE:**

### **POSSIBLE CAUSES:**

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

## **FILTER BY-PASSES DIRT:**

### **POSSIBLE CAUSES:**

1. Element cloth torn or punctured — replace element
2. Filter element is not seated properly in filter base — follow instructions under "Filter Disassembly - Reassembly" and reposition properly
3. Filter is plumbed backwards and element cloth is ruptured — re plumb properly and replace element
4. Colloidal fines (very small suspended dirt particles) are present and passing through element covering — use Crystal Clear or if fines have already settled, vacuum to waste