

Harmsco Portable Filtration System



Part Number 10700, 10720

SPECTRUM[®]
Aquatics

A **PLAYCORE** Company

7100 Spectrum Lane ~ Missoula MT 59808
800.791.8056 ~ www.spectrumproducts.com

You have purchased a Spectrum Products Harmsco Electric Portable Filtration System. Providing the unit is installed correctly and properly maintained, it will furnish you with many years of trouble free use. It is important to read this entire manual prior to beginning assembly or operation.

Shipping Information:

Each Harmsco Pump will arrive fully assembled on one pallet. Before accepting the lift from the carrier, inspect for visible damage and match the contents with those listed below. Spectrum is not responsible for lost or damaged freight.

The pallet will contain all structural components and hardware.

NOTE: Vacuum does not include intake hoses or cleaning attachments.

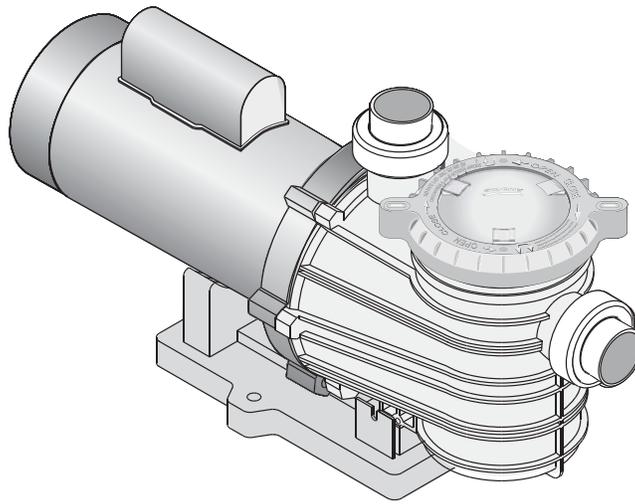
Operation Guide

Please follow the attached instructions for setup and use of your new Portable Filtration System. If you require assistance or have technical questions please contact your local distributor or Spectrum Customer Service at (406) 532-6321.

STA-RITE®

DYNA-PRO™ CENTRIFUGAL PUMPS WITH INTEGRAL TRAP

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



(Unions optional)

INSTALLATION, OPERATION & PARTS

Series MPRA, MPEA, and MPE
See Page 3 for Model Numbers

This manual should be furnished to the end user of this pump; its use will reduce service calls and chance of injury and will lengthen pump life.

Technical Support

Sanford, North Carolina (8 A.M to 5 P.M.)

Phone: (800) 831-7133

Moorpark, California (8 A.M to 5 P.M.)

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'MPRA', 'MPEA' & 'MPE' SERIES PUMPS WITH TRAP

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

The Sta-Rite 'MPRA', 'MPEA' & 'MPE' Series Self-priming Centrifugal pump:

- Is designed for use with swimming pools or as a centrifugal pump.
- 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 death, serious personal injury, or major property damage if ignored.

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

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

NOTICE indicates special instructions not related to hazards.

Carefully read and follow all safety instructions in this manual and on equipment. Keep safety labels in good condition; replace if missing or damaged.

⚠ WARNING **Hazardous pressure** Incorrectly installed or tested equipment may fail, causing severe injury or property damage.

Read and follow instructions in owner's manual when installing and operating equipment. Have a trained pool professional perform all pressure tests.

Single Speed Models		
HP	MPRA	MPE, MPEA
1/2		MPE6C-204L
3/4	MPRA6D-204L	MPEA6D-204L, MPE6D-205L
1	MPRA6E-205L	MPEA6E-205L, MPE6E-206L
1-1/2	MPRA6F-206L	MPEA6F-206L, MPE6F-207L
2	MPRA6G-207L	MPEA6G-207L, MPE6G-208L
2-1/2		MPEAA6G-208L
Two Speed Models		
HP	MPRA	MPE, MPEA
1-1/2	MPRA6YF-206L	MPE6YF-207L
2		MPEA6YG-207L, MPE6YG-208L
2-1/2		MPEAA6YG-208L

1. Do not connect system to a high pressure or city water system.
2. Use equipment only in a pool or spa installation.
3. Trapped air in system can cause explosion. BE SURE all air is out of system before operating or testing equipment.

Before pressure testing, make the following safety checks:

- Check all clamps, bolts, lids, and system accessories before testing.
- Release all air in system before testing.
- Water pressure for test must be less than 25 PSI (7.5 kg/cm²).
- Water Temperature for test must be less than 100° F. (38° C).
- Limit test to 24 hours. After test, visually check system to be sure it is ready for operation. Remove trap lid and retighten hand tight only, see Figure 1.

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

NOTICE: Do not start the pump until the strainer basket cover is on and the tab, or rib, on the discharge port aligns between the arrows.

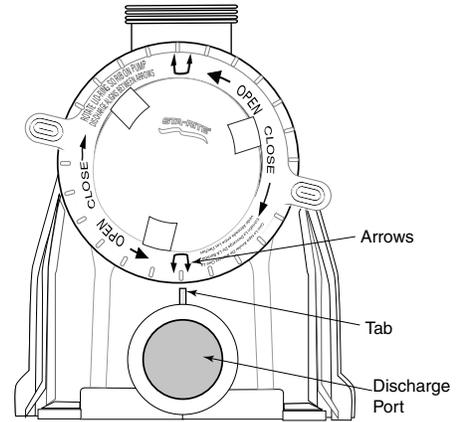


Figure 1 – Strainer basket cover alignment.

INSTALLATION

Only qualified, licensed personnel should install pump and wiring.

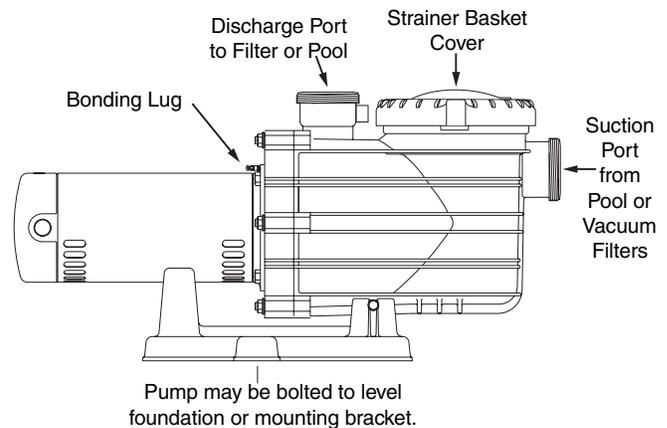


Figure 2

NOTICE: Port threads are: Internal - 2" NPT for direct connection to pipe. External - 3-1/4" Buttress. Fits Sta-Rite U11-200P Union Collar for quick disconnect pipe connection.

See Page 13 for Union Kits.

IMPORTANT SAFETY INSTRUCTIONS

Always follow basic safety precautions with this equipment, including the following.

▲ WARNING To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.

▲ CAUTION This pump is for use with permanently installed pools and may also be used with hot tubs and spas if so marked. Do not use with storable pools. A permanently installed pool is constructed in or on the ground or in a building such that it cannot be readily disassembled for storage. A storable pool is constructed so that it may be readily disassembled for storage and reassembled to its original integrity.

SAVE THESE INSTRUCTIONS

Pump mount must:

- Be located away from corrosive or flammable liquids.
- Have enough ventilation to maintain air temperature at less than the maximum ambient temperature rating (Max. Amb.) listed on the motor model plate. If this pump is installed in an enclosure/pump house, the enclosure must have adequate ventilation and air circulation to keep the temperature in the enclosure at or below the motor's rated ambient temperature whenever the pump is running.
- Be solid - Level - Rigid - Vibration free. (To reduce vibration and pipe stress, bolt pump to mount.)

Allow pump suction inlet height to be as close to water level as possible. Pump will not lift water more than 10' (3m).

Allow use of short, direct suction pipe (To reduce friction losses).

Allow for gate valves in suction and discharge piping.

Have adequate floor drainage to prevent flooding.

Be protected from excess moisture.

Allow adequate access for servicing pump and piping.

▲WARNING Fire and burn hazard. Modern motors run at high temperatures. To reduce the risk of fire, do not allow leaves, debris, or foreign matter to collect around the pump motor. To avoid burns when handling the motor, let it cool for 20 minutes before trying to work on it.

NOTICE: When connecting threaded pipe directly to pump, use thread seal tape to seal connections. Do not use pipe dope; pipe dope causes cracking in some plastics and may damage components in piping system.

When connecting pipe to pump with union half, use thread seal tape between pipe and union adapter.

Union collar to pump should be assembled dry and hand-tight.

NOTICE: Pump suction and discharge connections have molded in thread stops. DO NOT try to screw pipe in beyond these stops.

Taping Instructions:

Use only new or clean PVC pipe fittings.

Wrap male pipe threads with one to two layers of thread seal tape. Cover entire threaded portion of pipe.

Do not overtighten or tighten past thread stop in pump port!

If leaks occur, remove pipe, clean off old tape, rewrap with one to two additional layers of tape and remake the connection.

NOTICE: Support all piping connected with pump!

Piping:

Use at least 2" (51mm) pipe. Increase size if a long run is needed.

To avoid strains on the pump, support both suction and discharge pipes independently. Place these supports near the pump.

To avoid a strain left by a gap at the last connection, start all piping at the pump and run pipe away from the pump.

To avoid airlocking, slope suction pipe slightly upward toward the pump.

NOTICE: To prevent flooding when removing pump for service, all flooded suction systems must have gate valves in suction and discharge pipes.

POOL PUMP SUCTION REQUIREMENTS



▲ Pump suction is hazardous and can trap and drown or disembowel bathers. Do not use or operate swimming pools, spas, or hot tubs if a suction outlet cover is missing, broken, or loose. Follow the guidelines below for a pump installation which minimizes risk to users of pools, spas, and hot tubs.

Entrapment Protection

The pump suction system *must* provide protection against the hazard of

suction entrapment or hair entrapment/entanglement.

Suction Outlet Covers

All suction outlet covers must be maintained. They must be replaced if cracked, broken, or missing.

See Page 6 for outlet cover certification requirements.

All suction outlets must have correctly installed, screw-fastened covers in place.

Suction Outlets Per Pump (Figure 3, Page 6)

Provide at least two hydraulically balanced main drains, with covers, as suction outlets for each circulating pump suction line. The centers of the main drains (suction outlets) on any one suction line must be at least three feet apart.

The system must be built so that it cannot operate with the pump drawing water from only *one* main drain (that is, there must be at least two main drains connected to the pump whenever it is running – see Figure 3, Page 6). However, if two main drains run into a single suction line, the single suction line may be equipped with a valve which will shut off *both* main drains from the pump (see Figure 3).

More than one pump can be connected to a single suction line as long as the requirements above are met.

Water Velocity

The maximum water velocity through the suction fitting or cover for any suction outlet must not exceed 1.5 feet per second unless the outlet complies with the latest ANSI/ASME Specification for *Suction Fittings For Use in Swimming Pools, Spas, Hot Tubs, and Whirlpool Bathtub Applications*. In any case, do not exceed the suction fitting's maximum designed flow rate.

If 100% of the pump's flow comes from the main drain system, the maximum water velocity in the pump suction hydraulic system must be six feet per second or less even if one main drain (suction outlet) is completely blocked. The flow through the remaining main drain(s) must comply with the latest ANSI/ASME Specification for *Suction Fittings For Use in Swimming Pools, Spas, Hot Tubs, and Whirlpool Bathtub Applications*.

Testing and Certification

Suction outlet covers must have been tested by a nationally recognized testing laboratory and found to comply with the latest ANSI/ASME Specifications for *Suction Fittings For Use in Swimming Pools, Spas, Hot Tubs, and Whirlpool Bathtub Applications*.

Fittings:

Fittings restrict flow; for best efficiency use fewest possible fittings (but at least two suction outlets).

Avoid fittings which could cause an air trap.

Pool fittings must conform to International Association of Plumbing and Mechanical Officials (IAPMO) standards.

Use only non-entrapping suction fitting or double suction.

ELECTRICAL



⚠ Ground motor before connecting to electrical power supply. Failure to ground motor can cause severe or fatal electrical shock hazard.

⚠ Do not ground to a gas supply line.

⚠ To avoid dangerous or fatal electrical shock, turn OFF power to motor before working on electrical connections.

⚠ Ground Fault Circuit Interrupter (GFCI) tripping indicates an electrical problem. If GFCI trips and will not reset, have a qualified

electrician inspect and repair electrical system.

⚠ Exactly match supply voltage to nameplate voltage. Incorrect voltage can cause fire or seriously damage motor and voids warranty. If in doubt consult a licensed electrician.

Voltage

Voltage at motor must be not more than 10% above or below motor nameplate rated voltage or motor may overheat, causing overload tripping and reduced component life. If voltage is less than 90% or more than 110% of rated voltage when motor is running at full load, consult power company.

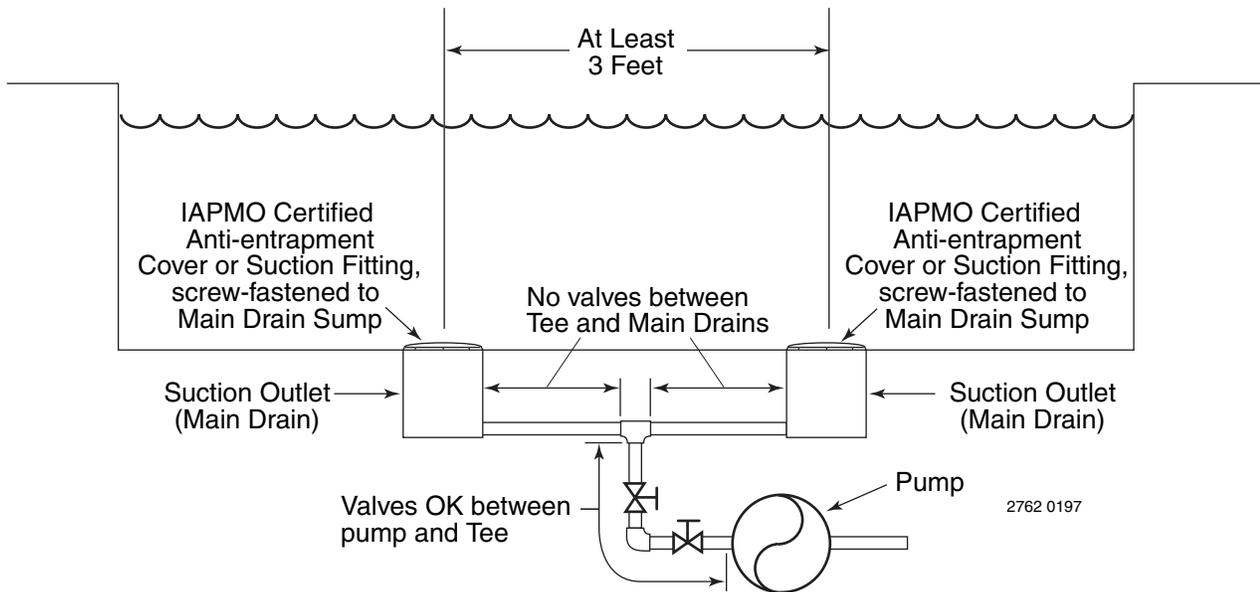


Figure 3 – Recommended pump suction layout.

Grounding/Bonding

Install, ground, bond and wire motor according to local or National Electrical Code requirements.

Permanently ground motor. Use green ground terminal provided under motor canopy or access plate (See Figure 4); use size and type wire required by code. Connect motor ground terminal to electrical service ground.

Bond motor to pool structure. Use a solid copper conductor, size No. 8 AWG (8.4 sq.mm) or larger. Run wire from external bonding lug (see Figure 4) to reinforcing rod or mesh.

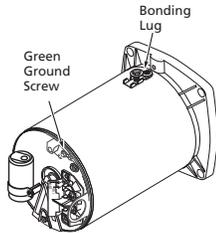


Figure 4 – Typical ground screw and bonding lug locations.

Connect a No. 8 AWG (8.4 sq.mm) solid copper bonding wire to the pressure wire connector provided on the motor housing and to all metal parts of the swimming pool, spa, or hot tub and to all electrical equipment, metal piping or conduit within 5 feet (1.5 m) of the inside walls of swimming pool, spa, or hot tub.

Wiring

NOTICE: 3 phase models require magnetic motor starters and external overload protection. If in doubt about the procedure, consult a licensed electrician.

Pump must be permanently connected to circuit. Table I, Page 8, give correct wire and circuit breaker sizes for the pump alone. If other lights or appliances are also on the same circuit, be sure to add their amp loads to pump amp load before figuring wire and circuit breaker sizes. (If unsure how to do this or if this is confusing, consult a licensed electrician.) Use the load circuit breaker as the master on-off switch.

Install a Ground Fault Circuit Interrupter (GFCI) in circuit; it will sense a short-circuit to ground and disconnect power before it becomes dangerous to pool users. For size of GFCI required and test procedures for GFCI, see manufacturer's instruction.

In case of power outage, check GFCI for tripping (which will prevent normal pump operation). Reset if necessary.

NOTICE: If you do not use conduit when wiring motor, **be sure** to seal wire opening on end of motor to prevent dirt, bugs, etc., from entering.

⚠️ WARNING Risk of dangerous or fatal electrical shock.

Be sure that power to the motor circuit is off before working on wiring, wiring connections, or motor. Re-install the motor end cover and all other wiring covers before turning on the power.

1. Turn off power.
2. Remove the motor end cover.

To Wire a Single Speed, Single Voltage Motor

There are two terminals labeled L1 and L2. Attach the power leads to these terminals. Either wire may attach to either terminal.

To Wire a Dual-Voltage Motor

Dual voltage motors have a plug to change from 230 volts (factory setting) to 115 volts.

1. If you have 230 volts motor supply voltage, confirm that the plug is set for 230 volts. The arrow on the plug will point to the 230 volt position. Note that plug only connects with one prong in this position.
2. If you have 115 volt supply, pull the plug straight up and place it on the **two** brass prongs as shown.



Figure 5A -Voltage Change Plug Set for 230 Volts

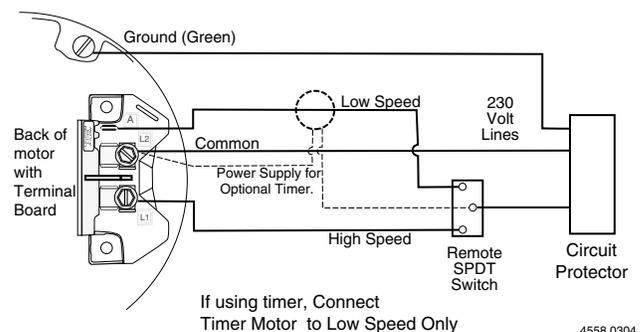


Figure 5B -Voltage Change Plug Set for 115 Volts

NOTE: Arrow is highlighted for clarity.

To Wire a Two-Speed Motor

Wire the pump as shown in the diagram.



Minimum switch and timer amp rating must equal Branch Fuse Rating given in "Recommended Fusing and Wiring Data" table.

Figure 5C: 2-Speed Motor Wiring Diagram

TABLE I - RECOMMENDED CIRCUIT BREAKER AND WIRING DATA

Motor HP	Branch CB Rating Amps	Max Load Amps	Voltage/Hz/Phase	Serv. to Motor - Dist. in Ft. (M)			AWG Wire Size (mm ²)
				0-100' (0-30)	101-200' (30-60)	201-300' (60-90)	
MPRA SERIES – SINGLE SPEED							
3/4	20/15	13.4/6.7	115/230/60/1	12/14(3/2)	10/14(5.5/2)	8/14(8.4/2)	}
1	20/15	15.3/7.6	115/230/60/1	12/14(3/2)	8/14(8.4/2)	6/14(14/2)	
1-1/2	25/15	19.2/9.6	115/230/60/1	10/14(5.5/2)	8/14(8.4/2)	6/12(14/3)	
2	20	12.0	230/60/1	14(2)	14(2)	12(3)	
MPEA SERIES – SINGLE SPEED							
3/4	15/15	11.0/5.5	115/230/60/1	14/14(2/2)	10/14(5.5/2)	8/14(8.4/2)	}
1	20/15	13.8/6.9	115/230/60/1	12/14(3/2)	10/14(5.5/2)	8/14(8.4/2)	
1-1/2	25/15	16.0/8.0	115/230/60/1	12/14(3/2)	8/14(8.4/2)	6/14(14/2)	
2	15	10.4	230/60/1	14(2)	14(2)	12(3)	
2-1/2	15	11.2	230/60/1	14(2)	14(2)	12(3)	
MPRA SERIES – TWO SPEED							
1-1/2 – 1/4	15	9.2/2.5	230/60/1	14(2)	14(2)	12(3)	}
MPEA SERIES – TWO SPEED							
2 – 1/4	15	10.0/3.0	230/60/1	14(2)	14(2)	12(3)	}
2-1/2 – 1/2	15	11.3/3.3	230/60/1	14(2)	12(3)	12(3)	
MPE SERIES – SINGLE SPEED							
1/2	15/15	11.0/5.5	115/230/60/1	14/14(2/2)	10/14(5.5/2)	8/14(8.4/2)	}
3/4	20/15	13.8/6.9	115/230/60/1	12/14(3/2)	10/14(5.5/2)	8/14(8.4/2)	
1	25/15	16.0/8.0	115/230/60/1	12/14(3/2)	8/14(8.4/2)	6/14(14/2)	
1-1/2	15	10.4	230/60/1	14(2)	14(2)	12(3)	
2	15	11.2	230/60/1	14(2)	14(2)	12(3)	
MPE SERIES – TWO SPEED							
1-1/2 – 1/4	15	10.0/3.0	230/60/1	14(2)	14(2)	12(3)	}
2 – 1/3	15	11.3/3.3	230/60/1	14(2)	12(3)	12(3)	

OPERATION

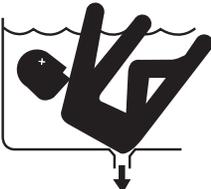
NOTICE: NEVER run pump dry. Running pump dry may damage seals, causing leakage and flooding. Fill pump with water before starting motor.

⚠ WARNING Before removing trap cover:

1. STOP PUMP before proceeding.
2. CLOSE GATE VALVES in suction and discharge pipes.
3. RELEASE ALL PRESSURE from pump and piping system.

⚠ If pump is being pressure tested, be sure pressure has been released before removing trap cover.

⚠ WARNING



Hazardous suction. Can trap hair or body parts, causing severe injury or death.

Do not block suction.

⚠ Do not block pump suction. To do so with body may cause severe or fatal injury. Small children using pool must ALWAYS have close adult supervision.

⚠ WARNING Fire and burn hazard. Modern motors run at high temperatures. To reduce the risk of fire, do not allow leaves, debris, or foreign matter to collect around the pump motor. To avoid burns when handling the motor, let it cool for 20 minutes before trying to work on it. An automatic internal cutoff switch protects the motor from heat damage during operation.

NOTICE: Maximum ambient temperature for motor operation must not exceed maximum ambient temperature on motor nameplate.

Priming Pump

Release all pressure from filter, pump, and piping system; see the filter owner's manual.

In a flooded suction system (water source higher than pump), pump will prime itself when suction and discharge valves are opened.

If pump is not in a flooded suction system, unscrew and remove trap cover; fill trap and pump with water.

Clean and inspect O-Ring; reinstall on trap groove.

Do not lubricate the trap cover O-Ring. The original equipment O-Ring contains a permanent internal lubricant.

NOTICE: If you replace the O-Ring with a non-internally lubricated O-Ring, you may need to apply a silicone based lubricant.

Replace trap cover on trap; turn clockwise to tighten cover.

NOTICE: Tighten trap cover handle ring by hand only (**no wrenches**)! See Figure 1, Page 4.

Pump should prime now. Priming time will depend on vertical length of suction lift and horizontal length of suction piping.

If pump does not prime, make sure that all valves are open, suction pipe end is under water, pump is not trying to lift water more than 10' (3m), and that there are no leaks in suction pipe. See Troubleshooting Guide, Page 12.

Routine Maintenance

The only routine maintenance needed is inspection/cleaning of trap basket. Debris or trash that collects in basket will choke off water flow through the pump. Follow instructions below to clean trap:

1. Stop pump, close valves in suction and discharge, and **release all pressure from system before proceeding.**
2. Remove trap cover handle ring (turn counterclockwise). If necessary, tap handles gently with a rubber mallet.
3. Remove strainer basket and clean. Be sure all holes in basket are clear, flush basket with water and replace in trap with large opening at pipe connection port (between ribs provided). If basket is replaced backwards cover will not fit on trap body.
4. Clean and inspect lid O-Ring; reinstall on trap groove.
5. Clean O-Ring groove on trap body and replace cover and handle ring. To help keep cover from sticking, tighten **hand tight only.**
6. Prime pump (see priming instructions).

Storage/Winterizing

NOTICE: Allowing pump to freeze will damage pump and void warranty!

NOTICE: Do not use anti-freeze solutions (except propylene glycol) in your pool/spa system. Propylene glycol, "RV antifreeze", is non-toxic and will not damage plastic system components; other anti-freezes are highly toxic and may damage plastic components in the system.

Drain all water from pump and piping when expecting freezing temperatures or when storing pump for a long time (see instructions below).

Keep motor dry and covered during storage.

To avoid condensation/corrosion problems, **do not** cover pump with plastic.

For outdoor/unprotected installations:

1. Enclose entire system in a weatherproof enclosure.
2. To avoid condensation/corrosion damage, allow ventilation; **do not** wrap system in plastic.
3. Use a 40% propylene glycol/60% water solution to protect pump to -50°F (-46°C).

Draining Pump

⚠ WARNING Explosion hazard. 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.

1. Pump down water level below all inlets to the pool.



⚠ To avoid dangerous or fatal electrical shock hazard, turn OFF power to motor before draining pump.

2. Remove trap cover handle ring (turn counterclockwise). If necessary, tap handles gently with a rubber mallet. Low pressure air can be used to remove remaining water from the piping.
3. Cap inlet piping after draining to keep water out of the pipes.
4. To prevent pump from freezing, remove trap cover and

drain the tank body through the two drain plugs provided.

- A. Gravity drain system as far as possible.
- B. Protect areas which retain water with non-toxic propylene glycol antifreeze ("RV" antifreeze).

5. Clean pump thoroughly; replace trap cover.

NOTICE: Tighten trap cover by hand only (**no wrenches**)! If pump is not anchored, use caution to not break attached piping!

6. Be sure motor is kept dry and covered.

Startup For Winterized Equipment

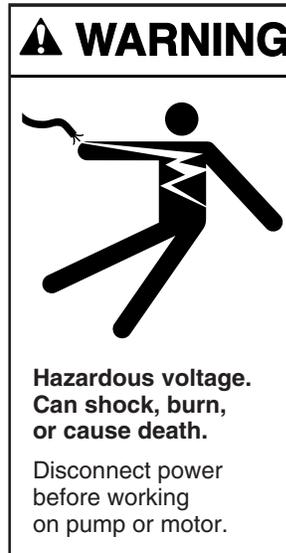
1. Remove any temporary weather protection placed around system for shutdown.
2. Follow filter manufacturer's instructions for reactivation of the filter.
3. Inspect all electrical wiring for damage or deterioration over the shutdown period. Have a qualified serviceman repair wiring as needed.
4. Inspect and tighten all watertight connections.
5. Open all valves in suction and return piping.
6. Remove any winterizing plugs in piping system.
7. Drain all antifreeze from system.
8. Close all drain valves and replace all drain plugs in piping system.
9. Prime pump according to instructions on Page 9.

PUMP SERVICE

Pump should only be serviced by qualified personnel. For best results, use only genuine Sta-Rite factory parts. Be sure to prime pump (Page 9) before starting.

⚠ CAUTION Before removing trap cover:

1. **STOP PUMP** before proceeding.
2. **CLOSE GATE VALVES** in suction and discharge pipes.
3. **RELEASE ALL PRESSURE** from pump and piping system.



⚠ To avoid dangerous or fatal electrical shock hazard, turn OFF power to motor before working on pump or motor.

Aside from lubricating trap cover O-Ring, no lubrication or regular maintenance is needed beyond reasonable care and periodic cleaning of strainer basket.

If shaft seal is worn or damaged, repair as follows:

Pump Dissassembly/Removing Old Seal

Disconnect power to pump motor.

⚠ Be sure valves on suction and return piping are closed before starting work.

Release all pressure by opening all vents before starting work.

1. Drain pump by removing drain plugs on bottom of pump body and trap body.
2. **Be sure** there is no pressure in trap body; remove cover (unscrew by turning counterclockwise).
3. Remove 6 nuts, lockwashers and flat washers holding seal plate to pump body. Pull seal plate and motor away from pump body. (You may have to CAREFULLY use a screwdriver to separate body from seal plate.)
4. Remove seven screws and washers holding diffuser to seal plate. Remove diffuser.
5. Remove motor canopy. Being careful not to touch capacitor terminals, loosen capacitor clamp and move capacitor to one side.
6. Hold shaft with 7/16" open-end wrench on motor shaft flats.
7. Unscrew impeller from shaft (turn counterclockwise when facing it).
NOTICE: On 2 HP model, remove impeller screw (left hand thread - turn **clockwise**) and gasket before removing impeller. Inspect gasket for damage, cracks, etc. Replace if damaged.
8. Remove four screws holding seal plate to motor.
9. Place seal plate face down on flat surface and tap out ceramic seat (Figure 6).
10. Remove slinger from motor shaft and inspect for damage or abrasion.
11. Clean seal cavity in seal plate and clean motor shaft.

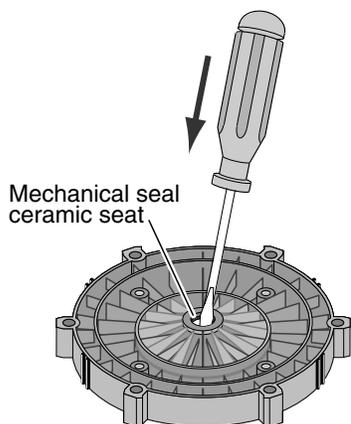


Figure 6

Pump Reassembly/Installing New Seal

1. Ceramic seat must be clean and free of dirt, grease, dust, etc. Wet outer edge with small amount of liquid detergent; press ceramic seat into seal plate cavity firmly and squarely with finger pressure (Figure 7).

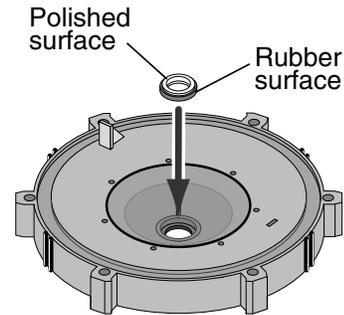


Figure 7

2. If ceramic seat will not locate properly, remove it, place **face up** on bench and reclean cavity. Ceramic seat should now locate.
3. If seat still will not locate properly, place a cardboard washer over the polished face and use a piece of 3/4" (19mm) standard pipe for pressing purposes.
NOTICE: **Be sure** not to scratch or mar polished surface or seal will leak.
4. Replace slinger on end of motor shaft so that impeller sleeve will push it into position. If slinger shows signs of wear or damage, replace it.
5. Remount seal plate on motor. Tighten bolts to 60-80 inch-lbs. (69-92 kg/cm) torque.
6. Apply a **small** amount of liquid detergent to inside diameter of rotating half of seal.
7. Slide rotating seal member, polished carbon face out, over impeller sleeve until rubber drive ring hits back of impeller.
NOTICE: **Be sure** not to nick or scratch polished seal face; seal will leak if face is damaged.
8. Screw impeller onto shaft (clockwise); this will automatically locate seal in seal plate.
NOTICE: On 2 and 2-1/2 HP models; install impeller gasket and lock screw (left-hand thread - turn **counterclockwise**). Torque lock screw to 50-55 inch-lbs. (57.6-63 kg/cm).
9. Mount diffuser on seal plate; tighten screws to 10-14 inch-lbs. (11.2-16.1 kg/cm) torque.
10. Assemble motor and seal plate to pump body with nuts, flat washers and lock washers. Torque nuts to 120-130 in-lbs. (138-150 kg/cm).
11. Prime pump according to instructions on Page 9.

TROUBLESHOOTING GUIDE

⚠ Read and understand safety and operating instructions in this manual before doing any work on pump!

⚠ Only qualified personnel should electrically test pump motor!

FAILURE TO PUMP; REDUCED CAPACITY OR DISCHARGE PRESSURE

Suction leaks/lost prime:

1. Pump must be primed; make sure that pump volute and trap are full of water. See priming instructions, Page 9.
2. Make sure there are no leaks in suction piping.
3. Make sure suction pipe inlet is well below the water level to prevent pump from sucking air.
4. If suction trap O-Ring is defective, replace it.
5. Make sure pump is not trying to lift water more than 10' (3m).
6. Make sure suction pipe is at least 2" (51mm) in diameter.

Clogged pipe/trap/impeller, worn impeller:

7. Make sure suction trap is not clogged; if it is, clean trap and strainer.
8. Make sure impeller is not clogged (follow steps 1 through 7 under "Removing Old Seal", Page 11; check impeller for clogging; follow steps 7 through 11 under "Installing New Seal", Page 11, for reassembly).
9. Impeller and diffuser may be worn. If so, order replacement parts from Repair Parts List, Pages 13 and 14.



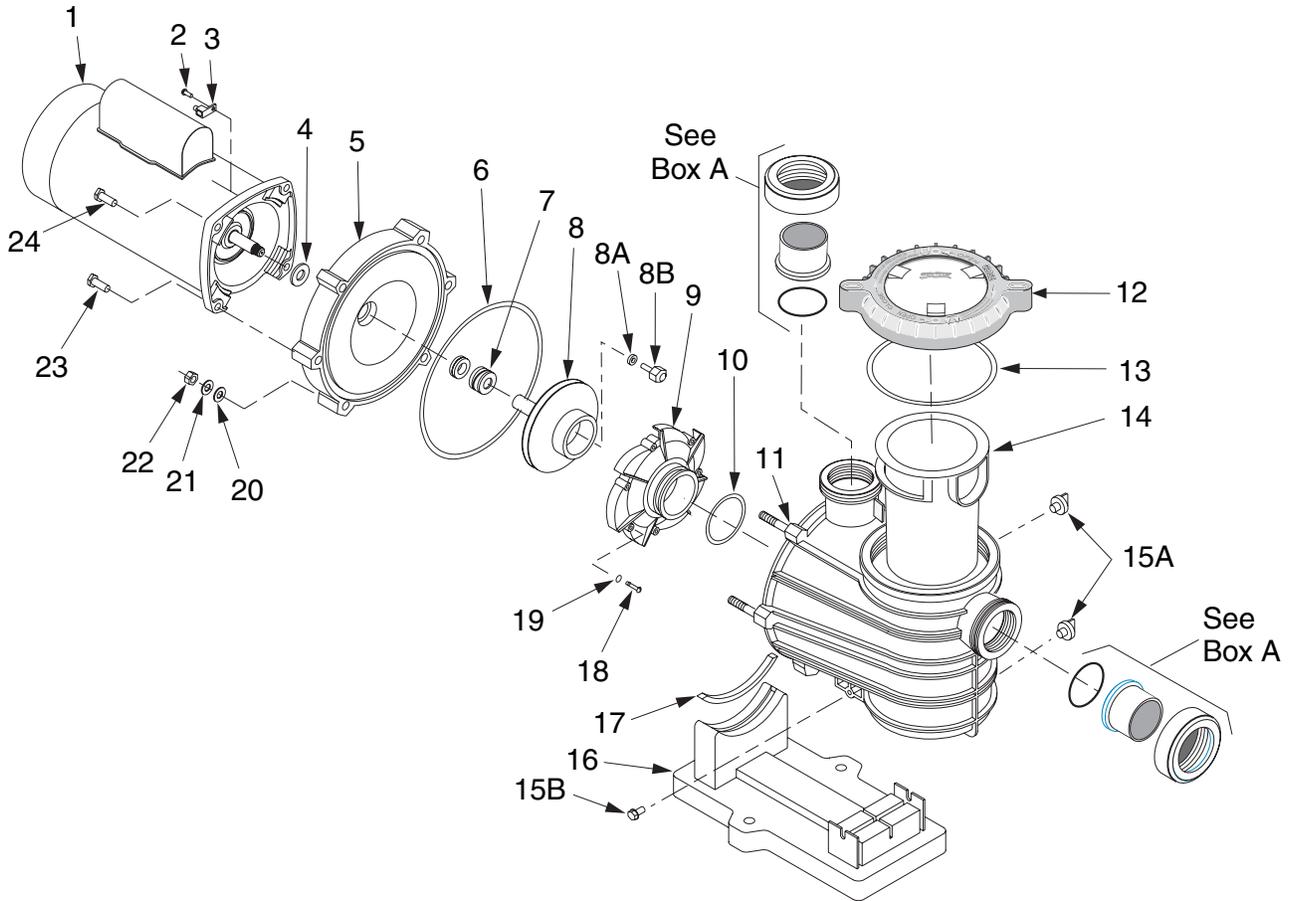
Electrical:

10. Pump may be running too slowly; check voltage at motor terminals and at meter while pump is running. If low, see wiring instructions or consult power company. Check for loose connections.
11. Pump may be too hot.
 - A. Check line voltage; if less than 90% or more than 110% of rated voltage consult a licensed electrician.
 - B. Increase ventilation.
 - C. Reduce ambient temperature.
 - D. Tighten any loose connections.

MECHANICAL TROUBLES AND NOISE

1. If suction and discharge piping are not adequately supported, pump assembly will be strained. See "Installation", Page 4.
2. Do not mount pump on a wooden platform! Securely mount on concrete platform for quietest performance.

REPAIR PARTS LIST DYNA-PRO™ POOL PUMP 1/2 through 2-1/2 HP Models Single Speed and Two Speed



Model No.	HP	Motor (Key No. 1)
Single Speed 115/230/60/1		
MPRA6D-204L	3/4	A100DLL
MPRA6E-205L	1	A100ELL
MPRA6F-206L	1-1/2	A100FLL
MPEA6D-204L	3/4	AE100DLL
MPEA6E-205L	1	AE100ELL
MPEA6F-206L	1-1/2	AE100FLL
MPE6C-204L	1/2	AE100CHL
MPE6D-205L	3/4	AE100DHL
MPE6E-206L	1	AE100EHL
230/60/1		
MPRA6G-207L	2	A100GLL
MPEA6G-207L	2	AE100GLL
MPEAA6G-208L	2-1/2	AE100G5LL
MPE6F-207L	1-1/2	AE100FHL
MPE6G-208L	2	AE100G5HL
Two Speed 230/60/1		
MPRA6YF-206L	1-1/2	A100FLL-Y
MPEA6YG-207L	2	AE100GLL-Y
MPEAA6YG-208L	2-1/2	AE100G5LL-Y
MPE6YF-207L	1-1/2	AE100GLL-Y
MPE6YG-208L	2	AE100G5LL-Y

Box A

For quick disconnect pipe connections, purchase separately:
 Pkg. 188 2" Slip 1/2 Union Kit or
 Pkg. 189 2" NPT 1/2 Union Kit.

Includes:
 U11-200PS Union Collar
 U9-362 O-Ring
 U11-196P 2" Slip adapter or
 U11-199P 2" NPT adapter.

REPAIR PARTS LIST
DYNA-PRO™ POOL PUMP
1/2 through 2-1/2 HP Models Single Speed and Two Speed

Key No.	Part Description	Qty.	MPEA6D-204L MPE6C-204L MPRA6D-204L	MPEA6E-205L MPE6D-205L MPRA6E-205L	MPEA6F-206L MPE6E-206L MPRA6F-206L MPRA6YF-206L	MPEA6G-207L MPE6F-207L MPEA6YG-207L MPE6YF-207L MPRA6G-207	MPEAA6G-208L MPE6G-208L MPEAA6YG-208L MPE6G-208L
2	Screw #10-32x1/2"	1	U30-692SS	U30-692SS	U30-692SS	U30-692SS	U30-692SS
3	Bonding Lug	1	U17-568	U17-568	U17-568	U17-568	U17-568
4	Slinger	1	17351-0009	17351-0009	17351-0009	17351-0009	17351-0009
5	Seal Plate	1	C3-184P	C3-184P	C3-184P	C3-184P	C3-184P
6	Seal Plate Cord Ring	1	U9-373	U9-373	U9-373	U9-373	U9-373
7	Shaft Seal	1	37400-0027	37400-0027	37400-0027	37400-0027	37400-0027
8	Impeller	1	C105-236P	C105-236PB	C105-236PC	C105-236PDA	C105-236PEA
8A	Gasket	1	–	–	–	33455-1047	33455-1047
8B	Impeller Lock Screw	1	–	–	–	37337-6080	37337-6080
9	Diffuser	1	C1-270PB	C1-270PC	C1-270P	C1-270P	C1-270P
10	Diffuser O-Ring	1	U9-374	U9-374	U9-374	U9-374	U9-374
11	Tank and Trap Body (Only)	1	C76-71P	C76-71P	C76-71P	C76-71P	C76-71P
12	Trap Lid and Ring Assembly	1	17307-0111	17307-0111	17307-0111	17307-0111	17307-0111
13	Trap Cover O-Ring	1	35505-1440	35505-1440	35505-1440	35505-1440	35505-1440
14	Trap Basket	1	C8-58P	C8-58P	C8-58P	C8-58P	C8-58P
15A	Drain Plug	2	U178-920P	U178-920P	U178-920P	U178-920P	U178-920P
15B	Mounting Screw 5/16-14x5/8"	2	U30-919SS	U30-919SS	U30-919SS	U30-919SS	U30-919SS
16	Base - Plastic	1	C4-77P	C4-77P	C4-77P	C4-77P	C4-77P
17	Motor Pad - for Plastic Base	1	C35-45	C35-45	C35-45	C35-45	C35-45
18	Screw #8-32x7/8" Rd. Hd.	7	U30-542SS	U30-542SS	U30-542SS	U30-542SS	U30-542SS
19	Lock Washer #8 Ext. Tooth	7	U43-21SS	U43-21SS	U43-21SS	U43-21SS	U43-21SS
20	Flat Washer 3/8"	6	U43-62SS	U43-62SS	U43-62SS	U43-62SS	U43-62SS
21	Lock Washer 3/8"	6	U43-12SS	U43-12SS	U43-12SS	U43-12SS	U43-12SS
22	Nut 3/8-16 Hex	6	U36-38SSW	U36-38SSW	U36-38SSW	U36-38SSW	U36-38SSW
23	Cap Screws 3/8-16x1-1/4" Hex. (LS Suffix)	2	–	–	U30-75SS	U30-75SS	U30-75SS
24	Cap Screws 3/8-16x1" Hex.	4	U30-74SS	U30-74SS	U30-74SS	U30-74SS	U30-74SS
•	Nameplate	1	32155-4071	32155-4071	32155-4071	32155-4071	32155-4071
•	Tag, "CAUTION This pump equipped with mechanical shaft seal..."	1	61002-0012	61002-0012	61002-0012	61002-0012	61002-0012
•	Voltage Sticker	1	U27-153	U27-153	U27-153	U27-68	U27-68
•	Tag, "WARNING/CAUTION/Instructions..."	1	C63-12	C63-12	C63-12	C63-12	C63-12

• Not illustrated.

HARMSCO® Betterfilter®

INSTALLATION AND OPERATION MANUAL UPFLOW SWIMMING POOL CARTRIDGE FILTER

CARTRIDGE CLEANING INSTRUCTIONS

HARMSCO CARTRIDGES

May be cleaned and reused before replacement is necessary.
Cartridge cleaning is necessary only when flow falls below that required or when pressure increase over start-up pressure exceeds 10 pounds.

INSTRUCTIONS FOR CLEANING CARTRIDGES

See Page 4 on how to remove and replace cartridge(s) for cleaning.
Remove rim gasket to prevent damage during cleaning.

Normal Cleaning Procedure.

Normal cleaning is done by using a pressure nozzle on the end of your garden hose. Direct jet spray at cartridges on an angle to remove dirt.

Special Cleaning Procedures.

To be used only when normal procedure is insufficient to return cartridge to normal filter runs.

1 Removing Oils From Cartridges. If oils coat cartridges and cause reduced flow, this material may be removed by soaking cartridges in a solution of 2 lb. Tri-sodium Phosphate to 10 gallons of water or a Tri-sodium Phosphate based product. Usually 12 hours soaking time will break oil coating from cartridge. Enzyme products are known to release oils from cartridge media and in **some** cases may eliminate the need for soaking. Tri-sodium Phosphate and enzyme products are available at most swimming pool distributors and retail locations. Repeat Normal Cleaning Procedure.

2 Removing Algae From Cartridges. If algae coats the cartridges and causes reduced flow, soak cartridges in a solution of 2 lb. Tri-sodium Phosphate to 10 gallons of water. Add 1 pint of swimming pool chlorine to kill the algae. Soak for one hour. Check pool chemistry for cause of algae growth.

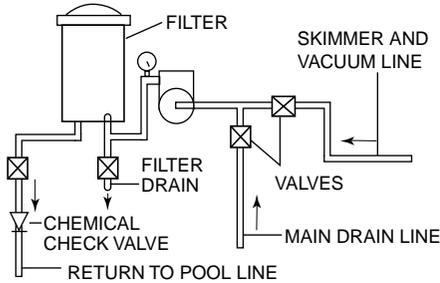
3 Removing Calcium Or Mineral Deposits. *Caution***** Do not use muriatic acid on cartridges until all oils have been removed as in step #1 above. Make sure all previously used products have been thoroughly rinsed from cartridges.

If calcium deposits are present, perform operation #1 above. Rinse - then, in a solution of 1 part muriatic acid to 20 parts water, soak until bubbling action stops. Use a plastic garbage container or similar vessel. Check pool chemistry for high PH or Alkalinity. Repeat Normal Cleaning Procedure.

4 The only exception to the above procedures are with the use of biguanides (i.e. Baquacil, SoftSwim or other similar sanitizer). When using a biguanide, always soak the cartridge with muriatic acid first (as described in #3), and then soak in Tri-sodium Phosphate and water, (as described in #1).

Heed all manufacturer's posted instructions, warnings and cautions
when using any product.

TYPICAL INSTALLATION OF RESIDENTIAL POOLS



Where unit is being installed below water level of the pool, it is necessary to provide valves as indicated in the drawing as shown, so that the filter housing may be opened without draining the pool.

To protect against electrolysis, all metal components of the water circulation and heating systems must be connected by a wire to ground the entire system.

Filter housings must be grounded
DO NOT STORE CHEMICALS NEAR FILTER HOUSING

TYPICAL INSTALLATIONS*

For Residential and Commercial Pools

* See Page 6 for Single Cartridge (SC) Models

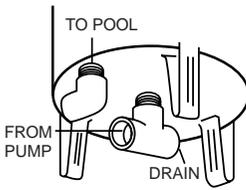


FIG 1:
 Betterfilter® Models
 BF42, BF84,
 BF126

SUGGESTED INSTALLATION (Fig. 1)

1. Install 1-1/2" "T" on the center nipple as shown in figure 1.
2. Pipe water from discharge of pump to one side of this "T".
3. Install a 1-1/2" x approximately 10" nipple from other side of this "T" with 1-1/2" valve at end of nipple. This is for draining filter unit.
4. Install 1-1/2" elbow on the other nipple as illustrated. This is the return-to-pool line.

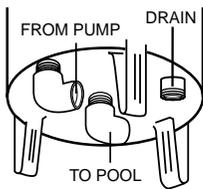


FIG 2:
 Betterfilter® Models
 BF96, BF144

SUGGESTED INSTALLATION (Fig. 2)

1. Install 2" thread to socket PVC elbows on side of nipple marked inlet—Pipe water from pump discharge to this elbow.
2. Install 2" thread to socket PVC elbow on center nipple marked outlet. This is the return to pool line.
3. Install 1" valve or cap on marked drain.

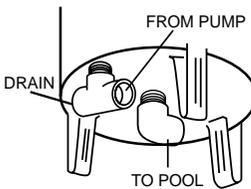


FIG 3:
 Betterfilter® Models
 BF168, BF252,
 BF336, BF450,
 BF600

SUGGESTED INSTALLATION (Fig. 3)

1. Install thread to socket "T" on the side nipple as shown in figure 3. Pipe water from discharge of pump to one side of this "T".
2. Install nipple and valve in other side of this "T". This is the drain for emptying filter housing.
3. Install thread to socket PVC elbow on center outlet. This is the return-to-pool line.

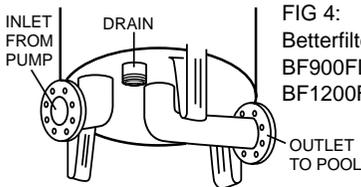


FIG 4:
 Betterfilter® Models
 BF900FL,
 BF1200FL

SUGGESTED INSTALLATION (Fig. 4)

1. Install water pipe from the pump to flange marked "inlet".
2. Pipe return-to-pool line flange marked "outlet".
3. Install valve in drain line to threaded nipple marked "drain".

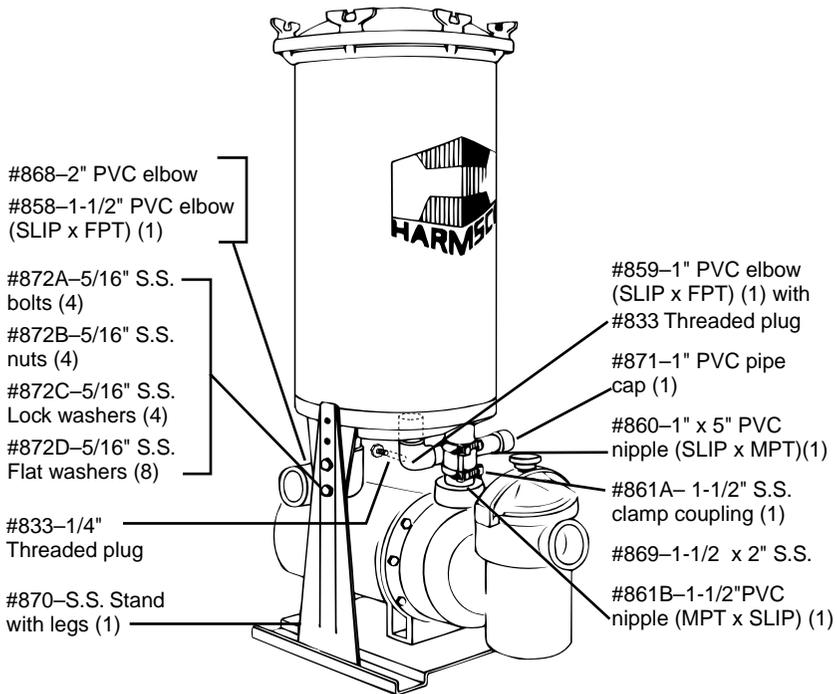
Operation: After installation insure all in-line valves are in the open, flow through position. Turn on pump. **WARNING:** Inlet pressure not to exceed 50 psi. Operating temperature: 32° - 105°F.

ASSEMBLY INSTRUCTIONS FOR BKM BASE MODELS

Models: BF144 BKM, BF105 BKMSC and BF155 BKMSC are 2"

Models: BF42 BKM, BF84 BKM, BF126 BKM are 1-1/2"

Harmsco base kit models are adaptable to different swimming pool pumps.



All other parts are the same as equivalent BF Models

STEP 1. Read instructions thoroughly and familiarize yourself with parts. (Cartridge cluster may be removed during assembly).

STEP 2. Install the 1-1/2" nipple (MPT x SLIP) (#861B) into top of pump using teflon tape. Slip the 1-1/2" S.S.* clamp coupling (#861A) onto the nipple, tighten bottom bolt only.

STEP 3. Turn filter tank upside down and install 1-1/2" PVC elbow (SLIP x FPT) (#858) onto S.S.* outlet nipple of filter tank. Tighten to desired position.

STEP 4. Install 1" PVC elbow (SLIP x FPT) (#859) onto S.S.* drain nipple of filter tank, tighten to desired position. Glue slip end of 1" PVC nipple (#860) into elbow. Install 1" PVC pipe cap (#871) onto 1" PVC nipple (#860) using teflon tape.

STEP 5. Position filter tank in between base kit legs and insert S.S.* inlet nipple of filter (located directly below name plate decal) into top section of the S.S.* clamp coupling (#861A). Keeping filter tank level, install 2 S.S.* 5/16" bolts (#872A), nuts (#872B) and washers (#872C) on each side of stand, using a 1/2" wrench to secure filter tank to stand.

STEP 6. Tighten S.S.* coupling (#861A) top bolt.

STEP 7. Screw 1/4" threaded plug (#833) into hole in 1" PVC elbow (#859) which is attached to the drain nipple (or install pressure gauge, not supplied, into the hole in the elbow).

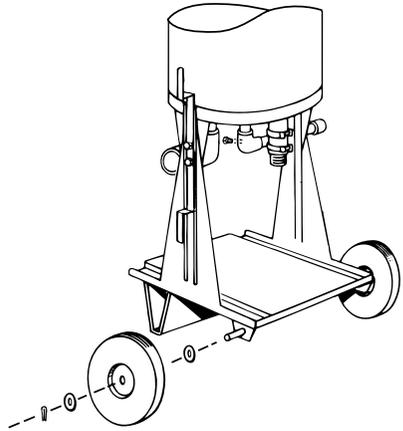
#- Part Number *- Stainless Steel

ASSEMBLY INSTRUCTIONS FOR BKP PORTABLE MODELS

Assembly is the same as for BKM Models except for the following:

Proceed exactly as with BKM before Step 5.

1. Slip bolts through holes in accessory bracket before proceeding to tighten nuts, etc.
2. Slide axle into holes on axle bracket.
3. Slip one (1) washer on each side of axle before putting on wheels.
4. Slip on wheels with grease fittings to the outside.
5. Add one washer to axle on each side and then slip cotter pins in place on each side of axle.



****WARNING**** Electrical wiring must be done by a qualified electrician to federal, state, and local codes. A ground fault circuit interrupter must be installed at receptacle to protect all electrical components.

All electrical components specified and supplied by others.

HOW TO REMOVE AND REPLACE CARTRIDGE CLUSTER FOR CLEANING

on residential Betterfilter® Models BF42, BF84, BF96, BF126, BF144 and Models BF42 BKM, BF84 BKM, BK96 BKM, BF126 BKM, BF144 BKM and the Model BKP Portable Filter

1. Turn off pump.
2. Unscrew wing nuts, lift lid from filter.
3. Remove cartridge cluster from housing
4. Clean cartridge cluster as described on cover.
5. Return cluster to housing. Replace gaskets properly.
6. Grease studs; replace wing nuts, hand tighten securely.

How To Install New Cartridges

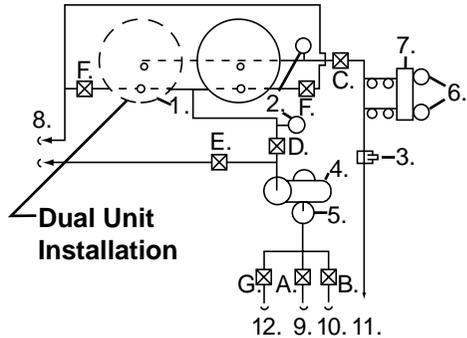
1. Follow above steps to remove cartridge cluster from filter housing.
2. Unscrew special straight threaded pipe cap from bottom of cartridge holding rod.
3. Slip spent cartridges from cartridge holding rod.
4. Slip new Harmsco cartridges on cartridge holding rod.
5. Replace special straight threaded pipe caps and tighten by hand so that cartridges are properly sealed.
6. Follow above steps for replacing cartridge cluster in filter housing.

DO NOT STORE CHEMICALS NEAR FILTER HOUSING

SINGLE AND MULTIPLE BETTERFILTER® COMMERCIAL INSTALLATION

Schematic Diagram of Typical Commercial Pool Installation

- A. Main Drain Line Valve
- B. Vacuum Cleaning Valve
- C. Return-to-Pool Valve
- D. Pump-to-Filter Valve
- E. Pump-to-Drain Valve
- F. Filter Drain Valves
- G. Skimmer Line Valve



- | | |
|---|---|
| <ul style="list-style-type: none"> 1. Filter Housing(s) 2. Pressure Gauges 2-1/2" Face—0-60 PSI 3. Flow Rate Indicator—Post Filter Installation Required 4. Pump and Motor 5. Hair and Lint Strainer—To Meet Code Requirements | <ul style="list-style-type: none"> 6. Chemical Crocks 7. One Double or Two Single Head Feeder 8. Filter Housing Drain Line 9. Pool Main Drain Line 10. Pool Vacuum Line 11. Return to Pool Line 12. Skimmer Line |
|---|---|

All Filter Housings Must Be Grounded

To protect against electrolysis, all metal components of the water circulation and heating systems must be connected by a wire to ground the entire system.

HOW TO REMOVE AND REPLACE CARTRIDGES ON BETTERFILTERS 168, 252, 336, 450, 600, 900FL, 1200FL

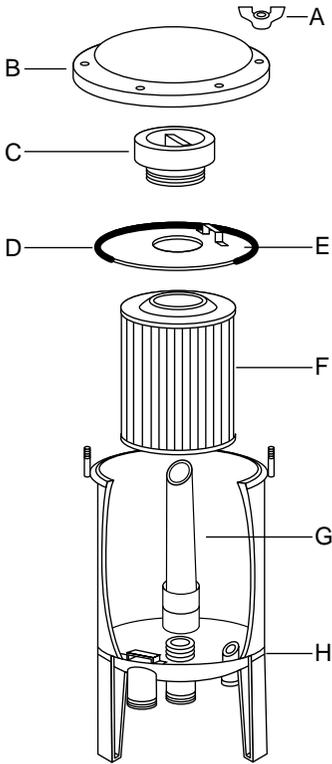
1. Turn off pump. 2. Drain filter housing. 3. Unscrew wing nuts. 4. Lift lid from filter. 5. Remove top stainless steel plate from unit. 6. Take off top rubber seal. 7. Lift out cartridge lifters (with cartridges) from filter housing. 8. Clean cartridges (See cover for cleaning instructions). 9. Return car-

tridge lifters (with cartridges) to housing. 10. Re-place rubber top seal properly. 11. Put stainless steel plate in place. 12. Replace lid. 13. Grease studs. 14. Replace wing nuts, alternately tightening nuts on opposite sides. 15. Close drain valve. 16. Put filter back service.

DO NOT STORE CHEMICALS NEAR FILTER HOUSING

REPLACEMENT PARTS AND ILLUSTRATION

Betterfilter® Models BF55 SC, BF105 SC, BF155 SC



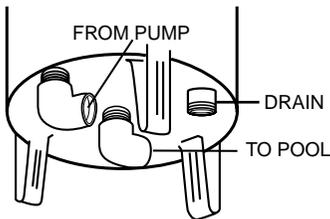
- A. Wing Nut
- B. Lid
- C. Cartridge Retainer Nut
- D. Rim Gasket
- E. Top Plate
- F. Cartridge
- G. Standpipe
- H. Tank

Note: Number of parts required per filter are in parenthesis

MODEL NUMBER			
	BF55 SC	BF105 SC	BF155 SC
A.	(6)202	(6)202	(6)202
B.	(1)530	(1)530	(1)530
C.	(1)905	(1)905	(1)905
D.	(1)550	(1)550	(1)550
E.	(1)903	(1)903	(1)903
F.	(1)ST55	(1)ST105	(1)ST155
G.	(1)562	(1)563	(1)564
H.	(1)55TK	(1)105TK	(1)155TK

SUGGESTED INSTALLATION

1. Install 2" thread to socket PVC elbows on side of nipple marked inlet—Pipe water from pump discharge to this elbow.
2. Install 2" thread to socket PVC elbow on center nipple marked outlet. This is the return to pool line.
3. Install 1" valve or cap on marked drain.

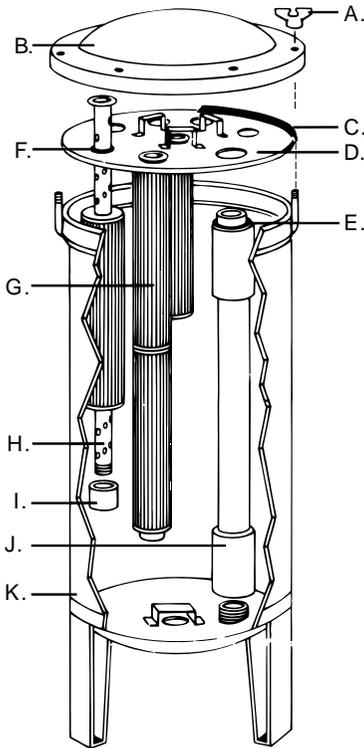


TO INSTALL NEW CARTRIDGES

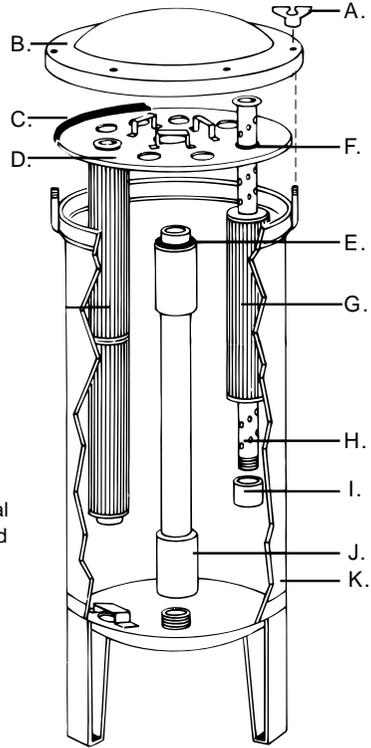
1. Turn off pump.
2. Remove wing nuts, lift lid from filter.
3. Remove cartridge (with top plate) from filter. Unscrew cartridge retainer nut from cartridge.
4. Apply wax or vaseline to threads on new cartridge. Screw cartridge retainer nut through top plate into cartridge.
5. Tighten until top of cartridge fits snugly against bottom of top plate
6. Reassemble filter.

RESIDENTIAL BETTERFILTER® REPLACEMENT PARTS

Betterfilter® Models BF42, BF84, BF96, BF126, BF144



BF42, BF84, BF126



BF96, BF144

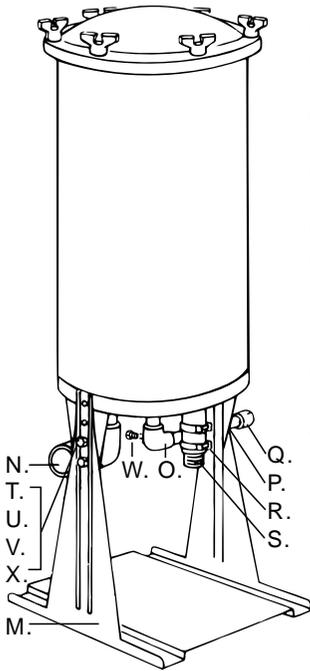
- A. Wing nut
- B. Lid
- C. Rim Gasket
- D. S.S. Top Disc
- E. O-Ring
- F. O-Ring
- G. Harmsco Cartridge
- H. Holding Rod
- I. Pipe Cap (Special Straight Threaded Pipe Cap)
- J. Stand Pipe
- K. Tank

Note: Number of parts required per filter are in parenthesis

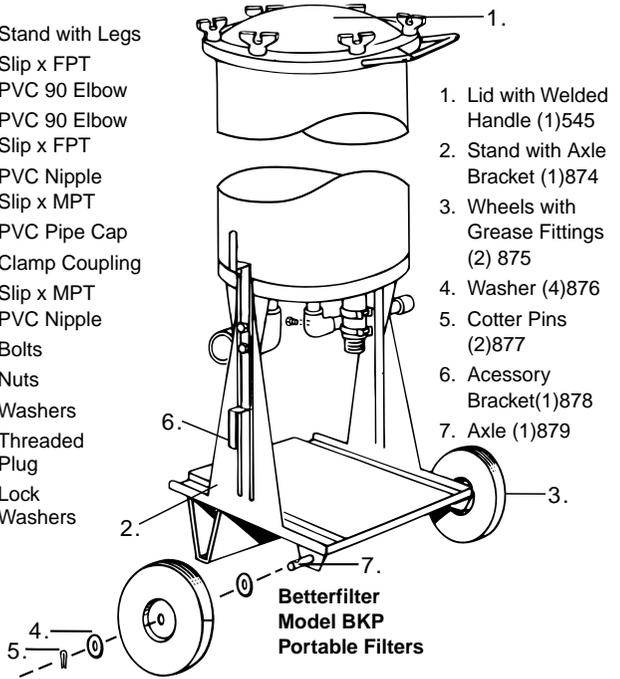
MODEL NUMBER					
	BF42	BF84	BF96	BF126	BF144
A.	(6)202	(6)202	(6)202	(6)202	(6)202
B.	(1)530	(1)530	(1)530	(1)530	(1)530
C.	(1)550	(1)550	(1)550	(1)550	(1)550
D.	(1)519	(1)519	(1)901	(1)519	(1)901
E.	(1)551	(1)551	(1)930	(1)551	(1)930
F.	(7)552	(7)552	(8)552	(7)552	(8)552
G.	(7)ST/6	(14)ST/6	(16)ST/6	(21)ST/6	(24)ST/6
H.	(7)555	(7)512	(8)512	(7)534	(8)534
I.	(7)513	(7)513	(8)513	(7)513	(8)513
J.	(1)560	(1)531	(1)965	(1)532	(1)1445
K.	(1)42TK	(1)84TK	(1)96TK	(1)126TK	(1)144TK

**BETTERFILTER® MODELS BF42 BKM, BF84 BKM, BF96 BKM,
BF126 BKM, BF144 BKM, BF105 BKMSC, BF155 BKMSC,**

For parts A through K see corresponding BF model number



- M. Stand with Legs
- N. Slip x FPT
PVC 90 Elbow
- O. PVC 90 Elbow
Slip x FPT
- P. PVC Nipple
Slip x MPT
- Q. PVC Pipe Cap
- R. Clamp Coupling
- S. Slip x MPT
PVC Nipple
- T. Bolts
- U. Nuts
- V. Washers
- W. Threaded
Plug
- X. Lock
Washers

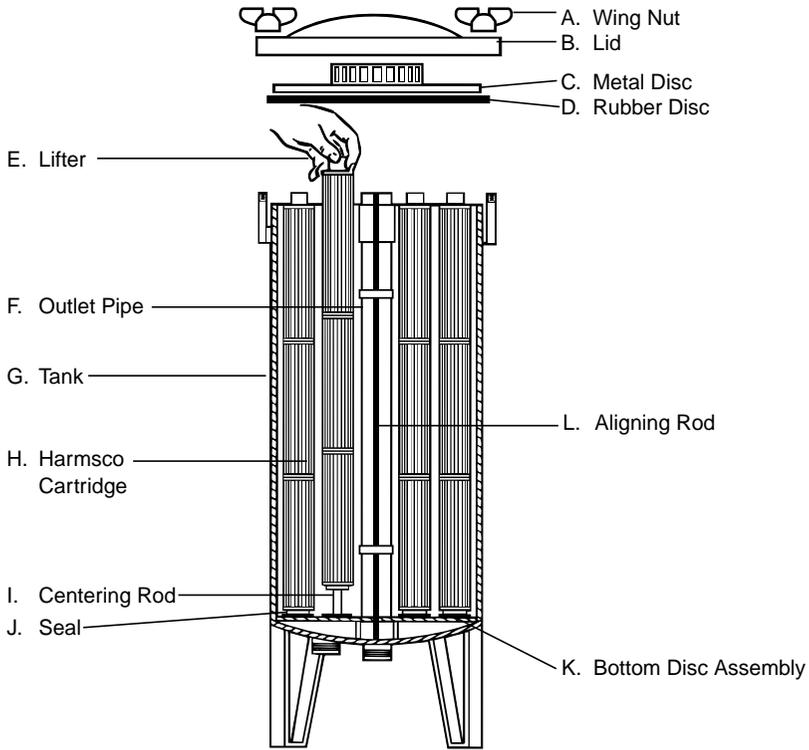


- 1. Lid with Welded
Handle (1)545
- 2. Stand with Axle
Bracket (1)874
- 3. Wheels with
Grease Fittings
(2) 875
- 4. Washer (4)876
- 5. Cotter Pins
(2)877
- 6. Accessory
Bracket(1)878
- 7. Axle (1)879

**Betterfilter
Model BKP
Portable Filters**

MODEL NUMBER					
	BF42 BKM	BF84 BKM	BF105 BKMSC BF96 BKM	BF126 BKM	BF105 BKMSC BF144 BKM
M.	(1)870	(1)870	(1)870	(1)870	(1)870
N.	(1)858	(1)858	(1)868	(1)858	(1)868
O.	(1)859	(1)859	(1)859	(1)859	(1)859
P.	(1)860	(1)860	(1)860	(1)860	(1)860
Q.	(1)871	(1)871	(1)871	(1)871	(1)871
R.	(1)861A	(1)861A	(1)869	(1)861A	(1)869
S.	(1)861B	(1)861B	(1)861B	(1)861B	(1)861B
T.	(4)872A	(4)872A	(1)872A	(4)872A	(4)872A
U.	(4)872B	(4)872B	(4)872B	(4)872B	(4)872B
V.	(8)872D	(8)872D	(8)872D	(8)872D	(8)872D
W.	(1)833	(1)833	(1)833	(1)833	(1)833
X.	(4)872C	(4)872C	(4)872C	(4)872C	(4)872C

COMMERICAL BETTERFILTER® REPLACEMENT PARTS



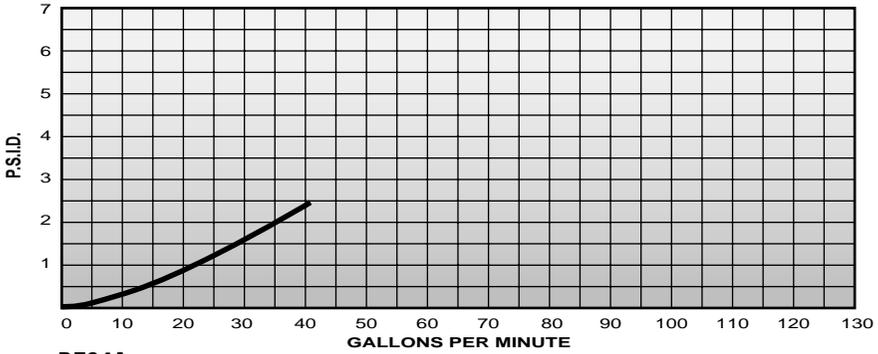
Note: Number of parts required per filter are in parenthesis.

MODEL NUMBER							
	BF168	BF252	BF336	BF450	BF600	BF900FL*	BF1200FL*
A.	(8)202	(8)202	(8)202	(10)202	(10)202	(20)202	(20)202
B.	(1)611	(1)611	(1)611	(1)669	(1)669	(1)613	(1)613
C.	(1)633	(1)633	(1)634	(1)670	(1)670	(1)651	(1)651
D.	(1)635	(1)635	(1)636	(1)671	(1)671	(1)653	(1)653
E.	(14)621	(14)622	(14)623	(25)622	(25)623	(50)622	(50)623
F.	(1)629	(1)630	(1)673	(1)672	(1)673	(1)646	(1)647
G.	(1)168TK	(1)252TK	(1)336TK	(1)450TK	(1)600TK	(1)900TK	(1)1200TK
H.	(28)ST/6	(42)ST/6	(56)ST/6	(75)ST/6	(100)ST/6	(150)ST/6	(200)ST/6
I.	(14)625	(14)625	(14)625	(25)625	(25)625	(50)625	(50)625
J.	(14)639	(14)639	(14)639	(25)639	(25)639	(50)639	(50)639
K.	(1)637	(1)637	(1)637	(1)677	(1)677	(1)638	(1)638
L.				(1)678-3	(1)679-3	(1)678-4	(1)679-4

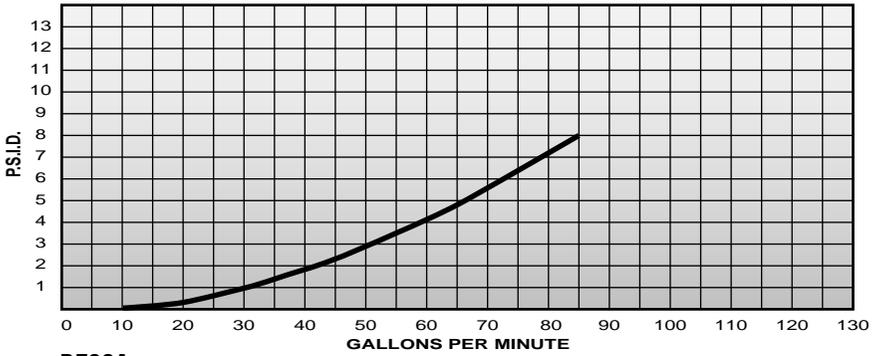
*BF900FL and BF1200FL have flange fittings instead of thread fittings.

Performance Curves

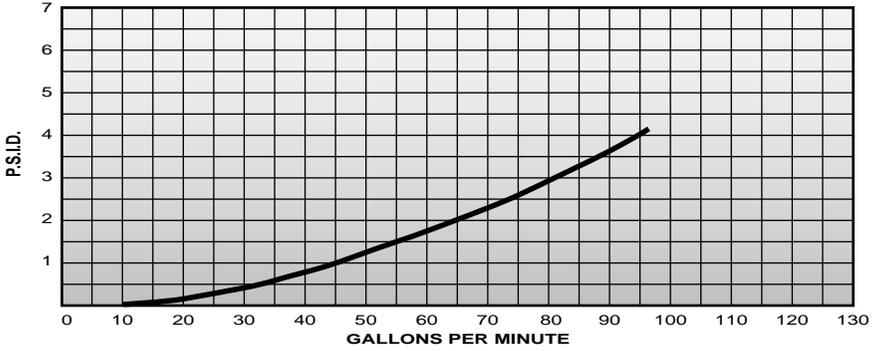
BF42A



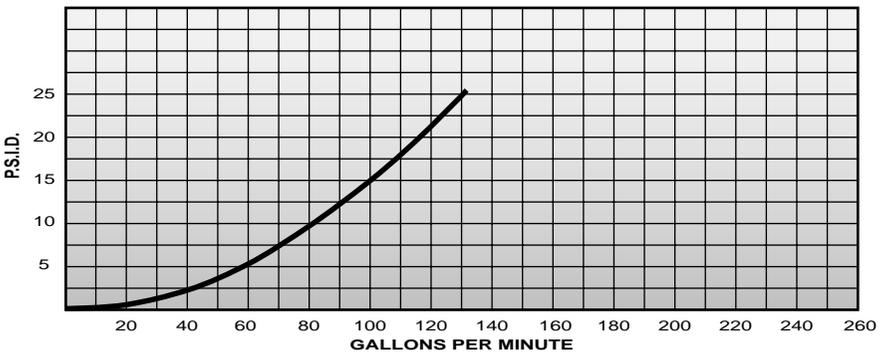
BF84A



BF96A

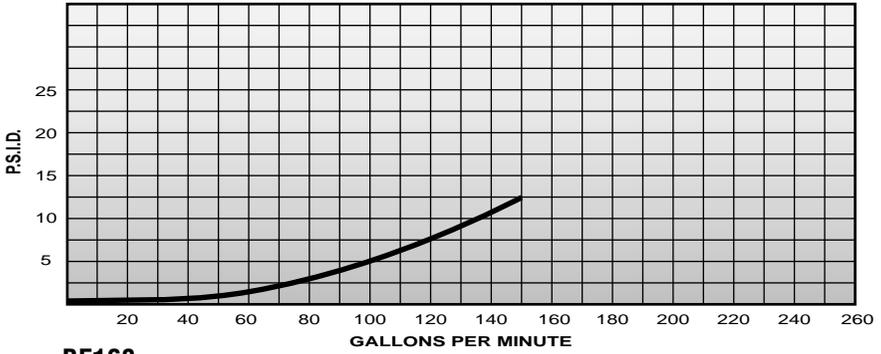


BF126A

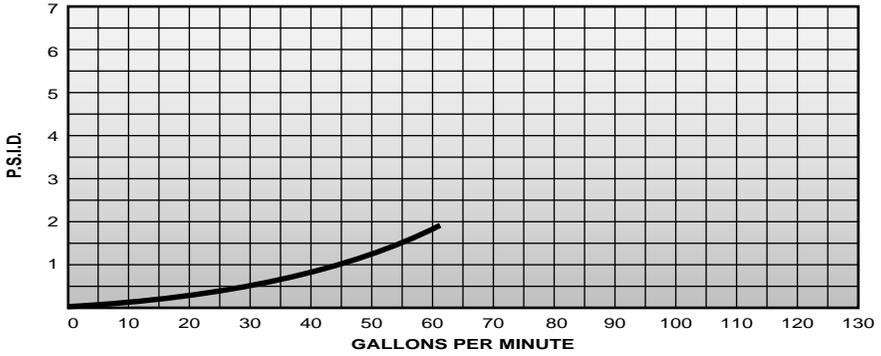


Performance Curves

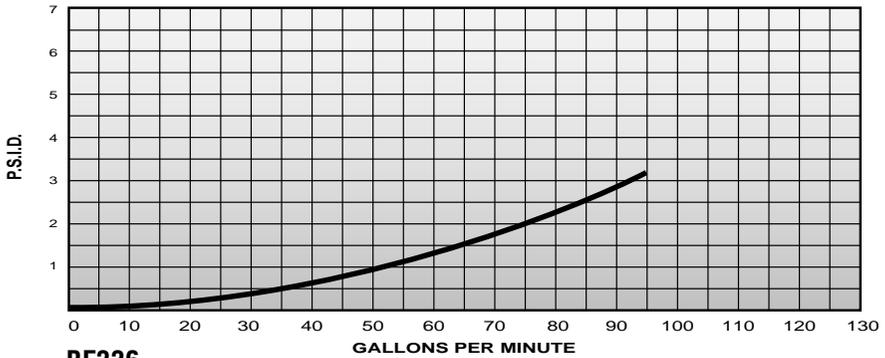
BF144A



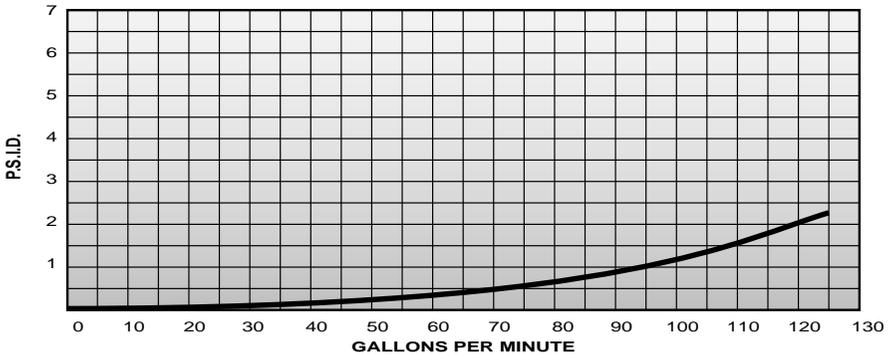
BF168



BF252

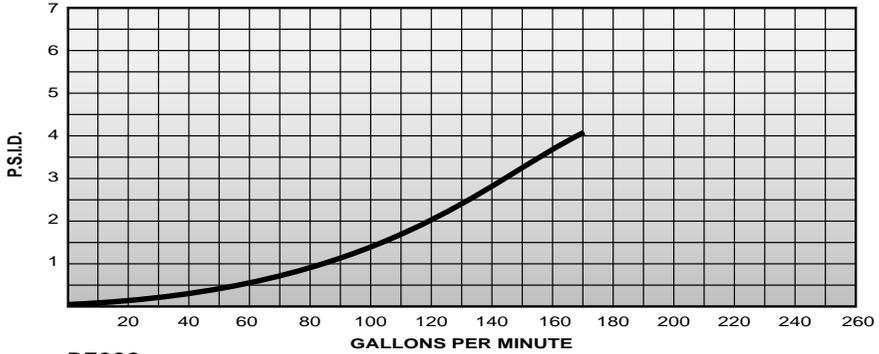


BF336

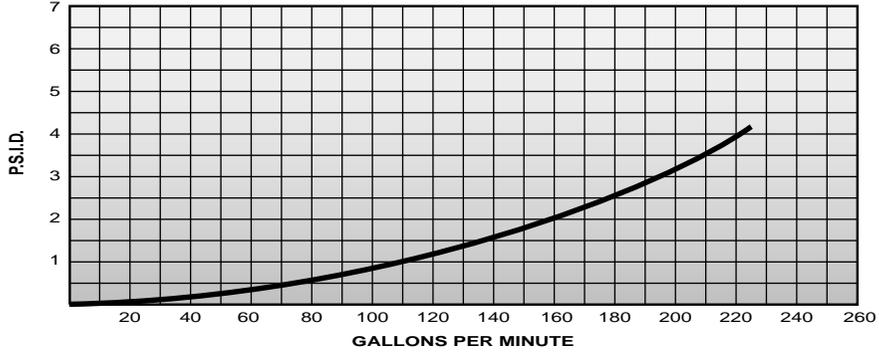


Performance Curves

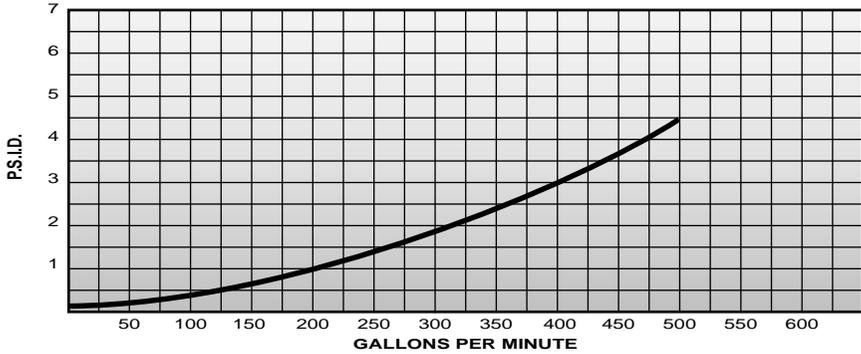
BF450



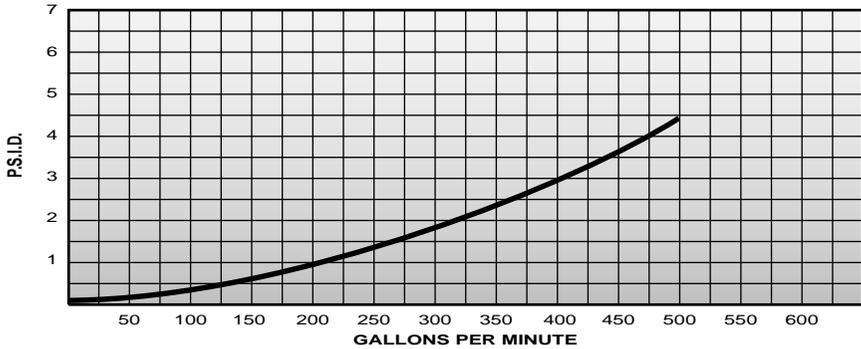
BF600



BF900FL

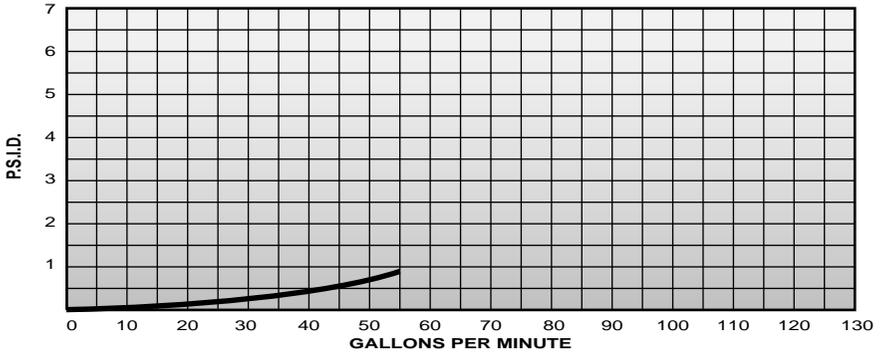


BF1200FL

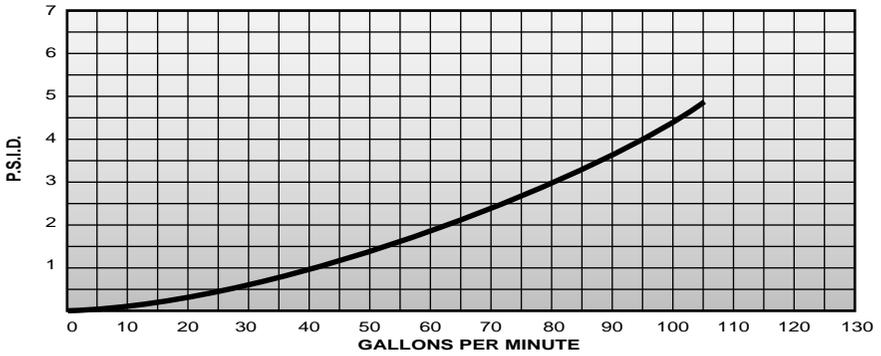


Performance Curves

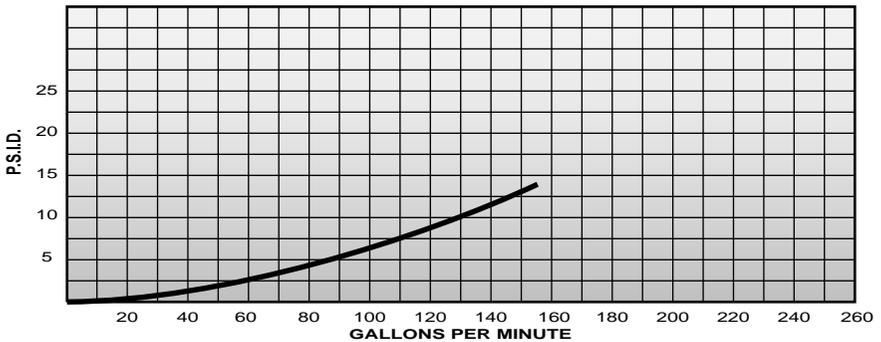
BF55SCA



BF105SCA



BF155SC



WARRANTY

HARMSCO® INC. LIMITED WARRANTY UPFLOW SWIMMING POOL CARTRIDGE FILTER

I. Harmsco, Inc. extends this warranty to the original purchaser of the filter unit only, provided that the "warranty information card" is completed and returned to Harmsco, Inc. within thirty (30) days of installation of the filter unit.

The filter unit is warranted against all defects in material and workmanship for the first year. During that year Harmsco will pay factory labor and parts for repair of the unit, together with shipping charges to and from the factory, provided proper shipping instructions have first been obtained from the factory.

This warranty excludes the following:

1. Any fresh water unit installed for salt water use.
2. Defects caused by improper installation, operation or care.
3. Damage caused by chemicals. (We strongly discourage the storage of chemicals or the use of chemical feeders near your unit). Make sure adequate ventilation is provided. If you can not comfortably breathe in closed pump room, ventilation is not adequate.
4. Gasket, wing nuts, top discs, bottom discs, cartridge lifter or holding rods, cartridges, outlet pipes, PVC fittings.
5. The cost of labor and material expended in removal and reinstallation of the unit.
6. Damage caused by electrolysis or galvanic attack.
7. Damage caused by salt added to the water for the purpose of generating chlorine.
8. Any unit not grounded.

II. Service under this warranty is to be provided by the dealer who sold the unit. If the dealer can not service the unit, please contact the factory: HARMSCO, INC., P.O. Box 14066, North Palm Beach, FL 33408
ATTN: Service Dept. (561) 848-9628.

Please be prepared with the following information:

- Model number of your filter
- Date of installation
- Name of installer
- Nature of problem
- Your address and telephone number

Factory repair may be obtained by shipping your unit to the factory after first obtaining proper shipping instructions from the factory. The shipping charges are the purchaser's obligation, unless the unit has been installed for less than one year, in which event Harmsco will pay the charges. The shipping address is:

HARMSCO, INC.
7169 49th Terrace North
West Palm Beach, FL 33407

Any unit shipped to the factory must have all piping removed or a labor charge (at the then prevailing rate) will be made for removal.

A letter of explanation, including the following information, must be enclosed:

- Model number of your filter
- Date of installation
- Name of installer
- Nature of problem
- Your address and telephone number

III. Harmsco allows for repair or replacement of warranted fresh water filter units during the ten (10) year period following initial installation at a prorated price. The replacement or repair price shall be prorated upon the following schedule.

YEAR OF SERVICE	REPLACEMENT PRICE
2nd	20% of then current list
3rd	30% of then current list
4th	40% of then current list
5th	50% of then current list
6th	60% of then current list
7th	70% of then current list
8th	80% of then current list
9th & 10th	90% of then current list

Specially coated filters for salt water (SW) use are warranted for one year only from the date of installation. The warranty for filters with special coatings is limited to the recoating of the defective parts, due to failure in materials or workmanship, for one year from date of installation. Waterwarmer units and portable (BKP) units are warranted for one year.

IV. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

V. There are no implied warranties for fitness nor merchantability which extend beyond the duration of this written warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Harmsco, Inc. disclaims liability under this warranty for any damage to the filter unit caused by the use of improperly sized or improperly fitted filter cartridges.

Harmsco, Inc. disclaims liability under this warranty for any filter installed on any application other than a swimming pool.

----- FILL IN AND RETURN THIS CARD -----

FILTER WARRANTY INFORMATION CARD

Date of Installation _____

Purchased From (name and address of firm) _____

Harmsco Betterfilter Model No. BF _____ **Serial #:** _____

Size of Pool: _____ Gallons: _____

(check one box only:) For Fresh Water For Salt Water

Make of Pump _____

Horsepower of Pump _____

Your Name (owner) _____

Street _____

City _____ State _____ Zip _____

SUGGESTED CHEMICAL OPERATIONAL PARAMETERS

The following information is provided by the National Spa and Pool Institute

CHLORINATION	Min	Ideal	Max.
Disinfectant Levels			
Free Chlorine, PPM	1.0	1.0-3.0	5.0
Combined Chlorine, PPM	None	None	0.2
CHEMICAL VALUES			
PH	7.2	7.4-7.6	7.8
Total Alkalinity, PPM	60	80-100	180
Total Dissolved Solids, PPM	300	1000-3000	3000
Hardness	150	200-400	500-1000
REMEDIAL PRACTICES			
Superchlorination	Monthly	When combined chlorine is 0.2 or more	Weekly

Note: Some high use spas and pools may need superchlorination three times a week or more.

COMMENTS:

* Superchlorinate Regularly

* combined chlorine is eliminated by **Superchlorination**

NOTE: In order to maintain a proper chemical balance, you must have a good test kit and know how to use it.

To protect against electrolysis, all metal components of the water circulation and heating systems must be connected by wire to ground the entire system.

Filter housings must be grounded

DO NOT STORE CHEMICALS NEAR FILTER HOUSING



HARMSCO, INC., P.O. Box 14066, North Palm Beach, FL 33408 U.S.A.

(561) 848-9628 • (800) 327-3248 • Fax: (561) 845-2474

HIM-7/98-2.5M

PLACE
STAMP
HERE

HARMSCO, INC.

P.O. BOX 14066

North Palm Beach, Florida 33408