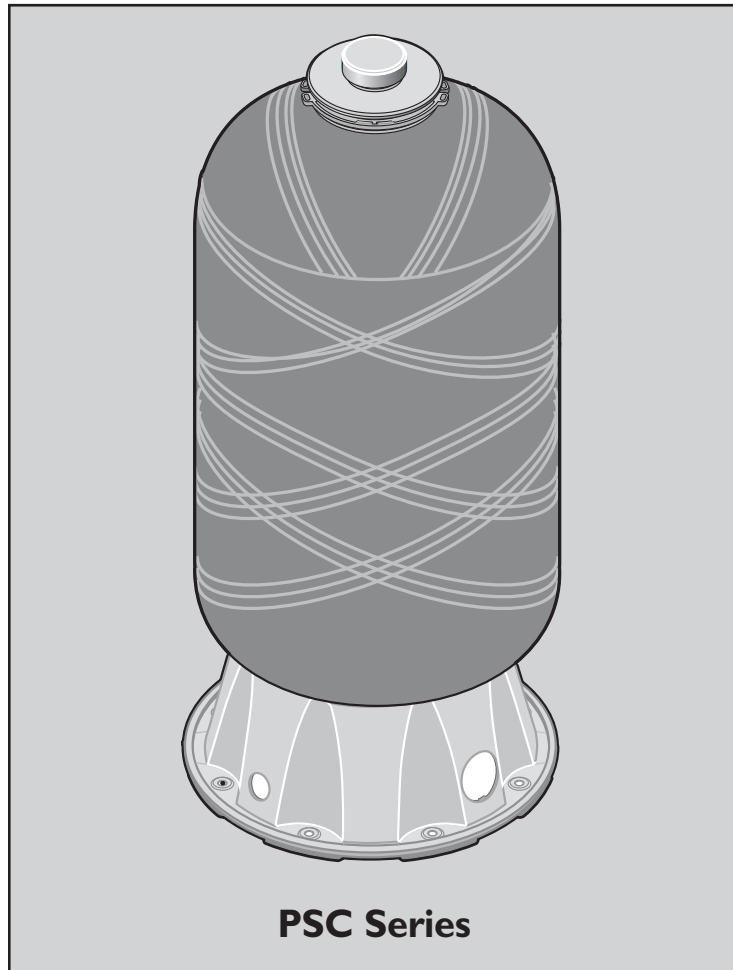




293 Wright Street, Delavan, WI 53115

OWNER'S MANUAL

Composite Pressurized Water Tanks




Tested and Certified by the WQA
to NSF/ANSI Std. 61 Section 8


Installation/Operation/Parts
*For further operating, installation,
or maintenance assistance:*


Call 1-262-728-9181


Install in compliance with all applicable laws, codes and ordinances. Non-compliance may cause product failure, property damage, and/or personal injury. Install this tank in vertical position only. If your installation requires a horizontal tank, contact your dealer for available steel tanks.

READ AND FOLLOW SAFETY INSTRUCTIONS!

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

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

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

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

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

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

Keep safety labels in good condition.
Replace missing or damaged safety labels.

RULES FOR SAFE INSTALLATION AND OPERATION

NOTE: Installation must comply with all applicable state, provincial, and local statutes, codes and ordinances. Non-compliant installation may result in product failure, property damage, and/or personal injury.

1. Read the Owner's Manual and Rules for Safe Operation and Installation Instructions carefully. Failure to follow these Rules and Instructions could cause serious bodily injury and/or property damage.
2. Always test water from well for purity before using. Check your local health department for testing procedure.
3. Before installing or servicing your tank, BE SURE pump electric power source is disconnected.
4. Release all pressure before working on tank or system. Make sure all air pressure has been released before removing tank flanges.
5. BE SURE your pump electrical circuit is properly grounded.
6. Remove bleeder orifices, air volume controls or other air charging devices in existing system.

LIMITED WARRANTY

PENTAIR WATER warrants to the original consumer purchaser ("Purchaser" or "You") of the products listed below, that they will be free from defects in material and workmanship for the Warranty Period shown below.

Product	Warranty Period
Water Systems Products – jet pumps, small centrifugal pumps, submersible pumps and related accessories	<i>whichever occurs first:</i> 12 months from date of original installation, or 18 months from date of manufacture
PENTEK INTELLIDRIVE	12 months from date of original installation, or 18 months from date of manufacture
Pro-Source™ Composite Tanks	5 years from date of original installation
Pro-Source™ Steel Pressure Tanks	5 years from date of original installation
Pro-Source™ Epoxy-Line Tanks	3 years from date of original installation
Sump/Sewage/Effluent Products	12 months from date of original installation, or 18 months from date of manufacture

Our warranty will not apply to any product that, in our sole judgement, has been subject to negligence, misapplication, improper installation, or improper maintenance. Without limiting the foregoing, operating a three phase motor with single phase power through a phase converter will void the warranty. Note also that three phase motors must be protected by three-leg, ambient compensated, extra-quick trip overload relays of the recommended size or the warranty is void.

Your only remedy, and PENTAIR WATER's only duty, is that PENTAIR WATER repair or replace defective products (at PENTAIR WATER's choice). You must pay all labor and shipping charges associated with this warranty and must request warranty service through the installing dealer as soon as a problem is discovered. No request for service will be accepted if received after the Warranty Period has expired. This warranty is not transferable.

PENTAIR WATER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR CONTINGENT DAMAGES WHATSOEVER. THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE FOREGOING WARRANTIES SHALL NOT EXTEND BEYOND THE DURATION EXPRESSLY PROVIDED HEREIN.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on the duration of an implied warranty, so the above limitations or exclusions may not apply to You. This warranty gives You specific legal rights and You may also have other rights which vary from state to state.

This warranty supersedes and replaces all previous warranty publications.

PENTAIR WATER, 293 Wright St., Delavan, WI 53115

⚠ WARNING To prevent possible serious or fatal injury and/or damage to equipment, system pressure must be less than 125 pounds per square inch gauge (psig) under any circumstances. Failure to follow this instruction can result in tank explosion. If system discharge pressure can exceed 125 psig, install a relief valve capable of passing the full pump volume at 125 psig. Install relief valve in pump supply line to tank, as close to tank as possible.

⚠ WARNING Hazardous pressure. Read owner's manual before attempting to install, operate, or service this tank. To avoid possible equipment failure, severe injury, and property damage, do not allow pump, tank, or piping system to freeze.

GENERAL SAFETY

All tanks are factory pre-charged with air. When installing tank, adjust pre-charge to 2 psig below pump cut-in pressure setting. To do this, bleed air from or add air to the valve on top of the tank.

NOTICE: Always set pre-charge with NO WATER in tank.

Check pressure frequently with an accurate tire pressure gauge until correct pressure has been reached. For correct pre-charge pressure settings, see Chart 1, below.

CHART 1

Pressure Switch Setting	Tank Precharge (psig)
20-40 psig	18
30-50 psig	28
40-60 psig	38
50-70 psig	48

NOTICE: Replace and tighten air valve cap if it is removed for any reason. Failure to replace air cap may allow loss of air pressure and eventually lead to tank waterlogging and air cell failure.

Pre-charged storage tanks can be connected together to increase the supply of usable water (drawdown). Two tanks of the same size will double the supply and three tanks will triple the supply. See Figures No. 1A and 1B for typical installations of this kind.

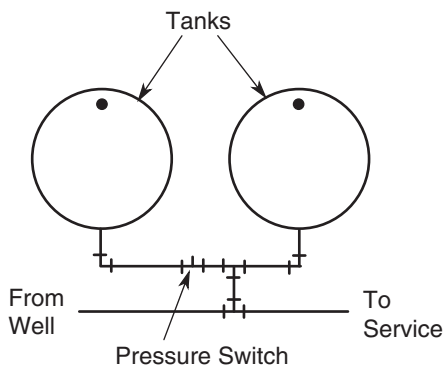


Figure 1A: Typical Layout With Two Tanks

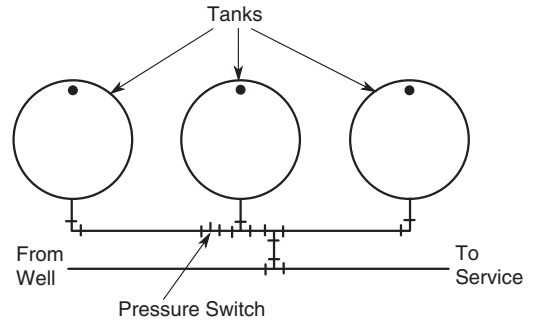


Figure 1B: Typical Layout With Three Tanks

OPERATING CYCLE:

1. Tank nearly empty – air expands filling area inside air cell (Figure 2A).
2. Water begins to enter tank – air is compressed in air cell as tank fills with water (Figure 2B).
3. Pump-up cycle completed – air pressure has reached the cut off setting of pressure switch (Figure 2C).
4. Water being drawn from tank – compressed air in air cell forces water out of tank (Figure 2D).
5. Tank now empty – new cycle ready to begin (Figure 2A).

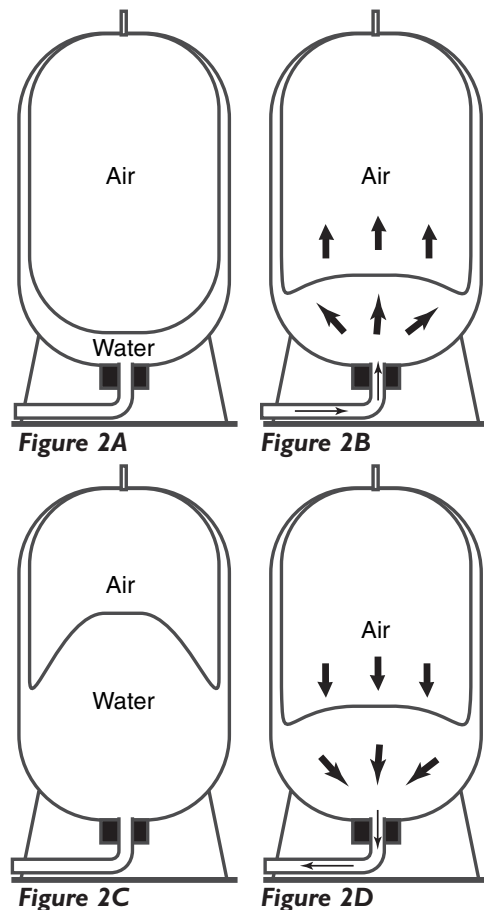


Figure 2: Air Cell Cycle

Chart II – Water Yield Per Pump Cycle (drawdown) in Gallons

Model Number	Tank Capacity (U.S. Gals)	Pressure Switch Setting		
		20-40	30-50	40-60
PSC-14-4	14	5.3	4.5	3.9
PSC-20-6	20	7.2	6.1	5.3
PSC-30-9	30	10.8	9.1	7.9
PSC-35-10	35	12.8	10.8	9.4
PSC-40-12	40	14.7	12.5	10.8
PSC-48-14	48	17.2	14.6	12.6
PSC-60-20	60	21.9	18.5	16.1
PSC-80-23	80	29.1	24.6	21.3
PSC-85-25	85	31.7	26.8	23.2
PSC-119-35	119	43.8	37.0	32.0

NOTICE: Drawdown will be affected by operating temperature of the system, accuracy of the pressure switch and gauge, the actual precharge pressure, and the rate of fill.

INSTALLATION

Connect system pipe to elbow on tank flange. Use plastic or steel pipe as required. To prevent leaks, use PTFE tape on male threads of all threaded connections to tank.

NOTICE: To be sure that joint is not cross-threaded and that threads are clean, always make connections by hand (without sealer) first. After making sure that threads are clean, remove pipe, add PTFE tape and remake connection. Do not overtighten pipe connection at tank. Thread connection on hand tight plus 3 additional turns for steel pipe and 1-2 turns for schedule 40 PVC pipe.

NOTICE: When replacing a standard tank in a submersible pump system, raise pump and discharge pipe far enough to remove bleeder orifices from the tees in the discharge pipe. Plug the tees. When replacing a standard tank in a jet pump system, remove Air Volume Control (AVC) and plug AVC port in pump.

In areas where the temperature is high for long periods of time, the tank pre-charge pressure may increase. This may reduce the tank drawdown (amount of water available per cycle). If this occurs, reduce the pre-charge pressure to two PSI below the pump cut-in setting of the pressure switch.

It is necessary to flush all air out of the piping system and water reservoir portion of the pre-charged tank. This is required on new installations, pumps requiring repriming and pumps that have been disassembled for service. Proceed as follows:

1. Open faucets furthest from tank and allow pump to operate.
2. Air in the system will cause a sputtering flow; allow faucets to run until you have a steady, air free stream.
3. Open and close faucets repeatedly until you are sure all air has been removed.
4. If stream does not become steady, air may be leaking into the system; check for leaks in the piping on the suction side of the pump.

NOTICE: To prevent waterlogging, check tank air charge every six months.

¹Lake Chemical Co., Chicago, Illinois

SPECIFICATIONS

Model	Tank Capacity (U.S. Gals)	Tank Diameter	Tank Height	Discharge Tapping
PSC-14-4	14	16"	31-5/16"	1"
PSC-20-6	20	16	36-5/16	1
PSC-30-9	30	16	48-5/16	1
PSC-35-10	35	21	37	1
PSC-40-12	40	16	61-5/16	1
PSC-48-14	48	21	44	1
PSC-60-20	60	24	46-9/16	1-1/4
PSC-80-23	80	21	66	1
PSC-85-25	85	24	58-9/16	1-1/4
PSC-119-35	119	24	78-9/16	1-1/4

NOTICE: Maximum Internal Water Temperature – 120° F.
 Maximum Ambient Air Temperature – 120° F.
 Distance from base to center line of connection is 2".
 Allow 12" clearance over top of tanks for service access.

TO CHECK TANK AIR CHARGE

If drawdown (amount of water that comes out of tank per pump cycle) decreases significantly, check as follows:

1. To check air charge in tank, shut off electric power to pump, open faucet near tank, and drain completely.
2. Remove pole piece cap and check air pressure at the air valve in top of tank with a standard tire gauge. Air pressure should be 2 psig below pump pressure switch cut-in setting (that is, if switch closes at 30 psig, pressure in tank should be at 28 psig).

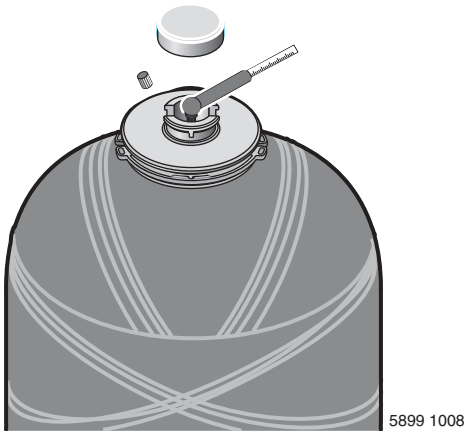


Figure 3: Use A Tire Gauge To Check Pre-charge In Air Cell

3. If the air pressure is more than 2 psig below the cut-in setting, add air to the tank. Use an air compressor or a portable air storage tank.
4. Use soap or liquid detergent to check for air leaks around air valve. Continuous bubbling indicates a leak. If necessary, install new core in air valve. This is the same as those used for automobile tubeless tires.

TO CHECK PUMP PRESSURE SWITCH SETTING

1. To check pressure switch setting, disconnect power to pump at supply panel (but be sure to leave pressure switch connected to power supply wires).
2. Remove pressure switch cover.
3. Open a faucet near tank.
4. Allow water to drain until pressure switch contacts close; immediately close faucet.
5. Check pressure at valve with standard tire gauge or with pump pressure gauge (if supplied).
6. Pressure gauge should read 2 psig below pump cut-in setting (28 psig for 30-50 switch, 18 psig for 20-40 switch, etc.) If not:
 - A. Adjust switch according to switch manufacturer's instructions.

- B. Reconnect power supply to pump and pump up pressure in system.
- C. Disconnect power supply to pump again and re-check switch setting.
- D. Repeat until pressure switch starts pump within ± 1 psig of proper setting.
- E. If cut-in setting is too low, system will rattle or develop water hammer when pump starts.
- F. Cut-out setting is not as critical as cut-in setting. Make sure that pump will stop running in a reasonable time. If it does not, cut-out setting may need to be adjusted down slightly. Be sure that after readjustment, system does not rattle or hammer on startup.
7. Re-check tank air pre-charge to be sure it is 2 psig below pump pressure switch cut-in setting.

TESTING FOR AIR CELL LEAKAGE

1. **Disconnect power to pump.**
2. Drain all water from tank by opening faucet closest to tank.
3. Remove pole piece cap and valve cap from valve and charge air cell.
4. Check air pressure after 24 hours. If air cell leaks, pressure will drop. If so, replace air cell.

AIR CELL REPLACEMENT

⚠ CAUTION To be sure polar boss cap cannot blow off of tank, release all air from system before removing capscrews from flange assembly.

1. **Disconnect power to pump.**
2. Follow steps 1 through 3 under "Testing For Air Cell Leakage".
3. Remove valve core (see Page 6).
4. Remove valve cap, hex nut and washer from valve.
5. With a screwdriver, pry the clips out and remove them. Remove polar boss cap.

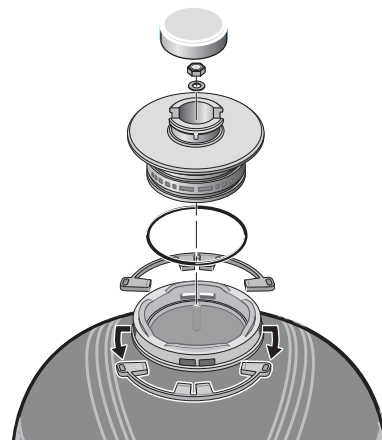


Figure 4: Remove Pole Piece Cap, Valve Cap and Retaining Nut, Clips, and Polar Boss Cap.

6. Air cell may not come out in one piece. Pull air cell up with pliers and cut wherever convenient with single edge razor blade or sharp knife. Continue pulling and cutting until air cell is removed.
7. Before air cell can be inserted into tank, it must be tightly rolled up as follows:
 - A. Remove valve core.
 - B. Place air cell on clean surface with opening to one end; flatten bag to force air out. Pull ends out flat (see Figure 5).
 - C. To get tightest possible wrap, start on one side and **TIGHTLY** roll air cell to other side (see Figure 5). Force out as much air as possible.

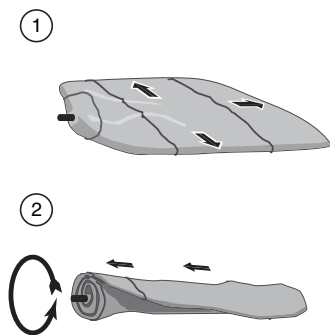


Figure 5: Spread Air Cell Out Flat and Squeeze Air Out; Roll Cell Tightly, Squeezing Remaining Air Out Through Valve

8. Push and turn tightly rolled air cell into tank (see Figure 6).

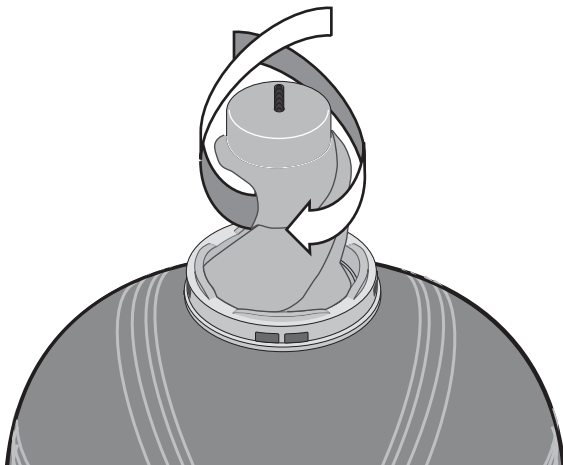


Figure 6: Turn and Push Air Cell Down Through Top Tank Port. Expel Any Remaining Air From Air Cell As You Go

9. Shake air cell a few times inside tank to work wrinkles out. It is not necessary to remove all wrinkles from cell.

NOTICE: Don't push air cell into tank further than its own length. In a large tank, air cell can slip out of reach if pushed too far.

10. Clean tank sealing surface before installing top flange assembly.
11. Clean sealing surface and groove of polar boss cap; install O-ring and polar boss cap on tank.
12. Pull valve up through polar boss cap.
13. Install metal washer and nut on valve.
14. Reinstall polar boss cap into top opening. Fasten it with two (2) red clips.
15. Recharge tank to proper air pressure and install valve cap and install pole piece cap (see Page 5).
16. Prime pump (see pump owner's manual).

VALVE CORE REPLACEMENT

⚠ WARNING To be sure air valve and core cannot blow out of tank, release all air pressure from tank before removing valve core.

1. Disconnect power to pump.
2. Drain ALL water in system by opening faucet closest to tank.
3. Depress valve core to release ALL air pressure in tank. When air stops coming out of valve, remove core from inside of valve to release remaining pressure. Thread new valve core into tank valve and tighten.

NOTICE: Do not overtighten.

4. Recharge tank with air pressure (see Figure 3, page 5) according to Chart I, Page 3; install valve cap and pole piece cap; reconnect power to pump. Tank is ready for service.

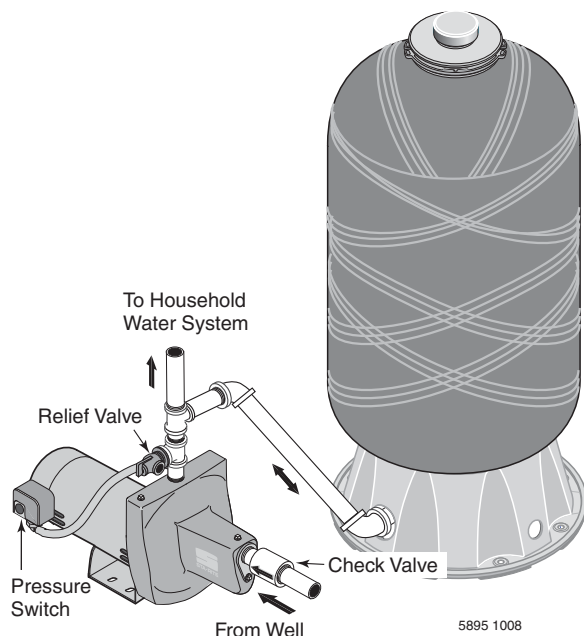


Figure 7: Typical Installation with Jet Pump

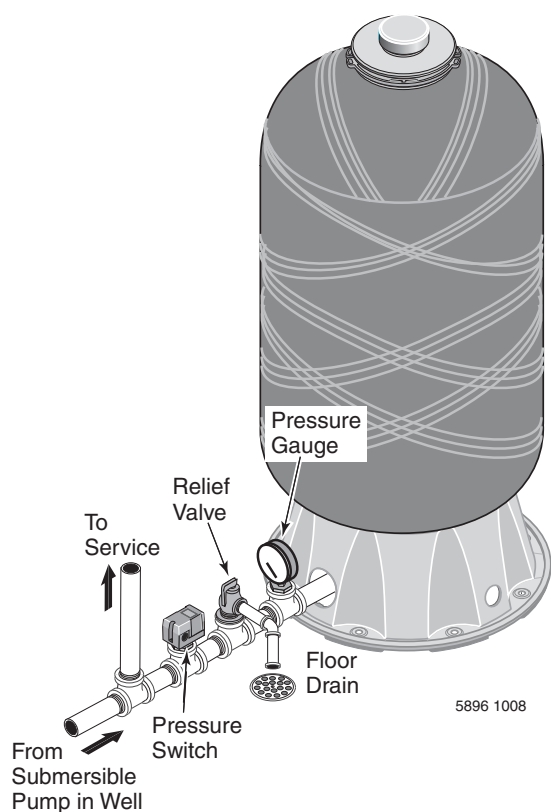


Figure 8: Typical Installation with Submersible Pump

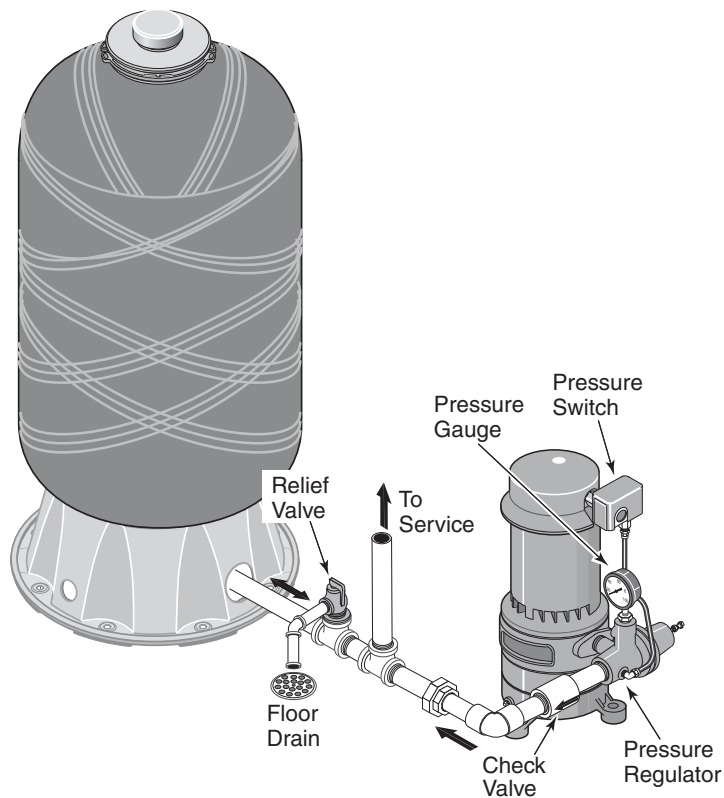
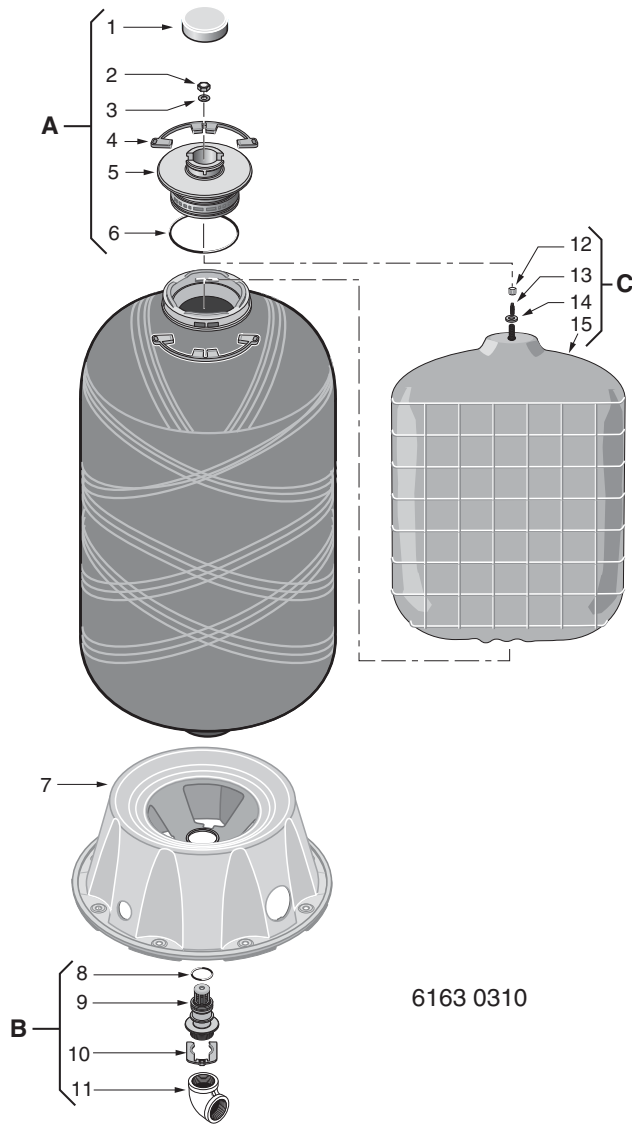


Figure 9: Typical Installation with Vertical Multi-Stage Pump



REPAIR PARTS LIST

Key No.	Part Description	Qty.	Part Number
A	Polar Boss Cap Kit (includes Key Nos. 1, 2, 3, 4, 5, 6)		CH20294K
1	Pole Piece Cap	1	
2	Valve Stem Nut	1	
3	Washer	1	
4	C-Clip	2	
5	Polar Boss Cap	1	
6	O-Ring	1	
7	Base	1	See below
B	Elbow Adapter Kit (includes Key Nos. 8, 9, 10, 11)		See below
8	O-Ring	1	
9	Elbow Adapter	1	
10	H-Clip	1	
11	SS Elbow	1	
C	Air Cell Kit (includes Key Nos. 12, 13, 14, 15)		See below
12	Valve Cap	1	
13	Valve Core	1	
14	Rubber Washer	1	
15	Air Cell	1	

	No. 7 Base	No. 11 SS Elbow*	B. Elbow Adapter Kit	C. Air Cell Kit
PSC-14-4	CH20316	CH20379	CH20301K	CH20070-1K
PSC-20-6	CH20316	CH20379	CH20301K	CH20070-2K
PSC-30-9	CH20316	CH20379	CH20301K	CH20070-3K
PSC-35-10	CH20317	CH20379	CH20301K	CH20070-10K
PSC-40-12	CH20316	CH20379	CH20301K	CH20070-4K
PSC-48-14	CH20317	CH20379	CH20301K	CH20070-6K
PSC-60-20	CH20318	CH20378	CH20302K	CH20070-7K
PSC-80-23	CH20317	CH20379	CH20301K	CH20070-5K
PSC-85-25	CH20318	CH20378	CH20302K	CH20070-8K
PSC-119-35	CH20318	CH20378	CH20302K	CH20070-9K

*NOTE: Elbow only: CH20379 = 1" NPT; CH20378 = 1-1/4" NPT.