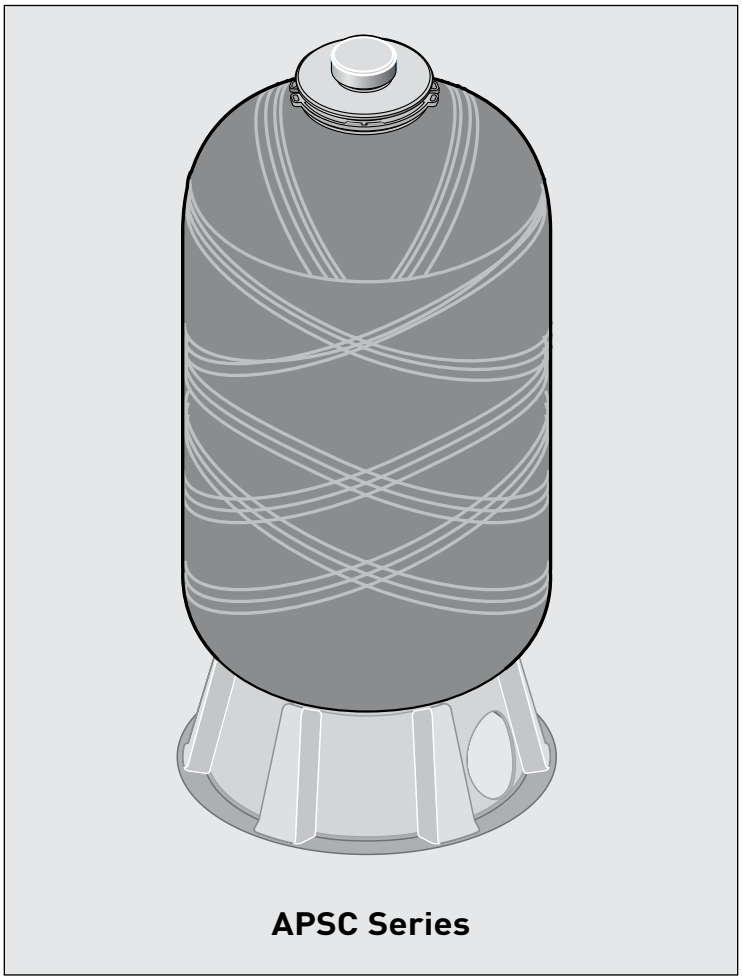
OWNER'S MANUAL

Composite Pressurised Water Tanks

PRO-SOURCE®

Pentair Australia / New Zealand



APSC Series

PH: 1-800 664 266 (AUSTRALIA), 0800 664 269 (NEW ZEALAND)

CH21087 (02/11/13)

Important Safety Instructions

SAVE THESE INSTRUCTIONS - This manual contains important instructions that should be followed during installation, operation, and maintenance of the product. Save this manual for future reference.

⚠ 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 indicates a hazard which, if not avoided, *will* result in death or serious injury.

⚠WARNING indicates a hazard which, if not avoided, *could* result in death or serious injury.

⚠CAUTION indicates a hazard which, if not avoided, *could* result in minor or moderate injury.

NOTICE addresses practices not related to personal injury.

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

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

Install this tank in vertical position only. If your installation requires a horizontal tank, contact your dealer for available steel tanks.

Rules For Safe Installation And Operation

⚠WARNING Risk of explosion. 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 Installation and Operation* 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.

⚠WARNING Risk of explosion. To prevent possible serious or fatal injury and/or damage to equipment, system pressure must be less than 873 kilo pascals (kPa) (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 873 kPa (125 psig), install a relief valve capable of passing the full pump volume at 873 kPa (125 psig). Install relief valve in pump supply line to tank, as close to tank as possible.

⚠CAUTION Risk of freezing. 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 14 kPa (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.

Product Specifications

Model	Tank Capacity *Liters (U.S. Gallons)*	Tank Diameter *Millimeters (Inches)*	Tank Height *Millimeters (Inches)*	Discharge Tapping *(BSP)*	Distance from Base to Center Line of Fitting *Millimeters (Inches)*
APSC-14-4-01	53 (14)	406 (16)	716 (28,2)	1″	44,5 (1,75)
APSC-20-6-01	76 (20)		866 (34,1)		
APSC-30-9-01	114 (30)		1176 (46,3)		
APSC-40-12-01	151 (40)		1499 (59,0)		
APSC-48-14-01	182 (48)	533 (21)	1664 (65,5)	1-1/4″	57,2 (2,25)
APSC-60-20-01	227 (60)	610 (24)	1107 (43,6)		
APSC-80-23-01	303 (80)	533 (21)	1128 (44,4)		
APSC-85-25-01	322 (85)	610 (24)	1453 (57,2)		
APSC-119-35-01	450 (119)		1915 (75,4)		

Maximum Internal Water Temperature: 49° C (120° F).
Maximum Ambient Air Temperature: 49° C (120° F).
Allow 305 mm (12″) clearance over top of tanks for service access.

Warranty

Pentair Water warrants that, when this product is used for the purpose it was designed, is correctly housed and vented against weather, vermin, dust etc., that it will be free of material and manufacturing defects at the time of the original purchase.

This warranty is limited to the cost of the product and does not cover third party costs including the costs of electricians, plumbers, etc. unless authorised by Pentair Water.

Terms And Conditions Applicable Internationally

How long the warranty is effective Internationally?

1) This Pentair Water product is warranted for 12 months for all parts from the date of the first consumer purchase. Should any parts fail as a result of such defects within the specified period, the part will be replaced free of charge. (This does not include travel charges, removal and reinstallation charges.)

Terms And Conditions Applicable In Australia And New Zealand

1) **You should carefully read the instructions supplied prior to using this Pentair Water product.**

   This product is to be installed and operated in accordance with the instructions provided. This warranty will not apply if it is used in a manner other than in accordance with the instructions.

What The Warranty Covers:

Pentair Water warrants its products to be free of defects in material and workmanship during the warranty period. If a product proves to be defective in material or workmanship during the warranty period, then Pentair Water will, at its sole option repair or replace the product with a like product. Replacement product or parts may include re-manufactured or refurbished parts or components.

How Long The Warranty Is Effective:

1) This Pentair Water product is warranted for 60 months warranty for all parts from the date of the first consumer purchase.
2) Authorised workshop labour will be free of charge for the first 12 month period from date of the first consumer purchase when unit is found to have failed due to defective workmanship or material supplied by Pentair Water Australia.

   Infield service by an authorised Pentair Water Service Agent will incur a travel, removal and reinstallation fee payable by customer.
3) Where this Pentair Water product is sold for commercial application as defined in the relevant Trade Practices and Consumer Protection legislation the warranty shall be for a period of six months from the date of purchase by the end user.

Who The Warranty Protects:

This warranty is valid only for the consumer purchaser.

What The Warranty Does Not Cover:

1) Damage, deterioration or malfunction resulting from:
   a) Accident, misuse, negligence, fire, water, lightning, or other acts of nature, unauthorised product modification or failure to follow instructions supplied with the product.
   b) Repair or attempted repair by anyone not authorised by Pentair Water.
   c) Any damage to the product due to shipment.
   d) Removal or installation of the product.
   e) Causes external to the product such as electric power fluctuations or failure.
   f) Use of supplies or parts not meeting Pentair Water specifications.
   g) Normal wear and tear.
   h) Water ingression or exposure to abnormal corrosive conditions or “run dry” conditions.
   i) Any other cause which does not relate to a product defect.
2) Damage caused to the product as a consequence of use of another manufacturer’s product used in conjunction with Pentair Water and affiliate companies.
3) Ingress of insects into the unit causing electrical malfunction is not warranted, care should be taken to avoid this occurrence.

Spare Parts:

Spare parts are usually stocked for a reasonable period of time following last production.

Pentair Water does not warrant that spare parts will be made available for the whole of the reasonable period and reserves its right to cease supplying spare parts or providing facilities for repair of spare parts in circumstances which are beyond its control including the requirement to remove spare parts from sale as a consequence of changes in the law or otherwise as it deems fit.

How To Get Service:

In Australia please contact 1800 664 266

In New Zealand please contact 0800 664 269

Claims under this warranty must give evidence of date of purchase, model and serial number of the product and the claimants name, address and telephone number.

1) To obtain warranted service, you will be required to provide to either Pentair Water state office or recommended service agent:-
   a) The product.
   b) Confirmation in writing specifying the nature of your claim.
   c) Proof providing date of original purchase.
   d) Full contact details including name and address.
   e) The serial number of the product if any.
2) The product is to be forwarded by the customer freight paid to an Authorised Pentair Water service agent.
3) Warranty service work will be denied or suspended, on equipment not readily accessible to service personnel, that is products that are behind barriers, tiled or bricked in, installed in roofs or second story external walls including inaccessible power points.
4) Any service of any product which is found to be faulty due to abuse, fair wear & tear, misuse or improper installation will be charged to the owner at the service agents current servicing hourly rate.

Limitation Of Implied Warranties:

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, WHICH EXTEND BEYOND THE DESCRIPTION CONTAINED HEREIN INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Exclusion Of Damages:

PENTAIR WATER’S LIABILITY IS LIMITED TO THE COST OF REPAIR OR REPLACEMENT OF THE PRODUCT. PENTAIR WATER SHALL NOT BE LIABLE FOR:

1) DAMAGE TO OTHER PROPERTY CAUSED BY ANY DEFECTS IN THE PRODUCT, DAMAGES BASED UPON INCONVENIENCE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, LOSS OF PROFITS, LOSS OF BUSINESS OPPORTUNITY, LOSS OF GOODWILL, INTERFERENCE OF BUSINESS RELATIONSHIPS, OR OTHER COMMERCIAL LOSS, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
2) ANY OTHER DAMAGES, WHETHER INCIDENTAL, CONSEQUENTIAL OR OTHERWISE.
3) ANY CLAIM AGAINST THE CUSTOMER BY ANY OTHER PARTY.

Effective Law:

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Nothing in this warranty limits or restricts, or is intended to derogate from, any right or remedy which the purchaser or ultimate user of the product may have pursuant to Australian state and/or Australian federal consumer protection legislation, New Zealand Sale of Goods Act, Consumer Guarantees Act, Fair Trading Act or any other relevant and applicable New Zealand legislation or authority and where necessary shall so be read and construed.

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

Pressure Switch Setting *kPa (psig)*	Tank Precharge *kPa (psig)*
140-280 (20-40)	126 (18)
210-350 (30-50)	196 (28)
280-420 (40-60)	265 (38)
350-490 (50-70)	335 (48)

Table 1 - Air Cell Air Pressure Setting

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 1A and 1B for typical installations of this kind.

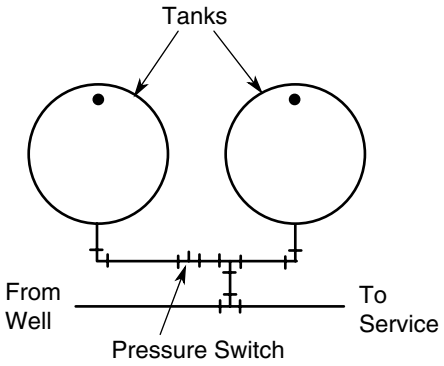


Figure 1A: Typical Layout With Two Tanks

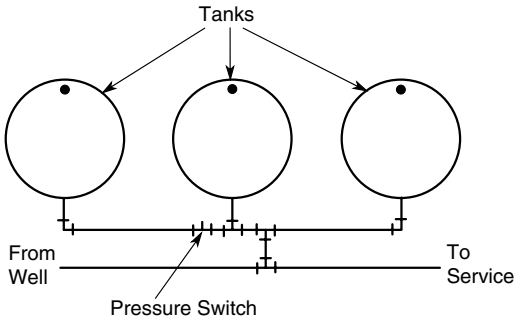


Figure 1B: Typical Layout With Three Tanks

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).

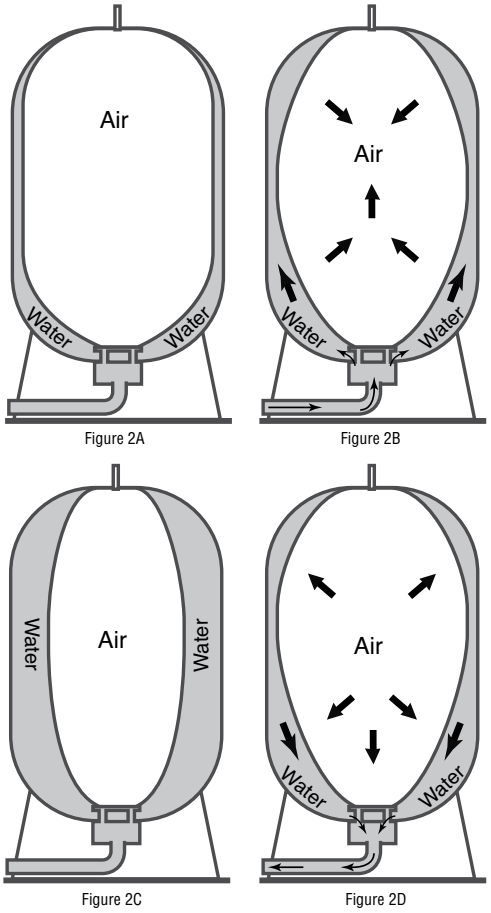


Figure 2: Air Cell Cycle

Model Number	Tank Capacity *Liters (U.S. Gallons)*	Water Yield Per Pump Cycle *Liters (U.S. Gallons)*		
		Pressure Switch Setting *kPa (psig)*		
		140-280 (20-40)	210-350 (30-50)	280-420 (40-60)
APSC-14-4	53 (14)	20 (5.3)	17 (4.5)	15 (3.9)
APSC-20-6	76 (20)	27 (7.2)	23 (6.1)	20 (5.3)
APSC-30-9	114 (30)	41 (10.8)	34 (9.1)	30 (7.9)
APSC-40-12	151 (40)	56 (14.7)	47 (12.5)	41 (10.8)
APSC-48-14	182 (48)	65 (17.2)	55 (14.6)	48 (12.6)
APSC-60-20	227 (60)	83 (21.9)	70 (18.5)	61 (16.1)
APSC-80-23	303 (80)	110 (29.1)	93 (24.6)	81 (21.3)
APSC-85-25	322 (85)	120 (31.7)	101 (26.8)	88 (23.2)
APSC-119-35	450 (119)	166 (43.8)	140 (37.0)	121 (32.0)

Table 2 – Water Yield Per Pump Cycle (drawdown) in Gallons

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 pipe thread sealant 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 14 kPa (2 psig) 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.

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. See Figure 3. Air pressure should be 14 kPa (2 psig) below pump pressure switch cut-in setting (that is, if switch closes at 210 kPa (30 psig), pressure in tank should be at 196 kPa (28 psig)).

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

3. If the air pressure is more than 14 kPa (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.

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 14 kPa (2 psig) below pump cut-in setting (196 kPa (28 psig) for 210-350 kPa (30-50 psig) switch, 126 kPa (18 psig) for 140-280 kPa (20-40 psig) 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 ±7 kPa (±1 psig) of proper setting.

NOTICE If cut-in setting is too low, system will rattle or develop water hammer when pump starts.

   E. 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 14 kPa (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.

Figures 4, 5 and 6 depict typical tank installations.

⚠WARNING Risk of explosion. If system discharge pressure can exceed 873 kPa (125 psig), install a relief valve capable of passing the full pump volume at 873 kPa (125 psig).

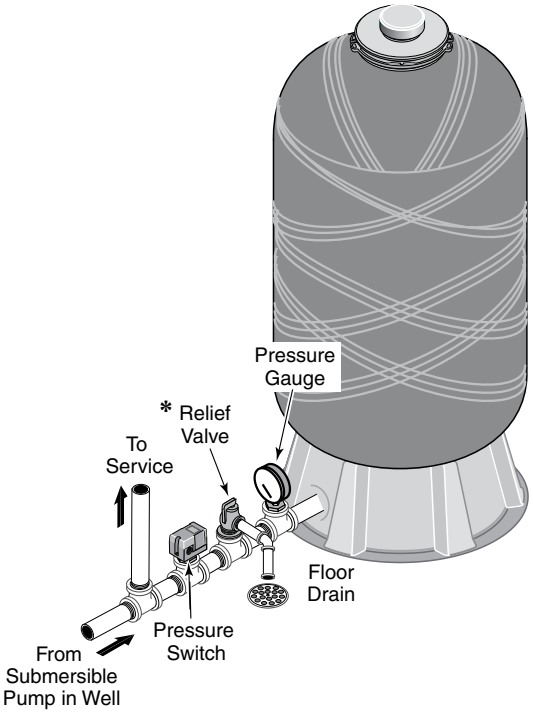


Figure 5: Typical Installation with Submersible Pump

Figure 4: Typical Installation with Jet Pump

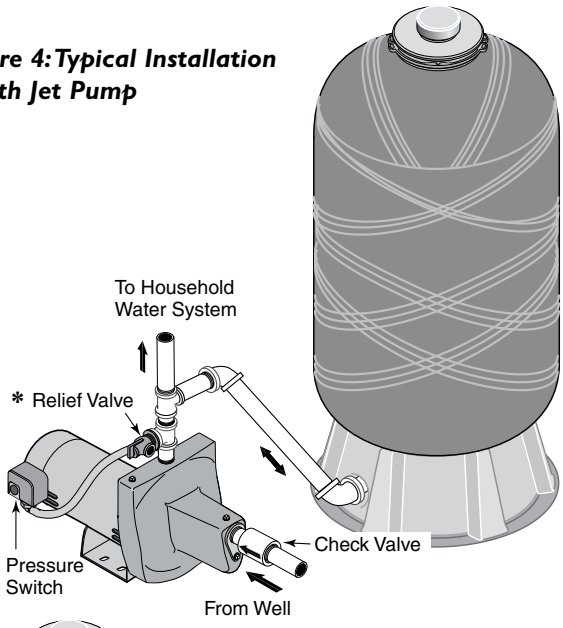
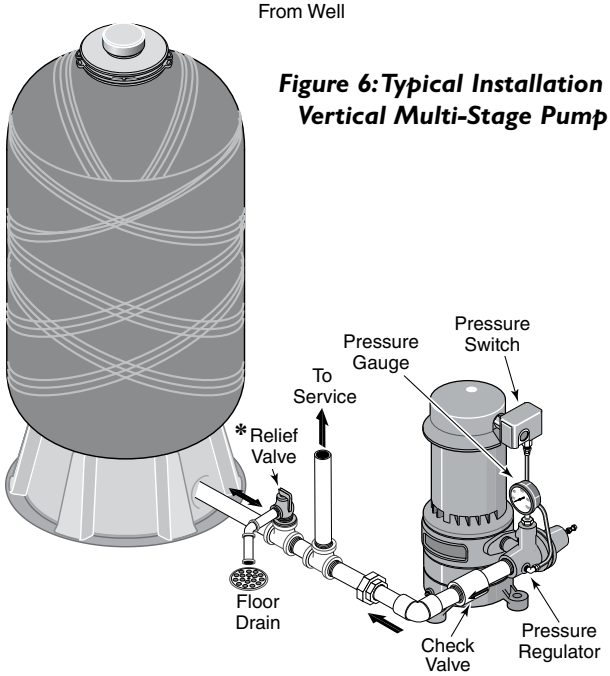


Figure 6: Typical Installation with Vertical Multi-Stage Pump



Air Cell Replacement

⚠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, see "Rules for Safe Installation and Operation", page 2.

1. Disconnect the power to the pump.
2. To release the water pressure from the tank system, open a faucet near the tank to drain the water.
3. Remove the pole piece cap from the tank and the valve cap from the valve. Depress the valve stem to release the air pressure from the air cell.
4. Remove the valve core to release the rest of the air pressure (see Valve Core Replacement).
5. Remove the valve stem nut and washer.
6. With a screwdriver, pry the red c-clips out to remove.
7. Remove the polar boss cap. See Figure 7 for an overall disassembly view.

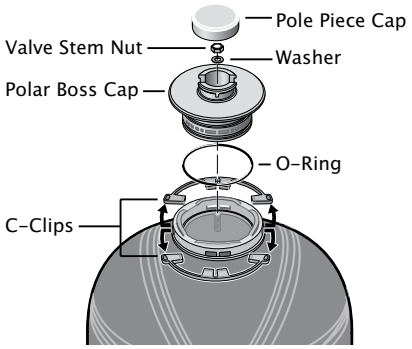


Figure 7: Remove Pole Piece Cap, Valve Cap and Retaining Nut, Clips, and Polar Boss Cap.

8. Disconnect the tank from the water supply line and carefully lay it on its side (protect the sides of the tank). DO NOT DROP.
9. With a large pair of slip-joint pliers, unscrew the elbow adapter from the tank.
10. Remove air cell by reaching into the tank and pulling it through the open top port. The tether pin should come out of the elbow adapter as you pull.
11. Lubricate the elbow adapter O-Ring with O-Ring lubricant.
12. Remove elbow adapter lid and push the tether pin through from the top. From the bottom of the elbow adapter lid, pull the head of the tether pin until the fins hook it into place. Reinstall the elbow adapter lid on the elbow adapter See Figure 8.

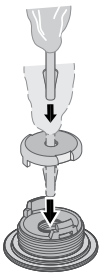


Figure 8: Push tether pin through from the top. Pull the head until the fins hook in into place.

13. While squeezing the air cell, push the valve end of the air cell into the bottom of the tank. Push it in as far as possible without losing the bottom of the air cell in the tank.
14. Reinstall the elbow adapter, with new air cell in place, in the bottom of the tank and tighten it against the O-Ring to seal it.
15. Reach into the tank from the top and pull the air cell into position.
16. Clean the tank sealing surface before installing the top flange assembly.
17. Clean the sealing surface and groove of the polar boss cap; re-lubricate and install the O-ring on the polar boss cap.
18. Push the valve up through the polar boss cap.
19. Install the washer and valve stem nut on the valve.
20. Reinstall the polar boss cap, with new air cell installed, in the top opening. Fasten it with two (2) red c-clips.
21. Stand the tank back on its base and reconnect it to the water supply line.
22. Recharge the tank to its proper air pressure (see "General Safety", Page 2). Install the valve cap and the pole piece cap.
23. Prime the pump (see the pump owner's manual) and restart the system.

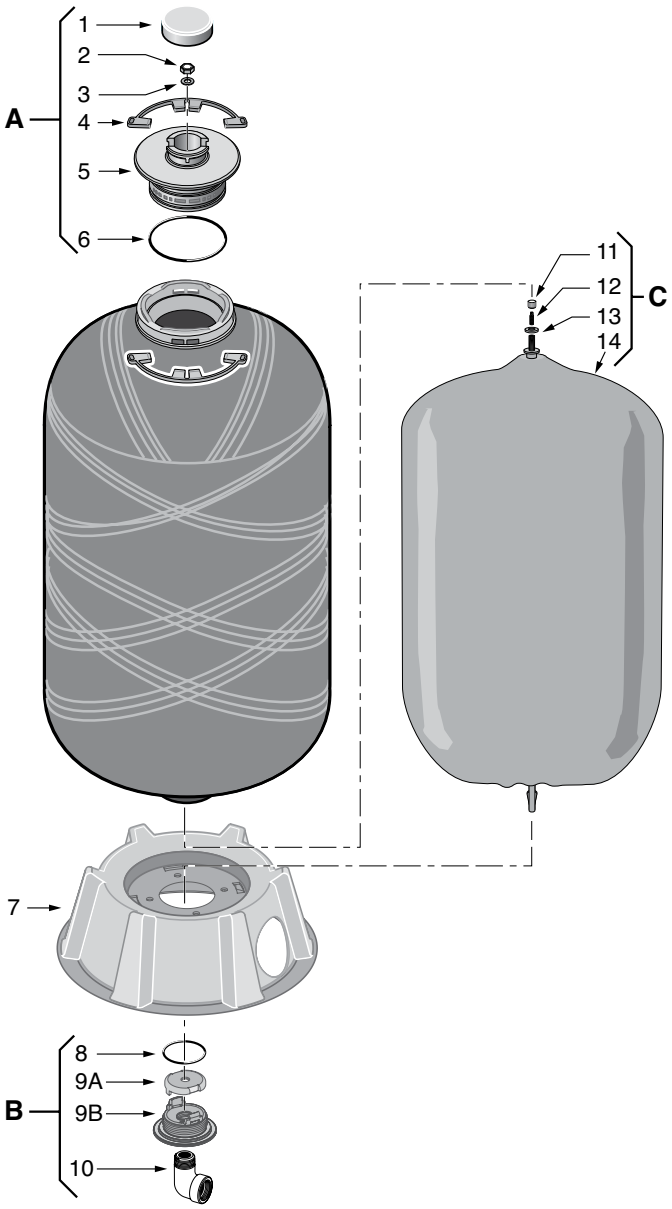
Valve Core Replacement

⚠WARNING HAZARDOUS PRESSURE. 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) according to Table 1. Install valve cap and pole piece cap; reconnect power to pump.

Tank is ready for use.



Ref.	Description	Qty.	Part Number
A	**Polar Boss Cap Kit (includes Ref. Nos. 1, 2, 3, 4, 5, 6)**		
1	Pole Piece Cap	1	CH20294K
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 table below
B	**Elbow Adapter Kit (includes Ref. Nos. 8, 9, 10)**		
8	O-Ring	1	See table below
9a	Adapter Lid	1	
9b	Adapter	1	
10	SS Elbow	1	
C	**Air Cell Kit (includes Ref. Nos. 11, 12, 13, 14)**		
11	Valve Cap	1	See table below
12	Valve Core	1	
13	Rubber Washer	1	
14	Air Cell	1	

Model	Ref. 7 - Base	Ref. 10 - SS Elbow*	Ref. B - Elbow Adapter Kit	Ref. C - Air Cell Kit
APSC-14-4-01	CH20364-1	CH21028	CH21084K	CH10836-1K
APSC-20-6-01	CH20364-1	CH21028	CH21084K	CH10865-1K
APSC-30-9-01	CH20364-1	CH21028	CH21084K	CH10866-1K
APSC-40-12-01	CH20364-1	CH21028	CH21084K	CH10867-1K
APSC-48-14-01	CH20343-1	CH21029	CH21085K	CH11161-1K
APSC-60-20-01	CH20343-1	CH21029	CH21085K	CH11160-1K
APSC-80-23-01	CH20343-1	CH21029	CH21085K	CH15149-1K
APSC-85-25-01	CH20343-1	CH21029	CH21085K	CH11159-1K
APSC-119-35-01	CH20343-1	CH21029	CH21085K	CH10829-1K

* Elbow only: CH21028 = 1″ BSP; CH21029 = 1-1/4″ BSP.