



Windsor™ Manual

INSTALLATION AND OPERATING INSTRUCTIONS WINDSOR™ RADON REMOVAL SYSTEM U.S. PATENT # 6,372,024, ITEM No. 86103



Manufactured by:

R.E Prescott Co., Inc.

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The Windsor™ unit from R.E. Prescott Co., Inc. is designed to remove radon gas from water. Radon is a radioactive gas which can cause serious health problems. Inside the unit, air is blown into the incoming water and allowed to bubble upward. This bubbling action releases the radon from the water. Air containing the radon is then collected and vented out.

Specifications

Dimensions: Diameter: 18" Tank Height: 33" Overall Height: 44"
 Maximum water depth: 18" (off float switch level)
 Refill water depth: 11" (on float switch level)
 Run dry water depth: 5"

Water capacity: On/Off Cycle Volume: 7 Gallons
 Usable water at maximum water depth of 18": 14 Gallons
 Usable water at refill water depth of 11": 7 Gallons

Approximate weight: 60 lb. empty
 225 lb. filled to maximum water depth of 18"
 363 lb. filled to overflow water depth of 33"

Plumbing connections: 1" fnpt water inlet and outlet Fleck bypass valve
 2" fnpt air inlet with nipple for directly mounting the Windsor blower
 2" female PVC socket weld air outlet
 1.25" fnpt overflow connection

Electrical: Dedicated 20A circuit, duplex GFI outlet, 115V AC #12 AWG wiring

Pump: 1/2 HP high pressure (75 p.s.i.) submersible pump
 10.6 A maximum (running) @ 115V

Blower: 4.5A, 115V AC

Solenoid valve: 2 - 1/2" fnpt solenoid valves, CV = 2.0, 115V coil for 7 gpm

Pump controller: Bubble-Up Mechanical Pump Control, protects the pump from running dry, integral check valve, operates the pump from a 1 gallon tank, 115V AC

Radon removal efficiency:

MODEL	GPM	EFFICIENCY
<input type="checkbox"/> Windsor	7	85%
Custom = <input type="checkbox"/>		

Inlet Flow and Pressure Specifications

7 gallons per minute and 50 psi required inlet flow and pressure.

Outlet Flow and Pressure Specifications

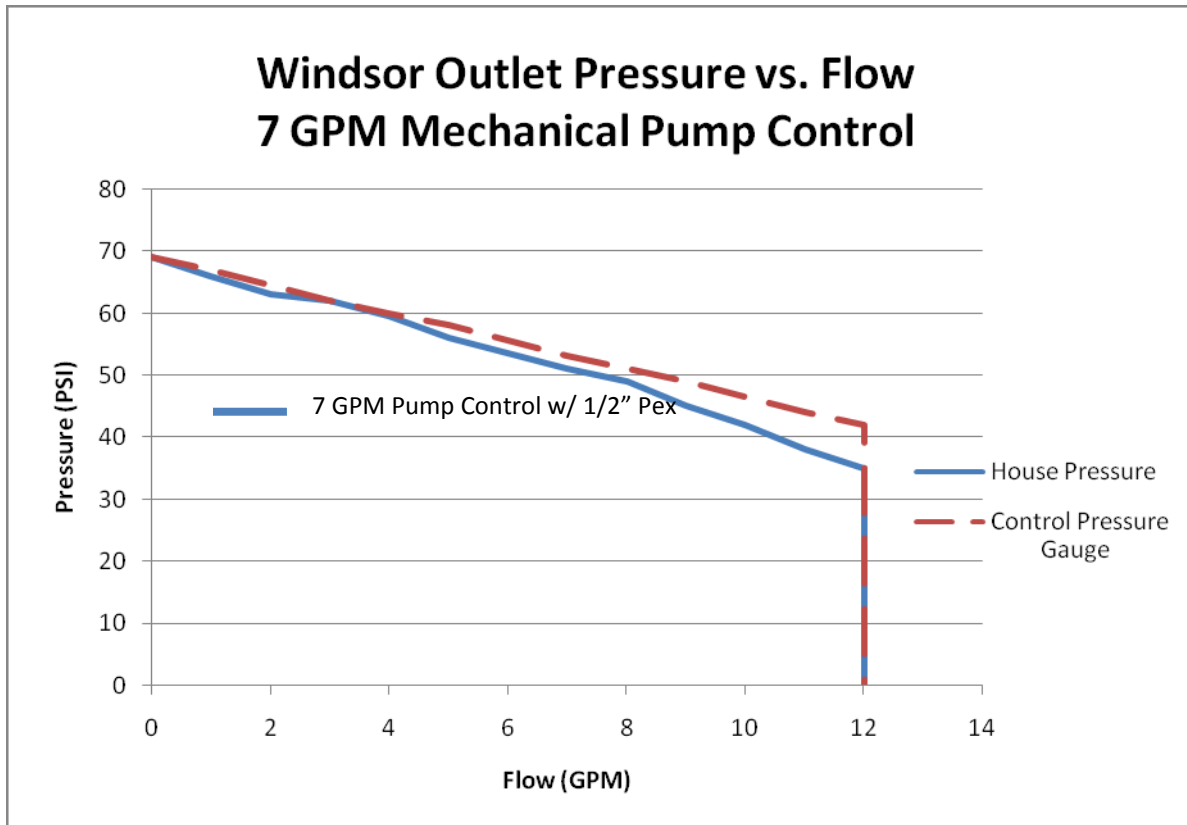


Figure 1 - Windsor Outlet Flow vs. Pressure

Controls and Indicators

Bypass valve

This stainless steel valve can be used to divert the water flow if a problem develops with the Windsor unit.

This valve has a black handle, and is located near the back of the unit. See Fig. 4. The valve has two positions:

- Service - This is the normal operating position. When the valve handle is in line with water flow, the unit can remove radon from the incoming water.
- Bypass - When the valve handle is perpendicular to water flow, the incoming water “bypasses” the Windsor unit. Use this position only if there is a problem with the unit.

Caution! When the bypass valve is set to the Bypass position, the Windsor unit cannot provide any protection against radon in the water.

Mechanical Pump Control

For instructions regarding mechanical pump control see Bubble-Up Mechanical Pump Control Assembly Owner’s Manual supplied with the Windsor and online at www.represcott.com.

Operating Instructions

Once the Windsor has been installed, it should operate with very little attention.

Normal Operation -

The unit should not need any operator attention. When water is used in the house, the one gallon draw-down tank delivers water demand. When the pressure drops to the set pressure, the mechanical pump control starts the Windsor pump to deliver water to the home and refill the one gallon draw-down tank. When the mechanical pump control senses normal household pressure, the mechanical pump control shuts the Windsor pump off. As the water level falls in the Windsor main tank, the float switch powers the blower and solenoid to fill the main Windsor tank with treated water.

Bypassing the Unit -

If a problem develops, the Windsor unit can be taken out of the water supply system with the bypass valve. The rest of the water system will operate normally, but the Windsor will not be able to provide any protection against radon in the water.

Caution! Do not continue to operate the water supply system this way for a long time. Correct the problem with the Windsor and return it to service as quickly as possible.

Installation

1. Set the main tank of the Windsor in the desired location that can hold the weight of the Windsor shown in specification section above. Choose a flat, level surface with ample set-up space.
2. In case of a malfunction, the unit could overflow. The Windsor is fitted with an overflow pipe. (The overflow pipe is mounted near the rear of the unit. See Fig. 4) Take this into account when positioning the unit. It is best if the unit can be positioned near a drain or sump pit with a sump pump.

Important note about overflow: A water sensor can be placed in a bucket under the overflow pipe and operate a water shut-off valve to stop overflow. Ask your installer for more information.

Caution! Normally, the output from the pump is at a pressure of 75 PSI. This should not create a problem in an installation where the existing plumbing is in good condition. However, in an installation where the existing plumbing cannot withstand the operating pressure of the Windsor, the output from the pump may produce a stress on the plumbing and cause leaks. In this kind of situation, a pressure regulator should be installed on the outlet side of the unit and drawdown tank.

3. The Windsor requires a duplex ground-fault circuit interruption (GFCI) protection outlet wired to a dedicated 20A circuit. This circuit should use #12 AWG wiring.
4. Install the one-gallon drawdown tank on the outlet side of the unit. See Fig. 8. This tank is included to prevent the pump from starting and stopping quickly ("short cycling") when there are short-term demands for small amounts of water.

Note: This expansion tank can be used for a certain amount of water heater thermal expansion. If you have a tank type water heater, check manufacturer's requirements for sizing thermal expansion tank.

5. Install a pre-filter on the inlet side to protect the solenoids from sediment clogging. (See Fig. 8). The pre-filter should be a sediment-type filter with a 5 micron rating. Do not use a carbon-type filter.
6. Attach the Fleck bypass valve.
7. The bypass valve is included so that the unit can be taken out of service easily without interrupting the water supply. Plumb the inlet line and outlet line so that the water can continue to the water demand if the bypass valve is set to the Bypass position.
8. Pour one ounce of bleach into the blower attachment nipple to disinfect the unit. See Fig. 4 for location of blower attachment nipple.
9. Firmly slip the blower onto the blower attachment nipple and tighten clamp in order to secure blower to nipple. See Fig. 4.

Caution! Do not use PVC pipe cement on this connection.

Note: If blower inlet is connected to draw air from an outdoor source, make sure that no moisture can get into the blower motor. If an outdoor source is desired, a dryer vent kit can be modified by removing the flap check and replacing it with screen. Be sure to install the kit as directed and run the hose down to the floor in the area of the Bubble-Up® Interactive.

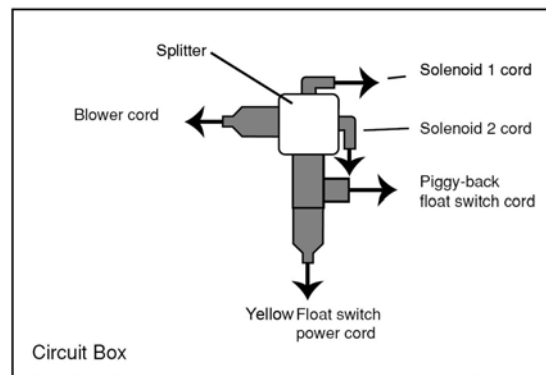


Figure 2 – Circuit Box Wiring Connections

10. Open the white circuit box on top of the unit. See Fig. 3 for location of circuit box. (To open the top of the box, unscrew each of 4 screws and lift cover off.) Plug in the following cords as shown in Fig. 2.

- Plug in cord to blower
- Plug in cords to both solenoids
- Plug splitter into piggy-back float switch cord
- Plug piggy-back float switch cord into yellow float switch power cord

Route the cords out of the openings in the sides of the circuit box, close the cover. Replace screws and tighten.

11. Run the vent line outdoors using 2" PVC piping. Try to make this line as short and direct as possible. Make all of the pipe connections air tight using proper PVC pipe cement.

Important note about vent line piping: Use ¼" per foot pitch towards the Windsor.

Caution! Do not install a vent outlet line which is longer than 50', and includes more than five elbows. This can create excessive backpressure and interfere with the operation of the unit. On longer runs, use larger pipe. Call the factory for details on specific applications.

Caution! Do not install the vent opening at a location where the vent gasses could be blown back into an occupied space.

Important information about venting: Since the Windsor unit removes radon in the water, the unit must be vented carefully. Common practice is to run the vent up past the roof line of the building. An elevated vent opening provides the best way of dissipating the radon gas. Protocols recommend extending the vent opening 2' above the highest opening in the building, and at least 10' away from the nearest opening. It is recommended to protect the vent opening with a vent screen. A single free hard (printed) copy of the ASTM E-2121 standard (Recommended Residential Radon Mitigation Standard of Practice) is available from EPA's National Service Center for Environmental Publications (NSCEP). You can order a copy by phone at 1-800-490-9198, via E-mail nscep@bps-lmit.com, or via the internet at www.epa.gov/nscep/ordering.htm Please use the EPA document number (402-K-03-007) when ordering E-2121. EPA reprints E-2121 under agreement with ASTM International.

12. Plumb mechanical pump control and plug pump cord into female cord of pump control.
13. Check all plumbing fittings to be sure all fittings are water tight.

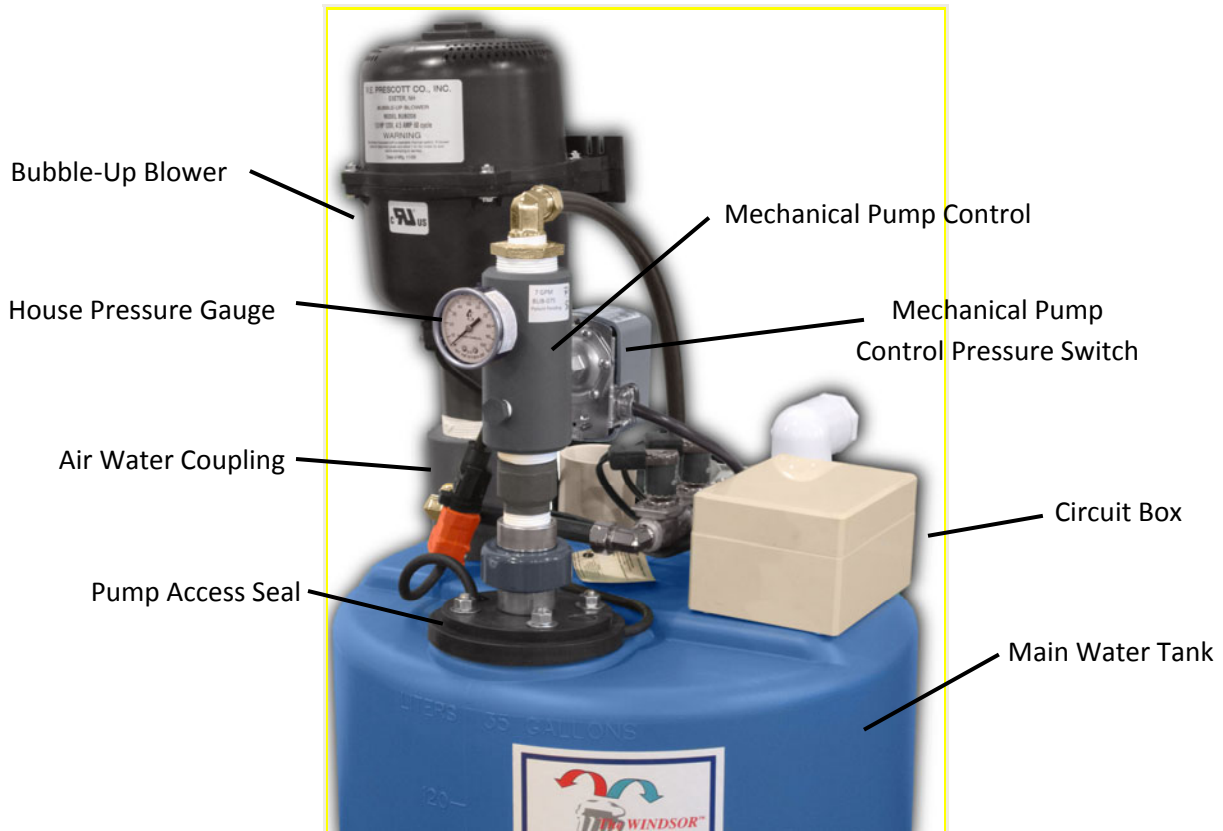


Figure 3 - Installation Points

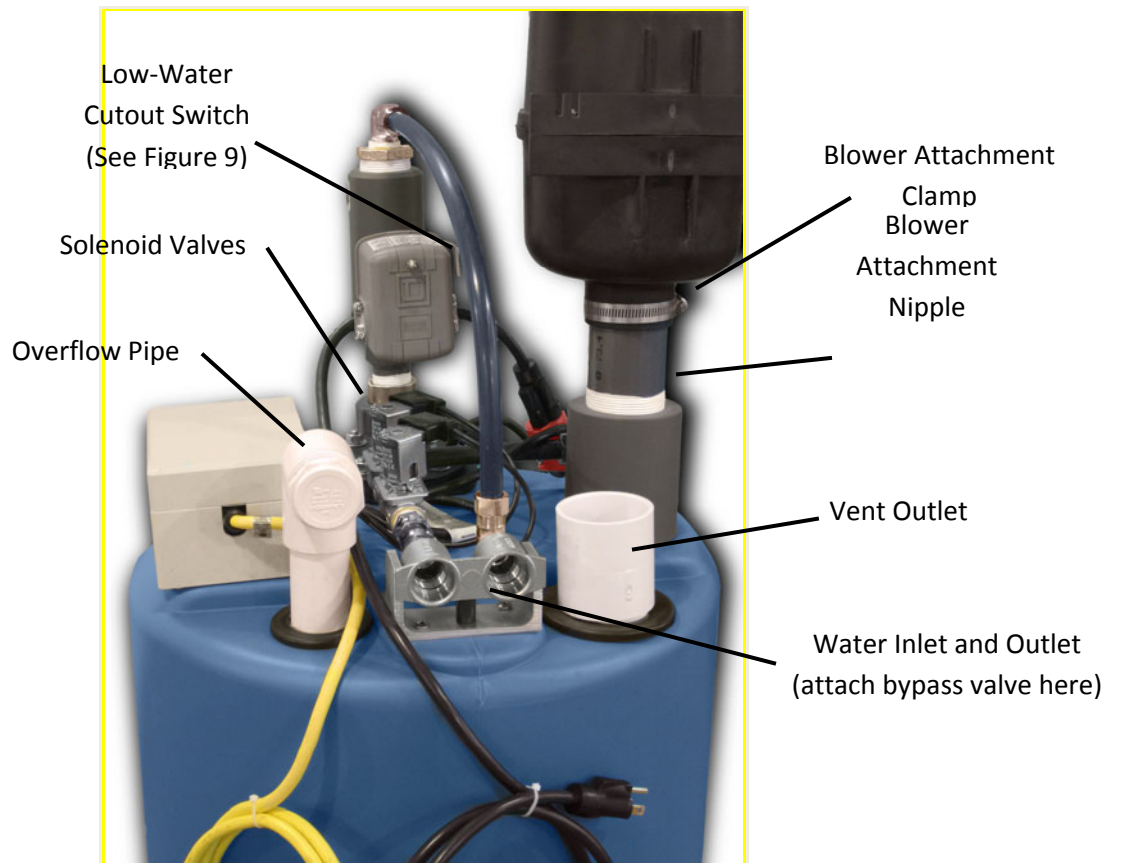


Figure 4 - Installation Points

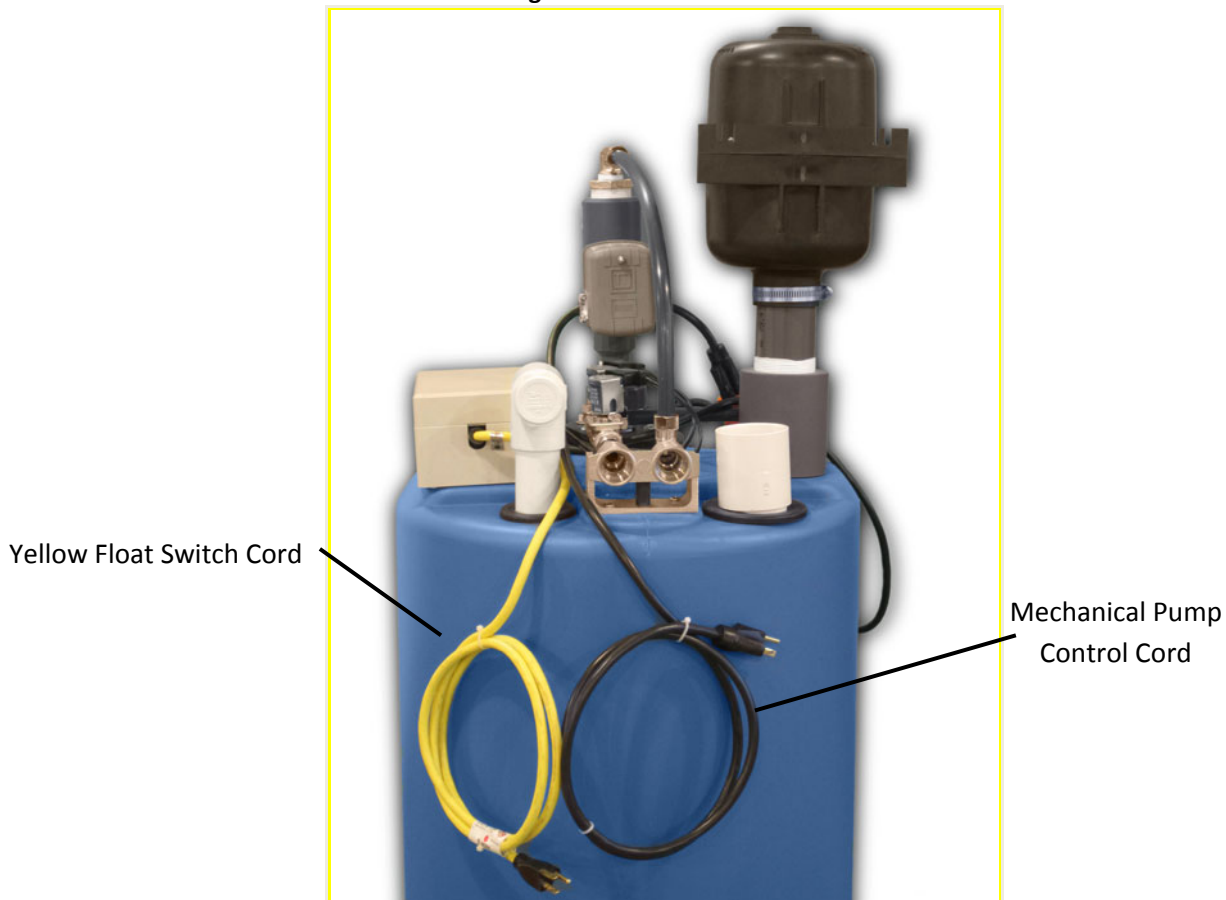


Figure 5 - Power Cords

Start Up Procedure

1. Set the black handle on the bypass valve to the Service position.
2. Before plugging in the Windsor, identify the plug-in cords. See Fig. 5.
3. Plug in the yellow cord first. The blower should start, and the solenoid valve should open to begin filling the tank.

Caution! Do not plug in the black cord for the mechanical pump control until the tank is filled with water. This will prevent the pump from running while dry.

4. As the water level in the tank rises, the float switch will tilt up. This will stop the blower and close the solenoid valves.
5. Once the tank is full, plug in the black pump control cord. The pump control will require a manual start. Move pressure switch lever to the start position until the pumps starts. See figure 9 or Bubble-Up Mechanical Pump Control Owner's Manual included with the Windsor.
6. If the pump does not start delivering water to the house, it may be necessary to prime the pump. (Normally you will only have to do this once, when the unit is first installed.) The pump is suspended by a pipe underneath the pump control. Unscrew the union and move the pump control off to the side. You may need to siphon the water up this pipe to remove the air from the pump and prime it.
7. Once the air has been removed from the pump, replace the pump control and tighten the union. Plug in the pump. Move the lever on the Pressure Switch again to start the pump. If the pump does not start delivering water to the house, repeat the priming sequence.
8. After the unit is operating, run a radon test of the raw water and the filtered water to ensure that the unit is reducing radon levels in the water.
9. Perform the six-month maintenance procedure, and fill out the Start-Up Data page at the end of this manual.

Maintenance

Every six months:

- Check the operation of the float, pump control, solenoid valve, and the blower by turning on a water tap and allowing it to run. At first, the water will be supplied by the 1 gallon drawdown tank, and then the pump should turn on. A few minutes later, you should hear the blower start and the solenoid valve should open. (The unit cannot remove radon unless the blower is working.)
- Shut off the water tap. The tank in the Windsor unit should fill in less than two minutes.
- Check the outlet of the vent line to ensure that it is not blocked.
- Disinfect the unit as needed. (Pour one ounce of bleach into the blower attachment nipple.)

Every year:

We recommend that you have your Windsor unit checked once a year by a qualified installer. The yearly checkup may include these steps:

- Run raw water and filtered water radon tests.
- Replace the cartridge in the pre-filter and disinfect.
- Clean the main Windsor tank as described below.
- Disinfect the unit as needed. (Pour one ounce of bleach into the pre-filter cartridge housing.)
- Clean and rebuild solenoid valves

Cleaning the tank:

1. Unplug the yellow power cord to the unit.
2. Run a water faucet until main storage tank is empty.
3. Unplug the pump controller.
4. Set the bypass valve to the Bypass position.
5. Remove the blower and set it to one side.
6. Run a 3/8" OD tube down the center of the air-water coupler about 3 feet and siphon out the water in the bubbling chamber.
7. Unplug and remove Mechanical Pump Control
8. Loosen the 4 bolts on the pump access seal of the Windsor pump until seal is loose. Do not take the bolts out of the access seal; this will cause the seal to fall apart.
9. Unplug float switch cord and remove Windsor pump assembly
10. Reach into tank and unscrew the bubbling chamber. The bubbling chamber can then be removed through the 5" pump access hole.
11. Pump or siphon the water out of the tank.
12. Vacuum out any remaining water with a wet/dry vacuum.
13. Wash down the inside of the tank. This may require some scrubbing. If a layer of minerals has collected at the bottom of the tank, remove this layer. If the mineral layer includes a rusty material, you may have to use a reducing chemical to dissolve and neutralize the rust.
14. As a final step, sanitize the inside of the tank using a dilute solution of chlorine bleach. Rinse, then vacuum out any remaining water.
15. Re-install the bubbling chamber and the pump assembly. Note that the direction of the float switch cord is towards the air-water coupling so that it can be re-installed in the same position. Make sure to tighten the well seal evenly.
16. Disinfect the unit. (Pour one ounce of bleach into the blower attachment nipple.)
17. Install the blower. Firmly slip the blower onto the blower attachment nipple and clamp it. See Fig. 4.
18. Set the bypass valve to the Service position.
19. Restart the unit. Follow the instructions in the "Start up Procedure."

Removing the Pump:

1. Unplug both power cords to the unit. Set the bypass valve to the Bypass position.
2. Remove piping on top of pump control and unscrew 1" union located under the mechanical pump control.
3. Unplug and remove the pump control.
4. Unplug the piggy back float switch cord from the circuit box on the Windsor.

5. Loosen the 4 nuts on the pump access seal. See Fig. 3. Do not remove the top nuts so that the bolts do not fall into the Windsor main water tank. Note that the direction of the float switch cord is towards the air-water coupling so that it can be re-installed in the same position.
6. Lift the pump access seal off of the main water tank. This may require prying with a flat screwdriver or two.
7. Lift and pull out float switch and then pump from the main water tank.
- 8.

Troubleshooting for Bubble-Up Mechanical Pump Controller

Low-Water Failure Re-Start

A low pressure cut-out switch is used to turn off the pump during low pressure or low water. On **flows greater than 10 GPM**, low pressure may occur and also turn off the pump. To re-start the pump from this condition move the lever on the pressure switch to start and hold the lever until the pump builds sufficient pressure to keep the pressure switch contacts closed. If the pump does not build up pressure, reduce water flow or check the water level in the Bubble-Up tank. Be sure pump is in good working order and is not air bound. (See Bubble-Up Mechanical Pump Control

Replacement Parts

Figures 3 through 9 list some of the replacement parts on the Windsor. There is a parts list on pages 11 and 12. Here are some points to keep in mind when replacing parts:

- Before removing any parts, shut off the water inlet to the Windsor. Set the handle on the bypass valve to the bypass position.
- Always unplug all of the power cords before working with the unit.

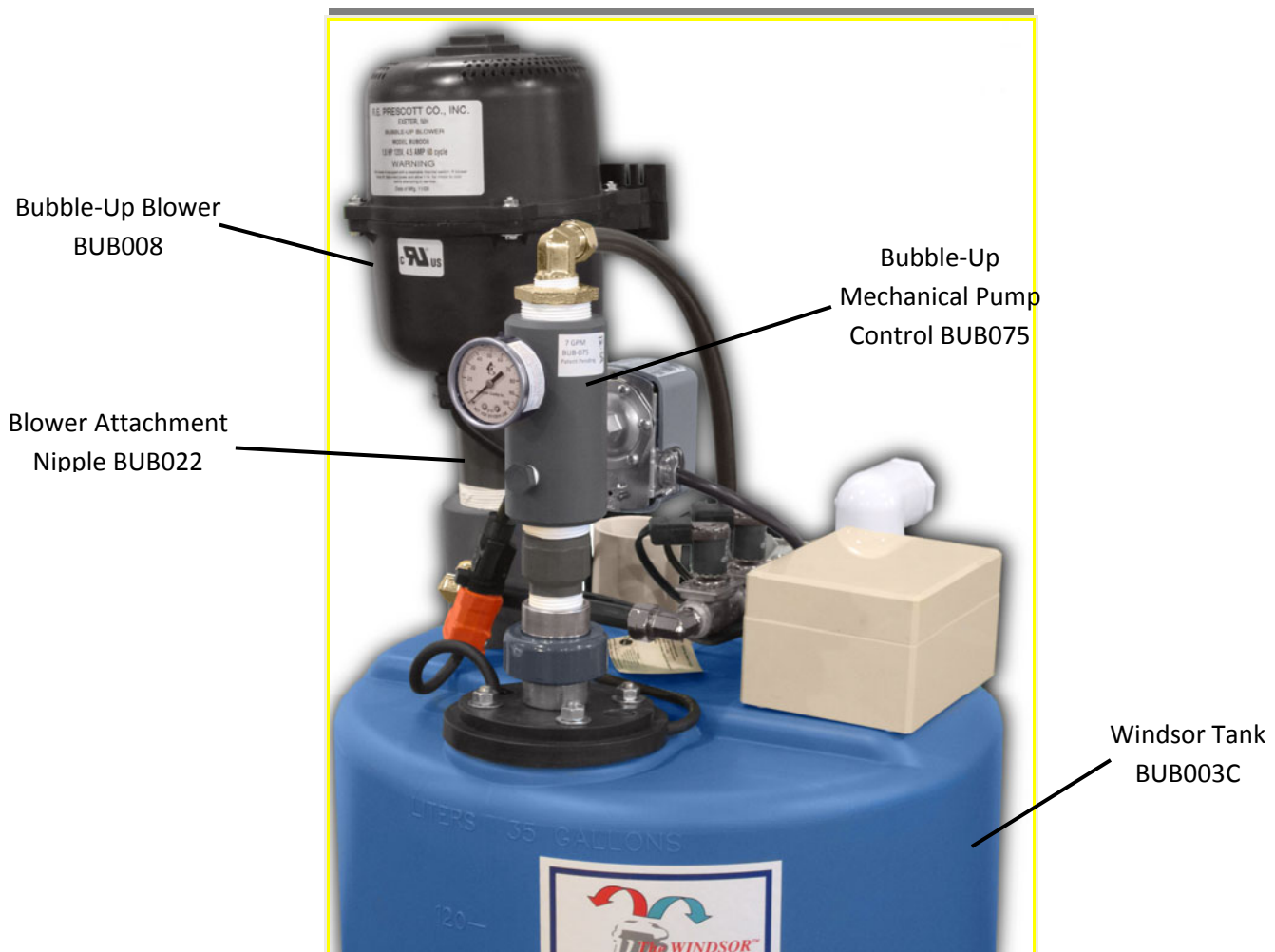


Figure 6 - Replacement Parts

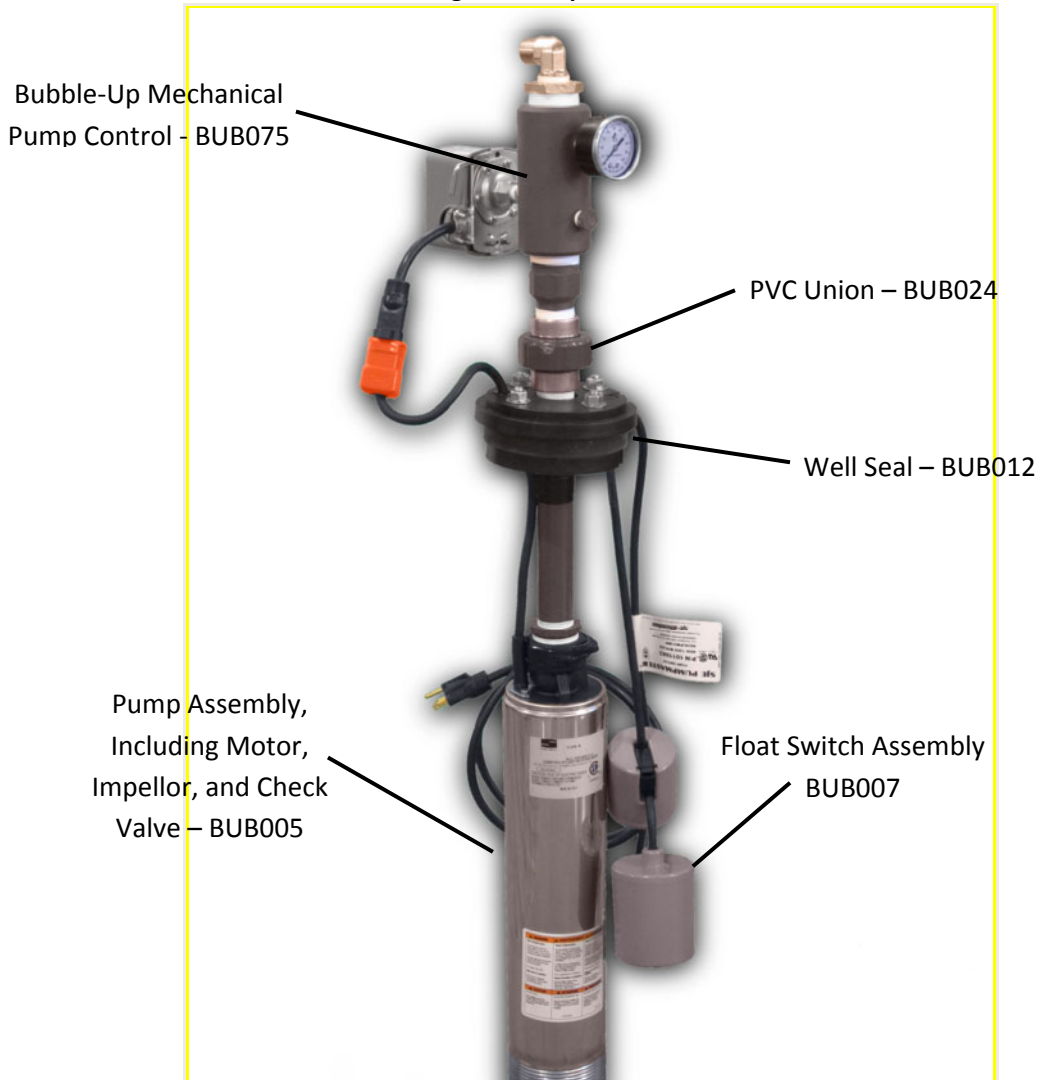


Figure 7 - Pump Assembly with Control



Figure 8 - Accessories

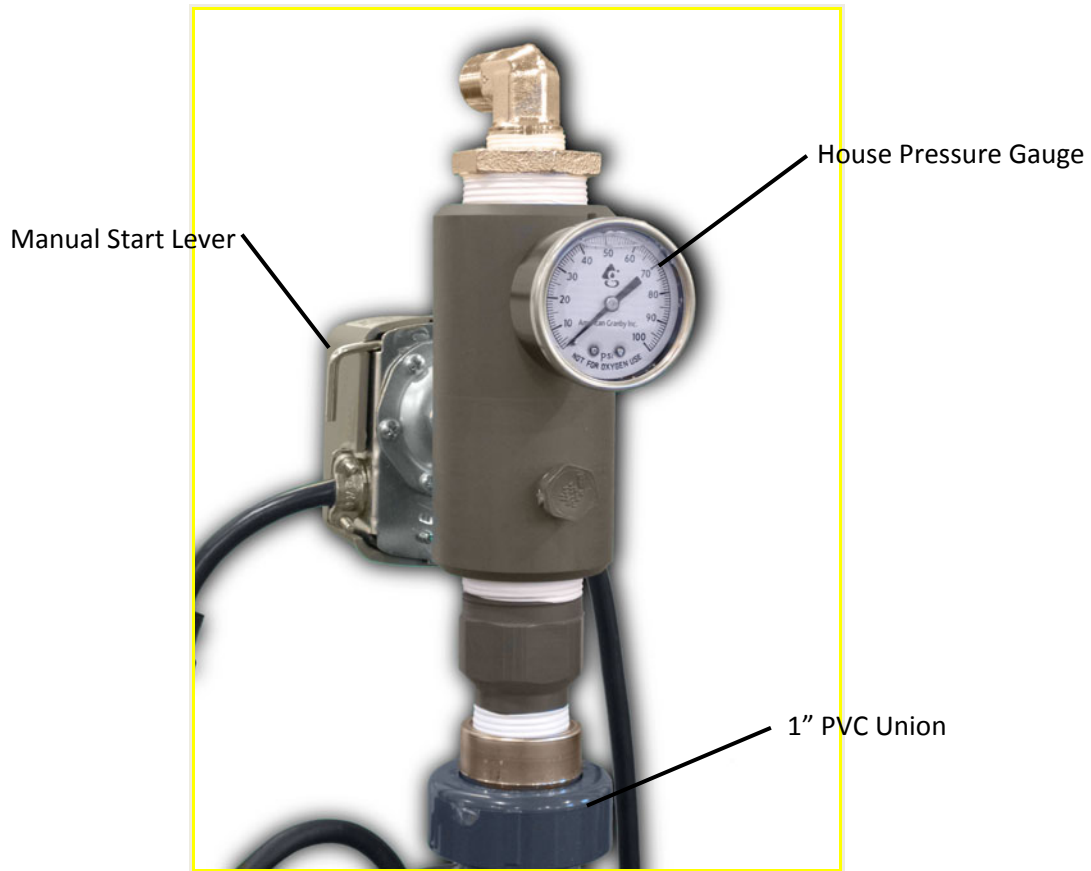


Figure 9 – Bubble-Up Mechanical Pump Control – BUB075

Parts Listing

Item#	Description	Quantity	Unit
BUB003B	4" X 31" Bubbling Chamber Liner	1	each
BUB003C	Windsor Tank	1	each
BUB007	Float switch assembly	1	each
BUB008	Blower	1	each
BUB009	PVC Manifold – air-water coupling	1	each
BUB010	Circuit Box	1	each
BUB011	6" supply cord 16/3, yellow	1	each
BUB012	Well Seal, size 5"	1	each
BUB012A	5" X 1" Gasket #3231	1	each
BUB012B	5" X 1" Top #3628	1	each
BUB012C	5" X 1" Bottom #3629	1	each
BUB013	4" Aluminum Channel	1	each
BUB014	1" Bypass, Stainless Steel	1	each
BUB015	Coupling Kit	1	each
BUB016	3/4" Stainless Steel Yoke	1	each
BUB018	Solenoid Valve 1/2"	2	each
BUB020	18" Solenoid Cord	2	each
BUB022	2" X 6" SCD 80 Nipple	1	each
BUB022B	1" X 10" Windsor Pump Suspension	1	each
BUB024	1" PVC SCD 80 Union	1	each
BUB025	1.25" PVC SCD 40SXT 90 Elbow	1	each
BUB026	1.25" X 1" PVC SCD 80 Bushing	1	each

Windsor™ Radon Removal System

BUB027	1.25" X 41.5" PVC SCD 40 Overflow Pipe	1	each
BUB028	2" X 35" Slotted PVC Downcomer	1	each
BUB030	1/2" X Close Nickel Plated Nipple	2	each
BUB031	1/4" SCD 80 Nipple, Yoke Mount	1	each
BUB032	#12 X 1.25" Phil Pan Sheet Metal Screw	4	each
BUB034	#12 X 3" Phil HD Flat Tapping Screw	1	each
BUB035A	3/8" X 2.5" Stainless Steel Hex Bolt	4	each
BUB035B	3/8" Stainless Steel Washer	4	each
BUB035C	3/8" Zinc Plated Nut	4	each
BUB036	2" Adaptaflex, Air Outlet	1	each
BUB037	1.25" Adaptaflex, Overflow	1	each
BUB038	5/8" Delrin Sleeve	6	each
BUB039	5/8" X 3/4" W/ Stop – Nickel Plated	1	each
BUB040	5/8" X 1/2" W/ Stop – Nickel Plated	1	each
BUB041	5/8" X 3/4" W/Stop Ell – Nickel Plated	1	each
BUB042	5/8" X 1/2" W/S – Nickel Plated	2	each
BUB043	Cord Splitter	1	each
BUB044	Pump Cord Plug	1	each
BUB045	1/2" SS Pex Insert	6	each
BUB046	1/2" X 20' Pex Tubing	0.1	each
BUB048	2" S.S. Clamp	2	each
BUB075A	Bubble-Up Mech. Pump Control Assembly	1	each
BUB054-08	Sta-Rite Bottom Suction, 20DOM05121+1	1	each

Start-Up Data

For service, call: _____

Installer: _____

Address: _____

Serial number: _____

Start-Up Notes

Fill Rate: _____

Radon in: _____

Radon out: _____



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