

ZAPPR

Installation Instructions



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SAFETY FIRST! ENSURE THAT THE FOLLOWING STEPS ARE COMPLETED IN SEQUENCE BY A LICENSED PLUMBER, CONTRACTOR AND ELECTRICIAN OR CERTIFIED WATER TREATMENT SYSTEM SPECIALIST. THE INSTALLER SHOULD BE AWARE OF, AND ADHERE TO, ALL PERTINENT LOCAL AND STATE CODES.

Step 1 – Determine Well Pump Flow Rate to determine the flow rate:

- 1) A garden hose
- 2) A five-gallon bucket
- 3) A watch with second hand or a stop-watch
- 4) A calculator, paper and pencil, or a head for figures

It is important that there are no demands on the well pump during this test. Turn off all faucets, sprinklers, hoses, etc., and inform others that you are about to begin a flow rate test.

1. Connect a garden hose to the house pressure tank drain valve.
2. Open the drain valve and collect the water in the bucket.
3. When the electric pump turns on, close drain valve and let pump fill the pressure tank.
4. Once the tank is full, wait until the pump turns itself off.
5. Empty the water from the bucket.
6. With your watch in hand, open the drain valve and collect all the discharged water in the bucket until the pump turns on. Immediately close the drain valve and begin timing the pump cycle.
7. Keep timing until the pump turns off; note the elapsed time in seconds. This is the Cycle time.
8. Measure the volume of water (gallons) in the bucket. This is the Drawdown.
9. Divide the number of gallons collected in #6 by the number of seconds in #7.
10. Multiply the answer by 60 to convert to minutes. This gives you the system's true pumping capacity in Gallons Per Minute, GPM.

Note: It may be prudent to complete the above exercise twice and average the results

$$\frac{\text{Gallons}}{\text{(draw down)}} \div \frac{\text{Seconds}}{\text{(cycle time)}} = \text{ } \times 60 = \text{ } \text{ GPM}$$

(drawing rate) (pumping rate)

The ZAPPR features a streamlined, modular design that consists of three tanks: an aeration tank, a pump tank, and a storage tank. These tanks are going to be plumbed in at your point-of-entry, after any other filtration or softening equipment your well may require.

As water enters the first tank, it passes through our proprietary QuadTrain Air Injector nozzle. Due to the pressure differential on either side of the QuadTrain, suction is created to naturally inject air into the pressurized water as it makes its way into the aeration tank, without having to use any kind of pump or air compressor. The QuadTrain has been designed to work at flow rates from 2.5-10 gpm, and can be custom-configured based on your well capacity to give you maximum aeration.

As this heavily aerated water enters the bottom of the aeration tank, it is forced up through a diffuser and is brought to atmospheric pressure, causing the radon particles to separate from the water as it is sprayed into the air pocket at the top of the tank. While this is happening, our blower is working in conjunction with our aeration orbs to maintain a turbulent environment inside this tank, ensuring that all the radon in the water gets released. Most importantly, the force of the blower also works to push all of this off-gassed radon up and out of the top vent, where it is safely released outside of your home.

The radon-free water then flows to the next two tanks, and all three tanks will fill evenly until they reach the full level, which is approximately 48" of water in the tanks. Once the tanks reach this level, as detected by our pressure transducer, a signal is sent to a relay to turn off the blower motor and to close the inlet solenoid, so that no more water enters the system.

The pump tank contains a submersible pump, and as you use water in your house, our pump controller will cycle this pump on and off as needed, supplying water to your home in the same way as the pump inside your well: water flows from the pressure tank until a low pressure is reached, and the pump will then run until the high pressure shutoff point is reached.

When the pump is sending water to your home, all three tanks will deplete evenly until a "low level" is reached, when the tanks are approximately 36" of water. Just as our pressure transducer closes the inlet solenoid and turns off the blower when the tanks are full, when the tanks reach a "low" level, the transducer then sends a signal to open the solenoid and to turn on the blower, and the process begins again.

The ZAPPR will come in three large boxes containing the three tank pre assemblies. There is an Aeration tank (Box A), a Pump tank (Box B), and a Storage tank (Box C). There are also three small sub-assemblies. There will be a blower box (Box D, shipped in Box B), a Pump Assembly box (Box E, shipped in Box A), an Electronics Box (Box F, shipped in Box C), and an Air Manifold Assembly (Shipped in the Bottom of Box B).

(Boxes A,B,C) The tanks will be laid out in a Right to Left configuration, with the pump tank in the middle. (Fig 1, Fig 2)



Fig. 1



Fig. 2

NOTICE: If the ZAPPR is being installed in a basement with a lower ceiling it will be necessary to install the Pump Assembly before connecting the tanks as you may need to tip the Pump Tank forward slightly to install it.

Using the Quick Connect Manifold unions, connect the tank assemblies together. Once the tanks have been connected and set in their final location, the Air Manifold Assembly will need to be installed. This will go on the top of the Aeration Tank with the open port facing the back and centered on the blower bracket. (Fig 3)

Quad Train Adjustments

Based on your well test results, the ZAPPR Quad Train air injector can be adjusted to match your well production. If these changes need to be made, remove the Quad Train assembly from the piping by loosening the quick connect unions. This is preset from the factory at 5gpm but can be configured to four different flow rates with the injector/plug kit provided.

1 injector / 3 grey #0 plugs = 2.5 gpm

2 injectors / 2 grey #0 plugs = 5.0 gpm

3 injectors / 1 grey #0 plug = 7.5 gpm

4 injectors = 10.0 gpm

The injectors can simply be pushed out from the bottom with a large, Philips head, screwdriver, and the desired arrangement can be installed from the top. (Fig 4, Fig 5) Once you have made these changes, if necessary, reinstall the unit with the white air inlet at the bottom, and rotate the assembly so the inlet faces to the Right (Fig 6).



Fig. 3



Fig. 4

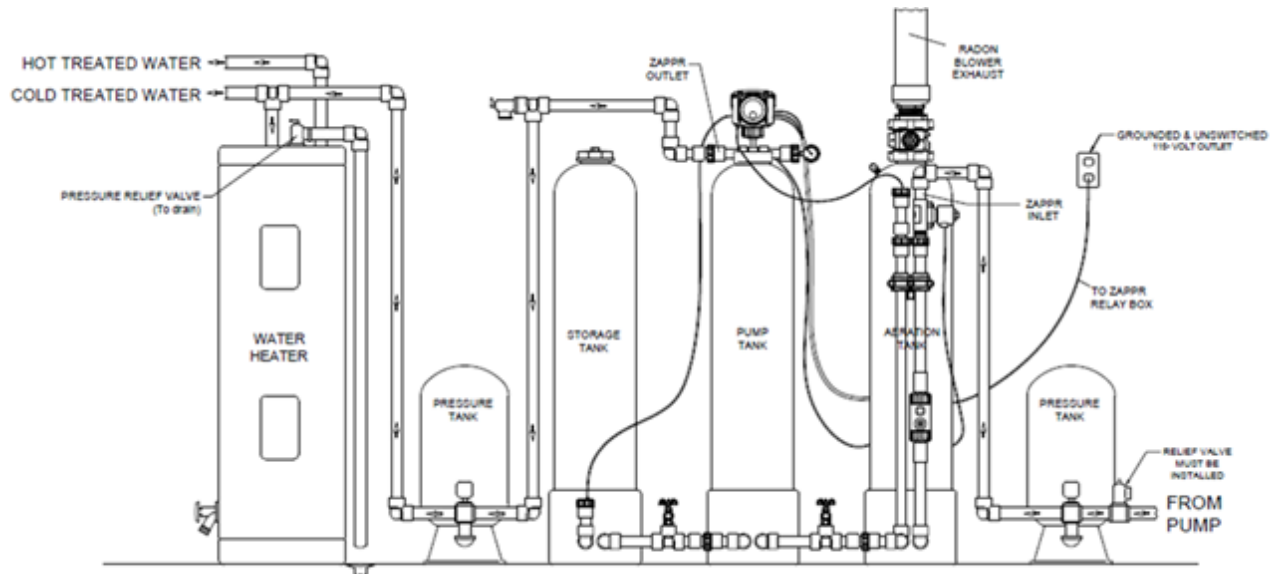


Fig. 5



Fig. 6

Typical Installation



This is a standard drawing of how the ZAPPR installation may look. If your water requires pretreatment for Iron or other contaminants it would typically be sized for the injector flow rate based on well production. This closed well system is what provides water for the ZAPPR, Radon Removal System. A pressure tank, preferably a 32 gallon tank with around a 9 gallon draw down, will need to be installed after the ZAPPR to act as the expansion device for the repressurization pump supplied with the Unit.

NOTE: Your installation may vary. Follow all local plumbing codes.

(Box D) The Blower will need to be mounted onto the Blower Bracket, with the flow going up, using the four 8/32x1/2" screws supplied. The Blower piping will then need to be installed into the top of the blower, this is a press fit, and the other end connected to the upper manifold. The filter is then installed onto the bottom of the blower using the supplied clamp. (See Fig 7, Fig 8, Fig 9)



Fig. 7



Fig. 8



Fig. 9

(Box E) The Pump Assembly is shipped assembled for quick installation. Depending on the ceiling height, you may have to tip the Pump Tank forward slightly to install the Pump. The gauge and the 1"npt discharge fitting can be swapped for ease of installation. Once the pump assembly has been installed, gently snug the nuts on the well seal to tighten the rubber gasket into the top of the Pump Tank (See Fig 10, Fig 11)



Fig. 10



Fig. 11

(Box F) the Electronics will need to be mounted next. The relay box can be hung on the supplied bracket located towards the bottom of the blower mounting pipe assembly. The Pump Controller then gets mounted onto the top of the Pump Assembly using the quick connect union. (See Fig 12, Fig 13).



Fig. 12



Fig. 13

Once the Electronics have been mounted, it's time to connect the cables. There are three 120v cords that will need to be plugged into the bottom of the relay box. The Pump and the Solenoid both plug into the marked locations on the bottom of the relay box. The blower cord will be plugged into the bottom of the blower speed controller. (Fig 14).

IMPORTANT, once the system is powered up and functioning the Blower Speed Control will need to be adjusted to 45-Volts.

The smaller control cables should then be connected to the Pump Controller housing on top of the pump tank. The Level Transducer, make sure that the transducer is facing upward, will plug into the left side of the Pump Controller (Fig 15, Fig 16). The Safety Float will plug into the bottom of the Pump controller (Fig 17, Fig 18). The two conductor and three conductor cables from the Relay Box will plug into their respective spots on the right side of the Pump Controller (Fig 19).





Now that the unit is fully assembled and internal connections have been made. The incoming water supply needs to be connected to the water inlet solenoid. This is a $\frac{3}{4}$ " FIPT connection (Fig 20). The outlet connection to the pressure tank and the house is a 1" MPT connection (Fig 21). On the top of the Aeration tank there is a 2" PVC spigot fitting to attach too for the Radon Ventilation system (supplied and installed by others) (Fig 22)



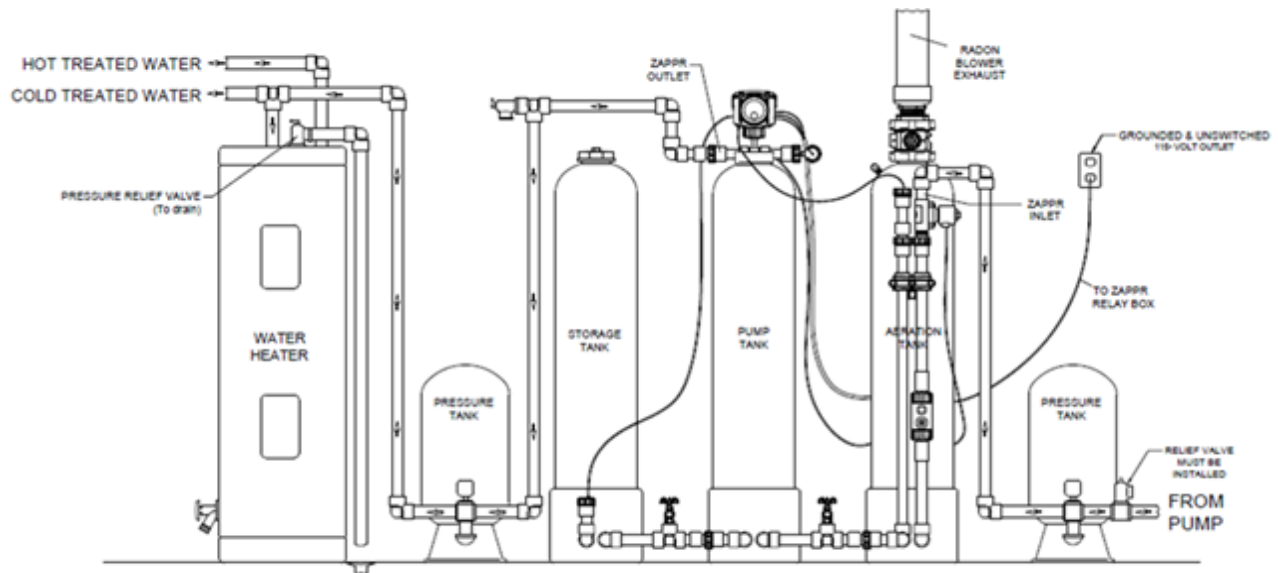
Fig. 20



Fig. 21



Fig. 22

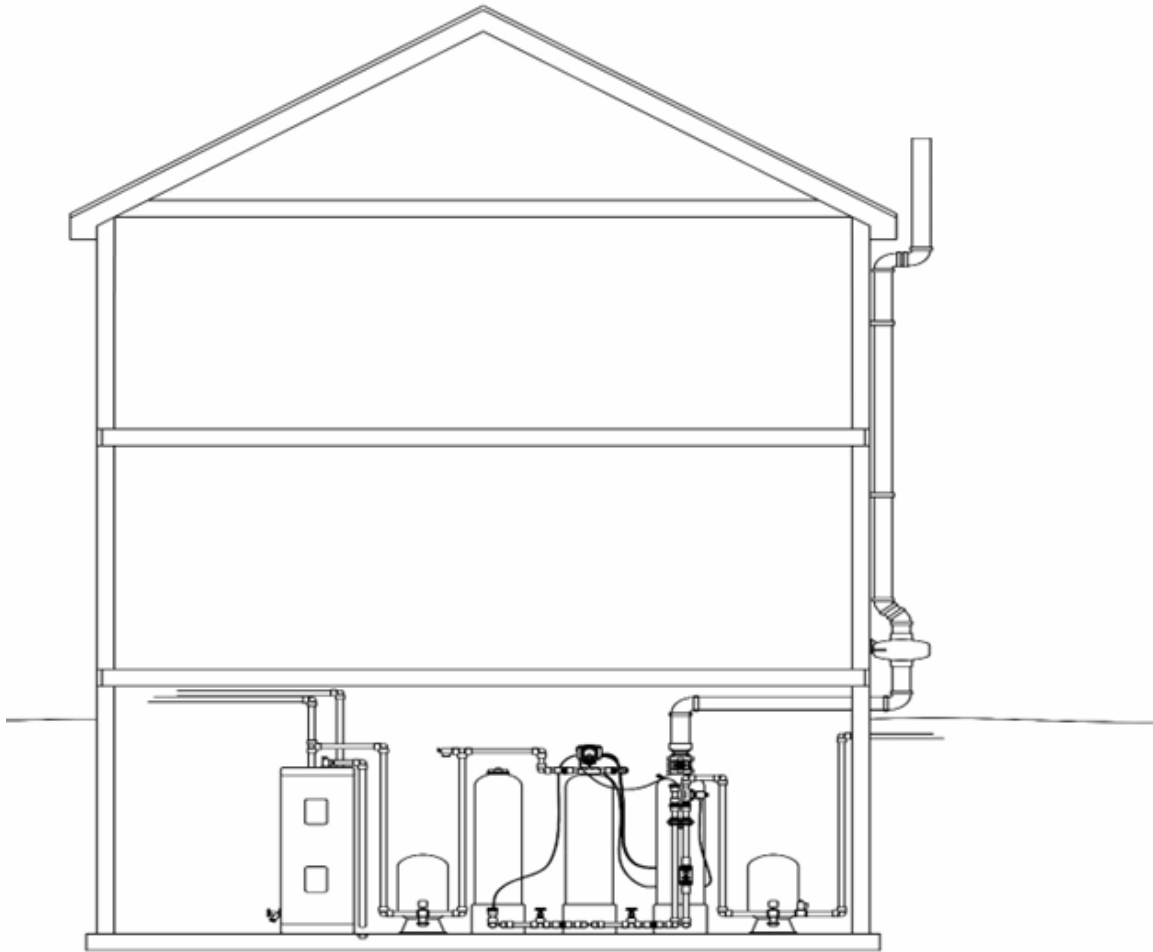


Optional Chemical Feed Tank pn# ST-ZAP

The Zappr Radon Removal System is set up from the factory to be used with a chemical feed system if the application calls for it. The injection tubing simply installs onto the nipple sticking out of the top of the Aeration Tank. Remove the push-fit cap and install the supplied elbow from the chemical feed system, ST-ZAP (Fig 23). Once the tubing is connected, plug the lead into the 3-pin port on the bottom right of the controller (Fig 24). The unit will recognize that the accessory pump is attached and activate it.



TYPICAL RADON VENTING DIAGRAM



Installation of the ZAPPR

As complex as the ZAPPR Radon Removal System seems, installation is simplified due to the Modular design of the tanks and controls. There are a few items that are sold separately depending on the installation of the unit.

- 1) Pressure Tank for the repressurization pump, preferably a 32 gallon tank with around a 9 gallon draw down.
- 2) A radon ventilation blower system, supplied by others according to local codes.
- 3) PVC Radon ventilation pipe and fittings depending on application and distance. At the original setting, the ZAPPR can vent a total of 30ft with 3" pipe, the system can easily be adjusted to vent a longer distance if need be. Consult the factory for more information.

The ZAPPR has defaulted to a 40/60 pump setting from the factory. This is standard on all units and cannot be altered.

Here are the Indicator Colors for the single LED on the Standard ZAPPR version:



Blinking Red - Overfill



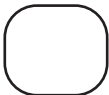
Blinking Purple - Run Dry



Blinking Yellow - Chlorine
Tank Empty



Green - Ready



White - Booster Pump
Running



Blue Blink on top of white /
green - Refilling

WATER TREATMENT EQUIPMENT

This warranty cannot be transferred - it is extended only to the original purchaser or first user of the product. By accepting and keeping this product, you agree to all of the warranty terms and limitations of liability described below.

Important Warning: Read carefully the Chandler Systems Water Treatment Systems Equipment Installation, Operating and Maintenance Instructions Manual to avoid serious personal injury and property HAZARDS and to ensure safe and proper care of this product.

Model Numbers Covered:
Water Softeners, Media Filters and Upflow Filters

*FOR AS LONG AS YOU OWN AND LIVE IN YOUR SINGLE FAMILY HOME, this warranty covers your water treatment equipment, if you are the first user of this Chandler Systems equipment and purchased it for single family home use - subject to all of the conditions, limitations and exclusions listed below. Purchasers who buy the Chandler Systems equipment for other purposes, and other component parts are subject to more limited warranties and you should read all of the terms included in this form to make sure you understand your warranty.

What is covered by this warranty?

Chandler Systems warrants that at the time of manufacture, the water treatment equipment shall be free from defects in material and workmanship as follows :

Product	Warranty
Residential Mineral Tank	10 Years
Proprietary Control Valves	7 Years
Other Softener / Filter Control Valves	5 Years
Brine Tank	5 Years
Residential Reverse Osmosis System	5 Years
Other Accessories and Parts	1 Year
Brine Tank Components	1 Year
REVERE Wireless Low Salt Alarm	90 Days

* This warranty does not include media and/or cartridge filter elements.

Additional Terms & Conditions

What Chandler Systems will do if you have a covered warranty claim Chandler Systems will at its option either make repairs to correct any defect in material or workmanship or supply and ship either new or used replacement parts or products. Chandler Systems will not accept any claims for labor or other costs.

Additional Exclusions and Limitations

This warranty is non-transferable and does not cover any failure or problem unless it was caused solely by a defect in material or workmanship. In addition, this warranty shall not apply :

- If the water treatment equipment is not correctly installed, operated, repaired and maintained as described in the Installation, Operating & Maintenance Instructions Manual provided with the product.
- Defects caused as a direct result of the incoming water quality
- If the tank is not the size indicated for the supply line size of the

installation, as described in the manual.

- To any failure or malfunction resulting from abuse (including freezing), improper or negligent; handling, shipping (by anyone)
- If the unit has not always been operated within the factory calibrated temperature limits, and at a water pressure not exceeding 125 psi other than CSI), storage, use, operation, accident; or alteration, lightning, flooding or other environmental conditions;
- To any failure or malfunction resulting from failure to keep the unit full of potable water, free to circulate at all times; and with the tank free of damaging water sediment or scale deposits;
- This warranty does not cover labor costs, shipping charges, service charges, delivery expenses, property damage, administrative fees or any costs incurred by the purchaser in removing or reinstalling the water treatment equipment.
- The warranty does not cover any claims submitted to Chandler Systems more than 30 days after expiration of the applicable warranty, and does not apply unless prompt notice of any claim is given to an authorized Chandler Systems Dealer or to Chandler Systems or a designated contractor is provided access to the installation and to the water treatment equipment.

THESE WARRANTIES ARE GIVEN IN LIEU OF ALL OTHER EXPRESS WARRANTIES. NO Chandler Systems REPRESENTATIVE OR ANY OTHER PARTY IS AUTHORIZED TO MAKE ANY WARRANTY OTHER THAN THOSE EXPRESSLY CONTAINED IN THIS WARRANTY AGREEMENT.

Additional Warranty Limitations

ANY IMPLIED WARRANTIES THE PURCHASER MAY HAVE, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE APPLICABLE TIME PERIODS SPECIFIED ABOVE. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

Limitations of Remedies

The remedies contained in this warranty are the purchaser's exclusive remedies. In no circumstances will Chandler Systems or the seller of the product be liable for more than, and purchaser-user's remedies shall not exceed, the price paid for the product. In no case shall Chandler Systems or seller be liable for any special, incidental, contingent or consequential damages. Special, incidental, contingent and consequential damages for which Chandler Systems is not liable include, but are not limited to, inconvenience, loss or damage to property, consequential mold damage, loss of profits, loss of savings or revenue, loss of use of the products or any associated equipment, facilities, buildings or services, downtime, and the claims of third parties including customers. Some states do not allow the exclusion or the limitation of incidental or consequential damages, so the above limitations or exclusion may not apply to you.

What to do if you have a problem covered by this warranty

Any warranty coverage must be authorized by Chandler Systems. Contact the person from whom you purchased the product, who must receive authorization from a Chandler Systems Dealer.

If your product is new and not used and you wish to return it, contact your Chandler Systems Dealer.

