

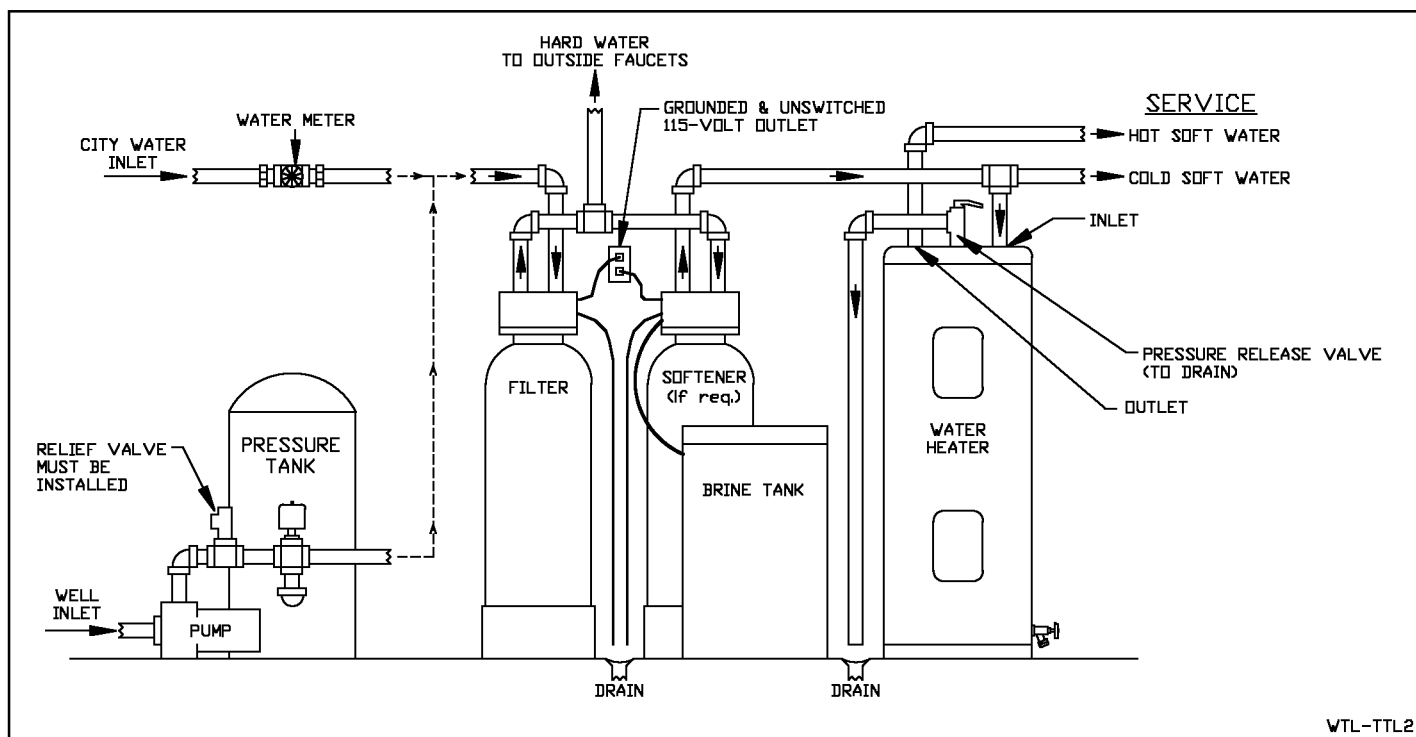
The following information is not intended to replace attending technical training programs or reading of installation instructions. It should be viewed as a general discussion about the product, its application, limitations and key factors to remember before purchase.

PURPOSE and CAPABILITIES: Standard whole house (point-of-entry) water filters can be used to solve many different water problems for the home, business or farm. All work on the same principle of downflow treatment. Filtration media are granular in design so that the granules nest tightly together to provide for excellent compaction and filtration. After a period of time, they simply backwash (upwardly through the media to drain). The differences are the size of tank and media selection. See the Filter Media Selection Guide for the various media and their applications. Residential filter tanks are available in 9, 10, 13, 14 and 16 inch diameters. All must have either a "D" gravel or Garnet Sand underbed to insure a proper distribution system for both service and backwash modes.

Various medias are available for handling problems such as Turbidity (sediment), Iron, Manganese, Hydrogen Sulfide, low pH, Taste, Odor, Color, Chlorine and Organics reduction. All but the Manganese Greensand units operate without the use of chemicals. They simply backwash, rinse then return to service position.

A specialized filter is the Upflow System. It has no control valve, instead, a simple "INLET" / "OUTLET" manifold. It works exactly the opposite of the standard "downflow" filters. Water enters the unit first running down the distributor tube then UP through the media. This means that it is not designed to handle sediment! Since the flow is upward, the granules do not compact to provide the desired straining effect needed for sediment removal. The only media that you would ever use in Upflow filters are Neutralizer and Activated Carbon. Again, refer to the Filter Media Selection Guide for more information on media selection. Always check with CSI before attempting anything other than standard applications!

LIMITATIONS: An automatic downflow filter must have sufficient water flow rate supplied to it for proper backwashing to take place. It is, therefore, critical to test the output capacity of the pumping or water supply system before making a selection. It is often the case that filters require more water for backwash than they can offer in treated, service flow. Another limitation is that of service flow. If you attempt to get too much water through a filter, one of two things will happen. First, the water may not be completely treated leaving stains, odors, etc. in the finished service water. Secondly, there may be tremendous pressure drop across the filter bed if too much water is forced through the filter. Proper sizing is critical! Check the individual specifications sheets for backwash requirements and service flows.



HOW TO DETERMINE PUMP CAPACITY

1. Open any faucet and run until pump turns "on."
2. Close faucet and let pump fill pressure tank and turn "off."
3. Open any faucet and collect all water discharged until pump turns "on."
4. When pump turns "on," immediately close faucet and start timing pump cycle.
5. When pump turns "off," record cycle time to refill pressure tank (in "seconds").
6. Measure total number of "gallons" collected in step #3.
7. Divide the number of "gallons" collected in step #3 by the number of "seconds" in step #5.
8. Multiply the answer derived in step #7 by "60."
9. The answer in step #8 is the average pumping capacity of the system.

(Note: Make certain no other water is being used during this test)

Example

$$\begin{aligned} \text{Number of "gallons" collected during draw-down (step \#3)} &= \underline{9} \\ \text{Number of "seconds" in pump cycle to refill tank (step \#5)} &= \underline{72} \\ \text{GPM} &= (\text{gallons collected} / \text{seconds in cycle}) \times 60 \\ \text{GPM} &= (9 / 72) \times 60 \\ \text{GPM} &= .125 \times 60 \\ \text{GPM} &= \underline{7.5} \end{aligned}$$

(Simply select a filter requiring 7.5 gpm, or less, backwash)

WATER TESTING: Always test the raw water supply for at least the following: 1) Hardness; 2) Iron; 3) Manganese; 4) pH; 5) Tannins; 6) Hydrogen Sulfide {if rotten egg odor is present}; and 7) Chlorine {if on treated water supply}. Consult specification sheet to check for limitations.

INSTALLATION: Filters should be installed on a level surface; on cold water line only; typically after outside sillcock lines; before softeners; and, before the piping splits to the water heater. Above is a diagram of a typical installation. Avoid installations in direct sunlight and where freezing may occur. Locate the unit near a 115V , unswitched outlet (except manual units that require no electricity) and near a drain. Where the drain line must be elevated above the system or runs for more than 20 feet, increase the drain line size to 3/4 ". NEVER decrease the size of the drain line! It is advisable (and code in most areas) that there be at least a 4" air gap between the drain and drain line. Check all local codes before installing equipment.

PROGRAMMING THE SYSTEM: After all plumbing has been completed according to the installation instructions, find the section in the instructions regarding programming the control valve. It is quite simple but you must first consult your water test results. You have determined the pH, amount of iron, manganese, etc. It's typical to set filters to backwash from every 3 to 6 days. It is always advisable to both disinfect the unit and test the system cycles. Consult the installation instruction manual.

REGULAR MAINTENANCE: All that's necessary for normal filter maintenance is regular backwashing. If iron bacteria has entered the system, you will need to remove the control valve and add 5.25% sodium hypochlorite (standard household bleach), leave it sit for at least 30 minutes then backwash. Should the system become terribly fouled, it may be necessary to empty the filter bed washing the granules in a stronger solution. If this doesn't sufficiently clean the medium, a replacement bed will be necessary. You'll need to replace and/ or replenish media according to the **Filter Media Selection Guide**.