

## Iron Curtain Troubleshooting Guide

### Symptom: Air Spitting from Fixtures

Iron Curtains use natural oxygen to aerate water under pressure to oxidize iron, hydrogen sulfide and manganese. Air will stay in solution under pressure until there is enough of a pressure gradient to allow the gas to escape. Filling a glass with water at a home with an Iron Curtain demonstrates this. The air rises to the top of the glass & dissipates because atmospheric pressure is much less than the water pressure. The same phenomenon occurs in the water distribution system when excessive pressure loss provides a gradient, allowing air to escape from the water. Air rises out of solution and can migrate throughout plumbing, spitting when a faucet is turned on. Temperature and total dissolved minerals can also influence the solubility of air in water.

When air spitting occurs, first evaluate the water supply. Pressure differential occurs when the demand is greater than a well pump can provide water. Well pumps are normally set to start and stop at a 20 psi difference, (usually 40-60 psi) Look at the pressure gauge by the pressure switch when the pump is running. If pump is capable of keeping up with demand, the pressure should not fall below the start pressure. If pressure does fall below the start pressure, an excessive pressure gradient can cause air separation. Have a well professional evaluate water supply system.

Determine if each water treatment system is sized properly for peak demand in the application. If excessive restriction by a filter or by supply piping occurs, this sets up the environment for the air to come out of solution.

Ideally, install pressure gauges at the outlet of the last piece of water treatment equipment, the hot water heater and at the furthest faucet in distribution, (see diagram 1, each pressure gauge numbered) If unable to install gauge in piping, place pressure gauge on outlet of closest faucet and/or hot water heater drain and furthest faucet

A. Open bathtub faucet completely and determine flow by reading a softener meter or use 5-gallon bucket and a stopwatch. \_\_\_\_\_gpm

B. Check pressure on each gauge

1. \_\_\_\_\_psi (these gauges are notorious for sticking, tap the face of gauge a few times prior to reading)

2. \_\_\_\_\_psi

3. \_\_\_\_\_psi

4. \_\_\_\_\_psi

C. Open other faucets to mimic peak demand and record pressure readings.

\_\_\_\_\_gpm

1. \_\_\_\_\_psi

2. \_\_\_\_\_psi

3. \_\_\_\_\_psi

4. \_\_\_\_\_psi

If pressure drop from the well pump shut-off setting (the 60 psi in a 40-60 psi setting) at the furthest faucet is greater than 65%, air separation may occur within plumbing system.

Repeat these pressure readings with each piece of water treatment equipment on bypass to determine the cause of the excessive pressure drop.

Iron Curtain filter on bypass

1. \_\_\_\_\_psi
2. \_\_\_\_\_psi
3. \_\_\_\_\_psi
4. \_\_\_\_\_psi

If iron bacteria are present in water supply, they commonly clog inlet diffuser on aeration tank.  
Clean and consider nuisance bacteria control system such as chlorination.

May need to upsize system to provide less pressure drop

Filter tank restricted due to plugged bed, consider more frequent or longer backwashes

Softener on bypass

1. \_\_\_\_\_psi
2. \_\_\_\_\_psi
3. \_\_\_\_\_psi
4. \_\_\_\_\_psi

Plugged resin bed, clean or replace resin

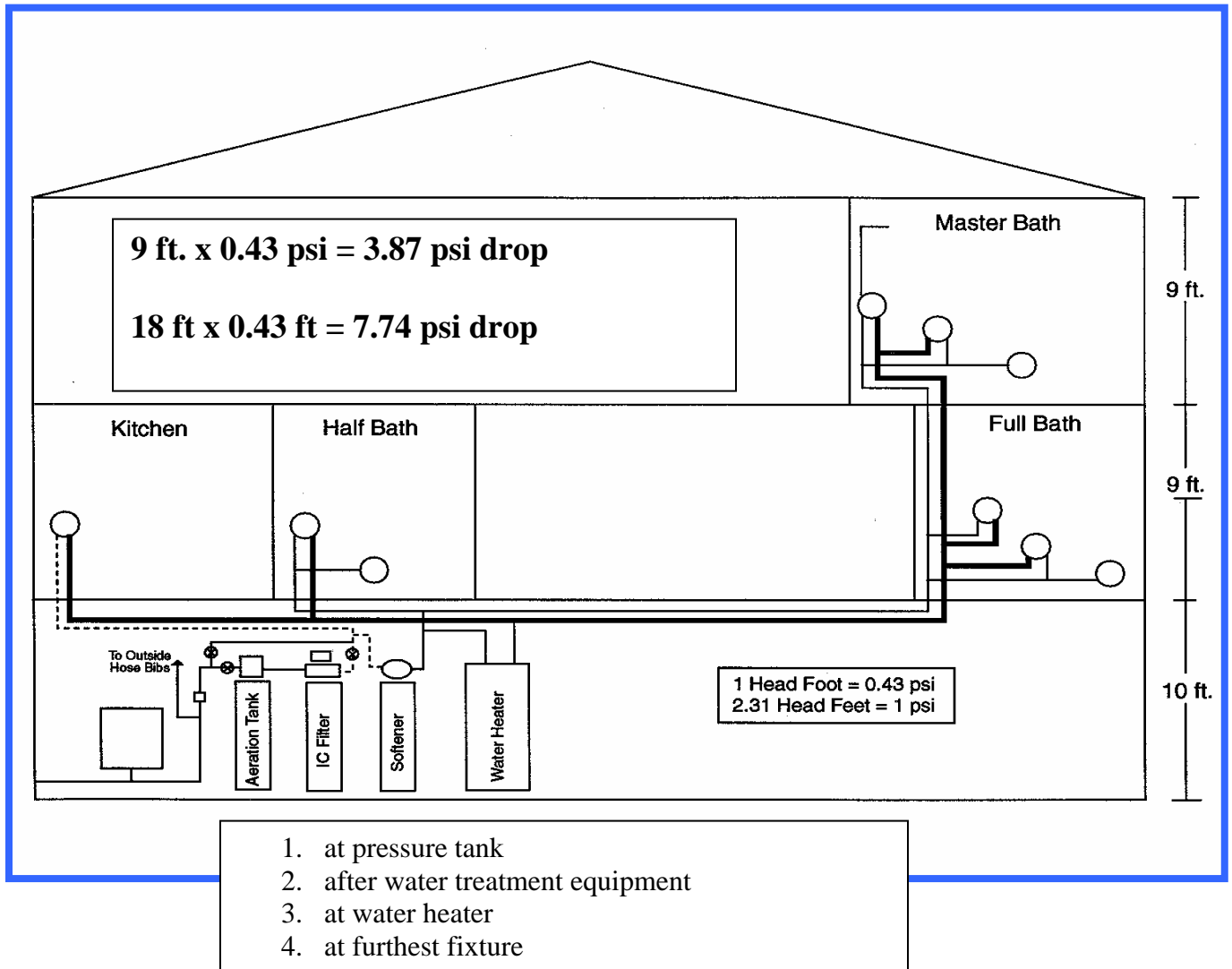
May need to upsize system to provide less pressure drop

All equipment on bypass

1. \_\_\_\_\_psi
2. \_\_\_\_\_psi
3. \_\_\_\_\_psi
4. \_\_\_\_\_psi

Piping is plugged, clean or replace pipe

May need to upsize system to provide less pressure drop



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