



J-Series Jet Sparger Installation Recommendations:

- **Steam Pressure** – Steam supply pressure should be stable. If steam supply varies greater than +/- 10% of the design pressure, a steam pressure regulating valve should be installed to stabilize steam pressure. A loss of steam pressure or spikes of steam pressure can cause unstable operation.
- **Fluid Pressure** – The liquid pressure cannot exceed 80% of the steam supply and should be maintained at 60-70% or less of the steam pressure to insure stable operation.
- The Jet Sparger has an integral pneumatic actuator and modulating steam plug to control steam flow through the Jet Diffuser. No Steam pressure reducing valve is required to control steam flow to PSX Jet Sparger.
- Tank agitation is recommended to mix & circulate heat in tank and avoid hot spots.
- PSX Jet Sparger should be placed in an area of the tank where it will see flow past the Jet Sparger.
- Temperature probe should be placed where it will see well established flow.
- Steam shut-off valve with lock-out should be considered on steam line.
- Please refer to the ProSonix heater Owner's Manual for additional details.

Steam Strainer Recommended Sizing Chart

Heater Steam Inlet	Max. Opening (in.)	Heater Steam Inlet	Max. Opening (in.)
1.0"	0.020	4.0"	0.030
1.5"	0.020	6.0"	0.050
2.0"	0.020	8.0"	0.063
3.0"	0.030	10.0"	0.125



Recommended Installation Components:

Temperature Probe

The temperature probe is a vital element in successfully controlling the PSX heater. The PSX heater will typically be among the fastest responding elements in the control system. As such, it is vital that the temperature response from the probe be as fast as possible. The following recommendations will apply to most installations:

1. Place the probe in a location where it will see well established flow
2. Place the probe no more than 20 pipe diameters from the PSX heater.
3. Use reduced Tip thermo-wells or bare sensors if the system will allow them
4. RTD's or Thermocouples may be used.
5. Temperature Transmitters, if used, should be designed to fail at high temperature output to prevent the heater from overheating the process upon failure.

Steam Traps & Blow Down

Steam will cool and condense in the pipe during normal operation. A well insulated pipe will minimize this effect. The condensed steam travels at high velocity and may cause damage to the PSX Heater or stem piping. Condensate may be removed using a device known as a steam trap. A valve may also be used to purge water from a low spot in the pipe.

1. A steam trap and drop leg with blow down valve should be installed on the steam inlet piping, upstream of the check valve.
2. Steam piping should be blown down after any extended shutdown to insure all condensate has been purged from the steam line. Install a trap in the steam supply line close to PSX Heater to remove any condensate before it can cause noise and vibration in PSX Heater.

Steam Strainer

The PSX Inline heater utilizes a Jet Diffuser for smooth operation, so a strainer should be installed on the steam line in order to insure the diffuser does not plug. In general, the steam strainer should have openings no larger than the amount shown in the above table unless allowed by ProSonix technical personnel. The total capacity of the strainer should be large enough to ensure that the minimum steam pressure to the heater meets the steam requirements for the stated steam pressure at which the PSX heater was sized.

Steam Isolation Valve

Because the PSX heater is not a positive shutoff valve, a full port tight shutoff isolation (on/off) valve should be used to provide complete shutoff of steam during extended down periods or for PSX heater maintenance. A ball or butterfly valve, sized for low pressure drop is recommended. The isolation valves should be closed to isolate the supply line from the PSX Heater when the PSX Heater is not in operation for an extended period.

Check Valve

A check valve should be placed approximately 5 pipe diameters from PSX Heater steam inlet. The check valve should be sized appropriately for minimal pressure drop into the heater. During times of PSX Heater shutdown, if water pressure is maintained in PSX Heater, the water will flood the steam piping if no check valve is present. Upon opening the steam block valve when restarting the system, steam hammer may occur in the inlet piping.

Note: *The above referenced components are not included with the PSX Heater unless otherwise stated in the proposal. Please refer to the ProSonix O&M manual for complete guidelines for use & install.*