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# Steam System Best Practices

## Document No. 5

### Steam Trap Installation

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#### *Steam Trap Installation “Best Practices”*

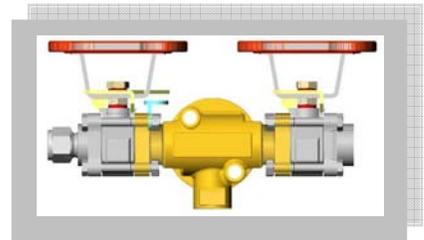
A steam trap has two major functions, to remove condensate as quickly as it is formed and to prevent steam discharge. There are certain installation faults that can occur which make it impossible or may severely limit the steam traps abilities to perform these functions efficiently.

A high percentage of steam trap failures are due to installation.

What can be done?

We have outlined fourteen (14) Best Practices for steam trap installation. Steam traps today, should be providing a six (6) year (minimum) maintenance free operation and with proper installation this goal can be easily obtainable.

- 1.) The most important rule for installation is one of *Mother Nature’s laws - GRAVITY*. Condensate flows from the process to the steam trap by gravity, not by pressure or velocities.
- 2.) Root cause analysis must be conducted on every steam trap that fails. If a steam trap fails and is replaced with the same type and design with out a root cause investigation; the new steam trap will also fail.
- 3.) Piping from the process to the steam trap should always be equal or larger then the process outlet connection. Example: A steam unit heater with a 1” condensate outlet would have a 1” or large tubing/piping from the unit heater to a same connection size on the steam trap. Never reduce diameter of the tubing/piping before the steam trap or reduce connection size of the steam trap.



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- 4.) Expand the tube/pipe diameter after the discharge connection of the steam trap. Example: 1" (connection) steam trap discharge tubing/piping would be increased to 1.5". This will allow the flash steam to expand and not cause back pressure on the steam trap.
  - 5.) Steam traps with 1" or smaller connections should use tubing with tube connectors to eliminate leak points. This will eliminate leak points in the system due to expansion, contraction, and carbonic acid deaeration.
  - 6.) Steam traps with a connection size of 1" or smaller should be the universal mount design.
  - 7.) Install a strainer ahead of the steam trap or purchase a steam trap with an integral strainer. The use of a strainer will eliminate or reduce steam trap premature failures due to corrosion products.
  - 8.) When installing an external or internal strainer; always install a blow valve on the strainer. This will allow the strainer to be blown down during operation and more important will allow the steam trap cavity to be safely depressurized during servicing.
  - 9.) Always install the steam trap in a location that can be accessible by plant personnel.
  - 10.) Install a visual indication of the steam trap performance on all process applications. The visual indication can be a sight glass or test valve.
  - 11.) Locate the steam trap below the lowest condensate discharge point of the equipment.
  - 12.) Never install a rise in the pipe ahead of a steam trap.
  - 13.) Check valves should be installed after the steam traps in most applications.
  - 14.) Have installation standards on all applications.

