Steam System Best Practice

Document No. 1

Condensate Removal from Steam Lines

Condensate Removal from Steam Lines

All steam lines need to have adequate condensate removal from the steam line on a continuous bases. No matter how well the steam line is insulated; the heat energy will be transferred from steam into the atmosphere and the steam in the steam line will change state (latent energy is released); thus condensate will form in the steam line. The condensate volume will depend on the steam line insulation, steam pressure, and steam line length. The condensate will flow with steam at the bottom on the steam line in a swaying motion (not a straight line); thus the steam line "drip pocket must be large" (drip pocket is the name of the branch line extending down).

Where to install condensate removal drip pockets on the steam lines.

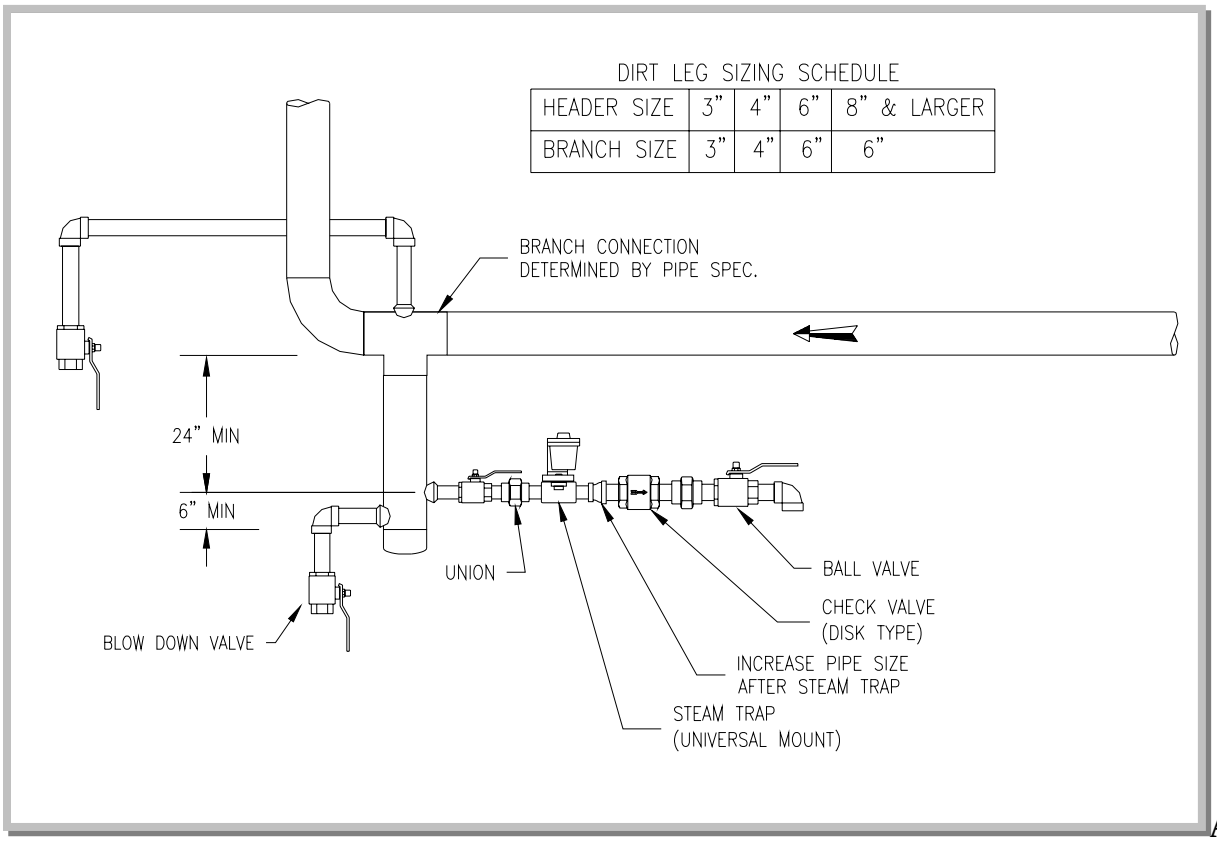
- All low points
- Any change of direction
- All valves that could be in the off position (control or isolation)
- Every 200 feet of straight steam piping
- Drip pockets must be properly sized
- Drip pockets must be properly installed

Manual blow down lines should be provided at the bottom of the steam line drip pocket for proper start-up procedures. Please see print.

Key Factors

Drip pocket (vertical branch line – see print below) size. A drip pocket is a properly sized vertical line which will remove "drips" of condensate that will form in the steam line due to thermal losses; even if the line is properly insulated.

- 2" steam line = 2" drip pocket
- 3" steam line = 3" drip pocket
- 4" steam line = 4" drip pocket
- 6" steam line = 6" drip pocket
- 8" steam line or above = one pipe diameter smaller than the steam line for the drip pocket
- At least 18" or more for the pocket length
- 3" or more off the bottom of the connection for the drain line to the steam traps
- Blow off valve at the bottom of the drip pocket



Air Venting

All steam lines must have air vent devices to remove air during start-up. The air venting devices can be manual or automatic. If the system has no air venting capability, then all the air that is in the steam line at start-up will flow into the process equipment. Please see the above print.

Best Practices

1. Proper condensate removal on all steam lines
2. Select reliable steam traps for the steam drip pockets.
3. Use universal mount steam traps for this application
4. Air vents on all steam line lines (manual or automatic)
5. All steam traps should have an internal strainer or external strainer
6. Use ball valves with a Class Four (4) shutoff.