

# 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 the steam at the bottom of 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

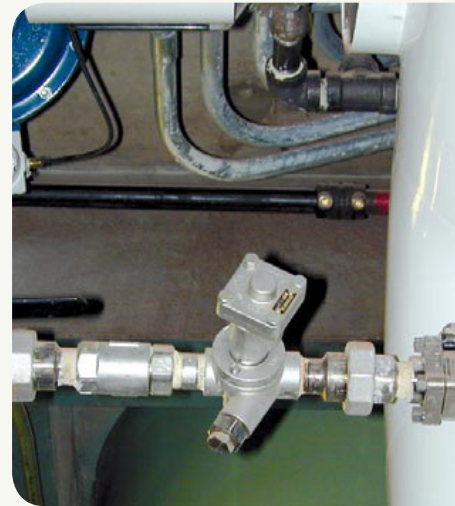
- All low points
- Any change of direction
- All valves that could be in the off position (control or isolation)
- Every 500 feet of straight steam piping
- Drip pockets must be properly sized
- Drip pockets must be properly installed

Manual blow down line should be provided at the bottom of the steam line drip pocket for proper start-up procedures. Please see figure 1 on page two.

## Key Factors

Drip pocket 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.

- 2in. steam line = 2in. drip pocket
- 3in. steam line = 3in. drip pocket
- 4in. steam line = 4in. drip pocket
- 6in. steam line = 6in. drip pocket
- 8in. steam line or above = one pipe diameter smaller than the steam line for the drip pocket
- At least 12in. or more for the pocket length
- 3in. more off the bottom of the connection for the drain line to the steam traps
- Blow off valve should be 3 inches lower than the connection line to the steam trap. The blow off valve should be off the side of the drip pocket (per figure 1).



# STEAM SYSTEMS BEST PRACTICES

Swagelok Energy Advisors, Inc.

Document No. 1

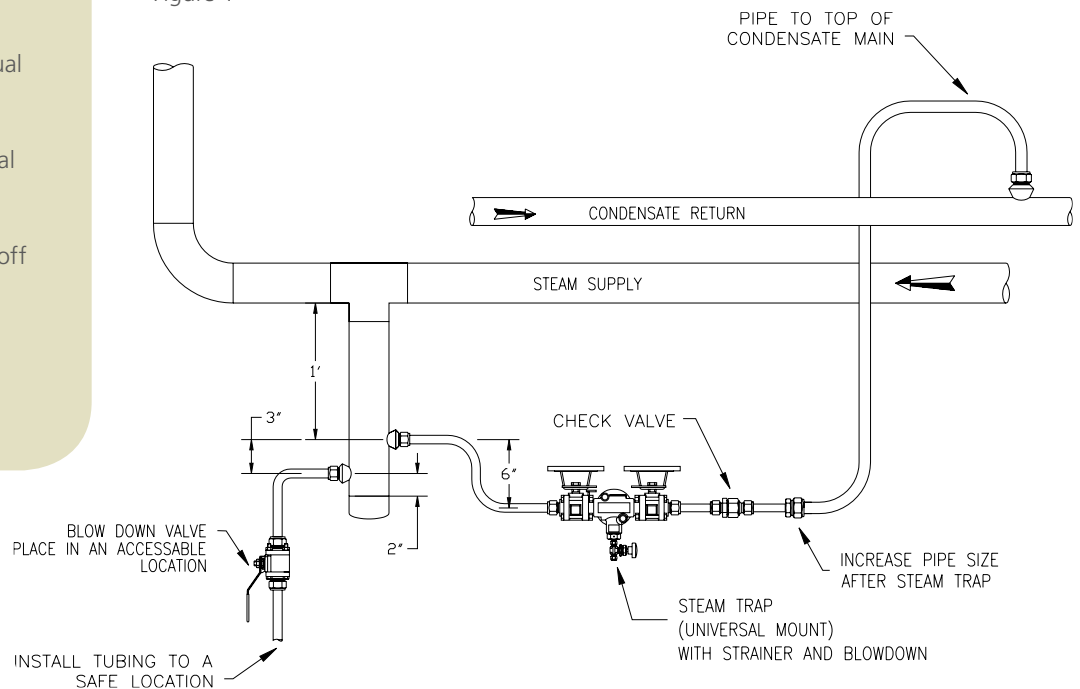
## Best Practices

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 shutoff or higher for isolation.
7. Tubing for installation will eliminate leak points.

## Air Venting

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

Figure 1



## Dirt Leg sizing Schedule

Header size	3in.	4in.	6in.	8in. & Larger
Branch Size	3in.	4in.	6in.	One pipe diameter less than the header pipe size.

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