

Recommended Specifications for Attemperator

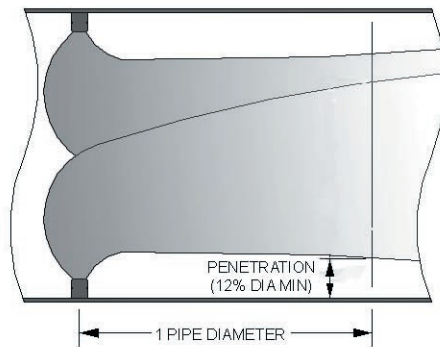


Reference:

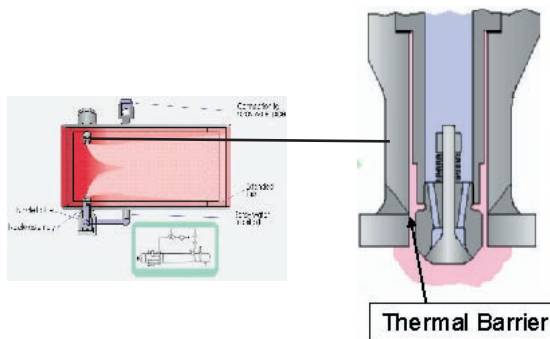
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The following recommendations apply to Inter-stage and final-stage Attemperators for HP and Reheat, where the differential temperature between inlet steam and injected water exceeds 250°C (450°F).

1. Spring loaded variable area nozzles required.
2. The minimum clearance of the spray boundary from the pipe wall shall be 12% of the pipe diameter, measured at a distance of one pipe diameter downstream of the spray injection point.



3. Circumferentially, wall mounted nozzles are required.
4. Spray water valve and attemperator must be separate components when the ΔT between injected water and inlet steam exceeds 450°F (250°C).
5. A liner is required.
6. Nozzles protrusion into steam shall be minimized.
7. Attemperator should incorporate a thermal barrier.



8. The maximum water droplet size exiting from the attemperator shall be 125 microns for all operating conditions. Supplier shall calculate the water droplet size for all operating conditions. The basis and results shall be shown by manual or computer calculations.
 9. Spring loaded nozzles shall be capable of opening at least 0.08 inch (2 mm).
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10. Moving parts (spray nozzles, water valve trim components) shall be easily removable without the need to cut the steam pipe.
11. Water valve must remain closed when there is no steam pressure in pipe.
12. For the range of operating conditions, flashing and/or cavitation shall not be permitted.
13. The water control valve trim shall provide a sufficient number of discrete pressure drop stages to maintain the trim exit velocity less than 100 ft/s (30 m/s).
14. The spraywater flow control element shall have a Class V shut-off in accordance with FCI 70-2. To ensure tight shut-off, the load on the seat-circumference, in the closed valve position, shall be 8.9 kg/mm (500 lbf/in), minimum.
15. To optimize performance, the final steady state steam temperature shall be within +3°C (+5.4°F) of the set point.