

Modify Section 23 21 13, subsection .03 Hydronic Specialties, article A. "Strainers" per the following (deletions are shown struck through and additions are double underlined). Remainder of section is unchanged.

23 21 13 Hydronic Piping

.03 Hydronic Specialties

~~A. Strainers~~

- ~~1. Strainers ahead of circulating pumps should be large mesh (at least 3/16") and stainless steel construction. All strainers shall be valved and capped for blowdown.~~

A. Y-TYPE PIPELINE STRAINERS

1. General: Locate strainers to protect components from water born debris. Install in entering line ahead of the following equipment, and elsewhere as indicated, if integral strainer is not included in equipment:
- a. Chillers (as recommended by chiller manufacturer)
 - b. Heat Transfer Equipment
 - c. Pressure reducing or regulating valves.
 - d. Pumps
 - 1) Exceptions:
 - a) If suction diffuser with integral strainer is used, then omit separate y-strainer.
 - b) Do not use strainers that can increase pressure drop and/or become clogged on pumps serving open tower condenser water loops. Use tangential solids separator systems (Lakos or similar).
 - e. Temperature control valves.
2. Product Requirements: Provide strainers full line size of connecting piping, with ends matching piping system materials. Select strainers for respective working pressure of piping system. Provide type 304 stainless steel screens, with perforations (or mesh for sizes under 2") per schedule below.

<u>SERVICE</u>	<u>PIPE SIZE</u>	<u>Coarse Straining (typically at central plant equipment)</u>	<u>Medium Straining (typically at terminal equipment, i.e. with temperature or pressure control valves)</u>
<u>Water</u>	<u>¼ to 2"</u>	<u>1/16" (0.057)</u>	<u>1/32" (0.033) (20 mesh)</u>
	<u>2 ½ to 4"</u>	<u>1/8"</u>	<u>1/16" (0.057)</u>
	<u>5" and up</u>	<u>3/16"</u>	<u>1/8"</u>
<u>Air or Gas</u>	<u>¼ to 2"</u>	<u>1/32" (0.033) (20 mesh)</u>	<u>0.009 (60 mesh)</u>
	<u>2 ½ to 6"</u>	<u>1/16" (0.057)</u>	<u>1/32" (0.033)</u>
	<u>8" and up</u>	<u>1/8"</u>	<u>1/10"</u>

- a. Threaded Ends, 2" and Smaller: Cast-iron or bronze body, screwed screen retainer with centered blowdown fitted with drain plug. Press-joint pipe fittings are an acceptable option.
- b. Flanged Ends, 2½" and Larger: Cast-iron or steel body, bolted screen retainer with off-centered blowdown fitted with hose end drain valve.
- c. Grooved Ends, 2½" and Larger: Wye pattern, steel, ductile-iron or malleable-iron body and access end cap with off-center blowdown fitted with hose end drain valve, access coupling with EDPM gasket.
- d. Acceptable Manufacturers: Subject to compliance with requirements, provide Y-type strainers of one of the following:
 - 1) Apollo; Conbraco
 - 2) Armstrong International.
 - 3) Hoffman Specialty ITT; Fluid Handling Div.
 - 4) Metraflex Co.
 - 5) Spirax Sarco.
 - 6) Watts Regulator Co.

3. Installation: Install Y-type strainers full size of pipeline, in accordance with manufacturer's installation instructions.

- a. Y-type strainers in horizontal steam or gas lines shall be installed so that the pocket is in the horizontal plane. This stops water collecting in the pocket, helping to prevent water droplets being carried over, which can cause erosion and affect heat transfer processes.
- b. On liquid systems the pocket should point vertically downwards. This ensures that the removed debris is not drawn back into the upstream pipework during low flow conditions.
- c. Although it is advisable to install strainers in horizontal lines, this is not always possible, and they can be installed in vertical pipelines if the flow is downwards, in which case the debris is naturally directed into the pocket. Installation is prohibited with upward flow, as the strainer would have to be installed with the opening of the pocket pointing downwards and the debris would fall back down the pipe.
- d. Install pipe nipple and hose end drain valve in strainer blowdown connection, full size of connection, except for strainers 2" and smaller installed ahead of control valves feeding individual terminals.
- e. Where indicated, provide drain line from shutoff valve to plumbing drain, full size of blowdown connection.
- f. Where strainers are installed in pipe branches serving multiple terminals rather than at each individual terminal, provide isolation valves on each side of the strainer to allow for routine blowdown service without draining the piping system.
- g. Be sure to remove any temporary fine mesh start up screens if used during initial cleaning and flushing of systems. After being removed, temporary start up screens shall be tagged and attached with small brass jack chain and s-hook to the outside of the strainer body for future re-use during future cleaning and flushing.

END of revision

Update Commentary:

Section was updated primarily for the following reasons:

- 1) *To define more complete strainer requirements, including specific screen size requirements for various services and pipe sizes.*