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Try a spring-loaded check valve for your next tight situation

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Every heating contractor moving into an empty boiler room, which is often the size of a miniature closet, has to mentally sketch out his piping system around the type of boiler and the heat distribution system he is going to install. One of the main criteria determining the piping configuration is the stupid little check valve.

First, let's look at the three most common types of check valves: the weighted plunger type, the flapper type swing check, and the spring loaded check valve.

The plunger-type check in an intermittent circulation system is designed to prevent gravity circulation from the heat source when the circulator is in the off mode.

The flapper-type swing check valve to allows water to flow only in one direction. It does not prevent gravity circulation. It's used mostly to prevent different circulator consumer circuits from interacting with each other it eliminates short circuiting problems. Depending on the system layout, water always tries to take the path of least resistance. A flapper-type swing check allows the circulator to move water only one way the way the system design demands it.

If, however, opposite forces of a second circulator are at times almost equal, pushing against the flow direction of the swing, annoying chattering of the valve will occur with the valve flapper being pushed back and forth rapidly by two opposing pump forces fighting each other.

Both the plunger type and the swing check have two drawbacks: They are both large and bulky and they can only be installed upright in a horizontal pipe.

For every flow check or spring check valve the heating contractor is going to need in the system, he has to provide a short horizontal pipe run. This almost always requires the addition of elbow fittings, adding labor, and using up valuable space.

One solution which I have found to be quite useful, is a spring check valve. This ingenious little spring check, which every plumber who installs well systems is familiar with, would make the heating contractors life a lot easier. It can be installed in any position. Horizontally, vertically, right side up, or upside down. It is super compact, a 1-inch valve is about 2-inches long. It costs about half as much as a swing check. It's non-ferrous and can be used for heating and plumbing. It functions as both a directional swing check and a gravity flow check and is

available in sizes from 3/8-inch to 3-inches. The spring check can be especially helpful in installations where space for piping is limited (which is not a rare occurrence).

The number of check valves needed in a particular system can vary. Constant circulation systems pretty much eliminate check valves to the point where you need only a spring check between the tank and boiler to prevent gravity circulation, and between the boiler and the mixing valve to eliminate shortcircuiting through the three or four-way valve. Check valves on the heat distribution side of the mixing valve are not needed because the pump never shuts off anyway and during a no-heat demand condition the mixing valve completely isolates the boiler from the radiation hydraulically.

Intermittent circulation systems with multiple zone circulators require a gravity check for each zone.

Spring checks have proven to be reliable and effective. Try using one on your next tight job. They may be just the solution you've been looking for.

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