

PM Glitch & Fix November 2011

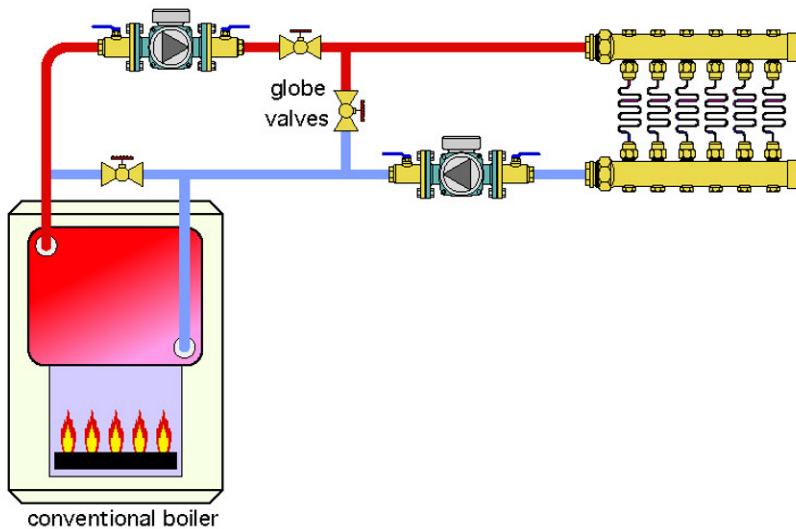
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Poor Man's Radiant

The Glitch

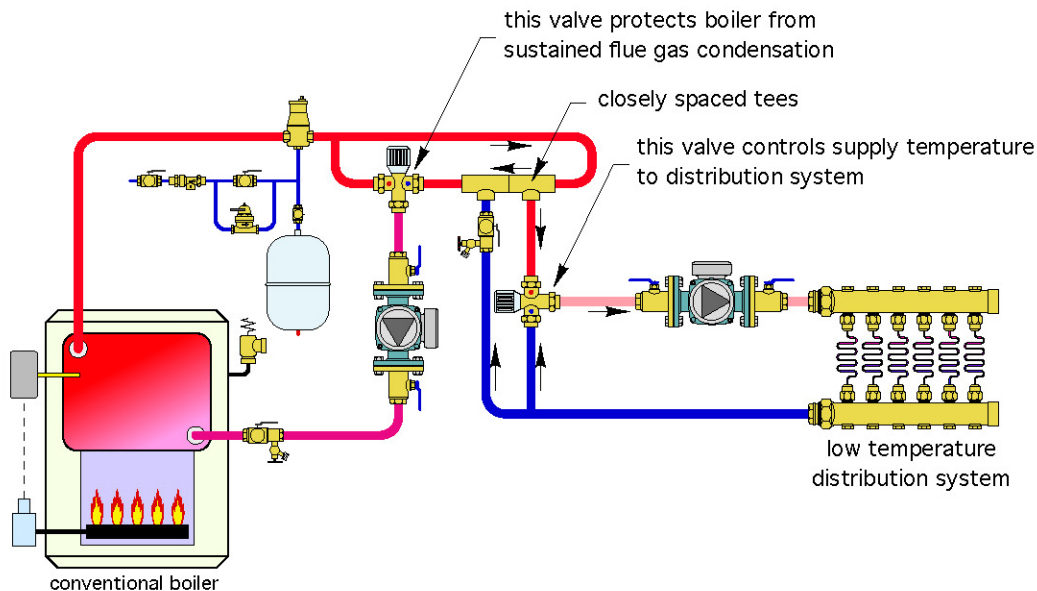
In an attempt to avoid purchasing what he considers “fancy valves,” an installer constructs the system shown below. He uses two globe valves to control the flow of hot and cool water to supply the radiant panel manifold. He installs a third globe valve to protect the boiler from low inlet water temperature.

Can you spot at least five incorrect or missing details on this schematic?



The Fix

Manually set (nonthermostatic or nonmotorized) valves will never yield stable water temperature control or properly protect a conventional boiler from sustained flue gas condensation.



The fix drawing shows one approach that *will* provide stable control of supply water temperature and boiler protection. It uses two three-way thermostatic mixing valves: One provides setpoint control of the water temperature supplied to the manifold. The other boosts boiler inlet temperature, when necessary, to avoid flue gas condensation.

Although this is a valid solution to mixing and boiler protection, it is likely not the least expensive. Given current hardware offerings, it would likely be possible to use a single three-way motorized mixing valve in place of the two three-way thermostatic valves. This is especially true in pipe sizes larger than 1-inch. Use of the motorized mixing valve would also allow for outdoor reset control of supply water temperature.

Other details missing in the original drawing include:

1. No expansion tank.
2. No make-up water subsystem.
3. No air separator.
4. No purging valves.

These have all been added in the fix drawing.