

Replacing A Steam Boiler - Successfully!

When an existing steam boiler fails and needs replacing, obviously a new one must be installed. And that's when the adventure begins. The first thing to do is find out why the old boiler failed:

- Was it an 80-year boiler on its last leg?
- Were the controls installed properly?
- Were the controls maintained according to the manufacturers' recommendations?
- Was the boiler bringing in bodacious amounts of fresh water?
- Is your customer accustomed to the nuances of a steam system or is he a new homeowner who doesn't know that steam boilers require "hands on" attention?

You need to find the answers to these questions before you install the new boiler so that the boiler failure won't happen again. (If it fails again, watch how quickly the homeowner's steam system becomes *your* steam system!)

Sizing the Replacement Boiler

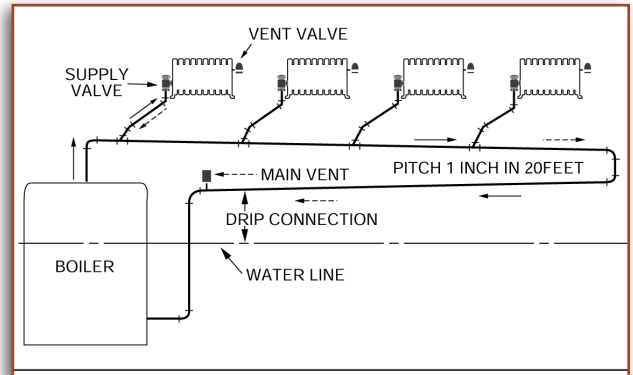
Proper sizing of the new boiler plays a major role in the success of your replacement job. It is very important to ensure that the new steam boiler has the same capacity in producing steam as the system you are connecting it to has in condensing the steam. This is the one fact that trips up many contractors.

Steam systems are nothing like hot water systems when it comes to providing heat. In a hydronic system, the boilers, pipes and radiation are filled with water. The boiler heats the water, which is then circulated out to the radiation. There, it gives off some heat to the room and drops a few degrees in temperature. The water then comes back to the boiler where it is heated and re-circulated back out to the system.

In a steam system, all the pipes and radiators are filled with air. The only water in the system is found in the boiler and any piping below the boiler water line. The steam boiler heats up the water until it

changes from hot boiling water into steam. It does this by adding latent heat to the boiling water. Latent heat is a measurement of energy that isn't sensed by a thermometer – it's what steam heating is all about. The water, now in this vapor-like state, heads out into the system. The key is to realize that this steam wants to change back into water. And when it does, it gives back the latent heat that was needed to change the water into steam. This occurs when the hot steam enters cold pipes and radiators. This is the reason why the new steam boiler must be sized according to the amount of radiation that is connected to the piping system. To heat every radiator in the house, the boiler has to produce enough steam to fill the piping network and all of the radiators.

Regardless of the size of the old boiler, you should always walk around the house with a clipboard and add up the EDR ratings of every radiator. When you are done, you will know the exact size boiler required for this home. If you select the replacement boiler by reading only the rating plate of the old boiler, the success of the job and your company's reputation are in the hands of the installer who came before you. In addition, many homeowners believe that when they purchase a new steam boiler, they are also getting a new steam system. Their old system could have been experiencing problems for years, all because of the incorrect size of the old boiler. If you come in and select the replacement boiler based on the old one, you may then have to



Typical steam system

live with a very unhappy customer. It happens often.

When a replacement steam boiler is oversized, it can create many problems. It will force too much steam into the piping system, creating velocity problems, spitting steam vents, and water hammer noises, and causing the boiler to short cycle. Remember that the homeowner doesn't know about the need for proper boiler sizing. He hears the boiler constantly cycling on and off. All he knows is that his radiator vents are suddenly spitting water all over the walls and floor, and he believes that his house might explode from the water hammer noises. You – and your customer – can avoid these problems by taking the time to properly select the replacement steam boiler.

If you have any questions regarding steam systems, contact your local Hoffman Specialty/McDonnell & Miller Representative. Your Steam Team Representative has been thoroughly trained in the art of steam heating.

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