

# Ryan's Monthly

Ryan Company, Inc. Newsletter - June 2015

BOILERS \* WATER HEATERS \* BURNERS \* CHIMNEYS \* ACCESSORIES

## In This Issue

- [Upcoming Dates](#)
- [Trivia](#)
- [Fulton Endura Boiler](#)
- [Quick Links](#)
- [Fun Fact](#)
- [Additional Information](#)
- [Coming Next Month](#)

### Upcoming Dates to Remember

- June 2nd** - Blue Flame Fishing Event
- June 3rd** - MN ASHRAE Golf Event
- June 17th - 18th** - MASMS Custodial days metro
- June 18th** - Blue Flame Golf event
- June 23rd** - MASMS Custodial Days northern chapter
- June 25th** - MASMS Custodial Days Southern Chapter

### Trivia Question

**List 3 advantages to primary only hydronic design?**

First 5 correct answers will receive a prize? Please include address with your emailed answered.

June, 2015



## Hydronics - Diagnosing a Boiler System by Ear

I'm not advocating that your ears should be your default method of system diagnosis, but sometimes they can be a major troubleshooting tool on a jobsite. When there's a very obvious sound, it can help to have some idea of potential causes for the sound, and what trouble it might indicate, before you start taking things apart.

Here are some general ideas about some of the sounds you might hear from heating equipment, and how the noise may relate to specific problems.

### Rushing water in noise in pipes

As a general statement, I'm going to say that these noises typically aren't the fault of the heating system. With no air in the heating pipes, there really shouldn't be any sloshing or watery noise. Most of these issues relate to the plumbing system.

However, in a few cases, water could be moving so quickly through the pipes that it could be actually causing what is commonly referred to as "velocity noise." If you are hearing this noise, and it's truly in the heating system, then a fix needs to be implemented since the heating pipes are being worn out.

Regardless of how clean the system fluid is, a water velocity of eight feet per second, or more, is going to cause wear on the inside the pipes, which can lead to pinhole leaks.

The primary causes of velocity noise are either an oversized pump, or the lack of a differential pressure bypass. In this latter case, only a few zones may be operating, and all the flow from a main system pump is being forced through those few zones.

In both cases, I would call it a system design problem, or the installation does not match a proper design or sizing.

## Quick Links

- [Lochinvar website](#)
- [Fulton website](#)
- [Bryan Website](#)
- [Burnham website](#)
- [Shipco website](#)
- [Patterson website](#)
- [Security website](#)
- [Power Flame website](#)

### Fun Fact

Did you know that a duck's quack doesn't echo and no one knows why that is?  
**Very interesting!**

### More information

Visit our website for more information on any of our products. [Ryan Company website](#)



Contact Matt to set-up your lunch and learns now.  
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MODSYNC



### Banging or popping noises during firing

Generally this means kettling - the water inside the boiler is flashing to steam due to the boiler's inability to pass the heat into the water, and to have the water carry the heat away before it superheats.

There are a few causes of this behavior.

The simplest explanation is a lack of flow, or insufficient flow. The water is being overheated inside the boiler, and the water isn't moving, or isn't moving fast enough, for the amount of heat being generated by the boiler's burner. However, insufficient flow has several causes as well. If you have flow meters on the system, or if the boiler can display a measured flow rate, this possibility is easy to check. If not, it may be possible to check for flow by simply feeling the inlet and outlet pipes to the boiler (do this carefully, however, as the outlet could be hot!).

A pump indicator can also provide an indication of whether the pump is operating or not, but beware - a broken impeller inside the pump will make the pump indicator believe that the pump is moving water, but it might not be.

Again, simply checking the temperature of the pipes on either side of the pump could give you clues, but in this case, the pump itself could be generating heat, and the heat might be migrating down the outlet pipes, so check as far down the run as possible. Heat should be even along the entire length of the pipe.

Possible pump problems that can cause insufficient flow include:

- \* Deadheading (backwards install, closed isolation valves);
- \* Broken impeller
- \* Failed pump
- \* Debris jamming impeller or other blockages
- \* An undersized pump.

A second possibility, which is more serious and more rare, but is one I've seen on multiple occasions, is that the interior of the heat exchanger has blockages or has been coated with a foreign substance (such as flux), and is no longer able to transfer heat to the water efficiently. If this is the case, the specified pump rate for the boiler will no longer move the water quickly enough for the heat to be carried off before the water flashes to steam.

To solve this more serious issue, flushing the boiler with water or an approved cleaner may solve, or at least minimize, the problem.

The issue with blockages can be more serious, however. Some boilers on the market today have multiple-path heat exchangers, meaning that it's very difficult to flush blockages through all the pathways, since your flushing will take the easiest path (that is, the ones that aren't blocked).

Backflushing can sometimes help in this situation, but contact your boiler manufacturer or representative for the best approach.

**Loud, intermittent growling or humming** I'm not sure how else to describe this, but if you've heard some of the self-contained water make-up units, also known as system feeders, you'll recognize the pump noise I'm talking about. The units use small, but typically- noisy pumps (especially some of the older designs of feeder).



It's typically intermittent because the air separators gradually collect enough air to vent, causing the system feeder to run. If it really bothers the homeowner, you can replace the pump with a more recent model, which are typically quieter.

**Whining or screeching** These noises usually indicate failed bearings in pumps, or dry pumps. Both are relatively rare, but will annoy the building owner like nothing else. In most cases you can easily locate and replace the offending pump.

Want to look like a superstar? If the building owner is up to it, ask them to bring the phone into the boiler room where you might be able to diagnose the problem (and get the correct pump size) before you even step foot in the house.

**Hissing noises** These noises are a lot less common, but often come from the air vents. Unfortunately, this is usually the symptom of a bigger problem, such as a leak in the system, where air-laden makeup water is continually being introduced to the system, and the air separators are working overtime to vent it.

Alternately, the air vents could have failed and are now pulling air INTO the system, increasing the corrosion rate of all components.



#### Fulton Endura Boiler:

- 750,000 BTU/HR
- 1 Million BTU/HR
- 1.5 Million BTU/HR
- 2 Million BTU/HR

#### Features:

- Condensing Hydronic Boiler
- Up to 95% efficiency
- No minimum return water temperature requirements
- Accessibility to components for commissioning and preventative maintenance via removable panels
- Can be incorporated into primary, variable flow piping systems and does not require the use of circulator pumps, flow switches or temperature control valves.
- Up to 8:1 turndown
- Color touchscreen display with extensive capabilities, including BMS communications and integrated sequencing for up to 8 boilers.
- Only 34" wide and 80" tall
- Requires only 1" clearance on the side



## Coming Next Month

- A new featured job of the month
- A new trivia question to win a prize

Contact Matthew Kiemen with questions or to sign up for anything Ryan related.  
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