



*"Eddy's Boilerhouse News"*  
*By Eddy Emerson, Emerson Boiler*

NEWS LETTER ASME CSD-1 Controls and Safety Devices for Automatically Fired Boilers – Series CSD-1 letter 4.

CSD-1 Part CW – Steam and Waterside Control is a section of the code that we will need several letters to answer all the questions I have received.

1<sup>st</sup> question – Do I have to have a low water cut off on my hot-water heating boiler? The answer is yes. Paragraph CW-130 states; “Each automatically fired hot-water boiler shall be protected by a low-water fuel cutoff intended for hot-water service.” That seems to be real clear, or is it? Now I want to remind you that most codes written spend much more space on exceptions than they do on the code.

So, let's look at an important exception. Paragraph CW-210 – Requirements for Flow or Temperature Sensing Devices for Forced Circulation Boilers states; “In lieu of the requirements for low-water fuel cutoffs a water tube or coil-type boiler, requiring forced circulation to prevent overheating and failure of the tubes or coils, shall have an accepted safety control to prevent burner operation at a flow rate to “protect the boiler unit against overheating, at all allowable firing rates.” Okay, now what does that mean? Well as I read it (your inspector may read it differently) it means that if you have a fin tube boiler or a coil-type boiler with a circulating pump forcing water flow through the boiler, a flow switch will meet this requirement of the code.

Oh, so now it's clear, right? Not quite. This might make one think that if they can have a flow switch on their boiler, no need for a low water cut off. If you have a water tube (fin-tube) or coil type boiler with forced circulation, okay. But, if you have a fire tube or cast iron boiler which has a definitive waterline, you must have a low water cutoff even if you have a flow switch. CSD-1 goes on to state; “When there is a definitive waterline, a low-water fuel cutoff complying with the applicable portions of CW-100 shall be provided in addition to the sensing device required in the preceding paragraph. Functioning of the low-water fuel cutoff shall cause a safety shutdown and lockout.”

This is a very easy issue to solve. It is okay to put both a flow switch and a low water cutoff on your boiler, and it increases the safety factor. Good idea.

Steam boilers must have two low-water fuel cutoffs with one being a manual reset. It should be noted that the piping of an external low-water fuel cutoff must be connected with at least 1 inch NPS (1 inch pipe). These can be either a float type or a probe type. The fat boy believes that one float and one probe will provide the highest level of safety. Say you have two float type LWCO's, whatever failure you have on one you could have on the other. But, a float type and a probe type will have different kinds of failures. So it only stands to reason that the safety level will increase.



*"Eddy's Boilerhouse News"*  
*By Eddy Emerson, Emerson Boiler*

Finally, electric boilers must have a low water cutoff except (there is that except again) "electrode type boilers, where the reduction in water level provides a self-limiting control on input, low-water fuel cutoff controls are not required." Stand up, be a man (or woman) and put one on anyway.

Be safe and be happy (life is too short, don't get all steamed up).

**MORE TRAINING CLASSES ADDED:**

BILLINGS, MT (JULY 27-31, 2009) 40 HOUR BIA RECERTIFICATION  
OKLAHOMA CITY, OK (OCTOBER 5-9, 2009) 40 HOUR BIA RECERTIFICATION  
PHOENIX, AZ (NOVEMBER 3, 2009) BOILER, OPERATOR & TRAINING  
PHOENIX, AZ (NOVEMBER 4, 2009) UNIT I  
PHOENIX, AZ (NOVEMBER 5, 2009) UNIT II  
PHOENIX, AZ (JANUARY 11-15, 2010) 40 HOUR BIA RECERTIFICATION  
PHOENIX, AZ (JANUARY 25-FEBRUARY 5, 2010) 80 HOUR BIA CERTIFICATION

*Emerson Boiler, Inc.*  
*AKA: Boiler Consulting & Training, Inc.*  
*8721 N. 79th Avenue*  
*Peoria, AZ 85345*  
*Tel: #623-847-4788 Fax: #623-847-2386*  
*[www.boilersmadesimple.com](http://www.boilersmadesimple.com)*