

# SteamTeam®

Bell & Gossett®  
McDonnell & Miller™

VOLUME 1 / ISSUE 1 / MAY 2014

Steve Almgreen  
Assistant Product Line Manager -  
Steam Products

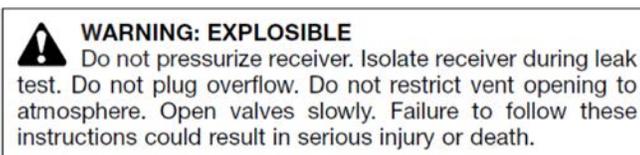
## SYSTEM PRESSURE LEAK TESTS AND RETURN UNITS

This document serves as a reminder that Domestic Pump Condensate units should not be pressure leak tested. Note the warning labels below. In its current form, each CC (CB, CBE, CS, CHD, and CED) Condensate unit has four (4) large warning labels attached to it. The largest label is 12-inches long by 6-inches tall.



Typically, these labels are attached to the top of the unit (near where the vent connection is) on the control panel, as well as on sides of the unit so that it is visible from multiple angles.

There are additional warnings included in the Installation / Operation manual as outlined below.



It is critical that Domestic Pump Condensate units not be pressure leak tested in order to maintain personnel safety and ensure the product is not damaged during system pressure leak testing.

An example of how pressure leak testing can go wrong, follows. A contractor called the factory and asked how quickly a new CC unit receiver could be shipped to a job site. After providing the information, I asked the contractor why the receiver was being replaced. The end-user also had a U tube heat exchanger in their steam system and the tube bundle had failed, needing replacement.

After installing the new tube bundle into the heat exchanger shell, the contractor wanted to conduct a pressure leak test on the system to ensure that there would be no leaks. He attempted to charge the system with 15 psi air pressure by screwing a pipe cap onto the top of the vent pipe. The contractor relayed to me that as he was increasing the pressure in the system, something didn't sound right but before he could stop and check what was causing the noise, the cast iron receiver on the system failed.

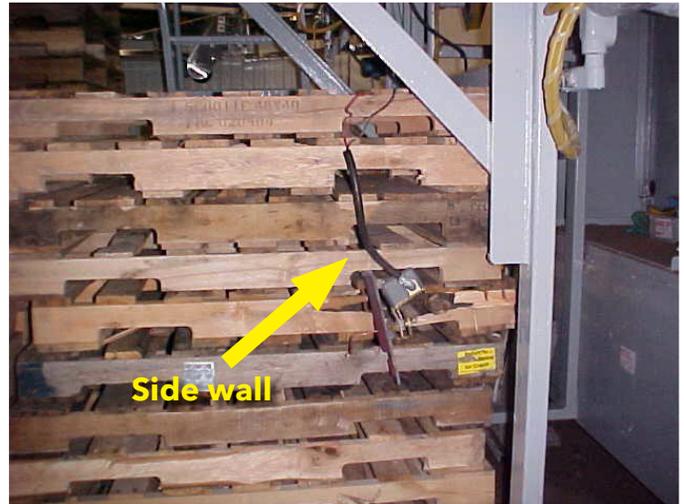


Photo 1

**Photo 1** illustrates the top and side wall of the receiver missing after it failed. **Photo 2** shows a portion of the sidewall and the float switch for the second pump where it landed with enough force to lodge in a stack of pallets nearby.

When I asked if anyone was hurt when this occurred, the contractor replied, "No, fortunately the only damage was to the receiver, the stack of pallets, and my dignity. I'll never make that mistake again. Next time I'll read the manuals and warning labels that were on the unit." Luckily, the contractor will get another chance to read those instructions and warnings.

Condensate return and boiler feed units on steam systems are typically vented to the atmosphere. In Domestic Pump products, the vent connections are generously sized to prevent these occurrences, but only if properly piped and not reduced or plugged. For your safety and to protect your professional reputation, always remember to properly install the vent connection and never restrict, reduce or plug it. Always isolate your condensate return or boiler feed unit from the system if leak tests are required.



**Photo 2**

Thank you for reading this important reminder about proper venting of Domestic Pump Condensate equipment.

Jarek Berezowski  
McDonnell & Miller  
Product Specialist

## TROUBLESHOOTING PSE SERIES ELECTRONIC LWCO'S

The best and easiest way to check the operation of the unit is to isolate and test it as an independent control. Testing it this way will determine if there are issues with the control, or issues with the wiring to the control. The hints and tips mentioned in the text below can be used to check the operation of any current or previous models, including PS-800, PS 850, and Series 750.

### Warning:

High voltages will be present when performing some of the tests. USE EXTREME CAUTION.

1. Ensure there is proper voltage to the unit.
  - 24 volts at terminals **H** and **N** on PSE-802 units.
  - 120 volts at terminals **H** and **N** on PSE-801 units.
2. Disconnect the probe lead from the probe. The red light should turn on when doing this.
  - Check the position of the relay contacts. **C** to **W** should be closed, and **C** to **B** should be open.



3. Short the probe lead to the chassis. The red light should turn off during this operation (for manual reset units, press the **Reset** button).
  - Check the position of the relay contacts. **C** to **W** should be open. **C** to **B** should be closed.
4. If these steps are performed correctly, the control should be working properly.

**A common issue with the PSE Series is that the control is not actuating the burner. Answering the following questions may resolve this issue.**

1. Is there a continuous source of uninterrupted power at terminals **H** and **N**?
  - Ensure that the unit has power to these terminals at all times. The control will be in low water mode when there is no power to these terminals.
2. Is there voltage at terminal **C**?
  - Some systems require a jumper from **H** to **C**. Check the boiler manufacturer's wiring schematic to determine if this is necessary.

3. Is the water conductive enough?
  - The voltage from the probe to the ground with water in the boiler and the unit turned on should be 4 volts or less. Any higher reading indicates that the water is not conductive enough. If this is the case, add boiler treatment on steam boilers to increase conductivity of the water. Water/glycol mixes higher than 50/50 can decrease conductivity on hot water boilers.

4. Is the probe in the water?
  - The tip of the probe should be in the run of the pipe on hot water boiler systems.
5. What type of sealant was used on the probe threads?
  - The use of PTFE tape or exotic thread sealant (BlueBlock, RectorSeal, etc.) can act as an insulator blocking the probe voltage's current path. Remove the probe and reinstall using a pipe dope or boiler grease.

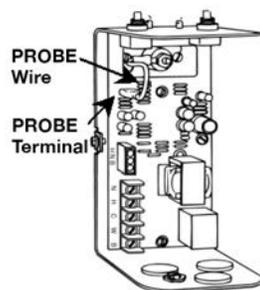
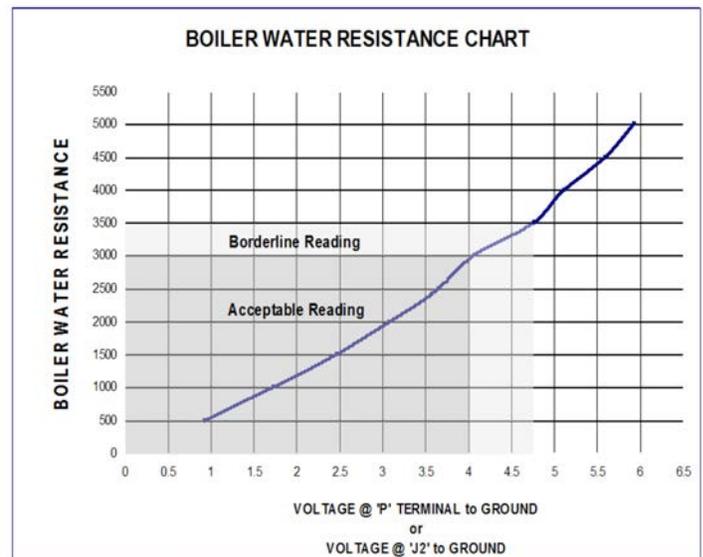
Jarek Berezowski  
McDonnell & Miller  
Product Specialist

## CHECKING BOILER WATER RESISTANCE

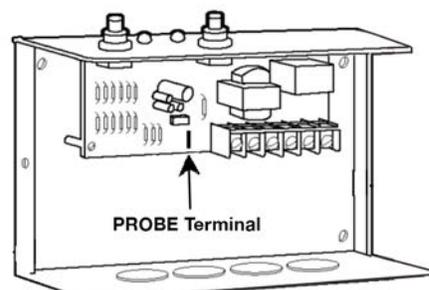
This is a simple way to check the resistance of boiler water that will provide a value seen on the control that can be compared to the chart below. This comparison will help determine if the control is sensitive enough for the application. Systems with any PS or 750 electronic LWCO can be tested utilizing this procedure.

**Note:** All tests should be done using a Digital MultiMeter (DMM) set to the low AC voltage scale.

1. Turn off power to the unit.
2. Connect the negative lead from the DMM to the probe connection on PCB board.
3. Connect the positive lead from the DMM to the ground (chassis or brass part of probe units).
4. Turn on power to the unit and record the meter reading.
5. Compare the meter voltage reading with the voltage scale on the chart below and plot the resistance reading.
6. Determine if the boiler water resistance is within control specifications.



Series PSE



Series 750