

Technical Bulletin # 35

To: Coulometrics Support Personnel

From: Engineering Dept.

Date: March 12, 2002

Subject: Integrity Checklist for Combustion Furnace CM5300 and CM5120

Purpose:

To provide a step-by-step procedure to check the integrity of the entire furnace system.

Procedure:

Test for the integrity of the combustion tube and pre-scrubber:

1. Check for a leak in the combustion apparatus.
 - A. Furnace may be on or off.
 - B. Set inlet pressure to 8-10 psig.
 - C. Set flow rate at 100 mL's oxygen.
 - D. Seal off combustion tube exit using a screw type hose pinch clamp. (See diagram Figure 1)
 - E. Flow controller ball should drop significantly.
Caution: Unions can pop off due to inlet pressure.
2. Clean KOH pre-scrubber.
 - A. Dispose of KOH solution according to local, federal, and state regulations.
 - B. Rinse pre-scrubber with distilled water.
 - C. Clean dispersion tube with distilled water by repeatedly forcing water through the dispersion tube with a suction bulb.
 - D. Clean dispersion tube with 1:1 Nitric Acid with a suction bulb.
 - E. Rinse dispersion tube with distilled water by repeatedly forcing water through with a suction bulb.
 - F. Refill pre-scrubber with fresh KOH solution.
3. Replace all silicon rubber unions. They have a tendency to degrade and cause leaks. Remember to also replace the unions on the back on the flow meter chassis and the pre-combustion tube, if applicable.
4. Check the breechblock for leaks on both the post and gas inlet. Use soapy water (Snoop) to check for small leaks that may not be apparent upon initial inspection.

Test for the integrity of the combustion furnace:

5. Check for a leak in the post-scrubber.
 - A. Furnace may be on or off.
 - B. Set inlet pressure to 8-10 psig.
 - C. Set flow rate at 100 mLs oxygen.
 - D. Seal off "Sample In" line going to the back of the coulometer using a screw type hose pinch clamp. (See diagram Figure 2)
 - E. Flow controller ball should drop significantly.
Caution: Unions can pop off due to inlet pressure.
6. Replace post-scrubber material.
 - A. Dispose of chemical compounds according to local, federal, and state regulations.
NOTE: Do not tap tube when packing. Pack by gravity only.

Test for the integrity of the coulometer:

7. Replace check valve between last post scrubber and coulometer.
8. Check the blue male Luer "Sample In" fittings going to the back of the coulometer. These fittings are very delicate and have a tendency to break and leak. Replace if bent or cracked. (CM129-071)
9. Check all connections on the titration cell. Pay special attention to the blue and red male Luer fittings. Replace if bent or cracked. (CM129-071)