THIS QUICK TUTORIAL WILL GUIDE YOU THROUGH THE COMBUSTION SET-UP PROCEDURE FOR THE CG4 POWER GAS BURNER
Combustion

- Setting Combustion

Equipment required and Test procedures
NOTICE

Always use calibrated test instruments to set combustion levels. Verify that test instruments are calibrated and in good working condition. If not already provided, drill test access holes in the flue pipe near the breech (or upstream of the boiler breech damper, if applicable) and in the front mounting plate area for firebox pressure. Be careful not to damage any water-backed surface.
Combustion

Draft – Set the stack or over-fire draft to the level specified by the appliance manufacturer.

Natural Draft Applications; typically over-fire draft is -0.01” or -0.02” W.C.

Direct Venting; typically may not require draft adjustment.

High Efficiency/Positive Pressure Appliances; (see manufacturer’s recommendations).
Combustion

**Oxygen** – It is recommended that you measure the oxygen (O2) early in the test sequence because high levels of carbon monoxide can be created at very low or even very high O2 levels. The typical operating range is between 3% – 5%
Combustion

Carbon monoxide (CO) – An operating range of 0 - 50 PPM is recommended for the CG4 burner. The maximum carbon monoxide (CO) level permitted in the flue gas by the UL 795 Standard is 400 PPM (.04%).
Combustion

Stack Temperature – The stack temperature must be within the range specified by the appliance manufacturer. Generally a 325°F stack temperature is high enough to avoid corrosive condensation in the vent system, however a large cross sectional flow area chimney or a very tall chimney may require a higher temperature. See ANSI Z 223.1/NFPA 54 for design requirements.
Recommended Combustion Adjustment Procedure

1. Initiate a call for heat.

2. Adjust the draft or breech pressure to the appliance manufacturer’s recommended level after flame has stabilized. A breech pressure that does not exceed -0.04 to -0.06”W.C. is generally acceptable.
3. Measure the carbon monoxide level and adjust air settings, if necessary, to temporarily raise CO to about **50 PPM for a test point.**

4. Measure the O2 or CO2 at the 50 PPM CO level. For this discussion, assume the O2 is 1.5% (11% CO2 for Natural Gas).
5. Open the air adjustment until the O2 level is increased by at least 1% or to 3% O2 (whichever is higher). This should reduce the CO level and provide a margin of reserve air to accommodate variable conditions.

6. Sample the CO level again. It should be in the 0 to 20 PPM range.
Recommended Combustion Adjustment Procedure

7. Check the draft to ensure it still meets specifications. If a major change in draft is required, repeat the above steps.

8. Check draft regulator for spillage. Confirm the condition of the chimney if spillage is present.

9. Verify stack temperature meets appliance manufacturer’s recommendations.
10. Perform any final adjustments and lock the air settings securely.
11. Record the combustion performance readings.
12. Hang the start-up tag in a prominent, safe location on or near the burner for future reference.