

National Comfort Institute Recommends The Following Procedure:

C. VENTED HEATING EQUIPMENT TESTING STEPS

1. For Natural Draft Equipment check the outlet of each heat exchanger, before the draft hood, draft diverter, or barometric with a digital CO analyzer. For the inducer fan and/or before any dilution air. All readings should peak and stabilize within 5 min. and must be less than 100 ppm**, which is acceptable. If CO readings continue to climb for more than 5 min., equipment is considered unsafe, even if still below 100 ppm, and requires repair. *Note: Condensing equipment may require more time to stabilize the CO readings due to increased wetting time in some equipment components.*
2. If the CO level is less than 100 PPM (as read) and stable this is considered acceptable. (Acceptable)
3. If the CO level is between 100 PPM and 199 PPM (as read) and stable the equipment requires service but may be operated minimally (Requires Service)
4. If the CO level is between 200 PPM and 399 PPM (as read) and stable this is unacceptable and requires immediate service. May be operated minimally if no spillage is detected and a low level CO monitor is present. (Immediate Service)
5. If CO levels are above 400 PPM (as read) this is considered life threatening and exceeds AGA/ANSI certification levels. The appliance "should not be used" at all, even if a low level CO monitor is present and no CO is present in the space. (Deadly) Red Tag
6. When necessary readings in all heat exchanger cells should be taken several times over at least a 5 min. period to verify stable combustion is occurring.
7. After initial CO test, additional appliances that exhaust air from the building or use combustion air should be turned on one at a time, to check if they affect operation.
(Draft Interference Testing does not apply to Sealed Combustion Equipment)
 - a. During all testing, a draft gauge should be inserted in the flue of the furnace above the draft hood or diverter. Design draft is between 0.01" w.c. and 0.02" w.c.
 - b. Any draft reading below 0.01" w.c. may indicate a potential problem.
 - c. Any reduction in draft when other appliances are turned on indicates a problem even if no carbon monoxide is measured in the space.
8. A light-off test on atmospheric appliances should be taken at the farthest heat exchanger or outlet from the pilot.
 - a. If cold startup, check light off after one cycle. Readings that peak will above 400 ppm can indicate pilot, spark, or burner problems.
 - b. A light off test on induced draft appliances is taken in the flue at least 12" past the inducer. If cold startup, check light off after one cycle. Readings that peak well above 800-1000 ppm indicate possible igniter, hot surface, or burner problems.
9. When burner shuts off, a CO test should be taken in at least one heat exchanger for about 60 seconds. An increase in CO readings at this time can indicate a leaky fuel valve.
10. Any visual signs of rust, black soot, or white soot are indications of poor operation.