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R**

Off

On

Open

CAZ Door

Closed

Negative number (1)

Causes:

- Exhaust appliances

Repairs:

- Eliminate/reduce CFM of exhaust
- Isolate appliances/CAZ from exhaust
- Replace the combustion appliances
- Provide make-up air (not realistic)

More negative from #1 (3)

Causes:

- Supply duct leakage to the exterior of the structure
- Interior door closure

Repairs:

- Seal supply ducts
- Pressure relieve interior rooms

More positive

Causes:

- Return duct leakage to the exterior of the structure
- Interior door closure

Repairs:

- Seal return ducts
- Pressure relieve interior rooms

More negative from #1 (2)

Causes:

- Exhaust appliances in the CAZ or affecting the CAZ

Repairs:

- Eliminate/reduce CFM of exhaust
- Isolate appliances/CAZ from exhaust – interior and exterior connections
- Replace appliances – sealed combustion furnaces, electric or power vented water heaters, etc.
- Pressure relieve CAZ to the house
- Provide make-up air (not realistic)

More negative from #3 (4)

Causes:

- Return duct leakage in the CAZ

Repairs:

- Seal return ducts in the CAZ

More positive

Causes:

- Supply duct leakage in the CAZ

Repairs:

- Seal supply ducts in the CAZ

Baseline (Stack Effect) is present in each quadrant – neg or pos

CAZ (Combustion Appliance Zone) Pressure Test Procedure

Step 1

- Make sure combustion appliances are unable to operate during set-up
- Remove forced air furnace filter (replace cover)
- Close all windows, doors, and other openings to the exterior of the structure
- Close fireplace and woodstove dampers
- Set up a gauge to read CAZ pressure with reference to (WRT) the outside

Record the baseline CAZ pressure: Pa (can be done CAZ door both open and closed)

- Turn on clothes dryer and all exhaust fans
- Use a blower door to simulate fireplace flow as needed (300 cfm or appropriate)
- Open supply registers in the house – close the registers in the CAZ
- Close all interior doors off the main body except to rooms that contain an exhaust fan

Obtain two CAZ pressure measurements with the forced air blower OFF: One with the CAZ door open and one with the door closed (long term averaging makes this process quicker).

CAZ Door
① **Open** **Closed** ②
Fan **OFF** Pa Pa

Note: There will be from 1 to 4 pressure measurements taken depending upon whether a blower or CAZ door exists.

Step 2

- Operate the forced air system blower (on the highest speed it can be expected to operate)
- Close the doors to rooms with exhaust fans and smoke/pressure test the rooms to determine the appropriate door position (testing is done with the CAZ at your back)
- Also, smoke/pressure test the doors to bedrooms that contain return ducts
- Reposition the doors as necessary (positive pressure in rooms – door closed, negative pressure in rooms – door open)

Obtain two CAZ pressure measurements with the forced air blower ON: One with the CAZ door open and one with the door closed.

CAZ Door
③ **Open** **Closed** ④
Fan **ON** Pa Pa

Note: For diagnostics, subtract the baseline pressure to get the actual level of depressurization due to exhaust fans, ducts, or doors.

The greatest negative pressure measured in any of the four quadrants would be considered “worst case” depressurization conditions for operational testing of combustion appliances.

- Diagnostics can now be performed using the four quadrant measurements to determine potential causes and appropriate repairs.

IMPORTANT:

- Any time you encounter a door you are unsure about positioning (ex: a bathroom in a bedroom or a CAZ with a door in a basement with a door at the top of the stairs), smoke/pressure test the door to determine its position. Complete twice – once with the fan on and once with the fan off.
- This procedure will cover most houses most of the time. Understand the concepts and apply them as needed in more complicated houses.