

# PTCS<sup>®</sup> Duct Sealing Final Exam

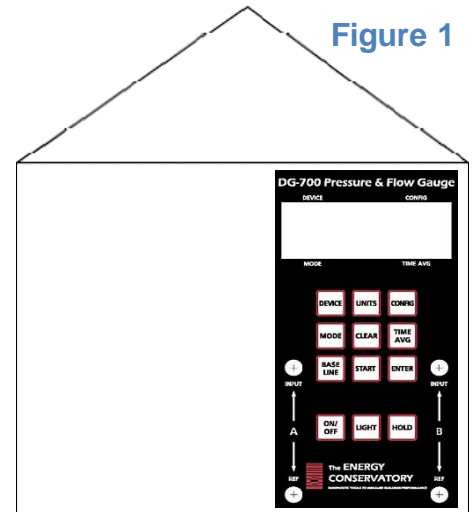
Name: \_\_\_\_\_

Company: \_\_\_\_\_

1. Air moves from areas of high pressure to \_\_\_\_\_.
2. In a house having a blower door depressurization test done, CFM airflow blown out of the house during the test equals airflow \_\_\_\_\_ through all the holes and cracks in the house.
3. What are the two variables that determine Air Flow?

Air Flow = \_\_\_\_\_ X \_\_\_\_\_

Figure 1



4. Using Figure 1 (to right), draw lines to show how you would connect hoses to the manometer to measure the pressure in the attic WRT the house.
5. Ductwork that is located in a basement that does not have a supply register, and where the basement ceiling is insulated, is considered outside conditioned space.
  - a. True
  - b. False
6. Site built homes and manufactured homes have the same pre-test and post-test requirements.
  - a. Yes
  - b. No
7. Before conducting a blower door test, the house should:
  - a. Have all windows shut
  - b. Have all fireplace dampers shut
  - c. Have all interior doors open
  - d. Have all combustion appliances in off or vacation mode
  - e. All of the above
8. A job will fail inspection if the house has a combustion appliance zone (CAZ) but no CO monitor is installed.
  - a. True
  - b. False
9. In blocking registers, foam blocks may produce different Duct Blaster results than taping as they create a different type of seal to the ductwork.
  - a. True
  - b. False
10. The filter should be removed for a duct blaster test.
  - a. True
  - b. False
11. The rings on a duct blaster should be installed as “innies” so that the outward appearance of the front of the fan is flat.
  - a. True
  - b. False

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12. Given these readings for a 2000 square foot existing home pressurized to 50Pa, fill out the leakage portion of the PTCS form at right.

- a. Pre-Test
  - i. FAN Pressure      86
  - ii. RING                1
  - iii. CFM                382
- b. Post-Test
  - iv. FAN Pressure      140
  - v. RING                3
  - vi. CFM                74

		<i>Existing Home, Existing Ducts</i>
<b>Pre-Test</b>	<b>Pre-Test Ring</b>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> Open <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
	<b>Duct Blaster Fan Pressure</b>	Pa
	<b>Duct Blaster CFM</b>	CFM
	<b>Pre-leakage Requirements</b>	<input type="checkbox"/> $\geq 250$ CFM ( $>1667$ sq ft) <input type="checkbox"/> $\geq 15\%$ of home's sq ft
<b>Post-Test</b>	<b>Post-Test Ring</b>	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> Open <input type="checkbox"/> H <input type="checkbox"/> M <input type="checkbox"/> L
	<b>Duct Blaster Fan Pressure</b>	Pa
	<b>Duct Blaster CFM</b>	CFM
	<b>Certification Requirements</b>	<input type="checkbox"/> $\leq 10\%$ of home's sq ft <input type="checkbox"/> $\geq 50\%$ <b>Reduction</b>

13. The duct blaster has been installed at the furnace in the garage. The house has been pressurized to 50Pa with the door between the house and the garage closed. What added step do you need to take to measure duct leakage to the outside?

- a. Put the duct pressure tap into the supply plenum
- b. Run a hose from the bottom/reference tap of the A channel to the house
- c. Run a hose from the bottom/reference tap of the A channel to outside
- e. Close all the interior doors

14. For energy savings, where are the highest priority leaks in a duct system?

15. A job will fail inspection if screws were not used at metal duct connections.

- a. True
- b. False

16. The reference hose should be placed in the register that the duct blaster is attached to.

- a. True
- b. False

17. A job will fail inspection if nylon ties (or equivalent) were not used when installing a crossover duct?

- a. True
- b. False

18. On a leaky duct system, it doesn't matter where you put the duct blaster. As long as all the registers are taped off, you should come out with the same results.

- a. True
- b. False

19. The homeowner complains of a musty, moldy smell that comes out of the registers when the heat comes on. You should:

- a. Check for leakage between the house and the crawl space
- b. Check the ductwork to see if it has been contaminated by water or other material
- c. Ignore the homeowner -- they don't know anything about HVAC
- d. Both a and b

20. All accessible plenums, main ducts, takeoffs, boots etc. need to be sealed.

- a. True
- b. False

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21. Before the pre-test you should:
- a. Make sure that all of the registers are taped off
  - b. Make sure that the filter has been removed
  - c. Confirm that the correct ring is set on the manometer
  - d. All of the above
22. A job will fail inspection if a good faith effort was not made to remove all duct tape before installing mastic.
- a. True
  - b. False
23. A CO monitor is not required if the homeowner never uses the fireplace and the fireplace is the only CAZ appliance in the home.
- a. True
  - b. False
24. It meets PTCS specifications to use UL181 tape as long as you have three screws to mechanically fasten two pieces of ductwork.
- a. True
  - b. False
25. Painting the entire system with a thin coat of mastic will guarantee passing a duct test.
- a. True
  - b. False
26. Approved UL181 tape may be used to seal the filter access panel on a furnace and the air handler to plenum connection.
- a. True
  - b. False
27. A sheet metal system can usually be repaired and sealed to PTCS standards without a drill or screws.
- a. True
  - b. False
28. There's only one return in the house, and it's in the living room. Closing the master bedroom door causes the fireplace in the living room to backdraft when the central forced air heating system is on. How can this be prevented?
- \_\_\_\_\_
- \_\_\_\_\_
29. Turning on a down drafting range vent that exhausts 750 cfm from the house backdrafts the fireplace. How can this be prevented?
- \_\_\_\_\_
- \_\_\_\_\_
30. Ducts buried in attic insulation are considered accessible.
- a. True
  - b. False

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31. Carbon Monoxide detectors need to be installed:
- When the home owner asks
  - Whenever a CAZ test fails
  - In very tight houses less than 1000 CFM<sub>50</sub>
  - In any house with a combustion appliance in the house, the garage or other attached space
32. In single-wide manufactured homes, the furnace to plenum must be sealed through the belly if it cannot be sealed through the furnace.
- True
  - False
33. If running a duct leakage to outside pre-test and either the home or ducts cannot be pressurized to 50 Pa, what would be the best option?
- Run the test at 25 Pa and record these results in the PTCS Registry
  - Run the test at 25 Pa and convert the flow to 50 Pa equivalent by using a "Can't Reach 50" factor
  - Stop testing and just Prescriptively seal the ducts
34. Before sealing, the duct system has 1,000 CFM<sub>50</sub> leakage to the exterior. After duct sealing, the house tests at 450 CFM<sub>50</sub> leakage to the exterior. Does this house qualify for PTCS certification?
- Yes
  - No
35. Which of the following statements is true?
- Prescriptive sealing does not require pre and post duct leakage testing
  - It must not be assumed that if a utility offers a PTCS duct sealing incentive they also offer a Prescriptive duct sealing incentive
  - By obtaining a PTCS certification today, you will be certified to offer PTCS and Prescriptive duct sealing
  - All of the above
36. In PTCS, if a building chase or pan joint have been used for the return, a supply side only test should be conducted.
- True
  - False
37. The PTCS Program conducts Quality Assurance Inspections:
- On 10% of the jobs
  - To verify the test results of the PTCS technician
  - To make certain that the work was completed to meet specifications
  - all of the above
38. As long as one person is certified from a company, that company can submit PTCS jobs regardless of which technicians performed the testing and sealing.
- True
  - False
39. Successfully completing PTCS Duct Sealing certification makes a technician eligible to submit PTCS Heat Pump applications.
- True
  - False
40. A project can be entered onto the mobile optimized site using a mobile device without internet access.
- True
  - False

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41. Projects entered into the PTCS Online Registry are submitted to utilities automatically without any more work on your part.
- True
  - False
42. A quality assurance inspector can initiate the process to decertify a PTCS technician if the results of his inspection do not meet the specification.
- True
  - False
43. All the utilities offer the same rebates for Performance Tested Comfort Systems.
- True
  - False
44. A duct system can still be sealed by a tech if it was previously sealed though the PTCS program but sealed poorly with no additional action prior to starting
- True
  - False
45. It is not necessary to seal return ducts in garages for PTCS.
- True
  - False
46. As long as your test out number reaches the 10% goal, it is not necessary to seal the high pressure areas at the plenum connections.
- True
  - False
47. A duct system and furnace are in an unfinished basement which has several supply air ducts. This system would qualify for PTCS duct sealing.
- True
  - False
  - Not enough information

Congratulations! You have completed the Final Exam for the PTCS Duct Sealing training. Please wait for instructions on how it will be graded. Make sure you hand this in to your trainer prior to leaving the class.

### **When you pass the exam, please remember to:**

- 1) Create an online account, if you have not already, at <https://ptcs.bpa.gov>
- 2) Complete and submit your Certified Technician Application (located at the end of your manual)