

Duct System Diagnostic Procedures

Testing Protocols

The required procedures for performing the following tests are contained in this manual.

1. **Total Duct Leakage Test**
2. **Duct Leakage to the Exterior Test**
3. **Combustion Appliance Zone Pressure Test**

Certification of a duct system under the PTCS program requires that one or more of these tests are performed on each system. A certified technician to complete the certification process must provide documentation to the sponsoring utility or the Energy Star Program of the test results showing compliance with **Performance Tested Comfort System (PTCS) Duct Program** standards.

The table (below) shows under which circumstances each test is required.

In existing homes, testing is required both before and after sealing. Existing homes that meet program standards without additional sealing may be certified. A home must be occupied for a least one year before it is eligible to be certified under the existing home standards. Check with sponsoring utilities for availability of and eligibility for incentive payments.

Type of Home	Required Tests				
	(1) Total Leakage		(2) Leakage to Exterior		(3) Combustion Zone
New Home	X	or	X		
with combustion	X	or	X	and	X
Existing Home			X		
with combustion			X	and	X

Duct Sealing: Performance Tested Comfort System (PTCS) Program Standards

New Construction: Based on the protocol for “Total Leakage Testing”, or “Leakage Testing to Exterior” duct leakage in new construction shall not exceed 0.06 CFM50 x floor area served by the system (in square feet), or 75 CFM50 whichever is greater.

Exception 1: if the air handler is located completely within conditioned space, it is not required to be in place during the test.

Exception 2: If the air handler is located in unconditioned space, it is not required to be in place during the test, the leakage limit shall be decreased to 0.04 x floor area served by the system (in square feet) or 50 CFM50, whichever is greater.)

In addition the following requirements must be met:

1. All *testing* must be done by a PTCS Certified Technician or Inspector;
2. Duct systems must be designed, sized and installed using recognized industry standards so that calculated heating and/or cooling loads are delivered to each zone (documentation may be required);
3. Based on the protocol for “Combustion Appliance Zone Pressure Testing” forced air system operation shall not depressurize a combustion appliance zone by more than 3 Pascals.
4. When combustion appliances are located within a conditioned space a UL listed carbon monoxide alarm, or equivalent must be installed.

Sealing Materials: All duct sealing shall be done with mastics that meet the UL-181 AM or BM standard. Where taping is necessary (to provide service access), only UL-181 listed tape shall be used. Cloth duct tape is not acceptable.

Performance Tested Comfort System (PTCS) Program Standards

Existing Home, New Ducts: Based on the protocol for “Total Leakage Testing”, or “Leakage Testing to Exterior” duct leakage for new systems in existing homes shall not exceed 0.10 CFM50 x floor area served by the system (in square feet), or 75 CFM50, whichever is greater.

In addition the following requirements must be met:

1. All testing must be done by a PTCS Certified Technician or Inspector;
2. Duct systems must be designed, sized and installed using recognized industry standards so that calculated heating and/or cooling loads are delivered to each zone (documentation may be required);
3. Based on the protocol for “Combustion Appliance Zone Pressure Testing” forced air system operation shall not depressurize a combustion appliance zone by more than 3 Pascals.
4. When combustion appliances are located within a conditioned space a UL listed carbon monoxide alarm, or equivalent, must be installed.

Sealing Materials: All duct sealing shall be done with mastics that meet the UL-181 AM or BM standard. Where taping is necessary (to provide service access), only UL-181 listed tape shall be used. Cloth duct tape is not acceptable.

Performance Tested Comfort System (PTCS) Program Standards

Existing Homes, Existing Ducts: Based on the protocol for testing “Duct Leakage to the Exterior”, duct leakage in a retrofitted system shall:

A) Not exceed 0.10 CFM50 x floor area (in square feet) served by the system;

Or

B) Document a 50% reduction* in leakage to the outside by comparing duct leakage to the outside before and after sealing;

Or

C) In extreme cases where return ducts are inaccessible, compliance with either A or B may be accomplished by testing the supply side only.

Regardless of qualifying path, all accessible components of the supply plenum and all accessible take offs including the gores on flexible elbows shall be sealed with approved materials. In addition the following requirements must be met:

1. All testing must be done by a PTCS Certified Technician or Inspector:
2. Based on the protocol for “Combustion Appliance Zone Pressure Testing” forced air system operation shall not depressurize a combustion appliance zone by more than 3 Pascals.
3. When combustion appliances are located within a conditioned space a UL listed carbon monoxide alarm, or equivalent must be installed.

*The leakage rate specified in A and B above is required for an existing system to be certified as meeting the PTCS standard. Some utilities may pay an incentive for “test only” (for less than a 50% reduction or greater than 10% of floor area). Contact the sponsoring utility for specific program details.

Sealing Materials: All duct sealing shall be done with mastics that meet the UL-181 AM or BM standard. Where taping is necessary (to

provide service access), only UL-181 listed tape shall be used. Cloth duct tape is not acceptable.