

Duct Leakage to Outside Test

Oregon Department of Energy Test Protocol

Tools: Duct leakage tester, blower door, digital-manometer or magnahelic gauge (1 Pa resolution)

1. Definitions:

Pa. (Pascals). Standard unit of air pressure measurement. Approximately 1/250" water gauge.

WRT. (With Reference To). When measuring pressure differences one zone will be the reference zone. The pressure measured in the other zone will be WRT the reference zone.

2. House preparation

- A. All interior doors open except: Door(s) to unheated basements, garage, or other unheated zones
NOTE: Door(s) to heated basement shall be open.
- B. Exhaust devices off, including: clothes dryer, bath and kitchen fans, central vacuum cleaner.
- C. Air handler off and set to not operate during test.
- D. Seal all registers and grills.
- E. Remove furnace air filter and any pre-filters.
- F. Close off any outside air ducted to return if possible.
- G. All exterior doors and windows closed.
- H. Combustion devices turned off so that they will not operate during test.

3. Equipment set-up

- A. Attach Duct Tester to air handler cabinet or closest large return register, unless performing duct sealing/repair on an existing duct system where return(s) are not accessible. In such cases, the return side may be blocked at the filter slot and the duct tester attached to air handler cabinet or supply register closest to supply plenum.
- B. Place end of hose measuring duct pressure in supply plenum (or closest supply duct at least 3' from duct tester attachment). Avoid placing the end of the hose facing the airflow.
- C. Set up Gauge(s) to measure Ducts WRT Outside and Duct Tester Fan WRT Zone where Duct Tester is located.
- D. Run Duct Tester to check air tightness of duct tester attachment and register/grill seals.
- E. Install Blower Door so that it **pressurizes** the house.

3. Test

- A. Set blower door to +50 Pa House WRT Outside.
- B. Set duct tester to 50 Pa. Ducts WRT Outside
- C. Adjust blower door if necessary to +50 Pa House WRT Outside. Adjust duct tester if necessary to 50 Pa Ducts WRT Outside. Repeat adjustments until readings are stable. If ducts cannot reach 50 Pa, pressurize ducts to match an entry in the "Can't Reach 50 Pa Factors" table, below.
- D. Measure Duct Tester Fan WRT Zone where Duct Tester is located. If Fan pressure is not below -25 Pa. retest with next smaller ring.
- E. Record Duct Tester configuration (ring: none, 1, 2, 3).
- F. Determine duct tester fan flow from chart or manometer:

Can't Reach 50 Pa Factors					
Duct Pressure (Pa)	5	15	25	35	45
Leakage Multiplier	4.5	2.2	1.6	1.3	1.1