

## TechTalk



Duct Leakage



## DUCT AIR LEAKAGE



In the early 1990s, weatherization assistance programs began using the adjective “catastrophic” in reference to “large” leaks in the duct system and the envelope/shell, used in prioritization of sealing (“catastrophic” leaks are sealed first). “Catastrophic Duct Leakage” and “Catastrophic Shell Leakage” were used for many years without being clearly defined.

Catastrophic *shell* (envelope) leakage is defined as physical gap(s) measuring at least 5 sq. in. of leakage area calculated for a single measure location (e.g., a door, a window, etc.).

Catastrophic *duct* leakage is defined as a condition identified when (a) the duct tester is in “open” mode, with speed control at maximum, and (b) the maximum achievable duct pressure is  $\leq 24\text{Pa}$ .

### 8.14 EVALUATING DUCT AIR LEAKAGE



Duct leakage is a major energy-waster in buildings where the ducts reside outside the home’s thermal boundary in a crawl space, attic, attached garage, or unconditioned basement. When these intermediate zones remain outside the thermal boundary after weatherization, duct sealing is usually cost-effective.

#### 8.14.1 TROUBLESHOOTING DUCT LEAKAGE

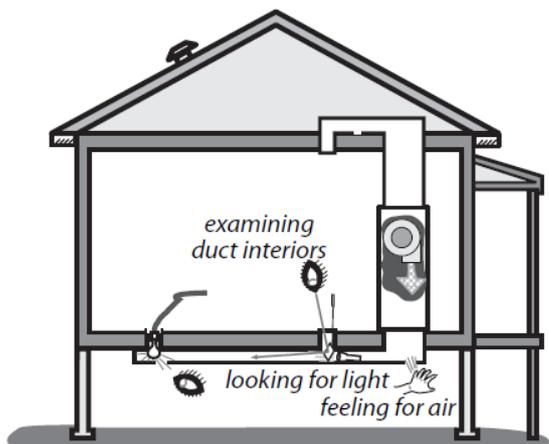
##### Finding Duct Leaks Using Touch and Sight

One of the simplest ways of finding duct leaks is feeling with your hand for air leaking out of supply ducts, while the ducts are pressurized by the air handler’s blower. Duct leaks can also be located using light.

Use one of these 4 tests to locate air leaks.

1. Use the air handler blower to pressurize supply ducts. Closing the dampers on supply registers temporarily or partially blocking the register with pieces of carpet, magazines, or any object that won’t be blown off by the register’s airflow increases the duct pressure and make duct leaks easier to find. Dampening your hand makes your hand more sensitive to airflow, helping you to find duct air leaks.

**Finding duct air leaks:** Finding the exact location of duct leaks precedes duct air sealing.



2. Place a trouble light, with a 100-watt bulb, inside the duct through a register. Look for light emanating from the exterior of duct joints and seams.

3. Determine which duct joints were difficult to fasten and seal during installation. These joints are likely duct leakage locations.

4. Use a trouble light, flashlight, and mirror or a digital camera to help you to visually examine duct interiors. Feeling air leaks establishes their exact location. Ducts must be pressurized in order to feel leaks. You can feel air leaking out of pressurized ducts, but you can’t feel air leaking into depressurized return ducts. Pressurizing the home with a blower door forces air through duct leaks, located in intermediate zones, where you can feel the leakage coming out of both supply and return ducts.