



Clean Your Coils

Save money and keep comfortable year-round.

Now is the time to think about getting your air conditioning system in shape so you can keep your comfort...and keep your utility bills comfortable, too. It's a breeze to do when you call on one of the professionals who belong to the Air Conditioning Contractors of America (ACCA) for help.

Keeping Cool

You should have your heating, air conditioning, and ventilation (HVAC) system checked twice a year for safety and comfort. For summer's heat and winter's chill, one thing is a must: a clean outdoor coil.

To provide cooling in the summer, air conditioners work by moving the hot air in your home to the outside. A refrigerant in the system picks up the heat at the evaporator coil inside the house and takes it to the compressor and condenser outside.

There, the hot air is released and the refrigerant turns back into a liquid and returns through the coil for another batch of heat. Fins in the condenser can become clogged with dust and dirt, which act as insulation and slow the process. The condenser has to work harder, so it uses more electricity. Eventually, the strain becomes too much and the system fails. To provide heating in the winter, air conditioning heat pumps work in reverse operation. However, whether for cooling or heating, improper maintenance of the outdoor coil can lead to problems.

A Better Idea from Your ACCA Contractor

To maintain year-round comfort, have an ACCA-member contractor service your system regularly. It's your best bet for energy efficiency, safety, and comfort. Your contractor's trained technician will perform a number of inspections, checks, and tests of the indoor and outdoor components of your HVAC system and clean the condenser with a brush, vacuum, pressure washer, soap, water, steam, or non-acidic cleaner as

recommended by the manufacturer.

Your HVAC technician will also inspect the outdoor coil fins (straightening them as needed) and he or she will clean and lubricate the condenser fan and motor if necessary. Additionally, the technician will advise of restricted outdoor air flow due to vegetation or other obstruction.

Meanwhile...

There's a lot you can do between regular maintenance visits to keep your HVAC system humming.

- When you cut grass near the outdoor condensing unit, make sure grass cuttings are blown away from the outdoor coil.
- Cut, pull, or trim shrubs, bushes, plants, and weeds around the condenser to allow a free air flow.
- Keep the area around the condensing unit cleared of leaves, dirt, grass cuttings, and other debris that can cause clogs and restrict the flow of air.
- Be sure not to build fences, walls, or other obstructions too close to the unit or cover it with a roof or overhang.

Keep It Simple

The easiest way to stay cool in summer...and warm in winter... is to have a **Planned Maintenance Extended Care Plan through your local ACCA contractor**. Just contact the contractor listed below for more information.

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What Testing and Balancing (TAB) is and Why it is Important?

Don't all brand new HVAC systems come tested and balanced?

The short answer is they all should. A group of industry experts from all sectors of the HVAC industry developed a standard that defines how an HVAC system must be designed and installed if it is going to work properly. Their work, over a three year period, resulted in an industry standard: the ACCA/ANSI HVAC Quality Installation Specification. The standard requires balancing on all newly-installed HVAC systems. Unfortunately, the QI Specification is not a requirement in all local jurisdictions. Therefore, many contractors still skip the TAB work. This is especially true in new construction where the low bid has traditionally ruled. You should always find a professional contractor who is capable of following the QI Specification's procedures for any HVAC TAB work.

How do I know for sure if there is a TAB problem?

If your professional contractor has identified an air balancing-related problem with your HVAC System, you probably already knew something was wrong. The average homeowner can detect the signs of an unbalanced HVAC system. Common complaints include hot spots, cold spots, and drafty areas. If you noticed one bedroom is always cooler in the winter and warmer in the summer, there is a strong possibility that you have an airflow problem. If you have noticed drafts when your HVAC system is operating, doors being pulled shut or blown open, you probably have an airflow problem. That means air is not going where it was designed to go.

Isn't it easier to just open and shut dampers on the registers?

Many times people will try to resolve the problem by closing down some outlet dampers and opening others. However, TAB-related comfort problem are rarely resolved by making adjustments in one area. In fact shutting down dampers at the outlets increases the noise level because the air velocity increases as it tries to

squeeze through the tighter openings. Additionally, the majority of the time, when the "quick fix" does work, it is a seasonal adjustment at best and will need to be changed every time the thermostat is changed from heating to cooling. Once a damper is closed down, the airflow runs to other rooms where, due to the increased airflow, those dampers are then closed down. The final result is a noisy, inefficient air distribution system that does not work properly. In a worst case scenario, shutting too many dampers down will result in your furnace over heating in the winter or the air conditioning icing up in the summer. Continuous operation under low airflow conditions can cause permanent damage to your HVAC system.

So how is the airflow to a room adjusted?

Balancing dampers are needed and the best location for them is at the main trunk so that noise at the outlet will be minimal when they are adjusted. Balancing dampers are generally placed in a section of duct designed to be attached to the main duct trunk called a take-off. A smaller duct is attached to the take-off and runs to the diffuser or grille. By moving a lockable handle, the size of the opening in the take-off is increased or decreased until the correct airflow in CFM is coming out of the diffuser.

Can other problems like drafty windows mimic airflow problem symptoms?

Yes, once a room airflow problem is ruled out by having a professional contractor measure the airflow, other causes for drafts and hot and cold spots can be checked. For example, in that uncomfortable bedroom, was the insulation properly installed? Could the walls, ceiling, windows or doors be leaking air? Generally, you will notice a buildup of dust in cracks or seams if the air is leaking into a room. Air leaking into your home is generally a sign that your home is operating under negative pressure. Negative pressures can

be caused by exhaust fans that operate constantly, furnaces without proper venting, or even chimneys. Having air enter your home through cracks and crevices is the worst way possible to bring in outside fresh air. This is because the air is untreated so it can raise or lower your humidity and bring in dust, mold spores, radon, etc. Negative pressures, once identified in your home, can also be resolved by your professional contractor. In some worst case scenarios, additional HVAC-related equipment may be required to bring in fresh air into your home in a controlled manner.

How can I tell if a TAB is performed properly?

In your HVAC system, airflow is rated by the total number of cubic feet per minute (CFM) produced. When your home HVAC system is designed, the airflow needed to heat and cool each room is calculated. HVAC equipment is then selected that can provide the CFM needed. Additionally, duct is sized and the diffusers and grilles are selected so that you system will operate quietly and efficiently while distributing the required CFM to each room. At a minimum, a balancing technician will need to check airflow at all of the supply registers and return grilles in your home two or three times each. The technician will adjust branch dampers until all of the supply registers and return grilles are providing airflow within 10 percent of the design value. The technician will finish by re-measuring your furnace/air handler to make sure it still has the required airflow going through it. Your professional contractor can provide you with a copy of the balancing report that will include the furnace/air handler data, diffuser locations and the final set points in CFM.

As you can see, TAB is a specialized field that requires additional tools and training. The right HVAC technicians with proper TAB training can ensure that many homeowner complaints stemming from airflow problems are resolved.

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Who Ever Heard of Upgrading Ductwork?

Aren't heating and air conditioning ducts the same in all homes?

The short answer is usually. Unfortunately, that may not be a good thing for your home. The Environmental Protection Agency (EPA) states: "about 20-30 percent of the air that moves through a duct system is lost due to leaks, holes, and poorly connected ducts. When the ducts are in an unconditioned space, the result is higher utility bills and difficulty keeping the house comfortable, no matter where the thermostat is set." In high humidity areas, duct leakage into unconditioned space also results in increased humidity in the home... "that cold clammy feeling and wet dog smell." In cold climates, duct leakage to unconditioned areas lowers the humidity in the home making it feel cooler and adding some excitement through unexpected sparking static electricity (EPA website: https://www.energystar.gov/index.cfm?c=home_improvement.hm_improvement_ducts).

My ducts seem ok, why change/upgrade ducting now?

If the ducting system is not designed and installed properly, your heating and air conditioning system will not work properly. Often duct systems were not designed properly and the return duct and/or the supply duct are undersized. If that is the case, your duct system may need to be redesigned and/or repaired or replaced in order to get the air where it is needed. Replacing or repairing undersized or leaky ducts and/or duct insulation may allow a professional heating ventilation and air conditioning (HVAC) contractor to downsize your HVAC equipment. Thus, saving on the price of the equipment. A homeowner's benefit in upgrading the ductwork is the increased comfort, followed by energy savings

How can repairing ducts make my home more comfortable?

Heated or cooled air is transferred from your HVAC equipment to the rooms in your home through the duct system. If the correct amount of air at the correct temperature does not make it through the duct to the rooms, these rooms will not be heated or cooled properly. Thus, you will have hot and cold spots and drafts in your home. Additionally, there needs to be a proper path for the air to return to the HVAC equipment. Unfortunately, many homebuilders still ignore the return ducting requirements in order to save on the installation cost. The result is stuffy, uncomfortable rooms, and uneven heating and cooling in the average home.

Are there other benefits to duct upgrades and repairs?

For many existing homes, there will also be improved indoor air quality, enhanced health, lower utility bills, and improved humidity levels. Obviously, using less energy translates into lower utility bills for you. Using less energy is not only smart; it is also a national goal that is environmentally friendly.

"Improved indoor air quality and enhanced health" are big claims!

If you currently have good indoor air quality, you may not see an obvious improvement. However, in many systems, sealing the duct will increase the indoor air quality. Thus, enhancing occupant health. For example, if ducts are leaking in an attic or crawl space they may bring in outside elements like pollen, mold spores, or other pollutants. Worse yet, if they are in a garage, leaking ducts may bring in automotive exhaust fumes or other chemical fumes from items stored in the garage. In a worst case scenario, leaking return ducts can cause a furnace or water heater in a small space to operate unsafely.

Are energy savings really going to show up on my utility bill?

If you have leaking or uninsulated ducting in an attic or crawl space, the answer is "Yes." A typical homeowner story is available on the Department of Energy's website (<http://energy.gov/energysaver/articles/story-house-never-stayed-warm-well-insulated-resolution>) indicates a 53% decrease in energy costs. The homeowner said, "But it's magic. We're keeping the house warmer and paying half as much."

"Sold!" Who is the best person to contact when I need to decide on HVAC upgrades that include duct repairs?

Look no further than your professional HVAC contractor! Professional HVAC contractors can evaluate, design, install, and/or repair ducts. An excellent time to have this work done is during an equipment change out. That way your duct system will work with your new higher efficiency equipment to make your home more energy efficient. Additionally, once the duct system is repaired or replaced, and balanced based on you individual room heating and cooling requirements, you should enjoy a new level of comfort in your home. One thing all of the best contractor's will have in common is the ability to perform a Manual J load calculation, a Manual S equipment selection calculation, and a Manual D duct design calculation.

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Why did the home Inspector say I needed to call in another expert?

When performed correctly, it is assumed that if no problem is found during the Combustion Appliance Zone (CAZ) testing that no combustion or venting related problems are present. However, the negative pressure can be the result of any combination of one or more of the following:

- wind direction and vent/chimney location
- kitchen/bathroom exhaust fans
- clothes dryers
- radon mitigation fans

When a CAZ test indicates the potential for combustion problems: building performance inspectors will generally recommend bringing in a professional HVAC contractor. Trained HVAC technicians can diagnose and repair most combustion related problems.

Why did the home performance expert do a CAZ test?

Many older homes may have preexisting combustion related problems that were never noticed because of the leakage of outside air into the home through cracks, old windows, doors etc. The CAZ test is done to evaluate how the sealing done when your home was tightened up will affect your HVAC system and other combustion appliances. Every combustion appliance requires make up air for the combustion process. Your home needs to be designed to provide the air needed for safe combustion. The weatherization and building performance industry uses CAZ testing methods as an indicator of when the conditions for improper combustion or venting could be present.

How is a CAZ test done?

Most CAZ tests are based on one or more of the procedures listed in a document called: Standard Guide for Assessing Depressurization-Induced Backdrafting and Spillage from Vented Combustion Appliances (ASTME 1998-02(2007)). Basically, the house has various doors closed, exhaust fans turned on the pressure differential between the area around the combustion appliance and other areas is then evaluated. If the CAZ area is negative that could mean there is a greater likelihood of combustion problems like backdrafting and spillage.

What are backdrafting and combustion spillage and Why does negative pressures cause combustion problems?

Combustion spillage happens when the unwanted combustion gas is not fully vented from your home. And will result in combustion gases like carbon monoxide entering into your home. Backdraft is primarily a re-verse movement of air through a combustion appliance. In a worst case, backdrafting can pull the flame outside of the burner assembly. When this happens it is called Flame rollout.

How are combustion problems fixed?

To burn properly all appliances, require the correct mixture of fuel and air and an ignition source. Technicians who work for professional HVAC contractors have the tools and training needed to isolate and resolve combustion related problems. For example, spillage and backdraft are both caused by a lack of available combustion air so a technician might be able to simply adjust the amount of combustion air, or clean out the furnace heat exchanger and the vent system to get your system operating properly again. HVAC technicians have the test equipment needed to identify the source or sources of combustion related problems. Often the actual problem is caused by other appliances that are not properly installed such as gas ovens, hot water heaters, and dryers.

How do I get the other appliances to work properly?

If the problem is with the operation of another appliance an additional repair technician certified on that appliance may need to be called in. In your home, the proper airflow to all of the combustion appliances must be present when they are operating and they must all be operating properly. Failure to allow for the proper amount of air to meet the cumulative appliance and occupant needs can cause unsafe conditions in your home. So it is strongly recommended that you call back the HVAC professional contractor to check your HVAC system and the entire home after any additional repairs are made by appliance repair technicians. Your professional HVAC contractor can then reevaluate the combustion needs and offer you solutions that will address them.

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Quality Installation You should get what you pay for!

There are many factors to consider when replacing your HVAC system.

How can you be sure you will get what you pay for? How can you discern a contractor's skills, or evaluate their proposal's promises? How can you assess the value of your new heating and cooling system and its installation when the cost is but one variable in the total value equation?

Experts from across the HVAC industry identified and refined the core elements required for a quality HVAC installation.

The result is a nationally-recognized, industry-approved standard (ANSI/ACCA HVAC Quality Installation Specification) which documents these industry requirements. The chart below will help you evaluate your contractor's compliance with the key elements in the Quality Installation (QI) standard. The questions address requirements of the key QI sections, then discusses the requirement so you can get what you pay for. If you seek value, rate your contractor—before you rate the price. For a detailed checklist visit: www.acca.org/homes

QUALITY INSTALLATION CHECKLIST (ABBREVIATED)		Contractor's Score (Yes = 1 & No = 0)		
QI Elements Questions	How to Get What You Pay For	Contractor 1	Contractor 2	Contractor 3
Did the contractor review the load calculation for your home with you?	In order to install the right size unit, contractors need to know the home's heating and cooling requirements, based on a variety of factors (e.g., size of the home, type of windows, insulation etc.). Determining heating and cooling loads based on the building's square footage is inaccurate and inadequate. Also, basing replacement equipment on the size of the original system could lead to problems since the original equipment size may have been incorrect.			
Did the contractor review the equipment installation procedures with you? Does the contractor have an installation checklist for testing the new equipment?	Selecting a high efficiency unit is smart. Hiring a contractor who will install the unit so it performs at that high level of efficiency is very smart. It takes great skill and a little extra time to design and test the system to ensure the equipment was installed correctly. Post installation measurements are key factors to ensuring your energy savings and guarding your health and safety.			
Did the contractor review the condition of your duct system with you? Did the contractor offer a plan to solve identified problems?	Leaky ducts can cause health problems and waste the energy savings that new high efficiency HVAC systems promise. Also, if the ducts are too small they will cause the HVAC system to use more energy while delivering less comfort. Ducts that are too small also may lead to early equipment failure.			
Upon job completion, will the contractor sit down and give you all the information you need?	You should receive the equipment's operators manual(s) and be shown how to do a few simple things like operate the thermostat and change the air filter. You should receive warranty and maintenance requirements and contact information. You should also receive a copy of the checklist used to test, measure, and ensure the system is working as designed.			
Is the installing technician NATE certified?	Contractors who employ NATE™ certified technicians are providing you with the highest level of nationally recognized talent.			
After interviewing the contractors, compare their scores, then their prices.	Contractor's Score:			
	Contractor's Price:			

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