

THE HOMEOWNERS JOURNAL

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HOW TO USE AIR CONDITIONING EFFICIENTLY

By James Quarello
ASHI Certified Home Inspector

We love air conditioning. Good ol' A/C. Keeps us cool and comfortable. Until we get the electric bill. Then we get "hot" about the cost. Fact is most people do not use their air conditioning effectively or efficiently. Now you're not going to save bundles of money by being more conscious of the way you use A/C, but it can make the pain a little more tolerable.

Whether you have a central A/C system or room units, you can save by following a few simple rules.

Maintenance: Just like any mechanical system, your air conditioner needs regular maintenance to operate at peak performance. Clean or replace your filters **once a month!** This is true for a room unit or central system. There seems to be an idea that high efficiency filters last longer. Leave them in for 3, 6, 12 months. Not true, they are finer and therefore filter smaller particles. This means they generally get dirty **quicker**. Often these

filters can be detrimental to your systems efficiency by restricting air flow. You should check with your HVAC technician before using high efficiency filters such as HEPA types. In extreme cases they can cause the indoor cooling coils to freeze, which may result in damage.

The indoor cooling coils in the air handler should be cleaned once a year. Dirty coils are less efficient. The fan blades in the air handler should also be cleaned. Clean blades move more air.

Clean condensate lines and check and clean the pump if your system is equipped with one. Be sure system shutdown switches are working. Look over the catch pan under the air handler if unit has one. Be sure there are no holes or cracks.

The outdoor compressor is the heart of a central A/C system. Keep the area around the unit clear and free of debris. Restricting the air flow from the unit will impede its' ability to dissipate heat causing it to work harder.

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How to Build a Porch Swing

Precisely measuring the enjoyment porch swings provide is difficult, but a good place to start is monitoring how long your smile lasts.

by Jill Connors

A porch swing isn't just a piece of furniture, it's a state of mind. Hop on, sway for a bit, and you're transported to a stress-free zone. Just ask Suzanne Henninger, who owns a weekend cottage in Seaside, Florida, where the front porch features a swing painted a cool blue. "I get my cup of coffee and head there first thing in the morning," says this health-care company vice president. "I listen to

the birds, smell the ocean air, and slowly rock. It's heaven."

Even the simplest porch swing offers a taste of gracious living, perhaps because it's a reminder of more genteel times. Such swings became popular in the mid-1800s, an era known for houses with wraparound porches, when Americans began enjoying more leisure time. They were particularly favored in the sultry South, where they provided a much-appreciated artificial breeze.

While metal and wicker versions are available, most porch swings today are wooden, made from teak, cedar, pine,



A white-painted model designed with the clean lines of a piece found at the Weatherend estate in Maine.

maple, or oak. Seeing a beautiful antique swing in Newport, Rhode Island, led

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AIR CONDITIONING

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Have the cooling fins cleaned once a year. The same is true for room units. Don't blow lawn clippings into the unit! Or if your clothes dryer is venting lint into the fins, find a way to correct this.

Clean your ducts! This is a greatly overlooked area of forced air maintenance. Dirty ducts are first and foremost unhealthy. You should consider cleaning your ducts every 3-5 years.

Using your system efficiently: The best way to use a central air conditioning system is to not open your windows when the temperature cools down for one or two days. The job of the A/C system is to; one: cool the air and two: dehumidify the air. By opening windows you re-humidify the air in the home and when you restart the system, it will have work to once again dehumidify the air.

A very important consideration is where you set your thermostat. 78 degrees is the optimal temperature for central A/C systems. 78 is not uncomfortable especially if the air is dry. Contemplate this fact, for every degree you deviate from 78 it will cost you about **three percent more** per degree to run you A/C. Using ceiling fans will also allow you to more comfortably raise the temperature and use the unit less.

Automatic or setback thermostats can save you money by raising the temperature setting while you are away from home and lowering it before you come back. Raising the temperature for a period of about eight hours is recommended in order to realize any savings. Shorter periods may not save you any money or may even cost you. Be aware and experiment with setting these devices around your schedule.

All ducts should be insulated and sealed. Duct leaks can be responsible for up to a 30% loss in efficiency. The same is true for insulating ducts, especially in unconditioned spaces such as an attic.

Some other points to remember are close your shades and blinds during the day. Insulated shades are a good way to keep the heat out of your home. Avoid using your oven, cook on the stove top or better yet the microwave or barbecue outdoors. If you have a ventilating



Typical Central Air Conditioning System

The typical central air conditioning system is a split system, with an outdoor compressor unit and an indoor coil, usually installed on top of the furnace in the home. The compressor pumps refrigerant through the system to gather heat and moisture from indoors and remove it from the home. Heat and moisture are removed when warm air from inside the home is blown over the cooled indoor coil. The heat in the air transfers to the coil, thereby cooling the air. The heat that has transferred to the coil is then pumped to the exterior of the home, while the cooled air is blown back inside, to maintain a comfortable indoor temperature.

hood run it to spot remove the heat to the exterior, but don't over do it, this will draw some hot outdoor air into the home.

Size matters: Bigger is not better with air conditioning. If your system is too large, either central or room units, it will not effectively dehumidify the air. This will make the home very uncomfortable. It will be cool, but feel damp or "clammy".

Whirlpool has a [cooling capacity calculator](#) that you can use to choose the correct size room air conditioner for your application. With central air the system is sized by an HVAC technician using heat load calculations.

When choosing any air conditioner the higher the efficiency the lower the operating cost. Central units are rated in SEER (Seasonal Energy Efficiency Ratio). The minimum federally mandated rating since January 23, 2006 is 13. SEER 13 is 30% more efficient than the previous minimum SEER of 10.

Room air conditioners are rated by the energy efficiency ratio (EER). The higher the EER rating, the more efficient the air conditioner. National appliance standards require room air conditioners built after January 1, 1990, to have an energy efficiency ratio (EER) of 8.0 or greater.

When buying a room air conditioner, look for units with an EER of 10.0 or above. Check the Energy Guide label for the unit, and also look for room units with the ENERGY STAR label.

A little consideration should be given to where you install your air conditioner. If possible, install the unit in a shaded spot on your home's north or east side. Direct sunshine on the unit's outdoor heat exchanger decreases efficiency by as much as 10%. By following these tips you will save money and be more comfortable. And you may find the painful cost of comfort might just be a little more bearable.

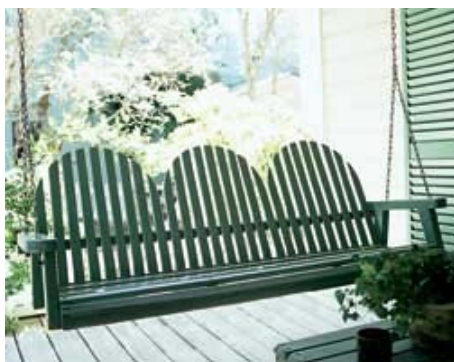
PORCH SWING

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This Old House master carpenter Norm Abram to craft his own, out of plantation teak. “Teak is very strong as well as rot resistant, so it can hold up to the outdoor environment. And it weathers beautifully,” says Norm, whose design was inspired by a classic English garden bench. Indeed, swings made of teak (\$500 to \$1,000) or cedar (\$250 to \$400) are meant to weather in the elements, turning silvery or dark gray. Some homeowners may prefer a painted swing, either crisp white or a color that complements their porch or exterior trim. In that case, a less expensive pine, oak, or maple swing (\$150 to \$400) can be coated with exterior trim paint or high-gloss porch enamel to suit.

For the most part, swing seats come 4 or 5 feet long; they may be contoured or flat. Seat depth varies widely, from 18 to 36 inches. The porch swing Norm built measures 4 feet long and has a seat that is 18 inches deep, dimensions he finds just right. Since comfort comes down to personal preference, it's a good idea to test-drive a swing before you buy.

Style differences emerge mainly in the swing's back: It may be squared off or curved, and constructed with horizontal or vertical slats, which may be set close together or spaced wide apart. While the peaked back of an Adirondack-style might seem more appropriate for the porch of a clapboard cottage than a brick Georgian, most swings can adapt to their architectural surroundings with the addition or omission of fabric-covered cushions.



A green-painted Adirondack-style swing with room for three.

Whatever way a porch swing is personalized, its appeal remains universal. When Suzanne Henninger bought her cottage four years ago, “the swing was the very first thing I added,” she says. “When friends come to visit me, they rock on that swing, then go home and buy one. It's contagious.”

How to Hang It



Attaching with eyebolts

When positioning a porch swing, allow for at least a 4-foot arc for the swing to move through. As for height off the floor, use 17 inches as a starting point, and adjust from there. Hanging chains can be stainless or galvanized steel; if you prefer the look of rope, make sure it is marine-grade braided nylon or polyester, and check it regularly for signs of wear.

“The biggest thing in installing a porch swing is to make sure it goes into something structural,” says TOH general contractor Tom Silva. In Seaside, Florida, where many of the porches feature exposed beams and joists, and most of the cottages were built in the past 15 years, town carpenter Jim Eichberger uses stainless steel screw-eyes with a 4-inch shaft as hanging hardware. He first drills a pilot hole slightly smaller than the shaft, then twists the screw-eye into place as far as it will go, using a screwdriver wedged through the eye for the final tightening. Tom Silva is more accustomed to working on the porches of older homes, where the condition of joists is often hidden by a finished wood ceiling. Rather than remove a section of the ceiling and have to replace the whole thing later, he prefers to cut a 3-by-3-foot

hole in the porch roof and patch it when he's done. From the roof, he predrills holes through the joists, then inserts 6-inch machine-threaded eyebolts through the ceiling and joists, securing them with nuts. (A threaded connector and nut can be used to lengthen a 6-inch eyebolt, if needed.) If the joists aren't located exactly in line with where you want to put your swing, Tom advises hanging a timber between two joists, then putting the eyebolt through the timber and securing the nut. Where a swing is to be installed parallel to a single joist and older, full-dimension lumber isn't in place, the joist should be sistered.

“It's definitely more of a pain to do it this way,” says Tom — and likely to take the project out of the hands of most do-it-yourselfers. “But it's the safest, strongest approach. I wouldn't feel comfortable any other way.”

No Porch Required



A deck, backyard, or garden is also a perfect place to site a swing. A rope-hung bench looks right at home beneath a sturdy tree limb; one suspended from a chain is a welcome addition under a well-built pergola or arbor. (Norm, who doesn't have a porch, hung his under an arbor at the New Yankee Workshop.) A number of companies have swings that come suspended in their own frames, or with an arched or flat-topped arbor from which to hang them. Walpole Woodworkers offers both a rustic Lakewood Swing (\$650) with facing love-seats that move in unison and the lattice-covered Plantation Arbor arch with cedar Kimball Swing (\$1,985), left. A glider — a bench that gently moves forward and back on a mechanized base — is even more versatile, since it requires less space and can be relocated with ease. Wood Classics offers a kit that turns any of its 4-, 5-, or 6-foot-long teak garden benches into a glider.

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ENERGY-EFFICIENT WATER HEATING

A Consumer's Guide to Energy Efficiency and Renewable Energy

U.S. Department of Energy - [Energy Efficiency and Renewable Energy](#)

To lower your water heating bills, try one or more of these energy-saving strategies:

Reduce Hot Water Use for Energy Savings

You can lower your water heating costs by using and wasting less hot water in your home. To conserve hot water, you can fix leaks, install low-flow fixtures, and purchase an energy-efficient dishwasher and clothes washer.

Fix Leaks

You can significantly reduce hot water use by simply repairing leaks in fixtures—faucets and showerheads—or pipes. A leak of one drip per second can cost \$1 per month.

If your water heater's tank leaks, you need a new water heater.

Install Low-Flow Fixtures

Federal regulations mandate that new showerhead flow rates can't exceed more than 2.5 gallons per minute (gpm) at a water pressure of 80 pounds per square inch (psi). New faucet flow rates can't exceed 2.5 gpm at 80 psi or 2.2 gpm at 60 psi. You can purchase some quality, low-flow fixtures for around \$10 to \$20 a piece and achieve water savings of 25–60%.

Showerheads

For maximum water efficiency, select a shower head with a flow rate of less than 2.5 gpm. There are two basic types of low-flow showerheads: aerating and laminar-flow. Aerating showerheads mix air with water, forming a misty spray. Laminar-flow showerheads form individual streams of water. If you live in a humid climate, you might want to use a laminar-flow showerhead because it won't create as much steam and moisture as an aerating one.

Before 1992, some showerheads had flow rates of 5.5 gpm. Therefore, if you have fixtures that pre-date 1992, you might want to replace them if you're not sure of their flow rates. Here's a quick test to determine whether you should

replace a showerhead:

1. Place a bucket—marked in gallon increments—under your shower head.
2. Turn on the shower at the normal water pressure you use.
3. Time how many seconds it takes to fill the bucket to the 1-gallon (3.8 liter) mark.

If it takes less than 20 seconds to reach the 1-gallon mark, you could benefit from a low-flow shower head.

Faucets

The aerator—the screw-on tip of the faucet—ultimately determines the maximum flow rate of a faucet. Typically, new kitchen faucets come equipped with aerators that restrict flow rates to 2.2 gpm, while new bathroom faucets have ones that restrict flow rates from 1.5 to 0.5 gpm.

Aerators are inexpensive to replace and they can be one of the most cost-effective water conservation measures. For maximum water efficiency, purchase aerators that have flow rates of no more than 1.0 gpm. Some aerators even come with shut-off valves that allow you to stop the flow of water without affecting the temperature. When replacing an aerator, bring the one you're replacing to the store with you to ensure a proper fit.

Purchase Energy-Efficient Dishwashers and Clothes Washers

The biggest cost of washing dishes and clothes comes from the energy required to heat the water. You'll significantly reduce your energy costs if you purchase and use an energy-efficient dishwasher and clothes washer.

Dishwashers

It's commonly assumed that washing dishes by hand saves hot water. However, washing dishes by hand several times a day can be more expensive than operating an energy-efficient dishwasher. You can consume less energy with an energy-efficient dishwasher when properly used and when only operating it with full loads.

When purchasing a new dishwasher,

check the EnergyGuide label to see how much energy it uses. Dishwashers fall into one of two categories: compact capacity and standard capacity. Although compact-capacity dishwashers may appear to be more energy efficient on the EnergyGuide Label, they hold fewer dishes, which may force you to use it more frequently. In this case, your energy costs could be higher than with a standard-capacity dishwasher.

One feature that makes a dishwasher more energy efficient is a booster heater. A booster heater increases the temperature of the water entering the dishwasher to the 140°F recommended for cleaning. Some dishwashers have built-in boosters, while others require manual selection before the wash cycle begins. Some also only activate the booster during the heavy-duty cycle. Dishwashers with booster heaters typically cost more, but they pay for themselves with energy savings in about 1 year if you also lower the water temperature on your water heater.

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PORCH SWING

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Where to Find It

Cedar swings:
Walpole Woodworkers
Walpole, MA
800-343-6948
www.walpolewoodworkers.com

Oak swings:
Creative Woodworking
Spruce Pine, AL
888-225-2029
www.oakswings.com

Teak swings:
Wood Classics
Gardiner, NY
800-385-0030
www.woodclassics.com

Mahogany swings:
Weatherend Estate Furniture
Rockland, ME
800-456-6483
www.weatherend.com

Wood, wicker, and vinyl/aluminum swings:
Porches and Yards
800-872-6525
www.porchesandyards.com

ENERGY-EFFICIENT

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Another dishwasher feature that reduces hot water use is the availability of cycle selections. Shorter cycles require less water, thereby reducing energy cost.

If you want to ensure that your new dishwasher is energy efficient, purchase one with an ENERGY STAR label.

Clothes Washers

Unlike dishwashers, clothes washers don't require a minimum temperature for optimum cleaning. Therefore, to reduce energy costs, you can use either cold or warm water for most laundry loads. Cold water is always sufficient for rinsing.

Inefficient clothes washers can cost three times as much to operate than energy-efficient ones. Select a new machine that allows you to adjust the water temperature and levels for different loads. Efficient clothes washers spin-dry your clothes more effectively too, saving energy when drying as well. Also, front-loading machines use less water and, consequently, less energy than top loaders.

Small-capacity clothes washers often have better EnergyGuide label ratings. However, a reduced capacity might increase the number of loads you need to run, which could increase your energy costs.

If you want to ensure that your new clothes washer is energy efficient, purchase one with an ENERGY STAR label.

Lower Water Heating Temperature for Energy Savings

You can reduce your water heating costs by simply lowering the thermostat setting on your water heater.

For each 10°F reduction in water temperature, you can save between 3%–5% in energy costs.

Although some manufacturers set water heater thermostats at 140°F, most households usually only require them set at

120°F or even 115°F. Water heated at 140°F also poses a safety hazard—scalding. However, if you have a dishwasher without a booster heater, it may require a water temperature within a range of 130°F to 140°F for optimum cleaning.

Reducing your water temperature to 120°F also slows mineral buildup and corrosion in your water heater and pipes. This helps your water heater last longer and operate at its maximum efficiency.

Consult your water heater owner's manual for instructions on how to operate the thermostat. You can find a thermostat dial for a gas storage water heater near the bottom of the tank on the gas valve. Electric water heaters, on the other hand, may have thermostats positioned behind screw-on plates or panels. As a safety precaution, shut off the electricity to the water heater before removing/opening the panels. Keep in mind that an electric water heater may have two thermostats—one each for the upper and lower heating elements.

Mark the beginning temperature and the adjusted temperature on the thermostat dial for future reference. After turning it down, check the water temperature with a thermometer at the tap farthest from the water heater. Thermostat dials are often inaccurate. Several adjustments may be necessary before you get the right temperature.

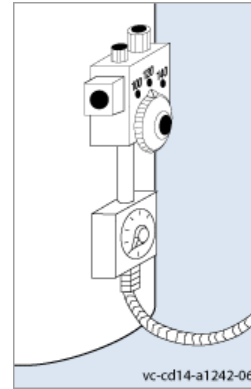
If you plan to be away from home for at least 3 days, turn the thermostat down to the lowest setting or completely turn off the water heater. To turn off an electric water heater, switch off the circuit breaker to it. For a gas water heater, make sure you know how to safely relight the pilot light before turning it off.

Install a Timer and Use Off-Peak Power for Electric Water Heaters

If you have an electric water heater, you can save an additional 5%–12% of energy by installing a timer that turns it off at night when you don't use hot water and/or during your utility's peak demand times.

You can install a timer yourself. They can cost \$60 or more, but they can pay for themselves in about 1 year. Timers are most cost effective if you don't want to install a heat trap and insulate your water heater tank and pipes. Timers aren't as cost effective or useful on gas water heaters because of their pilot lights.

Contact your utility to see if it offers a de-



mand management program. Some utilities offer "time of use" electricity rates that vary according to the demand on their system. They charge higher rates during "on-peak" times and lower rates during

"off-peak" times. Some even offer incentives to customers who allow them to install control devices that shut off electric water heaters during peak demand periods. These control devices may use radio signals that allow a utility to shut off a water heater remotely anytime demand is high. Shut-off periods are generally brief so customers experience no reduction in service.

Insulate Hot Water Pipes for Energy Savings

Insulating your hot water pipes reduces heat loss and can raise water temperature 2°F–4°F hotter than un-insulated pipes can deliver, allowing for a lower water temperature setting. You also won't have to wait as long for hot water when you turn on a faucet or showerhead, which helps conserve water.

Insulate all accessible hot water pipes, especially within 3 feet of the water heater. It's also a good idea to insulate the cold water inlet pipes for the first 3 feet.

Use quality pipe insulation wrap, or neatly tape strips of fiberglass insulation around the pipes. *Pipe sleeves* made with polyethylene or neoprene foam are the most commonly used insulation. Match the pipe sleeve's inside diameter to the pipe's outside diameter for a snug fit. Place the pipe sleeve so the seam will be face down on the pipe. Tape, wire, or clamp (with a cable tie) it every foot or two to secure it to the pipe. If you use tape, some recommend using acrylic tape instead of duct tape.

On gas water heaters, keep insulation at least 6 inches from the flue. If pipes are within 8 inches of the flue, your safest choice is to use fiberglass pipe-wrap (at least 1-inch thick) without a facing. You can use either wire or aluminum foil tape to secure it to the pipe.

