HOMEOWNER REPAIR GUIDE

CEILING FANS

Whether you're looking to cool your house in summer or to create the look of a tropical plantation, a ceiling fan can add both style and function to your room. There are many different models available – four blades or five, a variety of finishes, and fans with or without light kits. Most offer several speeds and a reversing switch to change the direction of the airflow. More expensive models may include wireless remote controls, dimmer switches, and other features.

CHOOSING A FAN

When selecting a fan, pay attention to the fine print on the carton. If you want a fan with a light, make sure the model you choose has a light kit included. (Trying to buy a compatible light kit may not be easy.) With ceiling fans, price usually indicates quality; cheaper models are likely to have a noisy motor, wobbly fan blades, and a shorter life span. Make sure, however, that you're not paying a premium for a designer "look" or features that aren't important to you.

The first step is to determine the size fan you will need. As a general rule:

LONGEST WALL IN YOUR ROOM	FAN SIZE
12 feet or less	36" fan
12 to 15 feet	42" fan
15 to 18 feet	52" fan
Clearances	The fan blades should be at least seven feet off the floor, and the blades must be at least 12" from the ceiling (18" is better). You can choose a "ceiling-hugging" model without a down-rod for a room with lower ceilings.

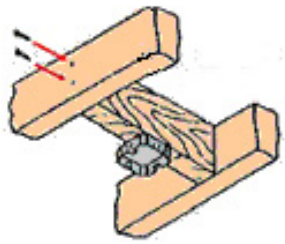
Manufacturers generally include assembly and installation instructions specific to the model you have purchased. Regardless of the fan you will be installing, however, you should think about how the fan will be secured to and supported in the ceiling, and how it will be connected to the electrical wiring – especially when installing it in an older home.

> **BEFORE YOU BEGIN**
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> Turn off all power to the circuit by pulling the fuse or tripping the circuit breaker. (Never assume that turning off the switch will guarantee that there is no current; sometimes, switches have been incorrectly installed on a neutral wire, leaving the other wire "hot" even when the switch has been turned off.) If you are not certain that you have shut off the correct circuit, be safe and turn off all power to the house at the service panel.

MOUNTING THE FAN

If you are replacing an existing light fixture, especially in an older home, be aware that the ceiling-mount box for the light may not have been secured to the wood framing; in fact, the box for a lightweight light fixture may only have been attached to the ¼" lath behind the plaster. It's important that you replace the old box with a metal junction box able to support the weight of the motor and the vibration of the moving blades.

If your fan weighs 35 pounds or less, you can use a special electrical box approved for ceiling fans or ceiling suspended "paddle" fan installation, nailed to the side of a ceiling joist. For fans heavier than 35 pounds, you'll need to support the fan independently of the electrical box. If you have access to the attic above, you can add a 2" x 4" wooden header (brace) nailed between two joists, and nail the junction box to it.



Fixture box attached to wooden brace



Ceiling fan hanger bar

As an alternative, you can install an expandable metal ceiling fan hanger bar through the rough opening. (If your model will have a decorative ceiling cover against the plaster, you can usually enlarge the hole to insert the bar, since the opening will be hidden by the canopy.) Metal teeth at either end of the bar secure the bracket in place between the floor joists. An electrical box, which generally comes with the hanger kit, is then attached to the bracket; with most bars, the box can be positioned at any point along its length, so your fan can be located at the desired spot in the ceiling.

If you have a beamed ceiling, you'll need special mounting hardware to install the fan. There is one type for a horizontal beam, and another type for a sloping beam. You may need an extender to ensure that the fan has sufficient clearance.

CONNECTING THE FAN TO THE HOUSE WIRING

With old knob-and-tube wiring, you won't be able to power the fan and the light separately; you will have to use the pull chains on the fixture to turn the light on or off and to change fan speeds. (Some people purchase a fan with remote control for that reason.) If you are not sure which of the existing wires coming into the junction box is the "hot" wire and which is the "neutral," turn on the power to the circuit just long enough to use an electrical tester, and then turn the power off again.

1. Attach the black "hot" wire that powers the fan and the "hot" wire that powers the light (usually blue, but sometimes another color) together in a wire nut with the "hot" wire in the junction box.
2. Attach the white "neutral" wire from the fan to the "neutral" wire in the junction box.
3. Because there is no ground wire on the knob-and-tube system, put a wire nut on the end of the ground wire from the fan and coil it up in the junction box.

If you wish to operate the fan independently of the light, you will need to run a 3-wire cable between the fixture and the junction box, and mount a double switch in the box. Similarly, if you are installing a fan where there is no existing light fixture, you'll need to run wires from the service panel or a nearby circuit to the junction box holding the fan and run a switch leg to a wall switch. (If you run a new circuit to the junction box with a ground wire, connect it to the grounding bracket on the fan and to the fan itself, joining all three wires in a wire nut.) Depending upon the way the joists are positioned, and whether the room is on the first or second floor, you may need to cut into your ceiling and/or walls to get the wires where they need to go. The ***Rewiring an Old House*** handout from our Repair Library has tips on fishing wire through walls; our separate handout on wall switches may also be helpful.

LEAD PAINT

Be sure to consider how to protect your family from lead paint dust when old plaster is disturbed.

ONE ADDITIONAL NOTE

If you are utilizing knob-and-tube wiring from an old lighting circuit, the insulation may have deteriorated around the conductors (wires). Wrap some electrical tape around the wire or purchase a length of knob-and-tube insulation fabric and run the wire through it. Be sure to use Romex clamps to secure the wires where they enter the junction box (through knock-out openings). Otherwise, the vibration of the fan can, over time, cut through the surrounding insulation, creating a shock and fire hazard or shorting out the circuit.

ASSEMBLY

Since fan assembly varies from brand to brand, it's important that you follow the manufacturer's instructions for putting the parts of your fan together. Once you have everything in place, turn the power back on and test the fan.

IF THE FAN WOBBLES

If the fan wobbles when it runs, the blades may need to be balanced. This involves a bit of trial and error. You can interchange two of the blades to see if that solves the problem. If not, you may need to determine if one or more of the blades is lighter in weight than the others and attach a small object to the blade(s) to equalize their weight. Some fans include small weights that can be attached to the blade; if not, try taping a pencil eraser or small amount of modeling clay to the top center of the blade(s) until the fan runs smoothly.

Home Repair Resource center

Home Repair Resource Center empowers homeowners to maintain their homes for sustainable and diverse communities.

WWW.HRRC-CH.ORG +1.216.381.6100 2520 Noble Road, Cleveland Heights, OH 44121
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