

## **Bath Fan Installation**

You've already spent a few extra bucks on a high quality 80 cfm bath fan. It's quiet -- 1.5 sones or less -- and has an efficient, permanent-lubricated motor, so it will last for a long time. How do you install a bath fan for maximum performance and minimum noise? The installation method, ducting and controls you choose will increase the usability and effectiveness of a good ventilation fan.

### **Installation**

Mount the fan to the framing in a way that minimizes the transmission of vibration from the fan to the resonant structure of the house. Install vibration isolators, such as rubber biscuits (Graingers 5C024 or Johnstone R-54-252), or resilient channel (used to hang drywall for sound dampening), between the fan and framing as shown in the drawings below. If you use rubber mounts, avoid over-tightening the connection. If you use resilient channel, install the strips parallel to the motor shaft for maximum effectiveness. Separate the fan box from the ceiling drywall with a resilient material such as closed-cell foam tape or backer rod. Do not use caulking, because it will transfer sound.

### **Ducting**

For maximum air flow, reduce pressure losses in the fan duct by using only smooth wall metal pipe and fittings. (Never use plastic flex hose of any description!) Keep the duct as short as possible, and terminate the duct outside, with a fitting designed for the purpose. Seal the joints in the ducting with metal-foil tape or fiberglass mesh and duct mastic. Do not use gray cloth "duct" tape! Fasten all joints with at least 3 sheet metal screws. The air in these ducts often carries lots of moisture that can condense on the cold walls of the duct. Prevent condensation from forming in the duct by insulating the duct and wrapping it with R-11 fiberglass batts, if it protrudes above the ceiling insulation. If the duct is a horizontal run, slope it so it will drain outside at the termination cap. Do not use an ordinary roof jack for a fan duct termination, because the screen will clog with lint and it cannot be cleaned.

### **Controls**

There are basically 3 control possibilities.

1. Give the fan its own switch. If your sound isolation job is successful, you may want to use a pilot light so you can tell if the fan is on or not.
2. Wire the fan to the bathroom light. This guarantees that the fan will be used when needed.
3. Install either a twist timer or a programmable timer (the Tork 701 is an excellent example) to operate the fan at times of the day you select. A

programmable timer should have an override switch located in the bathroom so that fan can be turned on during off-program times.

