Attic Whole House Fan Installation Plan

How it all works and how to install it

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INTRODUCTION
This report tells about a very quiet and low cost whole house fan system. All it requires is a used FAU blower , some duct, and a ceiling opening.

HISTORY
There were two popular whole house fan systems before this plan was created.
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30 INCH CEILING MOUNTED FANS
These use a huge 3 bladed fan in a housing mounted right at the ceiling. It is effective, but very noisy and, actually, a bit scary to see this huge fan above your head behind louvers that automatically rise up when it is on. These are the least expensive at about $400 plus installation from places like Dayton and Sears.

LOW FLOW DUCT FANS HUNG UNDER THE ROOF
The latest innovation is called "QuietCool" and uses lower volume duct fans mounted up in the attic hanging from the roof pulling air through new openings cut in your ceiling. These fans are rated at about 1450 CFM (cubic feet per minute) when operated in free air so they are not powerful enough for your whole house. They are typically installed for each room you want to cool. They cost about $400-500 per room or $2000 or more per house.

THIS NEW DESIGN GIVES YOU QUIET OPERATION AND HIGH AIR FLOW
The idea that you mount the blower under the roof and not right at the ceiling is why the system described here is so good. Now you can mount ONE big high flow BLOWER in your attic, put in ONE DUCT and ONE CEILING opening and get your whole house cool for about the same price as those big fans!

There are two ways to implement your own whole house system. One is to cut a new opening in your ceiling and mount a high flow blower hanging from the roof. Or you can tap into the ducts and vents already being used by your central air conditioning system.

You also have options for the AC power for the blower. You can wire a new switch to turn it on, or you can install an X10 remote control. You can get X10 controls on Ebay and other places, or direct from X10. You can buy the X10 MC10A minicontroller and one PAM04 Heavy Duty appliance module. You can then buy a NEMA 6-20 20 amp extension cord (the only way to interface with the PAM04).

So if you just add the ceiling opening, some duct to the blower, and the blower, you have the simplest and most powerful system.

But here is a more elegant way to tap into your existing HVAC system:

There are three key elements –

1. There is a large metal tee duct installed between your existing air inlet and the forced air unit.
2. There is a gravity operated one way valve duct installed between the tee and the blower.
3. There is a large blower that pulls air up into the attic through your existing ducts all over the house.

Note that while this taps into your air conditioning system, there is no reason why you could not get multiple blowers and put inlets in ceilings for the blowers without the one way air duct.

You will need a one way flow duct to isolate your FAU from this new blower. I just discovered that Pex sells the part for just about $80. Here is the link.

http://www.pexsupply.com/Honeywell-SPRD14-14-Round-Static-Pressure-Regulating-Damper-13608000-p?gclid=CKv2q7LzpZwCFRFWagodnzvBkA

So now I will show you some pictures of the installation.

Details are pictured and described below

Figure 001. This is the intake duct before modification. The ceiling intake is to the right and the air conditioning box is lower left.

002. I was lucky to have lots of room in the attic.

003. I cut plywood into 2 by 4 foot pieces and made a floor.

004. I decided to put the tee right on top of the unit so I disconnected the 18 inch duct there.

005. Here is the tee. I modified the shape a bit to make it easier to install.

006. Here is the tee mounted on the air box with the original duct now attached to the top. My mod was to make the bottom a bit bigger and the top a bit smaller so it fit easy.

007. I used silver duct tape on all joints.

008. This shows the blower with an adapter riveted to the side. The adapter is a 14 inch ring that is very cheap – I got it for free. It had a square flange and I trimmed it to round.

009. The blower is very heavy – I put it on a box to hold it near the roof while I attached cross bars and "plumbers tape" steel straps to the roof. Be sure to hang it – don't mount it on the ceiling joists – it

010. This is what the one way duct looks like. Mine does not have the big fitting on the lower right. It just sits horizontal so the inner plate falls to a closed position when my new blower is off. When it is on, it pulls the flap open. Perfect!

011. Here is the X10 controller. You plug it in anywhere you want and the top left ON button will turn the switch on and run the blower motor after to connect the extension cord to the motor.

012. Here is the X10 appliance module and the NEMA 6-20 extension cord.

The importance of using extension cords is that they are usually regarded as legal in an attic and do not need an electrician to install them. Technically, however, you need a metal junction box at the motor to connect the motor leads to the extension cord. Or, you can attach the motor leads to a simple plug and put a receptacle at the end of your extension cord. That way it is all extension type parts.

Any questions? Feel free to email me at kurt@IFIMISSITIFIXIT.com!

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