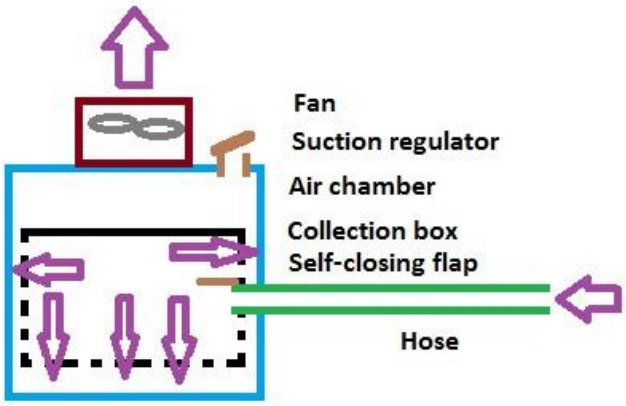
"If a colony disposed to swarm should be blown up with dynamite, it would probably not swarm again, but its usefulness as a honey-gathering institution would be somewhat impaired."

-- C.C. Miller, Fifty Years Among the Bees

This is the time of year when it seems every beekeeper and their 3rd cousin is catching swarms… except for me. If you are one of those blessed folks who have countless swarms waft down from heaven to fill your empty equipment, then all I can say is, "You are welcome," because no doubt many of those captured swarms originated in my bee yard.

You'll remember from the article "Free Bees?" that a bird in the hand is worth two in the bush, and often swarms are just too much trouble to be worthwhile. The same applies to cut-outs. But the ones that aren't too much trouble are a very satisfying find. And given that capturing a swarm is at least partial pay-back for the loss of honey revenue that I'll suffer, I certainly don't turn my nose up at them, as long as they are no more than head height and otherwise easily retrievable.

One very important tool that makes swarm-catching and doing cut-outs a much more civilized exercise (dare I say "easy"?) is a bee vacuum. Contrary to popular myth, a bee vacuum cannot "suck bees out of a wall." (Okay, with enough vacuum pressure, maybe it is theoretically possible, but the amount of force required means that you'd end up with a blob of bee soup instead of re-usable bees.) To do it right, the bees and comb must be exposed. The vacuum gently collects the bees from the comb surface. The beauty of a bee vacuum is that when collection is complete, all of the bees are safely contained in a package, just like the ones described in "Package Basics." They can then be installed wherever you wish.



Don't try to vacuum bees with a regular vacuum cleaner. I spoke with a fellow who had done that. "How'd it turn out?" I asked. "Not too good" was his reply, as expected. A specially-constructed bee vacuum has a few key features that prevent death and mayhem among the bees. Bee vacuums can be purchased for around $100 to $150 or you can make your own.

How it works

The schematic diagram above shows how a bee vacuum works. There are six critical components:

1. A fan. This should not be a powerful one, or else the vacuum pressure will propel the bees down the hose like fuzzy little bullets and smash them against the wall of the collection box. Mine is a one horsepower fan from a Mini Shop Vac.
2. Suction regulator. This is a valve or flap that can be opened or closed to adjust the force of the air flow. Fully opened equals less force; fully closed gives maximum force. The suction should be powerful enough to hesitantly lift a bee off of comb at about a half inch away. Much stronger than that will result in damage to the bee as it careens down the hose and into the collection box.
3. Air chamber. This is the box that holds the collection box.

My super-deluxe DIY bee vacuum has Plexiglas viewing windows, sliding vacuum regulator (on top), escape-proof hose port (on side) and even a thermometer!

4. Collection box. This is a screened container that will hold the bees. It fits inside the air chamber with plenty of room for air flow between the sides of the box and the inside of the air chamber. The side that is directly facing the fan must be solid, not screened, so that there isn't a direct path of air from the hose to the fan. Baffling the air flow that enters the collection box creates a relative "dead zone" of air inside the box, saving the bees from being tossed and tumbled once they enter it. This is an important feature of a bee vacuum.
5. Self-closing flap. The hinged flap prevents bees from escaping when the hose is removed. Mine uses rubber bands that act as springs to hold the flap snuggly in place in either the open or closed position.
6. Hose. Flexible vacuum cleaner hose, swimming pool hose or anything similar will do. It should be at least ten feet long, preferably longer. The ends should have plastic pipe-like extensions so that they can be fitted into the opening in the side of the air chamber.

The end of the hose holds the flap inside the collection box open. It automatically closes when the hose is removed, preventing bees from escaping.

Make one!

You can easily make your own bee vacuum. I'm not going to give dimensions or cutting guides because any old thing will work just fine, as long as you include the elements shown in the schematic on page one. For materials, all you need is the fan from a shop vac; a big container for the air chamber; a smaller container that fits inside of that one, with room to spare, for the collection box; window screen or wire mesh for the sides of the collection box; a hose; and some scrap to make the suction regulator and escape-prevention flap. The final dimensions aren't important at all.

You can simplify the construction of your bee vacuum even further by only making the air chamber and collection box. Instead of permanently affixing a fan, make an air port on top where the fan would otherwise be. Plug the hose that's attached to your regular ol' shop vac into the top air port and *voila*, you are ready to go. Your bee vacuum will be modular rather than self-contained but it should function perfectly well.

If you don't feel like making one, there are very nice commercial versions available. A popular model uses a five-gallon bucket as the outer air chamber, which makes the whole thing lightweight and very easy to carry around.

Usage tips

a) I have two collection boxes that can be swapped out if one becomes full (wouldn't that be nice!). Mine are about the size of bee package boxes. In fact an old bee package box could be retrofit to make an excellent collection box.

b) The suction regulator should be adjusted so that if you hold the business end of the hose a half inch or so away from a bee, she'll hesitate slightly before being sucked down the chute. Stronger than that and she may be banged up inside the hose before being slammed against the far wall of the collection box. If you are experiencing bee fatalities, adjust the suction.

c) While the fan is running, the bees inside the collection box will have plenty of fresh air. However once the fan is turned off, they can quickly suffocate and/or overheat. If the fan will be off for any length of time, remove the lid of the air chamber or completely remove the collection box to ensure that the bees don't perish.

d) My DIY bee vacuum has Plexiglas windows on each side. These let me assess whether the bees are being beat up by the suction, roughly how many bees I have collected, and so on. Note that once a few cups' worth of bees has been collected, they'll climb all over the screen and obscure the view. So while a viewing window is a nice luxury feature, it isn't critical.

e) Invest in some extremely long extension cords to get maximum use out of your bee vacuum.

Retail version of a bucket bee vacuum. On the right is the screened collection box. Note the solid top and the hose access port.

Without a doubt, this is the easiest way to collect swarms!

Final encouragement

Not only does a bee vacuum make swarm collection a snap, I consider them absolutely indispensible for doing cut-outs. Go ahead and get one this weekend so when the call comes for free bees, you'll be ready!

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