



AMA Charter #3470  
Club Newsletter December 2005

### Club Information

President – Seth Nagy  
Vice President – Brett Springall  
Secretary/Treasurer – Shirley Teague  
Safety Officer – James Burns  
Field Marshall – Jack Adams  
Into Pilots:  
Seth Nagy, Ron Miller, & Brett Springall

### A Note From The President

Our next meeting is December 21 at Captain's Galley. There will be a report about the landfill. Two test wells are going to be drilled at the old landfill. These wells will be used to determine the methane potential of the site. More about this at the December 21 meeting.

To spice things up for the next meeting, we'll have a drawing for a gift certificate to Hickory's newest hobby shop, Eddie Kizer's Planes-Trains-and-Automobiles. This time of year everyone needs stuff from the hobby shop to get that winter project underway. This certificate will help get your project rolling.

Don't forget, New Years Day is the four-star 40 pylon race at the Bob Wilson field in Hickory. Should be a great event for both participants and spectators.

Lastly, remember it is time to renew with AMA, and Caldwell Aeromodelers dues will also be due in January.

Hope to see you all at the Captains Galley December 21; 6:00 pm to eat, meeting starts at 7:00 pm. Until then, hope all your landings are good ones.

Thanks  
Seth H. Nagy  
President, CAM

### Notes from the last meeting

Election for 2006 year Officers will be held at the December meeting. Slate:

President - Seth Nagy  
Vice-President - Brett Springall  
Sec/Treas - Shirley Teague

A guest book has been put in the pin box at the field. The purpose of the guest book is to keep a log of field use by members and visitors.

Our incorporation and non-profit papers have been completed and mailed.

We will present a Christmas Fruit Basket to the County Maintenance Crew for all their help this year. We will also present a plaque to the County Commissioners at the first of the year.

We are ending our Club year with a total of 33 members.

WE THANK EACH AND EVERYONE WHO HELPED MAKE OUR YEAR SUCH A GREAT ONE!

Our Wish to Each of you:  
MAY LOVE, JOY AND PEACE BE YOURS AT CHRISTMAS AND THROUGH OUT THE NEW YEAR!

### **REMINDER:**

Our club dues and AMA expires December 31. Let us all start the New Year off right by renewing both. Remember we are a Charter Club and in order to fly you must have current AMA and Club membership.

**MEETINGS:** Next meeting will be on Wed December 21st at The Captains Galley on hwy321 in Granite Falls. Meeting at 7:00. COME BE WITH US ON THE LAST MEETING OF THE YEAR !!!

### Up Coming Events

November 12 - Annual swap meet. Dixie Classic fairgrounds, Winston Salem

Jan 1 - Four Star 40 Race. Wham field.

from Electric Flyers Only Inc. Crosswell MI

## Building a Vacuum Press System

**Ken Myers, editor**

There are many ways to make a vacuum press. This article doesn't cover how to cut foam or how to bag wings. (There are many Web sites/articles that cover this.) This project is fun if you're a builder, so go for it. A vacuum press is a must for making wings and other parts for model airplanes. If you are a builder and wish to advance your skills, a vacuum press is the way to go.

I have built several vacuum presses. I usually start by using the absolute cheapest parts, and spend the rest of the time working my way out of the mess I have created. The learning curve in life is brutal, but maybe I can save you some pain.

Our perception of what is a fair price seems to depend on rather strange parameters. I'll pay \$100 for a 3-oz brushless motor without blinking, but I'll try to save a few lousy dollars in the strangest ways on most of my projects. Sometimes I win, sometimes I lose. This time I won (it took me four tries). I started with a hand vacuum pump, progressed to a venturi/air compressor system, then to a compressor out of a defunct refrigerator, and finally to this system. The hand pump didn't move enough air. The venturi method was wearing out my air compressor, pleasing the utility company, and making a lot of noise. The refrigerator compressor only moved .5 CFM, and the exhaust spewed oil into the air.

My final vacuum press described here is patterned off industrial-type systems. It works without the problems my other version had and it's a real pleasure to use. Commercial systems such as the ones Vacupress or CST make start out at \$300 and go to several thousand, so the \$150 or less you may spend is a good deal.

### The Basics

Air is sucked out of a plastic bag, and the resulting atmospheric pressure squeezes the parts together with tremendous and uniform pressure. This pressure is adjustable from 3 inches to more than 25 inches Hg. Foam will flatten at anything more than 8 inches. I set my system for 6 inches for this application and at

roughly 20-21 inches Hg for woodworking. This system can produce more than 1800 pounds per square foot of pressure and is a lot cheaper than feeding an elephant.

### Components

A good pump is the heart of this system. I found a 1/4 hp surplus pump at Surplus Center. It pumps roughly 3-4 CFM. These surplus pumps came from Storage Technology and appear to be in good shape. Surplus Center has a good guarantee and will pay for shipping both ways if you get a defective pump.

The down side of this pump is that it uses a 240-volt motor. If you don't have 240-volt in your shop you may have to use your clothes dryer outlet or find another pump. You can buy used vacuum pumps on eBay at good prices, but I'm afraid of them. Vacuum pumps are used for biological experiments and with toxic chemicals sometimes. Do I need to explain where the Hulk came from?

My pump made noise like a small air compressor so I screwed a muffler on the exhaust. The compressor runs very little while working, so the noise is not really a problem for most people. I just don't like noise (that's why I fly electric). Some pumps are totally silent, for example a refrigerator compressor, but I found they don't pump much air.

I have a very large shop, 2400 square feet, so I needed a portable system. I bought a small folding table, installed wheels, and added a shelf and the vacuum components. I use the top of the table as a worktable, but I wanted it to be perfectly flat. So, I covered the medium-density fiberboard with Formica on both sides. I used the vacuum press (of course) to install the Formica. Trust me on there—forever! If you don't have the room for a roll-around, you can simply make a small wood tray to carry the press around. It's not very heavy, 40 lbs. maybe, without the reservoir. None of the layout or plumbing is critical so do what ever looks good to you.

**Reservoir Storage Tank:** The idea behind this is to provide a large vacuum supply so the pump doesn't cycle on and off rapidly. It also is used to help evacuate the bag. The air is pumped out of the large reservoir, and then closed off with a valve. When the wing is installed in the bag, the valve is opened with the pump running and this evacuates the bag quickly. A bigger reservoir is better in this case.

A small-capacity reservoir doesn't provide enough spare vacuum to work very well for big bags. The wings we make, however, don't require much pump down. The large bags I use on furniture require a huge pump down.

I used a 12-gallon portable air tank for a reservoir. You really don't need a reservoir with the pump I called out, but it looks so cool. The tank does take out many of the surges and slows down the pump cycling. It can be added later if you decide you need it.

**Vacuum Switch:** This regulates the pressure. It turns the pump on and off as needed. A small screw setting allows you a wide range of pressure. Air Logic model V-5100 is the one I use. The price is roughly \$25.

The pressure swing is roughly 2-inches with the single switch. If you want less swing than this you will have to use two switches. One switch is used to control the high pressure, and the other to control the low pressure. This particular model is very popular and seems to be the one everyone else uses. I only use one switch, and haven't found the wide swing to be a problem.

The switch is rated 15A by the company. The pump only pulls 1.6A so there is no need to rig a control relay. Break one side of the 240 volt line, and wire it to the switch contacts with push on connectors. I mounted the switch inside a plastic electric box.

**Vacuum Gage:** This shows you how much vacuum you have in the bag. Without it you cannot set the vacuum. It can be ordered from the same company that carries the vacuum pump.

**Miscellaneous Parts:** I purchased the rubber vacuum hose and a few other parts at the local auto-supply store. Most of the rest is standard plumbing hardware available at various home-improvement stores.

**Bags:** There are many articles on vinyl bags and valves. You can buy or make them, but I don't think something this heavy is needed. I use 2 mil sheet poly that I simply cut to fit around the part and make it roughly 8 inches oversize. I seal the edges of the poly sheet together with plumbers caulk. A 1/8 inch brass tube is laid on top of the caulk, and more caulk added on top. The plastic is then pressed into the caulk. When you pull a vacuum the bag self seals. I had a lot of trouble getting a good seal when using small pumps. The big pump seals the bag very quickly.

#### **Mechanical Assembly:**

I made a PVC manifold with a built in vacuum gauge to manage all of the hoses.

1. manifold line to vacuum switch
2. manifold line to pump
3. manifold line to storage tank "T."  
(Important: Use a large enough line here to prevent rapid cycling.)
4. "T" mounted to storage tank with shut-off valve; line from the valve goes to bag

#### **Parts List**

Vacuum pump, Vacuum gauge, Vacuum switch, Filter, Check Valve, Ball valve

1/8-inch rubber vacuum hose; 5-7 foot long (used as vacuum hose from manifold to storage tank) I used 1/8 inch hose to the bag. It slows down the evacuation and allows the bag to flow around the part. A bigger hose could be used.

Line cord for pump and 240-volt plug.

On/off switch for pump, 240-volt and electrical housing box.

1/8 inch hose barbs and Ts as needed; 1/8-inch pipe as needed.

Teflon tape

Muffler for pump

Reservoir (12-gallon compressed air tank)

**Disclaimer:** The author has no affiliation with any of the manufacturers mentioned in this article. You are on your own as far as any additional advice.