

# Building a Airbrush Booth, Re-visited

By Eric Christianson, August, 2012



*This picture shows a 1/48th scale Me-410 in the finished booth.*

Several years ago Ted Holochuck wrote a fine two-part article on how to construct an airbrush booth. This article can still be found on the IPMS-Seattle website.

I used that article as a basis for constructing my own (slightly larger) booth, relocating the blower motor from the top of the booth to the back, and incorporating several features that I thought would enhance the design first put forth by Ted.

I have been asked to write a new article on constructing an airbrush booth using my design and documenting what I've learned along the way.

## Key Features:

**Large size** – I scaled the booth to be able to easily fit a 1/48th Monogram B-17 on a turntable. This allows for plenty of storage room inside the booth for my airbrush supplies.



*This picture shows the large size of the interior, emphasized with a very small tank!*

**Rear-mounted exhaust system** – I chose to depart from the norm and mount the blower on the back of the booth. I did this to give me nearly six square feet of additional storage space in my model room. I cannot stress how well this design works (for me), while allowing for a smooth, horizontal air flow from my airbrush directly out the back of the booth. I used a 345hp Grainger blower, venting the exhaust via a laundry-dryer

hose through the wall behind the booth. The outside opening in my garage is covered with a flapper valve. Everything is out of sight and out of mind.



*This picture shows the top of the booth being used to hold my 'mobile' weather station.*

**Solid Construction**— I did not want to worry about the heavy blower hanging off the back of the booth vibrating the whole thing to pieces, yet I wanted to be able to move the entire booth around if I had to get behind it for some reason. As a consequence, I used 3/4-inch plywood where appropriate, and 1/2 inch plywood when and where I could get away with it.

**Doubles as a photo-booth**— Internal lighting and additional lights attached to the outside edges create a suitable photo-booth, incorporating a 'built-in' roll-down spool of background fabric. Painting the inside of the booth white helped brighten things up.

## First – Figure out what size you need the booth to be...

The first step is to decide what size of spray booth is practical, considering where you intend to place it and what type of things you will paint in it.

I hosed to make my booth as large as possible, allowing for my 10x10 foot

modeling room and the 36-inch deep table the booth would be sitting on.

Furthermore, since I build large scale aircraft from time to time, I went out to my stash and found the biggest plane I might build. This turned out to be Monogram's big 1/48th B-17 Flying Fortress. I taped the fuselage halves together, and then attached the top wings to the fuselage with more tape. I then set this contraption on a turntable and spun it around on a table-top. Allowing room for trays and bottles and what-not on internal shelves I intended to run along each side, I came up with an inside measurement of 28.5 inches in width. I am a tall person, so I sat in a chair and thought about the most comfortable position to hold my head while airbrushing. This put the top of the front opening (which is the same as the bottom of the panel that hides the light) of the booth at about 18" off the table top (about nose-level), while looking straight ahead and sitting in my soon-to-be-airbrush-booth chair.

I have a 36-inch deep tabletop pushed up against the wall, and the blower motor and mounting would consume 12 inches in the back of the booth, so this

left me a full 24 inches of depth inside the booth – perfect!

With these three dimensions I was able to sketch out a rough plan for the booth:



**Second – Create a list of materials ...**

First off, I needed to find a blower that



would be able to draw the air from the booth out through a vent.

I purchased this one from Grainger Associates (Bellevue – next to the old Eagle Hardware., now Loews?) for about \$130. It is a Dayton-Brand Shaded Pole Blower Item # 4C445, Shipping weight 12.9 lbs.

**Specs:**

Shaded Pole Blower, Air Flow @ 0.000 Inch Static Pressure 495 CFM, Speed 1570 , Voltage Rating 115 Volts, Power Rating 225 Watts, Current Rating 3.25 Amps, Frequency 60/50 Hertz, Thermal Protection Auto, Wheel Diameter 6 1/4 Inches, Wheel Width 4 1/4 Inches, Air Flow @ 0.100 Inch Static Pressure 476 CFM

If this item is no longer available, I am sure there are several others just like it at Grainger, or they can order one for you.

After getting the blower, the rest was easy. A quick trip to Home Depot and I was set. Since I do not own a table saw, I had them cut up a sheet of plywood for me. Here is a list of what I used for this project:

Qty	Description	Sketch Key	Suggested Source
1	Shaded Pole Blower	A	Grainger
1	1/2" x 30" x 24" plywood, booth bottom	B	Home Depot
2	3/4" x 21 1/4 x 23 1/4 plywood, booth sides	C, D	Home Depot
1	3/4" x 30" x 24" plywood, booth top	E	Home Depot
1	3/4" x 21" x 30" plywood, booth back	F	Home Depot
1	1/2" x 30" x 4" plywood, front light cover	G	Home Depot
1	3/4" x 12" x 20" plywood, back addl. Blower support*	E	Home Depot
1	22" GE 15w 'Warm White' florescent light, single bulb	F	Home Depot
1	12" x 12" stiff foam	G	Garage?
1	1 3/4" x 1 3/4" x (at least) 80" wood which will be cut up	E	Home Depot
1	(Enough) dryer hose to reach from the booth to the wall	F	Home Depot
1	Set of Dryer vent covers (inside and outside flapper) and wall runner (tube). This comes in a set.	G	Home Depot
1	16" x 16" x 1 filter (they come singly or in packs of 2)	H	Home Depot
1	Wooden Dryer Vent mounting block	J	Home Depot
3	Brass handles (optional) for moving the booth		Home Depot
1	Wooden Dowel (optional) for bolt of background cloth	K	Home Depot
NA	White Paint & Stain for the inside and outside of the booth		Home Depot
NA	Appropriate hardware for attaching the blower to the back of the booth, and quality wood screws for assembling the booth, and good wood glue for same.		Home Depot

## Assembly

This is a big project that needs room, but not a lot of time, actually. I built the booth in a single evening, painted the inside the next evening and stained the outside the next. I then had to wait four days to let it dry and find someone to help me carry it into the house (it has to be tilted to make it through the doorway!)

The booth is basically built in two chunks: the first is mounting the blower on the back panel of the booth, the second encompasses everything else. After mounting the blower I left the back panel off to the side and attached it at the end of the project because the panel (with the blower) is heavy and wants to shift the center of gravity wherever it goes.

I made sure that all the pieces of plywood were cut right and fit together and that I had the proper screws and glue and tools for the job. I set up two saw horse stations with plenty of work surfaces.

### Step 1 – Cutting a hole in the back panel of the booth

I started by cutting a hole in the back panel of the booth that is sized to fit the round opening of the blower AND is cut in the right place to match up with the hole in the blower once it is mounted. This is tricky since you have to figure out how you will mount the blower to see where the intake will be when finished, and then cut the hole to match. As long as you make the hole the same size as the one on the blower you can fine tune the match-up fit later. I started the hole with a drill and then used a handheld jigsaw to carve out the rest.

The pictures below will help you in coming up with a plan of attack. I really wanted the blower attached securely and firmly to reduce vibration (and therefore, noise). For my booth, the bottom of the

hole I cut was 8" from the bottom of the booth interior, and about 9.5 inches from the left-hand side of the booth interior.



This is a picture from the front of the booth with the air filter removed, showing the hole cut in the back panel that matches the intake opening in the blower. The hole that I cut is slightly off-center to the left because I vented the exhaust off to that side.

### Step 2 – Seating the blower on the back panel of the booth.

The blower has to match up with the hole that you cut. I found out that this is trickier than it looked, because you cannot see where the two line up and the motor / panel are too big and heavy to manipulate easily. But! A modeler can figure it out. Once I marked up the back of the back panel, I was ready to get to work.



This is a close-up of the same hole shown above. The closer you match the hole to the intake of the blower, the stronger the current of air being drawn in will be.

I put an additional 3/4 inch, 12" x 20" inch piece of plywood on the back (with a hole cut in it) and attached it to the back panel with the bottom flush with the bottom of the booth for added strength. This also pushed the blower back off the back panel to give the square lip of the exhaust outlet enough room to clear everything and provide the space I needed to mount it to the wooden dryer hose frame. (It's harder to explain than it is just to look at and figure out.)

I then covered that with a piece of stiff foam (again with a hole in it) to set the (steel) blower apart from the (wood) surface. I then set about attaching the blower to the back of the foam pad.



The blower is heavy and it wants to fall off the back of the spray booth, so I needed to create a little 'home' for it using several pieces of 1 3/4 x 1 3/4 wood, as shown in the pictures below. Unlike the pictures, however, which shows the finished product, I was doing this on a flat table top with the blower on top.

The blower comes with several mounting bolts on the back – it was just a matter of



finding suitable hardware to use for attaching the blower to the back of the wooden booth – not unlike building a model! I used galvanized steel L fittings and some strong banding and bolts to secure everything.

Once I was satisfied that the blower was not going to come loose short of being hit by a bomb, I set it aside and assembled the rest of the booth.

### Step 3 – Building the rest of the booth.

This was the fun part - just like a model! I'll try to explain in print what you will probably be able to figure out just by looking at the job in front of you.



Using my IKEA-sense of how these things should go together, I started with the bottom panel of the booth and attached the 1 3/4" x 1 3/4" runs of supports along the inside of the booth, leaving room for the thick sides to be attached and the back panel to be attached later.



Once these were secure, I flipped the bottom over and attached each side panel using glue and wood screws – first to the bottom and then to the wood support runs.

After each side was attached, I did the same thing with the top panel: I used

glue and wood screws to attach 1 3/4" x 1 3/4" support runs leaving enough room for the back and sides to fit.

I then attached the light bar housing about 3/4" in from the front edge of the top panel, centered. I made sure to orient the plug end so that when in place, the cord would be nearest to an available wall outlet or, in my case, a switch console.

Once that was done, I flipped the bottom-and-two-sides assembly right side up and dropped the top into place, securing the side panels to the support runs inside the top panel.





I now had a reasonably sturdy, four-sided box with no front or back. I carefully drilled a hole big enough to fit the light bar's electrical plug in the top-front of the right-hand side panel (I wanted the cord to wrap around the right-hand side of the booth).

Once that was done, I attached a 4 x 30-inch front panel that hides the light bar and ...suddenly - my airbrush booth looked pretty darn good - and strong.

#### Step 4 – Painting and staining

Before putting on the back panel (heavy with the attached blower), I wanted to paint and stain the booth while I could still manhandle it by myself. I painted and stained the two pieces separately (back panel and the rest of the booth).

I wanted the inside of the booth to be bright white, but since I mostly use enamels and lacquers that would burn right through a painted surface, I wanted to be able to recover from spills and puddles of thinner without losing the white color. Being a modeler, I knew just what I had to do! I first masked the opening in the back and the light bar housing, and then used a can of Rustoleum White Primer to prime the interior surfaces white. Once that was dry, I sloshed a coat of Future, yes, Future (I am a modeler after all) onto the bottom surface of the booth. That took two days to dry enough to lose its stickiness. After that I sprayed on a final coat of White enamel from a rattle can. (As a side

note - I have spilled stuff all over this booth and have always been able to clean up the mess with a wipe of a clean rag, leaving the surface gleaming white - magic!)

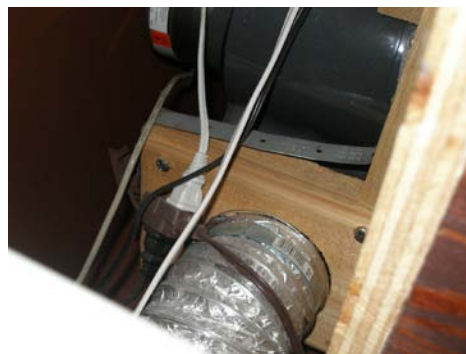
While the Future was drying I stained the outside surfaces to match the color of my model room. In three days most of the smell had gone away and the booth was ready to be assembled and brought inside. Just a few steps left.

#### Step 5 – Attaching the back panel with the blower to the rest of the booth

Now came the (physically) hard part. I say that because I live alone and I had to do this by myself. I cleared a spot on the sturdiest surface I had and set the booth on its front end, face down. I then lifted the back panel with the blower and carefully slipped it into place from above. And yes, like a true modeler, my first try was upside down. But once I had things sorted out I used glue and screws to secure the back to the bottom, sides, and front of the booth.

Then came the moment of truth: I carefully tipped the booth back onto its base and plugged the motor in. With a powerful whoosh and a hum my airbrush booth was moving air baby!

#### Step 6 – Connecting the blower to the dryer vent hose.



I picked up a block of wood that Home Depot sells specifically for mounting dryer exhaust hoses - it already has a round

hole cut in the middle of it. You just need to mount it in such a way so that the square blower exhaust vent is centered in the round hole in the wood. Not perfect but it works. You can also make your own mounting block with a square hole that matches the blower exhaust vent. I guess Jim Schubert would say that this would be something a real modeler would do!

#### Step 7 – Attaching the paper filter, fabric roll and accessory racks



While the booth was still out in the garage I did all the final assembly. I started with some metal brackets to hold the air filter over the hole in the back panel. I made a wooden dowel and rolled a small bolt of light blue fabric around it and wedged it into the top back of the booth. I attached the upper air filter brackets so that they would help keep the roll of fabric in place.

Next I attached some racks I picked up at the drugstore to the inner panel on the left-hand side. These would hold all of my thinner bottles and other airbrush supplies. I set trays on the right hand side for Q-tips, toothpicks, and pipe-cleaners, leaving room for a small 'airbrush waste basket' box I use during my sessions. I drilled several holes to slide my Pasche allen wrench and other essential tools around the front edges of the booth, and attached four airbrush holders to the outside of the left panel.



### Step 8 – Connecting the dryer vent hose to the wall.

The final step was to go inside my model room and cut a round hole in the wall to receive the dryer hose. There is a set of hardware that includes the indoor mounting bracket, the outdoor flapper and a plastic run that can be adjusted to



the thickness of your wall. Drywall screws and mounting bands are included as well. I found a spot between the studs and cut away until I had a hole just short of the right diameter – I wanted a tight fit. I pushed the plastic run through the hole, attached the mounting plate on the inside and the flapper plate on the

garage end. I left a little play in the hose between the booth and the wall just in case I needed to move the booth one way or the other. Once installed, the flow of air outward will open the outside flapper - all will be good.

Once I found an able-bodied human to help me carry this contraption inside, we set it on the table top, carefully slid the dryer hose into place and tightened the metal connecting band. I ran the cords around to the electrical switch box I have in my model room and flipped the switch. Voila! Lights! Hum! Air Flow! SNAP!!