

How to...

Airbrushing for model railroads

By Mike Wyatt NMRA Division 5 Member

Airbrushing can add a lot to your model railroading hobby. It may become one of the “best” parts of the hobby for you. I will try to provide some basics, so you can make good decisions about equipment, and learn how to paint by doing. As for paints- I will focus on the use of acrylic (such as Polly-S) paints vs. enamels, since the acrylics are so much safer and wife-friendly.

WHY? Why use an airbrush, instead of “rattle cans”- aerosols?

1. An airbrush is MUCH easier to control.
2. An airbrush in combination with high-quality paints, will provide a much finer and more professional finish.
3. An airbrush is, over the long run, lower cost to use than spray cans.
4. An airbrush is more environmentally friendly.
5. An airbrush (at least using present technology) is the only practical way to spray paint using water-based paints. Therefore, an airbrush is safer.
6. An airbrush is FUN to use.

What is an airbrush? It is a miniature spray gun, similar in principle to the spray gun that the body shop uses to paint cars, but on a small scale.

You need the following to paint with an airbrush:

- an **airbrush**
- A source of **compressed air or gas**
- **Paint**- either oil-based enamel (usually Testor/**Floquil Railroad Colors**), or water-based acrylic (such as Testors/**Floquil Polly-S**).
- Stickers, masking materials, and other such as pastel powders (for weathering), and a lacquer flattening coating (like Testor’s Dullkote).

Types of airbrushes:

A **single-action airbrush** is a simple device that atomizes paint. You control the flow of paint by adjusting a nut at the tip. You cannot vary the amount of paint sprayed accurately while you use the brush- you must stop painting and adjust by turning a nut near the tip (or at the back of the handle).

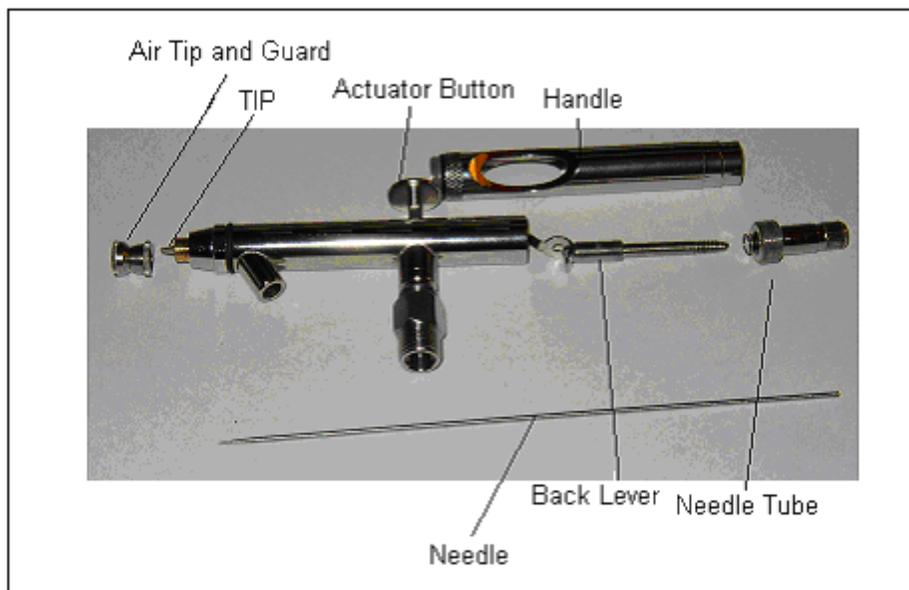
A **double-action airbrush** allows the user to vary the flow of paint by pulling back on the air button while spraying, so you can spray a fine line, or a heavier spray, without stopping to adjust the airbrush. This is a more advanced type of brush- but in the long run more useful, since it can spray from about 2” down to about 1/16” wide.

An **internal mix** airbrush mixes the air and paint inside the airbrush body; an **external mix** brush atomizes the paint outside the body- at the tip. The internal mix airbrush

atomizes the paint into finer drops, giving a less “grainy” finish. So- for painting the outside of models, an internal-mix airbrush may be important.

Double action internal mix airbrush	Single action external mix airbrush
	
<p>Thayer and Chandler Omni T-83 (adapter for air hose installed) Picture by the author</p>	<p>Badger 350 Picture used with permission of Badger Air-Brush Company</p>

Parts of an airbrush: internal-mix, double action airbrush (Thayer and Chandler Omni T-83)



Picture by the author

The **actuator button**, when depressed allows air to flow. Pulling back on the button pulls the **needle** away from the **tip**, causing paint to be siphoned from either a color cup, or a jar. Air flowing around the tip atomizes the paint. Pull the button farther back and you get more paint; allow the button forward, the paint shuts off. Move closer to the work, and spray at lower pressure, and use less paint flow for tight, close precise painting such as painting rail.

Brands: Each brand generally has models from a basic external-mix (about \$25) to artist-quality brushes approaching \$300.

Paasche, and Badger have been standards for years- high-quality, and full product lines from \$25 to \$300. Made in USA.

Badger/ Thayer and Chandler- a first-class double-action internal-mix airbrush. Also made in USA. About \$120.

Iwata: high-quality brush, used mainly by artists, made in Japan. High- end- \$250+

These are a few of the best-known brands; there are many others. Basically- you get what you pay for- a \$45- \$125 brush is a good bet. \$ 200 is probably beyond what most of us need, and you will probably want to replace a \$25 airbrush pretty quickly as you realize its limitations. I don't recommend the Chinese bargains you find at Big Lots or Harbor Freight.

Each manufacturer also has **sets** that contain an airbrush, multiple nozzles and needles, jars, color cup, hose, and a wrench for the head, and an instructional manual. These are many times just \$15- \$25 more than the airbrush alone, making them a great value. If this is your first airbrush- consider buying a set.



Badger 150 "Professional" Airbrush Set- about \$100. In wooden box- \$120.

(L to R) Airbrush w/ bottle, paint color cup, bottle, braided hose (good!), wrench, tip protector cap, air fittings, different needles for various viscosities of paint.

Pictures courtesy of the Badger Airbrush Co.

Recommended airbrushes for model railroad use and model painting:

Brand:	Type>>>	Recommended:
		internal-mix, double-action- very useful in any model railroad application.
Badger		Badger 150-3 (\$100 set w/ all heads and needles, hose, bottle, color cup, instructions).
Paasche		Paasche VL#5L - \$73 (\$119 set w/ 2 heads). Great basic brush- probably better than the Badger 150, at less cost.
Badger/ Thayer and Chandler		Omni T-83: I love this brush!! In one brush, you can spray from thick acrylics to finely ground Floquil enamel, <u>without changing tips</u> . Well worth the upgrade in price from the basic brushes.

Air supply: You can run your airbrush on virtually any source of air- but you need at least 40 PSI for the thick acrylic (cheap) paints commonly used for painting scenery. You use lower (15- 25 PSI) pressure for other paints like Floquil and Polly-S "railroad colors".

Getting Started

Your local hobby shop stocks many airbrushes, and can order most any airbrush set you want. Probably they will have to order the Thayer and Chandler through their Badger distributor. The art store or giant craft operation may also have a selection of airbrushes and accessories.

You can also shop online- excellent sources are **Dixie Art and Airbrush** (<http://www.dixieart.com/>), and even direct from **Badger** (<http://www.badgerairbrush.com/>) or **Paasche** (<http://www.paascheairbrush.com/>)

The most cost-effective air source for most of us is our garage compressor. You will also need a **regulator**, a **moisture trap**, and some hose connections.

Manufacturers such as Badger and Paasche also sell small piston-operated airbrush compressors for about \$100- \$140. You need a regulator (adjusts pressure) and a moisture trap (keeps water out of the paint).

Dixie Art and Airbrush sells the SilentAire Scorpion 2 (below right), a very quiet 2-piston compressor set, with everything including a regulator, filter, water trap, hoses, and even an airbrush holder, for about \$225



“Canned Air” is also an option to get started, but you will find that you go through a lot of cans. Some even use a truck inner tube adapted for the airbrush hose, then step on the tube for pressure!!

Practice: So- get your airbrush, figure out a compressor setup, buy some cheap acrylic paint (NOT a \$4 bottle of Polly-S for practice)- get a big \$.99 8 oz. bottle of brown or tan “earth” paint from Michael’s or Pat Catan’s. Set your initial pressure at about 40 PSI, tape some cardboard to the wall of your garage or basement, and start practicing!!!

Beginning Exercises--Getting Started

First, try and simply learn to control the button and adjust the paint flow. Start by spraying plain water- but after a few minutes practice with the paint you are going to use on pieces

of newsprint, copier or other white paper.

Begin practicing by trying to spray little dots on your practice paper- hold the brush close (about ¼"!) and play with the air pressure until you can get a nice dot. (You can actually turn the pressure as low as 15 PSI for these fine lines and dots.)

Next, practice airbrushing thin lines. Do what you did for the dot- but move the brush to the side holding it a fixed distance from the paper. This will be the hardest part- painting without using an "arc" motion that puts too much in the center and not enough on the sides.

Straight lines take a steady hand, but with practice, you will be painting like a pro. Use a single motion- and don't stop and reverse with the paint still feeding.

So- for a fine line, spray close to the surface and lower the pressure.

Remember your results are affected by:

- **How much paint** is sprayed (control using the paint adjustment on single action brushes, and the actuator button on double-action brushes),
- **How close the airbrush** is held to the work surface, and
- **The air pressure** used- more pressure sprays more paint, and less sprays less paint.

After you feel comfortable using the airbrush, you can move on to actually painting – perhaps start with painting rail, or scenery using the cheap paint.

Scenery Painting using an airbrush

Start with painting rail, or maybe painting rocks. Clean the surface, dry it, and have at it. You can't really do any damage that can't be painted over later.
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Model Railroad Car Painting

1. Prep the car- remove the trucks, then use warm water and dishwashing soap to wash the car. For an old car, you might need to use a worn-out soft toothbrush to get into the crevices. Use a hairdryer to dry out all the water.
2. Use a set of tongs, or a tool to hold the car up where you can see it and move it around. Paint carefully- being sure that you keep a fixed distance from the car. No arcs!!!

Safety warning!!!! If you decide on oil-base paints- you must use a **mask and a spray booth!!!!** If not- ten years from now you'll have an eye in the middle of your forehead!!!

Color Cup: Most airbrushes can use a “color cup”- a small ½ oz. chrome cup that can be used for feeding paint. This is a great way for painting cars and locos- since you will not use much paint anyway.

For scenery and larger projects, you’ll feed right from the paint container.

Masking: Earlier, you were practicing painting “free-hand”. The lines you painted were not sharp, and they were fuzzy. If you want sharp lines or stripes- you have to “mask” using masking tape, or “Frisket” film (a thin sheet of self-adhering plastic made for airbrushing). Don’t scimp on masking tape- use the “blue” 3M tape, or “fine line” tape by Pactra.

—Cut masks and tapes with a sharp Exacto blade. Replace the blade on your knife before every session.

—Avoiding paint bleed: Use GOOD, fresh masking tape. The stuff that’s been in the garage since you painted the Chevy in high school isn’t going to make it.

After masking: Painting

“Seal” the edges by first painting a light coat along the edges of the tape or mask. Between coats remember to press down your masking.

Mistakes

You can remove overspray (acrylics) without affecting the plastics by using isopropyl alcohol. You can even remove semi-dry acrylic paint with alcohol. (But, if you are using enamels- you can’t remove your mistakes as easily.)

Weathering: one of the great uses for an airbrush is weathering your models and structures. Use tans, white, and “dirt” colors sprayed at LOW pressure. Sneak up on the model, starting away from it and approaching it gradually until you have the effect you want. Remember- dirt and grime accumulate near the ground, and on flat surfaces- so should your weathering.

Flattening: almost always, after painting and weathering, you will want to put a light coating of flattening lacquer over the model. This seals the surface, and removes any “toylike” effect of the glossy polystyrene plastic. Use Testors or other flat lacquer sparingly. Clean the airbrush using lacquer thinner. But....

You might also want to think about using Testor’s DullCote as your ONLY aerosol. It’s such a pain to clean your airbrush if you have to use lacquer thinner!!!

Cleaning Your Airbrush

A clean airbrush is essential to proper atomization of the paint. The airbrush needs to be cleaned between colors (unless painting scenery), and cleaned thoroughly after each painting session. Some recommendations:

1. If there is paint in the paint reservoir (cup or jar), pour it back into a bottle or container.
2. Spray out any excess - use a plastic milk jug with a hole in the side to spray the excess and then the solvent to clean the brush.
3. Wipe the bottle, or color cup as clean as possible.
4. Use hot or warm water, mixed with a little dishwashing soap (one drop). (this assumes you are using acrylic paint- if you are using lacquer- you have to use lacquer thinner as the solvent.)
 - a. Fill the color cup or jar with warm water.
 - b. Use a model paintbrush to swirl around and free the paint in the cup or jar, then spray out the cup or jar.
 - c. Refill with water, and spray dry.
 - d. "Back-flush" the airbrush by covering the tip with a rag, and spraying. The brush will blow paint into the jar- dump this and keep running clear water or solvent through the brush
5. Repeat this process until the spray comes out clear.
6. Finally- use airbrush cleaner (available at art stores) to make sure the brush is completely clean. (You can also use alcohol if you painted w/ acrylics.)
7. Using airbrush cleaner and a paint brush, gently wipe the **paint tip** to remove any build-up of dried paint.
8. Pipe cleaners and old toothbrushes are also great tools for cleaning your airbrush.

At the end of your painting session, go through the cleaning process, then clean the needle.

Cleaning the Needle

The needle passes through the center of the airbrush- front to back. The needle is the way the paint flow is controlled in double-action brushes. It has to stay clean, and cannot be bent. (It is a good idea to keep a spare needle for this reason.) To access the needle, remove the airbrush handle at the back of the tool and loosen the needle chuck nut. Then pull the needle out and carefully wipe it clean.

To tell if the needle is clean and working properly- spray water through the brush, and look at the pattern of the spray. It should be an even "cone". If not, or if the spray is deflected, remove the needle, examine and clean it.

Gently replace the needle- push the trigger slightly as you slide the needle forward until it slightly protrudes from the tip. Tighten the needle chuck and replace the handle. Test by spraying water, looking for the "cone-shaped" spray pattern.

Hope you enjoy airbrushing!!

FAQ

Q: What is the difference between internal-mix and external-mix airbrushes?

A: In an internal-mix airbrush, the air and paint mix inside the paint tip. This produces a fine spray pattern. In an external-mix airbrush, the air and paint mix outside the tip, producing a more coarse spray pattern.

Q: What is the difference between a dual-action and single-action airbrush?

A: In a single-action airbrush, you depress the activator button and control only the air. The paint flow is controlled using a needle adjustment of some type- either at the back of the brush, or below the tip.

A double-action airbrush allows you to control the flow of air and the flow of paint using just a single button. A single-action brush works great for simply painting one-color bodies (or masked bodies). More complicated effects are possible using the double-action brush.

Q: Which do I need for painting polystyrene cars, buildings and locos?

A: Both types will work.

Q: What types of paints can be sprayed through the airbrush?

A: Any paint can be sprayed through most airbrushes. The exception: thicker acrylics (especially cheap ones) need a larger tip and needle, and higher pressure (60+ PSI).

Q: What's with all these needles and tips?

A: A larger needle/tip combination is used for thicker materials, like acrylics. The smaller needles are for thinned paints, like stains or lacquers. Use the right tip and needle together- see your airbrush's instruction sheet. The Omni brush will work with all viscosities of paint- did I say how much I liked mine??

Q: The acrylic paint seems to "run" and bead up on the surface??

A: You probably over-thinned it. Try a new bottle, and use no more than 10-20% water as a thinner. Use the over thinned stuff as a wash.

Q: Wash??

A: To add detail to your structures, scenery, rocks, etc. airbrush really thinned acrylics as a wash. Use darker washes (black, umbers, etc.) on lighter objects; use lighter washes (white, gray, etc.) to add detail to darker surfaces like red brick.

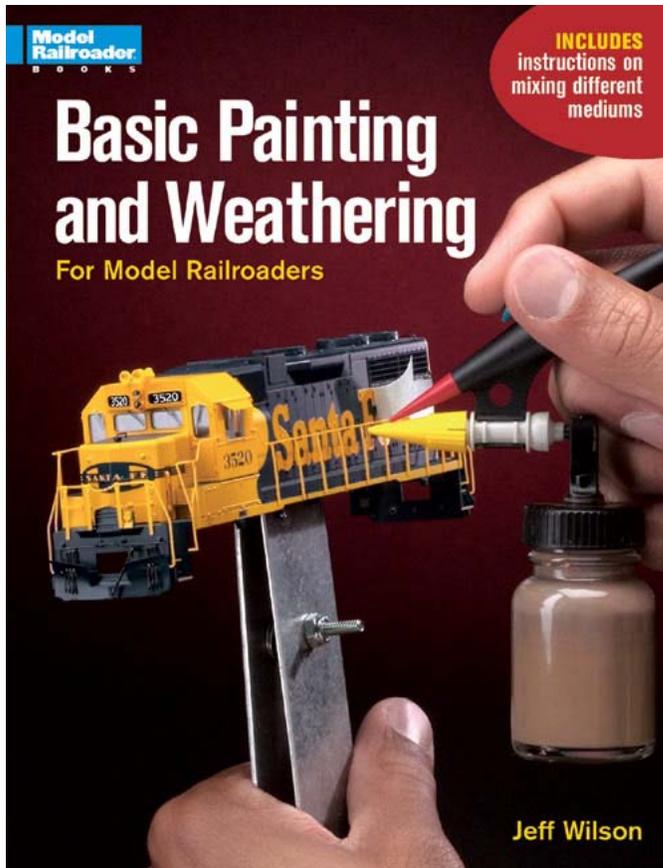
Q: How should I thin my paints? And what air pressure?

Paint	Thin using	Ratio Start with:	Air pressure to start	Notes
RR Acrylics (Polly-S)	Water, and perhaps a little isopropyl alcohol	Try first without thinning- then 10-20% MAX thinner	15 PSI for close, small work, 30 PSI for general painting	Try the paint and pressure on a scrap fist- If the paint appears to be dry as it hits the surface- and looks “grainy”- you are using too much air. Try lowering the PSI about 10 lbs.
Cheap Acrylics (scenery paints)	Water, and perhaps a little isopropyl alcohol	Try first without thinning- then 10-20% MAX thinner	30 PSI for general painting	
Enamel (Pactra/Testors, Model-Master, Testor’s Floquil RR Color etc.)	paint thinner or the mfg-supplied thinner	1 part paint to 3 parts thinner	15- 25 PSI	Ventilate!! Do not smoke!!!
Lacquer (primarily flattening compounds)	lacquer thinner or the mfg-supplied thinner Lacquers and thinner WILL damage polystyrene IF you apply it too heavy- be warned!!	1 part paint to 3 parts thinner	15- 25 PSI	Ventilate!! Do not smoke!!!

Q: Is this all worth it?

A: YES!! Painting can be a great part of this hobby!!

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Want more information?

This MR Book is an excellent source, and has some great tips and techniques (even if he is using a cheap airbrush!).