



# Basics of airbrushing

Tips and techniques for getting started

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By Cody Grivno • Photos by Bill Zuback

**W**hether we're modeling a prototype railroad or operating a freelance line of our own creation, we want our equipment to look prototypical and have a sense of individuality. One way we can achieve this goal is by painting our structures, freight cars, and locomotives with an airbrush. On the surface, airbrushing may seem like a difficult and intimidating task, but it really isn't. With practice, patience, and the right techniques, airbrushing can be a lot of fun. I'll show you just how easy it is to get started with an airbrush.

Structures, freight cars, and locomotives are just some of the things that can be painted with an airbrush. Cody Grivno shares some basic painting techniques that will help you get started.



**Fig. 1 Single-action airbrush.** With this style of brush, the air flow draws the paint up from the color cup (or bottle) into the angled paint nozzle. The knurled nozzle adjusts paint volume, and the button on the top controls the air flow.



**Fig. 2 Double-action airbrush.** On a double-action airbrush the air flow is controlled by pushing the trigger down; the paint flow is controlled by pulling the button back. The paint flows into the body of the airbrush from a gravity-feed cup. *FineScale Modeler photo*

## Understanding the terminology

I may be a bit biased in saying airbrushing isn't difficult. My father was an auto body repairman with decades of painting experience, and I grew up watching him paint vehicles. Some of my early paint jobs didn't turn out that well, and I ruined a few models along the way. Instead of getting frustrated by mistakes, I kept airbrushing, asking questions, and adapting my techniques. It's been 14 years since I first picked up an airbrush, and I'm still learning new tips and tricks.

Choosing an airbrush that's right for you is a matter of personal preference, but you should select one that you can grip comfortably and easily reach the controls. Painting sessions take time, and they can seem much longer if you have an airbrush that isn't a good fit.

There are two types of airbrushes: single-action (**fig. 1**) and double-action (**fig. 2**). A single-action airbrush allows you to control the volume of air passing through the brush with the trigger. A double-action airbrush lets you regulate both the air and paint



**Fig. 3 The Hybrid airbrush** is a single-action airbrush with internal mixing. The brush has the longitudinal needle found on double-action brushes, but the paint volume is controlled by turning the knurled knob on the end of the needle instead of with the trigger. *FineScale Modeler photo*

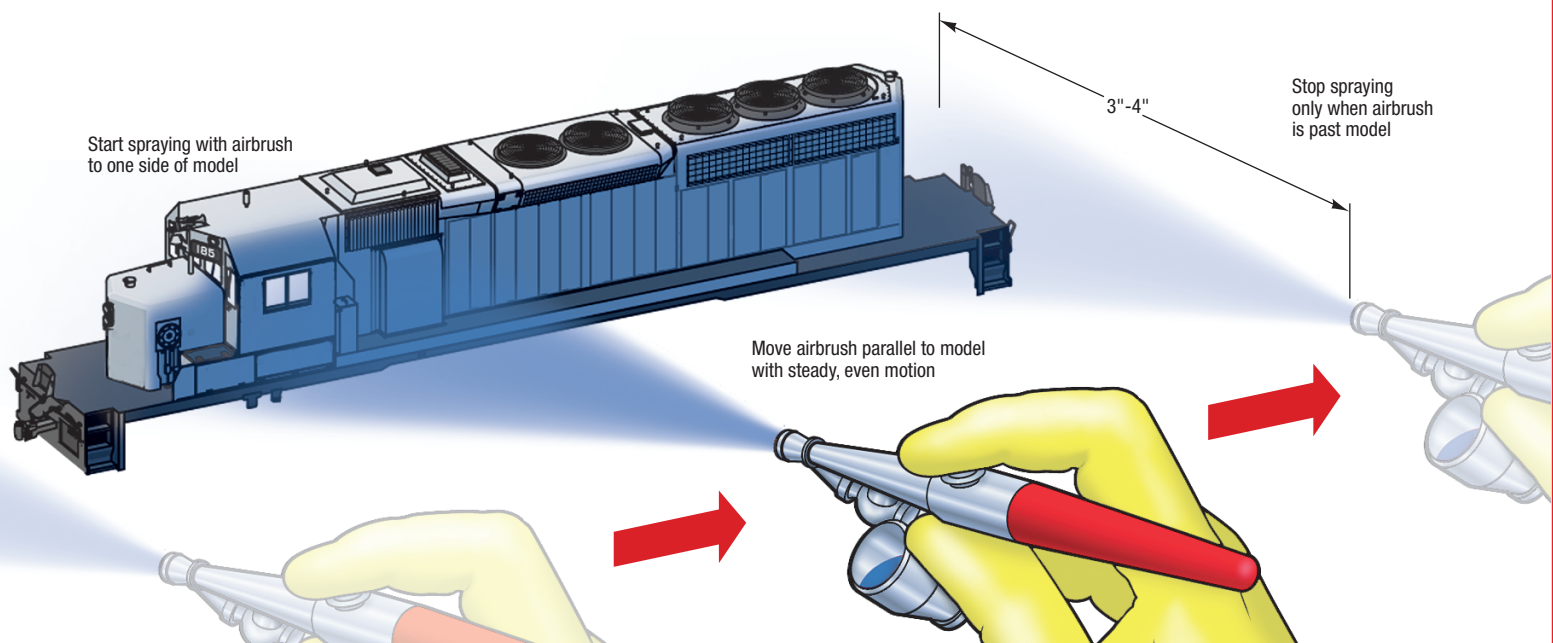


Illustration by Rick Johnson

volumes with the trigger. The air on a double-action brush is controlled by pushing down on the spray button; the paint volume is adjusted by pulling back on the button. Double-action brushes are good for painting and weathering in tight areas where controlling paint volume is necessary.

Some airbrushes, such as the one shown in **fig. 3**, are referred to as hybrids. These are single-action brushes, but the paint is mixed internally.

Airbrushes are further categorized as external and internal mix. In external-mix airbrushes, the air and paint are mixed outside of the brush. With an internal-mix airbrush, the air is drawn into the rear of the brush, while the paint is drawn (either by gravity or suction feed) into the middle.

External-mix airbrushes, which are all single-action, are good general-use brushes and easy to clean. Internal-mix brushes are better at atomizing paint into smaller particles but are more work to clean.

## Air supply

Having a source of dry, clean compressed air is key for successful airbrushing. Air sources vary in type, price, and complexity. The cheapest is a propellant can. Though affordable, if you don't airbrush often, it's difficult to regulate the air flow from a can, and the can may freeze during extended painting sessions.

If you plan to airbrush on a more regular basis, an air compressor is a better long-term investment. Airbrush-specific compressors are priced depending on features. Not all features

**Fig. 4 Airbrush stroke.** To achieve a smooth, even finish, move the airbrush as shown in this illustration. Overlap the edge of each stroke to get an even color across the model.



**Fig. 5 Model handling.** Handles make it easier to rotate a model when airbrushing. You can also make your own handle from scrap wood or foam blocks, but use foam only with acrylic paints as organic-solvent-based paint will dissolve foam.

are needed, but some, such as a pressure regulator, are useful. Small compressors are typically rated between 25 and 35 psi, ideal for most projects. However, for weathering you don't need that much pressure, and the regulator will let you adjust the psi.

A moisture trap is another helpful feature. Humidity in a compressor can cause water droplets to pass through the airbrush and onto the model, ruining the paint job. If you're unable to find a compressor with a moisture trap, you can splice a trap directly into the air hose. Moisture traps should be drained after each painting session.

About the only drawback to air compressors is that you can hear them running. Some compressors have an automatic shutoff feature to keep it from running when not in use. "Silent" models that use refrigerator-style compressors to charge small storage tanks are also available, but they're more expensive.

## Types of paint

Once you have an airbrush and air source, the next thing you need is paint. The two types of paint used by model railroaders are acrylics and organic-solvent-based.

Organic-solvent-based paints have been used in the hobby for many years but must be handled with care. These paints may attack plastic, so you'll want to prime your models or apply a protective coating. Also, organic-solvent-based paints must be used in a well-ventilated area, and you should wear a respirator, safety glasses, and nitrile rubber gloves.

Safe for plastic, acrylic, or water-based, paints are available in the same range of colors as organic-solvent paints. Even though they're labeled as non-toxic, acrylics should still be used with caution (rubber gloves, respirator, and vented spray booth). Acrylics require a bit more air pressure (20-30 psi) than organic-solvent-based paints.

Acrylics and solvent-based paints are both sold ready for brush painting, which means you need to thin them for airbrushing. Start by stirring the paint thoroughly in the jar. It takes several minutes to remix a bottle of paint, particularly if it's been sitting on the shelf for a while. Tans, grays, and browns take the longest time to mix because a large percentage of their pigment is clay. Keep stirring the paint until the pigment clumps are mixed completely with the liquid.

## Airbrush troubleshooting

**Even after years of experience**, you're going to encounter problems when airbrushing. Here's a peek at some of the problems I've run into.

**Overspray.** Watch where you're aiming your airbrush. While you're concentrating on spraying a certain spot, parts of the model that lie behind your target may accidentally receive overspray as you paint. Make sure you mask these areas before airbrushing. If you forget, you may have to repaint the affected areas.

**Gritty finish.** The paint is covering, but it's rough or lumpy. There are four possible causes: the paint isn't thinned enough, the airbrush is too far away and the paint is drying on the way to the model, clumps of pigment aren't dissolving in the thinner, or there's too much air pressure. You don't need to blast on paint with an airbrush - a gentle whisper from the airbrush should be enough to deliver a smooth finish. Adjust the air pressure and make sure the paint is well mixed.

**Spatters.** Little spatters around fine lines are usually caused by a damaged needle or nozzle. Paint deflects off the distorted tip and lands outside of the intended area. Sometimes, low air pressure can also cause this.

**Examine the needle and nozzle with a magnifying glass.** If the nozzle is cracked or splayed open, replace it. If the tip of the needle is bent, you can carefully straighten it. Single-action needles are relatively sturdy, and you can persuade a bent tip by pressing it against a hard surface. Go easy: press, check, press some more, check again, and so forth.

**The fine needle of a double-action (or hybrid) airbrush is more delicate.** You may not be able to see the bent tip, but you'll be able to feel it. Remove the needle from the airbrush and drag it lightly over your fingertip. Roll the needle as you drag, and you'll feel the hooked side catch as it rubs along your finger. Make note of the direction of the hook, then drag the affected side of the needle on fine-grit sandpaper or a sanding stick. Check it again on your finger and repeat if necessary.

**Bleed under masking tape.** This is usually caused by applying paint too heavily. The wet paint overwhelms the masking tape and creeps under, resulting in a ragged line. Spray on several light coats instead of trying to cover quickly with a heavy coat. Also, spray at an angle over the tape so the air pressure isn't forcing the paint under the mask.

**No paint coming out.** Shame, shame. You haven't been cleaning the airbrush properly. Most likely there's a small particle of dried paint clogging the nozzle. Read the sidebar "Airbrush cleaning" and be sure to clean your airbrush after every session.

— Paul Boyer, *FineScale Modeler*



**Fig. 6 Sharp separation lines.** A favorite modeler's trick is to put masking tape on a piece of glass, lay a steel straightedge over it, and cut a strip using a hobby knife with a fresh no. 11 blade. Use the cut edge to mask the separation line between colors.



**Fig. 7 Removing the mask.** Even though the paint is dry, it can still peel off if you're not careful. Slowly pull the masking tape up and away at an acute angle from the last color applied. Don't leave the tape on the model too long, or it will leave residue on the model.

To make sure your paint is clean (and stays that way), never shake the jar. When shaken, paint gets onto the lip of the jar and dries into clumps. These clumps can fall into the paint and clog your airbrush. Putting a screen filter on the siphon tube will help keep clumps out of the airbrush. Straining paint is an additional way to keep out foreign matter.

After the paint is remixed, find a thinner that's clean (free of lint and dust) and compatible with the paint you're using. Any impurities in the thinner will get in your paint and on your model. Acrylic and organic-solvent-based thinners can't be used interchangeably. In a separate jar, thin the paint until it reaches the consistency of milk. After your airbrushing session, empty the thinned paint into a waste-paint container. Never dump it back into the original jar.

Most manufacturers print the recommended thinner-to-paint ratio on the side of each jar, but consider that a starting point. Different colors (and bottles of paint) react differently. Thin the paint, spray it, and adjust as necessary. Weathering mixes must be thinned more than regular airbrush mixes. However, pigments settle fast in paint thinned for weathering, so stir it regularly or add a few drops of flow enhancer.

## Prep work and priming

Before you paint a model, clean it to remove any impurities that might affect paint adhesion or detract from the overall finish. The easiest way to clean a model is to wash it in warm, soapy water. Keep an old toothbrush handy to clean any hard-to-reach areas.

After the model is clean, shake off the excess water, put it on a lint-free towel, and set it in a dust-free place such as a cabinet. Plastic, metal, and some resin models can be cleaned with this technique.

Commercial cleaners are also available for the various modeling mediums. Alcohol-based cleaners help remove mold release, silicone, and grease from plastic. Tarnished brass models can be cleaned with powdered copper cleaner, available at most grocery stores, and an old toothbrush.

With the prep work done, you should spray the model with an undercoat, which ensures that the final color or colors are even throughout the model. Light gray is a good, all-purpose undercoat color.

## Painting and masking

Before you start spraying a model, test the paint on a similar material. This way, if the paint mix is too thin or not thinned enough, you won't ruin

your model. Once you're satisfied with the paint flow, start spraying.

Hold the airbrush between 3" and 4" from the model and apply the paint with a smooth, even stroke, as shown in **fig. 4**. Start spraying beyond one end of the model, smoothly move the airbrush across the model, and stop spraying beyond the other end. Apply the paint in light coats, overlapping the edge of each stroke until the model is evenly covered. The paint should go on wet and shiny but dry quickly. If you apply the paint too heavily or don't let it dry completely between coats, it'll get thick and develop runs. If it goes on dry, you'll have a rough finish.

You may need to rotate the model while airbrushing to get paint into hard-to-reach areas, and that's where a paint handle proves helpful, such as the handle shown in **fig. 5**, but you could also use a wood block.

To gain experience with the airbrush, start with models that require only one color, such as a boxcar. When you feel more confident, try painting models with multiple colors. To prevent the second color from getting onto the first, the model will have to be masked. Regular 3M masking tape or the firm's blue painter's tape work well. However, masking tape doesn't have a perfectly straight edge, so you'll need to put a

piece onto a pane of glass and cut it into strips using a new blade in a hobby knife or a single-edge blade (fig. 6). Use the freshly cut edge to mask the separation line. Make sure the tape is pressed down into grooves, over rivets and exterior posts, and window openings.

Once the separation line is masked and the tape is snug, finish covering the model with full strips of tape. Then, to help keep the separation line crisp, lightly spray along the edge with the first color. After the paint has dried, apply the second color. Repeat the masking and painting process until all of the colors are applied.

Paint should be given a full 24 hours to dry. When you remove masking tape from a model, pull it up and away from the last color applied at a 45-degree angle to prevent the paint from lifting, as shown in fig. 7.

## Safety first

No matter if you're using solvent-based paints or acrylics, paint fumes and particulates are harmful to your health. All painting should be done in a well-ventilated area, preferably a spray booth.

When you install a spray booth, keep it away from furnaces, water heaters, or other sources of ignition. Ideally, a spray booth should be vented to the outside air. Some spray booths are designed to remove particles and filter air out the back. This booth should be used only with acrylic paints.

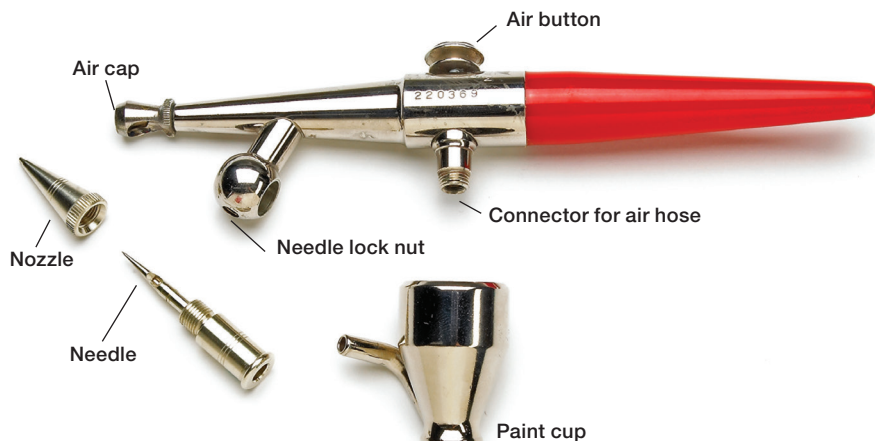
You can further protect yourself by wearing a respirator and nitrile rubber gloves (with organic-solvent paints) or latex gloves (with acrylic paints). The respirator will keep paint particles out of your lungs, and the gloves will keep paint off your hands.

## The sky is the limit

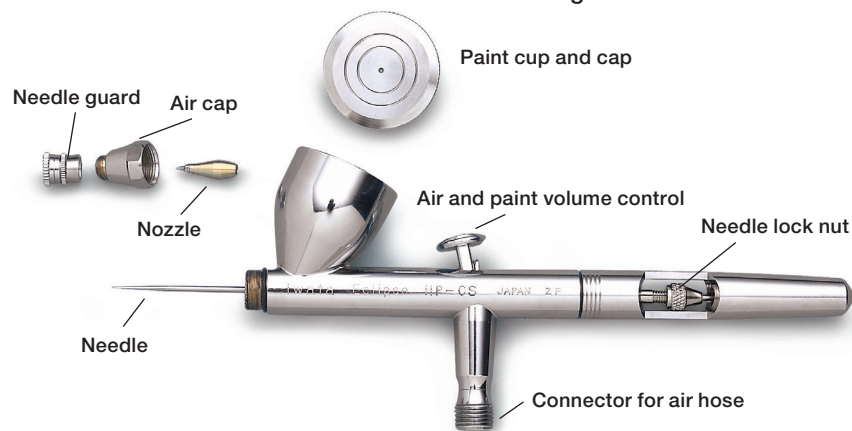
After you've gained confidence painting models, you can weather them with an airbrush. It's a given that you'll have models that don't turn out well, but don't be discouraged. Learning how to airbrush well takes time, and the best way to learn is by practicing. In no time you'll be painting models the way you want them to look, and you'll find out how much fun airbrushing can be.

### Single-action airbrush broken down for cleaning

*FineScale Modeler photo*



### Double-action airbrush disassembled for cleaning



## Airbrush cleaning

**When I first started airbrushing**, my father told me, "If you treat your airbrush well it'll treat you well." Nothing could be truer. With proper handling and cleaning, it should last you many years, but if you don't clean and maintain your airbrush, your painting sessions won't be enjoyable (and your models won't look that good, either).

Most manufacturers specify the proper cleaning techniques for their airbrush, which are a good starting point. Here are a few other pointers you'll want to follow to keep your airbrush operating its best:

- Keep rinsing until the cleaning solution comes out clear.
- Before you store your airbrush, take it apart and give it a thorough cleaning.
- Rinsing may remove most of the paint from the brush, but it won't get it all.
- Never store your brush with cleaner or paint in it.
- If you use a double-action or hybrid brush, oil the needle before storing it.