

HOW MUCH PRESSURE?

The question "How Much Pressure Do I Need For My Airbrush", or some derivative thereof, comes up frequently so I thought I'd try and provide a comprehensive answer once and for all.

Short Answer Number 1 - There is no such thing as an exact pressure for any paint, airbrush, or situation.

Short Answer Number 2 - It really doesn't matter anyway.

Think of airbrushing as washing your car with a hose. Get up close to the car and turn the hose on at full pressure and what happens? Most likely you are going to get wet. When you get in close for the tight areas you have to lower the pressure to prevent a lot of overspray. Likewise if you get way back from the car and try to wash it with low pressure the water doesn't even get there, so you need more pressure.

Using an airbrush is not that different from the analogy above. When you are in close to the surface you need to use less pressure to prevent overspray. When you are farther away from the surface you need more pressure just to get the paint to the surface of the model. In the case of an airbrush though, even at low pressure the paint will eventually get to the model's surface. The problem is that if it travels a good distance through the air it will dry, or partially dry, during the time it takes to get from the airbrush to the model. This causes a dimpling of the paint surface commonly known as "Orange Peel".

The overall goal of using an airbrush is to get the paint to the surface, and there are four things that affect how well that happens:

1. The construction and type of airbrush. Some airbrushes atomize or pick up paint properly at lower pressures than other airbrushes. Siphon feed airbrushes usually need slightly more air pressure to feed reliably than gravity feed brushes will. Internal mix airbrushes will generally atomize paint better at lower pressures than external mix airbrushes will. This factor also includes the size of the nozzle and needle in the airbrush. Some airbrushes have tip assemblies or separate nozzles and / or needles that can be changed, some have a single combination.
2. The viscosity, or thickness, of the paint. If you try and suck molasses through a soda straw you are going to have a much harder time than you would sucking water through the same straw. Many people think this is the only reason for thinning paint, but it isn't.
3. The volume and pressure of air through the airbrush. Given enough pressure and volume you can get molasses through a soda straw, but it takes quite a bit.
4. The distance between the airbrush tip and the surface of the model.

You cannot change the basic construction of the airbrush, other than perhaps changing the nozzle and needle, but you can change any of the other three factors. To complicate matters, these factors frequently change while you are painting. The thinner in your paint will evaporate causing it to be more thick, you will move your hand closer to or farther from the model's surface, or your air pressure may change because of temperature changes or when the motor cuts on and off.

My advice is to pick a pressure that you want to use for painting and then thin the paint enough so that it atomizes and flows through the airbrush properly and covers the surface well at that pressure. Knowing what pressure to start at is something that comes with experience and knowing your tools. A good starting point is 15 to 20 psi. For painting models you should never need more pressure than that. I know people who get excellent results at higher pressures, but I have never found a need to go higher.

Keep in mind that there will be a minimum pressure as well. Airbrushes "Atomize" the paint and then mix it with air. Each airbrush has a pressure at which atomization is the best, and this is the point at which you will get the finest spray pattern (not necessarily the narrowest spray, but the particles of paint are as small as they are going to be). This is usually around 20 psi for most airbrushes, but will vary with the paint and other factors. At this point you should get the smoothest finish, so it's worth experimenting to find that point for your equipment and paint.

If you are spraying a large area with a single color, such as the main color of a car, tank, airplane, or ship, then you can use a relatively high pressure (say 20 psi), leave your paint somewhat thicker, and get good coverage with each pass of the airbrush. If you are painting a critical area, such as the demarcation between two camouflage colors, you will have to reduce your pressure dramatically to prevent overspray from causing a wide line. When you reduce the pressure you are going to have to thin the paint more to get it to flow. You will additionally need to get much closer to the surface which in turn requires slightly thicker paint to prevent the air pressure from the airbrush from blowing it around. The bottom line is that YOU will have to find what works for YOU under specific circumstances.

I use Thayer and Chandler airbrushes, and for general coverage I usually start with a 3:1 ratio (3 parts paint to 1 part thinner), I spray at around 15 psi, and about 3 - 4" from the model's surface. For camouflage painting I reduce the pressure to about 8 to 10 psi, increase the thinning to approximately 1:1, and spray about ½" from the model's surface. Trying to use the same settings for camouflage as I use for general coverage would completely eliminate any chance of getting a thin division line between the colors. At the same time, trying to use the same settings for general coverage as I use for camouflage would require many, many passes and many coats of paint to get any kind of decent coverage.

Note that this commentary is just my own personal opinion, and others may differ. Scott Craig -- February, 2005