AIRBRUSH 101

A simple guide to understanding airbrush terminology, types of airbrushes, and their recommended uses

This guide is offered to help airbrush users select the best airbrush for their application, and to provide important usage/maintenance information.

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BADGER AIR-BRUSH CO.
"Your own personal airbrush department"

www.BadgerThayer.com

AIRBRUSH TERMINOLOGY, TYPES, SELECTION, AND OTHER BASIC INFO

ACTION – refers to trigger functions of the airbrush

SINGLE ACTION refers to airbrushes on which the trigger controls only the airflow. The amount of sprayed material is adjusted by turning/setting a needle (color) adjustment screw. When the trigger is depressed, a pre-set amount of material is sprayed.

DUAL ACTION refers to airbrushes on which the trigger controls both air and material flow (press down on the trigger for air, pull back on the trigger for material flow adjustment). This style airbrush allows the user to adjust line width while spraying.

Single action is simpler for applying uniform even coats of color without any notable shade or tone variation, and is almost always preferred for single color and basic spray coating applications. Dual action is preferable for "artistic" applications as it allows the user to vary spray pattern while spraying the airbrush, this enables the artist to go from fine to wide lines (and vice-versa) without limitation. Dual action is preferred for shading effects and color gradations, as well as being more proficient for detail airbrush applications and truer realism effects.

MIX – refers to the manner in which air and material come together (atomize) while airbrushing

EXTERNAL MIX indicates that air and paint mix outside the airbrush, producing a coarse round spray pattern.

INTERNAL MIX indicates air and paint mix inside the airbrush, producing a precisely atomized "fine dot" spray pattern.

Airbrushes spray a series of dots (atomized material). An external mix airbrush sprays a larger coarser dot pattern, which is preferable for larger surface coverage and volume spray applications. An internal mix airbrush sprays finer "softer" dots, and is preferred for precision finishing needs, such as color gradations, shading effects, and fine lines.

FEED – refers to the place of entry and manner in which the sprayed material enters the airbrush

BOTTOM FEED refers to airbrushes on which material enters through a siphon tube or color cup attached to the bottom of the airbrush. This type of airbrush should have at least 18 PSI while spraying to operate properly.

GRAVITY FEED refers to airbrushes on which material enters at the top of the airbrush through a top-mounted color reservoir. Gravity draws the material into the airbrush. This type of airbrush can be operated at spray pressures as low as 8 PSI.

SIDE FEED refers to airbrushes on which material enters at the side of the airbrush through a side attached color reservoir. This type of airbrush operates best at approximately 12 PSI.

DUAL FEED refers to an airbrush that has the ability to be used as either gravity feed or bottom feed depending on the user's varying application needs. This type of airbrush is patented and exclusive to Badger Air-Brush Co.

The Bottom Feed airbrush is best for general and production applications. The bottom feed airbrush facilitates the use of more material without having to frequently fill the material reservoir. The bottom feed airbrush also allows (or causes) the artist to work at a brisker pace, enabling faster spray application when desired.

The Gravity Feed airbrush, alternatively, allows the artist to slow down. Gravity pulls material into the airbrush, so the airbrush can be operated at a lower pressure for improved airbrush control. This makes it easier to do finer detail work as the finishing process can be done at a more deliberate pace. Gravity feed is usually the best choice for detail airbrushing.

The Side Feed airbrush allows the user to work with a swivel side cup which allows more flexibility for airbrushing in difficult to reach areas or on contoured pieces. Many artist prefer side feed airbrushes for detail applications because the side feed cup also eliminates any sight line obstruction to the needle tip when doing "close in" intricate detail work.

What is PSI? Pressure per square inch, it is a measurement of the level of air pressure.

Nozzle sizes - There are varying airbrush nozzle sizes for spraying a range of materials. Although they have some effect on the line an airbrush produces, nozzle sizes (Fine, Medium, Heavy or 1, 3, and 5) apply more to the material that should be sprayed through the airbrush than the fineness of line an airbrush will produce. The line fineness is ultimately determined by multiple factors – nozzle size, the needle's linear air flow angle, pigment/base ratio of paint, pigment size, operating pressure, etc. **NOTE: You must to have the right nozzle/needle size with the right spray medium for optimum airbrush performance.**

Fine/1: Best suited to spray thin, low viscosity mediums (inks, water colors, dyes, stains and gouache).

Medium/3: The most popular choice; will spray airbrush ready paints, properly thinned acrylics, lacquers, enamels, urethanes, and special application materials (food airbrushing colors, tanning solutions, airbrush cosmetics, body paints, etc.).

Heavy/5: Best for heavily pigmented and higher viscosity materials (glazes, gesso, latex, and varnish)

SPRAYING AND CLEANING THE AIRBRUSH

Spraying –

The key factors in properly spraying an airbrush are operating air pressure, amount of material being released by the airbrush, and the distance the airbrush is being held from the surface being sprayed.

For fine lines the airbrush should be held as close as possible to the surface with a small amount of material being released, for broader spray coverage the airbrush should be held 4" to 6" from the surface being sprayed with a larger volume of material being released.

NOTE: The airbrush will produce overspray. This is the "fuzz" of dots that sprays outside of or around the spray's desired focal point. If a sharp edge is desired, a masking medium (stencil, frisket, low-tac masking tape, spray shield, etc.) must be utilized when airbrushing.

There are some simple learning exercises that can be practiced to help develop skill, comfort, and confidence in using the airbrush: creating a grid of dots (on a blank sheet) with your airbrush – then going back and connecting the dots, drawing figure eights, and/or simply writing your name with the airbrush. These are all basic, but effective, airbrushing exercises. To practice airbrush technique on three dimensional objects, paint items such as scratch plastic/metal, pop cans, shampoo bottles, or other contoured items that are of little or no value.

THE ONLY THING THAT CANNOT BE TAUGHT RELATED TO USING AN AIRBRUSH IS PRACTICE.

Cleaning –

Step one: The key to keeping an airbrush clean is to not let material set up (dry) in it. This can be done by simply spraying the appropriate cleaning agent through the airbrush with reasonable frequency (when changing color and when setting the airbrush to rest for any period of time). Three important things to remember: 1. Your cleaning agent should be determined based on the material you are using, not the airbrush you are using 2. Material dries as fast in an airbrush as it does on the surface it is being sprayed on to. 3. Anything you think will take 2 seconds will take 2 minutes, and anything you think will take 2 minutes will usually take at least 20 – so spray the cleaner.

Step two: Should material set up (dry) in the airbrush, it may be necessary to back flush the airbrush. This is done by suffocating the air flow of the airbrush at the nozzle by carefully "pinching" a soft cloth or paper towel over the nozzle's end. This will deflect the air back into the airbrush chamber and loosen any dried material, sending it into the cleaning bottle. If done correctly, the cleaner will bubble during back flushing. It is advisable to spray fresh cleaner through the airbrush after you have back flushed it.

Step three: On what should be rare occasions it may be necessary to disassemble some parts of the airbrush for more thorough cleaning. This should only be done if the user has neglected to do step one of regularly spraying cleaner through the airbrush, and/or step two of back flushing is unsuccessful in getting the airbrush to spray properly again. If disassembly is required, it should be only of parts that come in contact with the sprayed material; from the material's point of entry into the airbrush and forward. The included parts for disassembly are the nozzle assembly and the needle. To thoroughly clean the nozzle assembly, use an ultrasonic cleaner or denture cleaner (yes, denture cleaner – follow the directions on the package). The needle should simply be wiped down with a soft cloth saturated with the appropriate cleaning agent. If residue on the needle is still apparent it may be removed by gently rubbing a fine steel wool over the residual deposit area. While the needle and nozzle are removed from the airbrush it is OK to run a pipe cleaner saturated with cleaning agent through the chamber of the airbrush, following the same path as sprayed material, and out the airbrush front. For bottom feed airbrushes that is up the stem and out the front, for gravity feed airbrushes it is down the color cup and out the front. Only do this when the needle and nozzle are removed as forcing anything through the nozzle will damage it. After using the pipe cleaner, blow out the airbrush to remove any pipe cleaner "fuzz". After all nozzle/needle cleaning steps are complete the airbrush can be reassembled and will be ready for use. This disassembly process should be rarely necessary if steps one and two are followed, but it is recommended if storing your airbrush for an extended period of time.

OTHER AIRBRUSH RELATED EQUIPMENT, MATERIALS, AND ACCESSORIES

Air Sources

COMPRESSORS - A unit that generates at least 30 PSI is recommended to start airbrushing. Some applications, such as T-shirt painting or other fabric painting, may be more efficiently done at higher pressures (up to 65 psi). Other applications, such as finger nail art and illustration may be more effectively done at lower pressures (as low as 10 psi). For applications requiring higher and lower pressure it is recommended to use a regulator (described below).

CO2 (or other inert pressurized gas) - A pressurized tank of inert gas can be used to operate an airbrush. A CO2 regulator is required to connect the air hose and moderate the air pressure.

AIR TANK - A compressor filled air tank (or spare tire of a car) can be used for short term project oriented airbrush applications.

PROPEL - A can of "air" that enables spraying for 5 to 15 minutes (dependent on can size) can also be used to operate an airbrush. This is best for beginners and those not certain they will continue airbrushing after trying it. After 5 cans, start looking at compressors.

Air Hoses

BRAIDED air hoses are the most common and most durable type of airbrush hose. A braided air hose can handle over 100 psi (more than enough for airbrushing). Braided air hoses are available with in-line moisture traps and quick disconnects.

CLEAR air hoses are best for airbrushing in environments where in-line moisture or contaminates may be a concern, because the user can see any material passing through the hose before it reaches the airbrush. A clear air hose can handle up to 50 psi and airbrush applications performed up to that pressure. Clear air hoses are available with moisture traps.

RECOIL air hoses are best for small work area airbrushing, because they stay out of the way. Recoil air hoses handle up to 50 psi and can be used in airbrush applications performed up to that pressure.

VINYL air hoses handle up to 40 psi and are primarily for use with propel. Vinyl air hoses are not recommended for compressors.

Compressor Regulators and Moisture Traps

AIR REGULATORS WITH A GAUGE allows the airbrush user to set air pressure to exact psi levels with a dial setting.

AIR REGULATORS WITHOUT A GAUGE allows the airbrush user to adjust air pressure based on a "trial and error" setting process.

MOISTURE TRAPS capture moisture produced by a compressor when air cools. They are desirable in high humidity areas to prevent moisture from flowing through the air hose and out the airbrush on to a work surface.

AIR REGULATORS WITH A GAUGE AND MOISTURE TRAP combines the two items described above.

Accessories

A **stencil cutting knife** is used to cut custom stencil designs in stencil film (described below) and acetate.
Airbrush needle lubricant helps prevent paint from drying on the nozzle/needle tip, reducing related airbrush clogging.
An **airbrush holder** provides a much needed a place to set your airbrush when you're not using it. That need is usually realized when your holding your paint filled airbrush looking for a place to set it down.
FastBlast jar adaptors connect the jar to a bottom feed airbrush. The FastBlast one piece siphon tube design is much easier to clean and is available in a variety of jar mouth sizes. Many professional artists put an adaptor on each color they're using.
Siphon filters slide over the jar adaptor siphon tube, preventing un-sprayable partides from entering and clogging the airbrush.

Masking Mediums

STENCILS are pre-cut design masks used to aid in the creation of an image. Stencils make airbrushing easier for beginners, and are an excellent tool for producing recurring designs time and cost effectively. Stencils are available with and without adhesive backing.

FRISKET FILM is a low tack adhesive backed film used to cut and mask designs or cover a specific area of an image to prevent sprayed material from going on to it. Frisket film is available in gloss or matte finish. The matte finish enables the artist to draw on the frisket film. There is also "liquid" frisket for easier masking off of contoured shapes.

STENCIL FILM, an uncut (usually non-adhesive backed Mylar) film used to create custom masking designs for airbrushing.

Paints - The rule of thumb for preparing paints (or other materials) for airbrushing is to reduce them to the approximate visual viscosity of 2% milk. As starting paint viscosities often vary from color to color, even within a specific paint brand, it is best to avoid fixed thinning ratios. It is also best to vigorously mix/stir paint rather than shaking it before use because mixing/stirring paint better blends pigment and base creating a more consistent paint from the top to the bottom of the bottle, and causes pigment to re-settle slower. Various paint types and materials, including acrylics, lacquers, enamels, urethanes, inks, water colors, dyes, stains, cosmetics, and food colors can be applied with an airbrush if properly reduced for spraying. Airbrushing can be done on canvas, paper, textiles, plastics, metals, wood, etc. Even the human body (skin/nails) can be airbrushed.

Paint Accessories

A **paint mixer** should be used to properly prepare and mix paint for airbrushing. It is always best for paint consistency to mix it rather than shake it, or better said "stirred not shaken".
Color mixing kits, which consist of a small cup and stir sticks, can be used to mix colors, creating new colors.

Learning Aids - Books/DVDs on general usage and/or specific technique provide excellent instruction for the aspiring airbrush artist.

AIRBRUSH APPLICATIONS / RECOMMENDED AIRBRUSH TYPES

SA=single action, DA=dual action, IM=internal mix, EM=external mix, BF=bottom feed, GF=gravity feed, SF=side feed

APPLICATION	BEST TYPE OF AIRBRUSH
AUTOMOTIVE/HARD SURFACE CUSTOM FINISHING	DA, IM, GF (or SF)
AUTO NICK & SCRATCH TOUCH-UP	SA, IM, BF
T-SHIRT/TEXTILE PAINTING	DA, IM, BF
GENERAL HOBBY FINISHING	SA, IM, BF
FINE SCALE DETAIL MODEL FINISHING	DA, IM, GF (or SF)
FINE ART	DA, IM, BF
COMMERCIAL ART/ILLUSTRATION	DA, IM, GF (or SF)
DECORATIVE PAINTING	DA, IM, BF
SCRAP BOOKING and STENCILING	SA, IM, BF
BASE COATING & GLAZING (CERAMICS, WOODWORK, TAXIDERMY, ETC.)	SA, EM, BF
HOME AND SMALL BAKERY CAKE DECORATING	DA, IM, GF
PRODUCTION BAKERY DECORATING	DA, IM, BF
FINGERNAIL ART	DA, IM, GF
AIRBRUSH TANNING	DA, IM, BF
COSMETIC/MAKE-UP	DA, IM, GF
BODY ART	DA, IM, BF
SIGN PAINTING	DA, IM, BF
WOODWORK FINISHING & ANTIQUING	DA, IM, BF
TAXIDERMY BASECOAT APPLICATIONS	SA, EM, BF
TAXIDERMY DETAILING	DA, IM, GF (or SF)
FISHING LURE PAINTING	SA, IM, BF
SMALL SCALE PRODUCTION APPLICATIONS	SA, IM, BF
VOLUME SPRAY PRODUCTION APPLICATIONS	SA, EM, BF

BADGER AIRBRUSHES BY TYPE AND MODEL		
AIRBRUSH TYPE	**DOUBLE ACTION, GRAVITY FEED, INTERNAL MIX**	
BADGER AIRBRUSH MODEL	**105 PATRIOT**	Excellent for extreme detail applications, soft color gradations, and intricate fine line work. Can be operated at lower pressures (8-10 psi), allowing better control in detail applications
AIRBRUSH TYPE	**DOUBLE ACTION, BOTTOM FEED, INTERNAL MIX**	
BADGER AIRBRUSH MODEL	**155 ANTHEM**	Ideal for fine or "artistic" applications where a soft fine spray pattern and "in process" fine to wide spray adjustment may be required. Combines fine spray atomization with use of larger material reservoir for use in fine finish general purpose applications
AIRBRUSH TYPE	**SINGLE ACTION, BOTTOM FEED, INTERNAL MIX**	
BADGER AIRBRUSH MODEL	**200NH PRECISE**	Perfect for proficient scale model finishing, nick & scratch touch up, and other professional production applications – very simple and precise airbrushes
AIRBRUSH TYPE	**SINGLE ACTION, BOTTOM FEED, EXTERNAL MIX**	
BADGER AIRBRUSH MODEL	**350 EASY**	Ideal for simple and basic spray applications and larger volume spray needs
	250 BASIC	