



6-1 An Italeri Panther D superdetailed with new track and spare links from Kasten by Doug DeCounter.

AIRBRUSHING MAGIC

The airbrush has added an element of magic to model building. How else could you reduce yourself to the size of a person that was actually painting the prototype on the assembly line? The airbrush literally allows you to duplicate the effects of a spray painting gun reduced to any scale you choose. With the airbrush, you can control the paint pattern to create those “soft” blended edges between camouflage colors with relative ease. Further, the airbrush allows you to apply a color evenly without burying the details under too much paint.

With practice, the airbrush eliminates the messy runs and spatters that are all too common with spray cans. Both spray cans and hand brushing have their useful place, but airbrushing allows you to supercede both techniques with practice. Don’t let the perceived complexity of airbrushes stop you. You can buy environmentally safe cans of propellant like Testor #8822 Ozone Safe Airbrush Propellant and an inexpensive airbrush for the price of a few kits. On warm and calm days you can spray outdoors with

a large empty corrugated cardboard carton to catch the overspray.

The “ultimate” airbrush outfit, however, may include a double-action airbrush (so you can control both the flow of paint and the flow of air with a single downward and backward stroke), a silent compressor fitted with a pressure regulator and moisture trap, (one that runs quiet enough so you can continue painting until two in the morning if you wish, without disturbing others), and a spray booth (vented to the outside so you can spray anytime of the year without worrying about airborne dust or spreading the odor of drying paint throughout the house).

THE CAVEMAN ERA OF AIRBRUSHING

There’s an archaeological theory that suggests that some of the paintings on the walls of caves were done by the cave people blowing air across a hollow reed straw, which in turn siphoned “paint” up the reed and deposited it onto the cave walls and ceilings. This basic siphon technique describes the actions of the most primitive, contemporary low-end airbrushes. Now if we can just prove

that the cave people used this technique on some of their handcarved stone woolly mammoth miniatures we can push back the date of the beginning of the modeling hobby.

PROFESSIONAL QUALITY AIRBRUSHING

A commercial artist may spend up to hundreds of dollars on various airbrushes and a silent and clean air supply. A modeler also may spend this amount, although there are lower-cost airbrushes and air supplies.

SELECTING AN AIRBRUSH

Airbrushes are divided into two camps, the *External* and *Internal Mix*. External mix airbrushes atomize the paint as the name suggests, outside the airbrush. Internal mix airbrushes are designed to bring both air and paint together inside the airbrush nozzle. After this, you have varying control mechanisms for both air and paint.

External mix airbrushes generally have a separate adjustment for paint and air. Air is generally switched on and off by pressing the trigger. Paint flow is adjusted by rotating the threaded paint nozzle, which allows the paint volume to be adjusted on an external mix airbrush.

Internal mixers, on the other hand, are available in up to 3 control mechanisms:

- *Single Action*
- *Double Action*
- *Fixed Double Action*

Single Action – Air supply is regulated via a simple on/off trigger. Paint supply is adjusted generally by a separate roller, commonly located at the rear of the airbrush. This roller allows variable line widths to be selected.

Double Action – Air supply is regulated by pressing the trigger. The further down the trigger is pressed, the more air is expelled. By pulling back on the same trigger, paint is introduced into the airstream. The further back one pulls, the more paint is injected.

Fixed Double Action – When pressing the trigger both air and paint are expelled. The

more the trigger is depressed, the larger the quantity of both air and paint.

SELECTING AN AIR SUPPLY

Propellant cans are an economical source of air for airbrushing. Pressure inside the propellant can is 60 pounds per square inch (psi), but this pressure drops as it is used. It will recover, once left to stand (warm up). If you wish to keep the pressure from dropping so quickly, place the propellant can in a shallow pan or coffee can of room temperature — not hot — tap water. This prevents the can from chilling too rapidly. Change the water if you are using propellant for an extended period. For big jobs, two cans used alternately will ensure continuous painting without affecting the overall paint job quality.

When using an air compressor, selecting one that has an airflow between about 10 and 30 psi of air pressure is desirable. More pressure, up to 60 psi, can be useful in certain circumstances. You also want a moisture trap so the water that is compressed out of the air won't find its way into your paint job. It's also important to have a compressor with either a large enough pump or with 2 storage tanks, so that it can maintain at least 22 psi continuously to ensure effective atomization while you continue to spray. Finally, it's really nice to have a compressor that is virtually silent in operation. Of course, the more of these features you want, the more you will need to spend.

CO₂ cylinders of compressed gas are another option. Totally silent and moisture free, they provide long service between refills (accomplished at your local beverage supplier/distributor). A regulator is still necessary – in fact you can't run without one.

WHY SO MANY TYPES OF AIRBRUSHES?

One reason, the simpler the design, the less expensive it is to produce, ergo the less expensive it is for you to buy. Having said this, you will be getting exactly what you pay for.

External Mix airbrushes such as our new A220 are very good for spraying large



6-2 It is easy to recreate blended color demarcation line camouflage patterns with an airbrush.

quantities of paint, but do not easily lend themselves to small detail work. The A220 is an excellent tool for producing car bodies, large single-colored models, priming, etc. Whereas our new external mix A270 (a little more complex/expensive) is quite capable of creating all but the most complex camouflage or what have you, and is still able to provide broad coverage as with the A220.

Aztek Internal Mix airbrushes such as the A320, A430, and A470 are all capable of the same interchangeable selection of nozzles, but the double-action controls of the A430 and A470 allow you to exploit the finer points of airbrushing.

BALANCING AIR, PAINT FLOW AND TIME

Successful airbrushing depends ultimately on a balancing act of sorts. Always remember the three variables.

Air Pressure (PSI)

Paint/Thinner Ratio (Viscosity)

Spraying Position (Proximity)

And to balance all three of these is to obtain perfection.

PERFECTING THE BALANCE FOR FINE LINES

There are actually two ways to approach fine lines, and they come about this balance

in totally opposite fashion. We will call them Method 1 and Method 2.

For Method 1 use:

Thick paint (viscosity – high)

High pressure (30 psi and up)

This allows you to create fine lines when the needle is partially retracted into the airbrush nozzle.

For Method 2 use:

Thin paint (viscosity – low)

Low pressure (10-15 psi)

This combination produces fine lines with the needle fully retracted into the airbrush nozzle.

Choosing is up to you and what you feel you are most comfortable with. We would like to encourage you to experiment with both methods, so at the very least you can appreciate the differences this balance has on your resulting paint jobs.

We would like to point out that both methods have their advantages. The downside with Method 1 is that the thicker the paint is being delivered under higher pressure, the more paint builds up on the needle/nozzle, causing spitting and clogging, which in turn requires more interruptions to clean. This is especially noticeable when spraying

acrylics, since solvent-based enamels tend to redissolve themselves when dried accumulations are met with additional wet solvents as you spray. The acrylics do not. Method 1 also requires that you work faster and keep the airbrush moving across the surface to be painted, as any hesitation in your travel will result in a wetter and wider than desired fine line. The advantage of Method 1 is that you get better paint coverage/opacity without creating those weak runny spiders.

The disadvantages with Method 2 are the potentials for both poor coverage and atomization (due to insufficient psi). The distinct advantages are far more control and the ability to "build up" color with multiple passes (coats).

Having said this, what is the ideal balance? Unfortunately the answer rests with the paint viscosity itself, period. The only way to be specific about this is to nail down for you an example to illustrate an ideal balance. Yes, it sounds self-serving, but an ideal balance – as a guide – would be found as follows:

Take Model Master II enamel, sprayed full strength using an Aztek A320 or A430 armed with a 9305C .45 mm ø gray nozzle (a.k.a. "general purpose nozzle") hooked up to 15–20 psi. Paint can be dispensed using either a siphon feed jar or paint cup if you prefer. Life doesn't get any better! Of course, a slight thinning of the paint may be required, especially when shooting glosses, up to 20% or 2 parts of Airbrush Thinner to 8 parts paint.

Now given these two extremely different methods, you've probably figured out that, somewhere between thick paint/high pressures and thin paint-low pressures, will be the spray characteristics you're looking for.

THE BALANCE OF BROAD AREA COVERAGE

For broad area coverage, pressure and paint viscosity are not nearly as critical due to the large output pattern over a large area. Taking into account all the previously mentioned variables, higher pressures and thicker paint are ideal for obtaining maximum coverage in

the shortest amount of time. Again, when spraying glosses, some thinning (actually more) is conducive to smooth glossy results, up to 50% or half-and-half. Light gloss colors such as yellows or gloss white require significantly less thinning, more like 20% or 2 parts Airbrush Thinner to 8 parts paint.

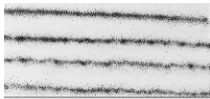
The upshot of all this can be summarized as follows: Fine line work, weathering effects and detail "spot" applications are best done using thin paint/low pressure (Method 2) because thick paint/high pressure (Method 1) will obscure delicate details. And for broad coverage, Method 1, or thick paint/high pressure, tends to yield more uniform and consistent coverage.

DUSTING – THE TECHNIQUE

As an adjunct to Method 1 (high pressure/thick paint), and because straight use of this technique will generally smother the model with paint, causing runs, pull the airbrush back and spray from a distance of at least 6 inches. This will allow the paint to dry somewhat on its approach to the model, creating a very thin paint film on the model's surface without obliterating fine detail.

LEARN AIRBRUSHING BY DOING IT

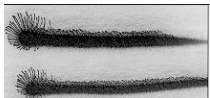
Here are some samples of good and bad applications of paint with an airbrush. Make a dozen photocopies of these pages and leave most of the page empty to provide an area for practice. Spray the photocopied pages with Model Master II Flat Clear Lacquer #2015, thinned down using Lacquer Thinner #2018 to about a ratio of 8 parts clear to 2 parts thinner; it's not all that critical, but try being as precise as possible – it's good practice. Adjust your airbrush for a broad coverage application and spray the photocopies, sealing the paper so the practice paint will not soak in. Study the examples and then try your hand at imitating the patterns – noting pressure, distance, viscosity, and adjustments. Have fun, loosen up, nobody is going to get critical on you. Practice will lead to mastery.



Bumpy/Uneven Lines

Causes: Insufficient pressure or pulsation from compressor

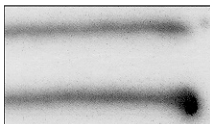
Solutions: Thin paint further or use a compressor equipped with a reservoir or use a CO₂ tank.



Spidering

Causes: Paint too thin and/or airbrush held too close.

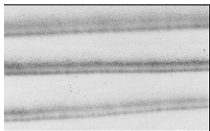
Solutions: Increase your distance and/or spray at a lower pressure.



Dots at Ends of Lines

Cause: Releasing trigger too abruptly and or continuing to spray after stopping at end of stroke.

Solutions: Practice releasing trigger gently and smoothly. Follow through or move past end point of spray pattern.

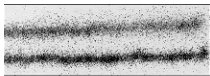


Asymmetrical Lines

(Sharp on one edge, fuzzy on the other edge)

Causes: Bent needle, airbrush not held perpendicular to surface. Paint buildup on aircap or particles of dried paint obstructing nozzle.

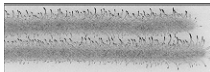
Solutions: New nozzle, hold airbrush more perpendicular and clean aircap.



Paint Too Thick

Causes: Not enough pressure and/or insufficient thinning of paint.

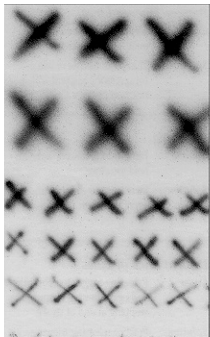
Solutions: More pressure and/or add more thinner to paint.



Paint Too Thin

Causes: Overthinning of paint.

Solutions: Increase air pressure and/or use less thinner in paint.

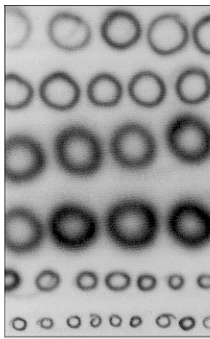


FIRST PRACTICE X's

Setup: 22 psi/thin paint to "milk consistency."

Using A320 or A430

Start by applying more paint, holding your airbrush approximately 4 to 6 inches away from the paper, then move progressively closer, while applying less paint (by not pulling the trigger as far back) until you can duplicate the X's on the bottom line. These are created with the airbrush nearly touching the paper.

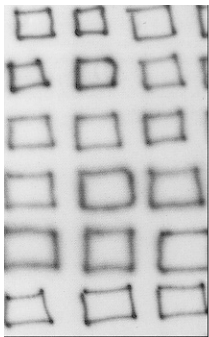


NOW TRY O's

Using the same technique

More paint/more distance

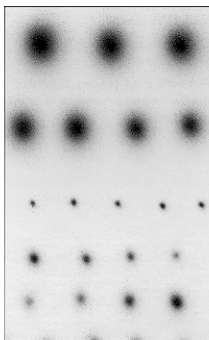
Less paint/closer up



NEXT TRY SQUARES

More paint/more distance

Less paint/closer up

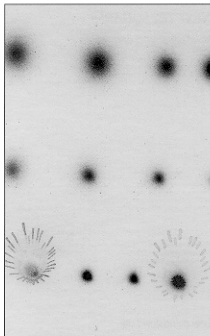


HOW ABOUT SOME DOTS

More paint/more distance

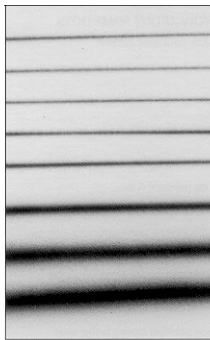
Less paint/real close

Less paint/but moving farther away



AND MORE DOTS

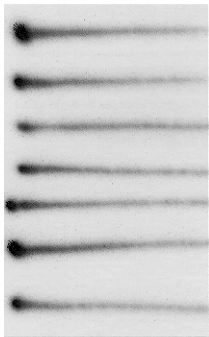
Now that we've been running the compressor for a while, moisture has been collecting in the air hose. So, every so often the airbrush spits some water along with the paint. This is why a moisture trap is mandatory to prevent this from happening.



READY FOR SOME NICE FINE LINES?

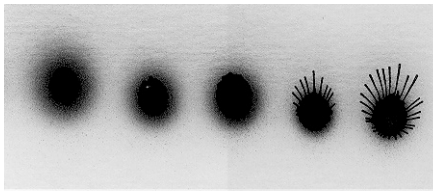
Come in close, and try to keep them consistent and straight.

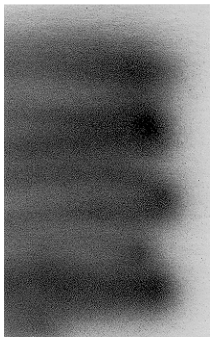
Work swiftly at high pressures (25 psi), then slow down and reduce pressure to 18 psi and lay down a few.



Dots at the beginning of a stroke or line are caused by lingering too long at the starting point and/or getting a little too close to begin with.

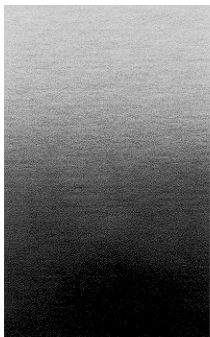
Keeping your distance is important, too. Notice how the same amount of paint creates a puddle if you move too close.





BROAD AREA COVERAGE

A common error is to turn around on the model surface, causing excessive paint build-up at the beginning or end of each pass. Always work in linear straight strokes, and continue a pass past the model surface before turning around to make the next pass in the opposite direction.



PROPER GRADATION OR FEATHERING

is reliant upon applying the paint smoothly, starting (in this case at the lower part) and backing off with both paint and distance as you proceed upwards. Always continue your strokes PAST the desired end points to ensure consistent coverage.

START

Grainy -
not enough air

Not enough air

Moisture

Apply small
amounts, close
and fast

*Sometimes
a lot of
different problems
can occur
in a single pass.*

Too heavy,
coat-blotchy

Too much paint
Too close - start of spiders

Spiders

Too little paint

FINISH

Once you are more familiar and comfortable with your airbrush's functions, move onto an old model and repeat the entire learning process. You may find that it takes much less paint to produce a run or sag on the three-dimensional model than it did on flat paper. Adjust your airbrush and technique as directed on the practice page until you can duplicate all the effects shown on this page – even the wrong ones. Your goal is to be able to apply a pencil-thin line, with the edges evenly feathered, and without any telltale blobs of paint.

Your airbrush can be used to apply a series of dots no larger than the periods on these pages or to draw lines as thin as those you would make with a pencil. The airbrush can be adjusted to produce a pattern that is the size of a period, as well as patterns the size of a dime, on up to about two or three inches in diameter.

The closer the tip of your airbrush is to the model, the more focused or narrowed the spray pattern becomes. In fact, to get a period-size dot from the airbrush, the tip should be almost touching the model's surface. For most model work, hold the airbrush substantially further from your model.

Remember, the goal in learning to airbrush is to master and gain control of three variables:

- 1) The flow of air (as determined by how far down you push the trigger).
- 2) The distance the airbrush is from the model.
- 3) The amount of time you hold the airbrush spray pattern over a given area of the model (loitering vs. proper time-over-target).



6-3 Use an eye dropper or a Model Master Pipette to mix paint colors.

AIRBRUSH PAINTING

GLOSSARY OF TERMS

Line Width Adjustments – The adjustment of a sprayed line – mechanically – without changing the paint volume used, by changing the relationship or distance from the surface.

Paint Volume Adjustments – The adjustment of the quantity of paint exiting the airbrush nozzle.

Castellations – Raised protective features on the airbrush nozzle tip, designed to protect the needle from damage.

Viscous – Having a thick, sticky consistency.

Viscosity – The state or quality of being viscous. With respect to paint, low viscosity is thin, high viscosity is thick.



6-4 A Testors MIG-29 painted and marked to match the box art by Terry Tuytschevers.

AIRBRUSH MODEL DESCRIPTION CHART

Airbrush Model Number	Description Features	Suggested Model Scale Usage	Trigger Air Valve Type	Suggested Uses*
A220 (8821)	External Mix Single Action Fixed Nozzle	All (Priming) 1/24th 1/25th	Standard On/Off ¹	Priming and single-color application for car bodies, and large surface area coverage on big scale models. Will do most any camouflage providing larger masks or templates are used to restrict overspray. Best airbrush for car modelers.
A270	External Mix Single Action Interchangeable Nozzles	1/35th and Larger	Standard On/Off ¹	As above, plus more control that allows more freehand camouflage work on on larger scale subjects using less masks. Also a favorite with car modelers.
1000S (8826)	Internal Mix Single Action Interchangeable Nozzles	1/48th and Larger	Variable ²	Key feature: Fine atomization, creates a finer mist – best used for detailing but not broad coverage on large scales kits, since the “focus” of its adjustability is concentrated at the finer range.
GP-100	Internal Mix Fixed Double Action Interchangeable Nozzles	All Gladly	Variable ²	Same as A320 and 1000S above, but even finer control allows you to do these things on even smaller scale subjects.
A320	Internal Mix Single Action Interchangeable Nozzles	1/48th and Larger	Standard On/Off ¹	Same as 1000S above.
A370	Internal Mix Double Action Interchangeable Nozzles	All	Variable ²	Same as 1000S, GP-100, A320. But with the addition of double action.
A430	Internal Mix Interchangeable Nozzles	All	Variable ²	As with GP-100, A320. But with the addition of double action.
A470	Internal Mix Double Action Single Action Fixed Double Action Interchangeable Nozzles	All With Ease	Variable ²	With all the abilities of the A430, plus features variable trigger positions, which will appeal to the full-fledged expert.

*Your results may vary. Always bear in mind, it is your skill developed through practice and patience plus our airbrush = results that will amaze yourself and impress your peers.

Trigger air valve type: 1. Standard = Simple On/Off Action – similar to all other manufacturers
2. Variable = Proportional increase in air volume-to-trigger movement – more control

OUR AIRBRUSH CONFIGURATIONS AT A GLANCE

Airbrush Model Number	Air Hose Position	Trigger Type	Air Valve Type	Hose to Airbrush Connection	Hose to Airsource Connection
A220 (8821)	Conventional*	Air Only	Standard On/Off	Permanently Fixed	Propellant Can Ready**
A270	Conventional* Only	Air On/Off	Standard Fixed	Permanently Can Ready**	Propellant
1000S (8826)	Rear	Air Only	Variable	Permanently Fixed	Propellant Can Ready**
GP-100	Rear Double Action	Fixed	Variable Swivel	Fixed Can Ready**	Propellant
A320	Conventional* Only	Air On/Off	Standard Fixed	Permanently Can Ready**	Propellant
A370	Conventional* Air & Paint	Standard On/Off	Standard Fixed	Permanently Can Ready**	Propellant
A430	Rear Downward	Variable Air & Paint	Variable	Detachable	Compressor Ready
A470	Rear Downward	Variable Air & Paint	Variable	Detachable	Compressor Ready

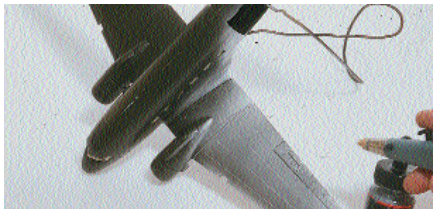
* Conventional air hose position: industry standard – downward from midway on the Airbrush body.

** All propellant can ready hose fittings include an air compressor adapter.

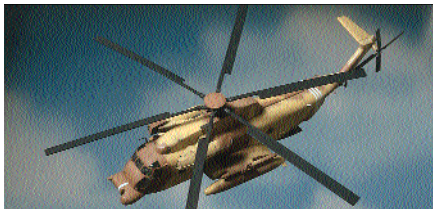
AIRBRUSH NOZZLE MATRIX

Item Number	Orifice Size	Color	PSI Range	Needle Type	Tip Style	Uses
9304C	.3mm	Tan	10–30	Stainless Steel	Castellated	All ultrafine applications 1/144th scale and up.
9305C	.4mm	Gray	10–30	Stainless Steel	Castellated	Fine line applications are possible with more skill. An excellent general purpose nozzle for medium coverage.
9306C	.5mm	Turquoise	20–40	Stainless Steel	Castellated	Large camouflage patterns 1/35th, 1/48th aircraft camouflage.
9307C	.5mm	Pink	0–20	Stainless Steel	Castellated	Spatter and stippling effects – diorama bases, weathering for large scales. Rockwork on model railroad layouts.
9340C	.3mm	Black	10–30	Stainless Steel	Unprotected Easy to Clean	Same as 9306C, but much easier to clean. No castellations, so it is easier to damage.
9341C	.5mm	White	20–40	Stainless Steel	Unprotected Easy to clean	Same as 9304C, but much easier to clean. No castellations, so it is easier to damage.
9342C	.53mm	Red	20–40	Acetal*	Cone Protected	Best for viscous (thick) acrylics. Car bodies. Large scale camouflage applications.
9343C	.70mm	Orange	20–40	Acetal*	Cone Protected	Best for viscous (thick) acrylics. Broader spray patterns. Medium range of control.
9344C	1.02mm	Yellow	20–60	Acetal*	Cone Protected	The “Blunderbuss.” For priming big things. Virtually no adjustment/control, but excellent for R/C aircraft large-scale spray gun effects if you require major coverage.

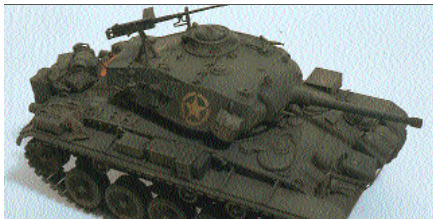
* Acetal resin copolymer. Acetal resin is used selectively by NASA in the space program because of its light, stable, and nearly unbreakable nature. Acetal resin, unlike metal, does not deteriorate through contact with solvents; and its manufacturing tolerances are much more precise and uniformly produced.



6-5 Hold the model with a coat hanger bent to plug into holes in the fuselage.



6-6 This Italeri MH-53U Pave Low III was painted using the A470 Double Action Airbrush.



6-7 This Italeri M24 has been superdetailed with On the Mark etched brass fender supports and about 50 other details by Doug DeCounter.