KEEP THE AIR ON! KEEP THE AIR ON! KEEP THE AIR ON! KEEP THE AIR ON!

# Back to Basics THE "SOFT" DAGGER STROKE

Airbrush master Terry Hill returns with another article in his Back to Basics series.

In his previous article, Terry discussed basic shapes and paint flow. Of course, every new artist asks "Is there a point to basic shapes—lines, dots, dagger strokes, and so on?"

Terry's answer is, "You'll be surprised to see how they combine to make recognizable shapes and objects. They are designed to build upon one another while increasing your skills until you garner an intuitive sense of exactly what stroke to use. Airbrush basics are a tool kit. You, the artist, use your imagination to combine these basics and the new art you create is greater than the sum of the parts. It becomes fresh, it looks completely unlike these practice shapes, and the best part is, it's all yours!"

This article tackles the first type of dagger stroke, known as the "soft" dagger stroke.

Overall, the dagger stroke requires some practice and coordination. You have to get the hang of simultaneously moving the airbrush, starting and stopping the paint, and varying the distance between the nozzle and the substrate (the material or object you're painting on). It's a little like rubbing your head and patting your tummy at the same time! Here are some general rules:

# "KEEP THE AIR ON"

Exercise patience. If you get tired or frustrated, and things aren't working out, check your airbrush and make sure it's not

"Don't get down on yourself. Learning to airbrush is unlike any other art form you have ever tried." observe the results as they magically follow your every move but you don't really get to feel the texture of the surface or clogged with paint or some other malfunction.

Take breaks. If you're tired or hungry, you won't perform these exercises as well as when you're rested and nourished. Get some music going; airbrush art is active, and can be very rhythmic. People often lose sight of that. You're moving around with the brush, you're checking and evaluating your paint surface, you're grabbing a new bottle of paint, adjusting the lighting...you get the idea. It's not like competing in the Olympics, but ask professional airbrush artists how tired they get after several straight hours of laying down paint.

The other benefit of taking breaks is to get a fresh look at your art. I don't know how many artists have told me stories about nearly throwing away a painting or a shirt, hitting a car hood that looks bad with a hammer in frustration, or selling the airbrush and joining the circus. BUT—then the artist goes away, sometimes overnight, comes back fresh, and is amazed at how good the work really looks. Any problem parts are now obvious, as are the solutions for fixing them.

Don't get down on yourself. Learning to airbrush is unlike any other art form you have ever tried. First of all, there's no sensory feedback. You can't feel the substrate. It's all visual! No matter how hard you try, you can't clearly see the paint transferring from the airbrush to the surface. You can the thickness of the paint as in other traditional art forms. Suspend any preconceived notions you may have, relax and let the exercises in this column bring you along to a new understanding of this unique art form.

Also, and this is long-term wisdom...seek out other artists, classes, or videos, and then paint, paint, paint. Musicians playing alone usually don't get the boost that they get when they show up to a basement or practice room to jam with other players. Airbrush art obeys the same laws. Attendance at an Airbrush Getaway workshop can cement your skills and open your eyes to fresh approaches.

OK, the philosophy sign is now extinguished, and let's move on to the soft dagger stroke. I call this "soft" in the sense of soft edges and a gentle application. The biggest asset of an airbrush is the ability to put down paint with blended or soft edges. This has been its greatest appeal over the years and it's tough to use a conventional brush to do that quickly. An airbrush's advantages are speed and uniform results. But those only come with practice and a certain amount of knowledge regarding technique.

The "soft" dagger strokes in this article are mostly a mixture of paint control, varied nozzle distance from the substrate, and follow-though (that's the active body language that accompanies good airbrush art).

## OK, load up an airbrush and let's paint!

For these exercises we're using a transparent purple/deep violet. This is a good color for practice, because it allows both subtle and deep shading, depending on how much paint you allow to build up. Second, the paint doesn't dry as quickly on the tip of the airbrush needle, causing blockages (the dreaded "tip dry"). Use any dark transparent color you wish to perform these exercises as long as you avoid heavily-pigmented colors such as opaques. Black is a definite no-no for now, due to its tendency to quickly build up and cause tip dry on the needle.

### Getting Started

### Figure 1: "Soft" and "hard" dagger strokes.

This illustration shows the two different versions of the dagger stroke. The top dagger stroke is an example of the soft dagger stroke and will be the main focus of this article. To accomplish it correctly, we'll use a combination of distance and trigger control. Begin with a wide-open trigger position akin to making a very large dot. You then keep the air and paint flowing, and move the nozzle along a line, moving from thick to thin by smoothly bringing the nozzle closer to the surface as you reduce the flow of paint. Don't bump into the surface and damage your needle; it's a common error when starting off. Notice that bringing the nozzle closer makes the edges less fuzzy, and defines the shape, while still finishing in a soft point. Remember, a properly done dagger stroke, whether rendered in a soft or hard fashion, is always finished by stopping the paint flow completely while performing a full and complete follow through.

The bottom dagger stroke in the photo is the hard dagger stroke. It's much more sharply defined and is slightly different in technique than the soft stroke. In this example, it begins with a dot much closer to the substrate and moves parallel to the surface to the left, trailing off from thick to thin into a comet-tail. We ease the trigger forward, reducing and eventually stopping the flow of paint while maintaining a distance very close to the surface. The stroke is completed with a strong follow through similar to that of a bowler or golfer after releasing or striking the ball.

For these shapes, (1) always keep the air on and (2) always follow through.

Figure 2: Beginning a soft dagger stroke. As mentioned earlier, every stroke essentially begins with a dot. In this example, we can see the finished stroke as well as representations of the relative sizes of dots necessary to produce this effect. You should be well-practiced at relative dot sizes and their relationships to distance from our









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previous column's exercises. In fact, we could think of a line as simply a dot that you move by moving the airbrush while you keep the paint flowing. A dagger stroke is the same thing, except you add a third dimension—you then move the nozzle closer, swooping it down to the surface as you make your line. Imagine that the nozzle is an airplane that you're landing while you're spraying paint. Keep gliding down to the substrate, with the paint on, then stop the paint and glide along without touching down.

But the dot is the start. Notice that we mostly focused on dramatically varying the distance. That change in distance, combined with a little trigger control, is your key to success with this stroke. More distance makes a larger-radius shape, and makes the edge softer.



"Imagine that the nozzle is an airplane that you're landing while you're spraying paint. Keep gliding down to the substrate, with the paint on, then stop the paint and glide along without touching down." 

### Figures 2a and 2b: Practicing the movement for a soft dagger stroke. "Measure twice, cut once" is an old adage. It was never truer than in airbrush art. Rehearse your movement. This helps to build muscle memory. Do this as often as you paint. There's no penalty for not shooting paint. But once it's on, it's hard to remove.

I start a dot with the paint flowing and keep it flowing to the end of the stroke. Concurrently, I'll ease off the paint at the end of the stroke, and follow through. These are posed shots and my main intention is to show you just how dramatic the difference is between the start and finish.

### Figure 3: The hard dagger stroke.

Just to further clarify, the hard dagger stroke shown here is much more tightly rendered than the soft version. The word "hard" is more a description of the look of the stroke than the difficulty of the technique. Of all the strokes used in freehand airbrushing, this is the "Mac Daddy" of them all! It's so important that we will devote our entire column to it in the next issue.

### Figures 3a and 3b: Hard dagger stroke technique. The relative distance of the airbrush from the surface from beginning to end of the hard dagger stroke





doesn't change very much at all. The variation in line width is controlled almost exclusively with trigger movement. Also note that I achieve some consistency of distance and a little bit of sensory feedback by dragging my finger along the surface.

### **Control Exercises**

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7

We practiced, rehearsed it, and now the moment of truth. We begin with the air on, start the paint flow to make a dot, and sweep the airbrush to the left and down towards the substrate to bring the dagger stroke to a point. Cut off the paint and follow through.

Do you have it? If not, don't panic. Make sure you have a good flow of air and paint, and try again. Rehearse, then put down some paint. When you feel like you've figured it out, move on to the next set of tasks. Remember, we are only working with the soft version of the stroke at this time. If you learn the soft dagger first, you will have much better success as we move forward in the next issue with the hard version.

**Figure 4:** *Tiger stripes.* The single shape, in this case the soft dagger, is a building block for more complex shapes. An important skill is arranging the shapes in relation to one another. The next sequence will give you some confidence in this. Since we've started making the shapes right-to-left, switch off and make one left-to-right. Then drop down and make another one. The idea is to control your paint and movement and to gain an awareness of the effect that changing distance dramatically can achieve.

One direction may be more comfortable than another. Why is this? Since we're right-or-left handed, we handle directions differently. For example, if you ride a motorcycle, you probably are better at making tight turns in one direction, say to the left, than to the right. And so on. Practicing your painting will level out these problems. **Figure 5:** *Vertical tiger stripes.* We're not going to let you rest. When you master the horizontal tiger stripes, think about going vertical—top-to-bottom, bottom-to-top. Be sure to make nice long purposeful strokes and really work on using distance to accomplish most of the variance in the stroke.

Figure 6: Diagonals. This looks like a thousand T-shirts I saw at Grateful Dead concerts. Master this pattern for some







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possibly forays into the mellow market. But honestly, with some practice with the trusty dagger stroke, you can probably do this. The idea is to point the strokes into the center, trail off with no paint flow, and leave the light spot in the center. Because of the way paint density and contrast work together, it'll look like it glows. Wow, man.

"Get some music going; airbrush art is active, and can be very rhythmic...You're moving around with the brush, you're checking and evaluating your paint surface, you're grabbing a new bottle of paint, adjusting the lighting... you get the idea."

**Figure 7:** *Circles and circles.* Nobody can draw a perfect circle. OK, maybe somebody can, but we'll help you along if you can't. Let's practice a slightly different set of shapes that we can later combine with dagger strokes to produce real-world designs. Warm up for your circular shapes by moving the airbrush in gentle circles a consistent distance from the substrate. No paint yet, just air flowing as you warm-up. When you feel you have it, get a good motion going, keep the air on, and gently roll the paint on and off while continually moving the airbrush in a circle, starting and stopping the paint as we did with the daggers. When done correctly, soft circles will appear.

To make these circles look their best, and this is important, move on a clockwise motion, painting some, then go back and work counterclockwise, continuing to lay down strokes of paint with the air continuously flowing. This eliminates flat spots.

Note in this exercise that we strive for the circles to be very soft and to blend with each other with no obvious overlap. Why? Because you don't want paint to build up and darken. These are called "hot spots" and can really distract from the smoothness and professionalism of your artwork. don't want them. In others, we've started from way back, then gone up close, and inadvertently made parts of the circles much darker.

Also, notice that some of the circles aren't circles—they're ovals. This usually is a result of making circles on one direction —in this case clockwise—and not going back over them with counterclockwise motions.

Continued in our next issue.

Figure 8: Circles gone bad!

cautioned against in Figure 7.

In some of the top circles, we

stopped the movement, and as

we paused, we kept the paint

on and it built up in hot spots.

In other circles, the strokes don't

lay down on top of each other

uniformly and so we get some stripes in the circles where we

Or, what not to do. These

circles have all the sins we

Terry Hill has been airbrushing T-shirts in the Florida panhandle for 22 years. A leading force in the airbrush world, Terry co-designed the air compressor for Silentaire that bears his name, and he has become a leading innovator of new products for the airbrush industry. When he's not working at Airbrush Headquarters in Destin, Florida, he is the director of the distinguished Airbrush Getaway workshops.



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## HOW-TO TROUBLESHOOT YOUR AIRBRUSH A MUST GUIDE FOR ALL AIRBRUSH USERS!

Terry Hill offers a summary of airbrush maintenance from the University of Hard Knocks. He feels that new and experienced airbrush artists should have confidence in their equipment so that they can focus on painting techniques.

First let's get a few general concepts out of the way. This guide is intended to be a likely sequence to follow as you troubleshoot problems you may encounter while using an internal mix double-action or fixed double-action airbrush.

### I. Paint Thickness Versus Air Pressure

The first concept to understand is the relationship between the thickness of the paint you intend to spray and the air pressure needed to atomize or "carry" the paint. Think of air pressure as muscles or horse power. Therefore, using low air pressure restricts your ability to carry heavy or thick bodied paint. The more you increase your air pressure, the thicker or heavier the paint you can spray with a given nozzle size.

### II. Paint Thickness and Nozzle Size

This leads me to the second concept, nozzle size and its relationship to paint thickness. It's a common mistake to assume that using the smallest possible needle and nozzle combination will give you the finest detail. This is not necessarily so! If you use a thick-bodied paint such as a pearl through a very small nozzle such as a .018-mm, you will most likely have clog after clog, with intermittent line control at best. The particle size of the pearl is just too big for the nozzle. The general rule of thumb here is to use the smallest nozzle and needle combination that corresponds to the thickness of the paint you are using. As with the air pressure, the nozzle and needle sizes should increase proportionally with the paint thickness. For this reason, some airbrushes come with more than one needle and nozzle combination. U.S.made airbrush nozzles and needles are generally numbered as #1, #3, and #5 and should be used for thin-bodied media (like water), medium-bodied media (the thickness of milk), and thick-bodied media (the thickness of heavy cream) respectively. European and Asian airbrush manufacturers designate their nozzles with a decimal expression such as .02-mm to .06-mm.

### III. Type of Airbrush

The third general concept is an often over-looked variable. It relates to the method of paint delivery to the nozzle. There are three airbrush variations to choose from: top-feed (**Figure 2**), also known as gravity feed, side-feed (**Figure 3**), sometimes known as siphon-feed, and bottom-feed (**Figure 4**), also known as suction-feed.

A big part of troubleshooting any airbrush problem is making sure you're using the right equipment for the job at hand.

Top-feed airbrushes are generally used with very thin media, at very low air pressures. Their hallmark is their smooth and predictable nature. Their useful air pressure range runs from as low as 10-pounds-per-square-inch (psi) to as much as 40-psi or more, depending on the situation. Despite the ability to paint at extremely low pressure, the average top-feed user paints at around 30-psi. These airbrushes were originally found mostly in the hands of illustrators delicately laying down fine inks, paints and dyes, but they are also the brush of choice for detailed automotive mural work as well as the tedious work of the fingernail artist. Top-feed airbrushes are uniquely suited for extremely low pressure work due to the tremendous assist that gravity gives the paint as it flows through the brush. The air is used mostly to atomize the paint, rather than to draw it through the airbrush.

Side-feed airbrushes can be found in many of the same arenas as their close















cousin, the top-feed airbrush, and are generally happy at similar pressure ranges and paint thicknesses. However, with less of an advantage from gravity to assist their paint delivery, they may require a few more psi to help siphon the paint from the side-mounted paint cup and atomize it properly. The biggest advantage to using a side-feed airbrush is the ability to position the paint cup out of your line-of-sight with your work. In **Figure 5** for example, a right-handed person would generally paint with the cup on the right side of the brush, allowing a clear line of sight down the top and left side of the brush to the paint target. Perhaps the best advantage of having a side-feed in your arsenal is its ability to paint in any position, even directly overhead, by simply repositioning the side cup.

Bottom feed airbrushes are a fair step away from the more delicate top- and side-feeds. They are more like a good ol' truck as opposed to the previous finicky sports models! They rely solely on air pressure to provide enough suction to pull the paint up a dip tube from the bottom-mounted bottle (Figure 6) and into the airbrush where it's then atomized. As the workhorse of the airbrush family, bottom-feeds can be found mostly in the hands of T-shirt artists, muralists and sign painters where large amounts of relatively viscous paints flow daily. Bottom-feeds are most happy with around 30-psi to as much as 80-psi, with a few artists pushing the envelope even higher, although this is not recommended. The average T-shirt artist paints between 40-psi and 60 psi, with most professionals preferring to work on the higher end of the scale at around 60-psi. The same brush in the hands of a sign painter would perform much better at the low end of the scale, at around 30-psi. Remember to factor in concepts one (paint thickness versus air pressure) and two (paint thickness versus nozzle size) to help you find the perfect working pressure for your particular painting style and technique.

### Hands-on Troubleshooting

Well, now that you understand what you are up against, let's see if your airbrush is working properly.

When there is a problem with your airbrush, you must first narrow down whether to blame the malfunction on your airbrush or the paint. The good news is that it's usually one or the other and not you, so don't be so hard on yourself! I can remember many late nights when I was first learning to airbrush when I just wanted to scream 'cause I thought I was doing something wrong. I kept blaming myself for not being able to make consistent lines and other shapes. I thought I wasn't talented enough to do the same thing twice, or steady enough to make a straight line when all along I was fighting a little devil known as "tip dry."

#### The Water/Solvent Test

The water/solvent test is a fast way to deduce and indentify a problem with your airbrush.

I used a bottom-feed airbrush throughout this demo, but the same steps apply to top- and side-feed airbrushes with a little common sense.

First, you should always be in a well-ventilated area when airbrushing. Connect a bottle filled with the solvent that's used to thin the paint you're having trouble with. I use water based T-shirt paint, so I'll use water as my solvent.

Set your pressure at the correct setting for the thickness of the paint you're using. If you're still not sure what pressure to use, try 40 psi. This is the most common setting for most forms of airbrushing.

Press down the trigger and roll it back to wide open. Spray the water/solvent freely into the air as shown in **Figure 7**. You should have a smooth pattern of finely atomized particles with absolutely no stuttering or skipping. Gently roll your trigger back and forth while watching closely how the water/solvent





Figure 10: Tip dry





comes off the end of the needle (**Figure 8** and **Figure 9**). If it sprays perfectly, great! You've just proved that your airbrush is A-Okay! We now know that the problem must be the paint (I'll cover paint issues later in this guide). On the other hand, let's say the airbrush skips, or even worse, doesn't spray or release paint at all.

The first thing to check is the condition of the needle. First and foremost, we're looking for something called "tip dry" (**Figure 10**).

Tip dry is a condition common to water-based paints as well as very opaque or heavily pigmented paint where paint dries and then builds up on the tip, thereby disturbing the flow pattern of the paint. It can also occur in situations where the paint is way over-reduced or the solvent is too fast for the given conditions. If you have a tip dry problem, the best course of action is usually to just clean the needle and proceed, while keeping an eye out for the dry paint to form again. (**Figure 11**) It can build up over and over, sometimes in only a few strokes. That's why you'll find most professionals are constantly, and unconsciously, picking at their needles. It's hard to believe, but this buildup of paint on the needle can cause enough turbulence to prevent your airbrush from spraying at all. In some cases a retarder can be added to the paint to reduce the problem, but this too can cause issues such as fish-eyes or inadequate coverage, so be cautious with your chemistry.

If tip dry is ruled out, the next likely culprit is the air hole on the top of the paint bottle (Figure 12). I always keep an old needle around to pick at the air hole and keep it open (Figure 13). It's a simple principle, really. For paint to leave the bottle via the suction provided by the airbrush, there must be a clear and open air hole at the top of the bottle. When this little hole gets clogged, a vacuum is quickly formed inside the paint bottle. Soon the vacuum inside the bottle is greater than that created by the brush and the paint stops flowing. The unfortunate thing that happens next is just the opposite. While trying to force the airbrush to work, many artists inadvertently back-flush the paint into the bottle (Figure 14) (notice the bubbles. Tip dry or a loose air/nozzle cap can also cause this to happen), thereby pressurizing the bottle at whatever the air pressure is set at. Everything is fine until you remove the bottle from the airbrush and release a torrent of 40-psi-pressurized paint out through the dip tube on top of the bottle and all over a very irate customer! All this is preventable by simply checking the air hole.

### Nozzle Checks

The next most likely problem may stem from your nozzle (Figure 15). The nozzle and needle are the two largest wear areas of an airbrush. As a matter of fact, in most quality manufactured and designed airbrushes, replacing the nozzle and needle is tantamount to rebuilding the brush. I bought my first airbrush in 1979 and it still works great as long as it has a good nozzle and needle! Look closely at the area where they mate. If you see any irregular or unsymmetrical paint build up, you may have a worn or torn nozzle. Sometimes you're able to feel the tear or crack with your finger tip. If it looks clean and feels clean, then remove the nozzle and look inside. It's common for pigments and dried paint to build up inside the nozzle. Clean it very carefully. I usually use an old needle for this, but be careful to only use ones that are not hooked so that you don't inadvertently scratch the inside of the nozzle. The easiest way to clean the delicate parts of the airbrush is to use an ultrasonic jewelry cleaner, available from Wal-Mart's jewelry counter. You can buy much more expensive cleaners at art stores, but the Wal-Mart models are so cheap that I consider them disposable, and they work great. Just put your parts in a little airbrush cleaner and let 'em go in the ultrasonic device for 30 minutes or so. You'll be surprised how much stuff comes out of what you thought was a clean airbrush!

### **Needle Checks**

Your needle is almost as important as your nozzle. Make sure it's straight and the point is sharp, without any hooks (**Figure 16**).

By this stage, 95-percent of airbrush problems should be solved, but occasionally you get a stubborn one. If everything checked out so far, then we need to look for leaks and loose parts. Start by putting that water bottle back on. Spray a little window cleaner or soapy water on the front of the airbrush where the head screws onto the body (Figure 17). If bubbles form (Figure 18), remove the head assembly (Figure 19) and apply Teflon tape (Figure 20 and Figure 21) or bees wax to the threads of any part that's leaking. A leaking head assembly can cause a loss of suction and thereby reduce the airbrush's efficiency and ability to spray consistently. When reinstalling the head assembly, be careful not to overtighten. These brushes are mostly made of brass, and it's easy to over tighten and damage if too much force is applied. It's better to have a very small leak than to chance damaging your brush.

### **Advanced Problem Solving**

Okay, now 99-percent of the airbrush should be in great shape but there's always that one-percent that defies logic. There are only two other things I look for before crying "uncle." Remove the head assembly again. If your airbrush has tiny air passages drilled through it, (**Figure 22**) then clean them out with a tiny piece of wire, or if you're really careful, a set of welder's tip cleaners from an oxyacetylene torch will do the trick nicely.

After making sure the jets or air passages inside the head are clean, reinstall the head assembly. Now take a look at the condition of the air cap, also known on some brushes as the nozzle cap. In any case, it's the

### Terry's Quick Paint Troubleshooting Checklist

If the airbrush passed the water/solvent test, then we know that it must be the paint that's causing us so much grief.

- First, is there really paint in the bottle?
- Is the air hole clogged? Gently plunge an old needle through it to make sure.

• Are the dip tube and fitting on the bottle clogged (**Figure 24**)? To be sure it's not, pass a pipe cleaner through them. Also, is the dip tube angled in a manner where it reaches the deepest part of the paint when in position to paint?

• Is your paint too thick? Try increasing your air pressure until it sprays. (Refer back to concepts one through three.) You may also try thinning your paint by adding approximately 5-percent of the proper thinner at a time until it sprays. It's generally not recommended to thin water-based paint more than 25-percent in total to avoid breaking down the pigment-to-binder ratio. If necessary, increase your pressure rather than over-thin your water-based paint.

• Is your paint old or has it been in the bottle long enough to form a sludge on the bottom? Clean the bottle and replace the paint. Most T-shirt paints are sold pre-thinned and ready to use straight out of the bottle, but it's still a good practice to strain your paint as you pour it into your paint bottle and thin it as necessary.

















Figure 21: Teflon tape application





first item forward from the head (Figure 23). Is the gap around the nozzle even, when looking straight at it from a front view? If not, then this cap is probably bent. Maybe the brush was dropped or bumped into something. I learned about this condition the hard way. I had one of those 99thpercentile airbrushes that refused to work properly, no matter what I did. I actually replaced the nozzle three times in a row before I realized that the nozzle cap was so bent that it was scraping and ruining my nozzle as fast as I could replace it. It was an expensive lesson, but one I'll never forget.

There's not much that goes wrong from the trigger back, but I'd better mention one little scenario that might drive you crazy. Occasionally, the airbrush will still paint with a small line even though you have the trigger in its fullforward position. This condition is known as trailing. Normally, when you press down the trigger, only air comes out until you roll the trigger back. But in this case, the brush releases a tiny bit of paint. This can easily be remedied by reseating the needle into the nozzle. Just loosen the nut (Figure 23) on the back of the needle and gently work the needle back and forth until a good seal is once again established. Then, tighten the needle in place.





