General Airless Spraying Guidelines

Choosing a Spray Tip.

The amount of paint delivered is determined by the size of the tip orifice and by the amount of pressure used. The fan width does not affect the flow rate, only the area the paint is distributed over.

Spray tip orifice sizes are normally measured in thousandths of an inch. The fan width is measured in straight inches and is calculated from orifice out to the edge where the fan ends so the actual coverage area is twice that distance.

When reading a tip it usually will be marked in the following way: 3-13; 4-17, etc. The first number is ½ the actual fan width; the 2nd is the orifice size. So a tip marked 3-13 has a 6” fan with a .013 orifice, a 4-17 has an 8” fan with a .017 orifice, and so on.

Spray Tip Selection

TIP SIZES	COATINGS				
	Light		Medium		Heavy
	Stains	Enamels	Oil-Based Primers	Interior Latex Paints	Exterior Latex Paints
.011	X				
.013	X	X	X	X	
.015		X	X	X	X
.017			X	X	X
.019					X

Spraying Surface Determines Fan Size

Small surfaces (cabinets, fences, railings) require smaller fan widths for

- Sharper spray pattern definition
- Reduced overspray
- Ability to spray further with less fall-off

Large surfaces (ceilings & walls) require larger fan widths for

- Increased coverage
- Ability to spray closer with less build-up

6-8" Fan 12-14" Fan

Paint Viscosity and Fan Width Determines Orifice Size.

The thicker the paint the larger the orifice size required to give an adequate flow rate to evenly coat the surface. Matching the correct size orifice to the viscosity of the paint allows for the correct pressure to be used. When too small of a tip is used with too thick of material, too much pressure is required to atomize the paint resulting in excessive over spray and a poor spray pattern. If too large of an orifice is used with too thin of material then too much material comes out making it difficult to control the spray pattern.

Also the smaller the fan width the smaller the orifice size that is required. When comparing a 6-15 tip (12” fan x .015 orifice) to a 3-15 tip (6” fan x .015 orifice), because the orifice size is the same, the same amount of paint flows through the tip, just distributed over two different fan sizes. In other words, twice as much paint will be distributed over the 6” fan as would be distributed over the 12”.

Using the right tip reduces overspray, provides more control, and extends the life of the tip.

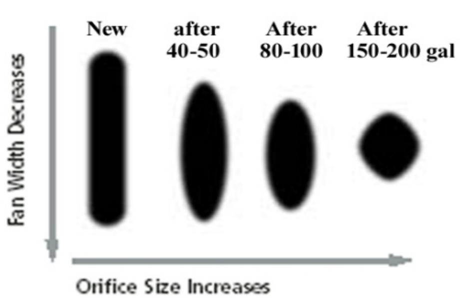
Fine Finish Tips vs Standard Tips.

Fine Finish (sometimes referred to as double orifice) tips are a special variety of spray tips designed for use with lacquers, urethanes and enamels when an ultra smooth finish is required.

Fine finish tips’ orifice size is measured in even numbers. Therefore if your coating required a .013 in a standard tip; you would use a .012 fine finish tip.

Fine Finish Tips

	Orifice Size - Inches							
Fan Width in.	.008	.010	.012	.014	.016	.018	.020	.022
2-4	108	110						
4-6	208	210	212	214	216	218		
6-8		310	312	314	316	318	320	322
8-10	408	410	412	414	416	418	420	
10-12		510	512	514	516	518	520	522
Flow rate (gpm)	.069	.11	.15	.21	.27	.35	.43	.52



Recommended Spray Tip Replacement Time

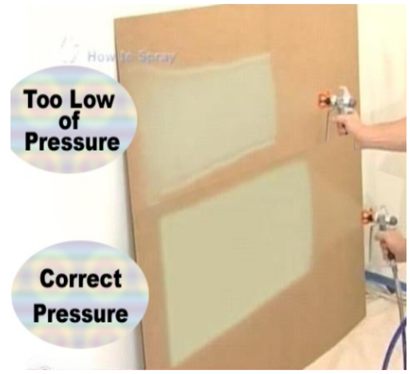
Latex — Replace after 15-40 gal. (57-151 L)
Oils & Stains — Replace after 35-60 gal. (132-227 L)

Important Things to Know About Tip Wear

It’s important to replace a tip when it is worn to ensure a precise spray pattern, maximum productivity, and a quality finish. As a tip wears, the orifice size increases and the fan width decreases. This causes more paint to hit a smaller area which causes a poor spray pattern, wastes paint, and slows productivity.

To increase tip life and to prevent excess overspray the lowest pressure possible should be used. Do not increase the paint pressure to compensate for a worn tip. This just makes the problem worse.

Pressure:



The biggest mistake most people make, even a lot of professionals, is spraying with too much pressure. You need just enough pressure to create an even fan with no "tails" (thick lines at the edge of the spray pattern, sometimes referred to as “fingers”).

Using too much pressure causes several problems, most notably is that it increases the amount of ‘overspray” let into the air. This not only increases the risk of damaging nearby property with overspray, but it increases the amount of paint required to do the job, sometimes by as much as 20%. It also lowers the quality of the spray pattern and greatly increases wear and tear on the sprayer and can cut the life of a tip in half.

The trick is to use the least amount of pressure possible while maintaining an even spray pattern.

To achieve proper pressure, never rely on pressure gages. Always adjust the pressure manually. To do so: using a new spray tip, back-off (decrease) the pressure knob all the way and then screw it in about 1/3rd of the way (screwing in increases pressure on most sprayers), point the gun at the surface to be painted or a piece of cardboard for testing and with your hand in motion, pull the trigger. If you have “tails”, turn 1/8 at a time, until the tail is gone. Now you have the proper amount of pressure for the material you are spraying. If the tails do not disappear, then either a larger tip orifice size is required or the spray tip is too warn to use. If you have to choose between too much pressure or not enough, always use the lesser amount, a minimal amount of tailing is acceptable as long as it does not affect the overall quality of the spray pattern.

If the material is further reduced you will need to adjust the pressure again.

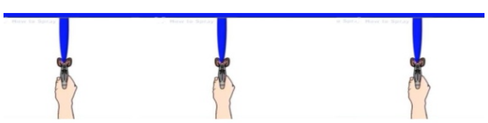
If you need more paint flow, increase the size of the tip, not the pressure. A re-adjustment of pressure is required after changing tips. You will really notice a difference in the amount of paint you use! You should never have a cloud of spray mist surrounding the person spraying, a sure sign of too much pressure!

Technique:

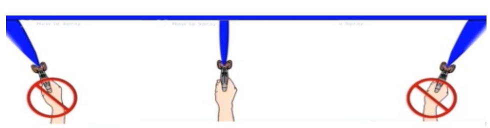
Maximum transfer of paint is accomplished by holding the gun at the proper distance from the surface to be painted at the proper pressure.

Too close and you apply too much paint in too small of an area. Too far away and you introduce a lot of spray into the air as it is not hitting the surface. The distance varies and depends on the amount of pressure you are using and the viscosity and type of the paint. So experiment until you find the proper distance. Normally it is between 6” and 10", NEVER more than 12”.

Every time you pull the trigger you must follow the same routine. Remember, when you pull the trigger the paint comes out instantly. Start your hand in motion first and then pull the trigger, release the trigger just before you reach the stopping point of your swing. Just remember... hand in motion, pull trigger, spray, release trigger, stop hand motion.



Correct Spray Method, Keeping the Gun Perpendicular to the Wall



Incorrect Spray Method, Fanning the Gun Out At The Edges

Hold the spray gun a constant 6 to 12 inches from the surface and maintain this distance with each pass of the gun. If you want to increase the size width of each pass, change the tip fan size, not the distance from the surface. Keep the gun precisely parallel to the wall. Don't sweep it back and forth or you'll end up with a wide arc of paint on the wall; the paint will be concentrated in the middle of the arc and almost transparent at each end.

Paint about a 3-4-foot horizontal strip at one time, then release the trigger and drop down to paint another strip of the same length, overlapping the first strip by 50%. Once you've covered an area from the top of the wall to the bottom, go back to the top and start another section adjacent to the first, overlapping the edge of the first painted area by several inches as you work your way down the wall again. Avoid over reaching. Paint a swath that is comfortable and does not require you to reach out too far.

Look Behind You.

Always periodically review what you have painted. Quickly make any adjustments required. Don’t wait until the end of the job to find the mistakes.

Examine the painted areas to make sure the entire surface is receiving a uniform coat of paint. Too much will run or drip; too little will let the old paint show through. If you notice these flaws, it means you are not keeping the spray gun a uniform distance from the wall at all times or that you are tilting it. An upward tilt will deliver excess paint to the bottom of the painted strip. A downward tilt will concentrate paint at the top of the strip.

To prevent paint buildup at the end of each strip, remember to release the trigger on the gun a fraction of a second before the spray gun stops moving at the end of your stroke. When beginning a new strip, start moving the gun a fraction of a second before compressing the trigger. Always keep the gun moving when it's spraying.