

AIRLESS TIPS

Tips on tips



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CHOOSING THE RIGHT TIP FOR YOUR JOB IS ESSENTIAL

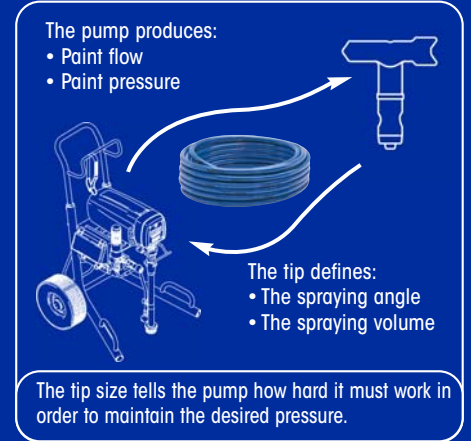
The spray tip affects a job's profit margin as much as any other piece of equipment on the site.

- Optimize your performance
- Improve your work quality
- Control your costs



HOW DO TIPS WORK?

- An airless sprayer pumps and pressurizes the paint without the use of air.
- The paint is then forced to go through the small orifice of the tip under high pressure (up to 350 bar).
- This process atomizes the paint in a controlled fan width and flow rate (same effect as placing your thumb on the end of a garden hose)



WHY SO MANY DIFFERENT TIPS AND SIZES?

You can compare it to choosing the right bit for your electric drill. There are bits designed for wood, bits for metal and bits for concrete. Each bit for each application comes in a variety of sizes. Using the wrong bit on the wrong surface does not work. With airless tips it is very similar.



CHOOSING THE RIGHT TIP

- decreases overspray
- provides more control
- results in less time to spend on the job
- less paint usage
- and higher profits



HOW TO CHOOSE THE RIGHT TIP?

Getting the most from your spray tip depends on several factors:

- THE TIP'S **FAN WIDTH**
- THE TIP'S **ORIFICE SIZE**
- YOUR SPRAYER'S **MAXIMUM OUTPUT**
- THE **TYPE OF PAINT** YOU ARE SPRAYING
- THE **TYPE OF SURFACE** YOU ARE SPRAYING
- **TIP WEAR**





THE FAN WIDTH

of a tip is defined by its spray angle when spraying at 30 cm distance from the surface. The angle is indicated with one number only:

- 5 in this case corresponds to an angle of 50°.



To obtain the fan width, multiply the number of the angle by 5:

- $5 \times 5 = 25$ cm fan width



WIDE RAC®

The wider the spray pattern, the faster the surface is painted. Wide spraying greatly improves productivity.

However, wide spraying is difficult to control and wide spray tips are not available in all sizes.

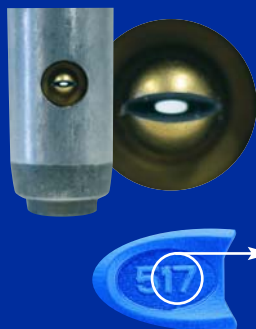
Graco provides a special range of RAC X™ tips, **WAXxxx**, specifically cut to provide a superb result at a wide angle, saving you time.

30 SEC.

3 passes
with WA

1 MIN.

6 passes
with standard tip



THE ORIFICE SIZE

defines the amount of paint that will flow through the tip.

It is indicated by the last two digits:

- 17 in this case corresponds to a hole size of 0.017 of an inch or 0.43 mm

Your actual flow rate will depend on your spraying pressure and the paint you are using: high pressure equals more flow; heavier paints equal less flow.

EVERY SPRAYER HAS A MAXIMUM OUTPUT LEVEL.

It is important never to exceed the maximum spray tip size that your machine can handle.

Example: if you require 4,4 l/min the smallest sprayer recommended is the Ultra®Max II 1095.

Inches		0.007	0.009	0.011	0.013	0.015	0.017	0.019	0.021	0.023	0.025	0.027	0.029	0.031	0.033	0.035	0.037	0.039	0.041	0.043	0.045	0.047
mm		0.18	0.23	0.28	0.3302	0.38	0.43	0.48	0.53	0.58	0.64	0.69	0.74	0.79	0.84	0.89	0.94	0.99	1.04	1.09	1.14	1.19
l/min		0.2	0.3	0.5	0.7	0.9	1.2	1.5	1.8	2.2	2.5	3.0	3.4	3.9	4.4	5	5.6	6.2	6.8	7.5	8.2	9
RANGE	MODEL																					
ST MAX™	395																					
	495																					
	595																					
ULTRA-MAX II	695																					
	795																					
	1095																					
MARK	V	with paint																				
	X	with plaster																				
GMAX™	3900																					
	5900 HD																					
	7900																					
EH	200																					
	200																					
GH	230																					
	300																					
GH	833																					
	5030																					
	3640																					
	2560																					
ROOFING	2075																					
	1015																					

Fine Finish Applications

Professional Airless Applications

Heavy Duty Applications

THE TYPE OF PAINT as well as THE SURFACE

you are spraying define the kind of tip you should use.
The table below indicates recommended tips and sizes for different applications and materials.



FINE FINISH TIPS



	Typical applications	Materials	Recommended tip sizes	Corresponding guards
RAC X™ FFAxxx	Cabinetry, wood working, metal and fine finish surfaces	Dyes Ink Stains Lacquers Oils	008 - 010 010 - 012 012 - 014 012 - 014 012 - 014	
Flat Silver 163xxx		Enamels Urethanes Auto finishes	012 - 014 012 - 014 008 - 014	
Flat Black 163xxx				

PROFESSIONAL AIRLESS TIPS



	Typical applications	Materials	Recommended tip sizes	Corresponding guards
RAC X™ PAAxxx	Residential, commercial or industrial job sites.	Latex Acrylics Multi colours	015 - 019 015 - 019 023 - 025	
Contractor flat 269xxx	Both interior and exterior.	Emulsions Block fillers Silicon	017 - 021 023 - 025 021 - 025	
Flat Silver 163xxx				

HEAVY DUTY TIPS



	Typical applications	Materials	Recommended tip sizes	Corresponding guards
RAC X™ HDAxxx WAxxxx	High production, large surfaces. Residential, commercial or industrial job sites.	Block fillers Intumescent Spachtel Elastomerics Mastics Epoxies Fibred Asphalt Silicat/Mineral Contact cement	027 - 031 029 - 035 029 - 041 027 - 033 041 - 047 043 - 061 047 - 053 031 - 071 027 - 033 -	
Flat Silver 163xxx	Both interior and exterior paint as well as airless plaster applications.			

AIRLESS STRIPING TIPS



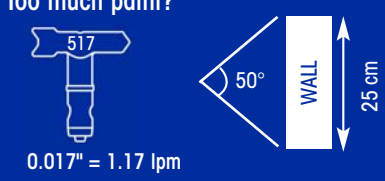
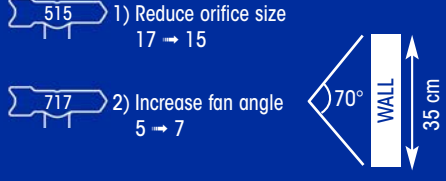
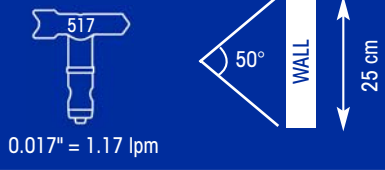
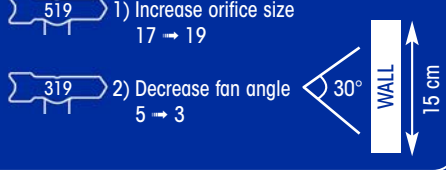
	Typical applications	Materials	Recommended tip sizes	Corresponding guards
RAC® 5 LineLazer LL5xxx	Parking lots, roads, warehouse floors, crossings and athletic fields.	Airless striping paints	013 - 055	
	Ideal to reduce overspray. Sharp line edges. Even paint distribution across the line.	Top quality exterior paints	015 - 021	

FOR ALL TIP SIZES AVAILABLE IN ALL TIP RANGES, PLEASE CONTACT YOUR GRACO DISTRIBUTOR

Texture & high viscosity material for spray applications																				NEW 1st digit x 5 = fan width*	WORN time to change!						
Ink	Stains	Lacquers	Enamels	Urethanes	Acrylics	Emulsions	Latex	Block Fillers	Intumescent																		
FFA-XXX							PAA-XXX							HDA-XXX													
108	110	112		115																					5 cm	3 cm	
208	210	212	214	215	217	219	221		225	227		231		235											10 cm	7 cm	
308	310	312	314	315	317	319	321		325	327		331		335											15 cm	10 cm	
	410	412	414	415	417	419	421	323	425	427	329	431	433	435		439	441	443	445	451	455				20 cm	15 cm	
	510	512	514	515	517	519	521	423	525	527	429	531	533	535	537	539	541	543	545	551	555	561	665		25 cm	20 cm	
		612	614	615	617	619	621	523	625	627	529	631	633	635	637	639	641	643	645	651	655	661	671		30 cm	25 cm	
							721	623			629			735												35 cm	30 cm
						819	821	723		827	729	831	833	835												40 cm	35 cm
WA-XXXX							1221	1223	1225	1227	1229	1231	1233	1235	1237	1239										60 cm	55 cm

*at 30 cm spraying distance

ADJUSTING TO THE RIGHT TIP

PROBLEM	SOLUTION
<p>Too much paint?</p>  <p>0.017" = 1.17 lpm</p>	<p>SOLUTION</p> <p>Tip 515: 1) Reduce orifice size 17 → 15</p> <p>Tip 717: 2) Increase fan angle 5 → 7</p> 
<p>Not enough paint?</p>  <p>0.017" = 1.17 lpm</p>	<p>SOLUTION</p> <p>Tip 519: 1) Increase orifice size 17 → 19</p> <p>Tip 319: 2) Decrease fan angle 5 → 3</p> 

Based on this general information, you will be able to choose the appropriate tip for your application. Experiencing with a few tips will help you gain experience and will help you decide

what is the optimum tip for your application. Ask your distributor or your GRACO representative for specific tip size recommendations.

TIPS DO WEAR AND WILL NEED REPLACEMENT

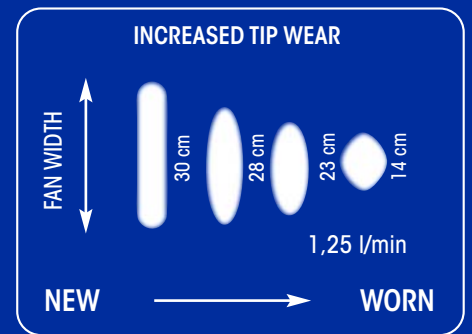
THE TWO MAIN CAUSES FOR TIP WEAR ARE:

- Working pressure at the gun.
- Abrasive material

To explain what tip wear is and what this means to your business, think again of the similarities between spray tips and drill bits. Have you ever tried to drill into concrete using a worn out bit? If you have, then you know that it takes much longer to drill, takes much more effort and the drilled hole ends up being very unprofessional. It is the same with continuing to spray with a worn out tip.



WHAT HAPPENS WHEN A TIP WEARS?



- 1 Fan width decreases
- + = more passes necessary = more labour
- 2 orifice size increases = more paint comes out = more material cost

TOTAL: TWICE THE LABOUR!
+ 30% more paint for the same surface!

Note that by using a worn out tip you might surpass the maximum output of your sprayer. Using a worn out tip will end up costing you much more than the cost of replacing a tip (labour + paint).



ABOUT GRACO

Founded in 1926, Graco is a world leader in fluid handling systems and components. Graco products move, measure, control, dispense and apply a wide range of fluids and viscous materials used in vehicle lubrication, commercial and industrial settings.

The company's success is based on its unwavering commitment to technical excellence, world-class manufacturing and unparalleled customer service. Working closely with qualified distributors, Graco offers systems, products and technology that set the quality standard in a wide range of fluid handling solutions. Graco provides equipment for spray finishing, protective coating, paint circulation, lubrication, and dispensing sealants and adhesives, along with power application equipment for the contractor industry. Graco's ongoing investment in fluid management and control will continue to provide innovative solutions to a diverse global market.

GRACO LOCATIONS

CONTACT

MAILING ADDRESS

P.O. Box 1441
Minneapolis, MN 55440-1441
Tel: 612.623.6000
Fax: 612.623.6777

AMERICAS

MINNESOTA

Worldwide Headquarters
Graco Inc.
88-11th Avenue N.E.
Minneapolis, MN 55413

EUROPE

BELGIUM

European Headquarters
Graco N.V.
Industrieterrein-Oude Bunders
Slakweidestraat 31
3630 Maasmechelen,
Belgium
Tel: 32.89.770.700
Fax: 32.89.770.777

ASIA PACIFIC

JAPAN

Graco K.K.
1-27-12 Hayabuchi
Tsuzuki-ku
Yokohama City, Japan 2240025
Tel: 81.45.593.7300
Fax: 81.45.593.7301

ASIA PACIFIC

CHINA

Graco Hong Kong Ltd.
Representative Office
Room 118 1st Floor
No.2 Xin Yuan Building
No.509 Cao Bao Road
Shanghai, P.R. China 200233
Tel: 86.21.649.50088
Fax: 86.21.649.50077

ASIA PACIFIC

KOREA

Graco Korea Inc.
Choheung Bank Building
4th Floor #1599
Gwanyang-Dong, Dongan-Ku,
Anyang-Si, Gyunggi-Do,
Korea 431-060
Tel: 82(Korea).31.476.9400
Fax: 82(Korea).31.476.9801

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Europe
+32 89 770 700
FAX +32 89 770 777
WWW.GRACO.BE



Airless Tip Selection Guide

Choosing the right tip is extremely important for maximum productivity, because the tip determines the fluid flow and the size of the spray pattern – the fan size. Using the right tip results in maximum control and minimum overspray, which means faster work and less paint usage, which ultimately means finishing the job quickly without wasting paint!

To choose the right spray tip, you need to consider several factors, such as the material thickness, the sprayer's maximum flow rate and the best fan size for the job. Knowing when a tip is worn and why to replace it are also important.

So the next time you're selecting spray tips, consider these questions:

How thick is the material?

It's easy to determine which tip size to use when you know the type of material you'll be spraying. Lower viscosity (thinner) materials, such as stain or lacquer, require a spray tip with a smaller orifice or hole size. Heavier materials, like latex, require a tip with a larger orifice. Extremely heavy materials like elastomerics and blockfiller might require spray tips larger than .035.

What is the sprayer's maximum flow rate?

For optimum performance, the sprayer must have a maximum flow rate higher than the flow rate of the tip, so be sure the flow rate of the tip is less than the maximum flow rate of your sprayer. Why use a tip with a lower flow rate? Because as the tip wears, the orifice becomes larger, and the flow rate increases.

What is the best fan size for the job?

Fan size – the width of the spray pattern – determines the area covered with each pass.

For a given tip orifice, a wider fan delivers a thinner coat, less defined spray pattern, more overspray, and faster coverage on broad, open surfaces. A narrower fan delivers a thicker coat, more defined spray pattern, less overspray, and better control when spraying small or confined surfaces.

To maximize productivity and lower labor costs, choose a tip with the right fan size. In general, a larger fan size increases production with less control, and a smaller fan size decreases production with more control.

RECOMMENDED TIP SIZES FOR COMMON COATINGS

Material	Tip Size (in./mm)
Stain or Lacquer	.011 to .013/0.28 to 0.33
Oil Base Paint	.013 to .015/0.33 to 0.38
Latex Paint	.015 to .019/0.33 to 0.48
Heavy Latex & Smooth Elastomeric	.021 to .025/0.53 to 0.63
Elastomeric & Blockfiller	.025 to .035+/0.53 to 0.89+

MAKE SURE TIP AND SPRAYER ARE RATED FOR EACH OTHER

Suppose your sprayer has a flow rate of 0.38 gpm (1.4 lpm), and you want to spray latex paint with a 0.017 in. (0.43 mm) tip. The 0.017 tip has a flow rate of 0.31 gpm (1.17 lpm).

The Verdict? You can use the 0.017 tip because it has a lower flow rate than the maximum flow rate of your sprayer.

ORIFICE SIZE ALONE DETERMINES FLOW RATE OF TIP

Tips 286415 and 286515 have a 0.24 gpm (0.9 lpm) flow rate with different fan sizes. Tip 286415 sprays an 8 in. (203 mm) fan with a thicker coat (more mil build), and tip 286515 sprays a 10 in. (254 mm) fan with less mil build.

Do not try to increase the area covered with each pass by backing the gun away from the surface. From farther away, less paint will reach the surface and go to waste as overspray.

The Solution? Use a tip with a larger fan and orifice. Remember, if you use a tip with a larger fan but not a larger orifice, the mil build will be less, and you'll have to move the gun more slowly.

Airless Applicators

Tip Selection Guide

Can You Afford the High Cost of Using a Worn Tip?

Choosing the right spray tip is essential for a quality finish no matter what material is being sprayed, but tips wear with normal use. It's impossible to say how long a tip will last, because there is a huge difference in abrasiveness from one coating to another. For example, latex paints are usually more abrasive than lacquers or alkyd enamels. There's even a wide variation in the abrasiveness of latex paints from one manufacturer to another. And because paint is sprayed at different pressures, some tips will wear faster than others. Abrasive material sprayed at too high a pressure or through too small a tip causes faster tip wear, which wastes time and paint.

How Do You Determine if a Tip is Worn?

When a spray tip wears, the orifice gets bigger and rounder, which makes the fan pattern smaller. When the fan has lost 25% of its original size, it is time to replace the tip. When a tip with a 12 in. (305 mm) fan wears down to a 9 in. (230 mm) fan, it outputs 30% more paint on 25% less area. Continuing to spray with a worn tip means painting takes longer, more paint gets used, and the finish may be uneven and have runs.

Five Ways to Extend Tip Life:

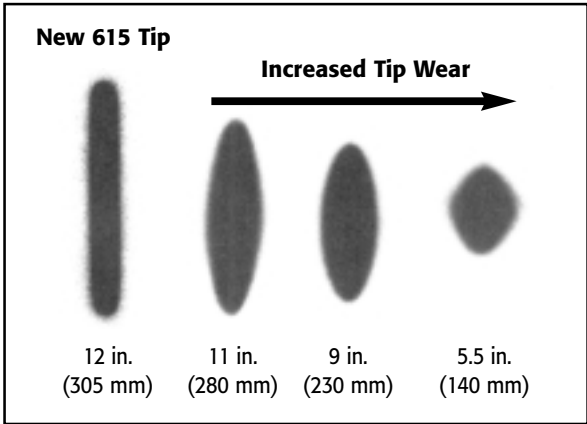
1. Spray at the lowest atomization pressure.
2. Strain the material before you spray it.
3. Use the correct size filters.
4. Clean the filters after every use.
5. Clean the tip with a soft-bristled brush.

EXPENSIVE DECISION

A contractor spraying with a worn tip uses, on average, 20% more paint and 20% more labor.

Consider this:
Assuming paint is \$10 per gal. (\$2.64 per L), consumption is 5 gal. (19 L) per hour, and labor is \$18 per hour, the total cost is \$68 per hour.

But if the contractor sprays with a worn tip? Labor efficiency would decrease by 20% while paint consumption would increase to 6 gallons (22.7 L) per hour, which would increase the hourly cost to \$81.60. The total cost increase would be \$108.80 per 8-hour shift!



A TIP ON TIPS

A rule of thumb: use smaller orifice sizes to spray lower viscosity materials such as stains and lacquers. Use larger orifice sizes for heavier viscosity coatings such as latex or oil-base paints.

1

Airless Applicators

Tip Selection Guide

Tip Charts

Color Coded RAC™ Tips

Graco identifies Reverse-A-Clean® tips with color codes:

- Standard RAC 5 SwitchTips are black.
- Fine Finish RAC (FF5) SwitchTips are green.
- LineLazer RAC (LL5) SwitchTips are yellow.
- Graco Heavy-Duty (GHD) RAC tips are gray.

Making Sense of the Numbers

Graco uses a unique numbering system for all airless spray tips. The first three characters designate the type of tip. For example, a 286417 is a RAC 5 SwitchTip™. The chart below shows other types.

286 RAC 5 SwitchTip	221 RAC IV SwitchTip
FF5 Fine Finish RAC 5 SwitchTip	269 Contractor Flat Tip
LL5 LineLazer™ RAC 5 SwitchTip	163 Fine Finish and Silver Flat Tip
GHD Heavy-Duty RAC SwitchTip	

Double the fourth digit for the approximate fan width in inches when the gun is held 12 in. (305 mm) from the surface. Example: 286417 has a fan width of approximately 8 in. (203 mm).

Divide the last two digits by 1000 for the tip orifice size in inches. Example: 286417 has an orifice size of 0.017 in. (0.43 mm). Also, look at the RAC 5 chart below to determine the flow rate of a .017 tip.

As indicated in the chart, this tip has a flow rate of 0.31, or approximately 1/3 gpm (which is about 1.2 lpm).

RAC 5 SwitchTips (286XXX)

		Orifice Size - Inches																						
		.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.039	.043	.045	.051	.055	.063	.065	
Fan Width	2-4 (51-102)		109	111	113	115		119	121															
	4-6 (102-152)	207	209	211	213	215	217	219	221	223	225					235								
	6-8 (152-203)	307	309	311	313	315	317	319	321	323	325	327		331										
	8-10 (203-254)		409	411	413	415	417	419	421	423	425	427	429		433	435	439	443		451	455			
	10-12 (254-305)		509	511	513	515	517	519	521	523	525	527	529	531	533	535		543		551	555	563		
	12-14 (305-356)		609	611	613	615	617	619	621	623	625	627	629	631	633	635		645		655			665	
	14-16 (356-406)								721	723	725		729		735									
	16-18 (406-457)					815	817	819	821			827		831	833	835								
	18-20 (457-508)						917									935								
Flow rate (gpm)		.05	.09	.12	.18	.24	.31	.38	.47	.57	.67	.77	.90	1.03	1.17	1.31	1.63	1.98	2.17	2.79	3.25	4.26	4.53	
Flow rate (lpm)		.20	.33	.49	.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	3.42	3.90	4.42	4.98	6.18	7.51	8.23	10.57	12.29	16.13	17.17	

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.011 in. (0.28 mm) orifice and a 6 in. (152 mm) pattern, order 286311. Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

Fine Finish RAC 5 SwitchTips (FF5XXX)

		Orifice Size - Inches		
		.010	.012	.014
Fan Width	4-6 (102-152)	210	212	214
	6-8 (152-203)	310	312	
	8-10 (203-254)	410	412	414
	10-12 (254-305)	510	512	514
	12-14 (305-356)		612	614
Flow rate (gpm)		.11	.15	.21
Flow rate (lpm)		.41	.59	.80

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.010 in. (0.25 mm) orifice and a 10 in. (254 mm) pattern, order FF5510. Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

LineLazer RAC 5 SwitchTips (LL5XXX)

		Orifice Size - Inches									
		.013	.015	.017	.019	.021	.023	.025	.027	.055	
Line Width	2 (51)	213	215	217	219						
	4 (102)		315	317	319	321	323		327	355	
	6 (152)			417	419	421					
	12 (305)					621	623	625	627		
	Flow rate (gpm)		.18	.24	.31	.38	.47	.57	.67	.79	3.25
Flow rate (lpm)		.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	12.29	

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.015 in. (0.38 mm) orifice and a 4 in. (102 mm) pattern, order LL5315. Fan width of a spray pattern is measured at 6 in. (152 mm) from the surface with traffic paint at 2000 psi (13.8 MPa, 138 bar).

Airless Applicators

Tip Selection Guide

Heavy-Duty RAC SwitchTips (GHDXXX)

		Orifice Size - Inches															
in. (mm)		.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	
Fan Width	2-4 (51-102)	107	109	111	113	115	117	119	121				129				
	4-6 (102-152)		209	211	213	215	217	219	221		225	227	229	231		235	
	6-8 (152-203)	307	309	311	313	315	317	319	321	323	325	327	329	331	333	335	
	8-10 (203-254)		409	411	413	415	417	419	421	423	425	427	429	431	433	435	
	10-12 (254-305)		509	511	513	515	517	519	521	523	525	527	529	531	533	535	
	12-14 (305-356)		609	611	613	615	617	619	621	623	625	627	629	631	633	635	
	14-16 (356-406)			711	713	715	717	719	721	723	725	727	729	731	733	735	
	16-18 (406-457)				813	815	817	819	821	823	825	827	829	831	833	835	
	18-20 (457-508)									923		927		931	933	935	
	Flow rate (gpm)		.05	.09	.12	.18	.24	.31	.38	.47	.57	.67	.74	.90	1.03	1.17	1.31
Flow rate (lpm)		.20	.33	.49	.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	3.42	3.90	4.42	4.98	

(water @ 2000 psi, 13.8 MPa, 138 bar)

		Orifice Size - Inches																			
in. (mm)		.037	.039	.041	.043	.045	.047	.049	.051	.053	.055	.057	.059	.061	.063	.065	.067	.069	.071	.075	.081
Fan Width	2-4 (51-102)		139																		
	4-6 (102-152)		239																		
	6-8 (152-203)	337	339	341	343	345	347	349	351		355								471	475	481
	8-10 (203-254)	437	439	441	443	445	447	449	451		455			461	463	465	467			571	575
	10-12 (254-305)	537	539	541	543	545	547	549	551	553	555	557	559	561	563	565	567			671	675
	12-14 (305-356)	637	639	641	643	645	647	649	651		655	657	659	661	663	665	667	669			
	14-16 (356-406)	737	739	741	743		747	749	751	753	755			761	763		767			771	
	16-18 (406-457)	837	839	841	843		847		851		855			861	863		867				
	18-20 (457-508)	937	939																		
	Flow rate (gpm)		1.47	1.63	1.8	1.98	2.17	2.37	2.58	2.79	4.26	3.25	3.49	3.74	4.0	4.26	4.53	4.82	5.11	5.41	6.04
Flow rate (lpm)		5.56	6.78	6.83	7.51	8.23	8.98	9.76	10.57	16.13	12.29	13.2	14.14	15.12	16.13	17.17	18.24	19.34	20.48	22.85	26.66

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.039 in. (9.9 mm) orifice and a 10 in. (254 mm) pattern, order GHD539. Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

RAC IV SwitchTips (221XXX)

		Orifice Size - Inches																					
in. (mm)		.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.039	.043	.045	.051	.055	.063	.065
Fan Width	2-4 (51-102)			111		115										235							
	4-6 (102-152)	207	209	211	213	215	217	219	221	223	225												
	6-8 (152-203)	307	309	311	313	315	317	319	321	323	325	327		331									
	8-10 (203-254)		409	411	413	415	417	419	421	423	425	427	429		433	435	439	443		451	455		
	10-12 (254-305)		509	511	513	515	517	519	521	523	525	527	529	531	533	535		543		551	555	563	
	12-14 (305-356)		609	611	613	615	617	619	621	623	625	627	629	631	633	635			645		655		665
	14-16 (356-406)								721	723	725		729			735							
	16-18 (406-457)					815	817	819	821				827		831	833	835						
	18-20 (457-508)						917									935							
	Flow rate (gpm)		.05	.09	.12	.18	.24	.31	.38	.47	.57	.67	.77	.90	1.03	1.17	1.31	1.63	1.98	2.17	2.79	3.25	4.26
Flow rate (lpm)		.20	.33	.49	.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	3.42	3.90	4.42	4.98	6.18	7.51	8.23	10.57	12.29	16.13	17.17

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a 0.013 in. (3.3 mm) orifice and a 8 in. (203 mm) pattern, order 221413. Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

Airless Applicators

Tip Selection Guide

Silver Flat Tips (163XXX)

		Orifice Size - Inches																	
		.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.039	.041	
Fan Width	2-4 (51-102)	107	109	111	113	115	117	119	121										
	4-6 (102-152)	207	209	211	213	215	217	219	221	223	225	227	229	231		235	239		
	6-8 (152-203)	307	309	311	313	315	317	319	321	323	325	327	329	331		335	339	341	
	8-10 (203-254)	407	409	411	413	415	417	419	421	423	425	427	429	431	433	435	439	441	
	10-12 (254-305)		509	511	513	515	517	519	521	523	525	527	529	531	533	535	539	541	
	12-14 (305-356)		609	611	613	615	617	619	621	623	625	627	629	631	633	635	639	641	
	14-16 (356-406)			711	713	715	717	719	721	723	725	727	729	731	733	735			
	16-18 (406-457)				813	815	817	819	821	823	825	827	829	831	833	835	839	841	
	18-20 (457-508)					915	917	919	921	923	925	927	929	931	933	935	939		
Flow rate (gpm)		.05	.09	.12	.18	.24	.31	.38	.47	.57	.67	.79	.90	1.03	1.17	1.31	1.63	1.8	
Flow rate (lpm)		.20	.33	.49	.69	.94	1.17	1.47	1.79	2.15	2.54	2.69	3.42	3.90	4.42	4.98	6.18	6.83	

(water @ 2000 psi, 13.8 MPa, 138 bar)

		Orifice Size - Inches																				
		.043	.045	.047	.049	.051	.053	.055	.057	.059	.061	.063	.065	.067	.069	.071	.073	.075	.077	.079	.081	
Fan Width	6-8 (152-203)					351			357	359												
	8-10 (203-254)	443	445		449	451		455	457	459	461	463	465	467	469	471	473	475	477	479	481	
	10-12 (254-305)	543	545	547		551	553	555	557	559	561	563	565	567	569	571	573					
	12-14 (305-356)	643	645	647		651		655	657	659	661	663	665	667	669	671						
	14-16 (356-406)				749				757	759		763		767								
	16-18 (406-457)		845	847	849							861	863	865	867							
	18-20 (457-508)																					
Flow rate (gpm)		1.98	2.17	2.37	2.58	2.79	4.26	3.25	3.49	3.74	4.0	4.26	4.53	4.82	5.11	5.41	5.72	6.04	6.36	6.70	7.04	
Flow rate (lpm)		7.51	8.23	8.98	9.76	10.57	6.13	12.29	13.2	14.14	15.12	16.13	17.17	18.24	19.34	20.48	21.65	22.85	24.0	25.36	26.66	

(water @ 2000 psi, 13.8 MPa, 138 bar)

Example: for a tip with a .043 in. (1.09 mm) orifice and a 12 in. (305 mm) pattern, order 163643. Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

REPLACE TIPS OFTEN FOR MAXIMUM PERFORMANCE

Watch for runs or sags in the spray pattern as signs of a worn tip. Don't increase pressure to combat these problems. You'll only waste paint and increase wear on the pump. Simply replace the worn tip.

Worn-out tips also wear components in your equipment much faster.

By spraying materials with correctly sized Graco tips and replacing tips when necessary, you'll maximize productivity, save paint and earn more profits.

HELPFUL HINT

1. Spraying at the lowest possible pressure greatly extends the service life of major pump components – and spray tips too!
2. Even though Graco Airless Spray Guns are built for long life, you can extend the life of your gun even more with a daily maintenance routine. At the end of each day, clean and oil your gun with a lightweight spray oil such as WD-40®.