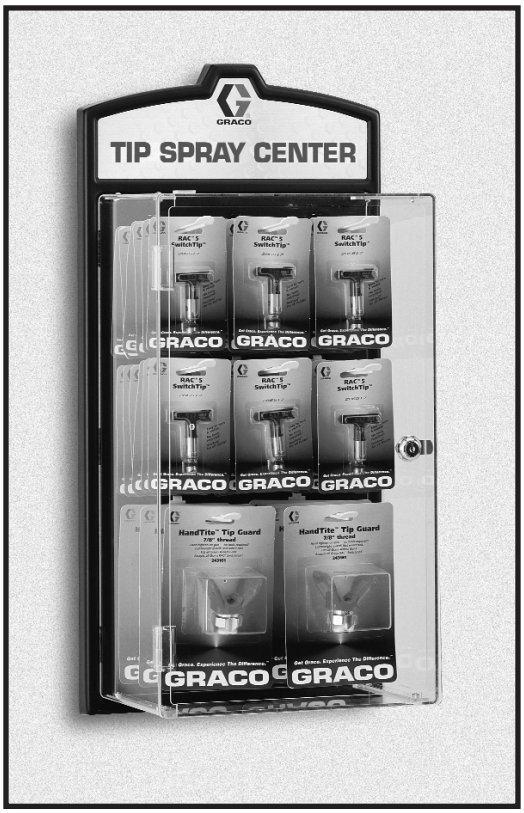
GREAT TIPS

from graco®



Choosing the right tip for the job

Choosing the Right Tip

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.

Tip flow rates are listed in the Tip Charts in this insert.

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.)
Stain or Lacquer	.011 to .013
Oil Base Paint	.013 to .015
Latex Paint	.015 to .019
Heavy Latex and Smooth Elastomeric	.021 to .025
Elastomeric and Block Filler	.025 to .035+

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 Tip Charts in this insert show that 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 flow rate lower 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 slower.

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. See **Expensive Decision**, at right.

EXPENSIVE DECISION

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

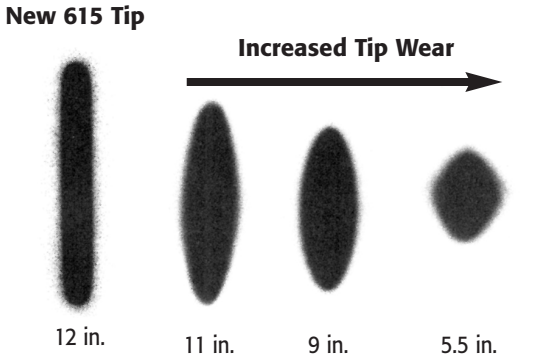
Consider this:

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!

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 produces the following results: 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 pressure that atomizes the material.
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.

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.

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

Double the **fourth digit** for the approximate fan width in inches when the gun is held 12 in. (305 mm) from the surface. Example: 286**4**17 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: 2864**17** 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

Fan Width in.	(mm)	.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.039	.043	.045	.051	.055	.063	.065
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, 138 bar, 13.8 MPa)

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

Fan Width in.	(mm)	.010	.012	.014
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, 138 bar, 13.8 MPa)

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

Line Width in.	(mm)	.013	.015	.017	.019	.021	.023	.025	.027	.055
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, 138 bar, 13.8 MPa)

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 (138 bar, 13.8 MPa).

Heavy-Duty RAC SwitchTips (GHDXXX) Part 1

Orifice Size - Inches

Fan Width in.	(mm)	.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035
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, 138 bar, 13.8 MPa)

Heavy-Duty RAC SwitchTips (GHDXXX) Part 2

Orifice Size - Inches

Fan Width in.	(mm)	.037	.039	.041	.043	.045	.047	.049	.051	.053	.055	.057	.059	.061	.063	.065	.067	.069	.071	.075	.081
2-4	(51-102)		139																		
4-6	(102-152)		239																		
6-8	(152-203)	337	339	341	343	345	347	349	351		355										
8-10	(203-254)	437	439	441	443	445	447	449	451		455			461	463	465	467		471	475	481
10-12	(254-305)	537	539	541	543	545	547	549	551	553	555	557	559	561	563	565	567		571	575	
12-14	(305-356)	637	639	641	643	645	647	649	651		655	657	659	661	663	665	667	669	671	675	
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	7.04
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, 138 bar, 13.8 MPa)

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

Fan Width in.	(mm)	.007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.039	.043	.045	.051	.055	.063	.065
2-4	(51-102)			111		115																	
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, 138 bar, 13.8 MPa)

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.

Contractor Flat Tips (269XXX)

Orifice Size - Inches

Fan Width in.	(mm)	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.035
4-6	(102-152)	211	213	215	217	219			225	227			
6-8	(152-203)	311	313	315	317	319		323	325	327			
8-10	(203-254)	411	413	415	417	419	421	423	425	427			435
10-12	(254-305)	511	513	515	517	519	521	523	525	527		531	
12-14	(305-356)		613	615	617	619	621	623		627		631	635
14-16	(356-406)			715	717		721		725				
16-18	(406-457)			815		819	821			827	829	831	
18-20	(457-508)								925				
Flow rate (gpm)		.12	.18	.24	.31	.38	.47	.57	.67	.74	.90	1.03	1.31
Flow rate (lpm)		.49	.69	.91	1.17	1.47	1.79	2.15	2.54	2.96	3.42	3.90	4.98

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

Example: for a tip with a 0.011 (0.28 mm) orifice and a 10 in. (254 mm) pattern, order 269511.
Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

Fine Finish Flat Tips (163XXX)

Orifice Size - Inches

Fan Width in.	(mm)	.008	.010	.012	.014	.016	.018	.020	.022	.024	.026	.028	.030	.032
2-4	(51-102)	108	110											
4-6	(102-152)	208	210	212	214	216	218			224				232
6-8	(152-203)		310	312	314	316	318	320	322	324				
8-10	(203-254)	408	410	412	414	416	418	420		424	426	428	430	432
10-12	(254-305)		510	512	514	516	518	520	522	524	526	528	530	
12-14	(305-356)		610	612	614	616	618	620	622	624	626	628		
14-16	(356-406)			712	714	716	718				726			
16-18	(406-457)				814	816	818	820	822	824	826	828		832
18-20	(457-508)			912	914		918		922	924	926			
Flow rate (gpm)		.069	.11	.15	.21	.27	.35	.43	.52	.62	.73	.84	.97	1.1
Flow rate (lpm)		.26	.41	.59	.79	1.04	1.32	1.63	1.97	2.34	2.75	3.19	3.66	4.16

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

Example: for a tip with a 0.010 in. (0.25 mm) orifice and a 10 in. (254 mm) pattern, order 163510.
Fan width of a spray pattern is measured at 12 in. (305 mm) from the surface.

THE RIGHT COMBINATION

The combination of Graco RAC SwitchTips and HandTite `Tip Guards gives you unrivaled spraying performance.

- RAC SwitchTips are designed for easy tip unplugging and quick tip changes.
- Graco has the broadest selection of spray tips available
- All tips are manufactured with the highest quality Tungsten Carbide, tested for flow rate and liquid honed for longer life.
- HandTite Tip Guards are guaranteed to be the best performing airless tip guards on the market. Their patented aerodynamic design virtually eliminates dripping or material build-up.

Silver Flat Tips (163XXX) Part 1

Fan Width in. (mm)	Orifice Size - Inches .007	.009	.011	.013	.015	.017	.019	.021	.023	.025	.027	.029	.031	.033	.035	.039	.041
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, 138 bar, 13.8 MPa)

Silver Flat Tips (163XXX) Part 2

Fan Width in. (mm)	Orifice Size - Inches .043	.045	.047	.049	.051	.053	.055	.057	.059	.061	.063	.065	.067	.069	.071	.073	.075	.077	.079	.081
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, 138 bar, 13.8 MPa)

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.

great tips

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 specialized distributors, Graco offers systems, products and technology which set the quality standards in a wide range of fluid handling applications including spray finishing and paint circulation, lubrication, 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.

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