

Application Techniques

Spray gun technique and its relationship to atomization of products is often misunderstood by many automotive refinishers. Proper gun technique involves four facets: gun angle, speed, path, and distance. Before handling the gun, it is important to adjust the spray pattern properly.

The proper spray gun pattern is elliptical in shape (8 – 10 inches in Length) with an even amount of material across the entire surface.

Heavy in the middle could mean too little air flow.

Divided in the middle could mean too much air flow.

Too much paint at the top or bottom could mean a restriction in the fluid flow, usually at the fluid needle and/or air cap. Clean both and retest.

A crescent shaped pattern could mean a restriction at the fluid needle and/or air cap on one side. Clean and retest.

With the air cap turned 90 degrees and a heavy amount of material sprayed, the test pattern should be 8 – 10 inches long, elliptical in shape, and the “runs” a consistent length along the whole pattern.

Atomization

Paint atomization, in the simplest terms, means to break up a paint liquid into a droplet or spray mist.

Conventional siphon feed guns atomize paint using high pressure, approximately 35 - 65 PSI at

the air cap to burst the paint into a fine spray mist.

HVLP type spray guns use a high volume of air at low pressure to carry the paint droplet to the painting surface. Air cap pressure for HVLP range from 1 - 10 PSI.

Reduced Pressure (RP) or Compliant type spray guns combine the characteristics of both conventional and HVLP. The paint is atomized at a high pressure(35 - 65 PSI at the cap) but has the transfer efficiency of the HVLP type of spray guns.

Atomization is a critical element that helps determine how any finished automotive paint job will look. Poor atomization will cause a host of problems such as texture or orange peel in the colors and clearcoats.

Variables that effect droplet size and atomization include: Size of the openings in the fluid tip and air cap Air pressure at the air cap Fluid (paint) delivery system

Because HVLP spray guns have pressurized, gravity feed, and suction feed fluid delivery systems, the amount of air pressure or lack of it will have a dramatic effect on droplet size and atomization.

Determining the correct pressure with unknown paint/gun

- Hold the gun about 6-8 inches from a piece of card or paper taped to the wall
- Set the pressure at 30 PSI and pull the trigger fully back and release
- Repeat at 5 PSI increments until two indential patterns have been produced

Spray Gun Set-Up

The following steps explain how to correctly set up a spray gun for application

TIPS

No one spray gun or gun set-up will apply every product correctly.

The equipment should work for "you", not the other way around.

If in doubt about spray equipment ask your spray equipment manufacturer or your PPG Distributor for assistance.

1. Make sure all control knobs on the gun are fully open.
2. Connect the spray gun to the air supply hose and air regulator.
3. Adjust the regulator to the gun manufacturer's recommended air setting(PSI) for the spray gun.
4. Spray a test pass (on a pattern board or piece of masking paper taped to the booth wall) to show atomization size and distribution of droplets.
5. If droplet size is too coarse, increase the air pressure by 5 PSI and repeat test. Continue to increase pressure and spray test until atomization is correct.

Maximum air cap pressure for HVLP spray guns is 10 PSI

6. Spray a static vertical pattern to show pattern size and shape.
7. Spray a static horizontal pattern to show paint distribution.
8. If either spray pattern is deformed or uneven, check for damage to the fluid tip and/or air cap. Clean or replace as necessary.
9. If required, fine tune the settings using the control knobs on the gun.

Gun Distance

The distance from the surface will vary somewhat with the size and the type of repair and the spray equipment. The recommended distance for most PPG products is 6 to 9 inches. Holding the gun closer than recommended restricts the separation of atomized particles resulting in excessive wetting of the product.

This technique does several things:

- Pounds solvent rich material on the surface which provides insufficient film build
- Slows dry and cure times
- Traps solvents that can lead to die back and solvent popping

Holding the gun back from the surface farther than recommended allows the atomized product to widely separate and will lack the required wetting on impact.

This technique does several things:

- Too much material lost with in flight solvent loss
- Dries too fast (will have a dry, rough film)
- Insufficient film build
- Improper wetting of material
- May require more coats to cover

Holding the gun at the recommended distance (6 to 9 inches) allows the proper amount of material to reach the panel and flow out.

This technique does several things:

- Allows the correct in flight solvent loss
- Dries and cures correctly
- Provides even film build
- Allows for proper adhesion

Other factors that affect color match are:

Factor	Lighter	Darker
Paint Feed	Decrease	Increase
Air Pressure	Increase	Decrease
Fan Width	Open Up	Close Down
Gun Distance	Farther Away	Closer
Gun Speed	Faster	Slower
Flash Time	Increase	Decrease
Thinning Ratio	Overthin	Underthin
Thinner Type	Fast	Slow
Fluid Tip Size	Smaller	Larger
Air Temperature	Warm Up	Cool Down
Humidity	Low	High
Air Movement	Increase	Decrease