

Guide for Spray Application of ZRC

The purpose of this guide is to relay practical information for the successful application of Z.R.C. Products by the spray technique. We have focused on the two most popular forms of spray application, namely conventional air and airless, and have left other more exotic methods such as hot spray, hot airless and electrostatic, to more definitive texts.

Z.R.C. Products can easily be applied by the spray technique. Periodically, spray difficulties are reported, but these generally stem from a misunderstanding of how to use Z.R.C. properly or use of inappropriate equipment. Hopefully, this guide will dispel the apparent mystery.

CONVENTIONAL AIR SPRAY APPLICATION

We find this application method to be used most frequently for small piecework or parts with intricate detail where high film builds must be avoided. In fact, its number one claim to fame, in our opinion, is the level of control an experienced applicator has over the film build and spray pattern.

The necessary pieces of equipment for conventional air application are a compressor, pressurized paint pot (preferably one with a constant agitation feature), material feed line, air pressure line and gun. A stream of Z.R.C. is fed from the pressure pot through the material line under air pressure (typically 15-20 PSI Fluid Pressure) to the gun where it is atomized by a second stream of air pressure (typically 50 PSI). For very small jobs, many applicators replace the pressure pot and material line with a quart sized cup (you'll also need to change to an external mix air cap) which attaches directly to the gun (you may see this set up in an auto-body repair shop).

The gun is the real key to control. The fluid adjusting valve controls the amount of paint passing through the fluid tip (with Z.R.C., this valve will most likely be full open) and the pattern adjusting valve controls the air flow to the horns of the air cap, which adjusts the spray pattern. In addition, there is a wide array of air caps, fluid tips and needles to choose from. For Z.R.C., use only fluid tips with a 0.080" orifice size or you'll see a lot of wear and probable clogging.

Air spray delivers a much lower volume of paint than airless spray and requires coatings to be of lower viscosity. In Z.R.C.'s case, this means that you will need to add solvent. We recommend that you use 1 part of XXX Thinner with 4 parts of Z.R.C. In other words, use a quart of XXX for a gallon of Z.R.C. You can also use Xylene (Xylol) at a ratio of a half-pint to a gallon of Z.R.C.

So, basically, you thin the Z.R.C., pour it into the pressure pot or cup (constant agitation is strongly recommended to avoid zinc settling), close the pot, adjust your pressures using regulators, pull the gun trigger, adjust the fluid and air flow with the appropriate valves and you're off to the races. It really is that easy! Also, remember to clean the equipment and flush all the lines with solvent when you're done.

AIRLESS SPRAY APPLICATION

Airless spray is most often used for large jobs where there are lots of flat surfaces. It's a lot faster than conventional spray because it delivers a whole lot more paint to the metal surface, increasing the production rate by a factor of at least 4!

The term "Airless" does not mean that you don't need a compressor, you do. The compressor-supplied air is used to drive a pump which magnifies the pressure many times to force a stream of paint (at up to 4000 PSI) through some very small orifices, atomizing it and propelling it toward the metal surface. The compressed air is not used to directly atomize the paint as in conventional air spray.

The equipment needed for airless spray is a little more involved than conventional. In addition to the compressed air line, you need an airless pump, pick-up tube, material line and airless gun.

Let's first discuss the "meat" of the operation, the Pump. Of utmost importance is the "Ratio" of the pump. For every pound of pressure put in from the compressor, the pump magnifies it by the ratio. For example, if you supply 100 PSI of compressed air to a 30:1 ratio pump, you will have 3000 PSI delivered at the gun (100 X 30). For Z.R.C., pumps lower than 30:1 don't give enough pressure magnification for proper atomization and pumps greater than 30:1 are overkill and more expensive.

The pump assembly also has packing glands and a filter. We strongly recommend the use of Teflon packings and complete removal of the filter screens. Check with your pump's manufacturer to determine the existing packing material and replace with Teflon if possible to avoid undue wear. And don't worry about the filter, we've already filtered the Z.R.C. for you. Leaving the filter in could cause clogging. Also, make sure that there is a pressure relief valve on the bottom of the filter housing. If for any reason you should experience a clog, you will need to release the pressure built up in the lines (could be up to 4000 PSI) to correct the situation. Without the relief valve, you've got a big problem.

Next is the gun

. Unlike the conventional spray gun with its multitude of adjustments, the airless gun is very simple -- there are no adjustments possible. The gun sprays "Full On", all the time the trigger is pulled. This makes it a little difficult for people used to conventional guns since you can't "feather" the edges and your hand MUST be moving when you pull and release the trigger or you'll see the most incredible runs and sags of your life.

Also, tip size and type are critical. For Z.R.C., we recommend Tungsten Carbide (to prevent premature wear), reversing (necessary to clear clogs) tips with orifice size of 0.026". All hoses must be 1/2" ID Airless Type to avoid clogging and flow restriction. On a positive note, you now only need one hose (conventional spray requires two).

So, now that you have the basic idea, let's start spraying. First, set up the system and flush it with solvent to clean the inside of the pump and the lines. Drop the pick-up tube directly into the Z.R.C. (note that there is no thinning required). Begin to raise the compressed air pressure using the air control on the pump while periodically triggering the gun. Once you have a nice, even looking spray pattern (my experience says that this will be around 2000 PSI for Z.R.C.), stop raising the pressure and go to work.

When you're finished, turn off the pump and trigger the gun to relieve the pressure. Drain the Z.R.C. from the filter housing through the relief valve. Clean off the pick-up tube and flush the system with solvent.

Airless spray has many advantages considering its efficiency, but it is much more dangerous than conventional spray for the inexperienced applicator. A friend of ours once wrote that "About the only way to hurt yourself with a conventional set up is to drop it on your foot". Airless is another matter. Please follow these recommendations for your own personal safety:

1. Never put your finger (or any body part) in front of the tip and never point the gun at anybody. Paint at 3000 PSI can penetrate clothing, leather and skin injecting itself into your person.
2. Airless hose is heavy. Don't tie it to your belt or sling it over your shoulder to relieve the strain.
3. If you see a pinhole in your hose, get rid of the hose. Remember, paint escaping from a pinhole can cause you great discomfort.

A variation, air-assisted airless, reduces the atomization fluid pressures from 3000 PSI to 1000 PSI and improves control of the spray pattern. It adds air flow just outside the airless orifice and allows spray adjustment, just like conventional spray. The set-up is the same as for airless, but an additional air line is added to the gun. The benefit: conventional air spray control with the production rate of airless.

This guide, in its limited format, is not meant to be a replacement for equipment owners manuals, painting textbooks or the applicators personal experience. It is our hope that it will be viewed as an adjunct offering tips specifically for applying Z.R.C. coatings. For further technical assistance, please contact us.



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