

# ZRC Worldwide

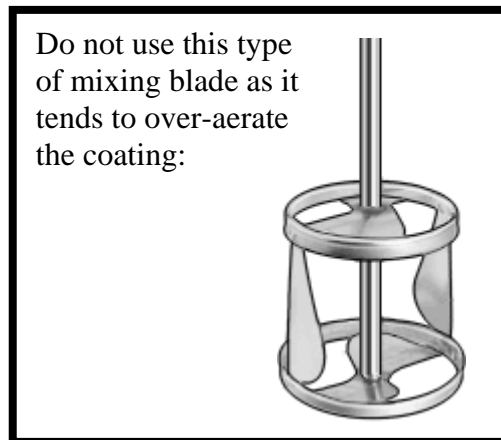
## Application Guide for ZRC Zero-VOC Water-Based Galvanizing Compound

Unlike ZRC Worldwide's regular line-up of solvent-based, single-component Cold Galvanizing Compounds, **ZRC Zero-VOC** requires the blending of its two components before use. Although it may seem complicated, it is really very easy.

### PREPARATION:

When you open a case of **ZRC Zero-VOC**, you'll see two containers. One containing the **Zero-VOC Liquid** and a heavier one containing the **Zero-VOC Powder**. To make it really easy, we've already premeasured the contents of these containers so that, if you blend both containers fully, you will be mixing the product at its proper mixing ratio of 1 Part Liquid to 3.1 Parts Powder (by weight) without the need of weighing them on a scale (which you probably wouldn't have, conveniently, at the jobsite or in the plant). Of course, if you wish to mix and use a smaller amount of the product, you could weigh the components to their proper ratio.

When blending, always add the powder, under agitation, to the liquid, never the other way around. To ensure thorough blending, we recommend the use of small, electric drill powered, propeller mixers which can be inexpensively purchased in any paint and hardware store. Below is a picture of the type of recommended mixer blade.



**ZRC Zero-VOC** can also be mixed by hand using metal spatulas or wooden stirring sticks. Either way, mix the coating until it is thoroughly homogenized and strain it through a 30 mesh filter before application.

### APPLICATION:

**ZRC Zero-VOC** can be applied by brush (100% Chinese Bristle), 3/8" nap roller (natural mohair or lambs wool (sheepskin)), conventional air spray and airless spray. The following pages describe the application of this product using spray techniques.

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## SPRAY APPLICATION:

The purpose of this guide is to relay practical information for the successful application of ZRC 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 exotic methods, such as hot spray, hot airless and electrostatic, to more definitive texts.

ZRC Zero-VOC can easily be applied by the spray technique. Periodically, spray difficulties are reported, but these generally stem from a misunderstanding of how to use ZRC properly or the 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 (Figure 1). A stream of ZRC Zero-VOC 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 (figure 2) is the real key to control. The fluid adjusting valve controls the amount of ZRC passing through the fluid tip (with ZRC Zero-VOC, 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 variety of air caps, fluid caps and needles to choose from. For ZRC Zero-VOC, use only fluid tips with a 0.080" orifice size or you may see a fair amount of wear and probable clogging.

Air spray delivers a much lower volume of ZRC than airless spray and requires the coating to be of lower viscosity.

ZRC Zero-VOC should be applied without further reduction, but water may be used if desired.

So, basically, you thin the ZRC Zero-VOC coating (if necessary), pour it into the pressure pot or cup (constant agitation is highly 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, please remember, when you're finished spraying, to clean the equipment and flush all lines using water.

CONTINUED



## 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 ZRC Zero-VOC to the metal surface, thereby increasing the production rate by a factor of at least 4!

The term "Airless" does not mean that you do not 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 ZRC Zero-VOC (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 coating as in conventional air spray.

The equipment needed for airless spray is a little more involved than conventional (Figure 3). 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 ZRC Zero-VOC, pumps lower than 30:1 don't give enough pressure magnification for proper atomization. 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. Leaving the filter in could cause clogging.

ZRC Zero-VOC should be strained through a 30-mesh filter before application. Also, make sure that there is a pressure relief valve on the bottom of the filter housing. Without this relief valve, you've got a big problem. 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.

Next is the gun (Figure 4). 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 that the trigger is pulled. This makes it a little difficult for applicators used to conventional guns since you cannot "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 ZRC Zero-VOC, we recommend tungsten carbide (to prevent premature wear), reversing (necessary to clear clogs) tips with orifice size of 0.026". All hoses must be ½" ID Airless Type to avoid clogging and flow restriction. On a positive note, you now only need one hose (conventional spray requires two).

CONTINUED



## **AIRLESS SPRAY APPLICATION (CONTINUED):**

So, now that you have the basic idea, let's start spraying. First, set up the system and flush it with water to clean the inside of the pump and the lines. Drop the pick-up tube directly into the ZRC Zero-VOC (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), 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 ZRC Zero-VOC product 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 setup is to drop it on your foot". Airless is another matter altogether. 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 airflow just outside the airless orifice and allows spray adjustment, just like conventional spray. The setup is the same as for airless, but an additional air line is added to the gun (Figure 5). The benefit: conventional air spray control with the production rate of airless.

## **FINAL COMMENTS:**

This guide, in its limited format, is not meant to be a replacement for your equipment's owner's manuals, painting textbooks or the applicator's personal knowledge and experience. It is our hope that it will be viewed as an adjunct – offering tips specifically for the application of ZRC Zero-VOC. For further technical assistance, please contact ZRC Worldwide by telephone at 1-800-831-3275 or by e-mail at [info@zrcworldwide.com](mailto:info@zrcworldwide.com).

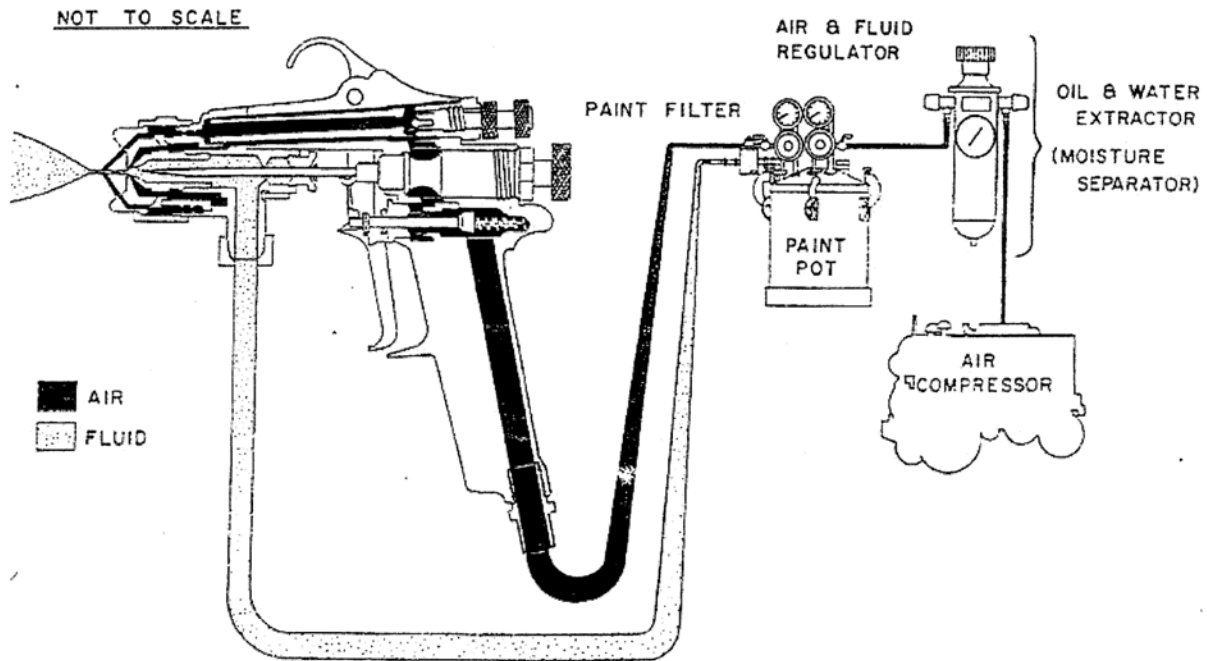


FIGURE 1. CONVENTIONAL SPRAY SET-UP

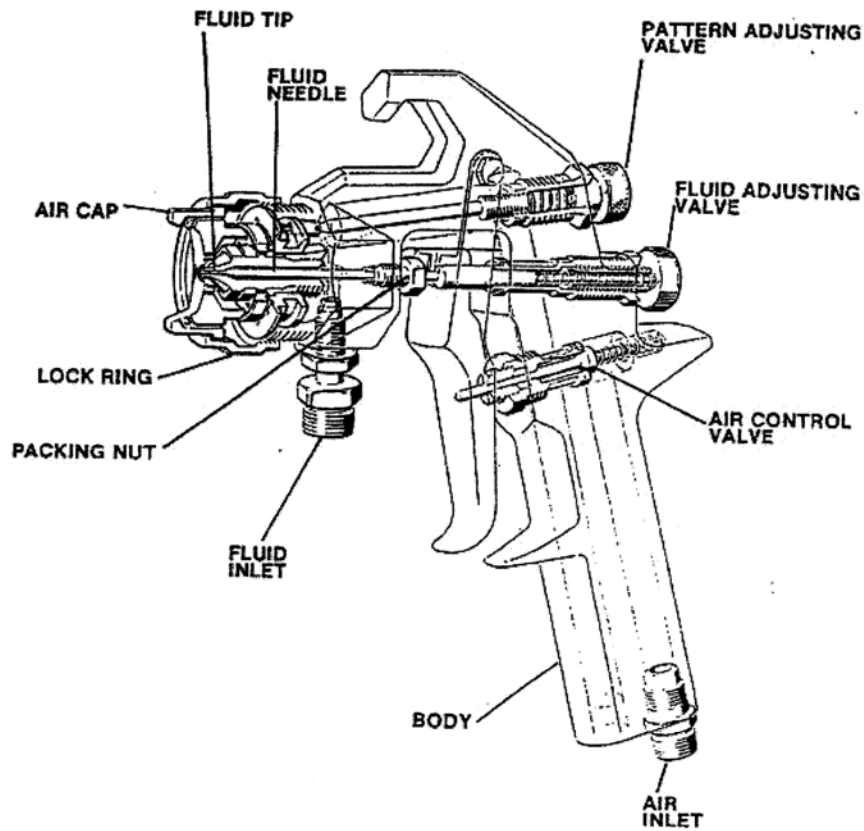


FIGURE 2. CONVENTIONAL SPRAY GUN

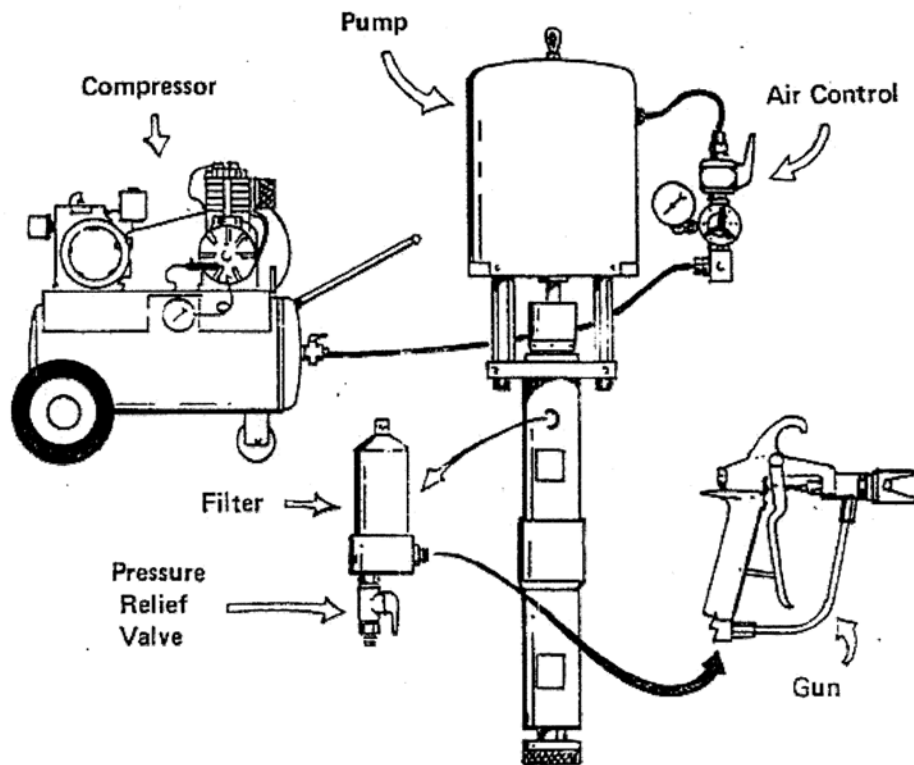


FIGURE 3. AIRLESS SPRAY SET-UP

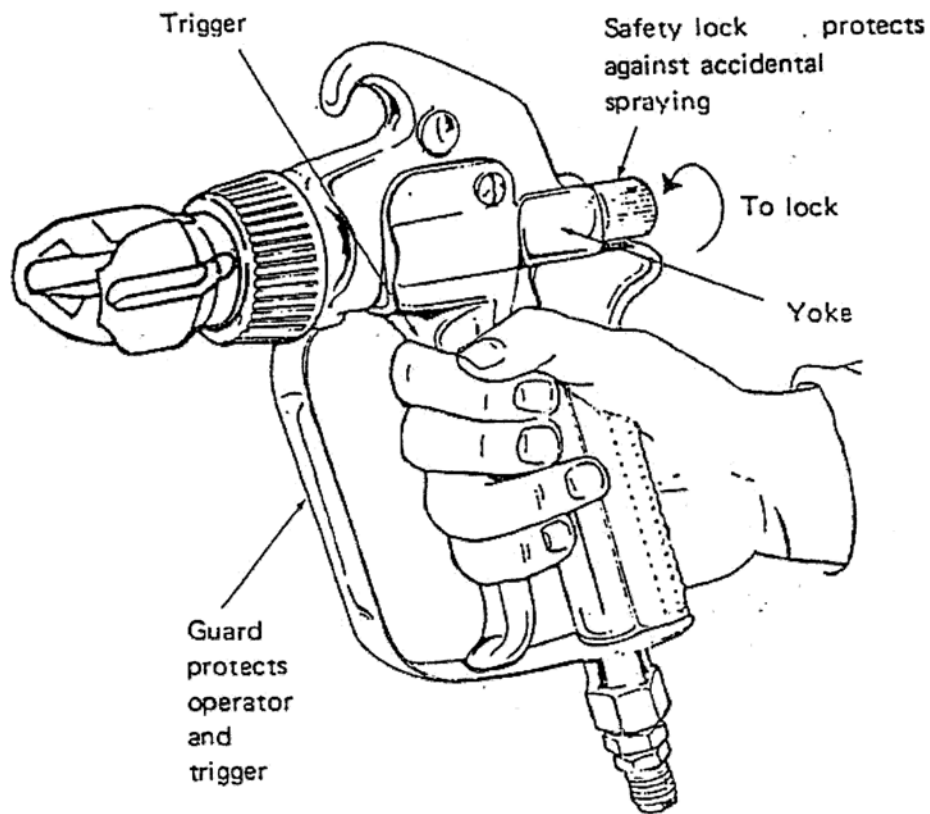


FIGURE 4. AIRLESS SPRAY GUN



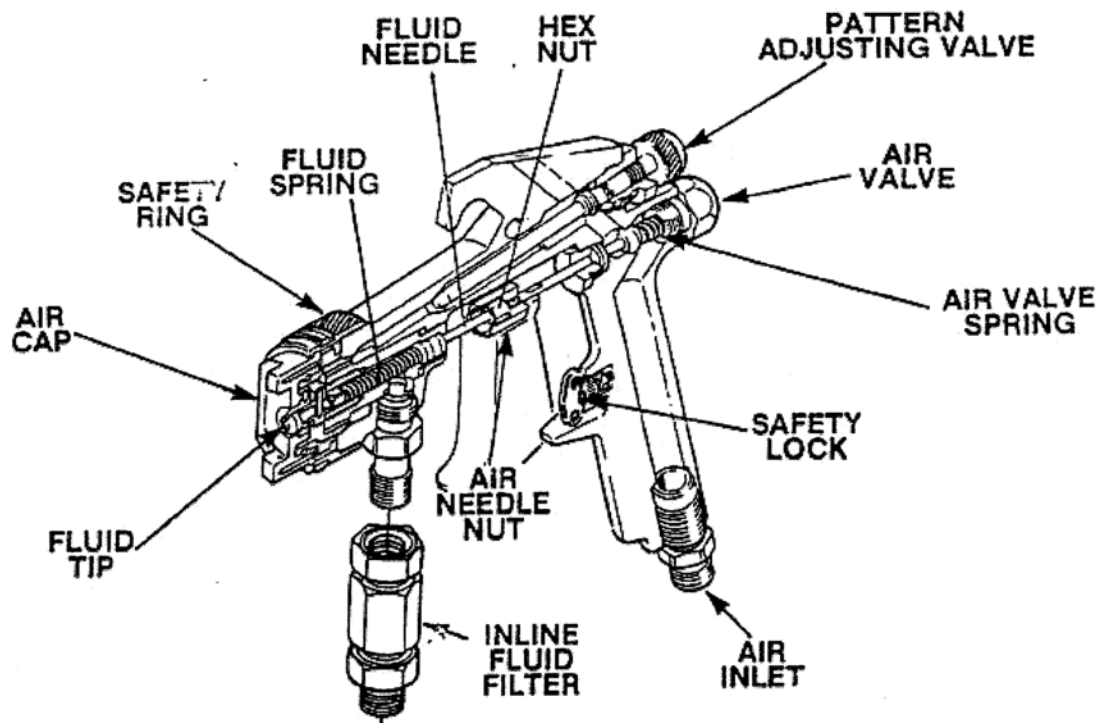


FIGURE 5. AIR-ASSISTED AIRLESS SPRAY GUN