

Working with SierraWest 3D Printed Castings

by Brett Gallant

General Notes about my 3D Printed Parts

Many of my parts are printed using a proprietary tooling resin that is drill-able and very flexible. When a part includes a bore hole, it may be necessary to slightly enlarge that bore hole for a proper fit. Either reaming or drilling will be required. More information on reaming vs. hand drilling can be found on page three. When reaming is required, use a small *broach reamer*. Broach reamer sets are easy to find at hardware stores or through an online retailer like Amazon. Keep in mind that the parts are plastic and contain very fine detail, thus are fragile and may break if mis-handled. If you do damage a part please contact me for a free replacement. They are shipped in baggies that will protect them from damage. If you remove parts prior to construction, please return them to the same baggie for storage.

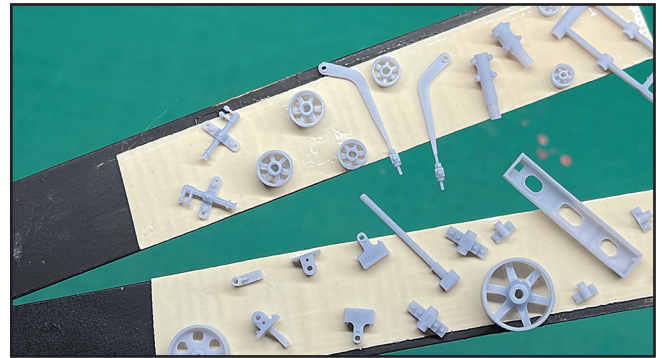


There are no parting lines or flash to remove. There is no mold release to wash off. You will find small remnants of the 3D Printing process in the form of a small cluster(s) of tiny dimples, bumps, or very thin filaments. These are placed in such a way that they can be hidden on the completed model in almost all cases. They are simple to remove with a fine file and a light hand, or scraping the tip of a sharp blade along the remnant. The dust is a throat and respiratory irritant in small quantities like this so please work in a well ventilated area and clean up afterwards. It is no different than the dust from my traditional resin castings.

Painting and Weathering Techniques - Metal

The same techniques and materials used on my hand poured resin castings apply perfectly to the 3D Printed resin parts. Be sure to visit the "University" link at the top of any page on my website for more information.

To create the appearance of metal on the parts, first apply a primer or base layer. Place the parts face down on a scrap of wood that has had double sided tape applied as shown. Lightly spray paint the parts, including all sides and edges, with a quality flat spray paint. Color choices are discussed on the next page. My "default" base layer color choice is almost always flat black.



Allow to dry then flip the parts over and paint the other side. Do not use so much paint that you cover up all of the fine details. Allow to thoroughly dry then remove the parts from the sticks. Now use a soft bristled brush to apply a *very light coating* of the metallic paint of your choice. Several brands are pictured below. I suggest trying a few different brands/colors including solvent based metallics.



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Create a Simple Metallic Finish

To create a simple metallic finish on a part, that is one without any additional colors applied, select a brush size compatible with the size of the part. Small part, small brush for example. In all cases this *dry brushing* technique works best with a soft, medium bristled brush. Experiment with different brush shapes. Rounded works best for me. Dip just the tip of the brush into the metallic paint then remove most onto a scrap of paper. Next very lightly brush the remaining paint onto the surface of the casting. Repeat this process several times until you are satisfied with the results. Let the paint build slowly and be patient. Rushing and applying too much paint will not achieve the desired effect. In most cases it will take several passes, re-dipping the tip of the brush then removing the excess between each pass. A light dusting of chalk powder is applied as a final weathering step. This technique is quick and easy, applicable to many of the 3D Printed parts.

Create a Metallic Finish on Top of a Color

When painting various details that are “metal” such as a gas can, acetylene tank, or oil drum, apply the black primer. Once dry, apply a color(s) of choice (before dry brushing the metallic paint) and then peel or chip the color away to expose the black primer underneath. I have a short video available on my website to view my favorite technique for achieving this look. (Click on the “University” link.) Once the paint has cured, apply a very light dry brush metallic paint on top of the peeled paint to create the metallic finish.

Alternative Base Layer Color Choices

If you are working with industrial machinery, a different base color may be applied. *Gray* and *green* were the most common colors. As the machines aged, then were bought and sold, much of the paint chipped off and became obscured by grime, oil, dirt, etc. On working machines heavy rust would not have been common.

Painting and Weathering Techniques - Wood

To create the appearance of wood on the parts, first apply a base layer as described. I always use a flat black primer for the base layer of “wood” parts. Once cured, dry brush a natural wood color on top of the black allowing a bit of the base layer to show through. This creates instant texture and depth. A video on this technique can be found by clicking on the “University” link on my website.

Creating “Clear” Effects on Bottles, etc...

One of the initial 3D Printing projects I tackled was printing with translucent resin to create glass bottles. In a word, amazing! When you receive the bottles they will appear frosted. It is very easy to make them clear and then add any color or weathering you like. You will notice the bottles are supplied mounted to sprue's as this makes them easier for both of us to handle. Start by placing the sprued up bottles on a stick with tape as usual. I spread



them out farther apart than a regular gray casting to ensure they get coated evenly when sprayed. Now use a clear glaze like the Krylon brand shown and give the bottles a light, but even coating. Use care not to

over-spray and apply too much glaze as this will cause irregular drip marks on the bottles. You can find several brands and types of clear glaze. Avoid using the “thick” versions as these spray too much glaze. Allow the bottles to dry thoroughly before preceding. You will see once dry, the bottles are crystal clear. Very cool. Now for the fun, coloring the bottles. There are many different paints/stains you can use to achieve the desired effect. I suggest experimenting to find what works best for you.

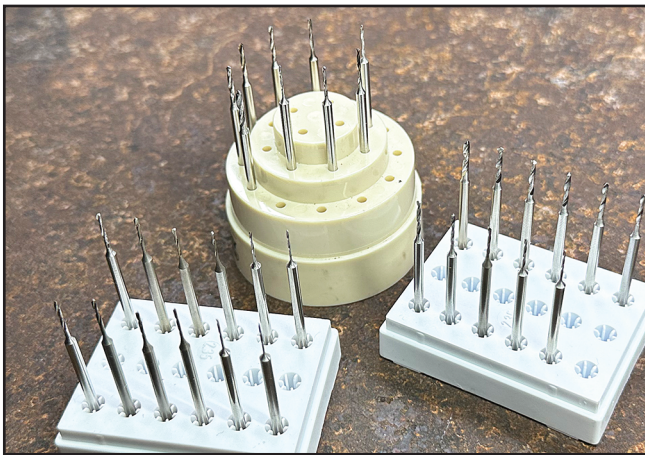
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Reaming Parts vs. Hand Drilling

Since the parts are plastic and include very fine detail, care must be taken in enlarging bore holes of any kind. Always test fit the mating parts before preceding and enlarge a bore hole only as necessary. Looking closely, you may find very fine supports located within the bore. These are easily removed as you ream or drill. The general rule is that if the bore passes all the way through the part then a reamer is used. Start with a smaller reamer diameter than the bore hole and work your way up, one size at a time, testing the fit of the parts between sizes.

If the bore hole does not pass all the way through the part, then use fine hand drill bits in the same manner as the reamers. It is very important to start with a bit diameter smaller than the bore drilling slowly and carefully. In some cases, the part may contain a bore hole that has a diameter smaller than your smallest bit. In that case use the tip of a new #11 blade to enlarge the bore enough to start drilling. Forceful drilling, or using a bit too large in diameter, will damage the part. Never use a powered drill. The drill bit sets I use are pictured below and can be found online.



Engine Oil and Grease

Many of my 3D Printed kits have exposed engines. Creating the slight “sheen” of fresh engine oil and grease is simple using washes from the products shown below. These should be applied very sparingly as a little of the product creates a subtle and effective detail.



Please handle my 3D Printed parts very carefully! While I use a high strength tooling resin that is very flexible and strong, these parts contain incredibly fine detail that must be handled carefully to prevent damage. I always recommend test fitting all parts prior to assembly to familiarize yourself with the proper fit and orientation.