

the Twin Mills at Deer Creek Supplemental Instructions

by Brett Gallant

General Notes about 3D Printed Parts

Many of my parts are printed using a proprietary tooling resin that is drill-able and very flexible. If a part requires drilling/reaming use a small *broach reamer* rather than a drill bit in most cases. Broach reamer sets are easy to find at hardware stores or through an online retailer like Amazon. Even though my tooling resin can withstand drilling, the reamer just works better. 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.

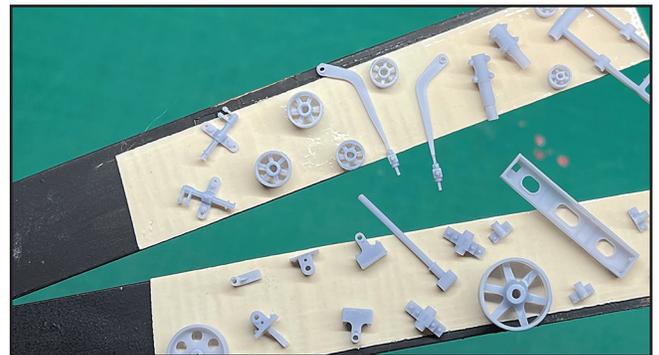


There are no parting lines or flash to remove. There is no mold release to wash off either. (Never has been with my castings!) However, you will find small remnants of the 3D Printing process in the form of a small cluster(s) of tiny dimples or bumps. These are placed in such a way that they can be hidden 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 hand poured 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.

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.

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.

Color Choices for the Base Layer

As with much of the industrial machinery from this era, *gray* and *green* were the most common colors found. 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. Apply base colors that appear natural. Quality flat spray

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paints can be found in varying shades of gray and green. Experiment with a few colors as it was extremely common for a small mill to have used machines bought from multiple sources thus having different colors. I would not however mix colors on the parts of a single piece of machinery. Since the parts were initially arranged on the “painting sticks” by kit, it is easy to separate the colors by machine.

General Notes for the Sawmill Machinery

The Sawmill Machinery has undergone a huge update. The 3D Printed parts are more accurate, include a finer level of detail, and are easier to assemble than their older, metal counterparts. You will find during assembly that the bore holes are printed accurately and require a simple cleaning with the reamer mentioned earlier. Do not use a drill. Test the fit of the appropriate wire/styrene tube to insure a smooth fit prior to assembly.

Pillow Blocks

Lots of pillow blocks in the Twin Mills. Lightly ream the bore hole then test the fit of its wire or styrene. Next file the flat, bottom side of all of the pillow blocks to remove any 3D Printing support remnants. This insures a good fit.

Notes for specific parts:

Double Blade Saw Husk (Template M5)

The large frame now includes a higher level of detail. The photographs in the manual are of the old, original frame. In reference to page 65, step 2. The pillow blocks now provided are the correct shape and do not require cutting. The shaft nut castings (page 66 step 6) are provided on a sprue and need to be removed prior to weathering. An extra is included in case one heads off to the “carpet demons”.

Log Carriage (Template M4)

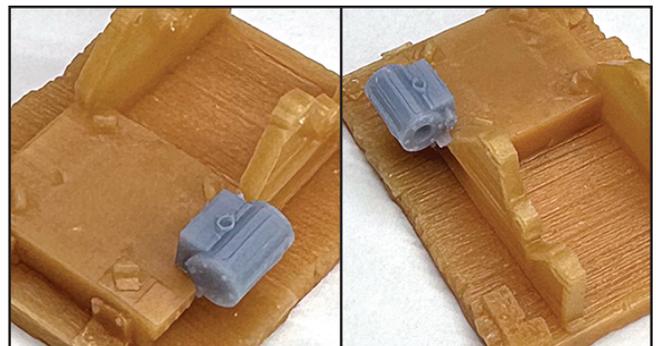
The knee and dog head have been combined. The dog is still separate and is inserted into the slot on the dog head as usual. This was a very tricky assembly so I decided to combine them for ease of construction. The trade off is the dog/dog head is no longer vertically adjustable to the log size. Select an appropriate sized log to fit the casting instead.

Cutoff Saw (Template M6)

The frame, blade guard and spindle pulley have been combined. Installation is as described in the manual.

the Donkey Engine (Manual page 73)

The Loader has been updated to represent a American Hoist and Derrick 30hp loader. The level of detail is fantastic. I believe this is the most dramatic update in the entire kit. The boiler contains much more realistic details and the stack cap is now supplied cast in place. The three wires mentioned on page 73 refer to the stack cap and boiler stays. The stack cap wire is attached to the underside of the cap and inserted into the small opening directly under on the boilers bonnet. The Connecting Rod and Crank Disc now provided as a single piece, inserted into the cylinder. Note the positioning of the cylinder in the photographs below then file the contact area smooth on the bottom of the cylinder and CA it in place.



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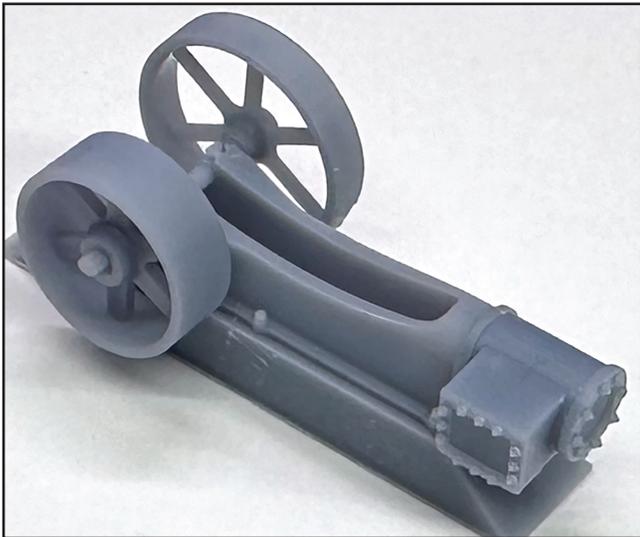
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Continue as outlined in the manual. When complete A steam supply pipe may be added as shown using the .012" diameter brass wire.

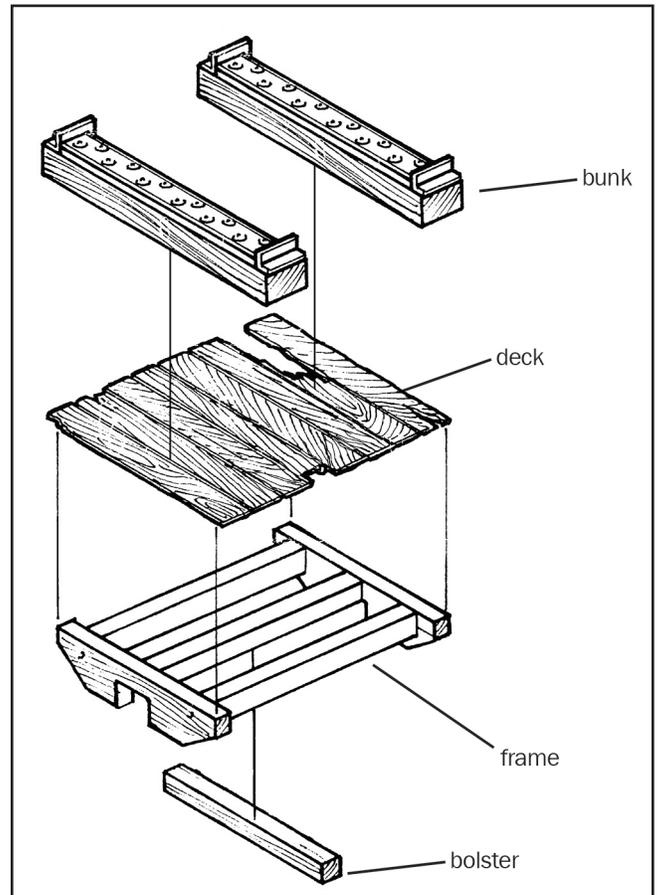
the Mill Engine (Manual page 101)

Complete the mill engine as outlined in the manual. The new 3D Printed mill engine includes the axle cast in place so there is no need to add the brass wire axle. The piping that is mentioned on page 102, step number two, goes between the top of the steam dome and the top of the flat portion on the cylinder.



Log Buggy Cars

Four log buggies are included to accompany the transfer table. They are quite simple to assemble and will add a lot of prototypical life to the rear of the new mill. Be sure once constructed to "load them up" with fresh cut lumber. They should be spotted on the table waiting to be hauled away by a small mill switcher.



Use leftover siding to cover the decks. Be sure to heavily grain and weather the exposed edges of the decking. CA the bolster and bunks in place then add your choice of trucks. Cut various lumber sizes and stack the lumber on top of the bunks. The fresh cut lumber looks great if a very light wash of rubbing alcohol and ochre chalk is applied to just kill that bare stripwood appearance.