

Working with the MACK AC "Bulldog" 3D Printed Kit

by Brett Gallant

Please handle these 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. Before you begin construction be sure to download: "*Working with SierraWest 3D Printed Castings*". These instructions cover all of the basics and provide essential information you will require before proceeding. There is a wealth of information Online about the history of the MACK AC as well as many examples of the various paint schemes. Please visit the "University" link on my website for more relevant instructions and videos.

General Notes

These instructions are not intended to be a step by step. They will suggest coloring and basic assembly along with the sequence of assembly that is recommended.

As with nearly all SierraWest 3D Printed parts, the supports are removed in house. On highly detailed castings like these, you may find very fine, thin supports that are easily removed with a pair of tweezers. Remnants of supports may be filed or gently scraped away with a sharp blade tip.

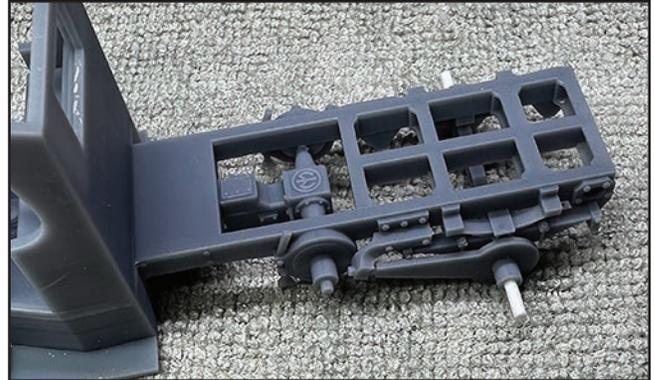
Test the fit of the four wheels and steering wheel. Use a very light touch and a hand drill bit to insure these parts fit correctly

File the support remnants along the front and rear edges of the roof away until the edges are smooth.

Prepare and prime all of the 3D Printed parts as outlined in the "*Working with SierraWest 3D Printed Castings*" download. Allow the primer to fully cure before proceeding. I primed all of the parts in this kit with a quality flat black spray paint. Except for the primer, all paint used is AK Interactive 3rd Generation water based paint. (Unless otherwise noted).

Paint and Weather the Components

A styrene rod is supplied for the rear axle in O Scale, a brass rod in HO Scale. Carefully clear the thin support out of the rear axle bore holes. Test the fit of the supplied axle material. Cut two pieces of the styrene in O Scale about 3/8" long each. Cut two pieces of the brass in HO Scale about 3/16" long each. Epoxy the axles in place being sure they seat fully in the bore hole.



I chose to model my Bulldog primary red which was a very common production color. Dark Kelly Green was also very popular. In order to achieve the rich deep red, a base layer of AK Burn Orange was applied directly on top of the black primer. Once dry AK Matt Red is brushed on. Dry chalk weathering is then applied over the cured red liberally to age and weather. The last page of these instructions contain photographs of the completed chassis as a color guide. Paint the cab roof in the same manner.

The hard rubber tires, hub caps, front axle assembly, brake lever, gear shift, steering wheel, and interior cab walls are painted AK Lead Grey (a favorite). The seat cushion and seat back AK Tan Earth. Note the recessed area inside the front hood MACK logo detail was highlighted with AK Pale Yellow. Headlights, radiator cap, and handle grabs AK Rusty Brass. The pair of chain sprockets AK Dark Rust. All parts are dry chalk weathered prior to assembly using black, grey, and rust.

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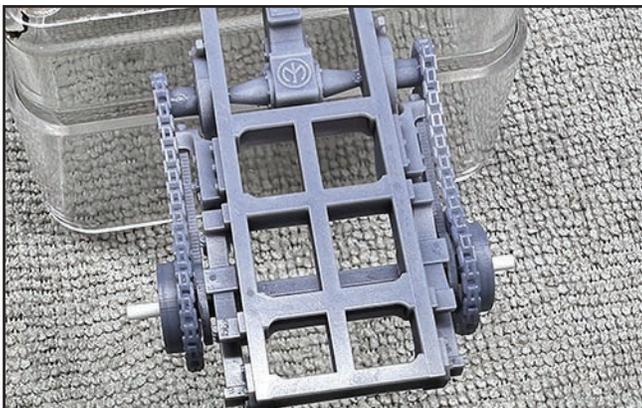
Assemble the Chassis

Epoxy the gear shift, brake lever, and steering wheel in place inside the cab. Epoxy is recommended for assembly. Just after the epoxy sets, and is still a bit tacky, any excess can be easily picked away with the tip of a blade and a little chalk powder applied to hide any visible glue remnant.

Locate the sheet of laser cut window glass. Carefully cut the three pieces off the carrier sheet with a new No. 11 blade. Do not touch the pieces with your fingers, always use tweezers to avoid getting fingerprints on the acetate. This looks horrible. Dirty both sides with chalk powder then use tiny drops of CA (cyanoacrylate) applied with the tip of the blade to the inside of the cab and glue them in place. You will note a recessed lip that makes placing the window pieces easy.

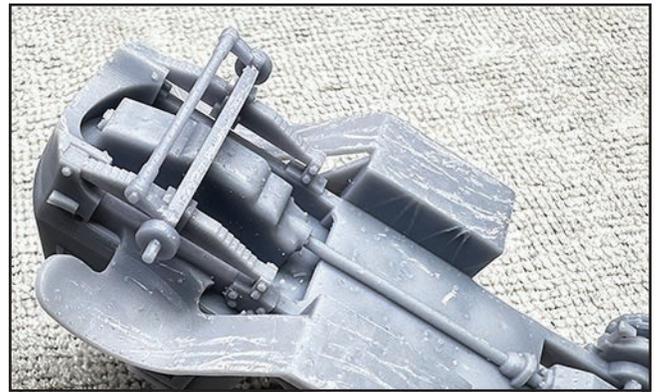


Glue the chain sprockets assemblies in place as shown. There is a right and left assembly. As an alternative to epoxy, you can try the slow dry CA as shown. This is an outstanding product and works great. I overall prefer epoxy but this is a great second choice.



Epoxy the roof in place.

Test the fit of the front axle assembly. Carefully file the "u" channels on the main frame's front leaf springs. This will allow the axle assembly frame to seat properly. This is important as you want the axle assembly to sit flat so the wheels are aligned with one another. In addition check the fit of the front wheels on the axle boss. Once satisfied epoxy the front axle assembly in place as shown below.



Epoxy the rear wheels in place. It is important to work on a perfectly flat surface to ensure both wheels are level. In addition, make sure as the epoxy sets to keep an eye on them so they do not "tilt" and remain straight. Once cured repeat for the front wheels. Allow the chassis to sit undisturbed with all four wheels flat on your workbench giving sufficient time for the epoxy to fully cure. Wheels out of alignment and/or crooked look terrible.

Epoxy the headlights, handle grabs, and front end frame hooks in place to complete the chassis. A small acetylene tank is included that can be added to the front driver side wheel well bumper if desired. An engine crank is also included. Keep in mind these cranks were removed from the crankcase as the engine turned over. It can be placed on the cab floor or on one of the different bed attachments as desired.

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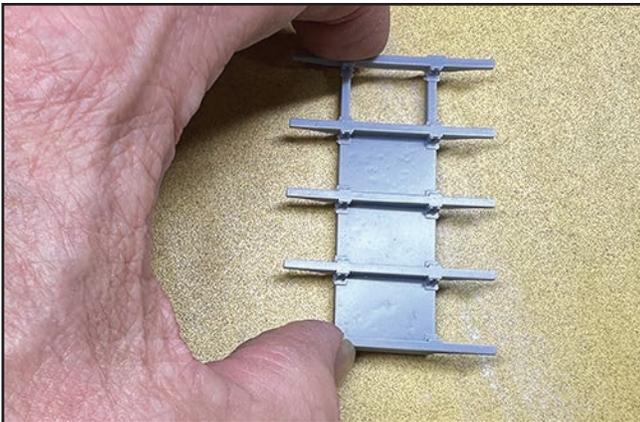
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The Bed Attachments

Each of the different bed attachments are designed to sit on top of the completed chassis frame and are interchangeable. This allows you the opportunity to stage your Bulldog in various scenes customizing it for each situation. If you choose, you may epoxy the completed beds to the frame.

Common Preparations

Regardless of the bed attachment, the following instructions apply. It is very important to achieve a good fit between the attachment and the frame. You must remove the many small remnants of the 3D Printing process on the bottom of each attachment. This is easy to achieve by using a piece of 120 grit sandpaper placed on a flat surface.



Lay the attachment down on the sandpaper and using light pressure slide it along the paper. Rotate it 90 degrees and repeat. Rotate it 90 degrees and repeat, etc... Continue in this manner until the bottom is smooth and flat. The bottom of the Tank 3D Print is cleaned by scraping a blade along the bottom. The dust created is a respiratory irritant so clean up your work area afterwards.

Test the fit of each attachment on top of the chassis frame ensuring the frame seats flat. Do not worry if the attachment contains a warp, the stripwood decking will fix this. Just be certain the bottom is flat as described.

Now prime the attachments in the usual manner. Allow the primer to cure as always before proceeding. More photographs of the various attachments can be found on my website by visiting the MACK 3D Printed page.

The stripwood is grained, detailed, cut to size, then stained. Instructions on can be found at the "University" link on my website.

The Flat Bed Attachments

Chalk weather the primed frames with browns, grey, and a little rust. Use care not to damage the cross members on the heavy duty frame. Use a soft bristled brush and a light hand. Grain, detail, and cut to size the stripwood for each frame then stain. Allow to dry then use epoxy to laminate the decking to the frame. Place the frame on a flat surface then apply appropriate weight while the epoxy cures. This will flatten out any warping.



The Stake Bed Attachment

Chalk weather the primed frame with browns, grey, and a little rust. Use a soft bristled brush and a light hand. Grain and detail the three different stripwood lengths.

Cut the stakes and stake slats to size, stain the pieces, allow to dry. Before constructing the side assemblies, take the 8 stakes and test fit them in the stake pockets on the frame. They are designed to be a tight fit. A little sanding may be required to make the fit easier since once the side assemblies are constructed, you do not want to have to use too much force to install them.

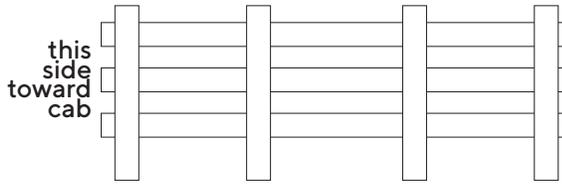
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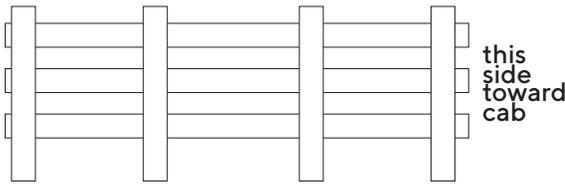
Stake Bed Template

O Scale - 100% Full Size

Right Side



Left Side

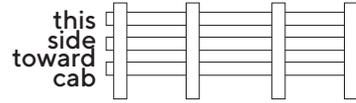


stripwood guide:

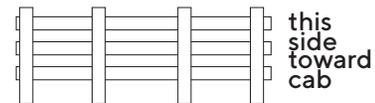
- 2.25" - stakes
- 2.5" - stake slats
- 3" - decking

HO Scale - 100% Full Size

Right Side



Left Side



stripwood guide:

- 2" - stakes
- 2.5" - stake slats
- 3" - decking



Use the template to construct the two side stake bed assemblies.

Next cut to size the stripwood for the decking then stain. Allow to dry then use epoxy to laminate the decking to the frame. Place the frame on a flat surface then apply appropriate weight while the epoxy cures. This will flatten out any warping.

Now install the stake bed assemblies being sure to note the left and right sides. Once set in the stake pockets, cut to fit from the 2.5" long wood the slats installed between the two side assemblies at the cab, front end. This will straighten the side assemblies out.

The Box Bed Attachment

Chalk weather the primed frame with browns, grey, and a little rust. Use a soft bristled brush and a light hand. Paint the box sides red in the same manner as the main chassis. Paint the decking AK Tan Earth. Dry chalk weather.



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The Tank Bed Attachment

Chalk weather the primed frame with browns, grey, and a little rust. Use care not to damage the cross members. Use a soft bristled brush and a light hand. Check the bottom of the tank and ensure it is smooth. Use a single edge blade and scrape it along the bottom as needed. Now paint the Tank AK Lead Grey, allow to dry, then dry brush with AK Gun Metal. Use this very sparingly. Subtle streaking of light grey can be applied to represent lime stain as desired as well as rust streaking and highlights.



Look at the frame and notice one end is featureless/smooth and the other has plate detail. The featureless/smooth end seats against the step-down on the rear end of the tank. The plate detail end is at the front/cab end once the tank is installed on the chassis. With this in mind, epoxy the frame to the underside of the tank. Make sure the epoxy sets with the frame flat and pressed firmly against the tank. This will correct and warping of the frame.

The Wrecker Attachment

Chalk weather the primed frame with browns, grey, and a little rust. Use a soft bristled brush and a light hand. Paint the tow frame short box sides orange in the same manner as the main chassis.



Use AK Ochre instead of red over the orange underlay then while the yellow is still wet use the “Chipped Paint Effects” technique demonstrated in the video on my website (“University” link) to achieve the desired peeled paint appearance. Chalk weather once dry.

Grain, detail, and cut to size the stripwood for the frame then stain. Allow to dry then use epoxy to laminate the decking to the frame. Place the frame on a flat surface then apply appropriate weight while the epoxy cures. This will flatten out any warping.

Paint the toolbox AK Tan earth and chalk weather once dry. Rust highlights can be added as appropriate.

Paint the body of the battery charger AK Dark Rust with the raised center strip AK Pale Grey. While the paint is still wet use the tip of a toothpick to remove the paint from the raised “ATLAS” lettering to expose the black primer underneath. Leave the battery charging cable black, paint the charging clamps AK Gun Metal. Chalk weather once dry.

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The Tow Assembly



Wrap the chain around the winch spool several times then use epoxy, hidden on the bottom, to secure in place. Once the epoxy has set thread the chain as shown up through the top of the frame and through the rear arm pulley in O Scale, over the pin at the same location in HO Scale. A few small drops of CA is used to hold the chain in place and keep it as taught as possible here at this location.

Next thread the chain through the neck of the large free standing pulley. Measure and cut the chain to fit as shown then attach the hook. Use a jump ring in O Scale or a drop of CA in the hook pocket in HO Scale and set the chain on the post as shown.



Paint the tow assembly AK Pale Grey then use the chipping effect and chalk weather. Glue the hand crank in place in O Scale.

Brass chain is first blackened with a chemical blackening agent. Visit the “University” link on my website for current materials and sources.

Extra pulleys and hooks are supplied for you to add anywhere on the truck and tow assembly as desired.

Start by Testing the fit of the chain through the neck of the main pulley on the rear arm of the tow assembly in O Scale. This is too small to realistically pull off in HO Scale so there is no pulley here. Enlarge the neck as needed with a reamer so the chain slides freely. In both scales test the fit of the chain in the largest free standing pulley (twist it off the 3D Printed carrier pad). Enlarge the neck with a reamer as necessary so the chain slides freely.

MACK MODEL AC BULLDOG



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