

## **MLS MasterClass 2002**

### **Build a 2-6-6T / 0-6-6T Mason Bogie An Adventure in 1:20.3**

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#### **Chapter 6 - A 'DIY' 6-Wheel Tender Truck** Scratch-building a Tender Truck for your MasterClass Mason Bogie

#### **Construction - Supplement**

#### **What will be required?**

For everyone who won't get a BBT Chassis including the rear truck, here's my suggestion on how to scratch-build it.

Well, basically we need the same materials as used on the loco itself. This includes styrene in thicknesses of 2mm, 1mm and 0.5mm (better 0.25mm). The various bolts and screw heads were cut from Evergreen and Plastruct shaped profiles:

- Plastruct item #90874, hex rod 1.5mm
- Plastruct item #90876, hex rod 2.5mm
- Evergreen item #220, 0.88mm rod (other 1mm rod will suit too)

Making the journal box lids will require 2-component casting polyurethane. There are alternatives to this - I will tell you more on this, later on in this article.

## Getting started

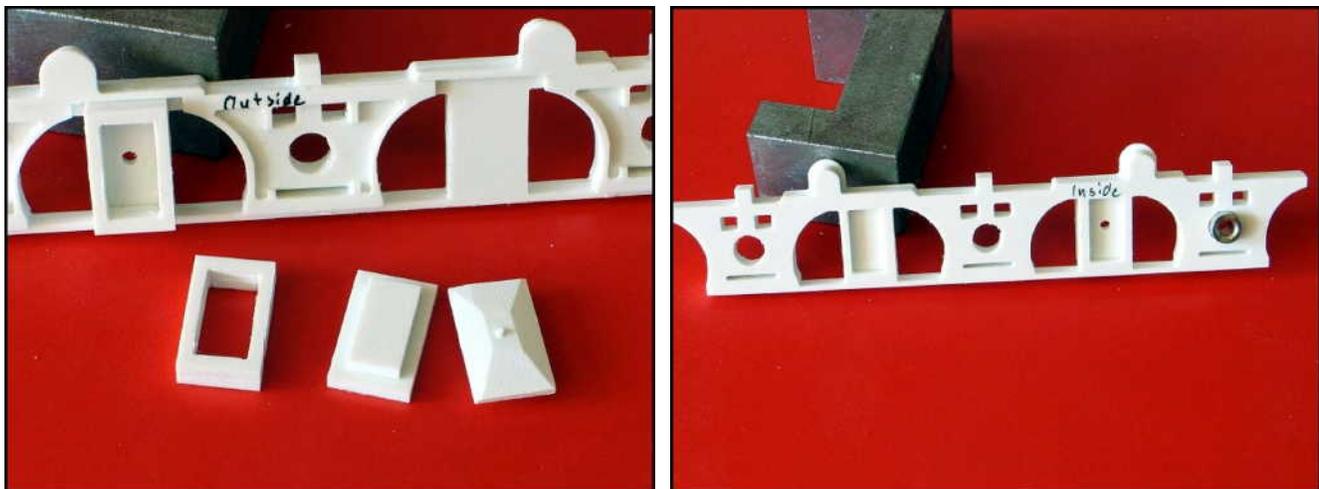
Download the cutting templates now:

[<<tendertruck-PDFs.zip>>](#)

Begin with cutting the side frame layers from 2mm styrene. If it's easier for you cut them from 1mm material, cut two and double them. Be aware that the front layers differ slightly from the back layers. You don't want to glue two front layers together.

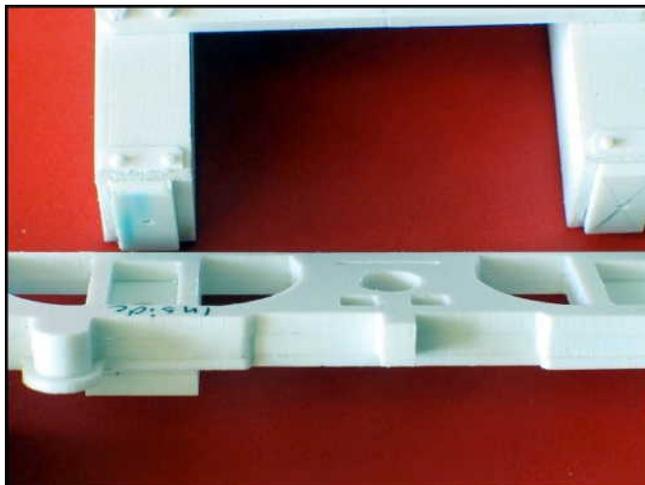
**CAUTION:** The radius of the holes prepared for the axle bearings depends on what bearing you will use. The bearings shown in this sample I will be replacing with roller bearing later. You may now just drill a hole wide enough for your axles. You can make the hole bigger later - but before gluing the journal boxes to the side frame.

Next take the sheet named "TENDER TRUCK 2". Cut all pieces that are made from 1mm and 2mm Styrene. Proceed as shown in the following pictures.



Now, build the two beams that will be placed between the side frames. Mine are 10mm x 17mm and x 62mm long. Make them as long as you need to fit our axles into the bearings. I use LGB axles and have copied the width of an LGB truck. You can make the beams solid or hollow, as you wish. Mine are hollow and filled with lead.

Next, refer to sheet "TENDER TRUCK 3" and the image below. Glue the "mounting plates" to the ends of the beams.

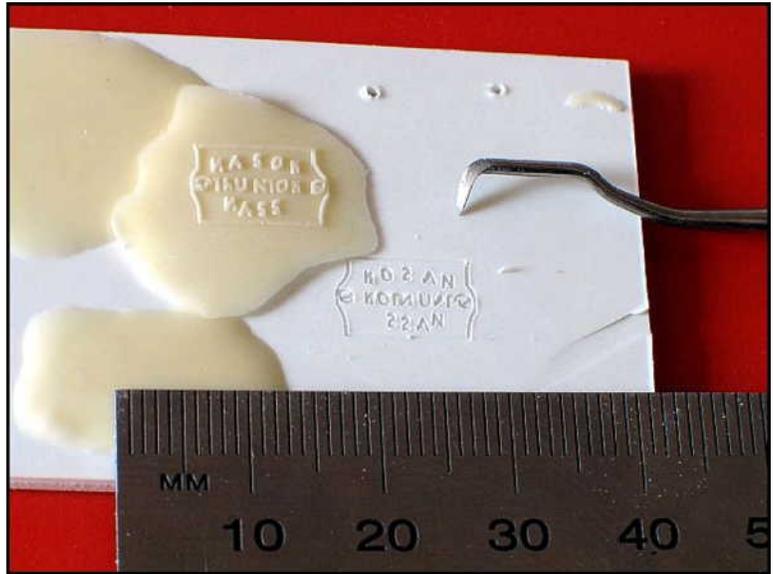


Glue one (only one!) side frame to the beams. Be sure everything is square. The remaining side frame will be screwed from the outside to the beams later. Prepare holes for the screws like shown above.

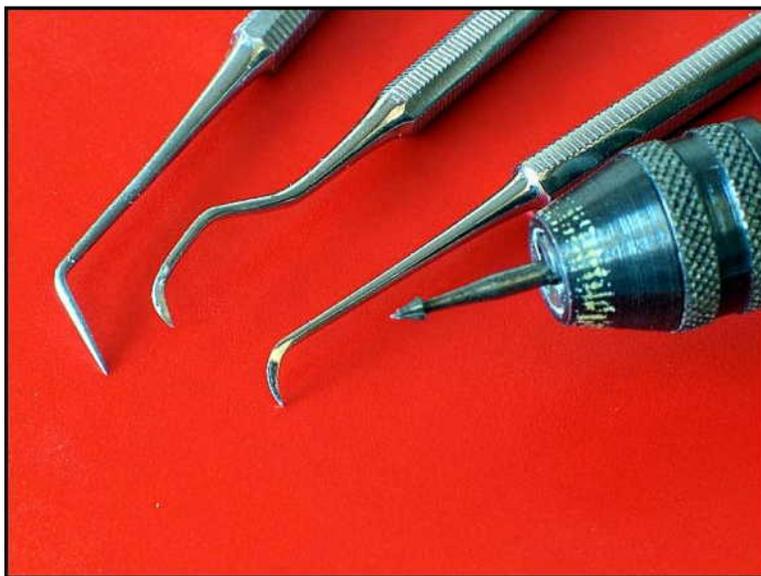
## The Journal Boxes

Make six journal boxes (refer to sheet 2). I suggest creating a solid block slightly bigger than needed and filing it to shape. You can also cut shaped slices and glue them together.

And now.... comes the tricky part. We'll make the journal box lids. The obvious way creating the raised lettering is removing the material around the letters. Well, I failed. Maybe someone else is able to do so, I am not. At this point I remembered a technique I used before while modeling in HO 1/87. When it comes to making really small parts, which I couldn't file or could barely hold between my fingers, I scribed them into plaster. Like creating a mold. I poured some drops of casting resin on it and let it harden. After "de-molding" I sanded the part from the backside until only the part is left. Tricky, eh? The same method we will use here - with one difference: we won't sand the backside completely away. We only sand it to a flat plate and then shape the plate to a journal box lid.



This time I haven't used plaster- I took Styrene instead because the lettering comes out more crisp. On the other hand, working with plaster is much easier. Try both materials and decide what suits you better. A word on the tools I use:



We need tools that remove material - not only divide it, like a cutter. The three scrapers, shown above (left) are dental tools. Go to your dentist and ask him for his tools. Only accept really sharp ones. If your dentist refuses to give away his equipment go to the next dentist - good luck!

**CAUTION!** I *always* forget to mirror my work. Normally its no problem but here it is *necessary to mirror* the lettering. I have spent several hours creating scrap. Don't do the same. Keep thinking while working. I recommend drawing a sketch of the mirrored lettering.

By now, you have probably noticed that I have cheated. I have done three things to make it easier:

- The journal box lid is slightly bigger than on David Fletcher's scale drawing.
- I have skipped the "W.M."
- Lettering as well as I have skipped all dots.- I have simplified several letters.

I don't believe that the average admirer of your loco will notice this without using a magnifying glass.

We begin the work with a motor tool like a Dremel or Proxxon Minimot, etc. We slightly scratch the lettering into the material - not too deep at the moment. We use these lines only as guide for our dental scribes (got some yet?), which tend to "escape" from the guidelines at the beginning of the cut. Next, work the lines deeper using the scribes, avoid making V-shaped grooves. You may sand down the material a bit when the scribing becomes too V-shaped.

Ok, it's time to think about the casting. I always work with a 2-component resin mixed 1:1, called Biresin G27. It's a German product from "SIKA" and pretty cool to work with. German-speaking modelers may try [WEISSMETALL - Tim Dicke](#) for details. [Micro-Mark Tools](#) has some resin stuff for all English-speaking folks. It's recommended to purchase a release agent too, but it's not absolutely necessary when working with the resin/styrene or the resin/plaster combo.

Instead of working with resin, it's also possible to use epoxy glue. Here, a release agent is a must. I have tried this and it works, but not as good as resin.

**Important: Make tests before pouring your journal box lids the first time!**

To speed up things it's useful having more than one mold. It takes me 15 tries to get the 6 usable parts needed. So don't be disappointed when the casting fails - it's normal.

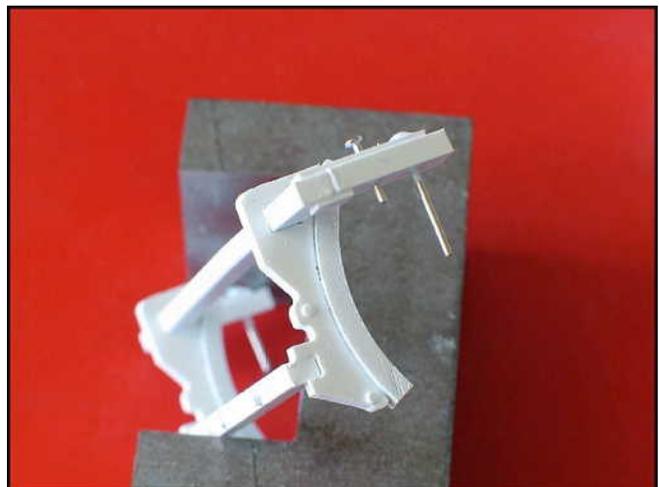
Sand the backsides of the lids flat by moving them over sand paper on a absolutely flat surface like a glass plate. Then bring the lids to shape and glue them onto the journal boxes using CA.

## The Brake Beams

Cut the four parts needed and prepare some 3mm wide strips (ref. draw. Tender Truck 3) - all from 2mm styrene. You now have two options to make the upper U-shaped part.

### Option A:

Insert the 3mm wide strip through the opening of the part that will hold the brake shoes. Then weld other pieces of the strip to get the U-shape. Reinforce the joints with small strips of 0.5mm styrene.





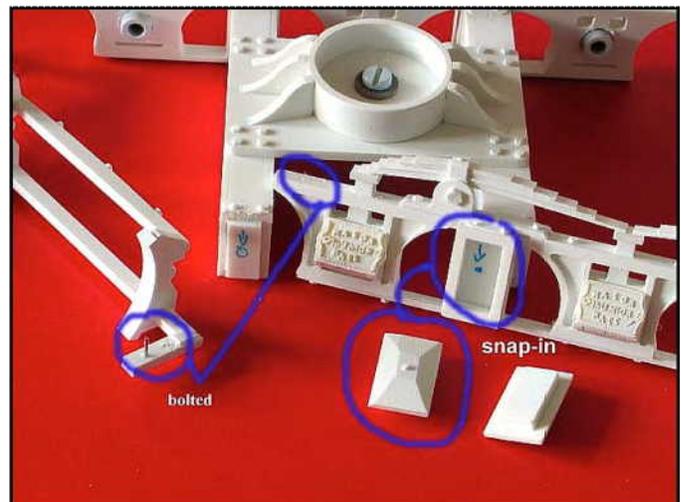
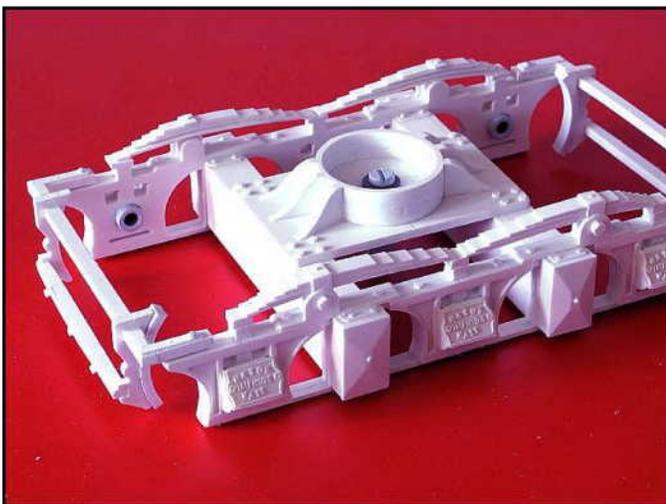
**Option B:**

Divide the part from sheet 3 and cut the upper U-shape as one piece out of 2mm Styrene.

The lower beam is also made from 3mm wide styrene (2mm thick). Sand it to a slightly convex shape. Locate all parts so that the brake shoes are in line with your wheel treads. Weld the brake beam assemblies together.

**Finishing Steps**

Cut slices off your hex rods and round rods. Add the rivet and bolt head detail, referring to the images along in this article. After painting the four subassemblies you now can insert the wheelsets, screw the side frame to the traversing beams and bolt on the two brake beams. Cover the screws by snapping in their end plates. To give these plates and the bolts a stronger hold I use removable glue like "FixO-Gum" Rubber Glue or Carpenters Glue (water soluble).



Ready. I hope it was helpful to you.  
Good Luck  
Jens Lasch