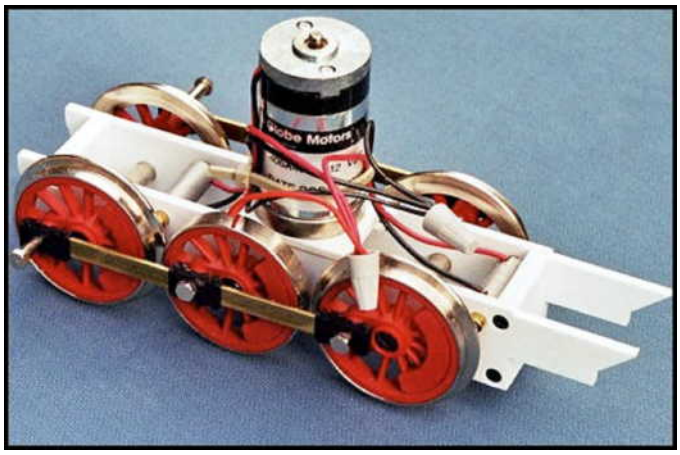


MLS MasterClass 2002

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

By David Fletcher & Phil Jensen

Chapter 6 - A 'DIY' Chassis!

A simple chassis to build from styrene

Construction - Supplement

Making your Own Mason Bogie Chassis

After all the long wait with the BBT chassis to come out, the world kinda changed on us in many ways! One of the good things that have occurred in that time, is that Hartland Locomotive works brought out their modular gearbox and new "mid-sized" drive wheels. The good thing about these mid-sized wheels is they make for nice 36" wheels at 1:20.3, and the gearbox and motor can be slipped into just about any kind of chassis! The motor is a high quality unit too, toward the quality of the Pittman. We used these motors and gearboxes in the C.P. Huntington Mini-class, and we can use the same stuff in our own Mason chassis. The options for a Hartland based chassis is as follows:

Make your own following the PDF set. This makes a simple plate framed styrene chassis. Dead easy to make, somewhat similar to the basic block we made for the Huntington

Have Rick Raively laser cut a styrene frame for you, which is a more complex cut that the DIY above, and is real stylish.

Take on the option for my really stylish laser cut stainless steel chassis bar frame, snap together and dead easy to use.

All 3 methods require some minimal parts to be ordered directly from Hartland parts:

For the DIY styrene chassis, these are the parts to order from Hartland Trains:

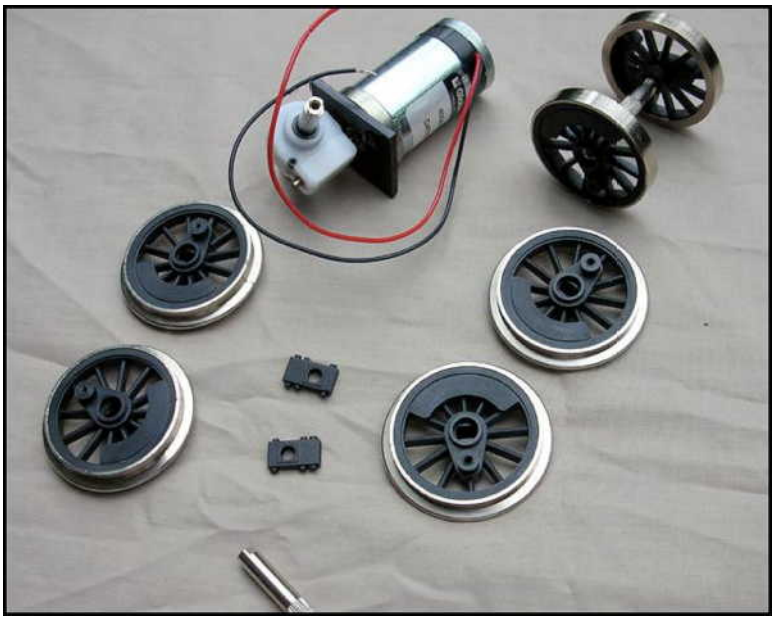
- Large modular motor and gearbox assembly with black mounting plate.
- 4 - flanged mid-sized wheels.
- 2 - blind mid-sized wheels.
- 4 - short crank pins.
- 2 - modular wiper assemblies (4 wipers in total in two pairs).
- 4 - modular side rod ends.
- 2 - modular side rod middle bearings.

Please call our Hero and Friend, Phil Jensen at Hartland Trains for the parts listed above. Explain also it is for the DIY Mason Bogie Chassis as this will help him to help you.

Call Phil only on Tues or Thurs, 8am-1pm Central Time: (402) 571 2933, or Fax (402) 573 -7274.

We are also very thankful to Phil for allowing us to us these Hartland parts in our projects once again, and also indebted to him for the concept shown below and to the prototype chassis he built here. This article is really the work of Phil Jensen.

Here is a sampling of the parts:



Lets Build It!

Follow the PDF's for this chassis. Download this set here:

Download DIY chassis templates:

<<DIY-PDFS.ZIP>>

Basically, you bang the thing together like this:

Cut the two side frames made from 2mm thick styrene.

Apply an outer 1mm layer showing bar frame detail to the outside of the 2mm thick base layer - this is completely optional, as once the wheels are in place, the close spacing of the wheels makes the details on the frame impossible to see!

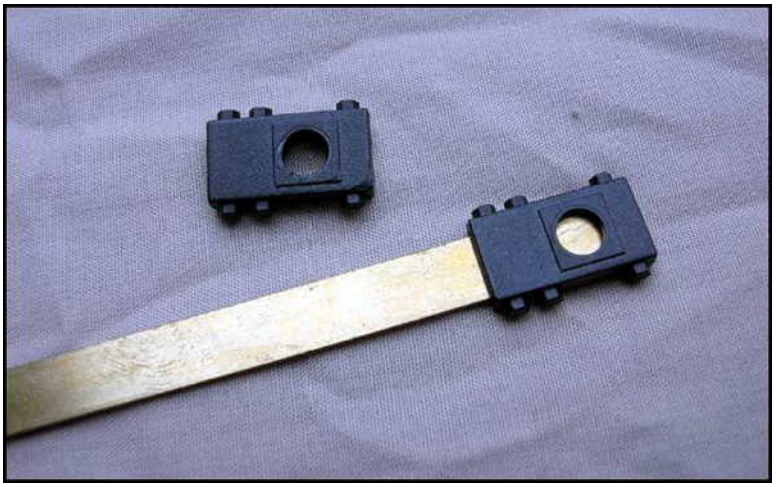
Cut the three 2mm thick spacers and apply them to the inside of the side frames.

Phil Jensen has done a demo of this chassis. Where my PDF's show 2mm spacers with 4.6mm SHS in the corners to screw into, Phil chose to cut the spacers using 4mm styrene, and screwing straight into the ends of the spacers. Excellent method!

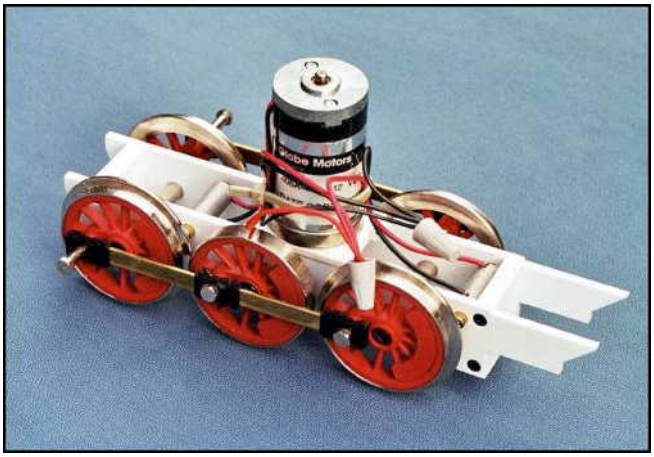
Basically, apply the spacers to one side first, bolt the side frame to the spacers as well as glue the spacers. Install the axles and gearbox, as well as the wiper assemblies. Then apply the second frame side, poking the axles through the bearing holes, etc. Screw the second frame side to the spacers, but don't glue this time.

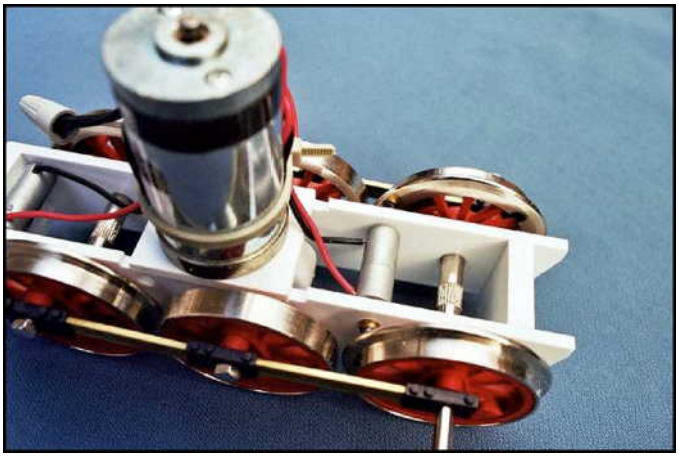
Next, apply the wheels onto the chassis and screw them onto the axles. Test the unit to see that it runs well.

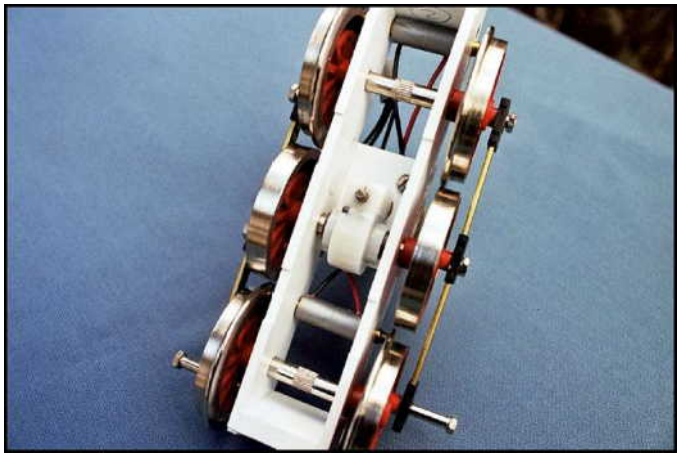
Now to make the side rods, Hartland have designed these end patches to slide onto the side rods. You'll need a length of K&S brass strip, 6.27mm X 1.6mm (1/4" x 1/16"). Cut the brass side rods per the PDF. BE EXACT ON THE PLACEMENT OF THE CRANK PIN HOLES. The more perfect the holes are located, the smoother the loco will run. Slip the Hartland plastic bearing patches onto the side rod, no glue needed. Use the crank pins to bolt the rods to the lead and middle axle. The rear axle will need a longer crank pin, made from 3.8mm brass tube and a bolt that slides inside the tube. Here is a view of the brass K&S rod and the plastic rod end patches:

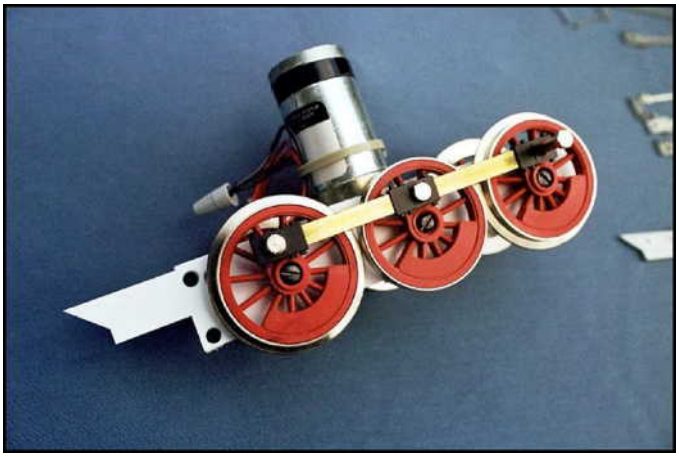


The DIY chassis will look something like this:









Making The Structural Frame:
To support the boiler/cab and support the pivoting chassis below.

This is one of the tougher parts of the class, and a real problem on the first 1:24 Mason I built. There is significant structural bending at the front wall of the cab, because the pivoting power truck does not support the loco in a structural way. Instead, we need to make a structural frame above the chassis to support the boiler, and run through into the cab space to connect to the tender deck.

In the PDF set you will see the diagram of the Mason model with some structural frame length dimensions. Fundamentally, Chapters 1-5 are based on working with the BBT frame, and Barry at BBT not only provided an elegant structural solution for the loco, but provided all the framing for the project with his BBT chassis. Time, however, has moved on and we have many builders who did not order the BBT, or missed out, and we must build a DIY structure for the loco, based on Barry's design so that the superstructure parts from Chapters1-5 will all fit.

The frame is dead simple in principle: two lengths of 35mm x 9mm channel - that is 35mm wide, with 9mmvertical legs. The frame above the power truck has the legs of the C channel facing upward and a 30mmdiameter hole cut in the frame for the motor to slide in to work as a bearing/pivot. The boiler/running boards just slide down onto this channel. A second longer channel is used under the tender deck. The two frames overlap each other in the cab/firebox area and are bolted together back-to-back, with the styrene tender deck sandwiched in between.

The channel frames that BBT provides are like this:

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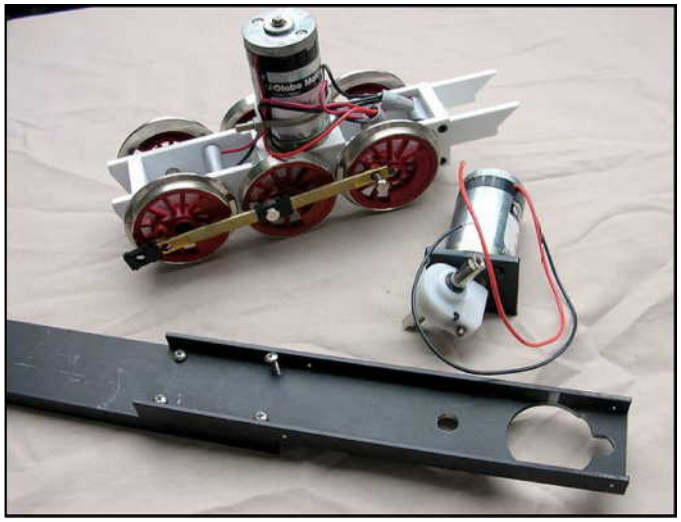
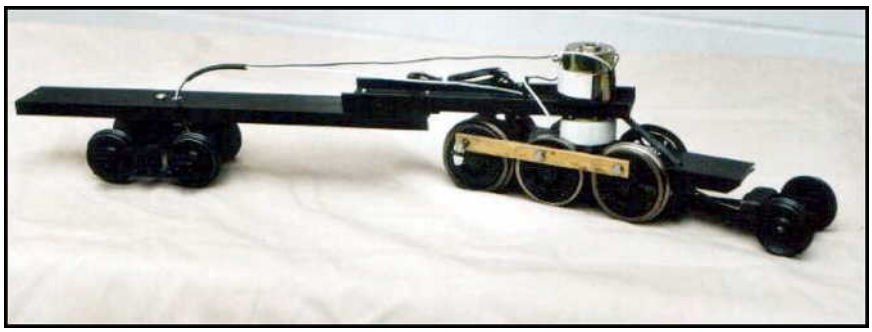


A 25mm PVC short pipe length cut on one side to form a 'C' shape is clamped around the motor above the frame to prevent the chassis from dropping out of the frame.

With the power truck, rear truck and support frame assembled with PVC clip around the motor top, the BBT assembly concept looks like this:



Barry also initially used a PVC pipe clip between the chassis and frame as a bearing pad, but we changed it as part of the spring rigging design in chapter 2. The tender deck assembly from chapter 2 also needs to be sandwiched between the two frame channels, with the deck flat down on top of the rear channel.

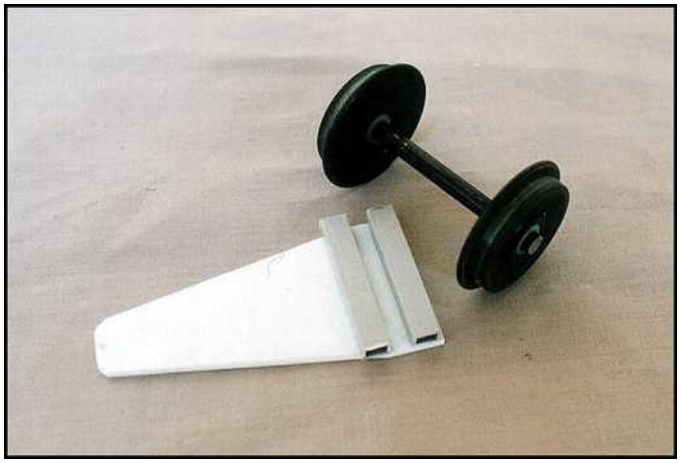
We will need to replicate this channel idea for your superstructure elements to work. The 35x9mm channel that BBT uses is a custom extrusion, and will not be available in shops that stop aluminium sections. However a similar channel idea can be made using two lengths of 9mm equal angle, with a central plate of 2mm thick, 31mm wide styrene added between the angles, forming the channel. A 2nd layer of 2mm styrene is sandwiched to the bottom of the spacer to enable the bottom of the channel to be smooth.

Repeat the same method for the tender frame and bolt the two channels back to back per above. Use the PDF to work out the channel lengths, location of the 30mm hole for the Hartland motor pivot, and holes for the back-to-back bolting of the channels.

The Pilot Truck

The pilot truck is made following the PDF templates in the DIY chassis set. Use a Bachmann or LGB metal wheelset as the pilot wheel, use two lengths of Plastruct ABS SHS either side of the axle, and then bolt the cover plate on.

The truck is assembled like this:



The pivot for the pilot truck will be a vertical 4.6mm x 4.6mm ABS Plastruct SHS mounted vertically on the front spacer of your DIY chassis. Just bolt the SHS to the center front of the forward spacer. Then insert a bolt through the truck and screw into the hollow centre of the SHS.

The Tender Truck

Jens Lasch of Germany some time ago wrote up a short article on building your own tender truck for the Mason. We've included his article in this chapter; please refer to it if you want to make your own tender truck.

Also note that the BBT cast metal RTR tender truck will be available for sale on its own once the BBT chassis are rolling out.

In addition, we're looking at getting a laser cut styrene tender truck kit together, with the laser cutting being done by Rick Raively. Keep an eye open for that option.

From here on:

The instructions from the normal MasterClass will see you through.

A special thanks to Phil Jensen for coming up with this very simple chassis design, and for supplying the sample.

Good Luck!
David Fletcher & Philip Jensen