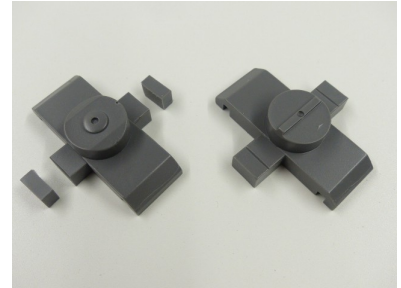


1.

Sand the back of the side frames and brake shoes on a flat piece of sand paper of about 80 - 100 grit. Then buff off with some abrasive pad if a smoother finish is preferred. Bogie main blocks being made for 45mm can be left as supplied, but If making for 32mm, you can cut off the outer portions of the bogie wings to the scribed line. For a wider looking bogie on 32mm you can leave them on.



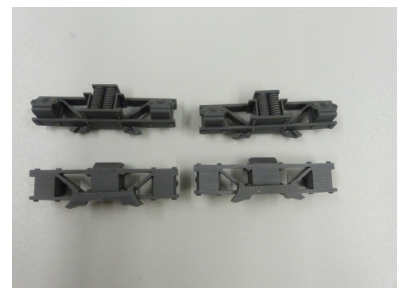
2.

With a small file, file the ends of the pre-cut tubes smooth and deburr the outer edges. With a scalpel, deburr the inner ends. Assemble the wheel sets making sure the axle has been oiled (auto motor 10-40 oil is very good) and the back to back is set to the correct gauge for your rails.



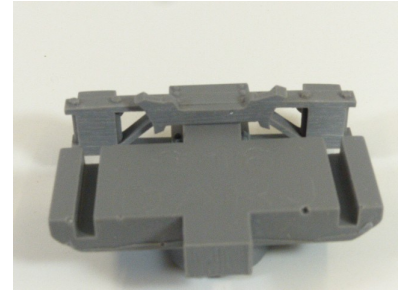
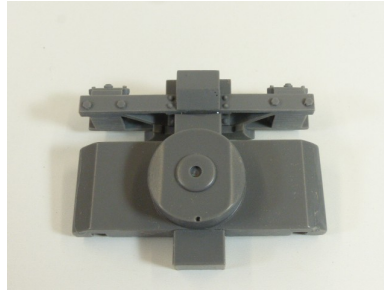
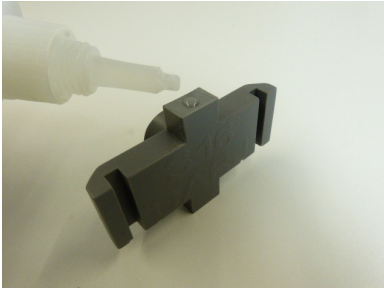
3.

Put a small amount of glue onto the middle section of the brake shoe casting and clip the shoe casting onto the back of the bottom of the side frame casting using the grooves cast into the shoe. Make sure the bottom of the shoe and frame casting are flush.



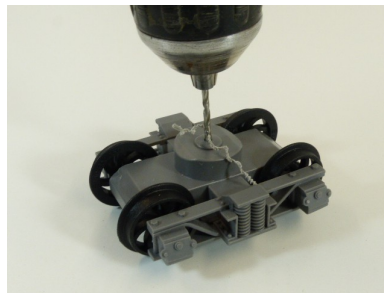
4.

The shoe casting will have created a step in the back of the side frame, the bogie wing fits into this step. Put a small amount of glue onto the end of the bogie body wing and glue the bogie side frame into place. The wing should be lined up so it's exactly in the middle of the side frame, the wing and the back of the spring casting will line up and the brake shoe step will set the height.



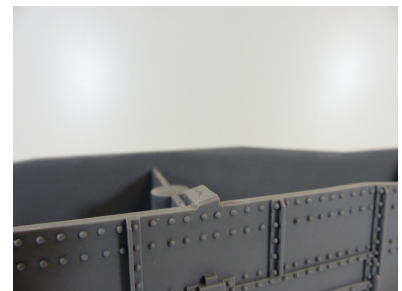
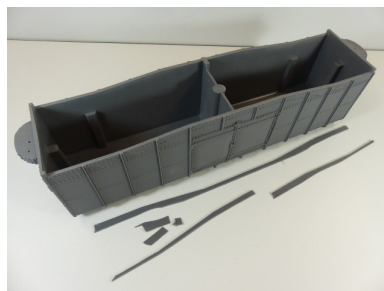
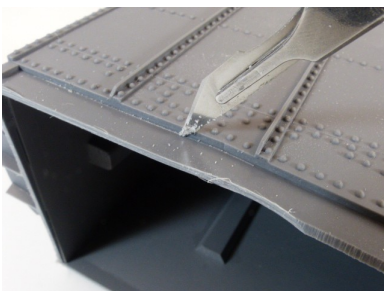
5.

Clip the wheel sets into place, make sure the axle tubes are pushed fully to the bottom of the axle groove. Put a **SMALL** spot of glue onto the middle of the tube, just enough to hold the wheel set in place. You could use hot glue, epoxy or thick super glue for this if you don't trust yourself not to let glue run into the axle tube! Drill a 2.4mm hole into the middle of the main bogie body for the fixing screw. The 'bar top' bogie is to control body roll and the 'ball top' bogie is for track compensation.



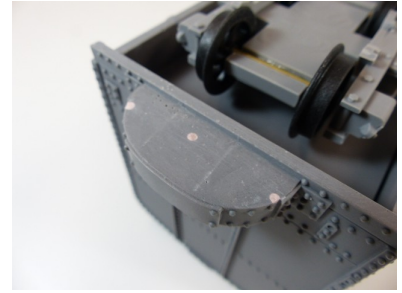
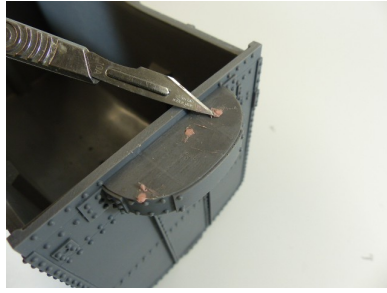
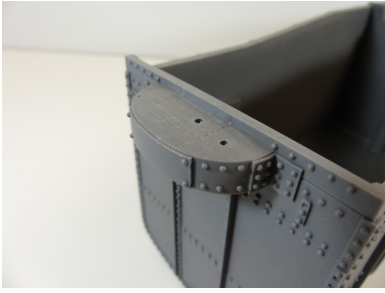
6.

Remove the flash from around the bottom of the body casting with whatever tool you are most happy with. We find that scribing about 5 times with the **BACK** of a scalpel blade and simply snapping off is the cleanest and best way. **MAKE SURE YOU DO NOT REMOVE THE SLIGHT ANGLED CASTING (brake mounting) IN THE MIDDLE OF ONE SIDE OF THE BODY.** Once the flash is off, you can clean up by using the scalpel as a scraper, finish off with a sharp file. Make sure you cut off all the flash on the middle bulkhead and bottom of the buffers.



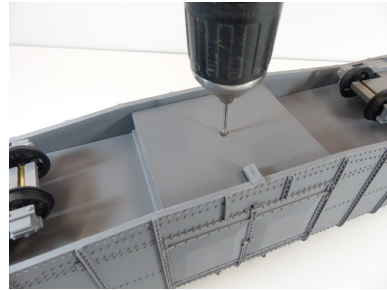
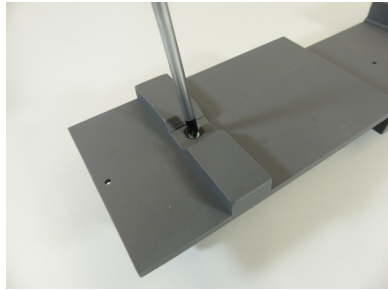
7.

Due to the limitations of the way we cast, you may have a few air bubbles on the underside of the buffer castings. This is normal and is not a defect in your model, they are very easily filled with car body filler and sanded or cut back flush.



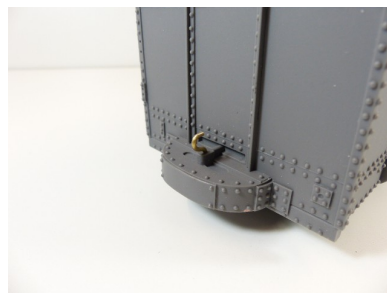
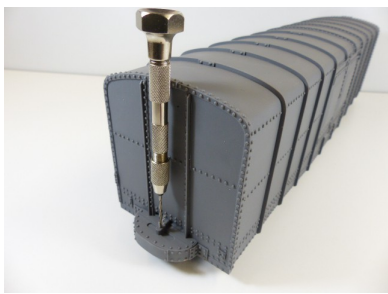
8.

Fit the chassis casting into the bottom of the body making sure the slot in the middle of the chassis is over the brake mounting. With a 2.5mm drill, drill out the three fixing screw holes. Screw the bogies onto the chassis. The 'bar top' should be free to move round and front to rear, but NOT side to side as it is to control body roll. The 'ball top' can be as free as you feel happy with as it is to compensate for track movement. Put the chassis onto the body and screw the chassis into place with the three fixing screws. Do not over tighten the fixing screws, they only need to 'nip' the chassis and hold it in place!



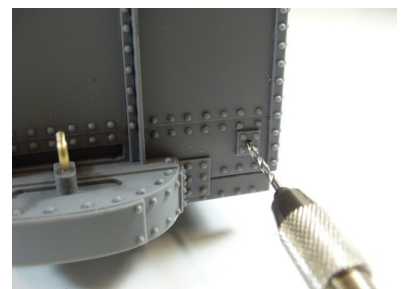
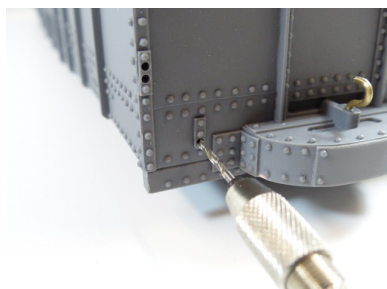
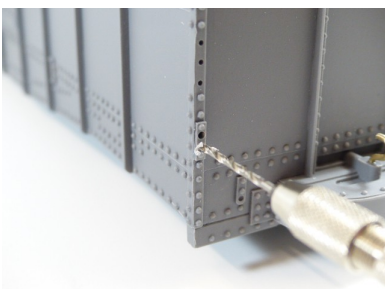
9.

At the marked points, drill 1.7mm holes into the buffers. Bend up a piece of brass wire into the type of hook you like to use and glue the hooks into place.



10.

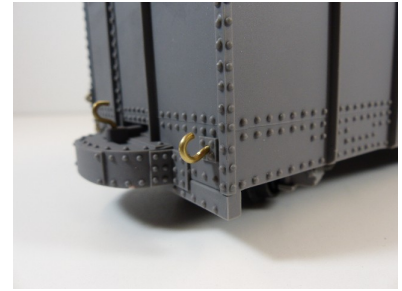
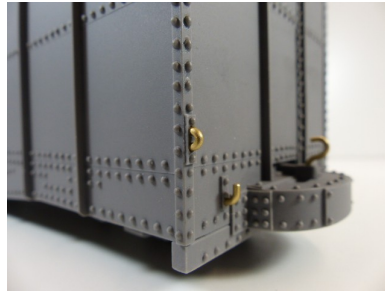
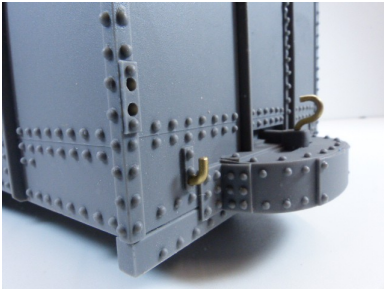
At the marked points, drill 1.7mm holes into the wagon ends for the safety chain fixings, four holes per end.





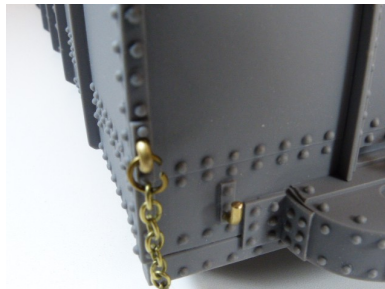
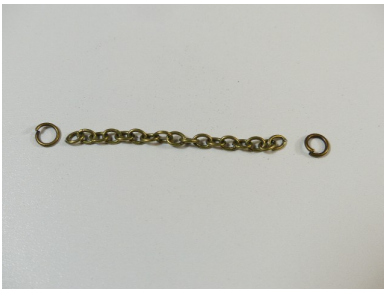
11.

Using the brass wire, bend up the 'U' to hold the safety chain fixing. Bend up a ninety degree angle for the safety chain storage hook. Bend up a nice hook shape for the connecting safety chain hook. Push these parts into the correct holes and glue them into place. We find putting a small amount of VERY thin Super Glue (Zap pink Super Glue is good) onto the tip of a scalpel blade is the best way to control the glue. You can't put more glue than is on the end of the blade and you can very precisely control where the glue goes!



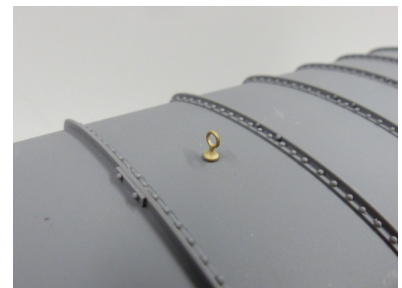
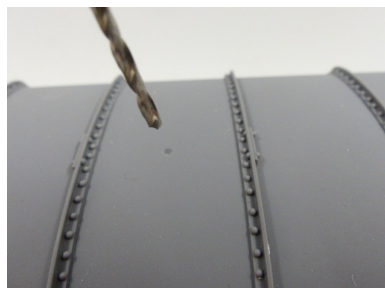
12.

Cut the larger chain in half, approximately 17 loop lengths is good, but you may prefer a different length to make two safety chains. Fit an eyelet onto the end of safety chain and hang the safety chains off of the left hand 'U' on the wagon ends. The other end of the safety chain hangs from the 'hook' to the left of the buffer on the buffer beam.



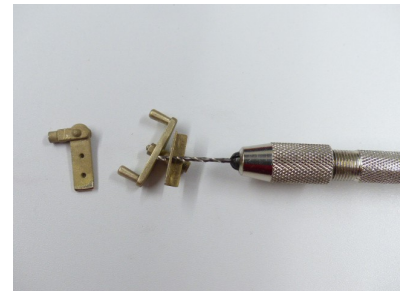
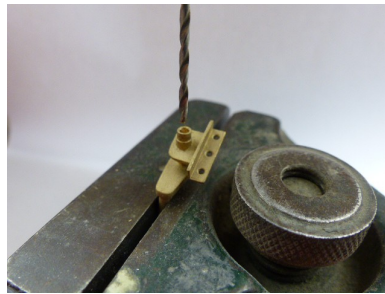
13.

Cut off the bell cable hoop from the brass casting. Drill a 2.7mm hole in the marked position in the middle of the wagon roof. Glue the hoop into place. These hoops are for a bell cable that would run the whole length of the train to the locomotive so the locomotive bell can be rung from any point down the train.



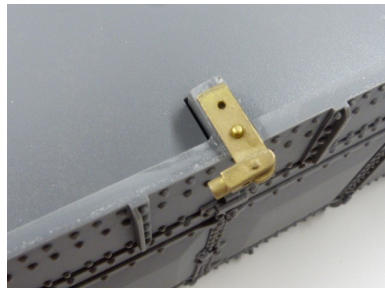
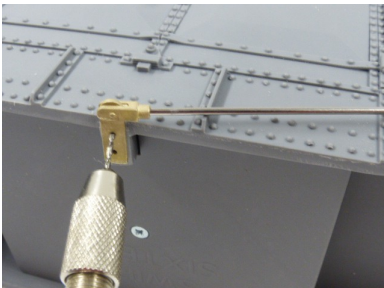
14.

A 1.7mm hole needs to be drilled into the ends of the remaining brake castings about 2-3mm deep. There is a slight concave in these parts so the drill can be guided into the correct position. This job is best done with a SHARP drill and preferably in a pillar drill, but a good battery screwdriver will also work. A quick tip is to fit the drill in the chuck so that only about 5mm is showing. This will stop the drill from bending and snapping. Chase out the 5 small holes in the brake castings with a 1.2mm drill.



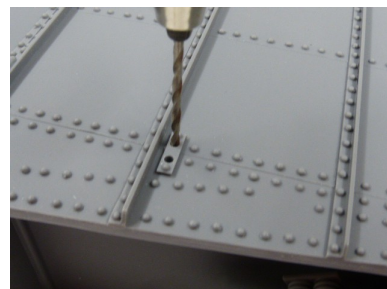
15.

Fit the stainless steel wire into the brake lever so you can judge the correct position of the lever and drill out one of the mounting holes. Glue the lever into place and fit one of the rivets. Once the lever is glued, drill out the second hole and glue the second rivet.



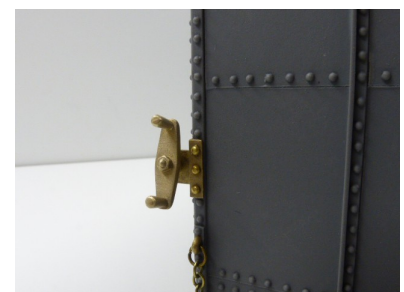
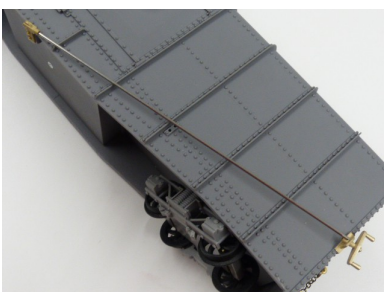
16.

With a 1.7mm drill, drill out the two holes in the body for the brake rod guide. Drill out the three marked holes in the wagon end for the brake hand wheel. A quick tip is to angle these three holes ever so slightly towards the body cavity so there is no chance of breaking through the outer skin of the wagon!



17.

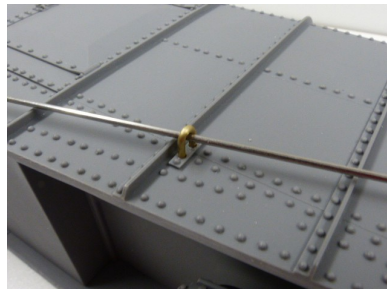
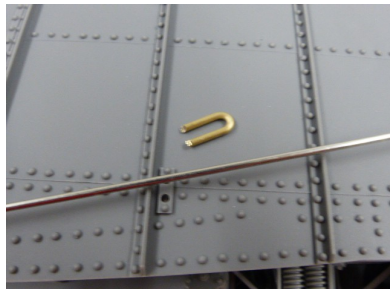
Cut the stainless steel wire, a little at a time, to the correct length so that when it is positioned between the brake lever and hand wheel, the hand wheel is fitting nicely onto the corner of the body. Once all is correct, fit the wire and glue the hand wheel in place using one rivet. Once the glue is set, re-drill the remaining two holes and glue in the last two rivets.





18.

Bend up a 'U' of brass wire and glue into place over the brake rod.



19.

This is very fiddly and you may prefer not to do this last step. Remove the chassis. Strip back the electrical wire and cut 16 lengths of single strands about 30mm long. Twist two together to make 8 double thick 30mm long lengths. Cut the small chain into 4 pieces and fit one length of twisted wire onto the ends of each length of chain. Fold over the 30mm wire and twist again so you end up with 15mm of twisted wire on the ends of each chain length. With a Dremel drill (best tool for the job) drill a 0.6mm hole directly over each door keep pin and one hole somewhere above the pin. The position of the second hole is up to you. Push one end of the twisted wire into a hole and pull tight with pliers from the inside, fold and glue. Push the other end of the chain with the folded wire into the second hole above the first, pull from the inside, fold over and glue.

