

## Grange Farm Tipper Wagon



Side tipping or dumping wagons were extensively used by narrow gauge industrial railways and range in size from small hand propelled examples up to large wagons capable of carrying several tonnes hauled in long rakes by large locomotives (e.g. the Kettering furnaces railway).

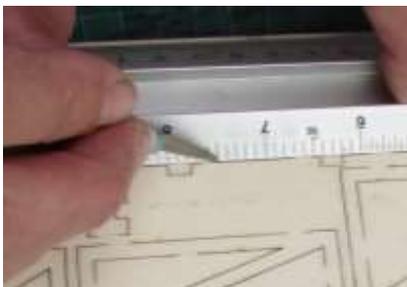
This model is based on the side tipper wagons used at the grange farm ironstone quarry which was part of the Scaldwell

ironstone railway system in Northamptonshire. This is a medium sized example which is big enough to be locomotive hauled but still noticeably smaller than a common carrier open wagon. The prototype was constructed with an oak inside frame and an elm planked body. The body “rocked” sideways on crescent shaped rockers and was retained in place by curved metal slots at each end.

### General Assembly Instructions

Do take time to read through the instructions and understand how the parts fit together before reaching for the glue pot. Where ever possible parts have been designed to be symmetrical but occasionally parts have to be left or right handed so take care to follow the instructions carefully at these points.

Most parts are attached to their frets by small sections of half cuts. To remove parts either cut through the remaining material from the front with a thin sharp blade (e.g. a scalpel) on a cutting mat or turn the whole fret over and with the aid of a steel ruler aligned with the pieces side, cut



lightly with a knife to break through the remaining wood.



DO NOT simply try and twist the parts out of the fret, there is a risk that the part may tear. The laser cutting process will leave a degree of edge discolouration. If you plan to leave you model unpainted now is the time to lightly sand the edges to remove this discolouration.

## Gluing

Wood and MDF parts may be glued with PVA wood glue, Cyanoacrylate adhesive (super-glue) or epoxy resin (Araldite). Beware of vary cheap glues, their joints may fail in time! If you do use a “super-glue”, go for one which takes a few seconds to set rather than an instant “grab” one. This will give you a few seconds to adjust the parts position before it is too late.

Metal parts (i.e. axle bearing tubes) are best fixed with Cyano/super glue.

## 3D Printed Details

The black nylon detail components will need removing from their “sprues” that hold the parts together with a sharp modelling knife or miniature side cutters. If necessary clean any printing dust off the “castings” with a clean toothbrush. “Twizzle” a 1 mm drill bit in the holes in the door hinges and latches to clean out the dust. TIP. Trimming off the sprues can leave little patches of white nylon visible. This can be removed by simply “colouring in” the area with a fine tipped black permanent marker pen. The nylon parts are best glued with a good quality super glue (e.g. Hafix).

## Painting

This is very much a matter of personal choice. As poplar plywood is used for the body, leaving the model mostly unpainted can be very attractive however if you plan to run your trains in all weathers, some form of protection (especially on the MDF parts) will be needed; a couple of coats of acrylic matt varnish from a “rattle can” is easy way of achieving this.

## Suggest Colour Scheme

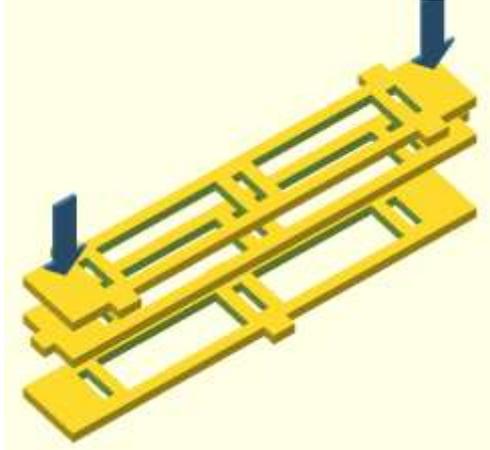
Stain the body parts before gluing together. With a cloth, lightly smear on wood dye bought from your DIY store. Go slowly as the very pale wood absorbs the colour quickly. Alternatively to achieve the silver grey look of weathered wood, stain with very weak mix of black india ink in surgical spirit applied with a small paint brush.

The chassis can be treated and protected with Exterior wood stain. Small tins in a variety of colours are available from your DIY chain store. Apply two to three coats with a small paint brush until you have an even colouring.

## Tools

The following tools are recommended:

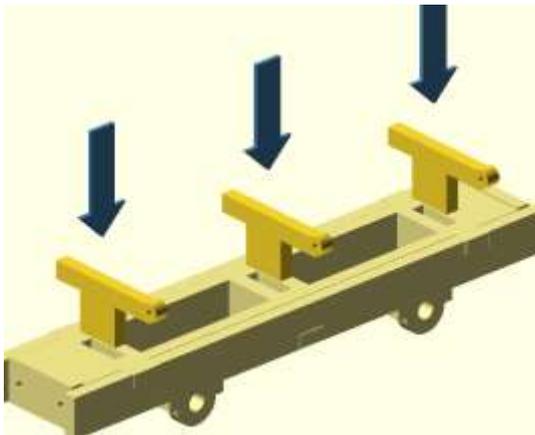
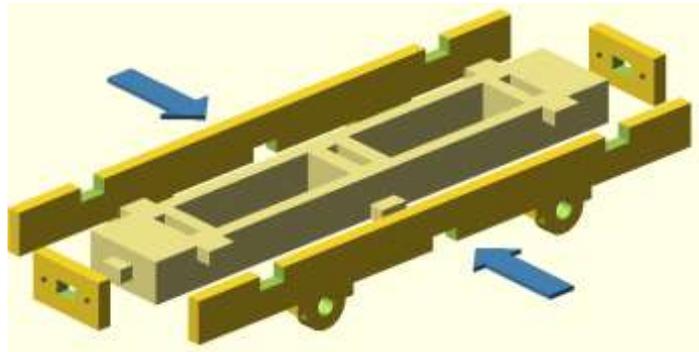
- A sharp modelling knife or scalpel
- 1 mm and 4mm drill bits
- A small file, sand paper or an emery board “nail file”
- A cutting matt
- A small steel ruler
- Some small clamps, bulldog clips or rubber bands
- A round section “needle file”
- A metal working vice with smooth jaws or a wood working vice



### Step 1 - Chassis

PVA wood glue is recommended for these 10 parts or if you want to use a super-glue DON'T use an "instant grab type". Glue the 3 "chassis plates" together. Note the sequence of centre tabbed, no tabbed and end tabbed plates. Make sure the parts are squeezed together properly.

Glue the two sole bars onto the sides and then the two end plates.



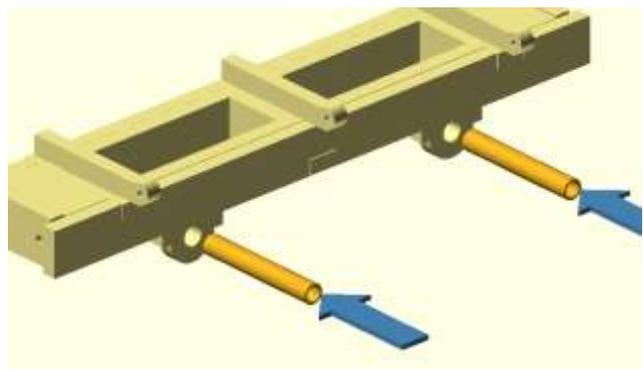
Now glue the 3 cross members into their chassis slots.

The parts should fit together snugly but if necessary clamp the sides to the plates while the glue dries. Suggest you check for square-ness by standing the complete chassis on a piece of glass and ensure it doesn't rock before the glue sets.

Once the glue is dry, lightly file the ends of the locating tabs to remove any remaining edge discolouration.

### Step 2 – Axle bearings

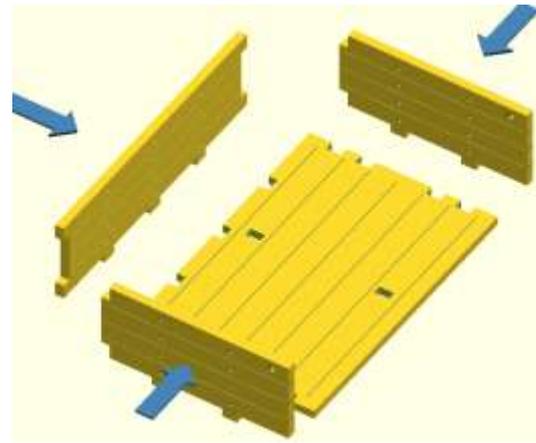
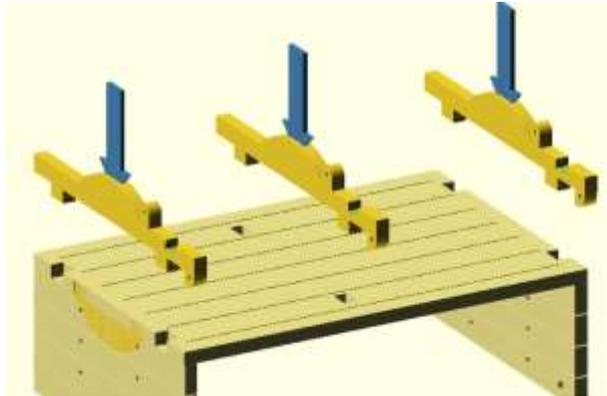
Gently slide the 2 brass bearing tubes into their pedestals, the holes might need easing by "twiddling" a 4mm twist drill through the holes with your fingers. Align the tubes so that they project out about 1 mm each side (don't be tempted to file them flush). Once you are happy with the position fix in place with a few drops of super glue on the inside of the pedestals.



*Now's a good time to paint the completed chassis!*

### Step 3 - Main Body

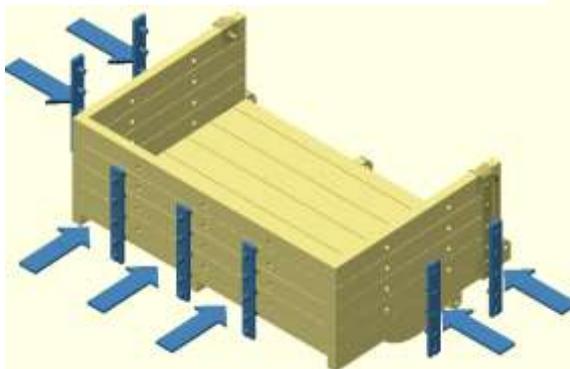
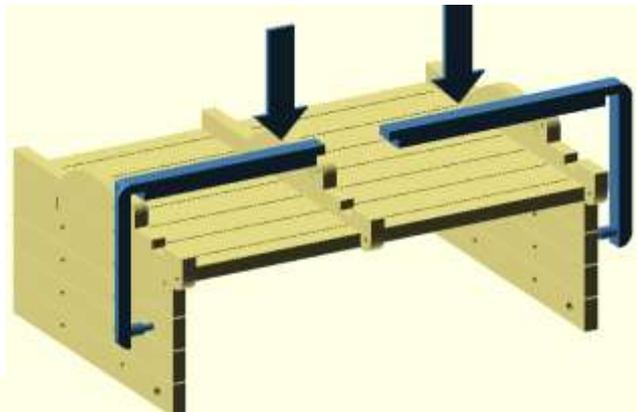
Glue the body ends and the fixed body side to the floor. Either PVA or superglue works well here. Note that the two small rectangular holes in the floor should be slightly to the right of centre.



Glue the 3 floor cross pieces onto the floor bottom.

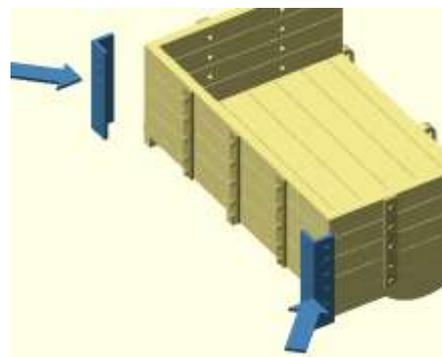
Tip temporarily insert the pivot rod through their 3 holes (but don't glue) to ensure alignment.

Glue the two side braces to the bottom of the body floor and the outside of the body-ends, locating in the cut outs in the cross members and the latch pins through the hole in the body ends. NB One side brace is slightly longer to allow for the central member's slight offset.

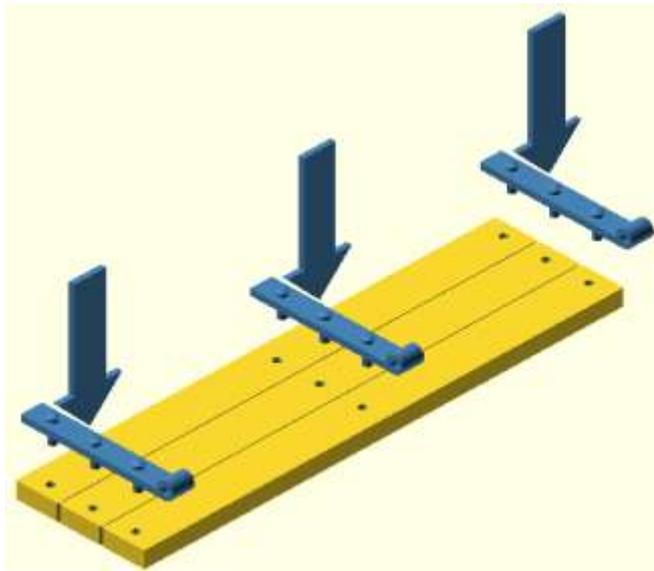


Glue the two corner plates in place.

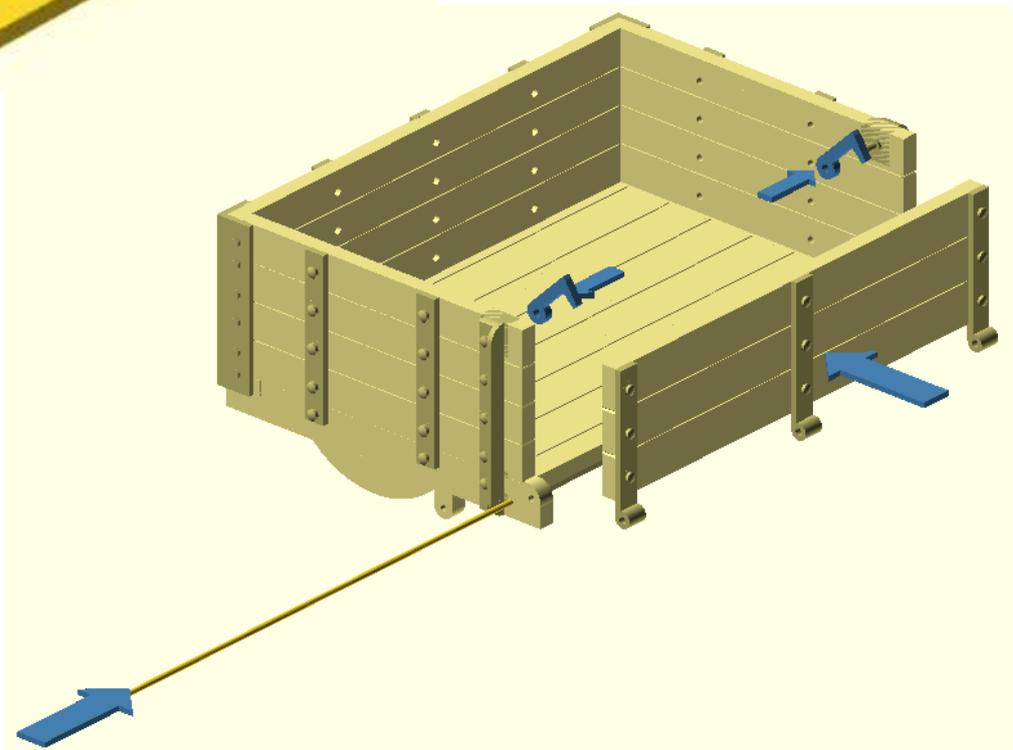
Glue the 7 strapping strips into their locating holes in the body side and end.



#### Step 4 – Door



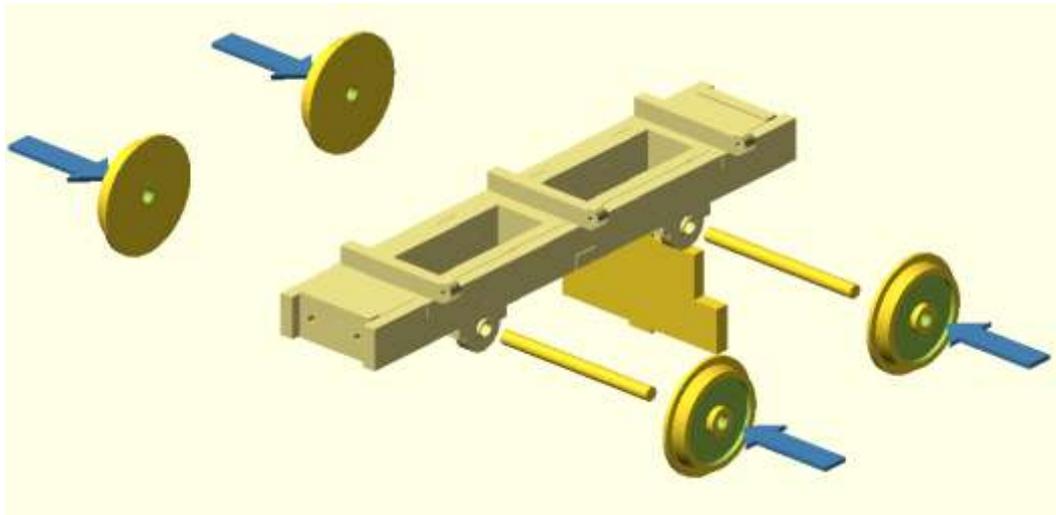
Glue the 3 hinge plates into their location holes in the door.



Locate the door hinges between the hinge holes on the chassis. Slide the long steel rod through all 6 holes. Fix in place with 2 small drops of super glue on the outer ends of the rod.

Now gently “pop” the door latches onto their pivot pins protruding through the body ends.

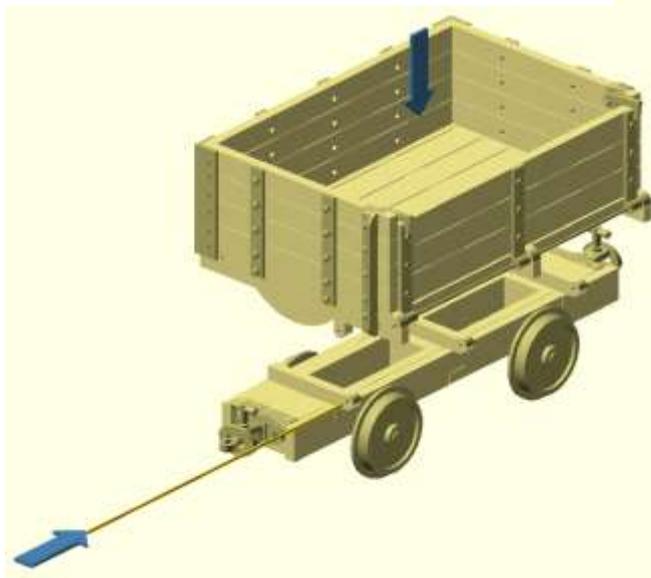
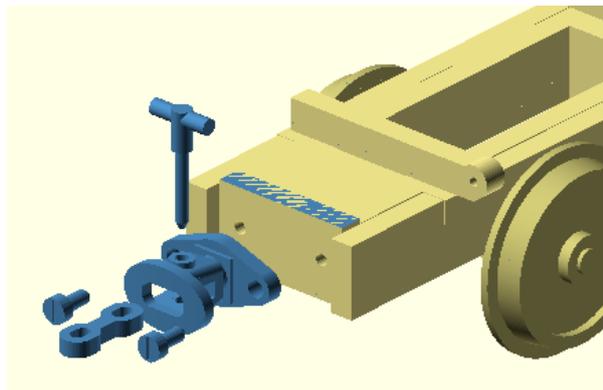
## Step 5 – Wheels and couplings



Push one wheel onto an axle, pass the axle through a bearing tube in the chassis and fit another wheel to the other end. Gently squeeze the two wheels together in smooth jawed vice until the “back to back” distance is 28 mm. NB a back to back gauge is provided in the kit to help get this right. Repeat for other axle.

With a 1mm or 1.5 mm **drill deepen the 4 pilot holes** for coupling mounting screws so that they are at least 5mm deep

Then screw the buffers to the chassis ends with the supplied self-tapping screws.



You can either use the “T pin” and link to couple the wagon or simply loop the supplied 3 link chain of the “T pin” and use as a standard centre buffer.

Finally slide the other long steel rod through the holes in the underfloor beams and chassis cross members to attach the body to the chassis. Two drops of glue on the outer ends should hold the rod in place and allow the wagon body to tip.

Job Done!