



RT Models

# 4mm scale, 009 gauge

## Shotton Steel works/Statfold Barn Railway

### Hudswell Badger 0-6-0DH

#### A Brief History

Statfold's BADGER is one of three Hudswell Badger locomotives built in 1971 for use on the self-contained system serving the hot strip mill stock yard at Shotton Steelworks in North Wales.

The rather unusual proportions of the locos, with a long, low bonnet and a prominent tall cab reflect the origins of the design in Hudswell's narrow gauge mining locos dating back to the 1940s. In mining applications the constraints of the underground loading gauge meant that either the driver's position was open or that a very restrictive cab no higher than the bonnet was provided. In contrast, the surface environment at Shotton had no such restrictions and so a spacious conventional cab was able to be provided.

Interestingly the three locos were supplied under the auspices of Hudswell Badger Ltd rather than directly under the Hudswell, Clarke & Co name. This separate business was the result of Hudswell recognising the need to diversify from being solely a locomotive manufacturer and, in conjunction with joint venture partners, producing industrial and construction machinery as diverse as a novel articulated forklift truck and trench digging machinery for cable and pipeline laying

At Shotton each loco worked with a pair of substantial bogie wagons, each of which carried four steel coils. In 1981 the three original locos were supplemented by a fourth. By this time Hudswell had been taken over by the Hunslet Engine Company but, recognising customer loyalty to the Hudswell brand, Hunslet continued to offer their former rival's products under the original name, so the 1981 loco had both Hudswell and Hunslet works numbers.

Reorganisation of the processes at Shotton ultimately rendered the narrow gauge system redundant and the locos and wagons were disposed of. Two of the original locos and the later replacement survive in preservation, with all three now at the private Statfold Barn Railway near Tamworth.

#### Livery

These was painted yellow when at Shotton Steel Works. "Badger" is preserved in a mid green livery with yellow and black wasp stripes for the rear only and "Tom" the half brother which is slightly different from the other preserved 2 is painted black with Wasp stripes on both front and rear.

#### Tips on Assembly

Thank you for purchasing this kit, I hope you enjoy building it.

If you are new to etched kits these tips will help you with general assembly of not just this but also other etched kits.

- Carefully cut the parts from the fret using a heavy duty Stanley knife on a hard surface or green cutting mat not too close to the required components as this could distort them. The tabs left on can be filed carefully with a needle file or a pair of snips which Xuron do some shears specially for cutting etched parts.
- When forming bends on half etched lines always try to use something to help form them like long nose pliers or a vice. Usually with most kit's the fold line is on the inside unless otherwise stated in the instructions, some lines on this kit like the bonnet tops represent joins on the real locos so please do not mistake these for bend lines. Scoring these before folding also helps with the folds.

For those who haven't soldered before, it isn't as hard as you may think and is something I recommend in doing, we all have to start somewhere. A few simple tips here should help you to begin with.

- Start by practicing on scrap pieces of brass or nickel silver, this way you won't ruin an expensive kit and it's a good way to gain the skills, in this case use the outside of the fret.
- A Soldering Iron capable of the job is a must, in the case of this kit a 25 iron is very capable.
- A clean tip is also a must as a dirty tip won't allow the heat to transfer well, this can be cleaned by wiping it on a damp sponge usually supplied with soldering iron stands or a tip cleaner from Antex.
- The parts you wish to solder should also be cleaned like with fine wet'n'dry.
- Also the use of flux is recommended as this will help the solder flow much easier like Fry's Powerflow flux or something from the Carrs range.
- Pre-tin some parts before attaching to the main model as this makes life easier for attaching and makes a cleaner. The term means applying solder to the part prior to actually soldering to another part/object.
- When finished soldering, wash the flux off with warm water and an old toothbrush, don't leave any on the model as it won't allow the paint to adhere and can be corrosive in some cases.
- Try to avoid using electrical multicore solder, use plain solder like 145 or 188, again this is available from Carrs or Eileens Emporium.
- Try not to use more solder than necessary as this will create more work in cleaning up the model and can also flood the detail.
- Cleaning the finished model can be done with wet'n'dry and a fibreglass pencil, I find it best doing the latter in a bowl of water as it stops the fibres going everywhere of which they can hurt and irritate.
- Also clean the model with an old toothbrush and cream cleaner prior to painting as this will help remove grease and dirt before painting.

## **Instructions**

### **Footplate**

With the chassis etch, punch out the half etched holes on the parts to represent bolts and rivets. Now remove part 1 the footplate and cut out the centre pieces and put away for later. File off the tabs.

Drill out the 6 holes with a 1.0 mm drill as these will take the 14BA nuts and bolts later. Fold up the front chassis mounting so it forms an open box shape. Then fold the rear chassis mounting flat onto itself with the half etched line outside the fold.

Now remove part 2 the front bufferbeam assembly from the fret and fold this up with all the half etched lines on the inside and attach to the front of the footplate making sure it's flush all the way round.

Now remove part 3 rear buffer beam assembly and fold this up. Take part 4 the cab step top and solder this into the groove of part 3 which should leave you with a solid box.

Take part 5 and fold this up 90 degrees and insert into the slot of part 3.

Now take part 6 and solder this on top of part 4.

Take part 7 the checkerplate cab floor and file down to fit snugly between the sides of part 3, also file the ends down so when inserted it leaves a gap of 1mm from the edge. Once you are happy with this, fold the end down so it forms a ramp and solder into place.

Now solder part 8 the rear bufferbeam to the back of part 3 where the holes are, these help with soldering large laminations.

Now solder the part 3 unit onto the rear of part 1 footplate with the bufferbeam flush with the back.

Take part 9 false chassis sides and fold into a U shape, solder this to the footplate centrally butted up to part 3 cab step assembly.

Now at this stage check that the Grafer 03/04 chassis sits level under the footplate assembly.

If it doesn't take part 10 and solder this under the rear mounting bracket, now check that the footplate is level on the chassis if so you need to drill out the holes on this match those already drilled out earlier to accept the 14 BA screws.

Take part 11 and 12 and puncture the rivets on these. These have been designed to work with the possibility of a scale chassis should you wish to build one, to fit the Graham Farish chassis the ends will need to be trimmed down for it to fit.

Solder these to the backs of part 2 front buffer beam unit with the rivets nearest to the outside edge.

Now solder the nuts onto the tops of the 4 holes on the areas of the mounting areas, use a cocktail stick screwed into the nuts to both locate them and to reduce the chances of solder creeping into the threads.

Clean the chassis of flux with warm water and an old tooth brush.

Once dried, test the fit of the footplate assembly onto the Graham Farish chassis by screwing the bolts in to check it all fits.

On the real locos, there is an extended section of the rear buffer beam coupling, these are provided by parts 13 which need to be laminated, 3 should be sufficient but there is a fourth if you want to extend it more. These should be attached centrally.

Next fold up part 14 the coupler pockets and solder these to the ends of the bufferbeams to the height of your coupling standard.

Parts 15 are provided as 2 different lengths of couplings, choose which is best and fold these up making sure they are soldered well, bend the small hook at the tops slightly in to help with coupling to your rolling stock.

Attach these into the part 14 coupling pockets with a pin and adjust them if necessary for the correct height.

## **Main body structure**

Take part 20 the cab and before folding it up, check the clearances of the bottom extensions within the cab floor, if they extend then file these down till the bottoms of the cab sit flush on top of the footplate.

Originally the kit was designed to have the footplates fixing holes tapped to accept the original Graham Farish screws, however it was decided during production to change these for 14BA brass nuts and bolts which as a consequence the nuts may foul the cab. The cab front will need small slots filed into the bottoms to clear the nuts.

Once you are happy with this, fold up the cab and solder in place making sure it's square.

Now take part 21 main bonnet structure and fold this up into a U shape. Attach this onto the footplate into the slots and butted up against the cab.

Take part 22 the rear bonnet top and part 23 front bonnet top and anneal these, be very careful when doing this not to burn yourself.

With part 22, form a very gentle curve across the whole of it matching the top of the front bonnet.

Now with the use of some long nose pliers, form the sharp corners till it fits snugly onto the half etched area on the top of part 21 main bonnet structure. Butt this up against the cab and fix in place.

Now repeat the same procedure with part 23 the front bonnet top but this time making sure it fits perfectly over the top of the bonnet front of part 21 which you can use this as a gauge.

Once you are happy with its fit, fold down the 2 small brackets on the back and solder the bonnet top in place.

Now the parts 32 the angle irons and solder these to the bottom of the bonnets on the right-hand side (closed cab side) making sure the one upright one is flush with the bottom of the footplate and not sitting on top of the other as this will cause problems when attaching the bonnet doors in a moment.

If you wish, you could replace these with 1mm L section brass from Eileens Emporium as this could make life easier?

Now take parts 33 and repeat the other side making sure they are butted up to the cab.

Now fit either part 24 plain front bonnet or part 25 chequered front bonnet depending on which loco you wish to build.

You will now need to decide on which versions of the engine bonnet doors you wish to fit according to your prototype.

Row 28 and 29 bonnet doors match part 24.

Row 30 and 31 bonnet doors match part 25.

28 and 30 after the right-hand side (closed cab side) and 29 and 31 for the left-hand side (open cab side)

With these doors pre-tin beforehand as it makes life easier and cleaner soldering job.

With the right-hand side, start from the front what your way backwards using the parting lines in the bonnet tops as points to locate them centrally.

Now with the left-hand side, butt the first piece up to the front, then choose either part 25 or 26+27 for the compressor compartment and fold these up. If using 26 and 27 you would need to cut part 27 to fit within 26.

Now attach either 25 or 26 to the body side make sure the right-hand edge is in line with the parting line on the bonnet top. Continue with the bonnet doors alongside again using the parting lines and centre locator guides.

Now fold up part 34 and install inside making sure that it goes fully to the bottom of the cab floor. Now fold up part 35 and attached this centrally on top of part 34. On the Left-hand side of part 34 solder a small piece of brass wire onto this attach part 38 the hand wheel. The right-hand side are a couple of levers which can be fabricated from 0.45 mm brass wire.

Now fabricate from brass wire handrails on both sides on the outside of the cab.

Solder parts 40 to both the front and rear of the cab for the spectacles, solder part 41 for the side spectacle.

There is provided part 43 which is the original type window for the closed side of the cab which is optional.

Solder part 42 the sliding window inside with the thickest edges away from the centre pillar.

Part 39 is also optional as one of these locos had a girder fitted with in the Rear such represents the outside of it which should be just shy of the bottoms of the spectacle rubbers on the rear of the cab.

Take part 46 Seat, fold this to a 90° angle and solder this inside the cab.

Now we can turn to detailing the top of the bonnets. Take two of parts 48 and solder these over the hole nearest the cab and the hole on the left-hand side towards the front.

Take one of part 49 and solder this to the hole on the right-hand side towards the front.

Take one of part 52 and solder this onto the small dimple on the oval area on top of the front bonnet to represent the radiator filler cap.

The mushroom events they goes into the right-hand large circular hole top of the front bonnet would need to be made from a short length of 1 mm brass rods and 1.5 mm of brass tubing soldered onto the top. The short piece of brass tubing can be cut by gently rolling the tubing along a flat surface with a Stanley knife and it will naturally cut itself when you rock back and forth.

File the top down so it slightly curved and solder this unit through the hole, the height does depend on your loco it can be slightly above the bonnet top or resting on it.

The exhaust does vary on these locos. The two that have been restored at Statfold Barn Railway has a short length of exhaust running out the rectangular opening. The one that has not been restored in yellow livery has extend across the whole length of the bonnet at a 45° angle with a exhaust silencer. The silencer can be represented from the piece of brass tubing at about 10mm in length.

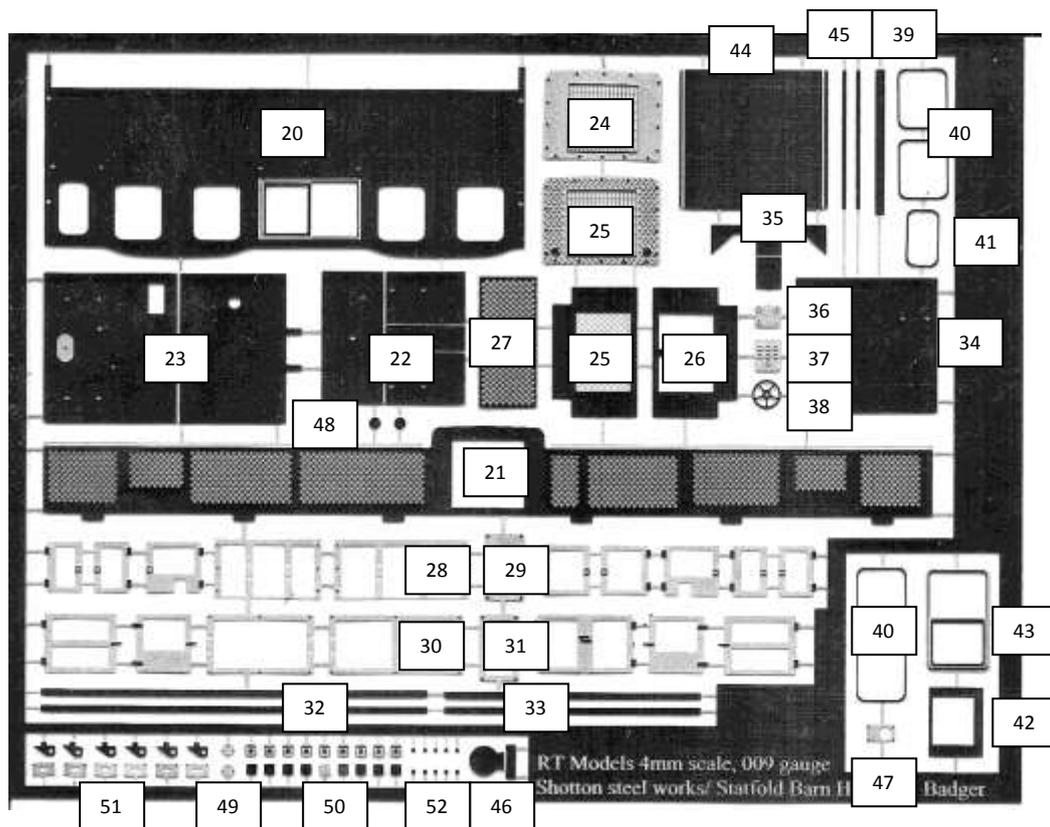
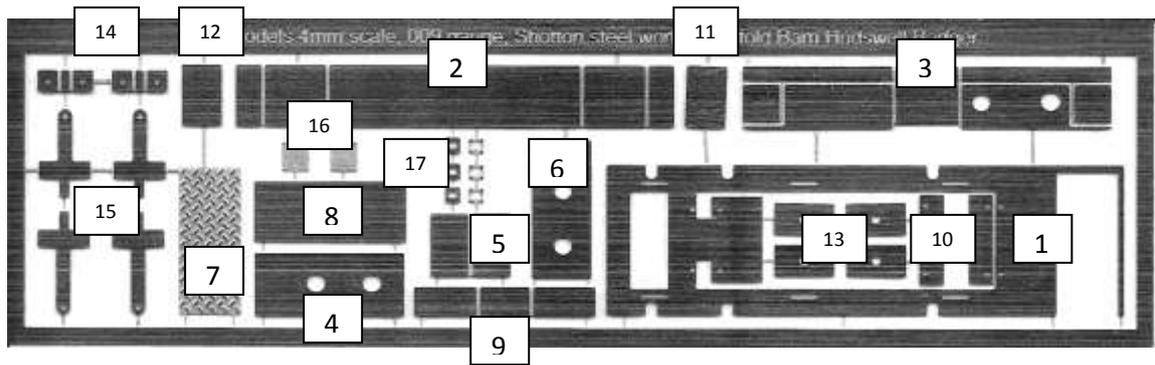
There is the option of a small cover plate part 47 to cover over the exhaust opening which badger Statfold Barn carries. Order is left to do now is if you decide to, sold the parts 50 headlights to the front and back of the loco is recommended on mountain the half etch onto the full etched squares to give them some relief.

Lastly, with parts 51 the lifting lugs, separately from the model inserts the loops into the rectangular brackets and solder these up. Then file the back so that the tabs are completely flush with the backs of rectangular sections and then solder these onto the front and rear buffer beams making sure that they are towards the edges at the bottom with the hole towards the top.

Finally, take part 44 the cab roof and slightly curve the sides to match the profile of the cab top with the half etched lines on the top following the length of the loco.

Now solder parts 45 the cab roof rail strips into these half etched lines.

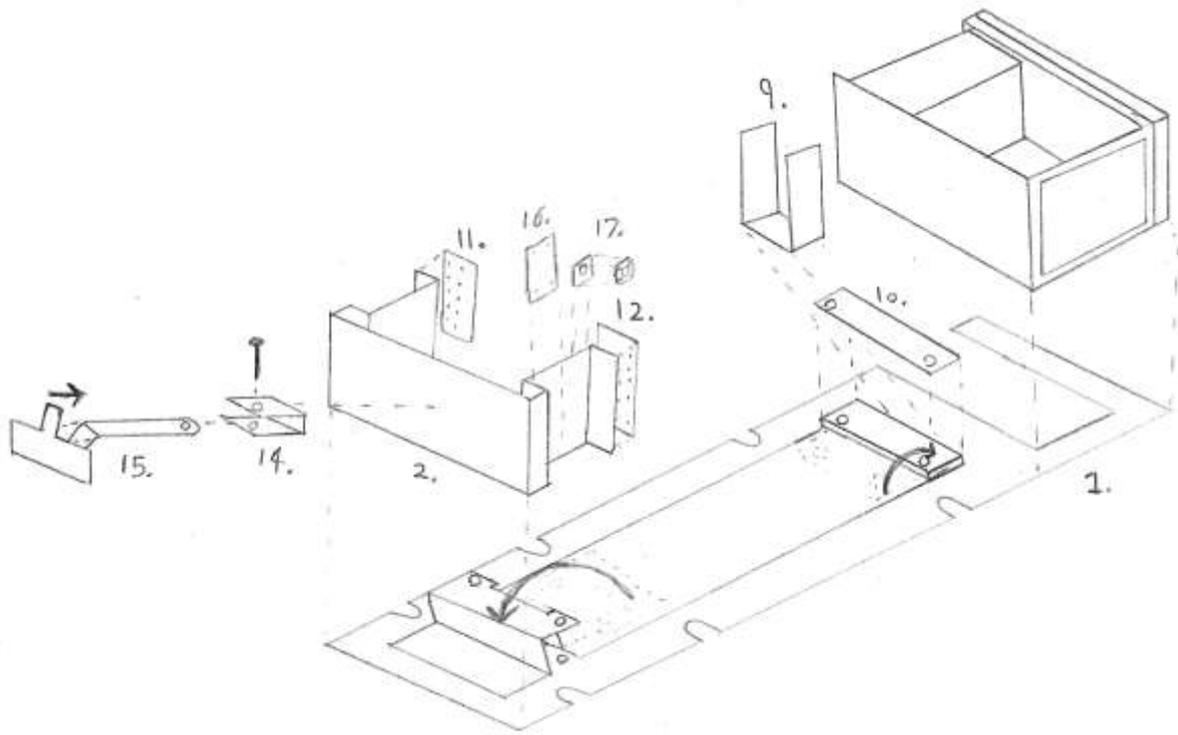
## Parts identification



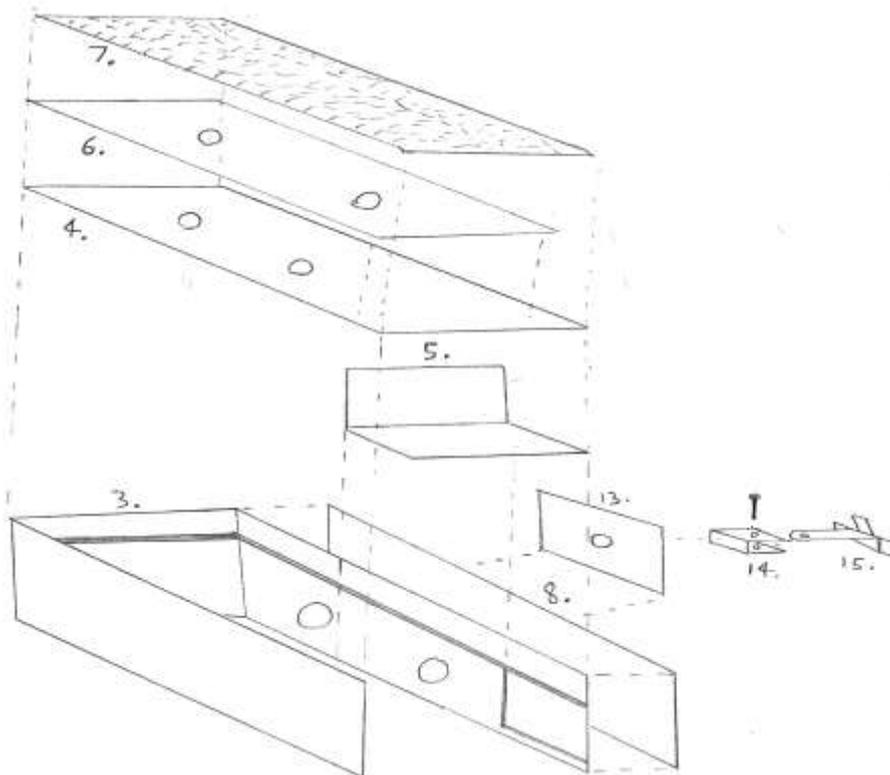
### Parts List

- 1x Footplate etch
- 1x body etch
- 4x 14BA nuts
- 4x 14BA bolts
- 1x 1mm brass wire
- 1x brass tubing
- 1x 0.45mm brass wire
- 3x silver plated pins

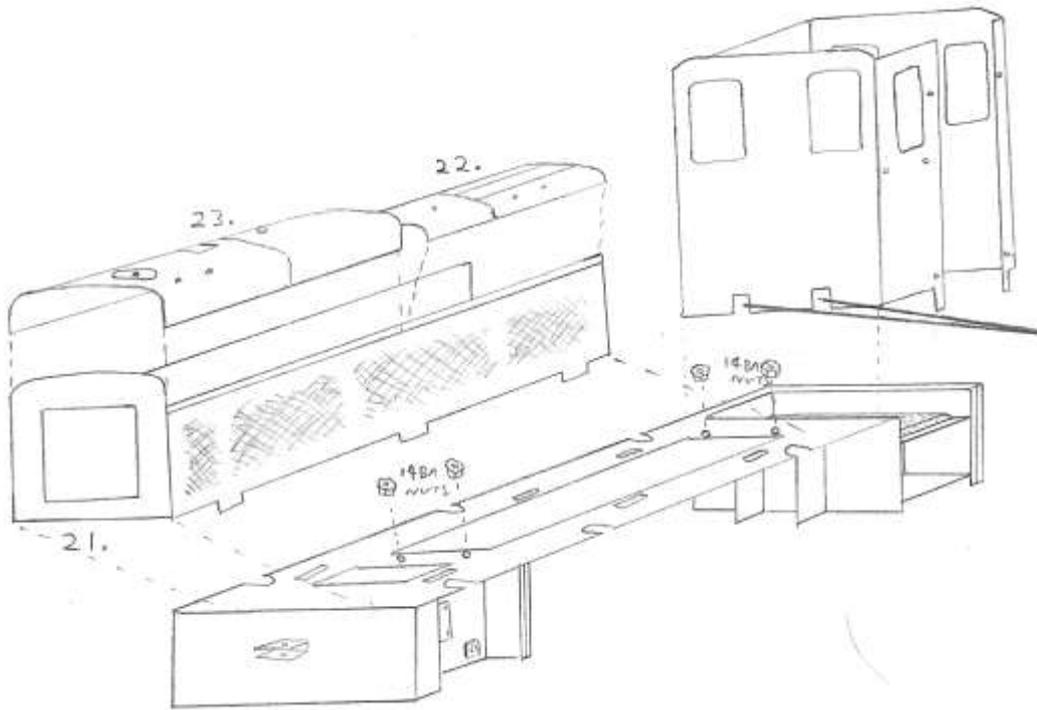
**Footplate, looking underneath**



**Rear cab step assembly**

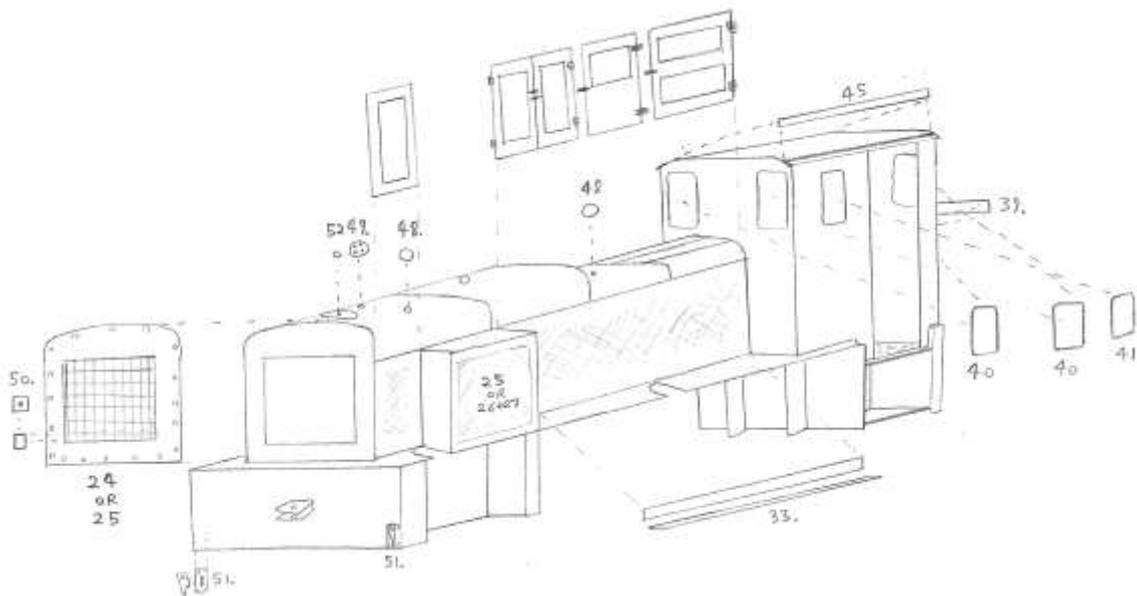


## Main body assembly

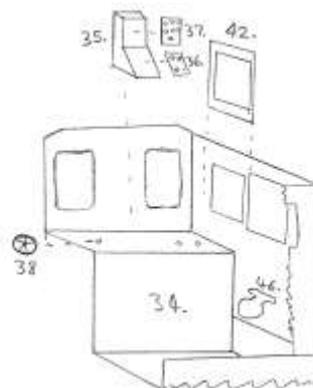


If using the nuts provided to secure the chassis, slots will need to be filed into the base of the front of the cab to clear them.

## Body detailing



## Cab Detailing



Prototype photos





