

Bachmann SR N Class Tender Chassis

Introduction

This set of instructions covers Rumney Models kit X.16A. This is designed to produce a CSB sprung replacement EM or P4 subframe for the Bachmann N class tenders. The subframe kit can be built to suit both the 3500 gallon and 4000 gallon tenders.



General Notes

Read through the instructions first and familiarise yourself with the components. Drawings and photographs are included to attempt to make the waffle clearer.

Check all holes before removing parts from the fret. The drawing process for etching if you use a CAD program as I do is extremely accurate but the actual etching process itself not an exact science. If the fret is slightly over etched, then there is no problem but if they are under etched the holes will need enlarging. I find that this is easiest to do before removing parts from the fret. The hole sizes will be noted at the appropriate points. Use an appropriate drill or a tapered reamer.

Remove one part at a time from the fret.

The instructions will assume that tags connecting parts to the fret will be cleaned up on removal of a part unless it is specified specifically in the instructions not to.

Very important:

All fold lines are through 90° with the fold line on the inside unless stated otherwise.

This means that when I say fold something up the folds should be made through 90° with the fold line on the inside. If the fold is to be done in any other way I will say so.

Everyone has their own soldering methods. I now use an Antex 50W temperature controlled soldering iron with predominantly 145° solder and La-Co paste flux.

Tools

The following tools may be useful when constructing the wagon:

- A selection of drill bits including 0.3mm, 0.45mm, 0.5mm, 0.6mm & 1mm
- A selection of tapered reamers in the range 0.3mm-2mm
- A smooth jawed vice
- A selection of needle files
- A piercing saw with fine blade (size 6/0 recommended)

Materials List

The following items are included with the kit:

150mm x 0.009" Steel spring wire

2 x Cast vacuum cylinders

30mm x 7/32" x 3/16" Tube for reservoirs on 3500 gallon tender subframe

You will need to source some other items to complete the kit.

Wire

You will need several sizes of wire are needed to build the underframe. Eileen's Emporium are good source for these, and they do a mixed sizes pack if you don't want to buy large quantities.

- 0.45mm - Tender brakegear

Nuts & Bolts

The chassis has been designed to use the following sizes of nuts and bolts. Again, Eileen's Emporium are good source for these though they are not the only ones.

- 10BA - Loco to tender couplings

The fixing between the tender body and the subframe is designed to reuse the screws that come with the Bachmann model.

Wheels

Alan Gibson Workshop does suitable wheels for the N Class tenders. You will need the following:

- 4S47 - 3'10" 10 spoke

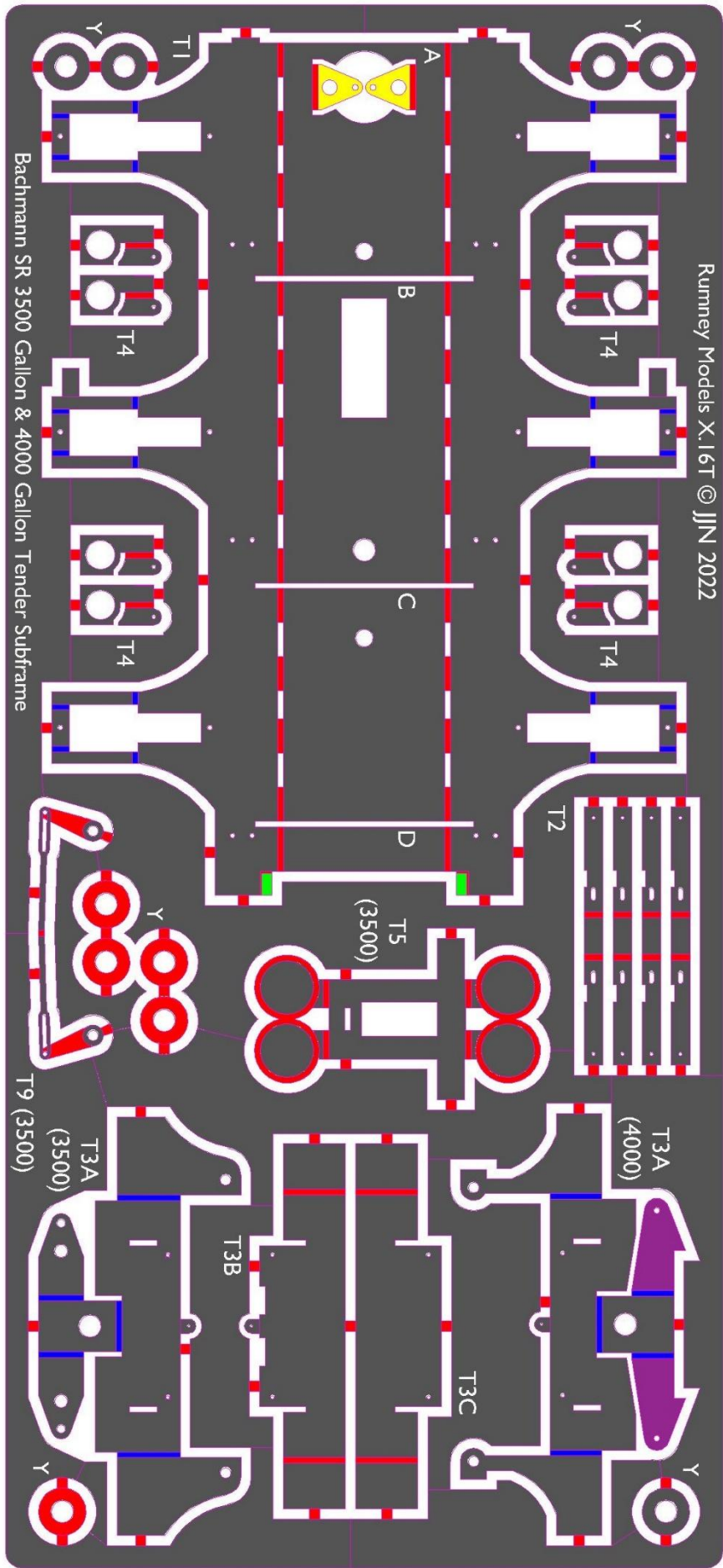
These codes are for P4 wheels. For EM replace the letter in the code with an E e.g., 4E47. As they come the wheels will have a 2mm axle.

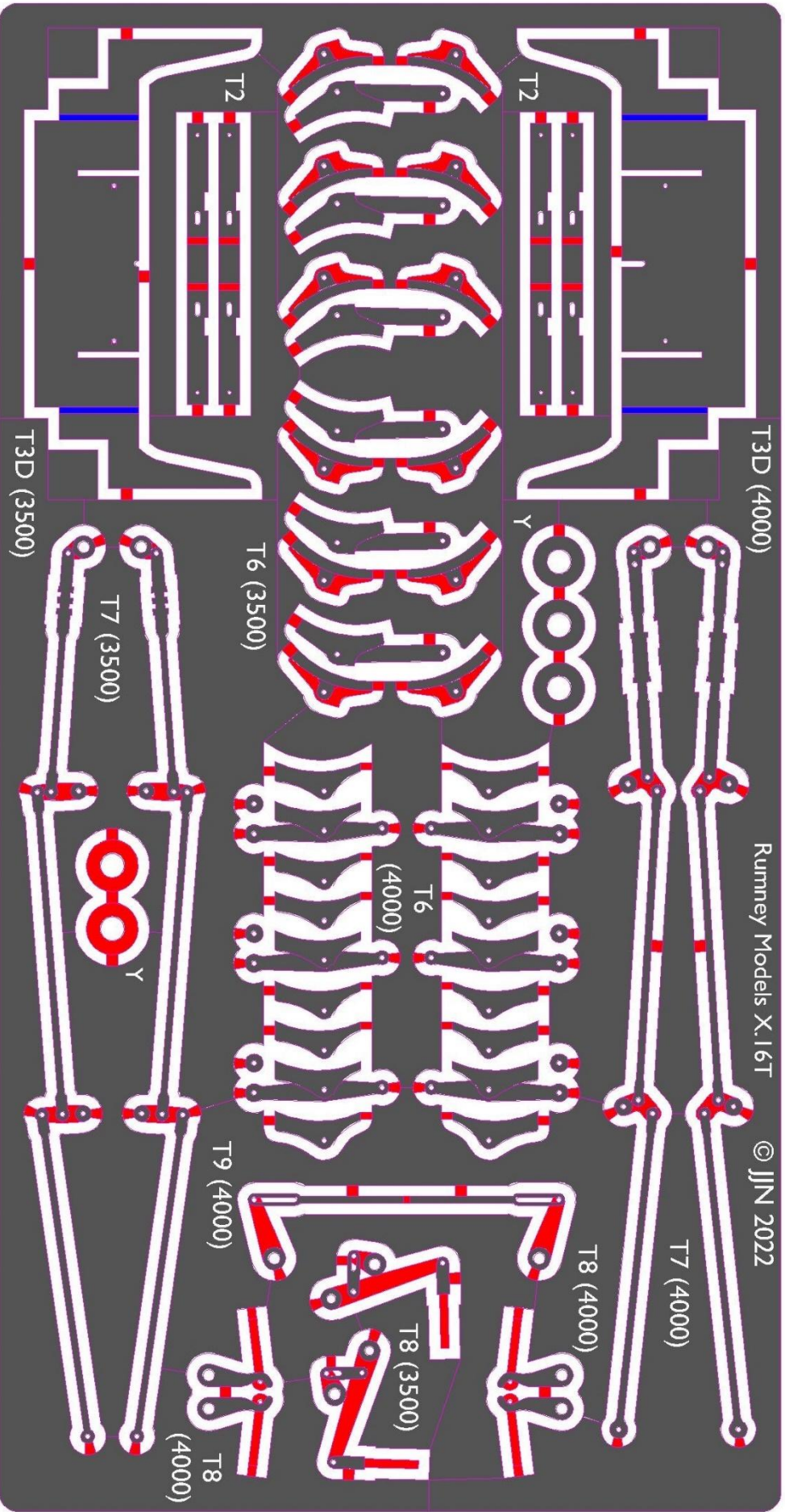
High Level Bearings

The tender subframe has been designed to use the High Level Kits bearings that come with their 'hornblocks'. You will only need the bearings, not the etches that accompany them.

You will need the following size; bores will need suit the axle diameter of your wheels:

- 3 x MiniBlox



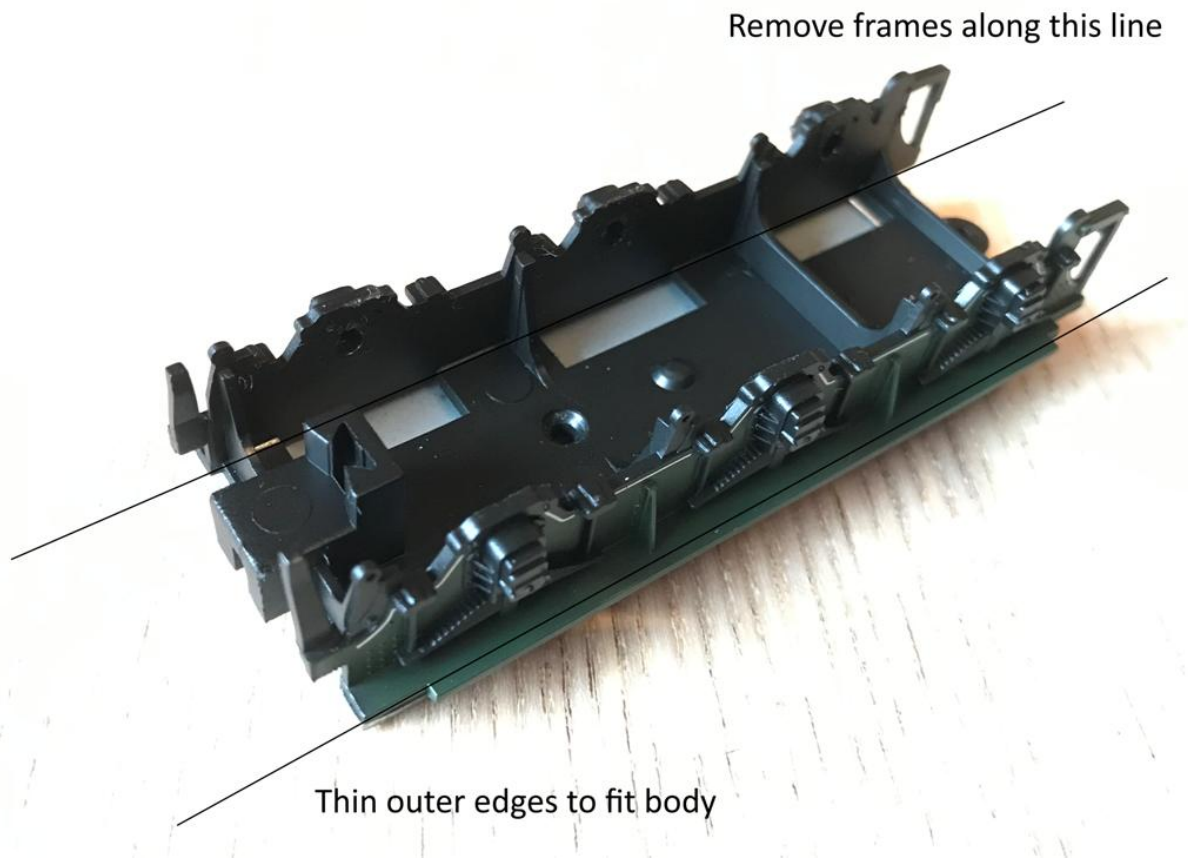


Tender Parts List

- T1 - Tender subframe
- T2 - Tender hornguides
- T3A (3500) - Front frame spacer (3500 gallon tender)
- T3A (4000) - Front frame spacer (4000 gallon tender)
- T3B - Frame spacer
- T3C - Frame spacer
- T3D (3500) - Rear frame spacer (3500 gallon tender)
- T3D (4000) - Rear frame spacer (4000 gallon tender)
- T4 - Spring carriers
- T5 (3500) - Vacuum reservoir formers (3500 gallon tender)
- T6 (3500) - Brake shoes (3500 gallon tender)
- T6 (4000) - Brake shoes (4000 gallon tender)
- T7 (3500) - Brake shoe links (3500 gallon tender)
- T7 (4000) - Brake shoe links (4000 gallon tender)
- T8 (3500) - Vacuum cylinder links (3500 gallon tender)
- T8 (4000) - Vacuum cylinder links (4000 gallon tender)
- T9 (3500) - Hand brake link (3500 gallon tender)
- T9 (4000) - Hand brake link (4000 gallon tender)

Bachmann Underframe Modifications

The tender subframe is designed to use the sideframes from the Bachmann plastic underframe. The underframe will need separating into three parts by two cuts, one along the back of each sideframe. The outer edge of the resulting L shaped sideframe will need to be thinned down to fit back in the body when attached to the etched subframe. There are 'ears' on the etched subframe to which you will be able to glue the plastic sideframe. The following image should give you a better idea of the modifications necessary. Make sure that the back of the sideframes are clear of any remnants of the centre part of the Bachmann underframe.



Construction

The sprung subframe is similar to the loco subframe in that it is designed to be self jiggging. It is the same for both 3500 gallon and 4000 gallon tenders. It is also the same for EM and P4, with any sideplay taken up by washers. The centre frame spacers and springs carriers are the same for both tender types. Parts specific to the 3500 gallon tender will have (3500) next to the part and those for the 4000 gallon tender will have (4000) next to the part.

Note that the photos of the test build are for the 3500 gallon tender. The 4000 gallon tender is similar.

Subframe

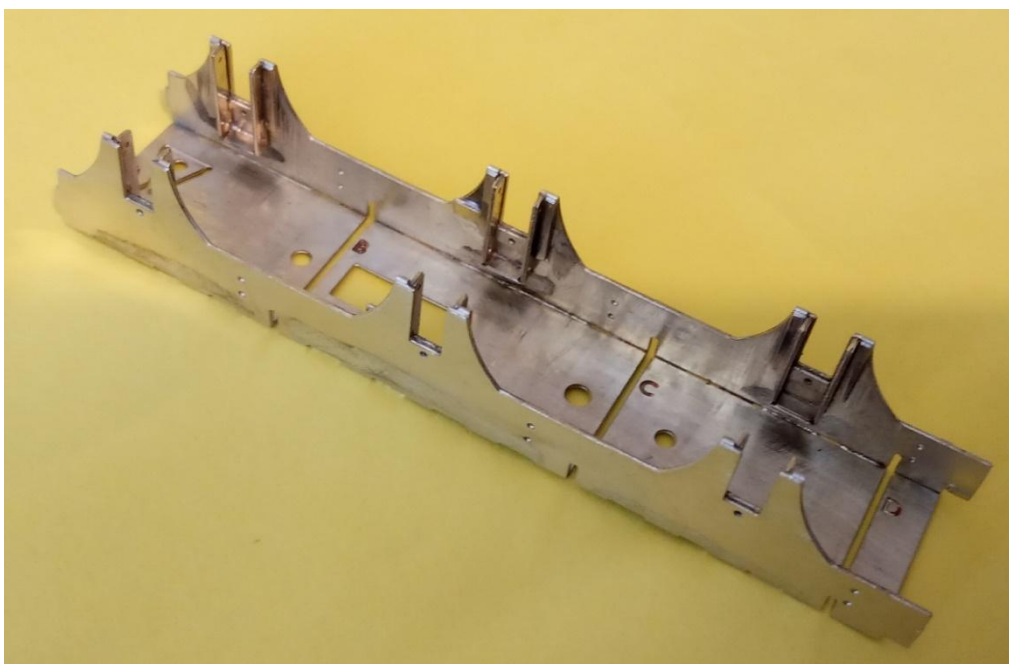
There are various holes in the tender subframe (T1) that need to be checked before removing from the fret. On each sideframe there is a hole centrally above the cut out on each axleguard for the wheel bearings and there is also a corresponding one in the centre of the U shaped part that attached to the bottom of each axleguard. These need to be a tight fit on 0.5mm wire. There are three pairs of holes on each sideframe for the brake hangers. These need to be able to take 0.45mm wire. Finally, if constructing a 3500 gallon tender, the small holes in the triangular vacuum cylinder brackets at the front (A end and shaded yellow on the parts diagram) need to be opened out to around 0.55mm. to accept the spigots on the cast vacuum cylinder.

For a 4000 gallon tender only, you will need to remove the small rectangles with a half etched line around at the rear of the sideframes (D end and shaded green on the parts diagram). This will make sure the frames fit properly. Leave for the 3500 gallon tender.

Fold the U shaped parts attached to the bottom of the axleguards through 180° with the fold line on the outside. Use 0.5mm wire through the holes at the top of the bearing cut out to make sure things are aligned and solder in place.

Fold up the hornguides (T2) and fit to the subframe. They should be hard up against the front edge of the inner part of the axleguard (A end). Solder along the front edge only. There is a little wriggle room at the rear end to get a good fit on the bearing so only solder the back when the bearing is fitted.

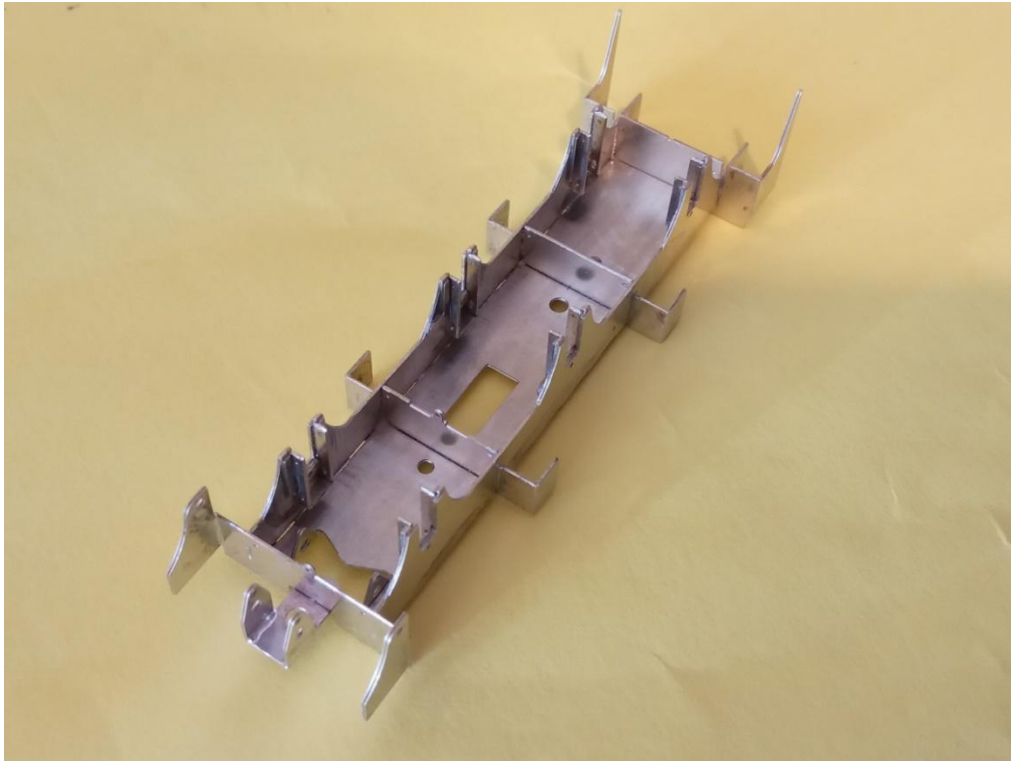
Fold up the subframe into a U shape making sure the sides are perpendicular to the base.



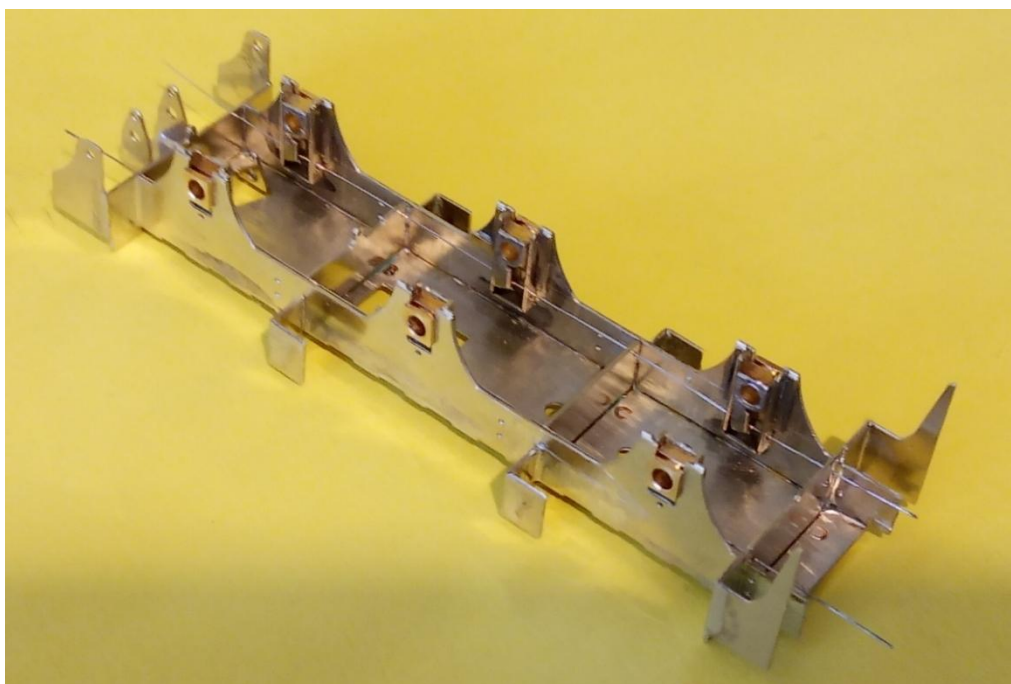
Fold up spacer T3B and fit in slot B on subframe. The ears should face towards the rear of the tender (D end). Repeat for spacer T3C. The ears should again face towards the rear of the tender.

Fold up T3A of your choice (3500 or 4000) and fit to front of subframe using slots and tabs at A. Everything folded up should face outwards from the subframe towards the front of the tender.

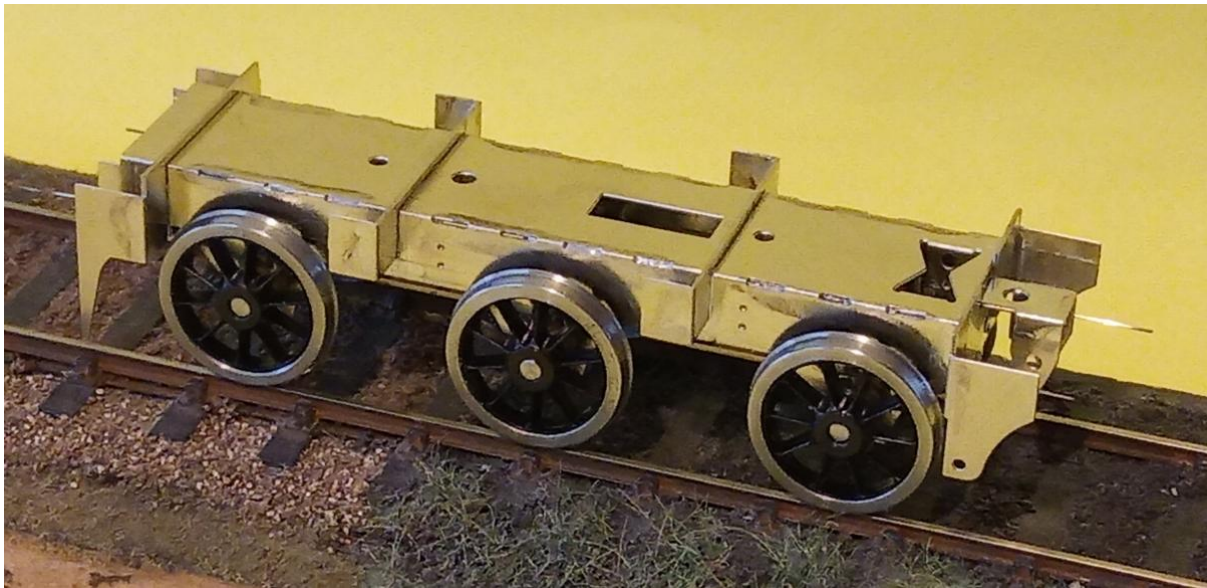
Fold up spacer T3D of choice (3500 or 4000) and fit at slot D with the guards irons facing to the rear.



Fold up the spring carriers (T4) and fit to the High Level MiniBlox bearings. Fit the bearings to the chassis. Arrange them so the ears on the spring carriers face forwards and mark the bearings to denote which axle they are on. If you remove them, you will then know which axle they need to go back on. Adjust the rear of the hornguides so they are a good fit on each bearing and solder the hornguides to the frames, taking care not to solder the bearing in place.



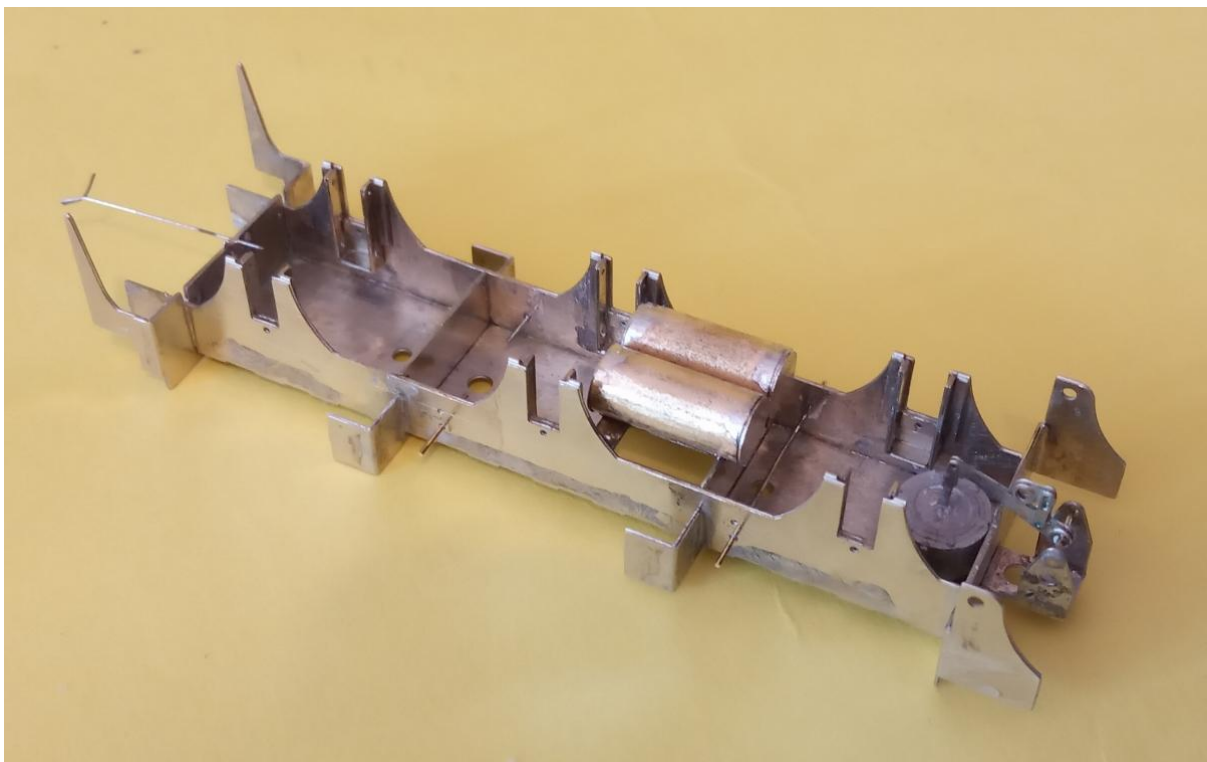
Fit the wheels and 0.009" CSB wire to check you have a smooth running chassis. 2mm washers (Y) are included to take out any side play.



There are two small brackets next to the A etched on the subframe. They are shaded yellow on the parts diagram. These are brackets for a vacuum cylinder and are for the 3500 gallon tender only. Fold up if you're modelling a 3500 gallon tender.

For a 3500 gallon tender, fold up the vacuum reservoir formers (T5 (3500)) and fit two length of 12.45mm long 7/32" x 3/16" tube for the reservoirs. Fit to the subframe. There is a slot on the reservoir formers that locates on spacer T3B. The other end rests on the two small lugs attached to the axleguard on the centre axle.

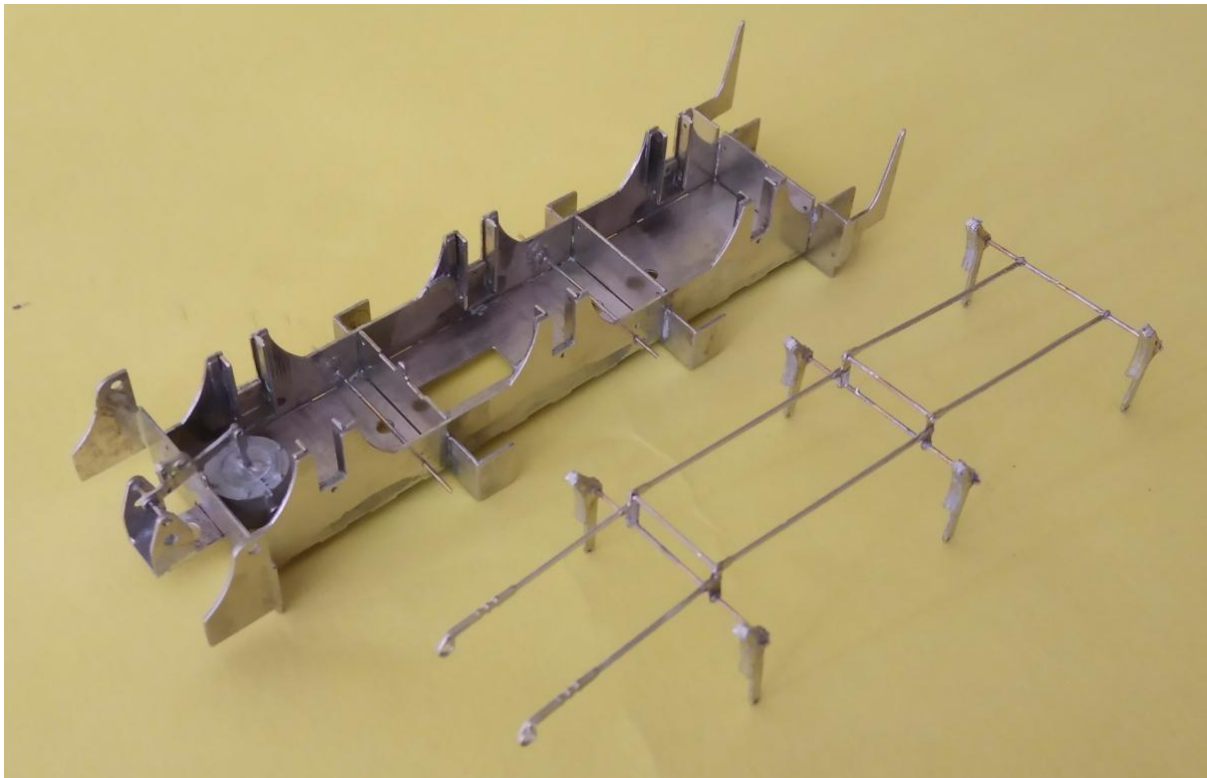
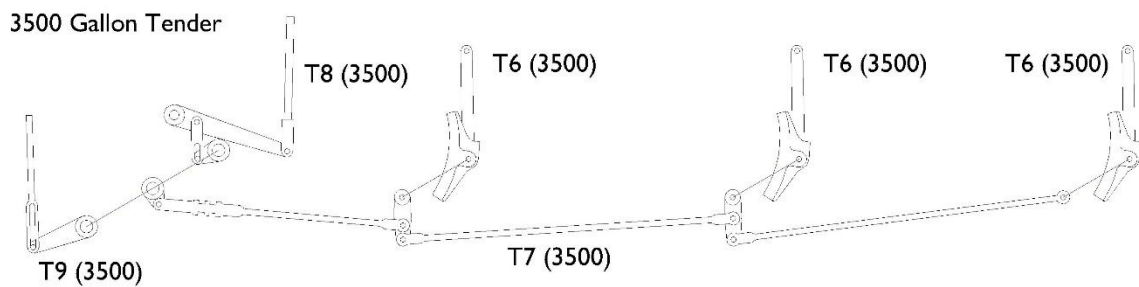
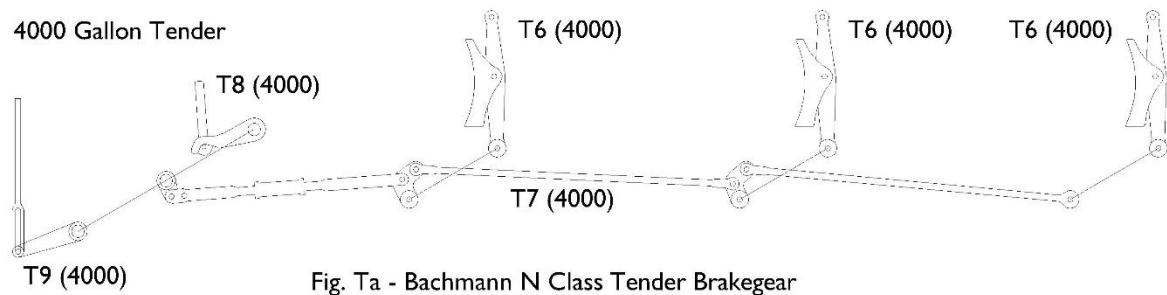
No reservoirs are included for the 4000 gallon tender as they are not visible between the frames.



Brakes

The brakes (T6) for both 3500 and 4000 gallon tenders are broadly the same. They consist of three layers at the shoe with the hanger layer in the middle. For the 4000 gallon set there are washers that need adding to the outside of the bottom of the hangers. Use 0.45mm wire for all the brakegear.

Assemble on the tender subframe with the brake shoe links (T7). The 3500 gallon brake shoes are hung from the uppermost of the pairs of holes in the sideframes and the 4000 gallon brake shoes from the lower one. The brake shoe links go behind the wheels. See Fig.Ta for the general arrangement.



Brake Cranks and Vacuum Cylinders

3500 gallon tender

The vacuum cylinder links (T8 (3500)) come in two halves. Use 0.45mm wire to align when soldering together.

Drill out the centre of a vacuum cylinder casting using a 0.6mm drill and fit the cylinder in place between the brackets shaded yellow on the parts diagram.

Hand brake link (T9 (3500)) fold double. Again, use 0.45mm wire to align when soldering together.

Fit the vacuum cylinder links and handbrake links with 1mm wire for the brake shafts. The vacuum cylinder link should fit into the vacuum cylinder casting. It may need shortening depending on how deep the hole is in the casting.

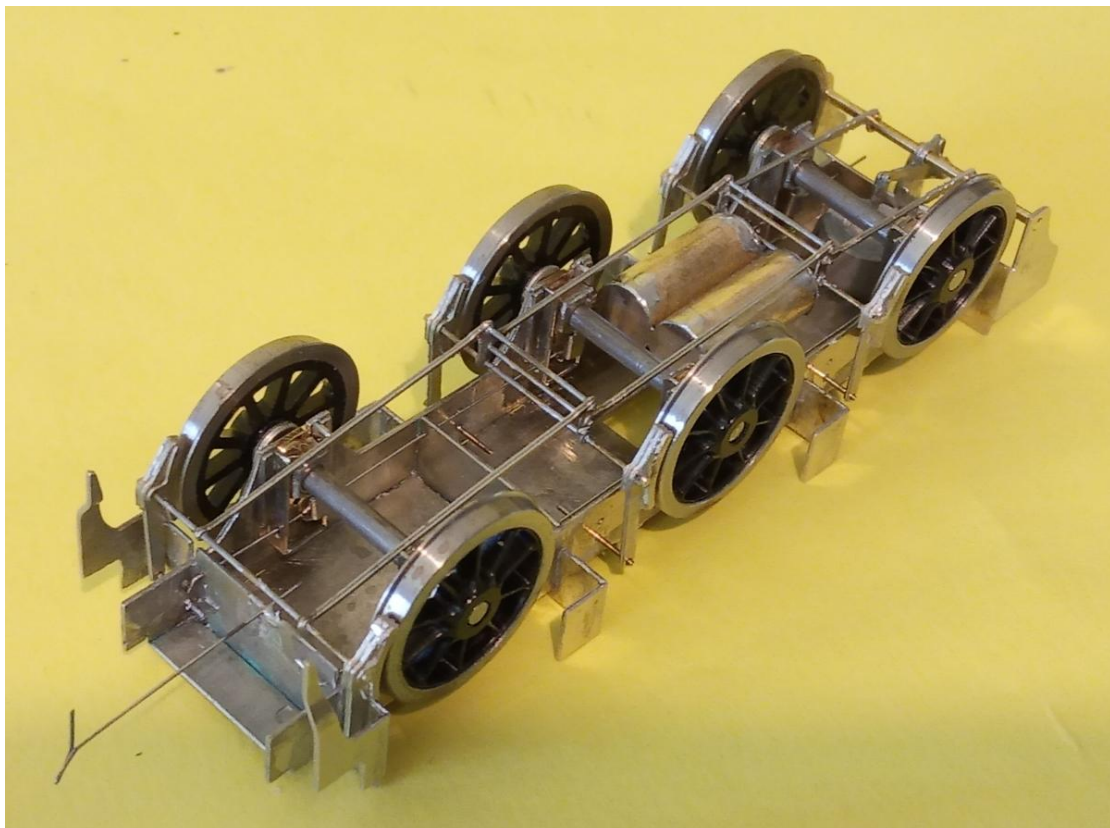
4000 gallon tender

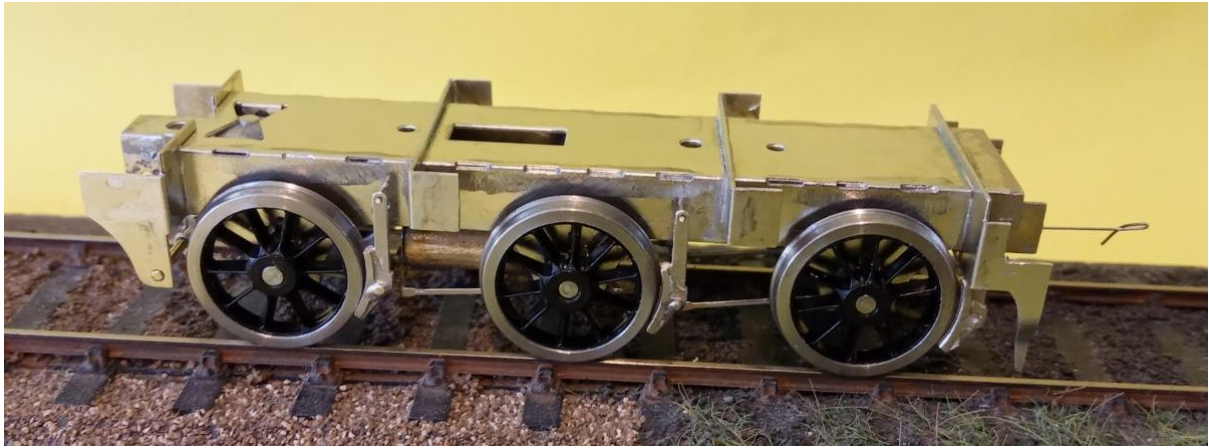
The vacuum cylinder links (T8 (4000)) are designed to be folded double and there are 2 sets. Use 0.45mm wire to align when soldering together.

Drill out the centre of both vacuum cylinder castings using a 0.6mm drill. Fit the cylinder to the outside of the brackets shaded purple on the parts diagram. For some inexplicable reason the outer brackets for the vacuum cylinder have gone missing. You will need to fix it in place as best you can. The missing part of the bracket will be hidden when the cosmetic sideframes are fitted

The hand brake link (T9 (4000)) folds double. Again, use 0.45mm wire to align when soldering together.

Fit the vacuum cylinder links and handbrake links with 1mm wire for the brake shafts. The vacuum cylinder links should fit into the vacuum cylinder castings. They may need shortening depending on how deep the hole is in the casting.





Assembly

Fit the subframe to the tender body. Test fit the cosmetic sideframes and adjust if necessary, so that they fit. Once you are happy glue them in place.

A Note on AJs

If you wish to fit AJ couplings there is a small bracket on the bottom of part T3A to which you can solder the coupling.



Justin Newitt - September 2022