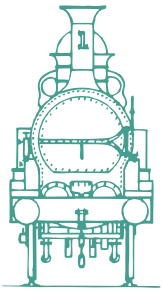
Railscale



NSWR CARRIAGE TRUCK

from 1855

A brass model in HO ie. 3.5mm to 1 foot.

Proudly designed and made in AUSTRALIA.

Additional Items Required

You will need;

a. 2 axles and wheelsets of 8 split spoke wheels of 12mm diameter, which will be 3'6" dia. for this HO model, including top hat type bearings. Gibson, Maygib or Ultrascale 3'0" wheels for 4mm scale are the ones to get. If you use other wheels, make sure they are the narrow type wheels, about 90 thou. thick, because the clearances are tight.

Wheels are available from Northside Model Railways at West Pennant Hills, Woodpecker Model Railways at Pendle Hill and Railscale. The axles will be too long and they will have to be shortened to 0.920" as described later.

b. Odd pieces of brass or nickel silver wire, approx. 10 thou. for the horse shunting hooks and tie down rings, and approx. 20 thou. straight brass or piano wire for the draw hook rods, 2 0ff small coil springs of no more than 2mm dia. and the buffers. I didn't include the buffers because I am not a lathe person, but details are given for turning your own. If you really get stuck, I could possibly turn them for you at a reasonable cost.

REFERENCES.

This model was made to compliment an 1855 type horsebox that I had scratchbuilt about thirteen years ago. Then in 1988, the opportunity came to produce this kit, the details coming from :-

a. A very old book printed in 1871, "Locomotive Engineering and the Mechanism of Railways", Volume 2, by William Collins, Sons and Company, London and Glasgow.

b. "19th Century Railway Drawings in 4mm Scale" by Alan Prior. This book has drawings of a Carriage Truck and Horse Box for the Great Northern Railway (UK), which are identical to the NSWR, except for the spring hangers, 'W'irons, axle boxes and the spacing for the safety chain hooks.

c. Photo on the front cover of "The Greatest Public Work, the New South Wales Railways - 1848 to 1889" by Robert Lee. The caption says 'Passenger train is about to leave Bathurst shortly after the railways' opening in 1876'. The loco is No. 33, so if you do not have this particular book, the photo has been published in other books that you may have.

THE MODEL.

This model is not meant to be a first model, and I assume that you have already constructed brass kits before and know how to solder etc.
Being such a small model, it has been designed to be fully made in one piece and so that most of the soldering is done from rear faces, so that none of the detail is spoilt. I find it best to use just enough solder to hold the part rather than to plaster it on.
It has also been designed for 3 point suspension compensation so that all four wheels are on the track at all times.

It is assumed that you have all the usual modelling tools, jewellers' files etc., and I find an Engineer's scriber very handy, especially to run down a fold line prior to folding, a fibreglass brush, available from watchmakers suppliers, and a good old brass suede brush can also be very handy for cleaning up.

If you do not have a rivetting tool, the bolt heads are marked with dots on the reverse side of the fret and can be pushed through using the point of the scriber, and push through on a piece of hardwood.

These instructions were written whilst I was making Neil Cram's model, which is exactly the same as the fret you are using.

I've tried to put as much detail into it as possible, so you will see that there are a lot of small parts and that there are some spares in case you lose some.

Read the Instructions carefully, familiarise yourself with all the bits, then it is time to GO------

CONSTRUCTION.

Leave the parts in the fret until it is time to use them.

'W' IRONS.

1. Take out the 'W'iron frames. Clear the holes for the top hat bearings (approx. 2mm, check yours), and for the draw hook rod (the 20 thou. wire or whatever wire you are going to use).
2. Please yourself when you want to put the bearings in, you may want to after you fold up the 'W'irons, or vice versa. Anyhow, fold up the 'W'iron into a little box. Be careful of the rocking 'W'iron, as the little 'Bumps' are there to bear on the body floor, thus taking any weight off the draw hook rod later. See FIG.1. Run through the fold lines with a scriber before folding to make the folding easier.
3. Solder the 'W'iron box on all four corners, on the inside, and solder in the top hat bearings, brim on the inside, with the bearing to the outside. It might be a good idea here to file a little 'Vee' on the inside bottom edge of the brim of the bearing, to assist in getting the wheel sets in and out.
4. The next bit you may leave out if you wish, it is purely cosmetic. ie. putting in the beams marked R1,2 &3 and P1,2 & 3. These were put there to simulate the timber framing under the floor. So, if you want to put them in, take them out of the fret, fold them up and solder in. You will note that they are marked R1 etc. That is for the fixed 'W'iron and P1 etc., for the rocking 'W'iron. Refer Fig.2. Be careful when soldering in the centre beam in that you do not fill in the hole for the draw hook rod. Drill out if you do. Also note that the outer beams are right and left handed and all easily fit into the checkouts provided.
5. Clean up the 'W'iron boxes etc. ie. file off tags that held them in the fret, file off any over soldering, clean off flux etc., and generally clean up, but be carefull to leave on the little tabs for the connecting rods at the bottom of the 'W'iron.
6. Take the little square piece with the hole in it from the axle box bits, marked 'AB', and solder over the bearing protruding through the 'W'iron, flat onto the face of the 'W'iron. See Fig.3. Keep the thinnest part to the top.
7. Now we come to some fiddely bits - the leaf springs. You will note that the piece with the etched leaves is attached to a plain piece without leaves, part'S', by a wide fold line. Fold this piece back over on itself (ie. fold line on the OUTSIDE this time), etched leaves on the outside, and at the same time, insert the plain single piece (S1) between the folded piece, and solder sparingly on the underside and top. This gives you a scale spring 3" wide. Clean off the tags, round off the end knuckles etc. after you have soldered it up as it will be stronger. Then file off the rounded section, where you folded it around, at the bottom of the new fabricated spring, and make it square on the bottom. When satisfied that all is right, solder the springs to the face of the 'W'iron, with the just filed flat bottom of the spring hard down onto the axle box surround. Solder sparingly from the inside. It's a good time now to clean up what you've done, incl. flux and solder out of the spring leaf lines.

8. Now for an even more fiddely bit - the axle boxes. Carefully take the axle boxes 'AB' from the fret, clean off the tags and fold up. Hold the front in thin nosed pliers and bend the sides around at right angles. Then with wider nosed pliers, squeeze the sides, check again for the sides at right angles. Again hold the front with small nosed pliers, bend the outside etched side around to follow the outline of the front face, then fold the top over to the slight slope. Fig.4 will give you an idea of what is required. Tack solder on the inside.
9. Now you have to fit the axle box. File a little bit off the back, check with the bearing as you may have to file a bit off it also, until the folded over bit at the top of the axle box touches the bottom of the spring. This is really fiddely, but when you have it right, solder the axle box to the backing plate, previously soldered on. I find a touch of solder at the bottom, alongside the bearing is enough, and maybe a small bit up the side. Clean up the axle boxes and 'W'irons, touch up with a small file, and round the corners etc., and you can put them aside for a while as they are finished.

THE CHASSIS.

Things get a little easier now.
I tried to have etched, some thin lines to mark the diagonal boarding on the deck floor of the model. If these did not etch properly on yours, like ours, just follow the marks with the scriber point, or knife, against a steel rule or straight edge.

1. Take the chassis floor 'G' from the fret, score the fold lines and turn down the sides and 'W'iron support lugs, but first clear the holes for the draw hook rods. The other two smaller holes in the floor are for the tie down rings and the holes in the turned down sides are for the horse shunting hooks, but more of that later. Cut the tags as close as possible, but no need to clean off just yet. See Fig.5.
2. Take the fixed 'W'iron (If you've put in the beams, make sure it's the right way round) and make sure it fits between the turned down lugs, for both 'W'iron frames. Get a piece of wire you will be using for the draw hook, and make sure it passes freely through both the lugs and the 'W'iron frame, with the 'W'iron frame pressed hard to the underside of the chassis. Adjust the holes if necessary with the point of the scriber.
3. Take out cross brace, 'L', clean off tags, open hole to min. 25 thou.,fold ends up and fit into chassis on opposite side of lug for 'W'iron. Make sure you have it right way up for the draw hook rod to pass through. The ends should also line up with the marks on the inside face of the turned down side. When right, solder into place, but not the 'W' iron as it has to come out. Check to make sure that the wire passes freely through the holes when the 'W'iron is in. If not, poke the point of the scriber in until it does. See Fig.6.

4. If you are carrying on with the underfloor detailing, take out the centre beams, part'M', from the fret and fold up as before. Put both 'W'irons in the chassis, slip a piece of wire through to hold them in position, with the beams narrowing towards the centre. Fit the centre beams in, lining up with the outer beams in the 'W'irons, and solder in.
5. Take the solebar overlays from the fret, part 'H'. Turning it over you will notice small dots marked on the back. Slightly punch these dots to form the bolt heads for the straps etc. on the face side. Clear the holes for the horse shunting hooks. (I'm sorry, but you have to drill out one hole that I didn't mark on the artwork). Solder the overlay to the turned down side of the chassis, just a few tacks top and bottom should do, but try to prevent solder from getting onto the face of the overlay. Fig.7.
6. Before you fix the spring hanger overlays, put the rocking 'W'iron back in on a piece of wire and check for free movement. If there isn't, file a little bit off the spring hanger of the turned down side to make sure it doesn't bind. When the overlay goes over this, it covers the gap between the spring hanger and the end of the spring.
   Take out the spring hanger overlays 'J' and 'K' and clean off the tags from the top edge. You will note that 'J' is shorter than 'K'. 'J' goes on the ends, 'K' in the middle. Solder the overlays, using a minimum of solder. Make sure you have the overlays the right way out, showing the shackle knuckle on the bottom. Clean off the remaining tags after you have soldered the overlays on, being carefull to leave on the shackle for the end of the spring. (Note, the shackle is not on the main chassis side turndown, to allow clearance for the spring on the 'W'iron).
   Clean up and remove flux etc.
7. It may be an idea to leave off the horse shunting hooks at this stage as they can get in the way of things, so lets go to the body.

THE BODY.

1. Remove the body, part 'A' from the fret, score the fold lines and turn up the sides. Fig.8.
2. Remove part 'B', clean off the tags at the bottom of the legs and punch through the three bolt heads on the end legs. Part 'B' goes on the inside of the upturned side with the bolt heads facing in to the centre of the floor. Check that the top of part 'B' is also in line with the top of the upturned side, -adjust legs to suit if it isn't. (It should be OK).
3. Remove packer, part 'C', and clean off all tags.
4. Remove outer side, part 'D', score fold line and fold up at right angles, making sure that the bottom has folded correctly, then punch the bolt heads. If you do the bolt heads first, you may flatten them when folding.

5. Tack solder the packer to the inside bottom of the outer side, then solder the outer side and the inner side to the folded upturned side of the body, as a three layered sandwich. Put some solder on the very top, so that when it is cleaned up, it looks like a single piece of brass. You will have to put a little bit of solder on the inside legs to the deck to stiffen it up. Then clean up all solder, tags etc., until the laminated sides look like a single piece of brass.
6. Take the wheel planks, part 'WP', clean off the tags and etching marks on the long sides only, and solder to the deck. Unfortunately, this has to be soldered on the face side, so tack solder, solder at the ends, and I tack soldered ours at the side centre leg of the side frame also. Clean up and file flush on the ends, not too much, only just back to the metal, and also clean out any solder that may be in the grooves for the diagonal boarding.
7. Now, to fit the body to the chassis, run a rough cutting file along both sides, where the outer side frames of the body, where folded under, until the chassis is a neat fit between them. See Fig.9.
   When the floor and chassis fit, check the body for any twists, bend them out, and solder the chassis to the floor, through the four large holes provided, lining up both pieces using the small holes provided for the tie down rings.
   If all has gone well, the floor should overlap the chassis at both ends equally, by the thickness of the metal you are using. If you apply any solder here, this little rebate will have to be cleaned out, as the face of the buffer beam fits in it. Clean any solder overrun back to the face of the underside of the chassis, especially where the fixed 'W'iron goes in, as it should sit hard onto the underside.
8. Now is a good time to check your model for level.
   Put the 'W'irons in on a piece of wire. You may find the rocking 'W'iron a little tight and the body high on that end, so take it out and gradually file a little off the round protruding upstands. If all has gone well, the rocking 'W'iron should rock up and down at the sides without binding anywhere. If it does, bend the spring hangers out slightly, or the ends of the leaf springs in, but in any case, it has to rock freely. Press the end holding in lugs hard to the 'W' iron frames, take out the wire and 'W' irons and solder the outside fold of the lug at the fold to the chassis floor.
   Mark on the chassis where the rocking and/or fixed 'W'iron goes so that they don't get mixed up. I usually put the rocking one on the 'Railscale' marked end.

BUFFER BEAMS.

1. Take out the buffer beams, Part 'N'. See Fig.10.
   Clean off all tags, punch out the bolt heads where marked, score the fold lines and fold up. The thin piece on the end follows the curve of the ovolo shaped end, and the very end pieces will need a little filing before bending, to make it fit square to the back piece of the buffer beam.

1. (cont).
   I like folded beams etc., as you are still soldering sheet metal to sheet metal, not a big solid casting to sheet metal, anyhow, the sheet metal ones are cleaner and the size doeas not vary. Also, it doesn't matter which scale the kit is produced in, the buffer beam will always fit. Gently solder the folded up ends and clean up.
2. Fit the buffer beams to the end of the body. You will see the reason for the small rebate mentioned before, in the end, as the face of the buffer beam fits into it. You may have to bend down, or file down, the end spring hanger and the bottom of the beam to get a good fit. When right, mark which end is which, but do not solder in yet. Keep filing until you get a good fit and the face of the buffer beam is flush with the end of the floor.
3. Take the draw hook escutcheon plate, part 'O', punch the bolt heads from the back, clean up and solder to the buffer beam. Solder the plate, open side down, centrally over the slot in the buffer beam.
4. Take out the safety chain hook eyes, part 'Q2' and collars, part 'Q1'. Cut the leg on Q2 hard to the fret to keep the leg as long as possible, and the tag on Q1 as close as possible to the collar.
   Put a collar onto the stem of the eye, then push the stem through the holes provided in the buffer beam, and solder at the back whilst keeping the eye vertical at the front. Then come around to the front side and give it a small touch of solder. If any eyes turn around when soldering, simply turn them upright on the front side before touch soldering there. Snip off the eye stems at the rear and rough file off the sharp edges.
5. Solder on the completed buffer beam, fill the joint between the beam and floor, for when it is cleaned up it should look like one piece. Also solder at back join with the side solebars/beams and spring hangers. Clean up.
   File back the ends of the buffer beams until they are flush with the side frames, being careful not to file away the bolt heads (I have) and file up the ovolo shape in the bottom outside ends of the buffer beam.
6. It will be a good thing now to check the draw hook escutcheon plate. Put a piece of 20 thou. wire through the slot and into the lugs for the 'W'irons to check if the wire passes freely through. If not, clean a little off the side of the slot until it does. This will ensure smooth operation of the hook later.

TIE DOWN RINGS.

I have allowed here for two types ;
   a. A working tie down ring or
   b. A cosmetic tie down ring.

Decide now which one you want. If you are going to carry a carriage on the truck you will need (a), the working one, but if you are going to run it empty and never have a load in it, just solder on the cosmetic one, part 'G'.

So, if you are going ahead with the working ring ;

1. Remove ring plates, part 'E', cleanup and punch bolt heads.
2. Solder to deck, lining up with the small holes.
   A scriber comes in handy here, as the plate can be held by poking it in the hole to hold the plate whilst soldering. Clean up.
3. Now, to fit the ring, check the size of wire you have, around 10 thou., and clear the hole in the plate and deck by minimum of twice the diameter of the wire. Clear the burr on top with a larger drill or countersinker and make a slightly larger countersink underneath. See Fig.11.
4. Take out a ring, part 'F', cut as close as possible to the part to try to save on cleaning up, then take a short piece of wire, double it over, slide onto the ring, crimp the wires together, pass through the hole in the plate and floor, spread the wires apart in the countersink on the underside, and solder.
5. Snip off the ends underneath and clean back flush with the bottom, only where the fixed 'W'iron goes. It's not so critical with the rocking 'W'iron. Work the ring backwards and forwards to free it up a bit.
6. Now, while you've got the 10 thou. wire out, put in the horse shunting hooks. Bend up a piece of wire, as per the sketch, pass through the hole, making sure you have the hook the right way round, and solder from the back. Snip off and clean up, making sure you leave enough room for the buffer shanks. Fig.12. It may be an idea to drill out the buffer beams for the buffers, at this stage. Check whatever buffers you are going to use.

CARRIAGE WHEEL RETAINING POLES & PINS.

1. Take out parts 'T' and 'U' in pairs and solder together. you will note that part 'T' has a small chamfer along the top edge. This stays uppermost when fixing them to the side frames, so be careful not to solder 'T' face down to 'U'. Do not clean up yet, as you may lose the holes in the ends. I found that I had to clear the holes with a small drill (like 0.30mm). Fig.13.
   You may be able to assemble together, the two parts, and stick in the pins (Those Tee shaped pieces under mark 'AB' in the fret), then solder. It IS awkward.
2. If you haven't already done it, take out the pins, round off the shanks, then poke them into the holes on the ends of the poles with the top at right angles to the poles, ie. parallel to the truck sides.
3. Solder on carefully, at the ends, including the pins.
   If you have a carriage, sulky or whatever to go on, space the poles to suit the outside of the wheels. If not, fix them in about 5mm from the ends.

If you've got the book "The Illustrated History of Railways in Britain" by Geoffrey Freeman Allen, on page 8 you'll see a photo of an old GWR carriage truck at Bristol Station. (Neil Cram and I were there in 1984 and 1990. - The large building in the background is still there, the covered station shed on the right is still there (restored) complete with platforms, but is now a covered car park. The buildings on the left behind the tracks are all gone and the area is now the main car park for Temple Meads Station.

DRAW HOOKS.

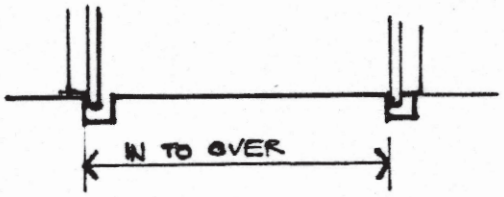
1. Take the draw/coupling hooks from the fret and fold over on itself, ie. fold the opposite way to usual. Solder in a piece of 20 thou. wire and fill the gap behind the hook when soldering, and solder both sides of the hook together. I've been using a piece of K & S 20 thou. piano wire, it's nice and straight.
2. File clean, shape the hook to a point and profile etc., and drill a hole about 25 thou. (check what you are going to use for a coupling), in the space behind the hook that you filled with solder, to suit if you're going to use links or a screw coupling. Fig.14.
3. Cut the wire to length as shown and then slide in through the buffer beam slot and 'W'iron lugs. You'll have to file bits off the sides and the shank behind the hook to get a nice sliding fit, without catching.
   While you're at it, make up two small washers, say 3mm x 2mm, and drill a hole in the centre, 20 thou. + to suit the wire you are using. Use a piece of fret, the piece between part 'T' and the pins is 2mm wide to start with. Check that the washers fit over the wire, then put aside.

FINISHING OFF.

1. If you haven't already done so, now is the time to really clean the model of all flux and grime etc., be it washing in warm water, dipping in Deoxidine, or whatever, because once the 'W'irons are in, you cannot clean underneath them.
2. Before you put in the 'W' irons, bend up the little tabs on the bottom under the axle boxes, out at 90°. Fig.15.
3. Now that you've satisfied yourself that everything is OK, fix in the 'W'irons, making sure you have them around the right way, ie. fixed and rocking. Slide in the draw hook and rod, make sure the hook is up the right way, slip a little coil spring over the end, slide on the washer you made previously, put a bit of compression on the spring, and solder onto the end of the rod.
   Clean off any flux straight away.
4. Take the 'W'iron coupling bars/rods (Not marked on the fret but shown on the layout sheet), file the ends to fit between the square piece behind the axle box and the little tabs you have just turned up. When right, punch the bolt heads from the back and solder on, with just a touch of solder at the bottom.
5. You will now have do a little bit of adjusting to get the model to sit level etc. You may have to bend these rods slightly up or down, it is a bit funny at first but you will be able to do it. It seems they have to be bent the opposite way they want to go. Check that the ends of the springs and the spring hangers line up and that the rocking 'W'iron rocks properly. Just bend the bits to do so, but if you have followed these instructions to the letter, you will not have to. Refer to photo of a horse box on page 17 of A.M.R.M. No. 98, Sept/Oct 1979 which shows similar suspension to this.

6. There you have it, only buffers and wheels to go. I haven't tried to fit spring buffers here as there is not much room between the back of the buffer beam and the 'W'iron frame. I suppose you could make up any early type buffer, but looking at the photo of that train in Bathurst, it appears the buffer may be similar to that used on the early 3 compartment 1st Class and Picnic carriages. I opted out for that one and have included a sketch of the ones I turned out of 1/8" brass rod. Fig.16. I just glue them in with 'Araldite' or 'Super Glue Gel'. Open out the holes in the buffer beam to suit. It may be better to drill for the buffers in the buffer beam, before fixing the carriage wheel retaining poles on the top of the turned up sides, as the model will be easier to hold.

7. The wheels. The axles supplied with the wheels are too long for N.S.W.R. models in HO. You'll have to shorten them to 0.920/0.925 (about 23.5mm), or you could try Casula Hobbies for their axles, 2mm diameter. When you fit your wheels to the axles, check with the NMRA gauge, but because the British standard has a thinner flange, you will have to check the wheels 'In to Over'.



Lock the wheels on with a bit of Locktite 601. Squeeze the 'W'iron frames in a bit, so when you put in the wheels, they have to be sprung in.

8. Take the wheels back out and paint the model. The colour is the problem, no-body knows. I think a safe bet would be dark grey tending toward black, but the choice is yours. Put the wheels back in. Fit 3 link couplings or screw couplings to your choice. If you want to fit KADEE's, you're on your own, but if you do, I suggest HOn3 because they look more to scale. Safety chain hooks have been provided if you wish to fit them with a very small chain.

Well, that's it. I hope you enjoyed building this model and if you have any suggestions which may help in improving this and other future models, please let me know. I've tried to get in as much detail as possible in this small scale, and am pleased how all the fine bits came out.

I believe that somebody else has a horse box body kit, but as yet I haven't seen one. If I do not see one soon I might be tempted to produce one to compliment this carriage truck as they ran together. It would be a full kit like this one, minus the wheels, buffers and bits of wire.

Eddie Garde.