

Instructions for Assembly of 9ft WB Wooden Underframe Kit

Prototype Notes

Suitable Prototypes

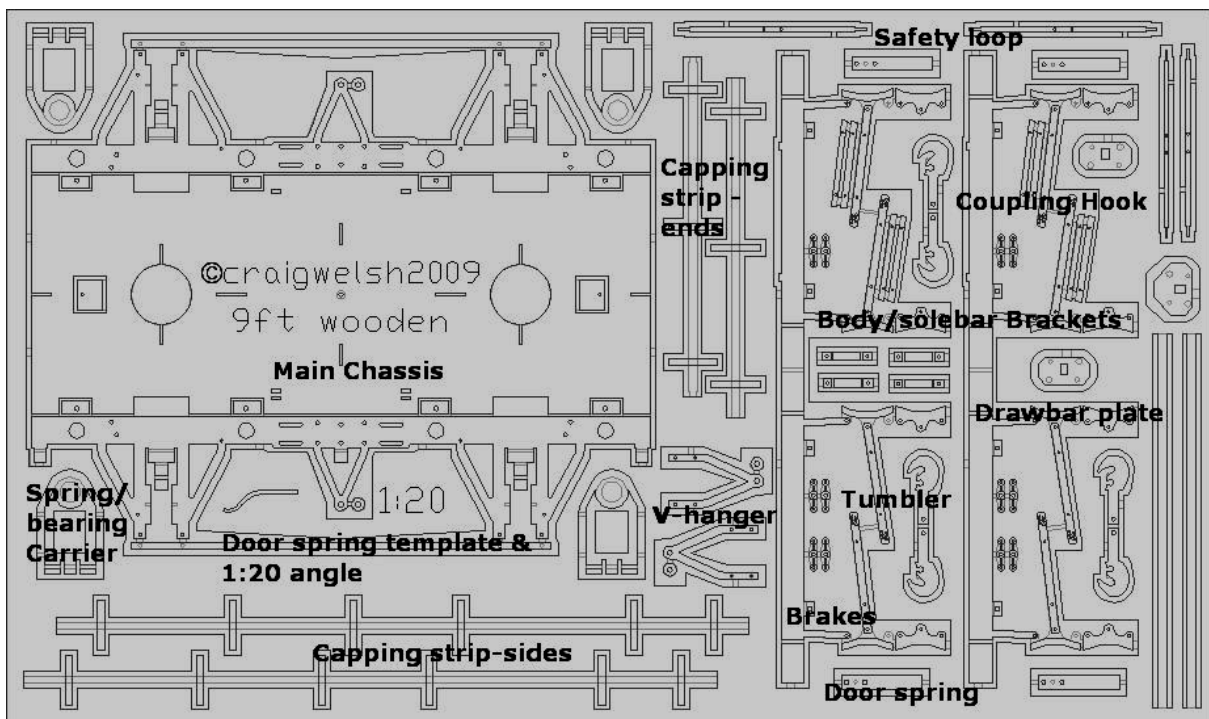
- PO RCH 1923 7-plank minerals
- PO 8-plank minerals
- PO RCH 1923 5-plank merchandise
- LMS wooden mineral
- LMS wooden merchandise D1666
- LNER 8-plank mineral

Required extras

- 0.5mm wire
- 10thou guitar string
- 0.4mm wire
- Wheels and bearings from manufacturer of choice - 12mm either 3-hole or spoked
- RCH Standard Oil Axlebox and 5-leaf Spring castings – MJT 2241/Alan Gibson
- 13" buffer heads with 3" (1mm) spindle – MJT / MSE 51L [LOC413] / Alan Gibson

Optional extras

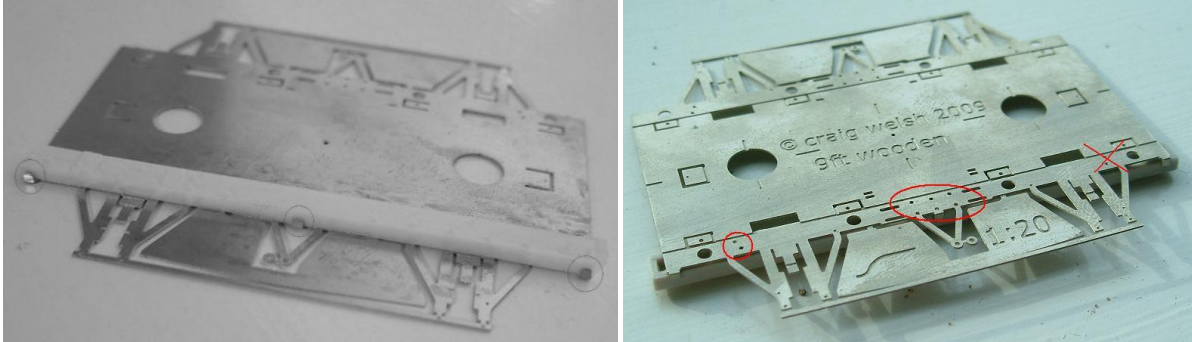
- 0.45mm brass wire
- 0.7mm brass wire



Please read full instructions through before starting!

Main Chassis

Fold up the 3 jig tabs (circled in red below) with the half etched line on the inside. Turn over the etch and solebar, ensure the solebar is central and hold in position.



Note that the holes at the outer end only need drilling where the lever guard is fitted (the left hand end once you have things turned over) and the door spring holes can vary depending on your chosen prototype. Once happy drill all holes 0.4mm, ensuring the drill is vertical at all times. *(Note: You cannot use this jig with a Bachmann body as the solebars are moulded as part of it)*

Once holes are drilled in both solebars the tabs can be broken off and any remains filed down.

Now use bending bars or an appropriate straight edge to fold up the sides of the main chassis with the half etched line to the inside of the fold. The springing tabs can be folded up from the floor now, again with the half etched line to the inside.

The circular reinforcement piece on the 'V' is folded with the half etched fold line outside and will need reinforcing with solder and tidying up. If the hole gets flooded with solder then redrill it 0.5mm before proceeding.

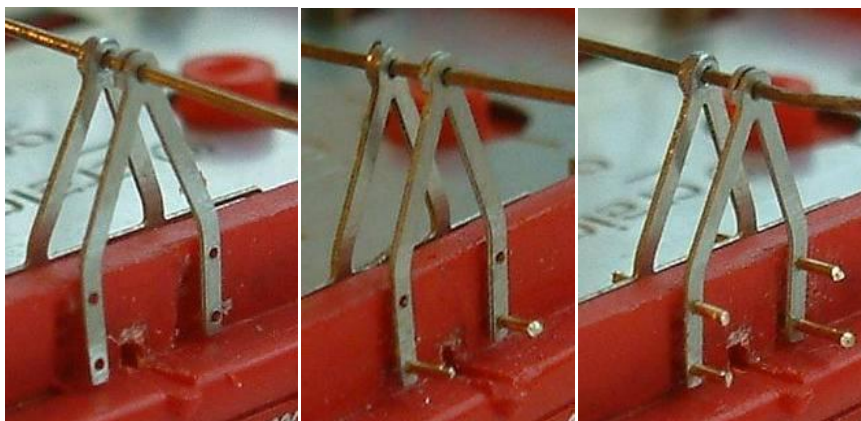
Tie-bars need the rivets punching at both ends then folding over (fold lines on outside) before reinforcing with a little solder. If you are modelling an unfitted wagon then snip off the tie-bar between w-irons but keep the strip as it is useful for hinge bars and other fittings.

Now we can fold up the bump stops (between w-irons). Firstly the top section is folded with the fold on the outside. Then the next section is folded the other way, again with the fold on the outside. I tend to bend these over my thumb while pushing them with a small file or similar. The last fold is on the inside and they should now sit facing outwards at 90 degrees to the sides. *(Note: Strip is provided in 1/2 etch to replicate the formed metal bump stops you sometimes get on these wagons although it was a much more common sight on metal underframes. Remove the existing bump stops if using these.)*



V-hangers

Drill the 4 holes 0.4mm while they are still on the fret. Once done remove them and clean up the holes and the tabs while carefully holding the v-hanger in some pliers/tweezers, try not to mis-shape them. The circular reinforcement is folded over with the fold on the outside as per the inner v-hangers on the main chassis, reinforce with solder and clean up; you may have to redrill the hole to 0.5mm. Put a length of 0.5mm wire between the v-hangers on the main chassis. Put one of the external v-hangers on one end of this wire, the reinforcing sections face inwards toward the chassis. Do not solder this 0.5mm wire in place!

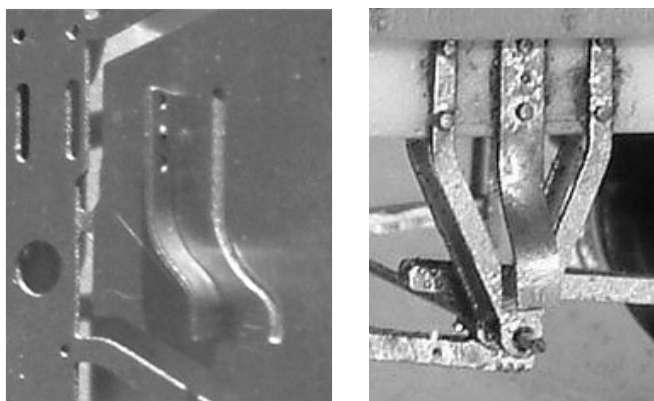


Bachmann body only – You will now need to align the inner and outer v and try to accurately drill through the solebar to the corresponding holes on the inside. I suggest putting some 0.4mm wire through the first hole as soon as it is drilled and working from there.

Push wire through all 4 holes in the v-hanger through the solebar and through the holes in the main chassis. You can then carefully solder these short lengths of wire in place on the v and the main chassis. Try to use a minimum of solder or you may need to cleanup with some de-soldering braid otherwise you lose the detail in the wire ‘rivets’. Repeat the operation for the second v-hanger on the other side. *Note:* If you aren’t confident soldering near plastic you could superglue the pins in place!

Door springs

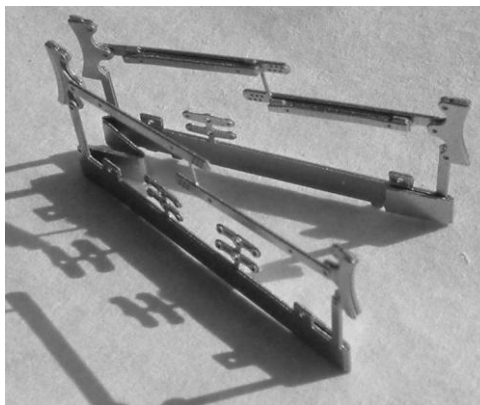
Push out rivet in the door spring and then shape it using the jig provided, make sure the rivet faces outward.



Bachmann body only – You need to guess the correct point to drill on this to affix the door spring to the solebar unfortunately. Pin the door spring on as per the v hanger, prototypically it should be 0.45mm wire instead of 0.4mm for these but the difference is very slight! Clean up the lengths of wire on the outside of the solebar on both the door spring and v-hangers with a file until they are just proud of the surface like rivets. Again you can use de-soldering braid if you used too much solder.

Brakes

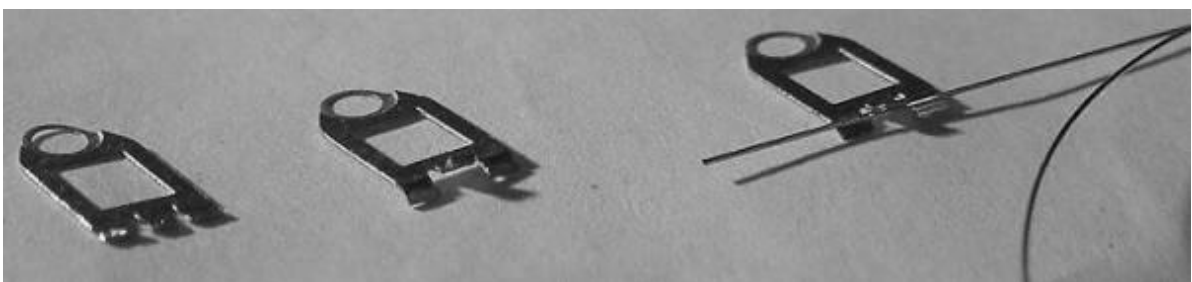
All folds are on the outside here and you should end up with a component that folds up as in the photo below. The blocking between the push-rods fell off or wasn't fitted to some wagons so can be removed if required although it does mean you have twice the push rods to align if you do this! Folding the two layers of blocking together can be slightly tricky so it's recommended you have some fine needle nose pliers to aid the bend.



Align it all with some 0.4mm wire though the holes in the brake shoes (apart from the two closest to the ground which are left empty) before you solder it all together. Cleanup the wire and any tab remains apart from the two on the bottom that will slot into the floor. Remove the tumblers and set aside and also remove the connector piece between the sets of push rods. If it's a wagon with independent either-side brakes then they are angled at 1:20 to match the coning on the wheels. The sections of fret between the w-irons have this angle to help you. Fold down the tabs for the safety loops, form these into a 'U' shape and clean them between file and thumb before slotting in place and soldering. On the prototype these safety loops are twisted through 90 degrees before attaching to the underframe which is why you see a lot of them at an angle instead of vertical in pictures.

Spring/Bearing Carriers

Use 10thou guitar string as spring wire. The key here is if you solder the bearings in then make sure you don't get excess solder on the front of the carriers which will affect the operation of the springing.



Test Running

Weight the wagon chassis to 50g and make sure the brakes aren't touching the wheels. As the tumbler is separate you can easily adjust the brake shoes so that they are close but not touching the wheels across the springing range.

Finish the Brakes

Fit the tumblers to the 0.5mm shaft between v-hangers, the fiddly bit is fitting them between the push-rods and soldering carefully in place. Push-rods may need tweaking if you had to move the shoes back from the wheels. When all done snip the rod between sets of brakes and tidy up.



Body/solebar Fixing Angles

The small sections of etch with holes in each end represent the diagonal fixings some wagons have to join the solebars to body, check your prototype here. Bachmann RTR body comes with a flat representation of them.

Levers/Guards

See separate instructions for folding then fit through the holes in the solebar and solder the stay to the w-iron.

Body Detailing

Couplings and drawbar plates

Couplings fold on the outside to give the correct thickness. Solder both halves together and round the edges to try and resemble the prototype casting. These couplings do work with Smiths chain but they are a scale representation and I personally use them with AJ couplings.

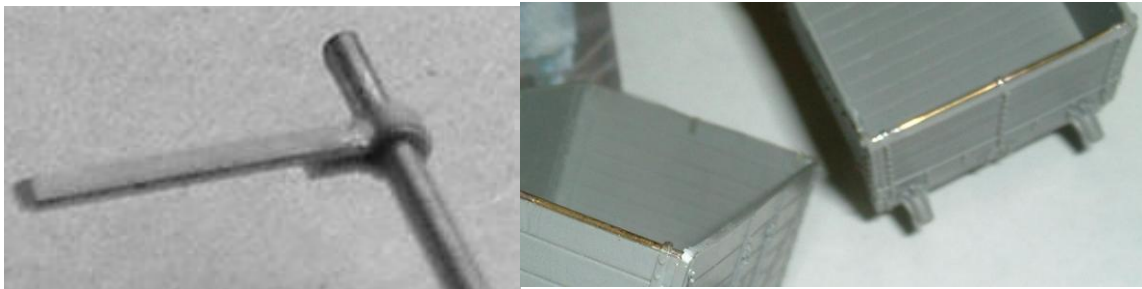
Drawbar plates for fixed end wagons are provided along with the special plate for the door end wagons that is taller to hold the floor planks in place when tipping. Rivets need punching on these plates, note they are prototypically diagonal and not square as per Parkside! The diagonal pairs are also different diameters on the prototype. By producing this full thickness and punching the rivets they are to scale.

Capping strips

Fit if appropriate to your period, the fixing of these varied greatly and these are only one possibility. Bachmann RTR wagons already have a representation moulded on.

End-door Hinge Bar

The end-door hinge bar is normally a bit fragile and weedy on both RTR mineral wagons and kits. The prototype bar is 2" diameter so I use 0.7mm brass wire to represent this. More by luck than design the tie-bars you cut off on these wagons matches the width of the vertical strapping on these wagons well. You can bend these around the bar and crimp with some pliers before soldering in place the correct distance apart. You need to leave a section of vertical strip on Bachmann bodies to replace the plastic section removed whereas the Parkside kits need most of the hinge strip filing back.



Buffers

These need to be 13" diameter head equivalent with a 1mm diameter shank. For both Bachmann and Parkside kits the buffer ferrules are missing when you spring the existing plastic body. At the moment this would have to be fashioned from a circle of plasticard glued on.

References

Prototype

- LMS 607324 preserved at the West Somerset Railway (S&DJR trust site)
- Derby works drawings for RCH 12T underframe (small copies are in Drawings of LMS Wagons – R J Essery)

Book

- The 4mm Coal Wagon – John Hayes
 - ISBN-10: 1874103488 ISBN-13: 978-1874103486
- The 4mm Wagon Part 1 – Geoff Kent
 - ISBN-10: 1874103038 ISBN-13: 978-1874103035
- An Illustrated History of LMS Wagons Volume 1 – R J Essery
 - ISBN-10: 0860931277 ISBN-13: 9780860931270
 - ISBN-10: 1906419337 ISBN-13: 978-1906419332 (reprint)
- The LMS Wagon – R J Essery and K R Morgan
 - ISBN: 0715373579. ISBN-13: 9780715373576

Magazine

- MRJ 12 & 13 “Scratchbuilding Model Wagons” – Chris Crofts, (An excellent article providing prototype part drawings as well as going into detail about the nomenclature relating to these wagons. Dia 1666 open wagons are covered in a further article by this author, see the online MRJ index.)
- MRJ 200 “Mineral Wagons for Slattocks Junction” – Craig Welsh

Web

- Pdf colour versions of the instructions have been put on my workbench (craigwelsh) thread on rmweb.co.uk along with my own builds with these underframes

