

Rumney Models Sprung Single Bolster Coach Bogies – Instructions

Notes

This set of instructions covers bogie kit OE.02. This kit is designed to provide a fully sprung, single bolster coach bogie that work along the lines of the prototype. Primary (wheels to bogie) and secondary (bogie to body) suspension are given equal importance and fulcrum points are arranged as wide apart on the bogie for stability. Correct profile ends are also included. Suitable cosmetic sideframes will be required.

Read through the instructions first and familiarise yourself with the components. Drawings and photographs taken during the construction of the 4mm test etches are included to attempt to make my waffle clearer.

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

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

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.

Technical

Distance between backs of the axleguards is 40.4mm.

The suspension is designed to use steel guitar wire of the same thickness for both the primary and secondary springs. The thickness of the wire will depend on how much the coach weighs. I have drawn up a table below showing you which size wire you should use for the mass of the coach. Note that the bogies are designed to operate optimally at the weights given below. It may be tricky arriving at the total coach weight before constructing the bogies in which case you will have to guess and then perhaps make the weight up using lead. Suitable guitar wire should be available from your local music shop. Use plain unwound steel strings.

Total weight of coach	Diameter of steel wire for primary and secondary springs
200g	0.012"
275g	0.013"
370g	0.014"
490g	0.015"
630g	0.016"

Primary suspension is arranged in individual springs that are soldered to the spring carriers. For this you will need a suitable flux. I use Carr's Black label. Secondary springs are arranged on the two point contact between two simple supports principle.

Materials list

Spring wire and pins to act as a bearing point between bogies and body are included but you will need to obtain other items to complete.

Your favourite brand of 3'7" or 3'6" coach wheels and bearings are of course required.

The following sizes of wire will be needed:

1mm to help pin the brakes in place

0.4mm to pin the axleguard keeps if using.

M2 bolts and nuts to fix the bogie to the body.

3mm outside diameter, 2mm inside diameter brass tube to provide a bearing surface.

(It is bad practise to use screw threads as a bearing surface hence the bolt size and the tubing)

Round headed pins with a 1mm shaft to act as a bearing point for the bolster.

Suitable guitar wire (see the technical section above).

Suitable cosmetic sideframes.

Components list

1 – Main bogie assembly

2 – Bolster guide

3 – Bolster

4 – Spring bearing plates

5 – End reinforcing plates

6 – Spring carriers

7 – Bearing washers

8 – Brake shoes

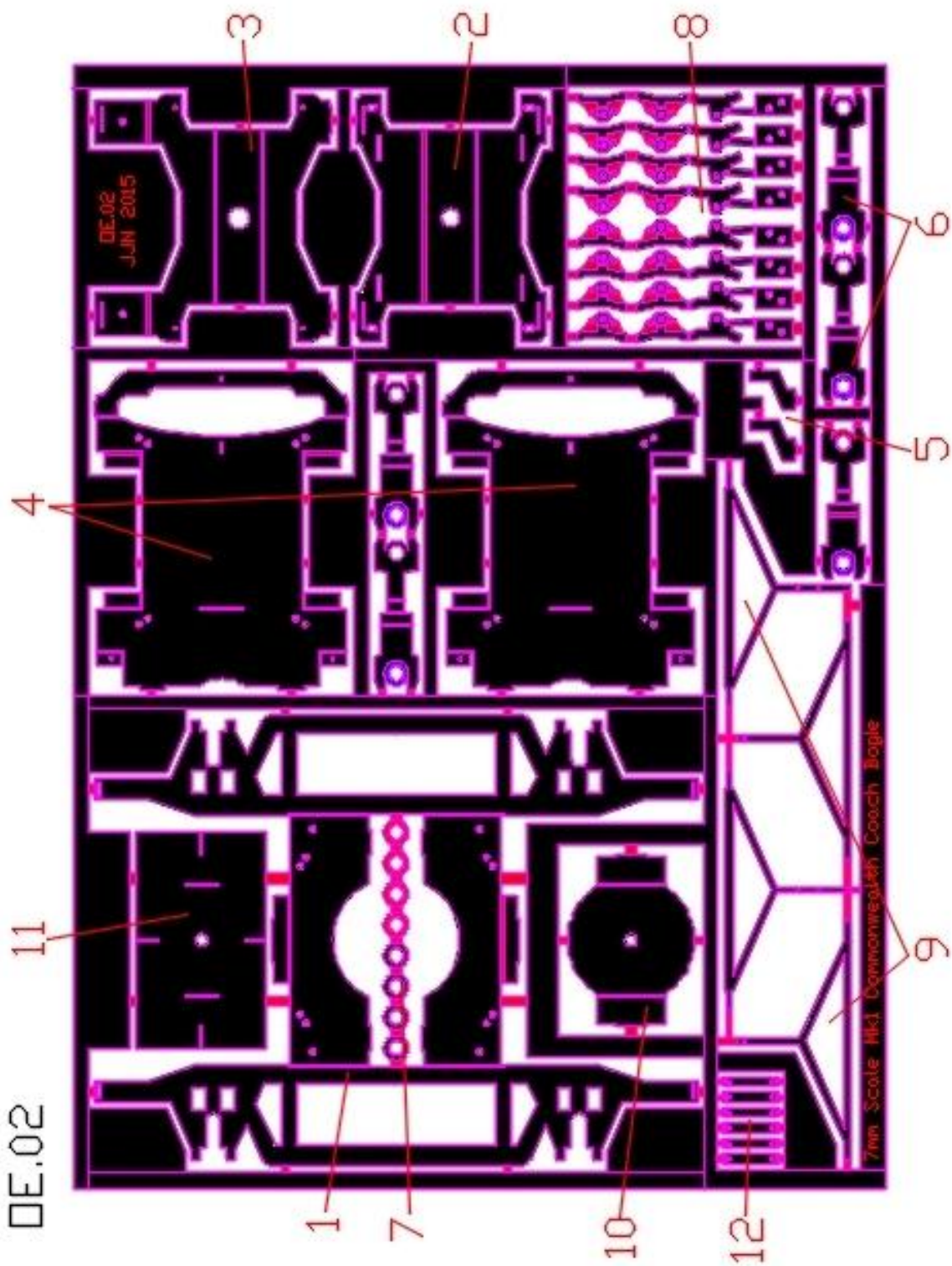
9 – Brake yokes

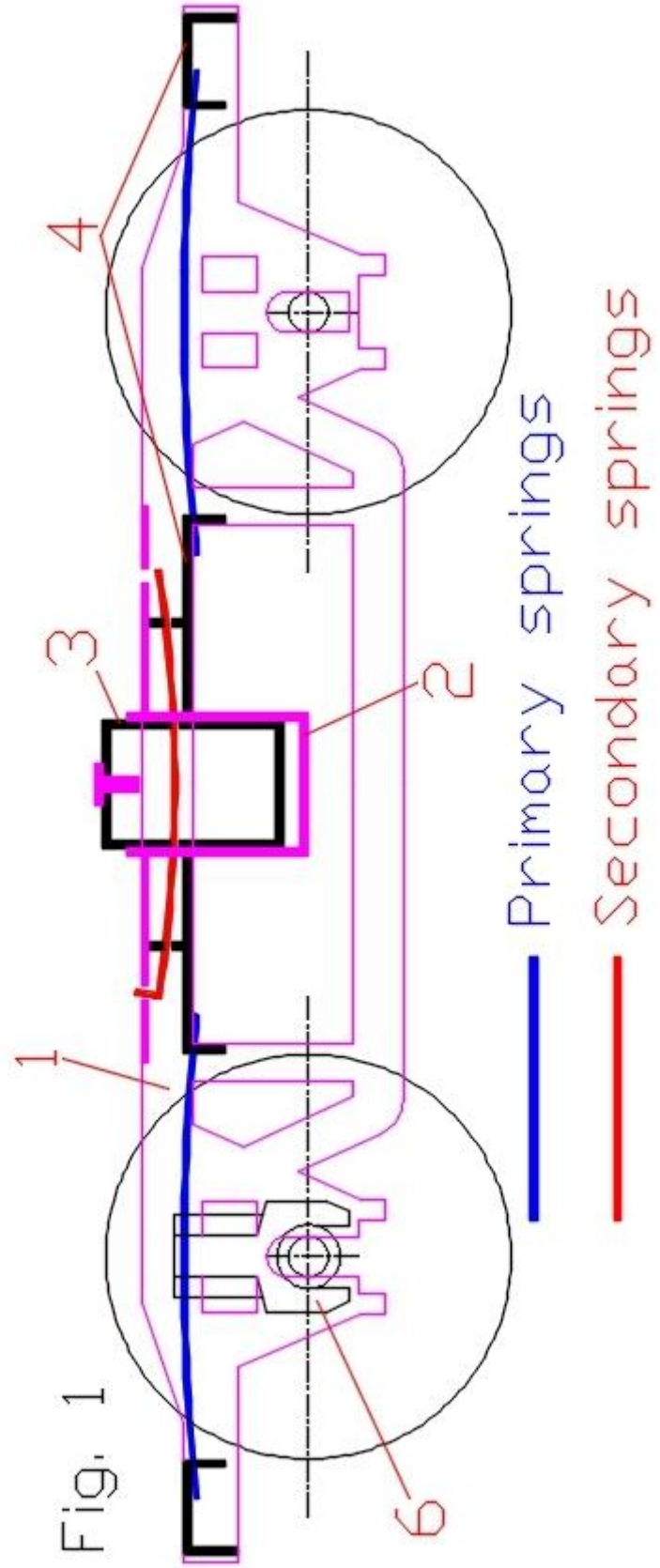
10 – Bogie pivot plate

12 – Pivot locating plate

12 – Axle keeps

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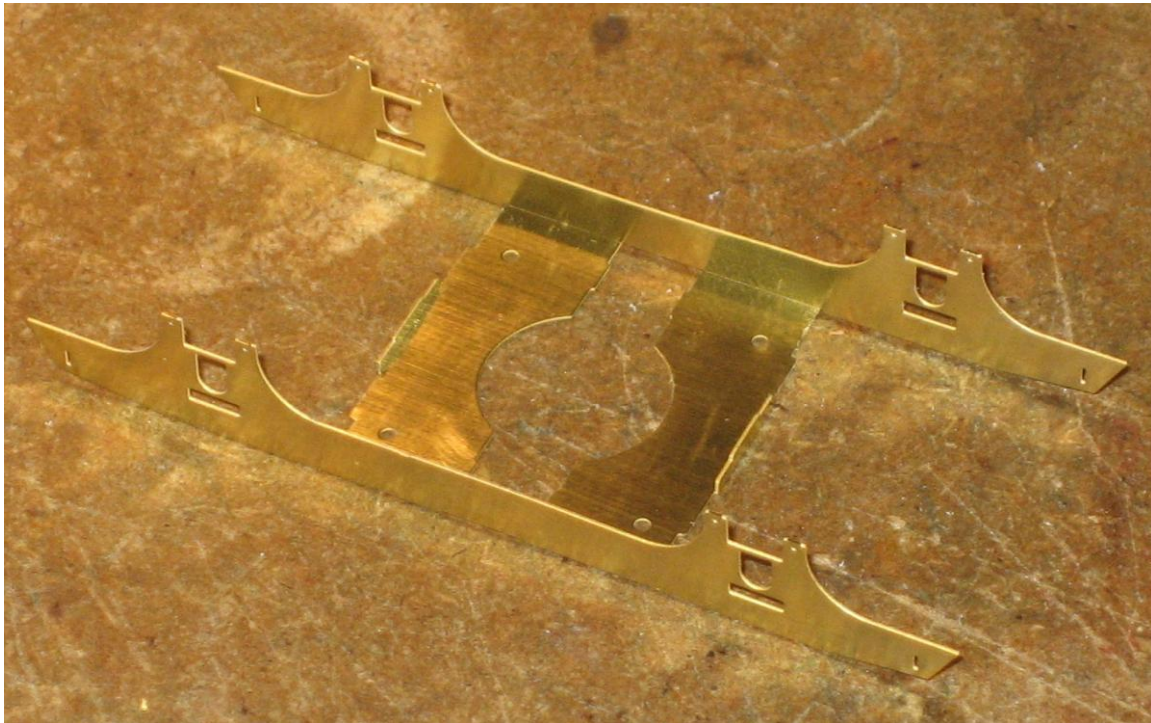




Construction

Fig. 1 shows the general arrangement of the main components.

Start with the main bogie assembly (1). Remove the main bogie assembly from the fret and tidy up any connecting tags. Fold the side up and also the two small sections that will locate into the spring bearing plate (4). See photograph below.

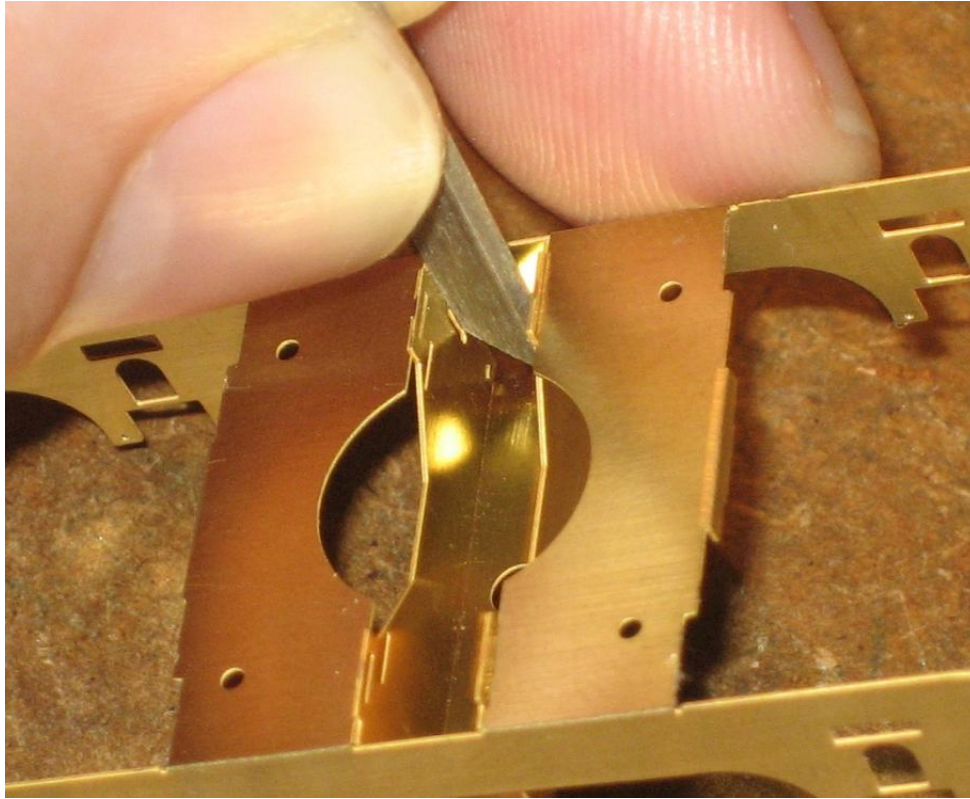


Ensure that the holes in the bolster (3) will accept the pins that will be used as a bearing point and then remove them along with the bolster guide (2) from the fret. The bolster guide needs to be folded into a channel and the bolster itself into a box. There are slots and tabs to help ensure that the bolster is folded up properly. Ensure all sides are at 90° to each other.

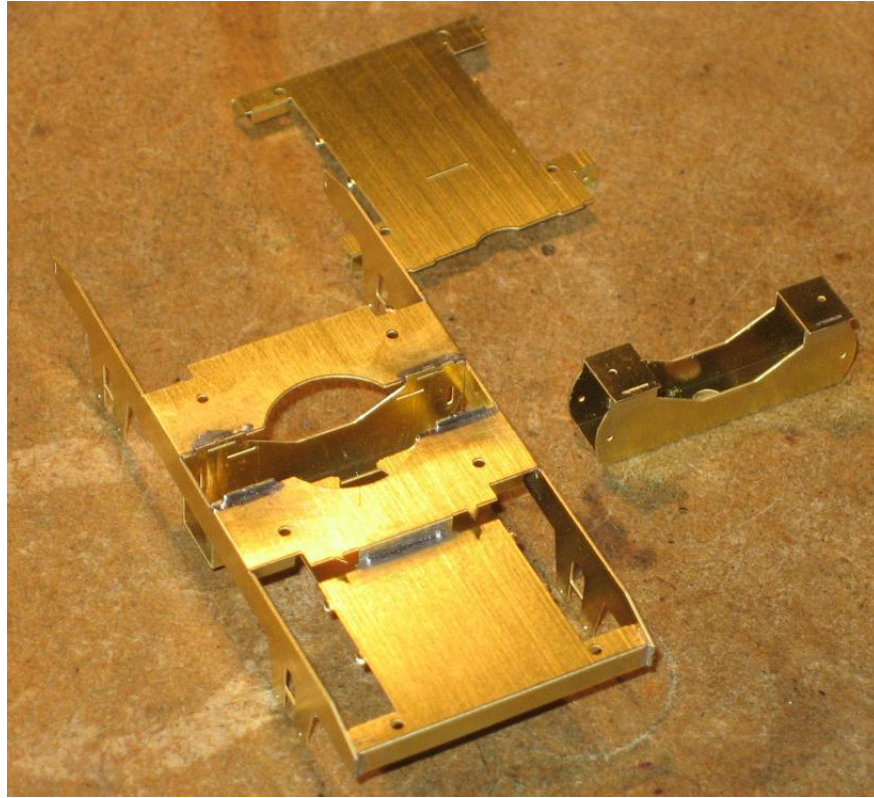
Solder the bolster together around the tabs and slots. Take the bearing pins and cut the shaft about 3mm from the head. Locate fully into the holes in the bolster and solder in place.



The bolster guide needs to be located in place on the main bogie assembly. There are tabs and slots to aid alignment. You need to make sure that the bolster guide is hard up against the main bogie assembly whilst you solder it in place or the sides will not be completely parallel. Indeed I would check that the distance between the points where the bolster guide connects with the main bogie assembly is 9mm (which is what it should be) using a Vernier calliper and adjust if necessary. I use a small needle file to apply pressure whilst soldering. See photo below. This is easier than it sounds.



Remove the spring bearing plates (4) from the fret. There are numerous parts that need to be folded up. Basically where you see a fold line on the spring bearing plate make a fold through 90°. Locate the spring bearing plate onto the bogie making connections with slots and tabs with the ends of the main bogie assembly and the bolster guide. Solder the spring bearing plate in place. Make sure that the ends of the spring bearing plate are soldered to the main bogie assembly. If they aren't then the primary springs could work their way loose.



There are triangular end reinforcing plates (5) included that help to strengthen the ends in the centre. Solder in place using the tabs and slots to locate them.

Spring Carriers

The spring carriers (6) can now be assembled. They are designed to be folded double and the springing wire soldered to the carrier using the etched slot as a guide.

A note on pinpoint bearings:

The points on the axles should be right up against the cone in the bearing with no sideways movement. Bearing washers (7) are included to take out any slop. I have designed the bogies around the use of Slater's bearings but I don't know how consistent they are. The depth of bearings from the same manufacturer in 4mm scale can vary considerably. DO a dry run to check before soldering everything together.

I find the easiest way to assemble the spring carriers is to make a small jig consisting of an off cut of wood with a suitable hole drilled into it. There are three half etched lines in the middle of the spring carrier. Fold the spring carrier double about the centre fold line with the fold line on the outside. The spring carrier can then be placed so that the bearing locates through the hole in the carrier and the wood. The bearing can then be soldered in place. The spring wire can then be located in through its etched guide slot and soldered in place using a suitable flux. I use Carr's black label. The spring wire needs to extend at least 12mm either side of the point where it is attached to the carrier. They will need to be trimmed but do this whilst checking against the bogie after cleaning the carrier up.

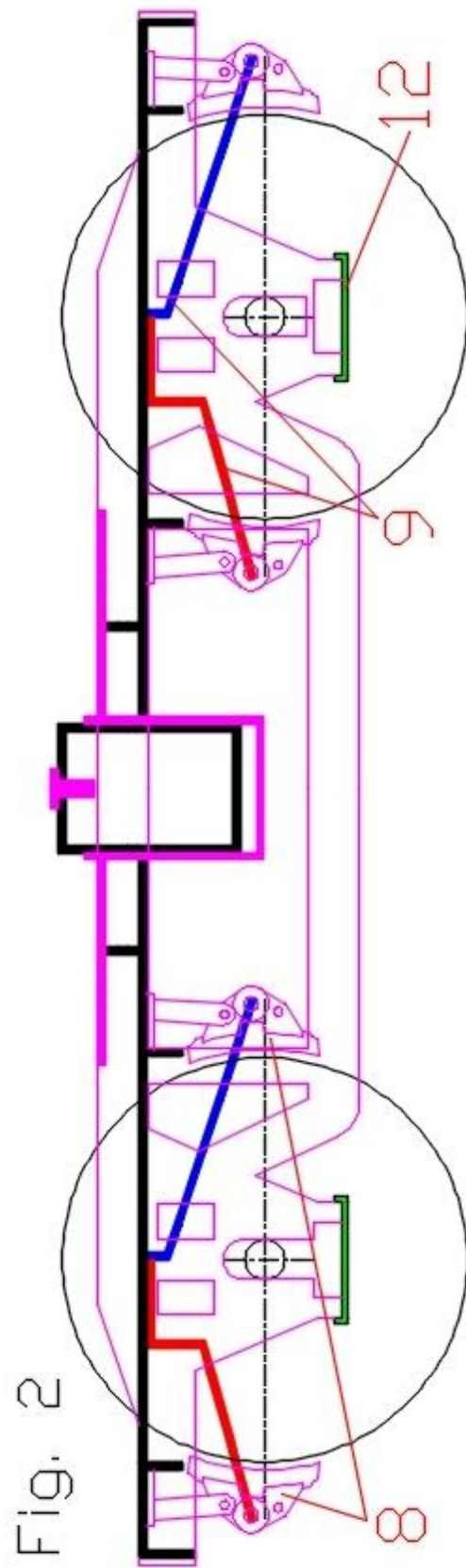


Axle keeps

Etched axle keeps (12) are included if you wish to use them on any cosmetic castings. They can be pinned using 0.4mm wire soldered to them and could be made removable in case you wish to drop the wheels out. They fold into a wide U shape and are fixed to the base of the bogie casting below the axles. They are shaded green in Fig. 2 below.

If you wish to make the wheels removable without using functional keeps you will need to contrive some arrangement to stop the wheels from falling out. I used 0.31mm wire soldered to the bogie as shown in the following photo for the 4mm version. These retaining wires don't need to be very strong as they only have to hold the weight of the carriers, wheels and bearings.

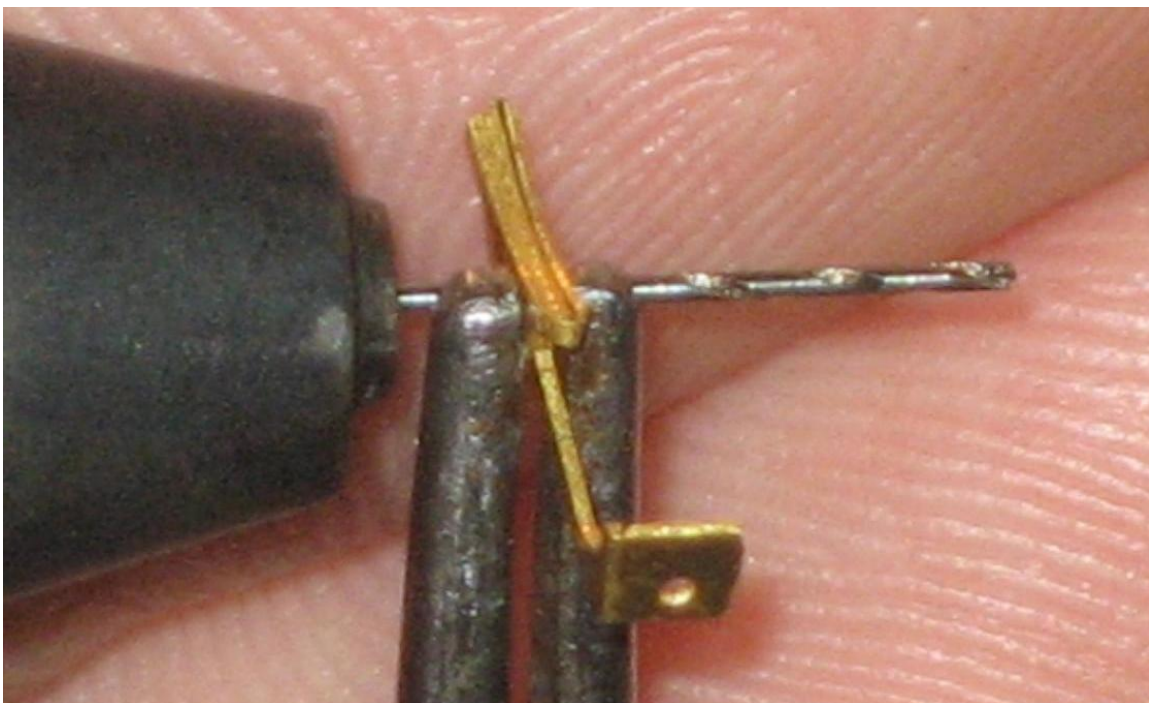




Brakes and Yokes



The brake shoes (8) are designed to be folded up as one piece, soldered together and then tidied up afterwards. Remove from the fret and fold up. The two outer detail parts of the shoes wrap around the centre section. There is no need to separate the parts. See photo above. Fold the base through 90°. The three parts of the brake shoes need to be aligned and soldered in place. I do this by putting a 0.9mm drill bit through the holes for the yoke and clamp the etched layers together using a pair of self closing tweezers. If you hold the drill in one hand you can rest the base of the tweezers on the workbench leaving one hand free for the soldering iron. It's easier than it sounds, see attached photo. Solder together. You can now clean up the assembly and the shoes in particular.



The shoes need to be located against the spring bearing plate and soldered in place. Use a length of 0.5mm wire and the holes etch in the spring bearing plates and brake shoes to aid location and then solder in place. Note that there are two sets of holes. One set will position the brake shoes for 7mm Finescale wheels and the other for Scaleseven ones. The wider setting is for Scaleseven.

The brake yokes (9) can now be added. There are two types; one with two etched fold lines and one with one. Fold them up and attach them to the bogie as per Fig. 2 above. You may need to bend the brake shoes gently outwards to be able to fit the yokes. Ensure you are happy with the alignment of the brake shoes and then solder the yokes to the brake shoes and the spring bearing plate.

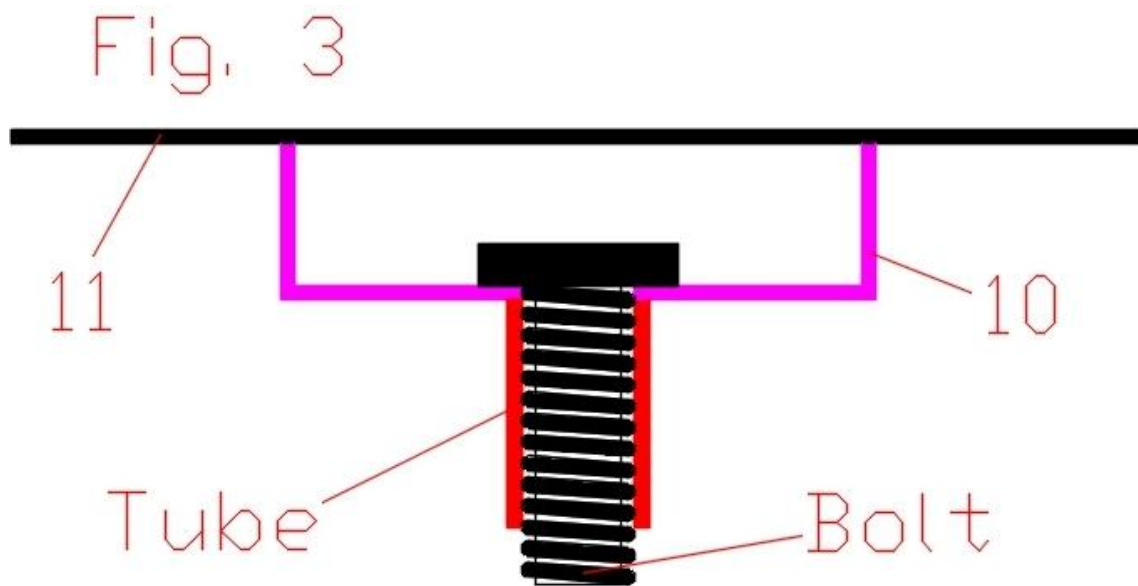
Pivoting points and adjustment

I dislike using screw threads as bearing surfaces and so have etched the holes in the bogies to 3mm diameter in order to be able to use a sleeve of 3mm outside diameter brass tube with the locating bolts. It may be a little extra work but there will be no catching of the bogies on the pivot bolt when moving up and down.

If you are fitting to a kit built coach then you can use the bogie pivot plate (10) and pivot locating plate (11) provided. Use M2 bolts and 3mm outside diameter x 2mm inside diameter tubing.

Remove the bogie pivot plate from the fret and fold into a channel. The M2 locating bolt can then be soldered in place from the inside of the channel. This assembly can then be soldered to the pivot locating plate using the tabs and slots as an aid. See Fig. 3.

The pivot locating plates have lines etched at the mid points of the sides to help align them on the coach floor. The intersection of these four lines will mark the pivot centre.



Height adjustment is via pads on the chassis floor above the bolster. These can be made out of plasticard or metal sheet. Ideally, if you are using plasticard, there should be a metal layer acting as the bearing surface for the pins on the bolster, 0.010" sheet would be fine. Make sure that each of the pads is the same thickness and then the coach will sit completely level.

Notes on cosmetic sideframes

The bogies are set up to the correct wheelbase, note that not all cosmetic castings are, at least in 4mm scale! Perhaps you'll have better luck in 7mm scale.

Thin the castings down as much as possible. Most castings when paired with sprung bogies are much too wide. This is generally down to the width of the cosmetic castings. Effort expended here will result in better looking bogies when placed under a coach.



The back of the axleboxes will need to be slotted to allow clearance for the bearings.

Painting

I now use Halfords grey primer in a tin through an airbrush with cellulose thinners to prime just about everything, including plastics. The primer is synthetic and has no adverse effects on the types of plastics used on RTR railway models and kits. The cellulose thinners used evaporate so quickly that they don't have time to attack the plastic. You can then put your choice of paint over the top including cellulose. Don't use the red oxide in a tin on plastic though as it won't adhere and the paint will just come off.

Finally

Thanks must go to the staff of The Buckinghamshire Railway Centre at Quainton and the GWS at Didcot for letting me measure up some of the coach bogies in their care which have greatly helped in the preparation of these kits.

Justin Newitt 2015

Suppliers List

Eileen's Emporium (wire, bolts & tube)
Unit 19.12 Highnam Business Centre
Newent Road
Gloucester
GL2 8DN
UK
www.eileensemposium.com