Rumney Models – BR 22T Plate Wagon Chassis BR Clasp Brake

This set of instructions covers the BR clasp brake chassis kits B.08 and B.09. These are designed to build into a fully detailed and accurate 4mm BR clasp brake plate wagon chassis to suit either the Parkside Dundas body (PC16) or the Rumney Models body (C.21).



Prototype Information

The humble 20/22T plate wagon remained essentially the same design from it's beginnings as a joint LMS/LNER design right through to the final BR builds. Even the change in carrying capacity was simply down to uprated springs. There were minor variations along the way in terms of construction: Some were fully welded, some fully riveted and some had a combination of welded sides and riveted ends; the early examples had three hinges per door and later ones four. The biggest area of change concerned the brakegear used. All LMS and LNER examples were unfitted until the LNER built some with their vacuum clasp brake just before Nationalisation. BR continued the build program at first constructing unfitted vehicles and then a large batch with the LNER clasp brake in the mid fifties. The final iteration saw the introduction of the BR clasp brake.

The first vehicles that were fitted with the BR clasp brake were new build diagram 1/434 vehicles. There were 2500 built between 1959 and 1961. Chassis kit B.08 covers this type. Build and numbering details are as follows:

B934025-B935524	Lot 3223	BR Shildon 1959/60
B935525-B936524	Lot 3440	BR Shildon 1960/1

In addition BR decided to retrofit the BR clasp brake to earlier build unfitted plate wagons. Chassis kit B.09 covers this type. I have been unable to find definitive dates as to when this took place but it had definitely started to happened by 1964. My best guess is that it happened in the early sixties around the same time as the new build program. Vehicles were almost all from diagrams 1/430 and 1/431 but I have found evidence of the occasional LNER diagram treated. Almost all had Plate

axleguards but one or two taken from the early lots had the heavy duty RCH type. These are possibly the only examples of the BR clasp brake and the RCH type axleguard being found on the same vehicle. This combination is outside the scope of my chassis kit though. Numbers of some of the wagons retrofitted with the BR clasp brake are as follows:

B930756, B931317, B931563, B931626, B931760, B931764, B932048, B932703, B932168, B932293, B932494 & B932522

This list is by no means exhaustive and a more comprehensive one can be found on page 68 of 'Wagons of the middle British Railways era' by David Larkin.

Whilst many of the BR clasp brake fitted plate wagons continued working in the manner intended many (both new build and retrofit) were converted to coil carrying wagons of types D and F in the mid sixties.



Notes

Read through the instructions first and familiarise yourself with the components. Drawings and photographs taken during the construction of the test etches are included to attempt to make my waffle clearer. Note that not all the photo are from this particular clasp brake chassis but suitably illustrate the item in question.

Important: 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. For a long time I used an Antex 18W soldering iron on virtually everything with few problems.

Check all holes before removing parts from the fret. The drawing process for etching, particularly if you use a CAD program as I do, is extremely accurate but the actual etching process itself is 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 as we go along.

Body Notes

If you are using the Parkside Dundas body you will need to make some alterations to be prototypically accurate.

The bodies to go on B.08 were all welded like the Parkside one but they had 4 hinges per door instead of 3. The middle hinge on each door will need replacing.

The bodies to go on B.09 had riveted ends so these will need to be added.

Given the work involved in removing the headstocks from the Parkside bodies I would give serious consideration to leaving the Parkside ends as they are and removing the headstocks from the chassis kit. You should also know that the Parkside ends are slightly under scale at 33mm. The headstocks on the chassis are to scale and are 33.45mm. If you keep the headstock on the chassis then you will need to shorten them slightly to suit the Parkside ends.

If you are using the Rumney Models body kit C.21 then you don't need to worry about any of this. All the variations in body work are covered in the instructions for C.21.

Technical

The suspension is individual springs made from 0.008" steel guitar wire soldered to the etched spring/bearing carriers. For this you will need a suitable flux. I use Carr's Black label. If the finished vehicle is weighted to 50g with the weight evenly distributed then this will produce a spring deflection of 0.5mm. Don't be tempted to up the gauge of spring wire. Even moving up to 0.009" springs will have a significant effect and you would need to weight the wagon to 90g to obtain the same spring deflection. Also don't over weight the wagon or the springs will not have enough upwards movement before they hit the W-Irons. Think of the 50g total as an ideal weight but also a maximum. There are notes on weighting the wagon at the end of the instructions.

The chassis is designed to produce a buffer centre height, when the kit is completed and weighted to 50g of 13.8mm when using Exactoscale wheels. The Exactoscale wheels are 13.4mm $(3'1'_{2}'')$ in diameter. Different makes of wheel may affect the ride height depending on their diameter.

Materials list

Several sizes of wire are needed to build the chassis. Eileen's Emporium are good source for these and they do a mixed sizes pack if you don't want to buy large quantities.

0.31mm - Some parts of the brakegear, axle guards

- 0.4mm Some parts of the brakegear
- 0.5mm Brake yokes
- 0.6mm Brake levers
- 0.8mm Main brake cross shaft
- 1.0mm Alignment pins

You will also require items such as buffers, vacuum cylinders, vacuum pipes, axleboxes and springs as well as couplings to complete.

For buffers I would recommend those produced by Lanarkshire Model Supplies. The quality is excellent. There were various types of fitted to these chassis so check your prototype. Buffers for both chassis were mainly pneumatic types. The new build chassis (B.08) were mostly fitted with 1' 8¹/₂" Oleos (BP03). The retrofit chassis (B.09) had a mixture of 1' 8¹/₂" and 2' 0¹/₄" Oleos (BP04). Others types could also be found including 1' 8¹/₂" self contained (B014) and 1' 8¹/₂" Dowty (BH02, you will need to change the head to a 16" type). I can't say for sure but it's not beyond the realms of possibility for some to have had 2' 0¹/₄" Dowtys (BP04).

All had 16" heads. If you wish to fit sprung metal heads to the self contained buffers I would thoroughly recommend obtaining them pre-drilled. The quality of work is excellent.

Metal buffer heads and springs for Oleo and Dowty types with the correct 1.45mm diameter spindle and 16" head are available from Wizard Models (UC026). MJT do a metal head for the self contained type (2376) with the correct 2.5mm diameter spindle.

Lanarkshire Models also do cast swan neck vacuum pipes, code VP03. These look very good but being whitemetal I find them quite fragile. Homemade ones from brass rod and very thin wire would probably be better.

You will need 21" vacuum cylinders. Lanarkshire Models have just released castings for this type. Something will also be coming in the not too distant future from Rumney Models as well.

Axleboxes on both types of chassis were either the Hybox type or roller bearings. Wizard Models do a suitable Hybox axlebox (BRC026). They also do hooded (BRC023) and non-hooded (BRC022) roller bearings. MJT also do a non-hooded roller bearing (2256A).

Springs on the prototype were 7 leaf. MJT (2285) do a good casting.

Couplings it seems were predominantly Instanter but screw couplings did appear. I use Masokits coupling hooks. I find the hooks are a bit on the big side but if you aren't using auto couplings this is a help. Masokits do a good etched screw coupling. For instanter couplings I use the Exactoscale products available through C&L Finescale.

Contact details for the above suppliers can be found at the end of these instructions.

Component List

- 1 Chassis top plate
- 2 Axleguards
- 3 Riveted axlebox guide overlays
- 4 Vees
- 5 Solebars
- 6 Solebar detailing overlays
- 7 Solebar detailing
- 8 Solebar/headstock corner plates
- 9 Solebar/headstock reinforcing plates B.09 only
- 10a Side support brackets (short)
- 10b Side support brackets (long) B.08 only
- 11 Clasp brakes
- 12 Spring Carriers
- 13 Bearing washers
- 14 Axle keeps
- 15 Brakegear links
- 16 Brake shaft crank overlays
- 17 Brakegear overlays
- 18 Brake yokes (EM/P4)
- 19 Brake yolks (OO)
- 20 Vacuum cylinder actuators
- 21 Vee reinforcing plates B.09 only
- 22 Brake lever guards/brackets/stays See separate 'Lever guard' etch if constructing B.09
- 23 Brake lever guard stays
- 24 Brake levers
- 25 Lifting links
- 26 Brake lever cranks
- 27 Brake lever washers
- 28 Coupling pocket detail
- 29 Lamp Irons
- 30 BR swan neck vacuum pipe brackets
- 31 Central door support bracket
- 32 Cleats B.08 only

The area shaded yellow in the parts diagrams is the jig for forming the safety loops. This area should be removed from the fret when the time comes. Note that there were different types used and I've included the type which seems most common for the chassis concerned.

The area shaded green is the drilling jig for the lamp irons.

The area shaded light blue (B.08 only) is the drilling jig for the cleats.

If you have chassis B.09 but don't have the separate 'Lever Guard' etch then contact Rumney Models for a replacement.

















Construction

Main Chassis

Firstly check the fit of your buffers in their holes in the headstocks. It may sound a bit odd starting with something that usually goes on at the end but it will be much easier to open out the holes now rather than later.

Start with the chassis top plate (1). Whilst still in the fret check the diameter of the holes in the fold out clasp brakegear brackets. They should be 0.4mm. Also check that the holes in the inner vees will accept 0.8mm wire. Adjust if necessary. If building B.09 press out the 6 half rivets on either side of the hole for the coupling hook. I use a drop head riveting tool on one of those ubiquitous green cutting mats to do this.

On chassis B.09 there are also two other small half etched circles on each headstock slightly in towards the centre from the holes for the buffers. On the real thing there were little hooks that were used for fixing ropes and this is where they were located. If you want to model them you could do so with something like 33SWG phosphor bronze and drill these holes out to locate them but beware, this is the path to madness... Don't ask.

Remove the chassis top plate from the fret.

The headstocks need to be folded up. This is best done with the chassis top plate clamped to something or held in a vice to avoid distortion. There are two sets of fold lines as the headstocks need to be folded into a channel. Starting with the outermost parts of the chassis top plate and fold through 90°. You can reinforce this fold line of you wish but I haven't found need to do this. Next fold the headstocks through 90° to form a channel. Do not reinforce with solder yet.

The bottoms of the solebars need to be folded up. There are two sets if fold lines along the sides of the chassis top plate one on the front and one on the back. Start with the outer most fold line and fold so that the two parts either side of this line are at 90° . Repeat with the inner one.

Fold out the clasp brakegear hanger brackets through 90°. These will be adjusted later but need to be at this angle for the moment. Fold out the inner vees. You should have something that looks like this:



Check that the holes in the axleguards (2) will accept 0.31mm wire and remove from the fret. If you wish to make use of the riveted axlebox guide overlays (3) included then now is by far the best time to fit them. Use the slot for the axle to align them on the axleguard assembly and solder in place. Make sure they will be on the outside of the axleguards when folded up. Carefully fold up the sides and the four spring supports. Make sure that the sides are at 90° and adjust if necessary.



The chassis top plate and the axleguards need to be soldered together. There are 1mm diameter holes on both the top plate and axleguard to aid location. Using short lengths of 1mm wire with the ends tapered slightly pin the two parts together. You may need to open out the holes slightly but make sure the wire is a tight fit. Solder the two parts together and then remove the locating pins.

Check that the main brake shaft holes in the in the vees (4) will accept 0.8mm wire and that the brake lever holes will accept 0.6mm wire. Make sure the holes in the vacuum cylinder brackets can accept 0.5mm wire. Remove from the fret and fold up. There are two parts that make up vacuum cylinder bracket on the solebar side. The outer part needs folding over through 180° with the fold line on the outside and solder together. Solder the Vees in place on the chassis top plate using the same method as for the Axleguards. Make sure the vees align.



Next remove the solebars (5) from the fret and fold into an L shape. I find the best way to do this is in a vice with a couple of lengths of aluminium to extend the jaws. A hold and fold tool would be good here.

Remove the solebar detailing overlays (6) from the fret.

As a result of the etching process there should be a curve through them with the ends closer to you if looking at the rivet detail side. Carefully bend them so that the curve is reversed slightly and that the ends are further away when looking at the rivet detail. This can easily be done between thumb and forefinger but take care not to put any kinks into it.

There are numerous half etched circles on the back of the solebar detailing overlays that need to be pressed out to form rivets. Now is the time. Those half etched circles that are on the back of the side support brackets need pressing out. See where parts 10a and 10b are on Fig.1a or Fig.1b. As with the headstocks on B.09 there are some half etched circles that mark the position where the rope fixing hooks are can be drilled out if you want and used as locating points.

The solebar overlays are designed to fit into the slots in the solebars. The completed solebar then locates into the slots in the chassis top plate. Locate the solebar detailing overlay in the solebar and tack solder in pace. Note that there is a right way up for all the overlays but given the shape of them this should be obvious.

Now is probably the easiest time to attach the solebar detailing to the solebars so I shall cover this now before returning to the business of assembling the chassis.

Solebar detailing

The solebar detailing (7) comes contained in its own little fret. See Fig.2 below. On it you will find number plates, label clips and a rectangle that is actually a block of wood on the real thing. I have no idea what the purpose of the rectangular block is but it was made of wood was quite common. The round parts can be ignored. See Fig.1a, Fig.1b or a picture of your prototype for the position of these details. Solder in place.





Main Chassis Continued...

The solebars can now be fitted to the chassis. Note the correct sides for the two solebars (again see Fig.1a or Fig.1b). There are slots and tabs to aid location and the ends go into the channel that is the headstock. Fit the solebars at an angle and then straighten locating the slots and tabs at the same time. Once in place then the solebar can be soldered in place. The accessible fold line on the headstock can now be reinforced with solder if you wish.



Now is a good time to fit the solebar/headstock corner plates (8). These locate in the four corners on the underside of the chassis. The straight edges run alongside the inside of the solebars and the outside of the headstocks. Solder in place.



Solebar/headstock reinforcing plates (B.09 only)

The chassis on the retrofits were of riveted construction. They therefore had plates that were riveted to the outside of the solebars and the inside of the headstocks to strengthen things in that area. The solebar/headstock reinforcing plates (9) need to be removed from the fret and folded into an L shape. Solder in place using Fig.1b or a picture of the prototype as a guide.

Side support brackets

Now is a good time to add the short side support brackets (10a) (and the long side support brackets (10b) if building B.08, see Fig.1a for where these locate). The connecting tags should be removed and then they need folding into an L shape. They can be located in place using the slots through the solebars and solebar detailing and the riveted part soldered to the top of the solebar.



Spring Stops

The retrofitted wagons (B.09) had round pattern spring stops. I use 1mm wire for these. I cut almost all the way through the wire with a piercing saw and then solder in place. The cut can then be completed without the joint breaking. There are four half etched circles on the bottom of the solebars marking the locating points.

The as built wagons (B.08) had fabricated stops. There are 6 fabricated spring stops on the solebar detailing (7) fret (see Fig.2 above) which can be folded up and then soldered in place. I find a small pair of self closing tweezers is a good help for this.



Brake Shoes

The clasp brakes (11) are designed to be folded up as one piece, soldered together and then tidied up afterwards. If you wish press out the half etched rivets at the top of the hanger bracket. Remove from the fret and fold up. All the fold lines are through 90° except for the one between the two plates with the holes in which is through 180° with the fold line on the outside. There are four parts to the brake shoes: Two outer detail parts and two inner shoes. The inner shoe parts needs to be folded through 180° with the fold line on the outside. The brake shoes need to be aligned and soldered in place. I do this by putting a 0.5mm drill bit through the holes for the yolk and clamp the four 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 clasp brake assembly and the shoes in particular.





There are tabs on the clasp brakes that locate into slots in the axleguards (2). There are two different sets of slots depending on which gauge you are building to. The outer ones are for EM/P4 and the inner ones for OO. The clasp brakes can now be soldered in place on the chassis. Note that the cosmetic hanger brackets for the brakes on B.08 are not identical. For the correct orientation see Fig.3 below, the appropriate parts are in green. Those on B.09 are all the same. Make sure that the clasp brakes are hard up against the axleguard assembly. The holes can also be used to help pin the clasp brakes to the chassis top plate when soldering.



Spring Carriers

The spring carriers (12) can now be assembled. They are designed so that the springing wire is soldered to the carrier using the half etched slot as a guide.

The distance between the backs of the axleguards is a little bit larger when compared with other systems and is 24.5mm. The advantage of this measurement is that if using pin point axles you don't have to hunt around for bearings that are deep enough but you may find that the carriers need packing out a little to take up any slop. Bearing washers (13) are included for this purpose. There should be a good fit between the axles and the bearings with ideally no sideways movement at all. If using pinpoint axles use a waisted type of bearing to avoid having to remove any more material form the cast axleboxes than is necessary. I have used Exactoscale waisted pin point bearings which are just about perfect for the job with only occasional ones that require packing out.

Due to the removable nature of the axleguards you can easily use Exactoscale parallel axles and bearings if you wish. If doing so then you will need to pack the bearings out on the back of the spring carriers before soldering them in place due to the length of the axle. Use the bearing washers provided.

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 2mm hole drilled into it. The spring carrier can then be placed so the half etched guide slot for the spring is facing towards you and the bearing locates through the hole in the carrier and the wood. The bearing can then can be soldered in place. The spring wire can then be located in its half 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 7mm either side of the point where it is attached to the carrier.



A note on roller bearings:

These were fitted to many of the BR clasp brake plate wagons. One method of doing this is to extend a non-waisted pinpoint bearing using 1.5mm brass rod and a small sleeve of 2 x 1.5mm brass tube. The actual bearing part of the axlebox casting is then removed with the bearing moving up and down with the springing. Wizard Models make a suitable hooded type roller bearing axlebox casting (BRC023) as well a non-hooded type (BRC022).





Extending the bearings is a bit of a fiddle and I'm looking into easier solutions for this. Also this method looks good but really the roller bearing is too small, the casing around the real things was 9" in diameter, and it is tricky to remove the material form the casting for the non-hooded types. Another option that I wish to try is to attach the casting for the roller bearing to the axle bearing and have it move with the functional springing. This would require some material removing from the top of the axlebox casting so that the cosmetic spring doesn't impede the movement of the axle. Having removable keeps makes this feasible.

Tweak the brake shoes if necessary with the wheels in place

Axle keeps

The axle keeps (14) are designed to be removable if you wish in order to allow the wheel sets to be easily dropped out. They can be soldered permanently in place but either way you will need to make sure the holes will accept 0.31mm wire before removing them from the fret.

If you are not planning on making them removable then they can be pinned and soldered to the axleguards. Remove from the fret and fold the ends up. Thread lengths of 0.31mm wire through the axle guard and holes in the axleguard and the corresponding holes on the opposite axleguard. Solder in place. Fit the other axle guard and solder in place. Trim the wire so that it represents bolt heads on the front of the axle guards but extends approximately 0.5mm from the back of the axleguard. These pins will prevent the springs from becoming disengaged form their slots.



If you want to make them removable to allow the axles to be dropped out then you will need to solder 0.31mm wire 'pins' through the holes in the axle guards. I find the easiest way of doing this is to use one pair of holes as a jig and drill a pair of 0.3mm holes into a piece of scrap wood. Short lengths of 0.31mm wire can then be threaded through the axle guards locating into the holes in the wood. These can then be soldered in place and filled back to represent bolt heads before folding up the ends. I found it easiest to fold he ends in this order and then quickly reinforce the fold lines with solder before removing the axle guard completely. You will need to make sure there is at least 0.75mm of wire projecting from the back of the axleguards otherwise the spring carriers will be able to fall out of place when everything is assembled.

It is also a good idea to leave at least one of the pins in the axleguard as long as possible to give you somewhere to hold them when painting. Once the axleguards and the chassis are painted they can be tack glued together on final assembly. The glued joint can be broken and the tie bars removed if you find it necessary to remove the wheels at any point.





Next attention can turn to the brakegear. Check and open out where necessary the holes in the brakegear links (15), brake shaft crank overlays (16), brakegear overlays (17) and brake yolks (18 or 19 depending on gauge). Refer to the Fig. 4 above for the hole sizes.

Remove the brakegear links (15) from the fret. Fold up one of the brake shaft crank overlays (16) so that it will wrap around the brake shaft crank on the brake linkage. The other is a spare. Use 0.31mm wire to align and solder in place. The brakegear overlays (17) need to be done next. Do them one at a time only removing them from the fret when necessary. Refer to the Fig. 4 again for where each one goes. Fold them up so they will wrap around the top of the brakegear links. Use the appropriate size of wire to pin them together making sure there is at least 5mm of wire protruding either side of the assembly then solder in place.



Once all the overlays are all in place you can trim all the connecting wires to represent bolt heads except for those noted in Fig. 5 below. These will be used to pin the assembly in place on the chassis.





The brackets for the brake links on the chassis top plate need to be angled inwards with the ends at right angles to the chassis and parallel to brakegear links assembly. The exception to this is the bracket second out from the main brake shaft which is cranked. There is a pair of fold lines to allow this. See photos below. Starting at one end and working towards the other locate the brakegear links assembly with the brackets, once everything is in place solder together. This is a bit of a fiddle but just take your time. Things can easily be tweaked once in place if something gets bent.







Yokes



The brake yokes, either (18) for EM/P4 or (19) for OO can be attached next. They follow the prototype in appearance. Ensure that the holes in them can accept 0.5mm wire and remove from the fret. The outer fold lines should be folded to approximately 30° and the inner fold lines to approximately 60°. Once they are folded they can be located to the chassis using 0.5mm wire. Note that there is a slot in the yoke which will locate in a similar slot in the brakegear links (15) so make sure they go on the correct way around. Pass a piece of 0.5mm wire through both the brake shoes and the yolk and then locate the yolk to the brakegear links. Solder everything in place and trim the wire.

Vee reinforcing plates (B.09 only)

Curiously the outer vees on the retrofitted chassis had reinforcing plates (21) fitted. These are included with the kit. There is only one type for the side where the brake lever is pivoted on the vee itself but there are two types for the other side, a large and a small one. The small one was much more common. Remove from the fret and solder in place using the holes as locating points. They should follow the general profile of the vee.

Brake levers, etc

Firstly make sure that the holes in the following items can accept the correct size of wire:

Brake lever guards, brackets and stays (22) 0.31mm Brake levers (24) 0.6mm and 0.31mm Lifting links (25) 0.31mm Brake lever cranks (26) 0.8mm and 0.31mm Brake lever washers (27) 0.6mm Vacuum cylinder actuators (28) 0.8mm

Note that there are two types of brake lever cranks (26). These go behind the brake shaft vee and then are bent to align with the brake lever and lifting links. There is a solid pair to be bent up prototypically or a pair with half etched fold lines to make things easier.

Brake lever guards

The brake lever guard, brackets and stay (22) can be removed from the fret and folded up. Note that for B.09 these are on a separate etch as there were some holes that didn't come out on the ones on the main production etch. The stay is etched as part of the lever guard to make life easier. Fitting it as a separate detail is a pain. Separate the lever guard/stay from the lever guard bracket. The stays on the new builds and the retrofits were of a slightly different pattern so I will cover the two types separately.

B.08

Press out the half etched rivet on the end of brake lever guard stay. Fold the stay needs folding through 180° with the fold line on the outside at the second of the half etched lines in from the pushed out rivet end. Fold the rest of the lever guard along with the lever guard bracket as per Fig. 6a below. Insert a piece of 0.31mm wire through the lever guard and stay and solder in place to represent a bolt. The first fold line from the pressed out rivet end of the stay can then be folded through 90° so that the stay locates on the riveted axlebox overlay as in Fig. 6a.



B.09

Press out the half etched rivet on the end of brake lever guard stay. Fold the stay through 180° with the fold line on the outside. Fold the lever guard along with the lever guard bracket as per Fig. 6b below. Insert a piece of 0.31mm wire through the lever guard and stay and solder in place to represent a bolt. The end of the stay needs to be twisted so that it locates on the riveted axlebox guide overlay. Again see Fig. 6b and the prototype picture below.





In both cases solder the folded up lever guard and bracket together using 0.31mm wire. Note that the hole is slightly off centre on the bracket. The hole should end up slightly towards the top of the bracket on the completed lever guard assembly. Trim the wire on both the front and back to represent a bolt. The completed assembly can then be located in the solebar and soldered in place. There are slots in the solebar to receive the lever guard brackets. Solder the stay to the riveted axlebox guide overlay.

Axleboxes and springs

Now is a good time to fit the cast axle boxes (if you haven't already done so) and springs. It will make life easier when bending up the brake levers as they should be bent, like the prototype, to clear the axleboxes and springs. The back of the axleboxes will of course need slotting to allow the wheel bearings to move with the springs and drop out if making them removable. Some types come with the riveted reinforcing strips for the axlebox guides moulded on. These are for heavy duty types and should be removed before fitting if using the riveted axlebox guide overlays.

Brake levers

The general arrangement of the brake lever, lifting links and cranks can be found on Fig.1a, Fig.1b and also on the photographs included below.

A piece of 0.31mm wire needs to be soldered in place so that it projects at least 1mm on both sides at the end of the brake levers (24). A short length of 0.6mm wire can also be soldered in place through the brake lever with a brake lever washer (27) on either side. The easiest way of doing these pins is to follow a similar method to the pins in the axle guards by drilling holes in a piece of scrap soft wood to accept the appropriate size of wire and then soldering in place. The same thing needs to be done with the brake lever cranks (26).



The brake levers need to be bent up as per the prototype clearing the axleboxes and springs. They then need to be cranked for the handle. Check on the model and adjust until you are happy with the shape. Once you are happy with the shape the brake levers can be soldered in place.





The brake lever crank can now be bent or folded to shape depending on type. These can be fitted along with the brake shaft (0.8mm wire) and vacuum cylinder actuators (26). The actuators need to have their half etched rivets pressed out and then folded over double. The hooks on the end need shaping so they can go around a piece of 0.6mm wire extending from the vacuum cylinder. See the photo below. Leave soldering of the actuator until the vacuum cylinder is in place.



Note that the brake lever crank goes behind the vee on both sides. Adjust if necessary so that it aligns with the brake lever. Fit the lifting links in place joining up the brake lever and the brake lever crank and solder in place. Note that there should be lifting links on both sides, one on either side of the lever/crank. A washer (27) can be added to the outer ends of the brake shaft and soldered in place. The vacuum cylinder can be added now and the two halves of the vacuum cylinder actuator soldered in together and to the brake shaft.

Headstock detailing

Now is as good a time as any to fit the coupling pocket detail (28). The new builds simply had the small rectangular type as seen on the photo below. The retrofits had a mixture of types either with a large riveted plate on the headstock $(1'8\frac{1}{2}")$ buffers) or a U shaped bracket $(2'0\frac{1}{4}")$ buffers) with the small rectangular type extending them. The BR clasp brake plates were mostly fitted with instanter couplings which were originally designed for 1'6" buffers. The difference was made up in the coupling pocket. You should therefore need four layers of coupling pockets on each end. In the case of the $2'0\frac{1}{4}"$ buffers this is on top of the U shaped bracket. Solder them in place using the hole for the coupling as a guide. I find the easiest way of doing this is to shape the end of a cocktail stick to fit in the slot. This can be used to align the detail on the headstock and hold it in place while you solder them together.



Lamp Irons

Lamp irons (29) are included for fitting to the headstock. There are two pairs included, one with half etched holes for pressing out the bolt heads and one with the bolt holes etched out completely. I dislike relying on glued joints for these sorts of things on plastic bodies and so have included these for use with 0.31mm wire pins to provide a more positive location. I have also included a drilling jig which has the correct spacing for drilling holes in plastic bodies. This is the part shaded green in the parts diagram. Use a 0.3mm drill. Fig. 1a and 1b show an example of the position of them.

If you wish to use the half etched bolt type then press out the rivets whilst still in the fret and then remove and fold up and fix in place

If using the pinned type then check that the holes will accept 0.31mm wire and remove from the fret and fold up. Two short lengths of 0.31mm wire can be soldered in the holes and then the lamp iron glued in place on the body having drilled receiving holes for them. Alternatively simply glue the wire and lamp iron in place at the same time without the solder.

BR swan neck vacuum pipe brackets

There are two BR swan neck vacuum pipe brackets (30) included. These are quite distinctive and come in two parts. There is a bracket which attaches to the solebar and a round head that has 'tails' that fold up. Press out the rivets on the bracket and remove from the fret. Twist the base of the bracket through 90° so that the interface with the head faces away from the rivets. This bracket can then be soldered to the back of the head (the side with no half etched areas). It is easiest to do this while the head is still attached to the fret. There is a small slot to help provide a positive location. Once soldered in place the assembly can be removed from the fret and the 'tails' on the head folded out. If you're brave these fold lines can be reinforced by the use of a very small quantity of solder and a very quick soldering iron. Some step soldering might be a good idea but I haven't encountered many issues with just using 145° solder. These can then be soldered in place on the headstock.



Safety loops

Formers are included on the fret for making safety loops form 0.31mm wire. These are marked in yellow on the parts diagram. There were different shapes used but I have included the shape I think is most appropriate. Once they are formed they can be soldered to the chassis.



Central door support bracket

The central support for the doors on plate wagons were removable to allow access to the whole length of the body and because of this they had a heavy bracket in the centre of the solebar to locate them.

A central door support bracket (31) is included with all the plate wagon chassis. It is in two parts, a main assembly to replicate the bracket itself and a T shaped plate that slots into the top. The main assembly is designed to fold up as one piece. Refer to Fig. 7 and the prototype picture below as you go along.



1 - Remove the central door support bracket from the fret and clean up any tags. Fold the two sides at 90° to the piece connecting them to form a U shape.

2 -Solder a piece of 0.7mm wire though the two holes in the sides. The wire will need to be filed flush with the outside of the bracket sides.

3 - There are small 'wings' at the bottom of the sides. These need to be folded through 180° so that the rivet detail is on the outside. The small full thickness rectangles on the front of the wings need to be folded through 90°. See the photo below. Solder in place.

4 - On each side are reinforcing pieces for the slot that locates the T shaped plate. These should be folded through 180° and soldered in place. Locate the T shaped plate into the slots in the top of the bracket and solder in place.

5 – The two sections that remain untouched on the top of the bracket need to be folded outwards through 90° .

The completed assemblies can now be located into the centre of the solebars using the tabs and slots provided and soldered in place in a similar manner to the side support brackets.





Cleats (B.08 only)

The new build plates had rope cleats (32) fixed to the headstocks. These are included with the chassis. They were also fixed to the lower edge of the body.

A similar to locating the lamp irons using pins is employed. A drilling jig (the area shaded light blue on the parts diagram) is included primarily for use on plastic bodies. This can be used to drill a pair of 0.3mm holes in a piece of wood into which two lengths of 0.31mm wire are inserted. The cleat can be placed onto the two lengths of wire and soldered in place. The bits of wire can be trimmed almost flush on the front before removing them from the wood. You will need about 0.75mm of wire on the back. The cleat can then be located into the holes towards the ends of the headstocks and soldered in place

The drilling jig can be removed from the fret and folded into an L if you are using a plastic body. This can be used to drill holes in the plastic sides into which the cleats can be glued in place. Fig. 1a shows the locating points for the cleats.

If you are using the chassis in conjunction with a Rumney Models body then the fitting of these to the body is covered in the instructions for C.21.

Painting

One of the advantages of having the chassis as a complete unit with solebars and headstocks is that you can paint it separately from the body and then glue the two together afterwards. If using an airbrush or aerosol this means you can prime it and then paint it all black with no masking at all which makes life a little easier.

I now use Halfords grey primer in a tin through an airbrush with cellulose thinners to prime just about everything, including plastic bodies. 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.

Notes on wagon bodies and weighting

Some modifications will be necessary to the body to get it to fit the chassis. Principally this will revolve around removing the plastic headstocks from the ends of the body. Careful use of a piercing saw or scalpel and file will do the job.

The suspension on the underframe is designed to work optimally under a 50g load.

Generally I like to hide the lead ballast in the floor of the wagon. There is a little space in between the tops of the solebars. Something like spare brass sheet could be used to fill this area. If you are using the Rumney Models body the floor is placed at the correct height so there is a recess in the bottom of the body. This can be used to hide thin lead flashing as ballast after having checked the weight of the wagon. Given the size of the underframe there is plenty of scope for placing lead ballast amongst all the brakegear.

Finally

Thanks must go to the staff of The Nene Valley Railway for letting me measure up and photograph at close quarters the Plate wagon in their care.

Last but certainly not least if you haven't come across the wonderful resource for BR wagon photos that is Paul Bartlett's website then I would thoroughly recommend a visit to: http://paulbartlett.zenfolio.com/

Justin Newitt 2015

Suppliers List

Eileen's Emporium (wire and sundries) Unit 19.12 Highnam Business Centre Newent Road Gloucester GL2 8DN UK www.eileensemporium.com

Parkside Dundas (plate wagon bodies) Millie Street Kirkcaldy Fife Scotland KY1 2NL www.parksidedundas.co.uk

Lanarkshire Models and Supplies (buffers, vacuum cylinders and vacuum pipes) 9 Nairn Avenue Blantyre G72 9NF www.lanarkshiremodels.com

C&L Finescale (Exactoscale wheels, bearings and couplings) Aran Lodge Severn Road Hallen Bristol BS10 7RZ http://www.finescale.org.uk Masokits (coupling hooks) Michael Clark c/o 27 Crotch Crescent New Marston Oxford OX3 0JL www.scalefour.org/masokits

MJT (axleboxes and spring castings) 17 Hurst Close Staplehurst Tonbridge Kent TN12 0BX www.dartcastings.co.uk

Wizard Models (axleboxes and spring castings) PO Box 70 Barton upon Humber DN18 5XY www.wizardmodels.co.uk