

E. B. Models

Instructions for building both Stroudley 0-6-0 C & C1 class goods locos.

This kit is a result of co-operation between members of the Brighton Circle and acknowledgement of help and encouragement is due to those who provided details that helped in the research, as well as sheer encouragement.

If you have purchased a complete loco kit with tender, please refer to the other set of instructions for building the tender.

C Class: There are, to my knowledge, only two versions from which to choose: - early version without brakes, or later version with addition of Westinghouse system - brakes were added only to driving and trailing axles on loco. The first two - Nos. 84/5 - as built, had Adams safety valves mounted on the boiler. Later 'production' batches had the standard Stroudley dome with Salter spring balance safety valves. Both options are included. Originally no.85 started life as no.83, being renumbered in June 1873. Whole class numbering system changed from 77-96 to 401-420 between 1880 - 1883. (See Historical Notes)

C1 Class: As this loco is very similar to the earlier C class, I have combined both into these instructions. Differences include boiler diameter, cab size, clack valves, frame length, driving-axle springs and cab reversing arrangements. Differences in building will be noted in the appropriate places.

Parts still needed to complete: As usual, motor, gearbox, wheels, axles, paint, transfers and couplings are not included – as these are left to the wide variety of personal choice.

General Advice:

You can choose whether to begin with the chassis or the bodywork. I began with the latter, but started on the chassis as soon as the footplate smokebox and cab had been positioned.

I have assumed you will use solder construction at most stages, with the exception of the attachment of whitmetal castings, where I would advise use of adhesives - though if you are adept at low-melt soldering, you can do so – *though proceed with great caution, as no liability can be accepted for damage to castings caused by soldering. However, purchase of replacements can be arranged.*

Careful removal of parts from the frets, and gentle cleaning up of tabs and any 'etch-cusp edges' with a needle file is recommended for all etched parts. Castings should also be lightly cleaned up as necessary, to remove any mould 'joint' lines.

Some arrangement for bending parts is necessary. Curves can simply be bent over a drill shank or rod of suitable diameter, held in a vice (suitably lined to protect the part). Often pliers will suffice on sharp curves, and small items, pressed against a hard surface. Sometimes even just fingers!

Straight right-angle bends are best made using a vice, with the ½-etch bend line a hair's width above the jaws, and **facing you**. Carefully check that the bend line is parallel to the top of the vice jaws / bending bars, and, using a steel rule / piece of flat hardwood behind to support, bend the metal **towards** you in one go. This will ensure a clean bend, and maintain the flatness of the part. Often a slight tweak more than 90° is needed to get a true resulting right angle.

All bends are made with the ½-etched line on the inside of the bend, unless otherwise stated. Where ½-etched dots are provided, these should be pressed through from the back with a scribe, to form bolt / rivet detail on the other side.

Many of the holes are deliberately etched slightly undersized, or even only half-etched. There are 2 reasons for this:-

1) To cater for individual preferences where fittings are concerned (which do vary) – especially in the wheel department.

2) In some cases, especially using nickel silver, which is .15mm thicker, the action of etching removes more metal, and, in order to try and preserve the delicate proportions of some parts, especially ones where there is a hole in a round end, I have taken the cautious route. Drilling out gently and gradually **while the part is still on the fret** is safer. Taper broaches are even gentler than drills. That way you get the more delicate parts which so enhance a scale model, rather than a blitzed remnant!

Please also note that there are areas that I have been deliberately cautious about – and I have offered alternative procedures. This is due to the absence of either precise information or convincing proof as to the exact nature of the detail under consideration. In these cases, I suggest a way forward,

rather than categorically state one. As you read through the instructions, it should be obvious where this occurs. Just occasionally one gets information too late to include!

Loco Construction: Chassis. Diagram numbers refer to the number of the paragraph of text.

1. **Frames:** Remove both frame sides - pts **1 & 2** from **nickel-silver fret**, along with chosen spacers from separate fret - determined by the gauge of your track - 00 (16.5), EM (18) or P4 (18.83).

After careful cleaning up, bend up and solder the front left and rear right spacers to separate frame halves - this is to minimise the risk of distortion on cooling. Solder the remaining spacer ends into their slots - forming the basic frame construction. If modelling the C, then the rear spacer will need to be shortened, as well as a recess filed in it to clear the drawbar pin arrangement. This is a simple matter of filing after fixing.

Check at this point that all is perfectly aligned, and make any corrections if necessary. *Failure to perform this important check will bring problems later.* Lightly spring the centre spacer into position in the slots, and solder.

2. **Coupling rods:** Detach from separate fret and clean up. Note that these are made up from 2 pieces with almost identical outline – one with full- and one half thickness, and pivot on the centre crank pin. Solder pairs of layers, ensuring correct positioning of cosmetic joint knuckle - determine from drawing / photo. Correct position is forward of the driving crank pin. The difference in wheelbase centres is only 1mm (7' 6" & 7' 9" - scale 30 & 31 mm), so take care.
3. **Suspension arrangements:** According to your choice, select and clean up chosen hornplates pt **3** or **4** (solid, sprung or flexichas/slotted or holed - or discard altogether if using springing). It is important that some form of jig is used. The Maygib axle jigs are useful, though taper-end style axle jigs are preferred to ensure greatest degree of accuracy in location of hornplates direct from coupling rods, as they allow for any reasonable diameter of hole in coupling rods. Springs - pts **5** have been deliberately produced separately, as some may wish to make arrangements to be able to drop the wheels out after completion of the basic frames.

Solder each plate carefully in position, using jigs at each stage. Solder top hat bearings in holes where fixed driving axle is required, and fit flexichas bearings where vertical movement is required. I leave springing arrangements to your preference.

If you are using a flexichas arrangement, then ensure beam passes through slot in centre frame spacer. It is assumed that the rear axle will be powered, but again, the choice is up to you. Modifications will need to be made to gain space under the smokebox / boiler assembly if you wish to power the leading axle.

Ample ***Flexichas beam, pivot and rod are provided. Retain a short length of the same tube for steam brake cylinder construction.***

4. **Brakes.** Parts **6** - hangers, **7** - brake blocks, **8** - clasp rods. If you are building **standard C1** or **braked version of C**, follow this section. If building **unbraked C**, ignore this section.

Brake pivot holes are provided. Cut wire hangers from 0.7mm wire provided, solder in position, and remove and clean up brake hangers and blocks. Solder both parts of brakes together now. Some gentle filing may be necessary to present the faces of the blocks accurately to the wheel treads, and ensure a 'one-piece look'.

5. ***You are advised to read carefully through this next section before proceeding with any construction:-***

Note that the pairs of hangers with rectangular ends (they're small!) are positioned where the steam operating cylinders are located - between the driving and trailing coupled wheels. The hangers are 'handed'. It will be helpful to fit one wheel on an axle and locate it in the relevant axle bearings to assist positioning. See **Illustration** for details.

6. Construct the steam cylinders by cutting a slit along a short length of the same tube provided for the pivot tube. This is cross cut into four pieces, and slid on to each rectangle, and soldering to fix. Cross-

drill for thin wire on which to hang operating rods, and solder wire in place. Fill the tube either with solder now, or a filler later on, after chassis construction has been completed.

Drill out holes on clasp bake operating rods - pt **8** - while still on fret. Bend the rods up, and solder to the 'peg' on the other hanger, which may require some filing. Solder adjustment plates to the wire through the cylinder, taking care other parts do not come adrift. The use of lower melting solder for this operation will help avoid the 'cylinder' from melting. Cyano glue could even be used.

On the full size loco, these rods pass either side of each braked driving/coupled wheel, though you may wish to represent these on the outside only, to avoid fouling electrical pick-ups. Drawings show that the prototype actually had cranked pull rods behind the wheels to clear the springs. Consult **diagram** to determine exact position of each brake component.

It is debatable whether it really is feasible to pass rods behind the wheels, though it might be OK with split axles.

7. If you wish to model the **steam operating pipes**, thin copper fuse wire will suffice. Photos will indicate their exact location.
8. **Guard irons** - pt **9** are fitted to the front of the loco, where the ½ etch rectangle is located. Press out rivets before removing from fret.
9. Should you wish to fit **sanding pipes**, these are best made from stiff brass wire, and attached after the bodywork has been built. Castings are provided for the upper fitting just below the footplate. They will be vulnerable when the body and chassis are separated.

The method of **current collection** is also left your choice.

10. **Balance weights** - pts **10** - are attached to all coupled wheels, aligned with the spokes. The very large pair - pt **11** - fit to driving wheels - directly opposite crank pins.
11. apparently spare parts - **12 & 13** - are **lifting links** and **reverser rods** respectively. The lifting links are provided for those building the C, primarily, as they are more visible - mainly due to the section of frame that holds the weighshaft - the protrusion just ahead of driving wheels. If you wish to fit the whole caboodle, then drill a hole inside the ½-etched mark, and used solid wire on which to hang these.

The reverser rod is provided as 2 parts, so you can make the yoke on the end, which attached to the lifting link. ***The reverser rod is attached to the lifting link and to the bodywork later.***

I bow out here, as my knowledge of the ins and outs of valve gear is rather scant. As always, my advice is to refer to photos, or plans.

Loco Bodywork:

All parts are on the brass frets, unless otherwise stated.

1. Remove **footplate**, pt **1**, **buffer beam** – pt **2**, **drag beam** – pt **3** and **footplate valences** - pts **4 & 5**. Using a 1mm thick card spacer, and a wooden 'right-angle' jig block, solder the buffer beam in position, indicated by the ½-etched line. Solder the drag beam at the end of the footplate. Now make a dry run with the valences, to ensure correct length. If any trimming of the valence ends is needed, consider carefully how much and where from - to preserve the correct appearance and shape. Then solder in position, using spacer against wooden block.
Buffers are fitted later, following the specific instructions. Buffer holes will need enlarging to suit.
2. Remove **cab sides** – pts **6 & 7**, and **cab front** – pt **8** at this point. During a dry run, locate the tabs in their respective sockets, and bend the lower 'tails' of the spectacle plate to follow the profile of the rear splashers. (Annealing would assist here - see boiler section **4**) Solder the whole assembly, starting with the sides located at 90° to the footplate. Offer up the **cab front** ensuring it sits properly 'on top of' the front edges of the sides, and the 'tails' sit tight to the profile of the splasher curves. Solder carefully in place. Some filing may be necessary here. Note that the small hole marks at the rear end of the footplate denote the location of the cab handrail pillars. Ensure no solder fills or covers these, and drill out now for cab handrail pillars. See later for fitting.

3. Fold up and reinforce-solder **smokebox wingplate assembly**- pt **9**. Ensure exact right-angled bends where appropriate. If you are modelling in 00, the remove the splasher tops, and use pts **9a & b** - 00 splasher tops. Bend to follow outline of splashers, and solder in position. Solder this completed assembly to the footplate.
4. Remove **boiler** etching from fret – pt **10**, and note that tiny ½ etched holes for boiler handrail knobs come on the **outside**. (Do not drill these yet, as it will encourage kinks to form during bending)
5. Boiler bands have not been included, as, in my opinion, they are usually overscale, and are best applied either as transfers made using decal sheet during painting, or made up from thin paper, painted beforehand

It is sensible to 'anneal' the brass before rolling. Here's how I did it:-

Light the front gas burner on your cooker, or mini-blowtorch (I must get one!) and gently 'wave' the boiler sheet, and smokebox, in the flame. Let it go slightly bluish/brown and then to a 'metallic-looking white' - almost back to the original brass colour, and ensure even heating. This will enable you to roll the boiler (and smokebox) without 'springing back' from the former. ***If in any doubt, try on a piece of fret waste first.***

Clean up the joint edges with a fibreglass brush now, before rolling commences. A handy pressure tool is made from a synthetic win-bottle cork, mounted on a thick nail, or bored to take a piece of tube as a bearing, and then it will roll as you traverse it along / across the tube.

Half-roll the whole boiler (top half of finished boiler), aligning the contact area of the former with the centre marks at each end, and taking great care to avoid kinking along the line of chimney and dome holes. Diameter of former used should be approx. 16mm. Wooden ramin dowel is ok, hard thick-wall brass tube or rod ideal.

If you are working in 00 gauge, a small 'curved triangle' will need to be removed from the front corner of the firebox, so that it matches up with the centre splasher. P4 modellers can set the firebox behind the splasher. The amount you remove is a 'try it and see' process, after completion of the rolling. The rear boiler former will now be easy to position and solder in, starting from the top centre alignment marks, and working outwards, keeping inward pressure on the boiler sides to ensure contact with former. Locating the rear of the boiler on the footplate should now more easily possible. (See later)

Continue to roll the front part to form an even tube with an overlapping seam at the bottom of the barrel formed by the ½-etched edges. Ensure the 'wings' at the back end remain opened out parallel for now, to form the firebox sides. *Any slight kinks can be eased out with a 'rolling pin' motion with the former inside, and the firebox hanging over a table edge.*

Note: In practise, I found that it simpler to remove the overlapping joint and cut back the joint edge by c1mm for the C boiler to fit the front former. This leaves a butt joint.

Add the **front boiler former** - pt **13a** - to the front end of the rolled tube. Note that this has a ½ etched curved mark. This gives you the option of cutting tab off and using it solely as a former. If you choose to keep it all together, it also provides a height guide from the footplate for the front end. The slight notch may need to be accentuated to allow this to fit into the lower part of the boiler.

6. Remove **Firebox former plate** – pt **11**, and solder carefully up inside the firebox end of the boiler. Note the alignment marks. Note that the C1 firebox tapers slightly from boiler centre down to splashers. C firebox needs to be reverse curved slightly to match up with the firebox former plate. *If you disagree with me (and it is debatable) you are free to follow your own convictions. Front elevation drawings were clear for the C, but there were none available for the C1. I deduced it solely from photos, which I believe are clear, though I agonised for weeks over this point, during research!*

The hole in the centre should line up with that on the smokebox front, so aluminium or oiled brass locating pegs would assist correct alignment of the cab, boiler and smokebox. These pegs can be withdrawn after soldering together. Ensure any oil is washed off with a clean solvent, such as lighter fuel. See **Diagram**.

7. **Firebox throatplate: It may not be possible to use this, depending on your motor arrangements** – pt **12**.
8. Remove and solder in place, with a good fillet of solder where it joins the firebox sides. If you are modelling the early version of the C1, the small slot will house the top end of the reverser rod. Photos

show a gently curved corner to the joint between the firebox and boiler cladding. Slightly radiused filing will blend these parts together, after joining inside with an ample quantity of solder.

9. Now you can do a dry run with the cab (which is now in place), boiler and smokebox wingplate. Carefully check mating with the various curves on the splasers.
10. Roll **smokebox** – pt **13** to form a close fitting tube over the boiler barrel. There is some slight latitude to allow for error here, as they should act 'telescopically'. The ½-etched edge is the outside rear of the part.
Do not solder up until you are entirely satisfied the whole assembly goes together level and true. Then join together carefully, with a minimum of solder. Leave soldering the smokebox wrapper until last, as it acts like a telescope and allows automatic placing of smokebox assembly and cab attachment, without worrying about correct length.
If you are building the C1, it is much easier to fit the cast clack valves now before the boiler is finally secured, as they fit partially underneath the boiler, and behind the driving splasers.

Boiler fixing plates (I think that's what they are!) pts **14a & 14b**: These solder up in layers with the bolt detail on the top, located beside the firebox on the footplate behind the driving splasher, tight in to the body.

11. **Reverser**: pt **15**. **Photos are vital here.** If you are modelling the C1, then the second batch nos. 427 – 432, built 1884 – 1887, were the only locos of either class to have the reversing rod *outside* the boiler cladding. All the C1's had wheel-reversing arrangements in the cab. The C class all had lever reverse with rod passing out from behind firebox cladding.

If you are modelling either loco with the reverser inside the cladding, then note that the small slot in the **firebox throatplate** is where the reverser rod passes through. (This won't apply if you weren't able to use it!)

If you are modelling a C1 with the reverser outside the cladding, the slot in the **cab front** is where it passes through.

In either case, the unused slot needs to be filled with solder, and the slot used checked for size and, if necessary, lightly filed to ensure adequate clearance while this is possible. Once all is in position, this would effectively be impossible.

Note: The length of the lower link is shorter when the reverser rod is **not** exposed. Provision has been made for rods and levers on the nickel silver chassis frets, but I leave the final detail of their construction to you. A yoke is formed on the reverser rod, by cutting a relevant portion from one of the others, and soldering with a wire pin and the lower lever. See **Diagram**.

There is a rectangular ½-etched fixing area on the left underside of the footplate. The lower end of the vertical link is bent through 90°, and fixed here, so as to allow the bodywork to be removed, taking the reverser with it, rather than attaching it prototypically to the chassis.

File away any protrusion here that might incur a potential misalignment of body with chassis during attachment.

12. Bend up **centre splasers**, and remove tops – pts **16 & 17**. If you wish to construct closed splasers, then use some fret waste to make the other side. Proceed to bend tops carefully to the profile, and solder the splasher top to the front face.

Tip: Bend the curve around the squared-off end of a piece of hardwood or metal dowel slightly smaller in diameter. Form the tight 'flare-out' curves at the ends with a small pair of flat pliers held end on. The radius of the bend formed is tight enough to be correct. I found that the curve was too tight for round pliers. Solder to the splasher front. Careful filing with a rat-tailed needle file will produce the 'flare-down-to-nothing' on the footplate.

A note about gauges: If you are working to P4 gauge, then you should not experience too many problems with clearances - nothing that gentle filing won't sort. However, if you work to the anomalous 00 gauge, then clearances will need to be watched, especially around the firebox end, as it is quite a complex construction. There is no shame in the judicious use of an abrasive disc to alleviate tight areas, where wheel flanges would otherwise foul and short out. The boiler backhead and cab splasher arrangements are also likely tight areas. These were designed and sized primarily for P4 clearances.

13. Remove **cab roof** parts. Bend up the rain strips on the **base** – pt **18**, starting with the front edge and then the sides afterwards. Curve the **main roof section** – pt **19**. and with a pair of flat pliers, bend the outer edges back to form the flat edge (matching the front panel) See **diagram**.
A dry run is essential here to check on the curvature. Solder the edges in place, and then solder sloping front **19a** against the front rainstrip and the curve just formed. A good generous fillet of solder underneath will help, as judicious filing of the outside of this joint will help to create the correct front profile. Beware of making the curve too high at the crown - it is a scale 6" only.
Measure and mark the location of the upper handrail location holes, and drill these before fixing roof permanently. (See later for fitting handrails)
Cut the rear bracing-strip off when completed. The rather odd-looking curved strips located between the cab sides are vertical roof strakes, which presumably stiffened it. Several are included, as the final curvature of the roof may vary slightly from model to model. Choose the best fit, and solder edge down to the rear etch-raised strip (C class only), to represent what looks like a piece of angle iron. See **Diagram**. and photos. It may require some filing to reduce height along its curved length.
14. Remove **cab steps** – pt **20**, bend at 90° and solder on to ½ etched locating marks at rear end of footplate valence.
15. Remove **cab spectacle plates** - pt **21** and clean up very carefully. Solder using a wooden or aluminium tapered stick to locate concentric with the aperture. A piece of circular plastic as used in coach glazing will fit the bill, but it may exclude the possibility of soldering an inside rim. Alternatively, there are liquid plastic preparations on the market, as used by the aeromodelling fraternity. For the '*concours d'élégance*' model, you could leave these off until after the model is painted!
16. Cab fittings can be added now, along with the other castings. See **diagram**. Cab edging can now be fitted. The top fitting has not been defined, as alignments can vary slightly. I suggest you pass the wire up from underneath, and thread the cab edging 'eye' onto the wire at the same time. A small washer can be used to locate the upper end of the handrail pillar, soldered second in order. Solder the wire at the base first. With the two ends secure, line up the edging 'eye' and solder the edging along the cab cutout. Trim to length at the upper end, to meet the upper fitting.
17. A quantity of **lamp irons** is provided - some plain and some 'tee'. Consult photos for exact locations. ½-etched line enables bend for soldering portion.
18. **CASTINGS: Boiler backhead:** this should be obvious! It is best glued to the rear of the cab spectacle plate - much easier than trying to lo-melt solder it. Fit the regulator handle on the spigot on the backhead. Note that the C had only one gauge glass on rhs, so remove lhs one.
'German Sausages' (C class only) these pump air vessels fit in the holes in the chassis between the front wheels on the inside, and stand up above footplate level.
Odd cylinder thing! This has to be something to do with the feed water donkey pump (not provided) for C class Nos. 84/5. It fits in the single hole at the rear of the chassis, on the outside.
Sandbox caps - locate in the holes on top of the front splashers.
Chimney: Although this is rather obvious, you may find that the holes in the Smokebox and boiler no longer quite align. Simply run an appropriate drill through, or gently rat-tail file, ensuring the upper hole remains unaltered. If the boiler front former was fitted complete, it should have located this unit correctly.
Dome - again, obvious. The early two C class locos had Adams valves until replaced in 1876 for no.84 and 1877 for no.85.
Salter valves: The levers of these appear on the loco body frets, but Chris Cox has produced the complete items to be mounted in a drilled hole on top of the dome. Brass pillars by Markits are provided in the kit.
Westinghouse pump: This is best left until after painting, though it might be best to prepare the fuse-wire pipes and location arrangements (not provided for) at this stage - simplifying matters later.
Sand boxes attachments: There are 2 items: The first is a familiar sandbox, which was only carried on the C1. They attach just below the cab at the rear of the chassis.
The other is a pipe-like fitting. These are mounted under the footplate - under the sandbox ends of the front splashers. It might be preferable to attach these to the chassis, to avoid them being vulnerable when the body is detached. A stiff brass wire fitted in a drilled hole will complete the sand pipe.
Westinghouse brake pipes: These attach under the front and rear buffer beams of loco and tender.
Oil lubrication Boxes: Chris has very conscientiously modelled these. They are best glued in position as indicated in **Diagram** or photos.
Reverser: C class: Lever attaches on LHS inside of cab side plate, next to the box / seat. Sadly most of the lower end will need to be removed - more realistic than the cutting a slot in the floor.

C1 class: Uses wheel and screw casting, which mount on top of the seat / box. Make sure that the lever outside the cab lines up with the reverser screw inside. It may be that the apparatus was inclined to align with the outer lever, but the drawings were of too poor a quality to decipher.

Boiler clacks: C: These are the standard 'right angle' ones that attach just behind the smokebox at "9 o'clock" and "3 o'clock". Drill the 1/2-etched hole for attachment.

C1: These clacks are shallow angled ones that locate behind the driving wheel splashers, should be fitted by now!

Whistle: locates just ahead of cab front.

Cylinder Cover: this locates at the centre of the wingplate below the smokebox door, on the footplate.

Boiler Handrail knobs: Brass turnings by Alan Gibson are provided. They locate in the 1/2-etched holes along the boiler at approx "10 o'clock" and "2 o'clock", as follows:-

6 longer ones on the handrails, and the 2 shorter ones on the front smokebox curved handrail. Gibson straight brass wire is provided for this purpose. Being brass, they solder in place, inside the boiler where possible, for a clean joint, unless you wish to attach them after painting.

If you look at pictures and drawings, you will notice a very thin link from the front of boiler handrails to the fittings on the smokebox. That is because the handrails were hollow, and they are operating rods that passed *through* the handrails. I can only suggest that you either ignore this size difference, or spin a piece of wire in the lathe / drill and thin down with a Swiss file or abrasive cloth. Some loco pictures show this changed and the rail leading right up to the fitting.

Smokebox door handles: These fit in the centre of the cast **smokebox door**. This latter in turn locates in the centre hole in the etched smokebox wingplate:-

C: I don't believe they lasted long enough to receive the later door hinges. I've seen no photographic evidence to the contrary.

C1: Use short-hinged door for early version, and long straps for final stage of life (definitely no. 428, and maybe 430 - as these lasted until 1919 and 1924). Again, check photos of known date.

T screw lubricators: Chris has very bravely cast these - which I am convinced add greatly to the character at the front. I did not include holes in case these did not work as castings. They did! Check photos again! Finish them with either Precision Paints brass, or a Pilot gold pen. So long as the surface is smooth, this makes a very good polished-brass look. The same applies to the salter and clack valves, pipes to the latter being copper. Precision Paints do a great copper.

Painting: Both locos were adorned in the Stroudley Goods Green livery - the C's all their lives, as they had all gone by 1904, and the C1's for most. With regard to the Mash black Goods livery I have only seen a photo of no 430 (withdrawn 1934) in that livery. Potentially nos. 428 - 432 may have possibly been repainted, but I doubt that any scrapped around 1907 - 1911 (421 - 427) ever did. See Bradley's 'Locomotives of the LB&SCR' vol. 1.

Number plates and works date plates are best obtained from Bill Bedford. I suggest a small hole (1mm) drilled exactly at the centre point of the oval plate. When the brass plates come, you can solder a small stub of 1mm rod as a location assister for fitting. After painting, these can be glued in position; a slight countersinking of the hole may assist the plate in lying flat. In both cases, the rear of the part is hidden - number plate on cab and works plate on driving splasher.

Finally, the Kitson engines had a maker's plate under the rear tender coping, and details of this are visible in Bradley Vol1 Fig 111, opposite p125.