

Instructions for building Stroudley Single 'Sussex'

Version 2

Historical Notes (These are a summary from 'Locomotives of the LB&SCR' vol. 1 by Bradley, with reference to 'Stroudley Locomotives' by Brian Haresnape.)

This loco was a rebuild of No.203 Stephenson single of 1864 - one of a number, that Stroudley undertook in 1871. Two sister engines of the class - nos. 198 & 204 reappeared as 2-4-0's 205 *Kensington* and 204 *Westminster* in 1872 (see *Belgravia* kit recently released).

In order to accommodate a larger firebox and longer boiler, the frames were extended by 1' 3". Originally Sussex appeared with Adams safety valves, but bad experiences led to these being replaced with Salter valves, as with C & Belgravia classes.

The 16"x 23" pistons were most unusual for Brighton works - being the only engine carrying them.

However, it was a good performer, and held its own on Brighton to London expresses well into the days of the Richmond & Gladstone 0-4-2's.

For the latter years of its life, Sussex was, for some reason, fitted in 1893 with a version of Joy valve gear - having an oil-pressure cylinder to operate it - that did not always operate flawlessly at slow speed - tending to throw the loco into reverse whilst moving slowly forward, and vice versa. Happily, it never happened at high speed.

After running 705,575 miles by 1895, it was withdrawn, though stored at Brighton shed for a couple more years.

Details:

Cylinders: 16" x 23"

Leading Wheels: 4' 3"

Driving Wheels: 6' 6"

Trailing Wheels: 4' 0"

Wheelbase: 8' 4" + 8' 0" = 16' 4"

Boiler diam. 4' 3"

Boiler length: 11' 0"

Firebox length: 6' 2^{1/2}"

Boiler Pitch: 7' 1"

Grate Area: 183/4sq'

Working Boiler Pressure: 140lb

Sheds: Brighton (All its life as far as I am aware)

This kit is a result of further 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.

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. However, for Brighton Circle members, excellent Loco Name transfers are supplied by Ian White, who is geared up to produce the names needed for this kit. Eric Gates also supplies Stroudley Passenger Livery lining transfers. I use Sharman wheels, though these are currently unavailable at the time of writing.

General Advice:

Important Note: You will need the chassis & frame jig from the Belgravia kit – which you should have retained. If you only purchased Sussed, then please contact me on mjwsjw@talktalk.net and I will provide you with one. If you are not on email, phone 07875 488209. I would actually suggest building the two locos together as they are so similar in many respects.

If you have not built an etched brass kit before, or feel in need of assistance, the best all-round reference work is the Wild Swan book:- 'Etched Kit Building' by Iain Rice. This deals with a similarly double framed (GWR) loco, so it is very appropriate, though construction details may differ.

You can choose whether to begin with the chassis or the bodywork. I tend to begin with the latter to get the feel for and shape of the model. It also lets you see what motor space is available. but start on the chassis as soon as the footplate smokebox and cab have been positioned.

I assume you will use solder construction at most stages. The exception is the attachment of whitemetal castings, where I would advise the use of adhesives - though if you are adept at low-melt soldering, you

can do so – but 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' or sprue residue.

Some arrangement for bending parts is necessary. Curves can simply be bent over a drill shank or rod of suitable diameter (allow for some spring-back in the metal), 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. Beware, though, of round nosed pliers, as they are usually tapered. Sometimes even just fingers will do! 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. Usually, 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 scriber, to form bolt / rivet detail on the other side.

Some 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 thin 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, which can 'snatch' work. That way you get more delicately shaped parts which so enhance a scale model, rather than an overscaled apology or a blitzed remnant!

Please also note that there are areas that I have been deliberately cautious about – and I have offered suggested 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. I make no apology for even leaving some vague areas out completely - as insufficient information was available to produce a part. Just occasionally one gets information too late to include!

Important introductory Notes:

If you have purchased the Belgravia kit as well as this one, you might find building them together would be worthwhile, as there are so many similarities – this one is simpler!

- This kit is designed to use a Mashima 1420 or DS10 motor, with a Branchlines Multi-box gearbox – which can be built to 'fold back' under the motor and render the whole unit very compact. There is plenty of 'visual shielding' for this mechanism with the 6' 6" driving wheels and large splashers – they "can cover a multitude of sins"! For those who use it, the chassis is designed to accommodate simple compensation, with the centre axle fixed in top hat bearings. This means the driving wheel and drive unit will need to be fixed too – unlike Belgravia – and the rear axle sprung. (An alternative using full compensation is also provided for – see construction notes) If you think that the Mashima 1420 is rather low powered, use of a Branchlines double reduction gearbox should help to offset that, by assisting with the power output.
- If you intend to model in 00, please note that this kit is designed with all three gauges in mind. Before commencing building, please note that spacers are provided for, but there is one part of this arrangement that splits the motion plate into a n/s chassis spacer for the chassis, and the upper is brass – fixed later under the boiler. See bodywork section 30. As we go along, relevant

- areas include instructions for 00. Sometimes it includes removal of material, at others a specially designed replacement part. For EM, just a little shaving of material with a file is all that is needed.
- It is most important at the outset to understand the way the kit is designed to go together. It was a considerable challenge to design it in such a way that it could be built relatively easily. If you have built the E.B.M. C or C1 Stroudley goods, this kit is, by nature, rather more complex – but the Belgravia 2-4-0 is a good lead in to this one. Or even vice versa – as this one has fewer footplate bends!
 - These complexities revolve around the double framing, and the consequently raised curved areas on the platform / footplate. These attractive, flowing curves necessitate that certain phases of construction be completed quite meticulously - as subsequent phases rely heavily on these preceding ones.
 - As a result, the outside frames are attached to spacers and, next, to the splashers, but not cab sides, as with 'Belgravia'. There is there no half etch valence guide underneath the footplate / platform – as there was with the C class – as this would have further weakened the already narrow platform sheet. Instead, the means of locating the front of the platform in the correct place is a pair of upstanding tabs at the front end of the outer frame (*not the overlay*) This enables the platform to align with the outer frames from the front, mounted in the frame construction jig. This will necessitate a little more cleaning up than usual. A certain amount of skill with the iron is needed to keep the ensuing soldering operations on the frames even, and the whole assembly parallel. Clamping to a straight piece of metal (*such as square brass tube, or a steel rule*) as an extra precaution might further help avoid kinked frames (*though it might also act somewhat as a heat sink to the soldering.*)
 - The **first operation**, then, is to mount the outside frames in the **fold-up jig provided with Belgravia** (*which comes with add-on pieces to accommodate the 3 differing gauges - P4, EM & 00 - for building the chassis later*). The platform is now shaped over ramin dowel as a former (*possibly ¼" or 6mm – experiment on a piece of fret waste in preparation for when we get there!*), and then is continuously soldered along the top outline of the outside frames – ideally from the inside. Once this is done, an overlay is added on the outside of the outer frame, on which is a half-etched ridge (*presumably part of the original means of attachment?*) This makes the outer frame a tad thicker than preferred, but will add to its strength. There are holes etched in the frames to assist good soldering. The cab is added later; it is a separate entity from the splashers, unlike Belgravia. Splasher tops and ends are now bent up and soldered into "3D".
 - The smokebox / wingplate arrangement is constructed next, with a build-up arrangement to form a sub-frame – on to which the smokebox wrapper is soldered - and mounted on the platform. **It is possible to construct the boiler assembly complete before attaching to the platform / footplate – to ease painting and attachment of boiler bands later. However, it would probably need to be done on some parallel square material, as there are tabs protruding downwards to locate in the platform.** Also, doing it this way, there is a potential risk of the boiler and smokebox being twisted, rather than being aligned perfectly, and this could lead to problems when aligning the firebox with the curvaceous driving splashers.
 - Finally, the boiler is rolled, located with short 0.9mm wire dowels and joined between smokebox and cab. (*The ingenious might be able to use a small nut and bolt to allow a little rotational adjustment!*) The firebox area is designed not to be a fully rolled cylinder, but only the upper half is curved - with the sides vertical. When these solder to the inner edges of the splashers, a small projecting lower edge is left around the insides. This is to ensure any discrepancy between the fitting of the parts is allowed for, after the rigours of boiler rolling. Experience shows that a visually perfectly rolled boiler may not actually align 100% along such edges. Hopefully this will allow some latitude for those to whom boiler-rolling is a fearful science they would prefer to avoid!

Construction:

- A) **Chassis:** *Please note that I have very little idea what went on behind the outside frames, at the rear of the chassis – so consequently I have left the small protrusion in place that was there in Belgravia for the brake operating rod. With single clasp-brakes clearly Sussex would have not have had the same arrangement, but Burt's drawings suggest there is something there. I am not aware that there was a handbrake on the loco, as with Grosvenor, but it is very possible. As so often, you have the choice – cut it off or attach some detailing to it! There should be a 1/2-etch line just visible to guide those who prune it!*
1. Detach both **chassis frame sides (1 & 2)**. Also remove the four **frame spacers (3,4,5,6)** leave as a unit for the moment, as these are in the correct order on the fret. Punch the 1/2-etched dots out to form the bolt/rivet heads for the guard irons.
 2. At this point you need to decide whether you are going to build a **rigid chassis** or a **flexichas / sprung** one.
 - If the former, then simply ream/open out the axle holes to the outside diameter of the top-hat bearings. **Note:** I have assumed 1/8" diameter driving axles, but this may not necessarily be the case for the leading and trailing axles. Check with the axle supplied by your wheel manufacturer with 4' 3" and 4' 0" plain wheels. Gibson tender wheels may be most appropriate, as at time of writing, Sharman (my preferred brand) have ceased production again. For this reason, the holes front and rear are for 2mm top hats/axleboxes – which should allow for most wheel and axle manufacturers.
 - If you are using a style of **flexichas**, then you will need to cut out the front and rear rectangles around the axle holes, but **not** the centre ones. On the other hand, if you intend either **full compensation** or **springing**, all of them will need to be cut out. *(If using full compensation, you'll need to have the front two axles double beamed, and the rear axle rocking.)*
 3. Remove the **frame jig** from the body fret, with the two '**extensions**', **(P4 modellers do not need these 'extensions')** and open out the holes to 2mm and use the 2mm nuts & bolts provided to hold together with appropriate gauge label uppermost. *(Originally they were intended to be soldered, but it has become clear they need to be more versatile.)*
 4. Place **chassis sides** in the pair of slots nearest the centre. These are slightly wider to accommodate the 0.45mm n/s chassis thickness.
 5. Fold up the frame spacers with 1/2-etched line across, locate only the front and rear ones and **diagonally** solder in place, to avoid heating & cooling distortion. Then, slightly springing the chassis apart, locate the middle 2 spacers and solder in exactly the same way. Note that the slot for the flexichas beam to pass through is not needed to the front, but to the rear. NB P4 and EM use the one lower motion plate / spacer, and 00 use the other.
 6. **Reversing bearing arm (7):** this is a more involved process than with other kits, as a good deal of the mechanism is visible. Solder the short **bearing arm** on the inside of the frame (chassis) side where there is a rectangular 1/2-etched recess behind the rear axle hole **on one side only**.
 7. **Hornguides (8)** are attached in the fretted out slots. Ensure axleboxes slide freely up & down, with no slop front-to-back. I only give scant instructions here, as builders often use their own variations here. **Top hat bearings** can be fitted to the centre axle hole now. Wheels can be temporarily attached, and the brakes fitted to hanger wires soldered in the holes in the chassis.
 8. **Weighshaft bearing brackets (9&10)** are removed from fret and 1/2-etched dots inside the chassis frame punched to represent bolt/rivet heads outside. Solder the bearing brackets in place (holes are slightly towards the rear), and cut piece of brass .9mm wire to thread through to represent Weighshaft.

9. At this point, it is necessary to solder up the balance weight **9a** and add to the centre of the weighshaft. This will protrude through the motion plate. **10a**. Looking forward, it should protrude about 1mm on the left-hand side, and be trimmed flush on the r.h.s.
10. **Weighshaft bearing cap (11)** is now detached (2 are provided) and carefully soldered on the flush side. If so wished, the other one can be fitted under reversing rod - though it would need to be drilled! Also a spot of Araldite might be a tad easier than soldering.
11. **Weighshaft reverser link (12)**: solder together the two halves of the lever, and set in place with the relief bosses to the outside. Clean up the reversing rod and connect it from the lever just constructed, to the similar one mounted on the hanger below the rear left hand inside of the chassis. You may find that a certain amount of tweaking is needed in order to ensure that no shorts occur with the wheels, when fitted, as there is very little room here.
12. **Guard irons (13)**: these can be fitted now. The ½-etched dots behind were already punched out earlier, so solder irons in place, lined up with these. **Please note that there are 2 spare pairs included - as I forgot to put guard irons on the tender tenders for Craven Belgravia & Sussex.**
13. **Frame steps**: the six steps can now be fitted, after punching out rivet detail and bending. They are located behind each carrying wheel axlebox. The slight cut-off aligns with the frame edge shape.
14. **Sanding Pipes**: these can be lengths of nickel silver wire soldered to the inside of the outside frames, aligning with the tapered base of the driving splasher sand box (be guided by the lining on the photo) - c2MM ahead of the driving wheel tyre. Take care not to foul the brakes.

B) Locomotive superstructure:

Part numbers in (brackets) after name.

1. Remove **platform / footplate (1)** from the fret, and also the two outer frame sides – **not the ½ etch overlays**. Use the **assembly jig (2)** – **without any add-on parts as yet (P4 modellers - ignore these completely)**. Apply plenty of solder in the inside of the bend – as this will help keep it as rigid as possible. *(You could even solder on some brass strips at 45° to add some triangulation is wished, to further increase rigidity.)*
2. Mount the **outside-frame sides (3&4)** on it – in the outer 0.3mm slots – **it is the same for all gauges**. If necessary, you can lightly tack either end with a minimum of solder, to avoid any chance of slipping during this tricky bit of construction. Do not remove the ½-etched frame overlay from the fret yet.
3. Remove the **front frame spacer (5)** and clean off the tabs. This is most important, as it will avoid slight misalignments. These can all add up to cause major problems. Solder these between the frames in the slots provided.
4. Remove the **other two spacers (6&7)** - the narrower of the two is the centre one - and solder in place in the slots. *(this may need to be narrowed, moved or even discarded later on – depending on the space required by the motor you choose. A recommendation is above)*
5. Bend up the curves on the **platform / footplate** very carefully, using the outer frames, now held in the jig, as a check-gauge. There should be no daylight at any point between the parts. **Start soldering from the front end first**. This is important, as however carefully the maths is applied in design, the thickness of the metal means that there is the possibility that there might be a slight excess of overhang at the rear end - which may need reducing after the drag beam has been fitted. Leave approx. 0.5mm overhang.

6. Prepare **spacers** and solder spacers to splashers, ensuring that the similar shapes at the bottom edge and axle clearance cut-outs are exactly aligned. **Ensure they lie good and flat without any space between.**
7. The **splashers and spacers (8 & 9)** are now soldered to the inside of the outer frames - taking great care to ensure continued accurate alignment. *Tip: using small diameter rods / wooden dowels as bending formers makes the task easier. Allow for a degree of 'spring-back' - i.e. the metal uncurls a certain amount. The clue is to allow for that with smaller diameters than might appear.*
8. Now the **outer frame overlays (3a & 4a)** can be added.
9. Remove **cab front** and **sides (11a, b & c)** from fret, and clean up. Locate in holes in footplate, ensuring tabs locate into slots and, when fully assured of accurate vertical alignment, solder cab front in place from top front corner to **halfway** downwards. Lift and complete the solder run to the bottom. Now leave aside until paragraph **18**
10. **Splasher tops and fronts** are now bent over/round and soldered up. The curved downward sweeps are best softened with the use of a fine-flame gas pencil torch (often obtainable for around £5-£10 on markets/Maplins)
11. **Smokebox:** remove the front wingplate (**12**), smokebox front (**13**) and rear (**14**) plates, and two fold-up tabbed spacers (**15 & 16**). Bend these two parts through 90°, and solder to front plate. Now add rear plate. Ensure the front and rear plates are aligned correctly. **See Diagram sheet 1.**
12. Now, before attaching **wingplate**, solder **smokebox wrapper (17)** around - carefully ensuring it starts accurately aligned. There may be a slight overlap at the end to file back. Pre-bending, or, better still, annealing (softening) will greatly ease this operation. Pushing the inverted assembly down on to a suitable piece of wood helps to ensure a clean accurate joint.
13. **Wingplate:** offer up assembled smokebox frame to wingplate - they should be aligned temporarily with a stub of 0.9mm wire, which need not be attached permanently, but can be removed after soldering them together. It is vital that they are flush at the bottom edge, *but note that the tabs are different sizes. Please note that there is a tiny pair of frame ends (17a) to fit up through the front platform* – I have left it to you as to when to do that. Very little solder is required. The angled end is bent at 90° and the rest of the piece solders under the platform.
14. **Boiler (18):** Clean up boiler sheet, and anneal carefully. I am convinced that this is the best preparation to avoid kinks and metal that resists being bent. It can be done very simply over a gas cooker ring, held with pliers. Ensure the whole sheet gets heated evenly, even if you have to stop occasionally to allow it to heat up. A dull red glow is safest. Beware the ½ etched edges getting too hot. Again, a cylindrical former that is slightly undersize will be most useful. The rear firebox portion is only curved at the top, and the sides left vertical for now. A piece of ½" (12mm) dowel is about right. Solder the underneath seam (½-etched overlaps), after tacking the front former in position **from the top** – ensuring the alignment marks correspond exactly. This ensures that the boiler will be the correct diameter, but also enables it to be properly aligned with the smokebox.
15. **Firebox:** once the boiler part of the sheet has been rolled, take the **firebox rear former (19)** and work the end round to match the former. When they are matched, stand on end so the former is flat, and the boiler standing up at 90° to the working surface, and start soldering at the top. (There are small 1/2 etched alignment marks) then, as before with the smokebox, turn on one side and press down onto a wooden board, so that no gap is left. Run the line of solder right down to the bottom edge. Repeat for the other side. **Front Boiler former (19a)** is now added flush at the front. **Firebox front former (19b)** is fitted beneath boiler, and at the front of the firebox to form the firebox throat plate.

Boiler front 'band' (20) - This thin band locates next to the edge of the rear of the smokebox, and is not so much a boiler band as part of the smokebox wrapper edge. Usually it is part of the smokebox wrapper, but in this case has to be part of the boiler.

16. Leave the **dowels** in position - they should be left permanently in the firebox end, and optionally at the smokebox end also (see alternative at **18**) and solder up. You will have to solder the smokebox / boiler joint from the outside - so use plenty of flux and proceed slowly to allow adequate heat to ensure solder flows well ahead of the iron. (*Insufficient heat and/or too little flux are the usual causes of soldering difficulties*) the firebox end former only should be soldered from the inside.
17. **Upper Motion Plate (u/m)**: This is the upper part that appears to support the boiler, and has had to be modelled separately. Once the boiler is soldered in its final position, tis can now be fitted. See photo: Some filing may be needed to fit exactly upright
18. **Note the cab is not soldered up yet – see paragraph 20 below.**
19. **Assembly**: now offer up the smokebox, boiler and cab, using wire stub dowels, and check everything is correctly lined up. **Now is the time to rectify any mistakes.**
20. **Cab**: there is a problem waiting to happen here, if construction continues regardless of the need to paint the cab before it is attached. The springs for the rear trailing wheels will obscure the bottom front corners of the cab sides, so painting must be done first.

Here is the solution: First, having completed building the outside frames, smokebox and boiler as a unit, we have constructed the cab as a separate entity, but using the slots on the footplate as a guide only – as per **paragraph 9**. (Once the 3 parts have been soldered together - 2 side sheets and front spectacle plate the cab look-out beading and vertical handrail will have to be added [see **Beading & Cab handrail** below] - pushing through eye provided and soldering just under roof edging. *Take care to get this vertical.*)

Now add the inside **cab 'boxes' - 11d & 11e** - duly labelled on the fret as l.h.s. & r.h.s. - that for l.h.s. is shorter, and has the oil reverser mechanism mounted on it for the final Joy Valve gear version. (Cab lever reverser stand was left in position with this later arrangement) Fold up and solder, ensuring the extra fold-up tab with the hole in is securely fixed to the rear edge, and solder two captive 2mm nuts on the top of these tabs. Then attach to the cab, only tack soldering along the upper edge, to ensure no solder will creep down and reach the footplate. Now lift the cab off and complete the soldering. The wire spigot on the rear firebox former will act as a location for the cab front (drill out the mark) and the 2 screws will hold the rear down. Take care to ensure that the cab sits down well on the footplate with nothing preventing it 'sitting down', and that the cab front meets the firebox without a gap! You will also see 2 slightly elongated holes on the footplate to match with these. The use of 2mm captive nuts on the inside of the boxes, and screws up through the (adjustment) slots will enable a good fit.

If preferred, the **firebox locator dowel** could be replaced with another screw, with the head greatly thinned, pushed through a drilled out hole in the firebox former from inside and soldered, and a duly thinned nut attached in the cab. This would need a small drill-dimple in the back of the whitmetal firebox backhead casting to accommodate it.

21. **Buffer beam / drag beam: (21, 22)** Remove both parts, clean up and attach drag beam first to the tabs on the end of the outer frames. Fold up front buffer beam, to represent a solid timber baulk. Fill in plenty of solder at outside ends to make it appear solid. Remove **drag beam pin plate (22a)**, fold pin brackets 90°, and solder in behind drag beam.
22. **Roof**: Remove cab roof parts **roof top (23) & rain edging (23a)**. Clean up and fold **roof rain edging** using pliers or folding bars, and run a fillet of solder round the inside of the fold. *Do not remove rear spacer yet.* Curve the **main roof section**, and, with a pair of flat pliers, bend the outer edges back to form the flat edge. (matching front panel) See **diagram sheet**. Now bend front piece into a shallow obtuse angle.

Solder **main roof top** in place up against edge upstand, and then trim front piece into place. Fill with plenty of solder *inside*, and shape the outer front edge to form a gentle curve. A good photo of any Stroudley roof will show what shape to aim for. *Do not worry if you file through the brass and get down to solder!!* You can use car body putty to smooth off and fill any holes!

Beading (24): now bend the beadings as close as possible to cab cut-out edges - and solder from the handrail loops inwards and up towards the roof. Again, use plenty of flux and heat, but stop promptly at the top to avoid de-soldering the roof.

Cab vertical handrail: Replace cab for this operation. This needs to be fitted in conjunction with beading. Drill out a .7mm hole just behind the rear cabside edge and cut a length of .7mm wire. Thread the beading over the wire and, whilst it still hangs loose, solder handrail wire to the underside of cab rainstrip (see photo) and thread through footplate where wire threads through hole. **Do not solder to footplate!** Snip off surplus – allowing just enough to locate in the footplate – bearing in mind the cab is a loose piece attached by screws. **Great care will need to be exercised here with handling the loose cab, so screw into place for now!**

23. **Boiler backhead:** this needs to be loose-fitted with the cab splashers before it is put in position, ahead of the cab splashers (see **22** below). Some filing may be needed to enable this to happen satisfactorily. It might be better to have a captive nut on the inside of the cab spectacle plate, and a hexagon (rather than slotted head) screw soldered through from the inside of the firebox former. Head / nuts can be reduced in thickness, and check that this will not conflict with the motor arrangement being used.
24. **Cab splashers (25 & 26):** These are provided in both 00 and P4/EM. I have allowed for wheel space above the trailing wheels, though I'm not sure it's needed. The 00 boxes are wider, but with the same attachment arrangements.
25. **Coupling drawbar (27):** there are several provided - so that builders can choose the distance between the loco and tender - mainly to allow for differing curve radii. A small length of 2mm wire / rod will suffice as a link pin. It is helpful to have the permanently fitted pin under the loco footplate, and the loose pin through the base of the tender coal space - there not being enough space to enable a pin to be fitted from underneath
26. Make up the etched **cab reverser quadrant (28)** parts, **on n/s chassis fret**, with **lever**, to fit in the cab. These are doubled to make sure that the finished item is strong enough. The other part of this item is already described above in the chassis section. **Note: if the later Joy oil valve Gear version is being modelled, this quadrant still remained in place, minus lever.** **The regulator** is fitted to the spigot on the backhead casting – though take care that the backhead is appropriately located, and at what stage in the proceedings.
27. Remove **cab brass spectacle rings (30)** 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 'concoirs d'élégance' model, you could leave these off until after the model is painted!
28. **Leading and trailing axle springs (31) on Chassis fret:** these are probably the most fiddly items in the whole kit, and would better be preceded by:-
Leading wheel splasher castings- these are fitted first, after you have removed any necessary material from the ½-etched rectangular area under the platform/footplate near the smokebox base (for 4' 3" leading wheels). Glue in position covering the void where the leading wheel flanges needed space.
Once the splashers are in place, collect the z-folding spring parts in front of you.
Remove any necessary material from the ½-etched area underneath the platform/footplate, behind where the leading springs will be located. Check against your chosen 4' 3" leading wheels – mounted

in the chassis – and see if they touch. If they do, of course, there will short-circuiting. So proceed to remove the thinner material. If it is not needed – why make more work? Merely glue the cleaned-up castings in place.

29. **Driving wheel springs (32) on Chassis fret.** As with the leading springs, these are 3 parts. These are not the same as the leading/trailing springs – they are in 2 parts. They are soldered either side of the frames as now are those on the outside framed tender.
30. A quantity of **lamp irons (33)** is provided - some plain and some 'tee'. Tee ones are on the front edge of the platform - just above the buffer beam. Consult photos for exact locations. 1/2-etched line enables bend for soldering portion.
31. **Upper Motion plate:** This needs to be fitted after the boiler is *in situ*, so that it can be “fitted” in the full sense of the word – with files – as, in the test build, it was found to be a smidgen too tall.
32. **Platform bolting plate: (34)** these are situated on the nickel silver chassis fret – and are layered together, with the bolt detail on the top. They are both soldered either side of the firebox, beneath the Westinghouse pump, and on the corresponding place the other side – equally spaced from the cab at one end and the splashers at the other.
33. **Tender Fall plate: (35)** this fits on the rear of the loco footplate, and covers the gap between the loco and the tender. Theoretically it should be hinged, though that is a tall order. Soldering in place may be preferred.
34. **Driving Wheel balance weights: (36)** Only the large pair are needed. Position these as per photographic evidence. They should cover the space between 5 spokes

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 you should have determined by now how you will attach the cab, and have it still remain detachable, if you intend to fit the backhead permanently.

Sandbox caps - locate in the holes on top of the front splashers.

Chimney: Simply run an appropriate drill or rat-tail file gently through, ensuring the correct hole diameter. It is possible to copper plate the chimney cap, while still separate, using Guy Williams’s method of a battery, 2 leads, and some copper sulphate. I believe you can add a touch of Sulphuric Acid, but seek more knowledgeable advice than mine!

Dome - again, obvious. Merely ensure the hole provided is correct size. In the early days, this loco had Adams valves until replaced in 1876. Parts are supplied for either version.

Salter valves: The levers of these appear on the loco body frets, as a fold up. It has been retooled for this kit. Brass pillars by Markits are provided.

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.

Westinghouse brake pipes: These attach under the front and rear buffer beams of loco and tender.

Boiler clacks: 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. Phoenix Precision paints do a good brass & copper paint for the body & pipes, respectively. Alternatively, you can buy fabricated clacks from Markits.

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: They locate in the ½-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 there 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.

Smokebox door handles: Brass turnings from Markits are provided (even finer than Gibson's!). These fit in the centre of the cast **smokebox door**. This locates in the centre hole in the etched smokebox wingplate (which may require opening out). The boss on the carrying shaft could benefit by slimming off I diameter – which can be done in a small rotary tool and a fine Swiss file.

Buffers: These are Chris's whitemetal castings – which, for those like me who are rather picky, can be bored out and sprung shanks fitted

Painting: This loco was adorned in the Stroudley Passenger livery all its life. Phoenix Precision Paints cater for all the Brighton stock paintshop requirements, and, as mentioned at the outset, lining transfers are available from Eric Gates, and names from Ian White.

Number plates and works date plates are best obtained from Ian MacCormac, now that Bill Bedford no longer does them. 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 assistance for fitting. After painting, these can be glued in position; a slight countersinking of the hole may assist the plate in lying flat. The pin will then locate the plate for you. In both cases, the rear of the part is hidden - number plate on cab and works plate on driving splasher.

Joy Oil-operated Valve Gear: So far no one has asked for this, so I guess I am the only one using it. If, however, you change your mind, the reversing arrangement is `cobbled together` using a Stroudley handwheel casting (as in the C1 class) and one of the early C class cylinders that were hanging below the rear footplate.

2 **operating oil tubes** (wires) also need to be run from drilled holes in the centre of the Driving axlebox castings to disappear inwards, underneath the frame edge, just behind the wheel – level with the back of the rear brake shoe.

For Tender construction see relevant tender instruction sheet – Craven Large Tender only, in this case.