

SERKits
Assembly Instructions
19th CENTURY SER PASSENGER LUGGAGE VAN
PLEASE READ TO THE END BEFORE STARTING THE KIT



Contents

Carriage steps etch	Comp underframe etch without brakes	
4in/100mm of 0.5mm p-bronze rod	10"/250mm 0.5mm brass rod	2x70mm 0.7mm N/S rod
		4in/100mm of Brass wire 0.5mm/26SWG
60 thou (white) Styrene floor, 114.5 x 45.5mm	40 thou styrene: 45.5 x 25mm spacer & end step	40 thou rolled styrene roof, min. 115 x 58mm
2x1 styrene strip 2x112mm	4x1 styrene strip 2x112mm	
2 Resin sides	2 Resin ends	2 solebars
BAG 1		
4 hooped buffer stocks [40]	4 buffers – 2 flat, 2 curved [33]	2 coupling hooks
4 combined low grease axlebox + spring castings [1]		
BAG 2		
4 small door handles for dog boxes. [5]	Louvres (small square): 4 for dog-boxes [90]	
BAG 3		
Pins: ~35	0.5mm styrene rod - 50mm	1.5mm x 0.5mm styrene strip – 1"/25mm
1.2mm brass rod - 30mm	Scale drawing	

Introduction

A typical SER passenger train had a mix of carriages for different classes of passenger, with a passenger brake van at one end and a brake second or brake third at the other. Express and continental trains might have had several PBVs in the same train, each with a guard, to increase the braking capacity. This was certainly the case with the ill-fated express carrying Charles Dickens and his young mistress back from Folkestone, which came to grief on the low viaduct near Staplehurst.

Passenger luggage vans would have been used for cross-channel trains where passengers had high volumes of luggage; in private trains where the family and servants took huge quantities of clothes and other belongings; and would sometimes have been pressed into service to carry soft fruit in crates during the picking season.

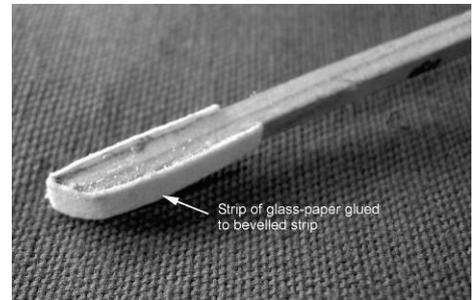
SER Kits uses high quality resin that withstands a degree of flexing. It can be drilled and filed with ordinary care without snapping unexpectedly. But take care around thin sections like window frames. If you follow the instructions and take your time, you should be able to achieve a highly detailed model which will be an asset to your layout.

Compensation

- This is by the rocking method. However the rocker is not loose, but controlled either by the flexing of the W-iron tie-rods which are of springy nickel silver rod, or by phosphor bronze spring wires. If you feel that compensation is unnecessary for 7mm Finescale 4-wheelers, either solder the rocking assembly solid, or discard the rocker and pack the axleguard etch with approx 3.5mm thick styrene or wood.
- The axleboxes are fitted over Slaters' wheel bearings and carry cosmetic springs. On the rocking unit, the springs move between the spring hangers and when going over track joints or point frogs, the up and down movement looks realistic.

General methods

- The resin castings are made in two part moulds, and it's almost impossible to produce a casting without minor imperfections caused by air bubbles. I reject those that have too many. Look out for tiny gaps in the beading around panels and tiny holes in thin edges such as window frames. Fill with e.g. Squadron putty or Humbrol filler. Hold the casting up to the light, and if you can see an internal air-bubble, consider cutting a small hole in the rear, and pressing filler into the small void.
- I find the homemade tool in the photo very useful for cleaning up inside panelled areas where normal tools would remove detail. The strip wood is 3 or 4mm square.
- Check the tiny detail of cosmetic bolts. If you are bothered by any that have failed to cast, remedy this as follows: drill 0.55mm and superglue tiny protruding lengths of the supplied 0.5mm plastic rod into the holes.
- The whole kit can be assembled using two-part 5minute epoxy resin glue such as Araldite or Devcon, and/or superglue.
- For strength, etched parts are intended to be fixed to the resin body with the supplied pins as well as glue. Perfectionists will square the heads.
- I recommend 'paint as you go', where suggested in the instructions. Leaving painting until after completion can cause difficulties, especially the interior and underside.
- This resin takes paint easily and primer is not needed (unlike etched brass). However a plain coat of paint is useful to show up flaws and gaps needing attention before you start the paint job proper.



Getting the resin castings ready

1. Clean up the castings, removing casting sprues from the edges of some castings. NOTE: the sides have 'sticking-out-bits' at the end. These represent lamp-irons and fixings for the end grab-rails as shown in the diagram. Do NOT accidentally remove.
2. Cleaning up round the guard's windows: use a craft knife and/or triangular needle file. Use a light touch. You can usually see best from the inside where to file to. The windows are the most fragile part of the casting, but are finally strengthened by the glazing. Look out for little resin spheres inside the window frames which will prevent the glazing lying flat. If any, chisel off with a square-edge craft knife.
3. Prepare the sides for fittings by drilling 0.8mm for dog-box door handles. Check the positions for the cast louvres against the drawing. Trial the dog box louvres. They need the flanges trimming down (end cutter) and the holes in the resin cleaned gently with a fine flat needle file. Glue all four louvres inn place
4. Prepare the ends by clearing the buffer-stock holes with a 3.5mm drill, and the draw-hook slot with a fine needle file or 1.2mm drill. Also drill 0.8mm 14mm apart, either side of the coupling hole slot for the safety chain eyes. Drill 0.6mm to take the end grab-rails, and on one end only, also drill to take pins for the etched steps. Refer to the drawing and to the photos later on. Use the etchings for exact positioning and for the steps off the headstock, it's sensible first to temporarily fit the buffer stock castings.

Assembling the body

The photo overleaf shows what you're aiming for.

5. Check the styrene floor fits snugly in the end slots. Trial the sides for fit, and if necessary, slightly reduce the length/width of the floor.



6. When satisfied, glue the floor into one end, then glue one side to end and floor, checking that top strapping detail lines up. Hold the body down on a truly flat surface (preferably plate glass) until the glue has set.
7. Glue the second side to the end, but not to the floor to allow for possible adjustment.
8. With the body still on a flat surface, trial the other end and if a snug fit, glue the second side to the floor, then add the second end.
9. Glue buffer stock castings into solebar holes, using a length of rod from one end to the other so that they are correctly aligned.

The underframe

10. At this stage I recommend making a simple cradle to support the vehicle upside down from three pieces of strip wood with a soft duster to cushion the vehicle.

Solebars

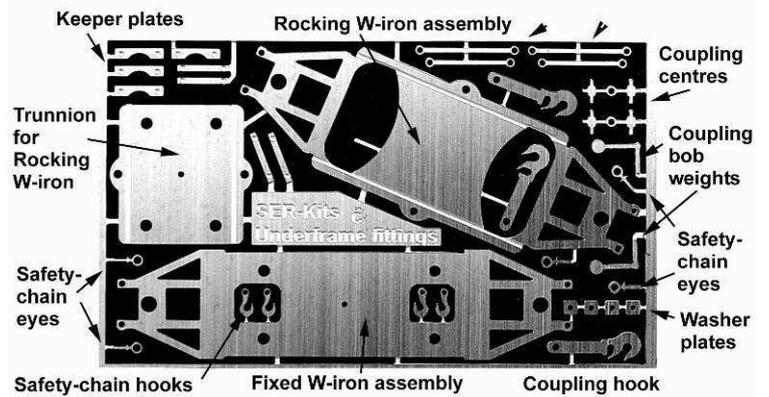
11. Sight along and if necessary straighten between fingers and thumb. (This type of LMA won't snap, unlike normal white-metal.) There are rear holes for the glue to hold the pins for the steps in place. Drill 1.2mm any that are blocked – careful, not too deep!
12. Adjust ends to fit in the headstock slots, filing equal amounts of each end.
13. Drill 0.6mm (using the cast starter holes) for horsehooks, steps and hangers as follows, but work slowly, lifting the drill in and out otherwise it may bind and break. (The 1.2mm rear holes help to avoid this) Look closely at the drawing, and note that there are not only hangers for the running boards, but single steps, and combined steps and step-hangers. The steps are on a level with the bottom of the solebars and not obvious at a quick glance. Refer to later instructions to understand how the etches are to be folded. They will be held with superglue and pins in the holes you are about to drill.
14. Drill at centres and ends 3 pairs of holes for steps and 2 pairs for horsehooks. (These are tiny loops for attaching ropes, but look like little handles. Do not glue the solebars yet, but fit the buffer stocks:
15. Clean up the stocks until they fit snugly into the headstock holes without forcing. Check that the solebars slide in easily, and if necessary, file back the stock spigots. When satisfied, the stocks can be glued. When doing this, it's worth passing a 1/16 in. rod from one end to the other to ensure alignment. Finally, check the drawhooks can slide freely in their slots, enlarging the hole if necessary with a fine needle file or reaming with a 1.4mm drill.
16. **Basic order of underframe assembly**
 - Solder folds of wheel assembly (the photo is the etch for the PLV
 - Loose fit bearings and wheels
 - Fit assemblies
 - Fit solebars
 - Fit running boards,
 - Fit T-hangers, axleboxes and springs

17. Before making the wheel assemblies, fixed and rocking, I prefer to side-track and paint the wheels. This is best if you're going for the full Mansell patent: wooden segments teak and outer steel tyre white. Use 3ft 6in Mansell Wheels (GWR type) from e.g. Slaters. If you're using Slaters wheels, then the centre can be left black and also the inner rim. This paint scheme is difficult to apply in situ, surrounded by running gear.

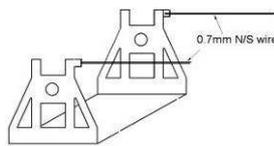
18. The photo and diagrams should make clear what you're aiming for.

19. Remove the compensation units from the etch and fold up the W-irons and the rocker trunnion. The little parts can easily get lost so put them in a tin.

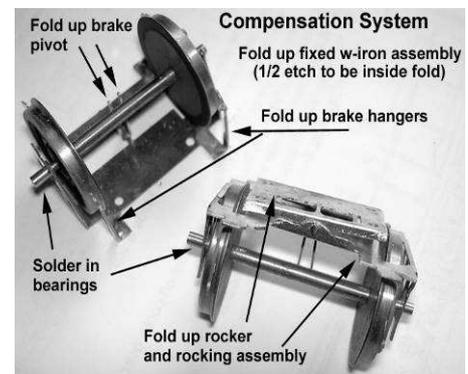
20. Reinforce folds with solder or 2-part quick-set epoxy resin such as Araldite. Choose appropriate keeper plates, punch rivets and solder to bottom of W-irons. (For better appearance, drill out keeper plates, and fix with pins after squaring the heads.) Use 3/64" brass rod to pivot the rocking W-iron.



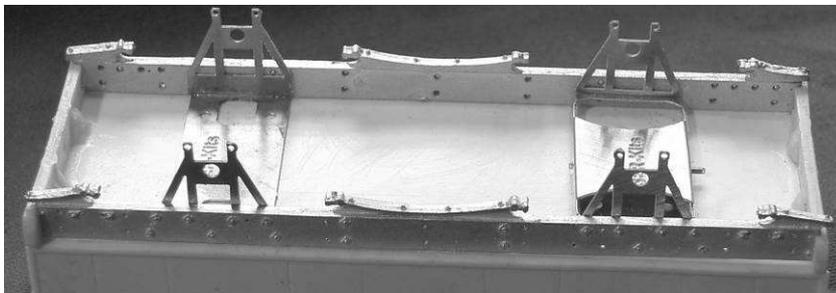
21. The rocking is controlled by the tie rods between the W-irons, made from 0.7mm nickel-silver wire. In some etches there is a half-etched recess for the wire; in others, there's a half-etched tag that can be curled round the wire. Tin these with solder now. Later, when fixing the units under the floor, it's important to ensure the soldering points face towards the middle of the vehicle.



22. Rinse off any acid, (dilute bicarb solution, then water.) Spray with an etch primer and then black.



23. The photo shows the stage you have reached:



24. Loose fit bearings and wheels. Solder the bearings, pushing in so that the wheels have virtually no sideways play and are centred

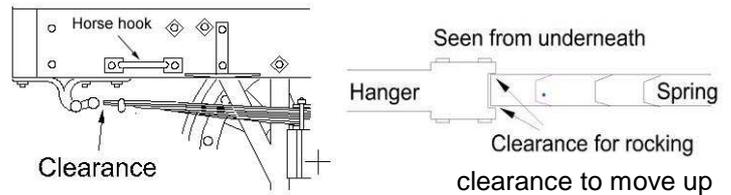
25. There's not much clearance for the wheel treads so offer the units up, pencilling the correct positions on the floor and burr out small recesses. Also, file the corners of the rocking assembly so they're not tight against the solebars.

Underframe fittings

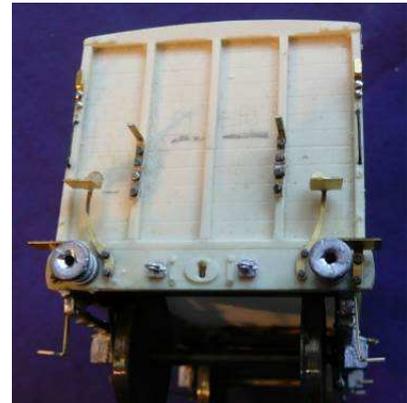
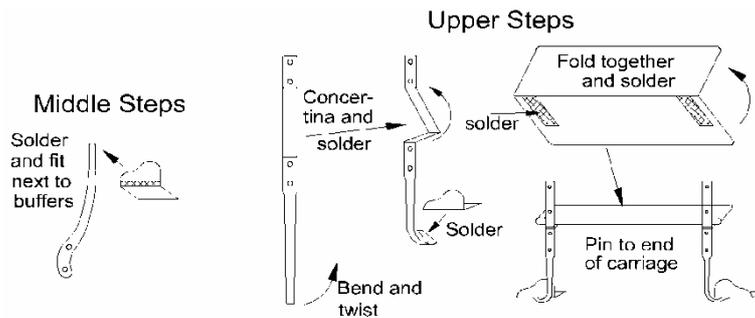
26. Tape the wheel units to the floor and rest the vehicle on track. The buffer centres should be 24mm above the track for the 1840s and 50s, and 24.5mm for the 1880s. Some packing between W-irons and floor may be necessary and can be glued to the floor now. Note that the exact height of the rocking W-iron depends on how you've folded the parts. I've found that there can be as much as 1/2mm variation between different attempts. (Etched kits rarely mention the variability of folds...)

27. Glue the solebars and wheel assemblies, lining up W-irons with the bolt heads cast in the solebars. The ends of the solebars may need a little filing or packing.

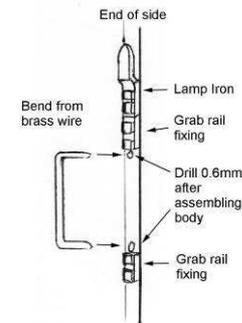
28. Solder or glue lengths of 0.7mm nickel-silver wire between W-irons to form tie-bars and to spring the rocker unit.
29. The axlebox and spring castings will be glued over the wheel bearings. On the fixed W-irons the springs should be trimmed down to be a snug fit between the spring hangers, while on the rocking W-irons they need to have just sufficient and down, while appearing to join. The springs may need to be straightened a little. Glue them to the wheel bearings.
30. Recheck the rocker is free to pivot.



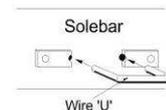
End detail



31. Remove the appropriate end steps from the etch, bend and solder as in the diagram. If the upper steps are done as a pair, it's easier to make them identical – see photo. Fix in place with Lill pins and superglue. The etched board can be replaced by 1mm card or styrene, cut to width (see Drawing).
32. Grab rails are fitted, bent from 0.5mm wire and fitted into drilled holes in the outside frames. For super-detailing tiny rectangles of brass can be pipped for bolt heads and glued against the grab rails. Above them, lamp irons are fitted, either castings or joggled from the underframe etch. Also etched eyes have been fitted either side of the draw hook hole.

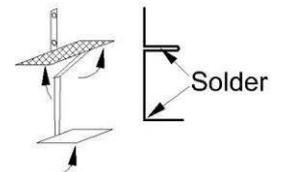


33. Bend solebar end horse-hooks from (0.5mm) 26 SWG brass wire and superglue into the holes drilled earlier.

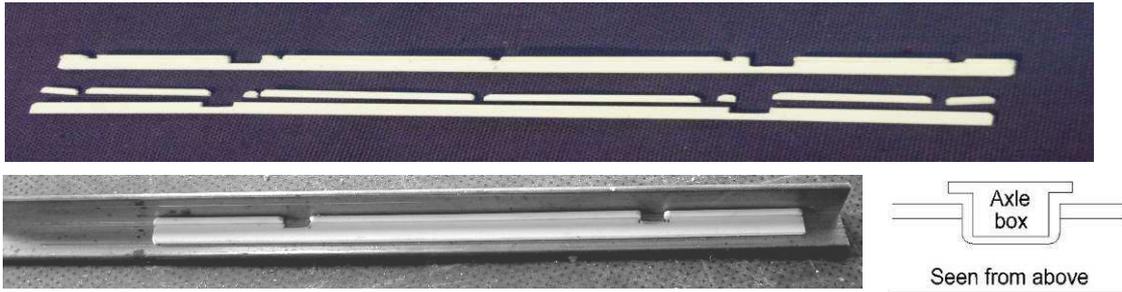


Detailing: steps and hangers

34. Remove the combined steps and hangers, fold as shown and solder, 2 for the PLV. As the lower hanger rod is rounded on the prototype, run the solder down to give thickness. Also solder the join at the rear for strength.
35. For the PLV remove 4 plain hangers. fold the bottoms up, and solder.
36. The hangers and steps are located with two cut down pins fitting into the solebar holes drilled earlier. The PLV combined steps go in the centre and the hangers at the ends.



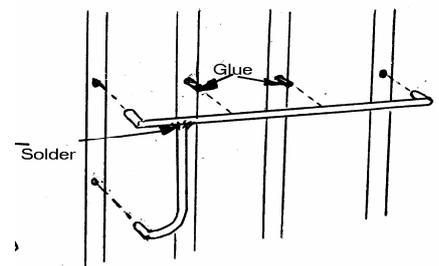
37. Make up running boards from pieces of 2x1mm styrene strip cut to suit the drawing (the photo shows a longer vehicle) and glued behind 4x1mm styrene strip. A piece of metal angle makes a useful jig as in the photo below. (If the styrene sticks to the metal, you're applying too much solvent – use a smaller brush.)



38. Offer the running boards to the carriage and file to fit around the axleboxes as in the diagram and photo
39. Check that all the hangers are vertical, and the steps and hanger toes horizontal. Glue the running boards to the hangers. 2-part epoxy resin glue is forgiving because it has 'thickness'. The photo shows the PLV.
40. Add door-handles, small ones for dog boxes (PBV: also on guard's seat) and larger ones for Guard's door on the PBV.

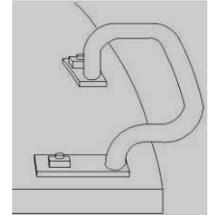
Handrails

41. Bend square-U shaped pieces of 26 SWG brass wire to make handles for the double doors and insert in the holes drilled previously.
42. Making and fitting the side grab-rails is ticklish. The diagram shows one method, but it's for the PBV, and for this PLV you only need the horizontals as in the main Drawing. If you're manipulatively challenged (clumsy? – perish the thought!), I'd suggest it's better to leave them off than to have badly-made ones that are not square to the framing. Alternatively, you could try using tiny split pins to hold the rails. The half-way solution is to fit the horizontal rails only. For the intrepid, here are my suggestions:
43. Cut 8 pieces of brass wire about 4mm long and tin the ends. Glue them into the middle holes of the horizontal rails as in the diagram (of the PBV) to protrude about 1mm. Cut more brass wire for the horizontals and bend the ends at right angles to fit the drilled holes. Tin them where they'll touch the middle pins, insert and touch each join with a hot iron. PBV only: bend the curves on the verticals, bend the ends at right angles to fit into the holes in the framing and solder at the top.
44. Alternatively, you could replace the solder with resin glue but the model will need gentler handling.



45. **Roof**

46. Adjust overhangs and sand sides and ends smooth. Check the curve of the styrene roof, rolling it more between fingers or with rollers if it's become flatter in the box.
47. Note that one end should have little fixings for end grab rails –see scale drawing and diagram opposite. Drill 0.55mm and bend wire to fit. The flat fixings can be made from 1mm wide flat brass pipped for the bolt heads and fishtailed to fit against the wire.
48. Glue roof to body with Evostik or UHU.



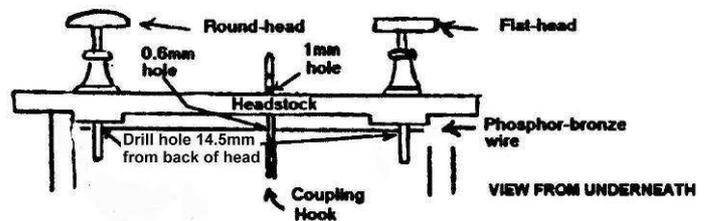
Painting

49. At this stage, I recommend painting all the etches with etch primer.
50. When dry, paint the whole carriage underframe black – solebars, headstocks, steps, W irons etc - inside and out. Paint the body (see later for colour) and finish with matt varnish.
51. Paint roof white (for new) and handrails and other ironwork black.

Buffers and drawgear

52. The kit has an etched screw coupling which is strong and easy to assemble and both etched and cast drawhooks (coupling hooks). The latter look better. If you choose to use them with the etched screw couplings, you'll need to make a saw-cut into the front hole in order to slide the top link in, and close it with glue or 70° solder.
53. Clean up the buffers. (Note that two are flat-heads and two are round-heads. Check with the drawing to get them the right way round!) Some modellers have been worried about the fragility of these buffers, but the metal is pliable, and can be bent straight again after an accident! I've been using them for more than 30 years now.
54. The buffers should need little adjustment in order to slide easily in the stocks. If necessary, gently run a 1.7mm drill through the holes in the buffer stocks, and scrape the buffer shanks along the length with a craft knife, rotating the buffer between each scrape. Don't file the shanks across the width – the roughness will stop the buffers sliding smoothly. The buffers should slide easily in and out. If not, your derailment rate will rise!

55. Measure 14.5mm along the shanks from the back of the buffer head. Drill a hole 0.6 mm (No 73) right through each shank to take the spring wire. If you're squeamish about drilling through a narrow rod, make a simple jig from a couple of inches of 1/16" I.D. brass tube. Drill the hole through the brass tube at the correct distance from the end. It's then a simple matter to feed each buffer into the tube for drilling. This jig is also useful for protecting the shank if you paint the buffer heads before assembly (rear – black, front and edge – teak colour).



56. There are two ways to carry out the next step. One uses solder and needs a temperature controlled soldering iron (a standard lighting dimmer in a plastic box with plug and socket is fine and cheap if you know your electrical safety). The other is to use 2-part epoxy glue,
57. Cut off two pieces of phosphor-bronze wire 41.5 mm long. For soldering: tin the centre. For gluing, roughen the centre to give the glue something to grip. Slide the wire through the hole in the coupling hook just behind the headstock, into the hole drilled in one of the buffer shanks, and overshoot into the recess in the solebar. Now pull it back into the hole in the other buffer shank. (It's easier to do than explain).
58. Solder the wire to the hook with 70°deg solder, or use a blob of resin glue. The glue must be allowed to fully set overnight. When set, the ends of the wire can be bent to touch the headstock so that the buffer heads protrude fully and the draw-hook is held back by the spring.
59. Solder or glue bob weights into the holes in the coupling centres. Fold coupling links around the coupling centres, insert long link into the slot in the coupling hook, and fold lip down to hold.

60. Safety chains: Insert eyes through washer plates and glue into holes drilled earlier. If modelling vehicles pre-1890, hang safety chain hooks from eyes with short lengths of chain cut from the length supplied. The safety chains were often looped up out of the way by threading the hook through the eye.
61. Sight along all the steps and straighten them up where necessary.

Historical Note

The kits allow most stages of the vans' lives to be modelled:

- In the 1880s many were piped for Smiths vacuum brake. Later some were fitted for the automatic vacuum.
- Some time after 1872, the single solebar steps were replaced with an upper running board.

Livery and lettering

Prior to c1882 they were probably brown like the outside framed brake vans, As to the exact shade there is no definitive answer. LSWR/SR wagon brown might be appropriate as a mid-brown similar to that of dark chocolate, which would have been available as a cheap and durable iron oxide base.

After c1882 when carriages and new passenger vans were painted crimson lake, it is possibly these vans were too. But they had been largely supplanted by other luggage vans or by the extra space in larger PBVs, so I'm doubtful.

Headstocks and solebars, running gear and body ironwork were all painted black (unlike wagons) and varnished. Roofs were originally white, so I use white with dashes of black and yellow for a bit of weathering – all different!

The interior of the luggage van was probably whitewashed. Similarly the sides of the guard's compartment, but the wooden seat frame, dog box and parcels box, and also the desk-top (above the rear passenger seats) would almost certainly have been varnished wood (pitch pine) with a seat squab and back of leather, possibly green. Floors were painted in a mix of left-over paint approximating to a dark grey or grey-brown.

The wheels were to Mansell's patent, with varnished teak segments between hub and tyre, so I paint the hub black, the segments 'teak' and the tyres (weathered) white, according to patent and photos. If the vans were ever crimson lake, then the teak segments should be painted to match. The axles were supposed by patent to be painted blue. This was an expensive pigment and was presumably intended to show that these were classy wheels.

The last stage is to add the lettering, using the SER-Kits transfer sheet. Suitable numbers:

Luggage Van	Withdrawn
11-16	1903
115-8	1903
126-9	1896 except 127 - 1903
180-9	All except 180-1 lasted until 1907. 186, 188, 189 used for conveyance of sponge cloths, with 186 lasting until 1935
	A photo of one of these vans at Folkestone shows it has been piped for Smiths' non-automatic vacuum brake

Finally

I hope you've enjoyed assembling this kit. If you've had any problems, let me know, and I'll try to find a solution for later kits. I'm hoping at some stage to detail the SER's fairly complicated lettering and numbering arrangement which no-one has yet chronicled. In the meantime, modellers will need to rely on photos.

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