

SR/BR Maunsell D1 & E1 4-4-0 INSTRUCTIONS.

Chassis Construction

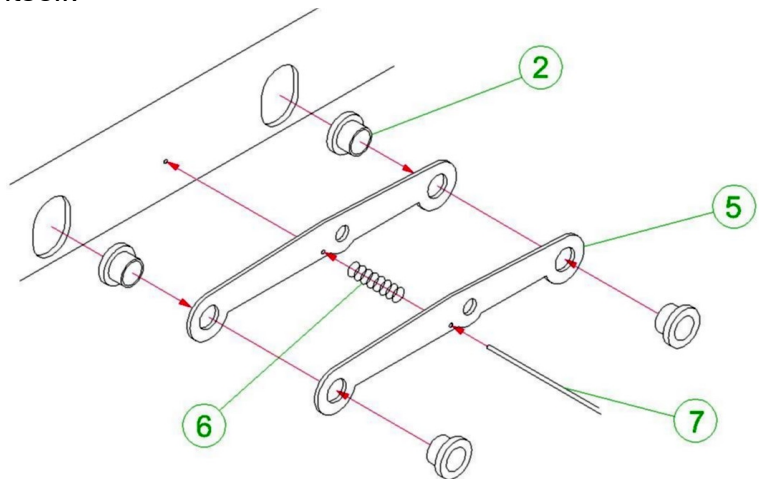
The chassis can be built rigid or compensated so decide now which one you are going to make. If building a compensated chassis remove the sections from the front and rear axle holes and follow the compensation section.

Take the frames (1) and solder the 1/8th axle bearings (2) into the frames (**rigid only**). Fold the chassis frames down and solder the frame spacers (3 & 4) in position.

Compensation

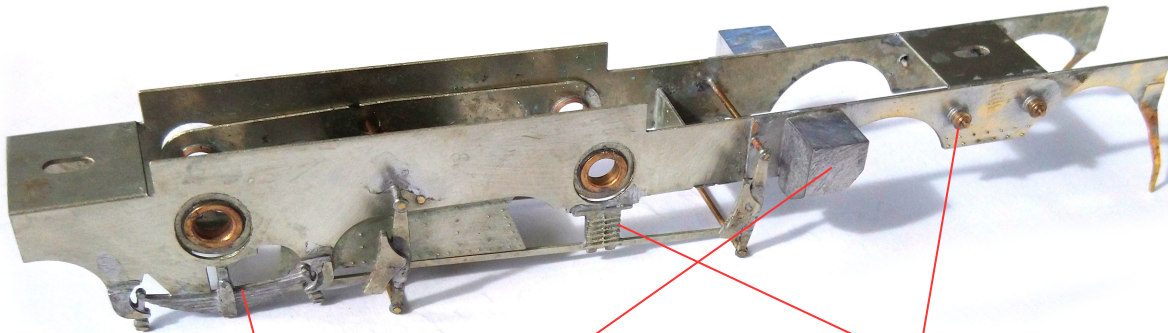
Beam compensation requires a fixed point, so that when the loco is on the track it remains level and is a huge benefit on a 4-4-0 with no balancing required. With this chassis the fixed point is the bogie. Solder the four 2mm bearings (12) into the axle holes in the bogie (11). Turn to the compensating mechanism itself.

Solder the 1/8th axle bearings (2) into the compensating beams (5). The compensating spindle should be cut from the 0.7mm brass wire (7). The beams are held apart by the compensation spring (6). It is very important that no parts of this mechanism are soldered in a fixed position other than the spindle to the mainframe. Both beams must move independently of each other. The assembly of the beams is otherwise very simple. Make sure you fit the beams so that the large hole is over the rear brake pilot hole. Solder together the nut and washer (16 & 17), this will be the plate that the bogie will rest on and locates onto the front body fixing screw, but you can fit a nut and screw to the chassis for testing. Fit the wheels (to the bogie and chassis) so you can test the compensating mechanism and when satisfied that all works O.K. remove the wheels and the bogie and put them to one side.



Brake Assembly

Solder two lengths of the 0.7mm brass wire (7) into the holes in the chassis to form the brake mountings (take care not to get solder on the compensation mechanism). Take the brake hangers (8) and solder the brake blocks (8a) onto the hangers. Solder the assembled brakes to the wire **2mm** from the frames. Study the brake actuating rods (9) and lever (10) diagram carefully. Pass more brass wire through the bottom of the brakes and then through the actuating rods. solder these joints. At the rear pass 0.9mm wire through the large hole near the leaf spring, then through the larger hole in the rod, then through the lever and then through the second rod and the frame. Cut the 0.9mm wire flush with the chassis frames.

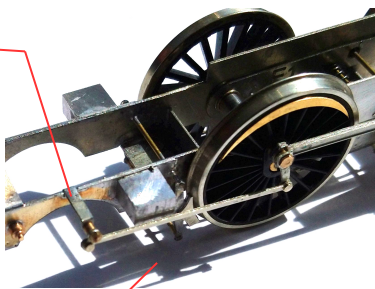


Solder the front frame overlays (13) to the the front of the frames and the front spring (14) and rear spring overlays (15) in place. Open out the guard irons to match the width of your track.

Solder the sandboxes (19) just behind the bogie wheel arch. Drill out the holes marked on the frame overlays and solder in place the four frame detail turnings (20).

On the E1 only fold the lubricator linkage bracket (21) and solder it into the recess in the top of the L/H frame. Use the linkage from the body etch.

After the chassis is painted and the wheels are fitted, rivet together the lubricator linkage (22) and attach it to the bracket with the 14ba nut and screw.



Loco Body Construction

Cut out the main running plate (1) and the running plate valences (2). Note that all the fold lines and locating lines should be on the underside of the running plate. Using a piece of 3mm bar or dowelling form each of the curves in the running plate, also making the right angled folds. Solder the valences in place making any remaining adjustments. Do not remove the valence frames yet. The bufferbeam (3) and Dragbeam (4) can then be soldered in place. Check that the bufferbeam lines up with the rear drag beam and adjust as necessary.

At this point solder two of the 8BA screws into the front and rear holes in the top of the running plate. Fold the rear splashers up at 90 degrees. Cut out the cab front (5) and the cab sides (6 & 7). Now is a good time to solder the spectacle frames (31) into the recesses on the cab front. Tack the cab front into the slots next to the rear splashers. Check the fit of the cab sides and solder them into their slots and to the cab front, making sure all is square.

Fold up the cab floor support (8) and solder in position about .5mm from the end of the running plate. Solder the cab floor (9) on top of the support and against the cab front. Fold the cab splasher boxes (10 & 11) and run solder inside the joint. Solder them inside the cab over the wheel openings.

Check the fit of the front splashers sides (13) adjusting as necessary and then solder them in place. Form the splashers tops for the front (14) and rear (12). Fit them against the inside of the splashers sides, not on top.

Take the firebox (15) and punch the lines of rivets through with a scribe. Form the curves with a 3mm radius bar. Check that it fits into the slots in the running plate and the cab front and that the firebox front (16) fits on to it and then solder the firebox front onto the firebox. Make sure there is a good thickness of solder inside the top front corners and then round the outside of the corners with a needle file. The slots help to hold it to the correct shape. Any adjustments needed are likely to be where the firebox meets the splashers. When you are happy with the fit, solder it in place.

Solder the frame tops (17) into the slots/recesses in the running plate.

Solder the smokebox saddle front and rear (18) into their slots. Fold over the top of each of the saddle sides (19) at about 45 degrees and punch through the rivets on the back. Solder these into the gaps at the side of the saddle front and rear.

Take the pre - rolled boiler (21), inner smokebox (22) and outer (23) and clean them up ready for assembly. Tack the boiler seam, preferably on the inside, use a piece of scrap brass on the inside, across the seam and solder the seam.

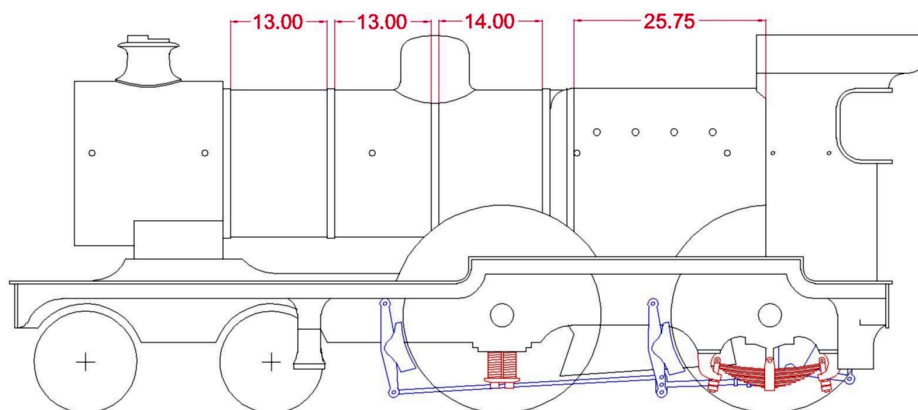
Once the boiler is firmly joined make sure it is perfectly round. Fit the inner smokebox flush with the boiler front and so that it lines up with the chimney hole. Repeat with the outer smokebox and then with the riveted overlay (24). Refer to the drawing below for dimensions and solder the boiler bands (32) in place on the boiler.

Check the fit of the boiler/smokebox into the slots in the firebox front and onto the smokebox saddle. You will need to file away the top of the splashers to allow the boiler to sit correctly. Make sure the bufferbeam and drag beam still line up. When you are happy that all is lined up correctly you can solder the boiler in position. You can now remove the valence frames by cutting up at intervals (taking care not catch the valence) and bend the pieces off. Clean up the tabs with a needle file.

Take the cab steps (26 & 27) and the running plate steps (28) and fold up the lower step part. Put a fillet of solder in the joints for strength. Solder the steps (29 & 30) into their slots.

Now return to the cab and form the cab sides overlay/roof (20) unit. Form the roof first with a large dowel or broom handle. The tight curves on either side can be formed with a 3mm diameter bar. Offer the unit up to the body to check the fit. The handrail holes should line up and you can put some wire through both holes on both sides to hold the unit in position. Tack at the bottom of the cab sides and at the centre of the roof. Check that all is level, then solder around the seams.

Boiler Bands & General Arrangement



Detailing.

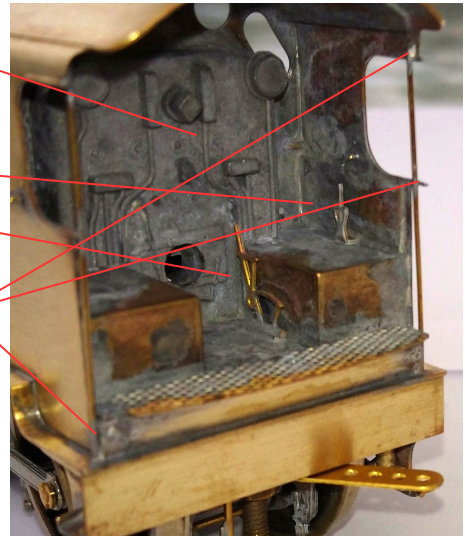
Most of these items can be either soldered or glued, but I recommend soldering if you can.

Fit the backhead (32).

Fold the bases of the two cab levers (34 & 35) over and fit them in place.

Solder the fallplate (36) in place.

Solder the two cab rear handrails in place soldering as indicated.

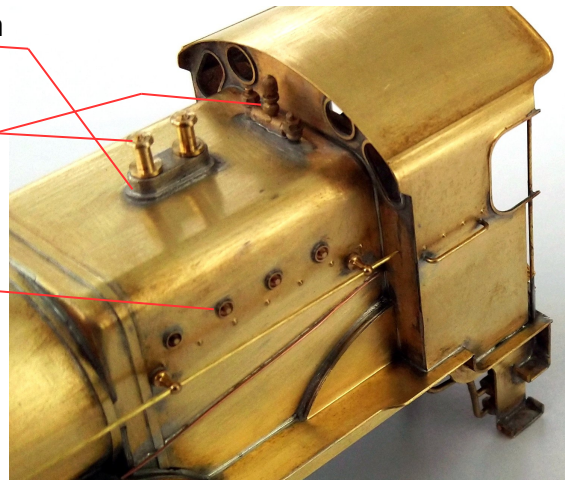
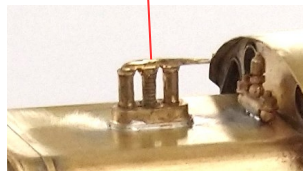


Refer to a picture to see whether the loco you are modelling has Ross pop or Ramsbottom safety valves.

Either solder the Ross pop safety valve base (37) in place or the Ramsbottom safety valves (39). Don't fit the Ross pop safety valves (38) until the loco is painted.

Fit the whistle and manifold (51).

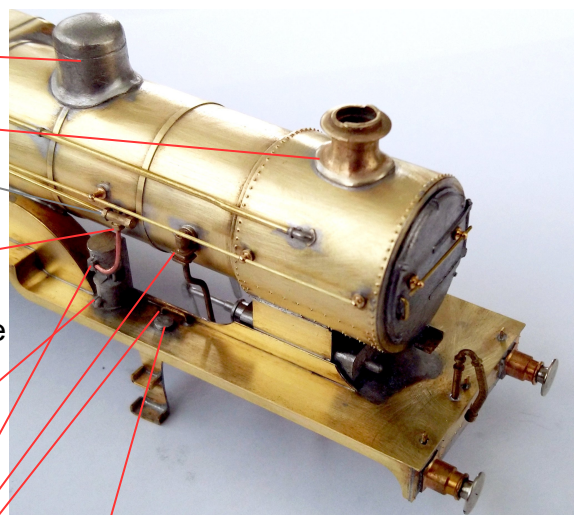
Solder the washout plugs (33) into their holes.



Fit the dome (40) in place.

Solder the chimney (41) in place.

Drill a 0.8mm hole in the boiler for the pump valve (43). Drill a hole in the end of the valve to take 0.7mm wire and a hole in the underneath of the valve to take copper wire. Solder the valve in position. Cut a length of 0.7mm wire to run from the valve to the cab front. Solder the wire into the end of the valve and to the side of the firebox. Solder the westinghouse pump (42) to the running plate, just in front of the splasher. Drill a hole in the w/h pump to take the copper wire.



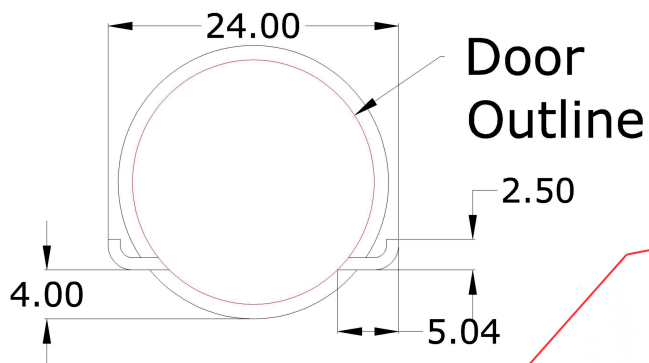
Solder the clack valves (45) in place. They were fitted to the side of the dome early on.

Fit the small handrail behind the hole for the sandbox filler on either side and then fit the sandbox fillers (58).

Solder the snifting valves (55) in position. These were removed by nationalisation.

Fit the smokebox door (51).

Cut the smokebox lamp brackets (56) to length using the drawing below and solder them in position.



Fit the front valve chest cover (48).

Solder the vacuum pipe (53) into the hole with the pipe hanging just below the running plate.

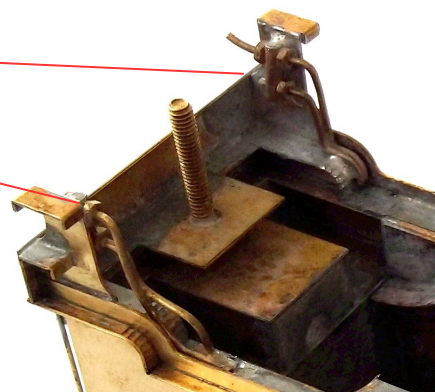
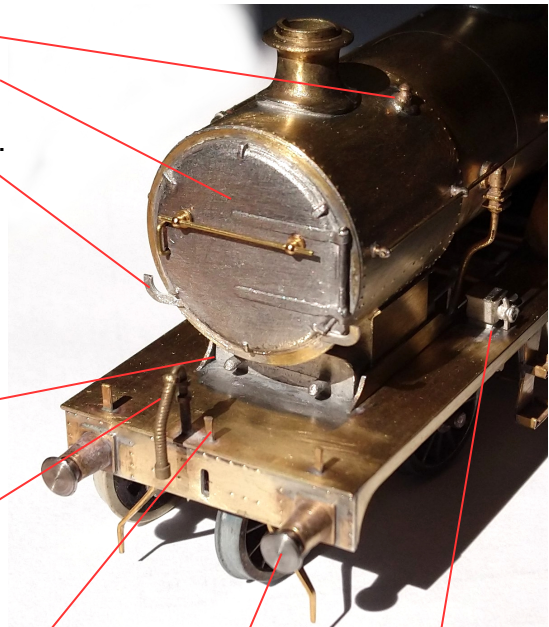
Fold the lamp irons (56) and solder in place from underneath.

Fit the sprung southern buffers (58) or the cast whitmetal SECR buffers (57).

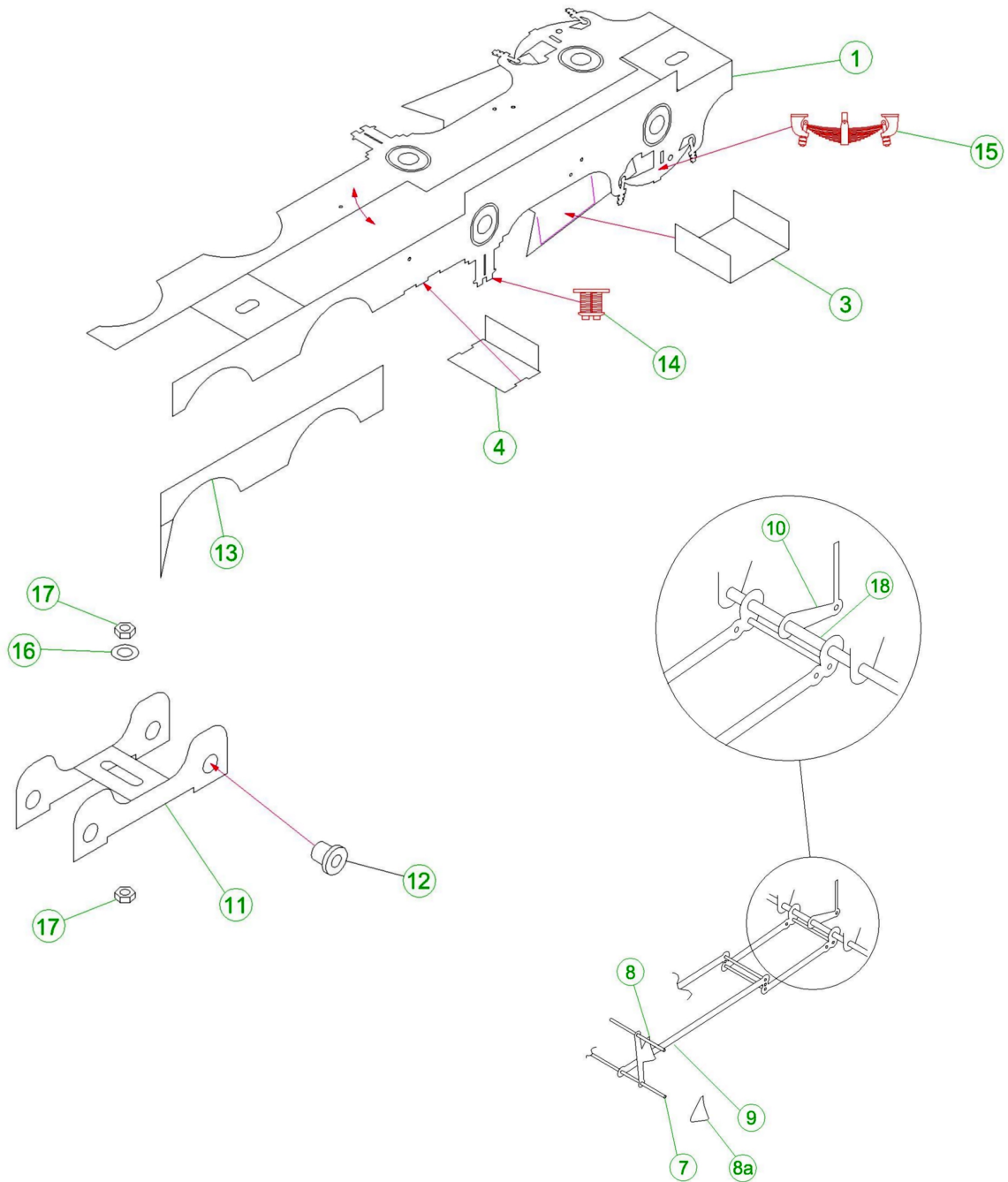
Fit the mechanical lubricator (63) (E1 only) above the linkage.

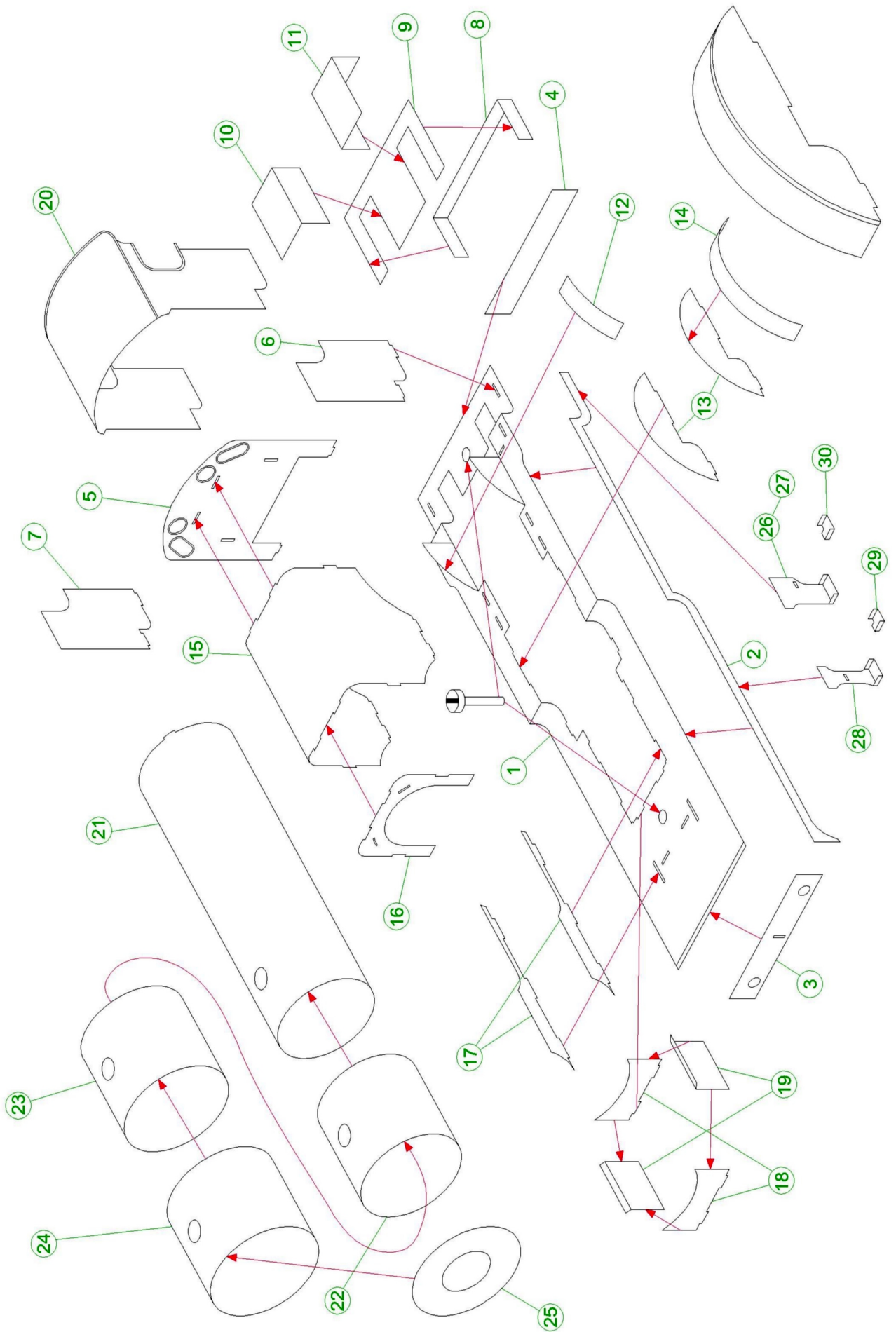
Solder the R/H and L/H injectors (46 & 47) behind the cab steps.

Take the cylinder rear casting (49) and the two dummy valve gear parts (50). Glue the valve gear parts into the rear cylinder block and then fit the assembled part to the rear of the smokebox saddle.



Chassis Construction.





CHASSIS PARTS LIST

- | | |
|--------------------------------|---|
| 1. Mainframes. | 13. Front Frame Overlays. |
| 2. 1/8 th Bearings. | 14. Coil Spring Overlays. |
| 3. Centre Frame Spacer. | 15. Leaf Spring Overlays. |
| 4. Front Frame Spacer. | 16. Washer. |
| 5. Compensation Beams. | 17. 8BA Screws & Nuts. |
| 6. Compensation Spring. | 18. 0.9mm Brass Wire. |
| 7. 0.7mm Brass Wire. | 19. Sandboxes. |
| 8. Brake Hangers. | 20. Front Frame Detail Turnings. |
| 9. Brake Shoes. | 21. Lubricator Linkage Bracket (E1 only). |
| 10. Brake Actuating Lever. | 22. Lubricator Linkage (E1 only). |
| 11. Bogie. | 23. 14ba Nut and Screw. |
| 12. 2mm Bearings. | |

BODY PARTS LIST

- | | |
|-----------------------------------|--------------------------------------|
| 1. Running Plate. | 36. Cab Fallplate. |
| 2. Running Plate Valences. | 37. Ross Pop Safety Valve Base. |
| 3. Bufferbeam. | 38. Ross Pop Safety Valves. |
| 3a. Bufferbeam Overlay. | 39. Ramsbottom Safety Valves. |
| 4. Dragbeam. | 40. Dome. |
| 5. Cab Front. | 41. Chimney. |
| 6. L/H Cab Side. | 42. Westinghouse Pump. |
| 7. R/H Cab Side. | 43. Pump Valve. |
| 8. Cab Floor Support. | 44. Washout Plugs. |
| 9. Cab Floor. | 45. Clack Valves. |
| 10. R/H Cab Splasher Box. | 46. R/H injector. |
| 11. L/H Cab Splasher Box. | 47. L/H Injector. |
| 12. Rear Splasher Tops. | 48. Valve Chest Cover. |
| 13. Front Splashers. | 49. Cylinder Rear. |
| 14. Front Splasher Tops. | 50. Dummy Valve Gear Parts. |
| 15. Firebox. | 51. Smokebox Door. |
| 16. Firebox Front. | 52. Whistle & Manifold. |
| 17. Frame Tops. | 53. Vacuum Pipe. |
| 18. Smokebox Saddle Front & Rear. | 54. Steam Pipe. |
| 19. Smokebox Saddle Sides. | 55. Snifting Valves. |
| 20. Cab Sides & Roof Overlay. | 56. Lamp Brackets. |
| 21. Boiler. | 57. SECR Buffers (Solid Whitemetal). |
| 22. Smokebox Inner. | 58. SR Sprung Buffers. |
| 23. Smokebox Outer. | 59. Sandbox Fillers. |
| 24. Smokebox Riveted Overlay. | 60. Short Handrail Knobs. |
| 25. Smokebox Front & Step. | 61. Medium Handrail Knobs. |
| 26. R/H Cab Step. | 62. 8BA Nuts and Screws. |
| 27. L/H Cab Step. | 63. Mechanical Lubricator. |
| 28. Running Plate steps. | 64. Medium Copper wire. |
| 29. Middle Running Plate Steps. | 65. 0.45mm Brass Wire. |
| 30. Middle Cab Steps. | 66. 0.7mm Brass Wire. |
| 31. Spectacle Frames. | 67. 0.9mm Brass Wire. |
| 32. Backhead. | 68. Fine Copper Wire. |
| 33. Washout Plugs. | 69. . |
| 34. Cab Lever 1. | 70. . |
| 35. Cab Lever 2. | |

Wheels.

The D1 requires 6'8" (26.66mm) 21 spoke wheels with the crankpin in line.

The E1 requires 6'6" (26mm) 20 spoke wheels with the crankpin in line.

SECR Six Wheel Tender Instructions.

Take the tender running plate (1) and solder the main frames (2) into their slots noting that the smaller curved end goes at the front. Fit the drag beam (3) and bufferbeam (4) in place at the front and back of the frames respectively.

Take the sides (5 & 6) and rear (7) next and flare out the top 4mm over a piece of 1/4" dia. bar [Note that the half etched lines go on the **OUTSIDE**]. Slot the sides and rear into the footplate and check that they meet correctly. Make any adjustments and solder in place. Solder two 8BA screws into the holes in the running plate.

Solder the two tank top supports (8) into their slots. Fold the top of the tender front (10) over at 90 degrees. Solder it into the slots at the front of the running plate.

Solder the valences (9) into the recesses under the edge of the running plate.

Next take the coalplate (11) and bend along the fold lines so that when it sits on the internal supports its front end meets the front plate. Make sure the rear end sits level and then solder into the tender. Slot the front bulkhead (12) into the recesses in the tender front and the smaller rear bulkhead (13) into the slots in the coalplate. (Note that for locos other than D1 & E1 the front bulkhead should be the smaller type).

Next curve the strengthening strips (16, 17 and 18) to match the flare of the sides and back, and fix them to the tender body. They will cover the half etched lines.

Solder the 'wingplates' (23) into the outer slots in front of the sides (for locos other than D1 & E1 use the inner slots). Fold the floor support (14), solder in place and then solder the floor (15) on top of it. (use the longer parts for D1 & E1 and the shorter ones for all other locos).

Solder the coal rails (19 & 20) to the top of the cab sides. Use the longer ones for D1 & E1 and the shorter ones for all other locos. See pictures below for location.

Fold the front sandboxes (21 & 22) and solder them to the tender front and floor.

Take the front and rear side steps (24 & 25) and fold up the bottom steps. Solder them behind the valences and then solder the small centre steps (26) into the slots.

Solder in place the following:

Tank filler (27).

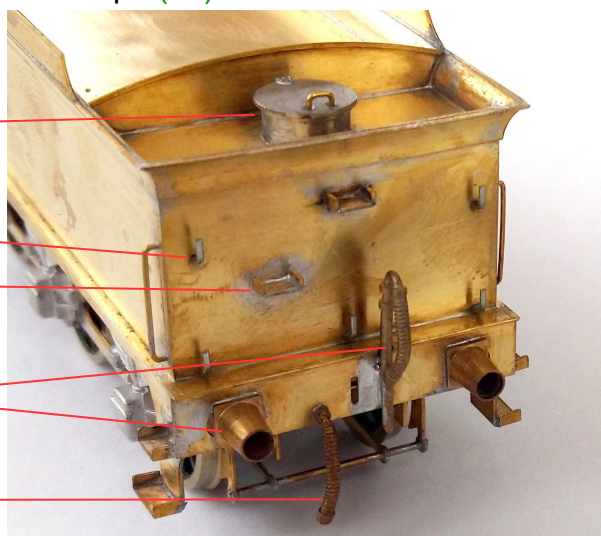
Lamp brackets (29).

Rear steps (30).

Buffers (31).

Vacuum pipe (36).

Steam pipe (37).



Toolboxes (22).

Coal space door (33).

Wingplate tops (34).

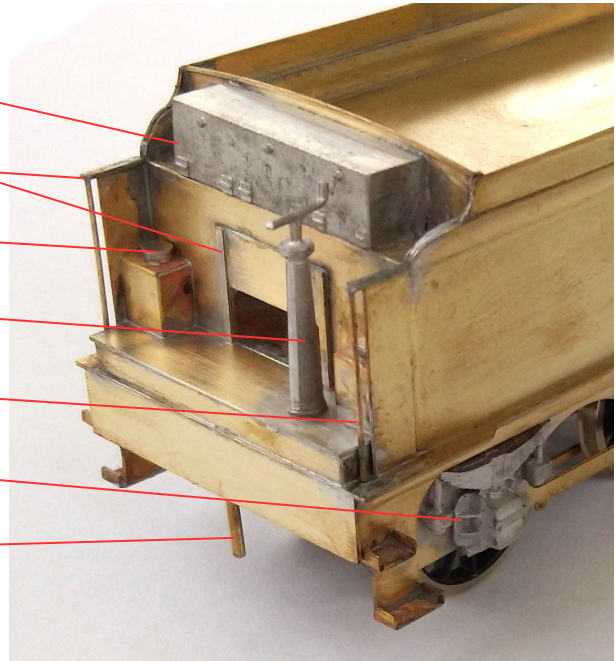
Sandbox fillers (35).

Brake standard (38).

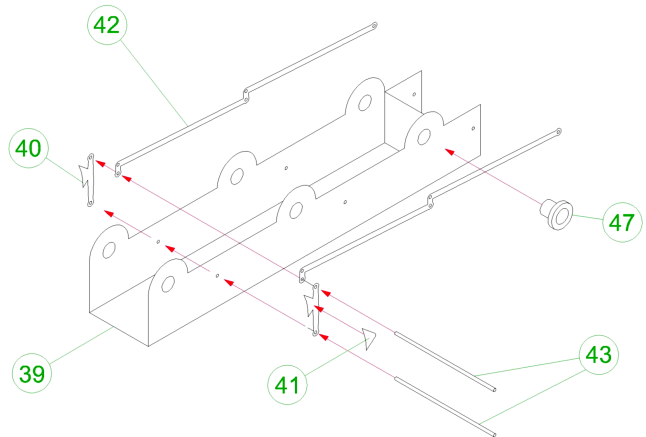
Handrails (46).

Axleboxes (32).

Form the drawbar pin with 0.9mm wire and solder it behind the dragbeam.



Fold the wheel carrier (39) up to form a box shape. Solder around the seams. Fit the 2mm bearings (47) into the axle holes. Solder three lengths (1 inch approx) of brass wire (43) through the holes in the sides of the carrier. Assemble the brake hangers (40) and blocks (41), making three L/H and three R/H. Attach the brake hangers and blocks to the wire about 2mm from the sides. Pass brass wire through the bottom hole in the brakes, through the brake rods (42) and then through the opposite brakes. Solder all the joints. Paint the wheel carrier before fitting the wheels.



Tender Parts List.

- | | | |
|---------------------------------|-------------------------------|----------------------|
| 1. Tender Running Plate. | 16. R/H Strengthening Strip. | 31. Buffers. |
| 2. Frames. | 17. L/H Strengthening Strip. | 32. Axleboxes. |
| 3. Drag Beam. | 18. Rear Strengthening Strip. | 33. Coalspace Door. |
| 4. Bufferbeam. | 19. L/H Coal Rails. | 34. Wingplate Tops. |
| 5. R/H Side. | 20. R/H Coal Rails. | 35. Sandbox Fillers. |
| 6. L/H Side. | 21. L/H Sandbox. | 36. Vacuum Pipe. |
| 7. Tender Rear. | 22. R/H Sandbox. | 37. Steam Pipe. |
| 8. Internal Coalplate Supports. | 23. Wingplates. | 38. Brake Standard. |
| 9. Valences. | 24. Front Steps. | 39. Wheel Carrier. |
| 10. Tender Front. | 25. Rear Steps. | 40. Brake hangers. |
| 11. Tank Top/Coalplate. | 26. Steps. | 41. Brake Shoes. |
| 12. Front Bulkhead. | 27. Tank Filler. | 42. Brake Rods. |
| 13. Rear Bulkhead. | 28. Toolboxes. | 43. 0.7mm Wire. |
| 14. Front Footplate Support. | 29. Lamp Brackets. | 44. 2mm Bearings. |
| 15. Front Footplate. | 30. Rear Steps. | 45. 0.9mm Wire. |
| | | 46. 0.45mm Wire. |
| | | 47. 2mm Bearings. |

