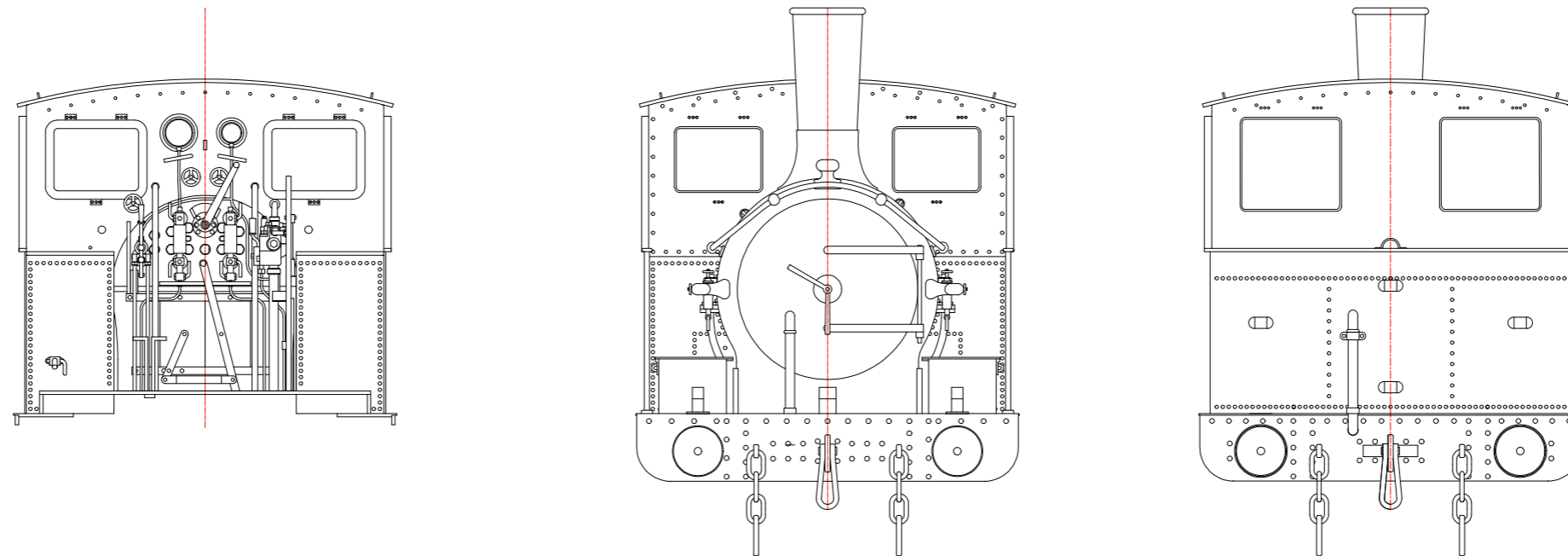
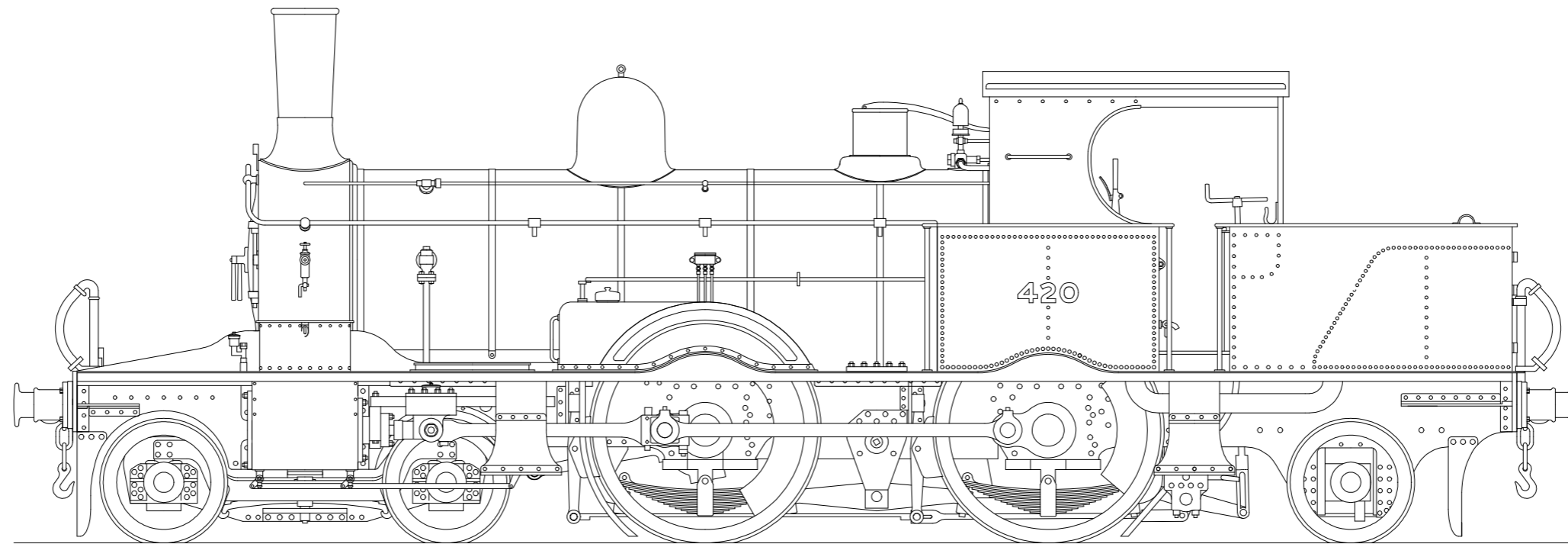


BEYER PEACOCK BUILT LOCOMOTIVE



**Fig 1. Beyer, Peacock Built Locomotive
Nos. 415-426**

Depicted as built with short tanks, blower valve on the left, small dome, low tank front, 3'0" trailing wheels, snap head rivets, Beyer Peacock splasher fronts, Adams chimney, low water filler, large rear windows, wooden roof, Adams lamp irons

ROBERT STEPHENSON & CO. BUILT LOCOMOTIVE

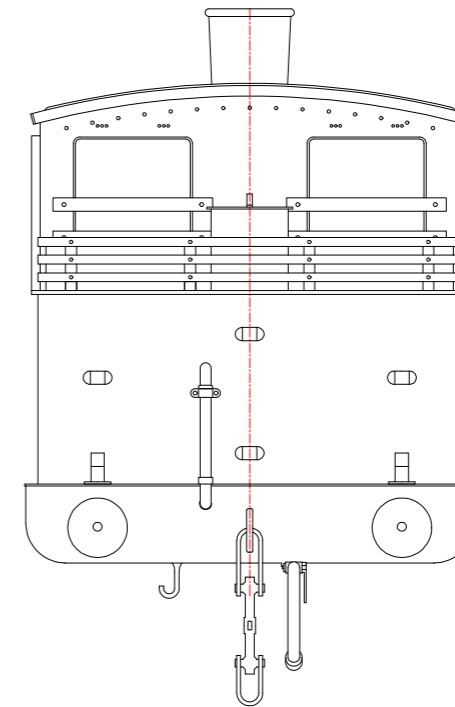
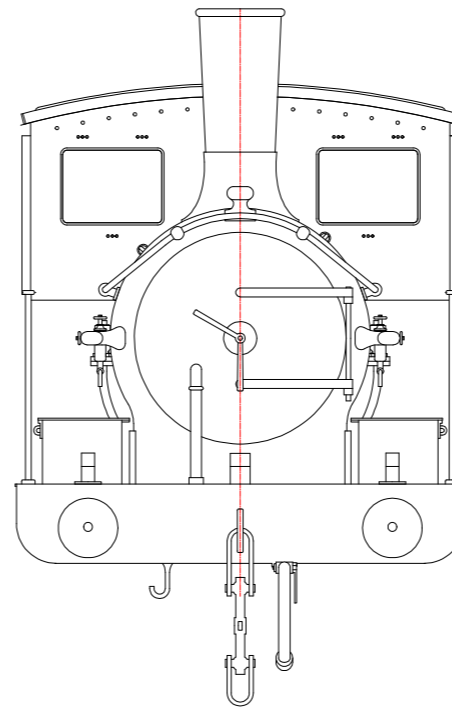
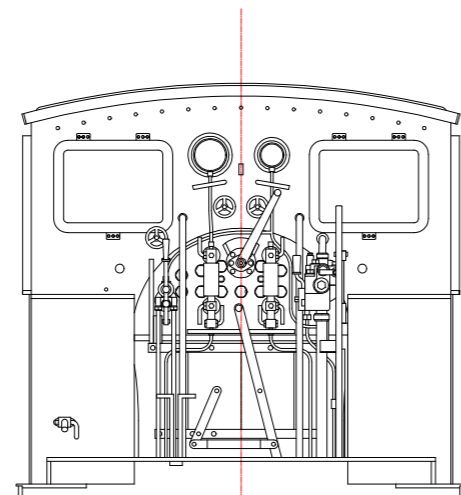
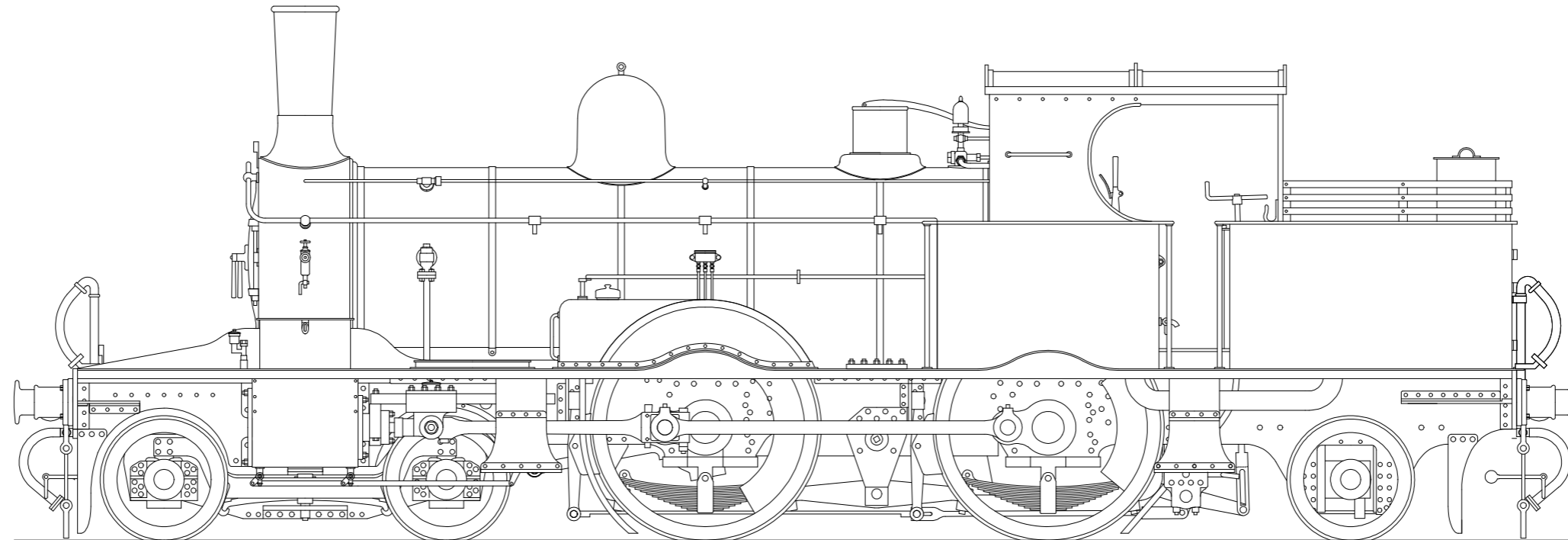


Fig 2. Stephenson Built Locomotive
45/7-57, 427-32

Depicted with short tanks, blower valve left, small dome, low tank front, 3'0" trailing wheels, plain splasher fronts, Adams chimney, 3 coal rail bunker, large rear windows with wooden bars, steel roof, Adams & Drummond lamp irons

DUBS & CO. BUILT LOCOMOTIVE

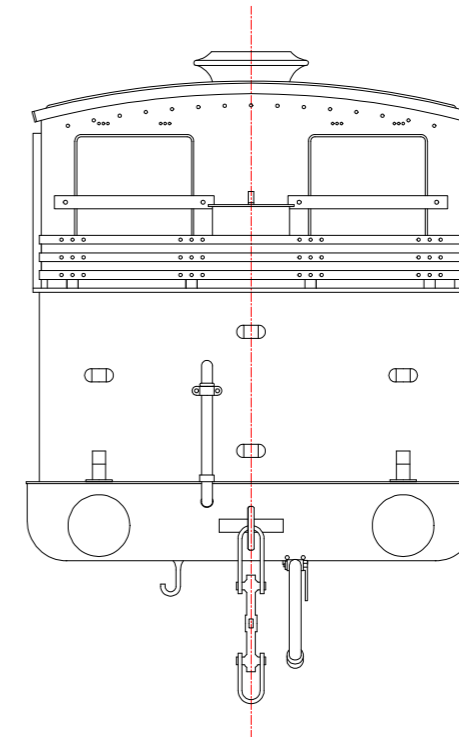
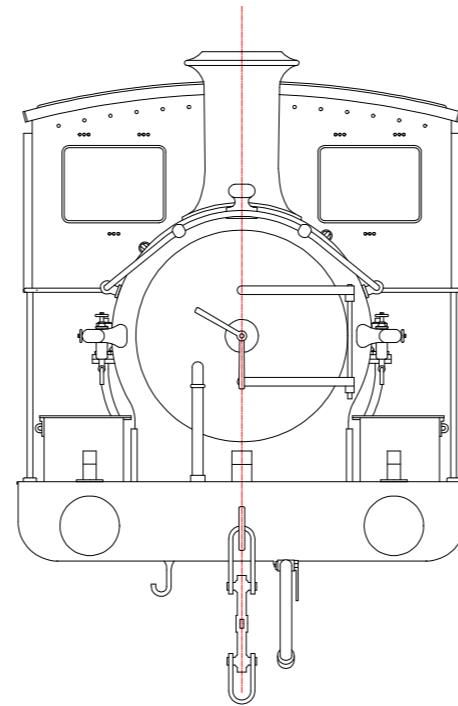
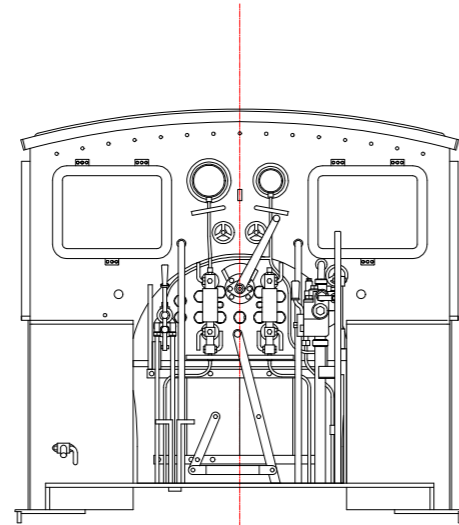
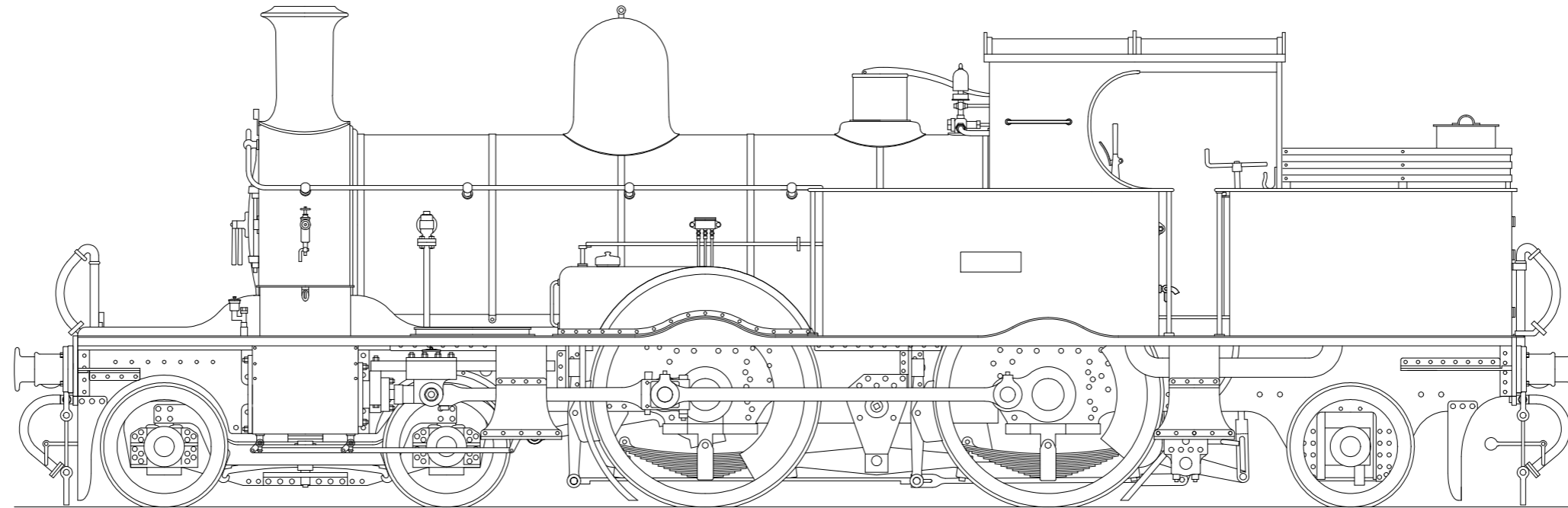
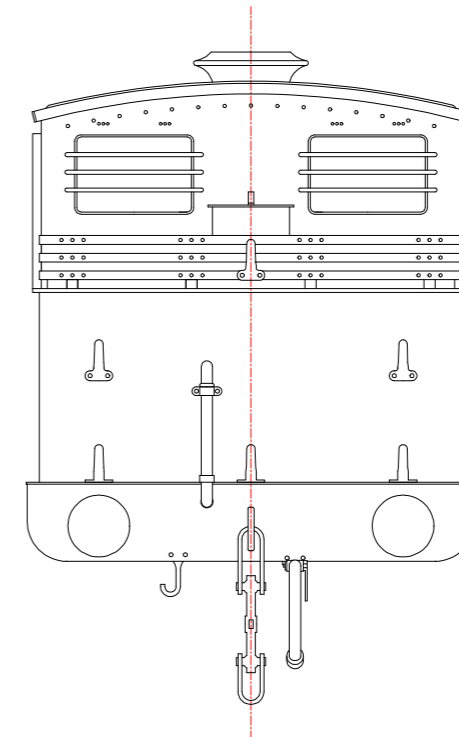
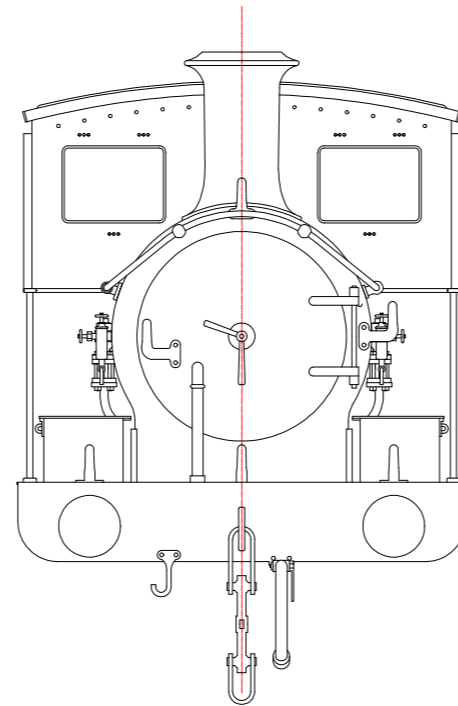
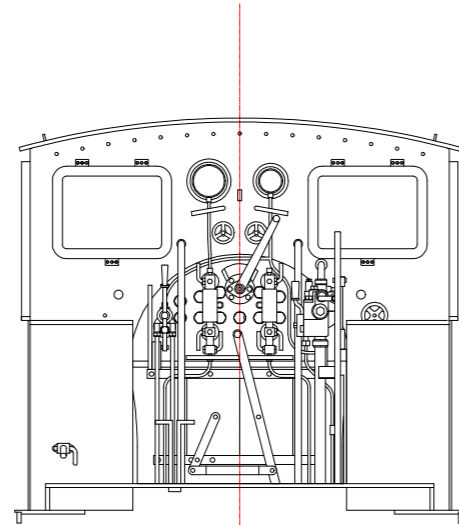
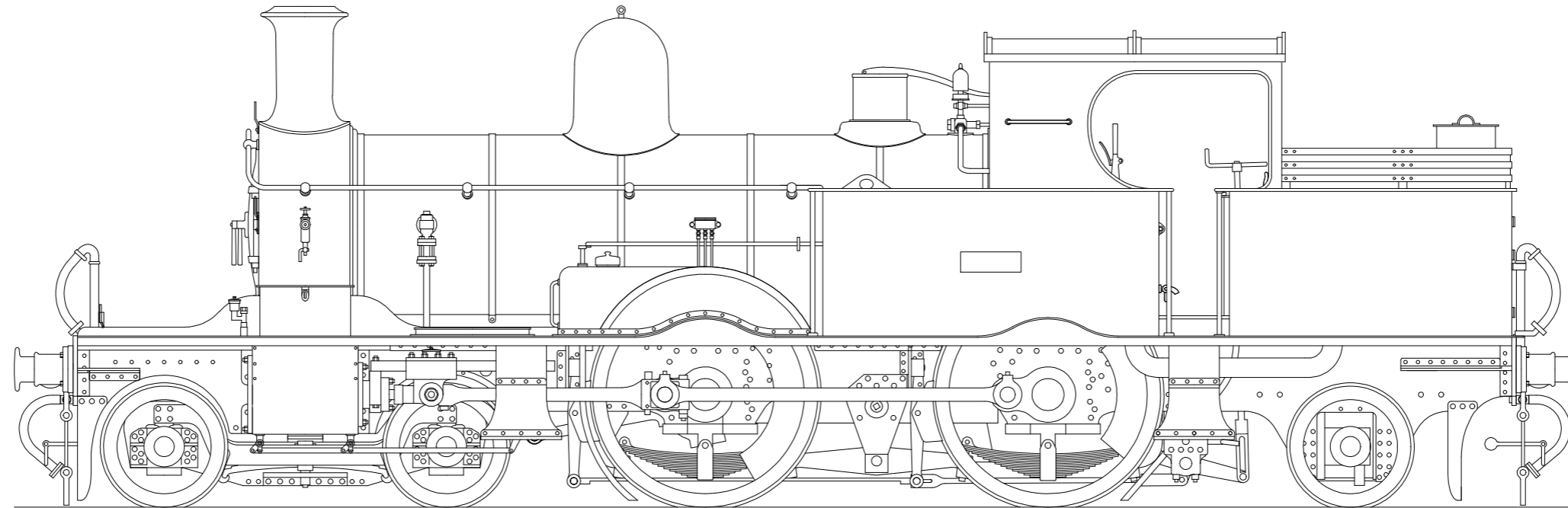


Fig 3. Dubs & Co. Built LOCOMOTIVE
169-71/73, 490-5, 516-525

Depicted with long tanks, blower valve right, large dome, high tank front, 3'0" trailing wheels (516-525 3'6" wheels), plain splashers, Drummond chimney, Sheeted 3 coal rail bunker, large rear windows with wooden bars, steel roof, Adams & Drummond lamp irons, vacuum brakes, steam heating

NEILSON & CO. BUILT LOCOMOTIVE



**Fig 4. Neilson & Co. Built LOCOMOTIVE
479-489**

Depicted with long tanks, blower valve right, large dome, high tank front, 3'0" trailing wheels, plain splasher fronts, Drummond chimney, sheeted 3 coal rail bunker, small rear windows with steel bars, steel roof, SR lamp irons, vacuum brakes, steam heating

FRAMES

COUPLING RODS

The coupling rods should now be made up so that we can use them as a jig for fitting the front hornblocks accurately in place. Each rod is made up from an inner lamination (M17) and an outer lamination (M18). First drill out all the crankpin holes to a convenient size which is undersize for the crankpins. Remove all burrs caused by the drilling. Now drill the same drill into a suitable small block of wood and leave the drill in the wood with its shank projecting. This projecting shank is used as a mandrel to accurately align the two laminations of each rod.

Place the inner and outer laminations over the mandrel and using plenty of solder and flux solder the two laminations together. You should now have a rod with the bosses on each lamination perfectly aligned. The rods have been deliberately etched too large so that the thin etched edges can be carefully filed so that the 'laminated' effect is lost and the rods appear to be made from one piece of metal. The crankpin holes now need carefully opening out until they just fit, with no free play, the ends of the hornblock alignment jigs.

FRAME PREPARATION

Having decided which chassis to construct, you can now start construction by preparing the frames (F1 & F2). First open out all the holes in the frames to their correct size and emboss all the frame rivets.

- C for compensation beam pivot - 1/16"
- B for brake hanger pivots - 0.8 mm
- S for rear brake cross shaft - 2.0 mm
- R for reverse weigh shaft - 2.0 mm
- P As required

To construct the kit as designed with a compensated chassis remove all the axle holes as described above. Solder one of the rear hornblocks (F17) to the inside of the frame aligning it with the half etched lines and with the bottom of the frame. Form the frame joggle to narrow the frames at the rear. Make the first bend inwards through 10° along the front half etched line and strengthen the bend with a fillet of solder. Then make the second bend outwards in the same way. Fold in the radial truck horn guides.

FRAME STRETCHERS AND ASSEMBLING THE CHASSIS

Select the frame stretchers - front (F3), bogie pivot (F4), motion plate (F5), ash pan (F6) & rear (F7) to suit your chosen gauge. Fold up the stretchers making sure the 1/2 etched fold lines are on the **inside** and that each bend is a right angle. Check that all

tabs on the spacers fit properly in their corresponding chassis slots so that the rest of the spacer is hard up against the inside of the frames.

If you are fitting the inside valve gear, file back the tabs on the motion plate (F5) to slightly less than half their width. This will make the valve gear removable by springing this stretcher into position in the frame slots.

Now assemble the frames and spacers. Start by tack soldering the ash pan stretcher to both sides. Check that everything is square and that the spacers are hard against the frames. If all is well solder the bogie pivot and rear stretcher to the frames checking constantly that the chassis is square and the frames are straight. If you are not fitting the valve gear solder the motion plate in place.

HORNBLOCKS

Prepare the remaining bearings and hornblocks (F17). Place a bearing into the rear hornblock that is already soldered to the frame. Slide the second rear hornblock and bearing for the rear axle over a long piece of 3/16" rod with a spring between the bearings. Carefully compress the spring and clip the hornblock between the frames. Make sure the hornblock is square to the chassis and that its bottom edge aligns with the lower edge of the frames and that the long rod is at right angles to the frame before soldering the second hornblock in place.

Fit the two front hornblocks using a stepped hornblock alignment jig and spring in the same manner as for the rear hornblock. Slide the coupling rods onto the jig to give the correct spacing to the axle centres. Make sure the hornblock is square to the chassis and that its bottom edge aligns with the lower edge of the frames.

FITTING THE COMPENSATION BEAMS

Cut a piece of 1/16" brass rod so that it fits through the frame holes and is flush with the outside face of the chassis frames. Cut two equal pieces of 3/32" tube which together fit between the frames and solder the compensation beams (F18) to them close to one end of the tube.

Temporarily fit the beams and the driving wheels and axles and confirm that the compensation works properly and check that the chassis is sitting level. The bogie rests on a suitable selection of the bogie pivot washers (B10). When correctly set up the top of the frames, above the beam pivot, should be 29.2 mm above rail level.

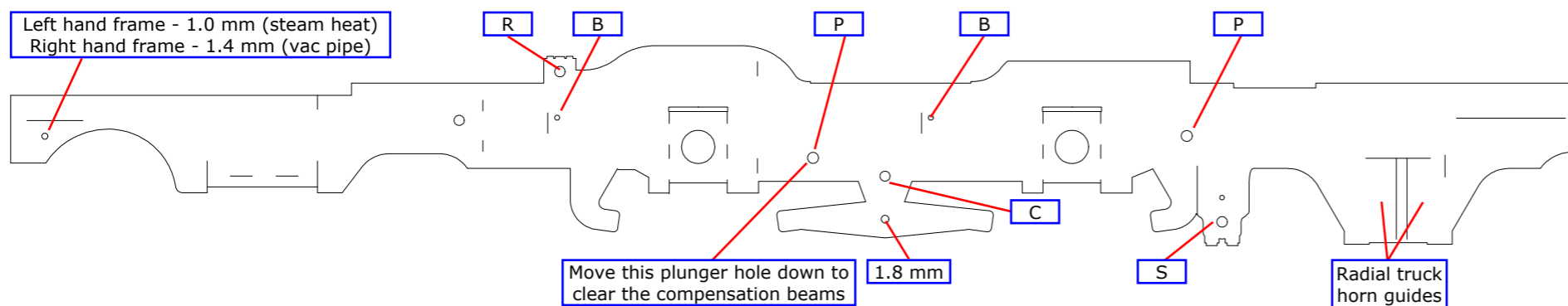


Fig 5. Frame Preparation

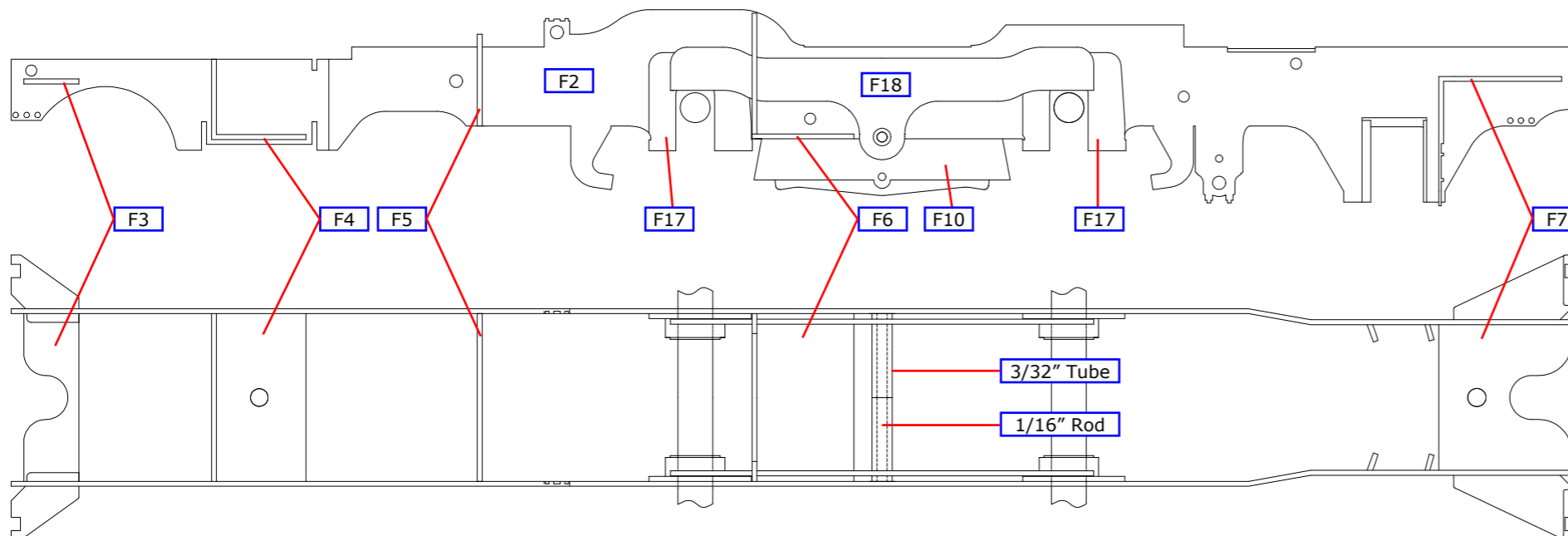


Fig 6. Frame Construction

No.	Description	Sheet
M17	Coupling rod inner laminations (2)	2
M18	Coupling rod outer laminations (2)	2
F1	Frame, left	1
F2	Frame, right	1
F3	Frame stretcher front, 3 widths	1
F4	Frame stretcher bogie pivot, 3 widths	1
F5	Frame stretcher motion plate, 3 widths	1
F6	Frame stretcher ash pan, 3 widths	1
F7	Frame stretcher rear, 3 widths	1
F10	Ash pan sides (2)	4
F17	Hornblock (4)	1
F18	Compensation beam (2)	1

FRAME OVERLAYS AND DETAILING

FRAME OVERLAYS

Emboss all the rivets on the frame overlays (F8 & F9). Fold down the sand-pipe brackets. Fold over the equalising beam bearings (fold line on outside) and profile as shown below.

Thread through the frame holes but **do not solder in place** lengths of 0.8 mm wire for the brake hanger pivots. These then serve to accurately locate the overlays, which only need tack soldering around their edges.

Solder the front frame stretcher (F3) to the frames and form the guard irons to shape.

For 3' 6" trailing wheels increase the height of the radial truck slot in the frame overlays, to the height of the slot in the frames.

CHASSIS DETAILS

Make up the main springs by laminating two spring outers (F24) around a spring inner (F25). Solder into place on the spring mountings.

Make up the cab steps by folding down the step backs on the rear step spacer (F13). Solder the rear step upper tread (F15) and lower tread (F14) onto the step backs. Solder the step spacer (F13) into position on the frames. Fold up the rear step stays (F16) and solder into position between the step back and the frames.

Solder the brake hanger bracket front and rear (F11 & F12) in place as shown.

Fit the sandpipes from 1.0 mm wire into the positions indicated on the drawing.

The pivot for the equalising beam is made from a length of 1.8 mm wire which also threads through the matching holes in the ash pan side (F10). The front of the ash pan locates into the slots in the ash pan frame spacer; solder the ash pans in place and then solder the 1.8 mm wire into place.

Assemble balance pipes and injector overflow pipes as shown below. Complete the chassis detailing by fitting the reverse weigh shaft from 2.0 mm wire as shown below the sand pipes from 1.0 mm wire, the vacuum pipe and if appropriate the steam heating pipe.

No.	Description	Sheet	No.	Description	Sheet
F8	Frame overlay, left	5	F15	Rear step tread, upper (2)	3
F9	Frame overlay, right	5	F16	Rear step tread stay, 3 lengths	5
F10	Ash pan sides (2)	4	F24	Spring outer lamination (8)	2
F11	Brake hanger bracket, front (2)	5	F25	Spring middle lamination (4)	2
F12	Brake hanger bracket, rear (2)	3	F34	Cross shaft brake cylinder lever lamination (2)	5
F13	Rear step spacer	3	F35	Cross shaft handbrake lever lamination (2)	5
F14	Rear step tread, lower (2)	5			

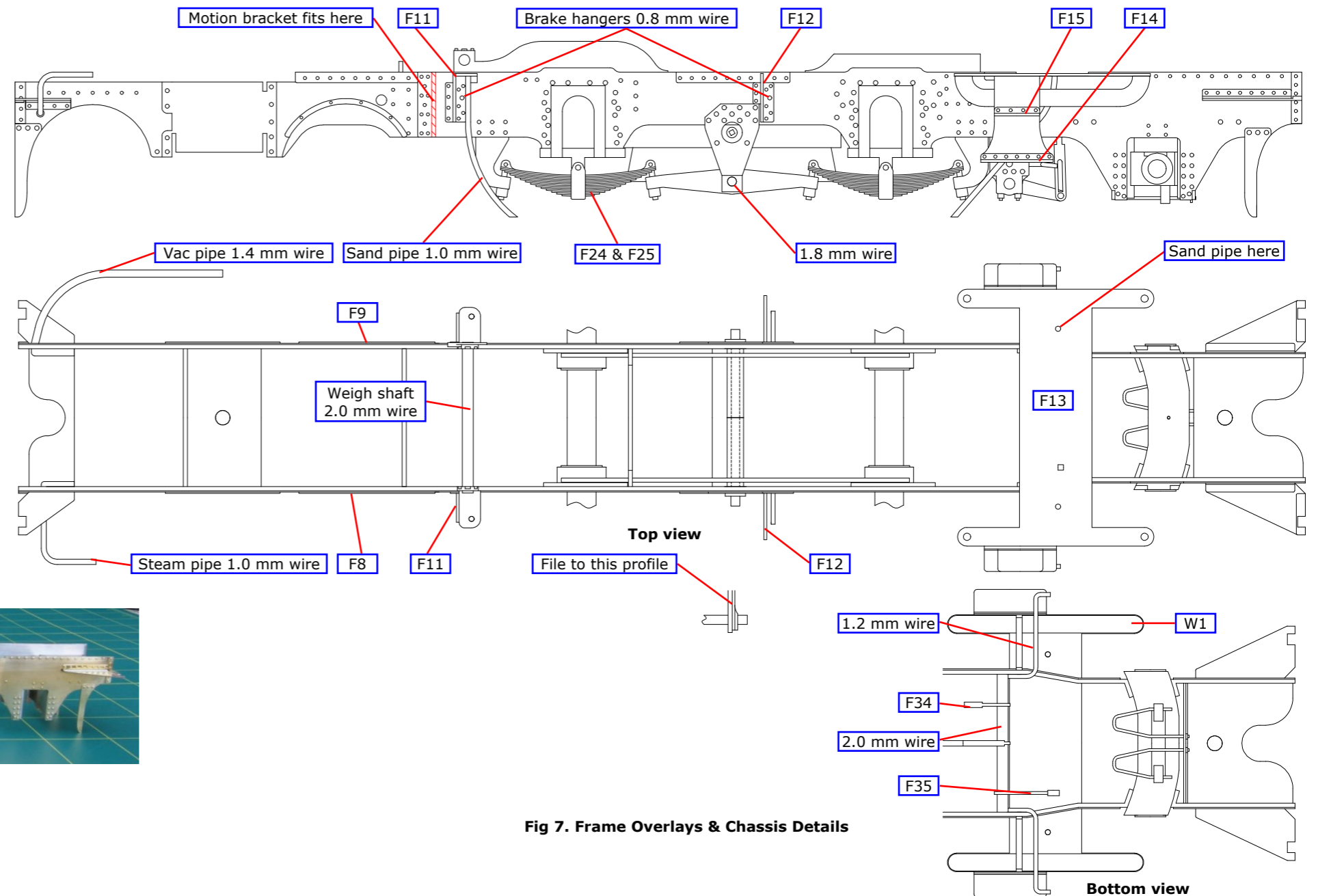


Fig 7. Frame Overlays & Chassis Details

BOGIE, RADIAL TRUCK & WHEELS

RADIAL TRUCK

For the radial truck use the widest components for Scaleseven or the middle width components for Finescale standards. Part F21 will need to be trimmed to fit.

Original Springing. Fold up the spring wire brackets on the radial truck lower (F22), fold up the ends and attach the radial truck upper (F21). Check for free, but not sloppy, movement in the horn guides. Solder the small top hat bearings in place and fit the radial truck wheels using the radial truck axle washers (F23) to eliminate any side play. Later the radial truck is retained with the spring wire to give some downward pressure.

Simplified Springing. Fold up the ends of the radial truck lower (F22) and attach the radial truck upper (F21). Check for free, but not sloppy, movement in the horn guides. Make the upstand from a piece of scrap etch 10 mm by 5 mm and solder to the upper surface of the radial truck upper. Fold up the spring to match the drawing below and solder to the underside of the rear step spacer. Solder the small top hat bearings in place and fit the radial truck wheels using the radial truck axle washers (F23) to eliminate any side play. Later the radial truck is retained with a loop of wire.

BOGIE

The bogie carries the weight of the front of the locomotive and is the third balance point of the compensation system.

Emboss the bogie frame rivets (B1). Fold up the bogie stretcher (B6), use the middle width for O Finescale or the widest for Scaleseven, and solder in place in the slots in the frames. Note the slot for the pivot bracket must be at the back. Fold up the pivot bracket (B8) and solder in place. Solder the axle boxes (BR1) in place and the stretcher bars (B7). Carefully ream the axle holes to 5/32" diameter and temporarily fit the wheels to check that the bogie is running true.

Using the spring middle lamination (B3) as a guide, drill two 0.8 mm holes into a block of wood or Tufnol and insert 0.8mm wire into the holes. These pieces of wire are used as a jig to accurately align the spring outer laminations (B2), the spring middle lamination (B3) and the equalising beams (B5).

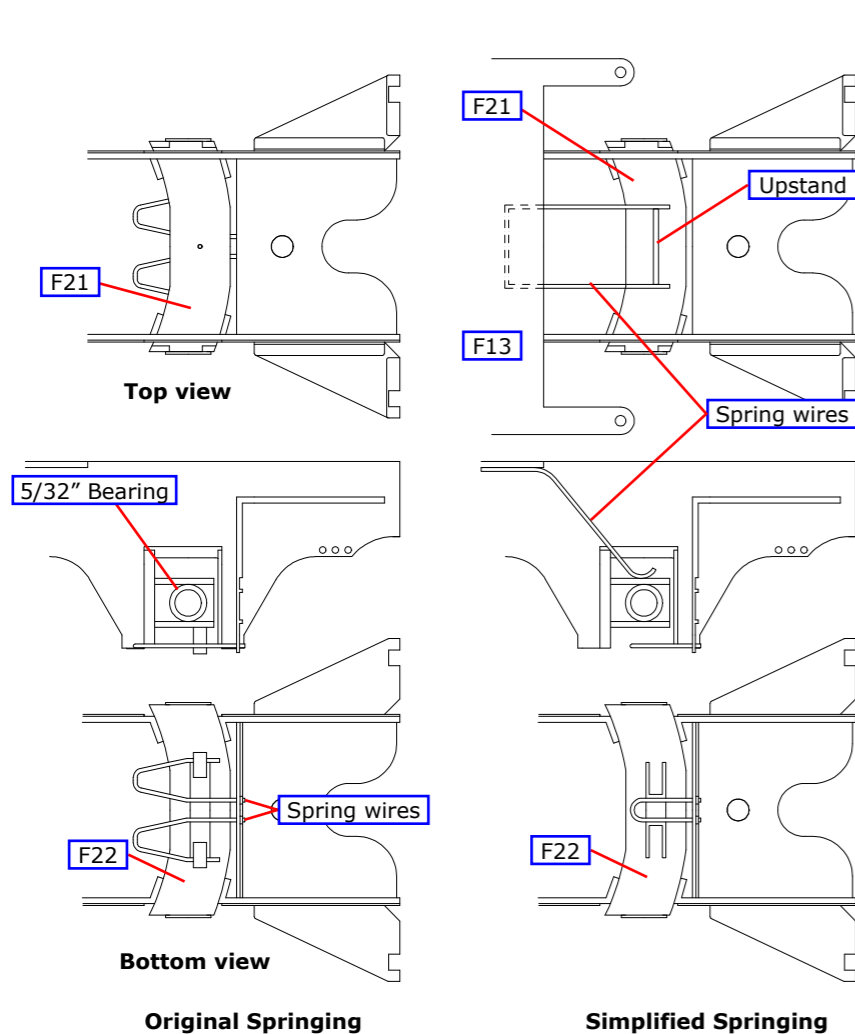
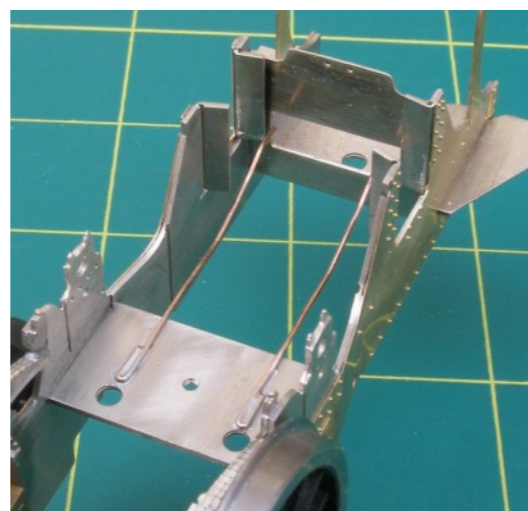


Fig 8. Radial Truck



Fold over through 180° the outer strips on the spring outer laminations (B2) (fold line on outside) before assembling all the components on the jig. Align carefully before soldering together. Trim the wire pins to length leaving the wire long at the back to enable the assembly to be located on the bogie through the holes in the frames. Emboss the rivets on the spring brackets (B4), fold up and solder in place locating it over the frame rivets. Add a piece of 1/16" wire to represent the fixing bolt. Repeat for the other side!

The side control springing can now be constructed as shown below, soldering the spring wires at one end only. Make up the bogie mounting screw as shown in the plan drawing. The 5/32" tubing is 3.1 mm long.

WHEELS

Attach the balance weights to the wheels as shown in the drawing. Prepare and fit the crankpins to the manufacturers instructions.

No.	Description	Sheet	No.	Description	Sheet
F21	Radial truck upper, 3 widths	1	B6	Bogie stretcher, three widths	3
F22	Radial truck lower, 3 widths	1	B7	Bogie stretcher, three widths	1
F23	Radial truck axlebox spacing washer	5	B8	Bogie pivot bracket	5
B1	Bogie frame (2)	1	B9	Bogie axle spacer washer	5
B2	Spring outer lamination (4)	2	B10	Bogie pivot washer	5
B3	Spring middle lamination (2)	2	F26	Balance weight, leading axle (2)	3
B4	Bogie spring bracket (2)	1	F27	Balance weight, trailing axle (2)	3
B5	Bogie equalising beam (2)	1			

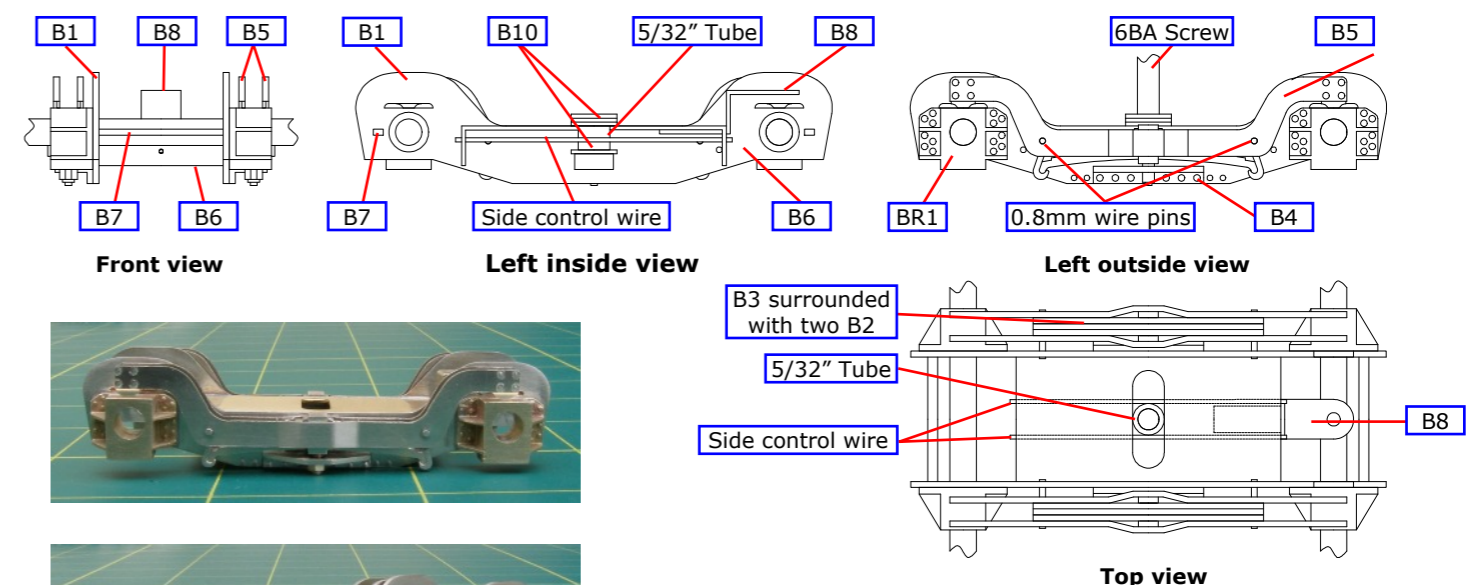


Fig 9. Bogie Construction

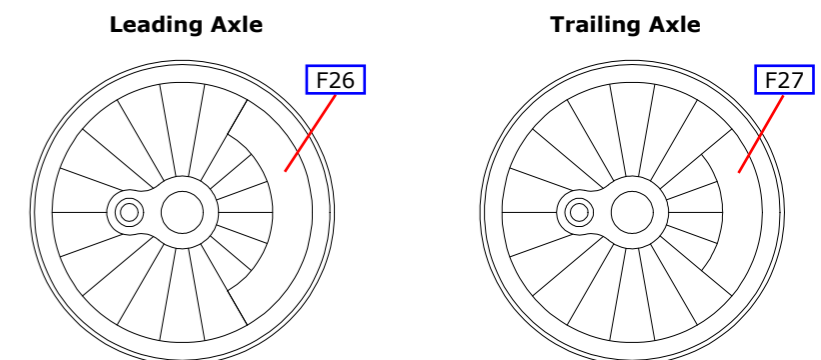
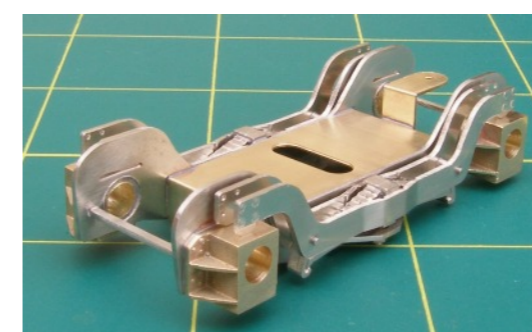


Fig 10. Balance Weights

CYLINDER ASSEMBLY DOUBLE SLIDEBARS

Modify the crosshead/piston rod (NS5) by cutting where indicated in the drawing. Assemble the piston rod/crosshead as shown in the drawing using the double slide bar parts, the crosshead slipper (M11), the crosshead front (M12) and the crosshead rear (M13).

Solder together the connecting rod laminations (M15) and add the rod boss overlays (M16) to the big end back and front. Drill the big end to fit the crankpins and the small end 1.6 mm. Attach the connecting rod to the crosshead using the cast cross head/connecting rod pin(NS7).

Check all the holes in the cylinder etch (M1) against the appropriate components and open up the holes if necessary. Reduce, as appropriate, the width of the inside cylinder faces to the etched lines provided. Fold up the cylinders making sure they are square and fold out the bogie pivot bracket. Check that the cylinders are a good fit in the slots in the frames. Solder the front cylinder cover (NS1) in place. Solder the cylinder cover rear (NS2) and the upper slidebar/piston rod gland casting (NS3) in place in the hole in the rear face of the cylinders. Accurate alignment is essential. Bend the cylinder wrappers (M4) to match the cylinder etch and solder in place.

Open up the slide bar locating holes in upper slidebar/piston rod gland casting (NS3) to 0.6 mm and check that the small pins on the lower slide bars (NS4) locate correctly.

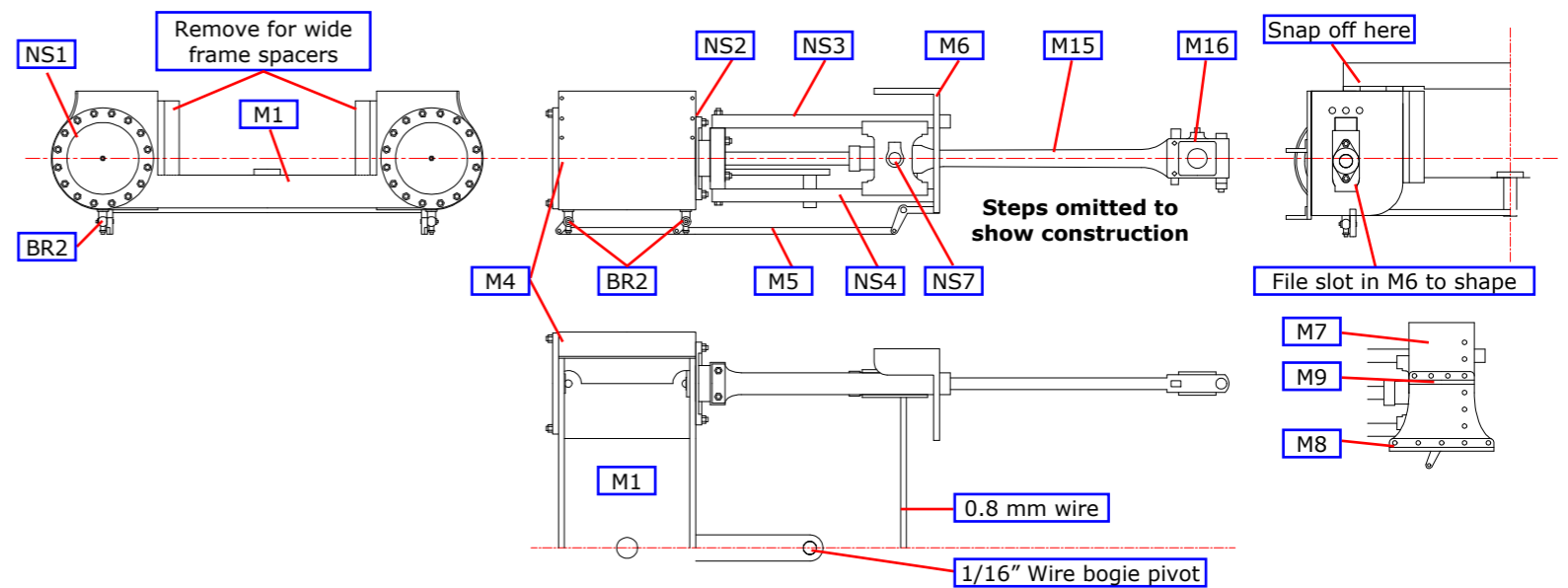
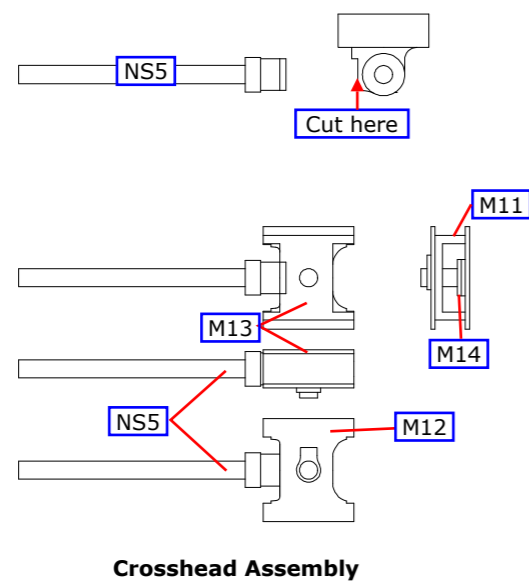
If required, reduce the width of the inside faces of the motion bracket (M6). Fold down the step support brackets. Re-profile the slots in the motion bracket (M6) as shown in the drawing.

Temporarily fit the wheels and bogie to the chassis, bolt the cylinders in place and fit the crosshead/connecting rod. Locate the motion bracket on the slidebars and over the frames in the position shown in Fig 11. Check all alignments before soldering the slidebars to the motion bracket. Solder the lower slidebars in place.

Solder the front step back (M7) to the motion bracket. Solder upper and lower steps onto the front step back. Carefully snap off the upper section of the motion bracket as shown in Fig 11.

Solder the cylinder drain cocks (BR2) into place in the cylinders. Fit the the two cylinder drain cock linkages (M5) onto the drain cocks and into the slot in the motion bracket. Connect them with the 0.8 mm wire for the drain cock operating rod between the two drain cock linkages.

No.	Description	Sheet
M1	Cylinders	1
M2	Cylinder cover front (2)	2
M3	Cylinder cover rear (2)	2
M4	Cylinder wrapper (2)	3
M5	Cylinder drain cock linkage (2)	1
M6	Motion bracket	1
M7	Front step (2)	5
M8	Front step tread, lower (2)	5
M9	Front step tread, upper (2)	3
M10	Crosshead top, single slide bar (2)	2
M11	Crosshead slipper, double slide bar (2)	2
M12	Crosshead front, double slidebar (2)	1
M13	Crosshead rear, double slidebar (2)	1
M14	Small end washer, double slidebar (2)	1
M15	Connecting rod lamination (4)	2
M16	Connecting rod boss overlay (4)	2



CYLINDER ASSEMBLY SINGLE SLIDE BARS

Solder together the connecting rod laminations (M15) and add the rod boss overlays (M16) to the big end back and front. Drill the big end to fit the crankpins and the small end 1.6 mm. Attach the connecting rod to the crosshead using the cast cross head/connecting rod pin(NS7).

Check all the holes in the cylinder etch (M1) against the appropriate components and open up the holes if necessary. Reduce, as appropriate, the width of the inside cylinder faces to the etched lines provided. Fold up the cylinders making sure they are square and fold out the bogie pivot bracket. Check that the cylinders are a good fit in the slots in the frames.

Modify the upper slidebar/piston rod gland casting (NS3) as shown in Fig 12. Check the fit of the crosshead/piston rod (NS5) with the gland casting. When satisfied solder the crosshead top - single slidebar (NS6) in place.

Solder the front cylinder cover (NS1) in place. Solder the cylinder cover rear (NS2) and the upper slidebar/piston rod gland casting (NS3) in place in the hole in the rear face of the cylinders. Accurate alignment is essential. Bend the cylinder wrappers (M4) to match the cylinder etch and solder in place.

If required, reduce the width of the inside faces of the motion bracket (M6). Fold down the step support brackets. Re-profile the slots in the motion bracket (M6) as shown in the drawing.

Temporarily fit the wheels and bogie to the chassis, bolt the cylinders in place and fit the crosshead/connecting rod. Locate the motion bracket on the slidebars and over the frames in the position shown in Fig 12. Check all alignments before soldering the slidebars to the motion bracket. Solder the lower slidebars in place.

Solder the front step back (M7) to the motion bracket. Solder upper and lower steps onto the front step back. Carefully snap off the upper section of the motion bracket as shown in Fig 12.

Solder the cylinder drain cocks (BR2) into place in the cylinders. Fit the the two cylinder drain cock linkages (M5) onto the drain cocks and into the slot in the motion bracket. Connect them with the 0.8 mm wire for the drain cock operating rod between the two drain cock linkages.

No.	Description	Sheet
M1	Cylinders	1
M2	Cylinder cover front (2)	2
M3	Cylinder cover rear (2)	2
M4	Cylinder wrapper (2)	3
M5	Cylinder drain cock linkage (2)	1
M6	Motion bracket	1
M7	Front step (2)	5
M8	Front step tread, lower (2)	5
M9	Front step tread, upper (2)	3
M10	Crosshead top, single slide bar (2)	2
M11	Crosshead slipper, double slide bar (2)	2
M12	Crosshead front, double slidebar (2)	1
M13	Crosshead rear, double slidebar (2)	1
M14	Small end washer, double slidebar (2)	1
M15	Connecting rod lamination (4)	2
M16	Connecting rod boss overlay (4)	2

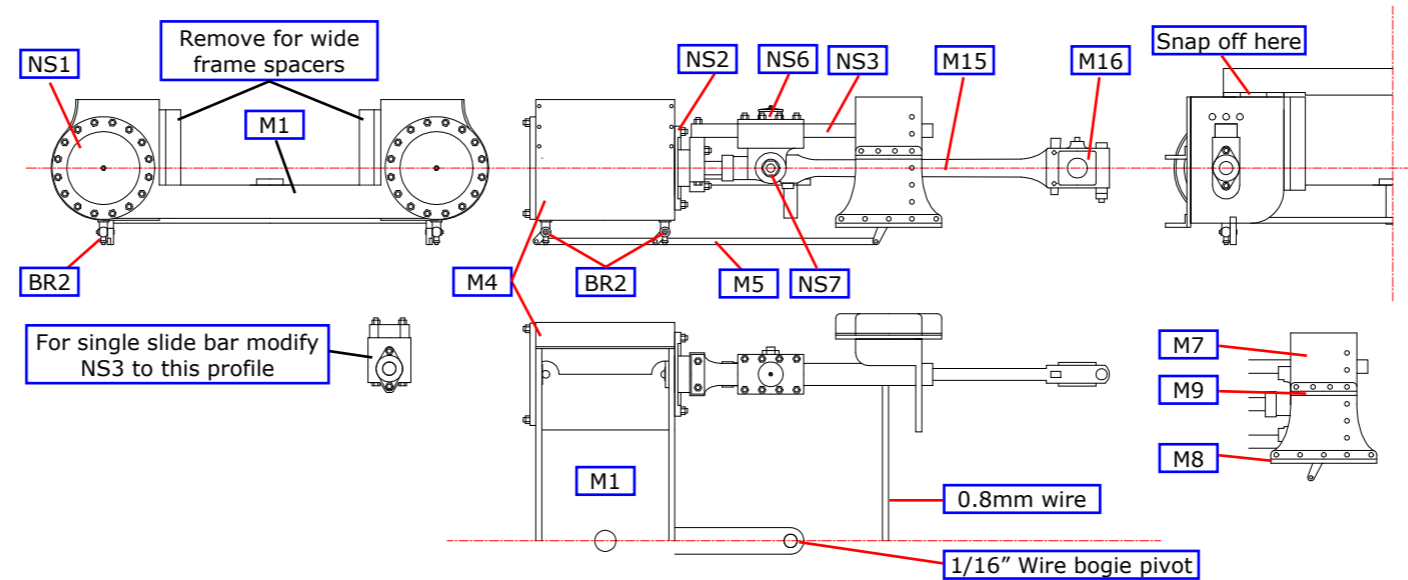
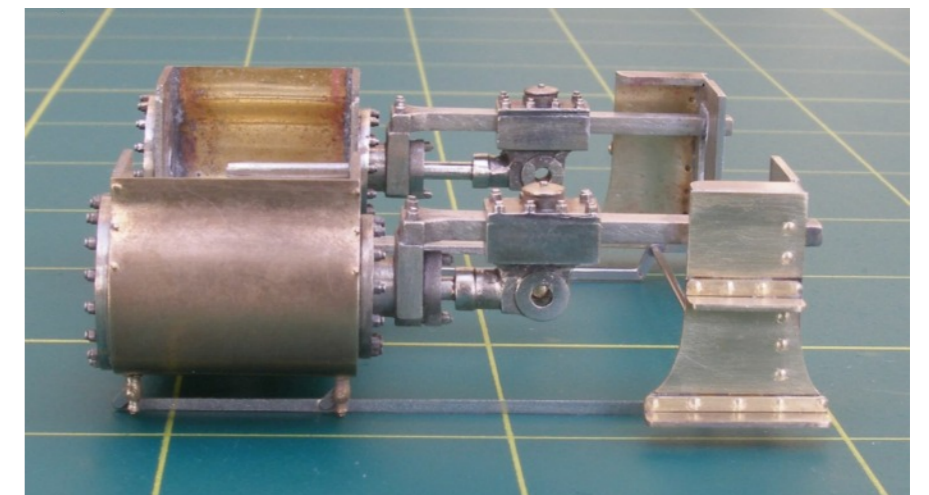
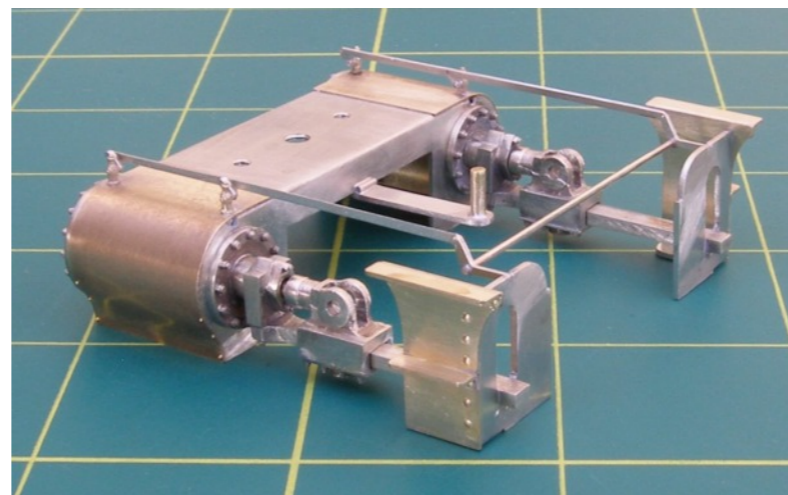
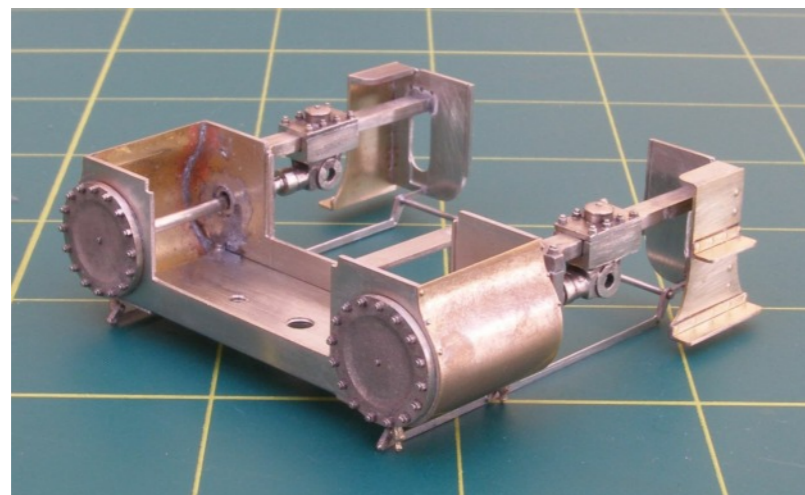


Fig 12. Single Slidebar Cylinder



FINISHING THE CHASSIS

ASSEMBLY

Assemble the wheel sets, bearings and rods selecting 3/16" axle washers of appropriate thickness to control side-play. The motor and gearbox fitting is shown in the drawing. Some side-play on the coupled wheels is desirable to assist with negotiating curves. A thorough check of all clearances at this stage is important.

Fit the connecting rods to the crossheads and to the leading crankpins. Use suitable washers between the crankpin bosses and the connecting rods to align the connecting rods parallel to frames. Fit the coupling rods outside the connecting rods. The rear crankpins will require a tubular spacer to locate the coupling rods parallel to the frames. The cylinder assembly can now be unbolted from the frames and removed. The remaining cylinder detailing components can now be fitted as shown in the drawing.

Now connect the motor to your pick-ups and test run. The axles are now retained by the springs as shown in Fig 7.

BRAKES

Solder together the brake hanger/shoe inner and outer laminations (F28 & F29) for each brake. The brake pull rods/cross shafts (F30) are pinned and soldered to the brake hangers using short lengths of 0.8mm wire. The rear pull shaft (F33) is made up of two

laminations. Fold to make the Y shape and then solder together. Solder together the laminations for the brake cylinder lever (F34) and the handbrake lever (F35). The brake shaft is made from 2.0 mm wire. Thread the rear pull rod, the brake cylinder lever and the handbrake lever onto the cross shaft to build the assembly shown below.

No.	Description	Sheet	No.	Description	Sheet
F20	Coupled wheel axle washer	1 & 5	F32	Brake cross shaft overlay, rear	3
F28	Brake hanger and shoe inner lamination (4)	1	F33	Brake pull rod and lever, rear	3
F29	Brake hanger and shoe outer lamination (4)	1	F34	Cross shaft brake cylinder lever lamination (2)	5
F30	Brake pull rod and cross shafts	3	F35	Cross shaft handbrake lever lamination (2)	5
F31	Brake cross shaft overlay, front	3			

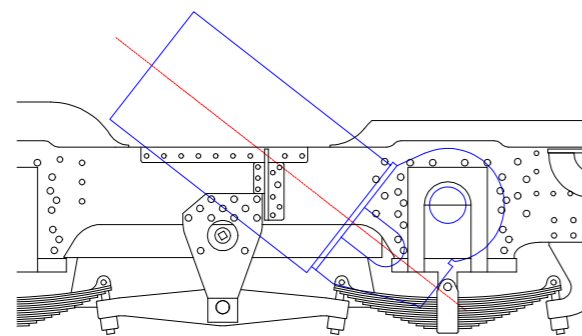


Fig 13. Motor Mounting

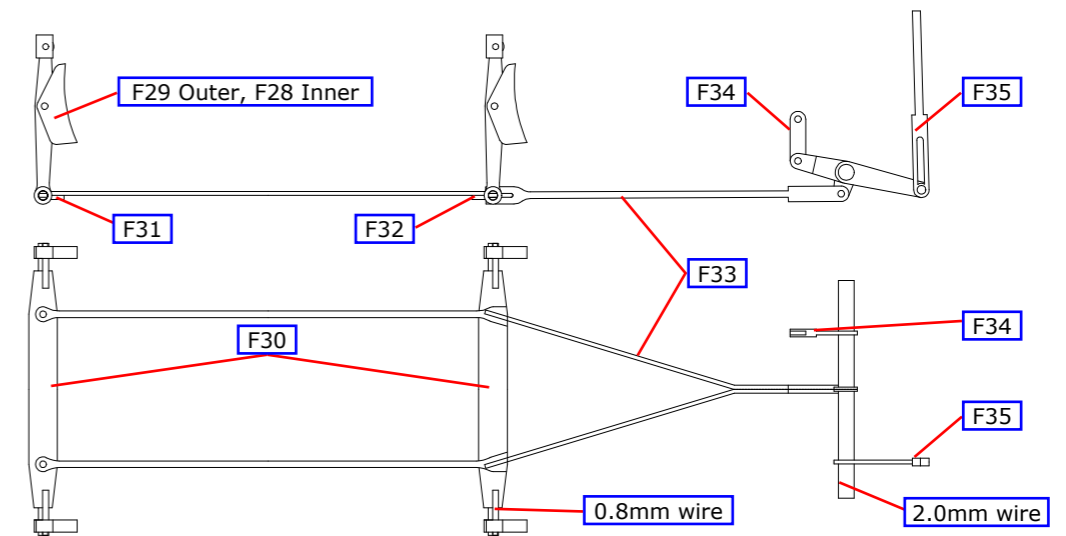


Fig 14. Brakes

FOOTPLATE

For a model of a Beyer, Peacock built locomotive, all the rivets on the footplate will need embossing. There are two rows of half etched holes around the edge of sheet 4 for you to test your skills!

Fold up the footplate valance jig (U2) as shown below. Drill through the holes in the footplate (U1) for the hand rail stanchions at the front of the tanks. Very carefully form the curves in the footplate over a 3/4" diameter bar. Solder a 6BA nut over the rear fixing hole.

Emboss the bolts around the edge of the sunken plate (U5) and fold up the edges. Choose the appropriate front frames (U6, U7 or U8). When you are satisfied with the fit of the footplate, the sunken front plate and the front frames on the jig, they can be soldered together. Take care not to solder the sunken plate to the supports on the jig. Accurate alignment and fit of these components is essential. You should now have a firm base on which to construct the remainder of the upper works. If appropriate emboss the rivets on the buffer beams (U3 & U4) and solder in place.

For a model of a Beyer, Peacock built locomotive, all the rivets on the toolbox sides will need embossing. Make the toolboxes, soldering two pieces of 0.8 mm wire in the holes in the toolbox base (U20) to enable location of the toolboxes in the footplate holes. Form the toolbox sides (U21) to shape to fit around the base and solder in place. Add the toolbox catch hasps (U23) and a piece of 0.3 mm wire for the padlock to go on. The toolbox lids (U22) and the padlocks (U24) are best glued in place, possibly later after painting.

Form the sidebar access hatch sides (U18) to shape around a 5.5 mm rod or drill and solder in place in the groove in the slide bar access hatch base (U17) before soldering in place in the recesses in the footplate. The sidebar access hatch lid (U19) is best glued in place.

Curve the splasher base angle (U25) to shape so that they fit in the recesses in the footplate. Solder the splasher front, Beyer Peacock or Neilson, Stephenson or Dubs (U26 or U27) in place in the footplate slots. Carefully curve the splasher tops (U28) to shape by forming over suitable rods constantly checking the fit with the splasher front. Solder them in place.

Make the sanding rod operating gear by locating the sanding rod bearing (U29) onto the splasher top with a short length of 0.8mm wire and solder in place. The top of the wire should be 3.6 mm above the top surface of the top. Solder the sanding rod crank (U30) in place at the top of the wire as shown in the drawing. Make up and fit the handrail at the front of the splasher from 0.6 mm wire.

No.	Description	Sheet	No.	Description	Sheet
U1	Footplate	5	U16	Steam pipe valve handle (2)	4
U2	Footplate valance jig	4	U17	Slide bar access hatch, base (2)	5
U3	Front buffer beam	1	U18	Slide bar access hatch sides (2)	3
U4	Rear buffer beam	1	U19	Slide bar access hatch, lid (2)	5
U5	Sunken front plate	3	U20	Toolbox base (2)	5
U6	Frame extension, Beyer Peacock, Stephenson and Dubs	1	U21	Toolbox sides (2)	3 & 5
U7	Frame extension, Neilson	1	U22	Toolbox lid (2)	4
U8	Frame extension, Southern Railway	1	U23	Toolbox catch hasp (2)	4
U9	Handrail stanchion base (6)	4	U24	Padlock (2)	5
U10	Coupling hook	1	U25	Splasher base angle (2)	5
U11	Coupling link	1	U26	Splasher front, Beyer Peacock (2)	4
U12	Screw coupling hook (2)	4	U27	Splasher front, Neilson, Stephenson & Dubs (2)	4
U13	Screw coupling, four pieces	5	U28	Splasher top/front (2)	5
U14	Safety chain eye	1	U29	Sanding rod bearing (2)	4
U15	Safety chain hook	1	U30	Sanding rod crank (2)	4

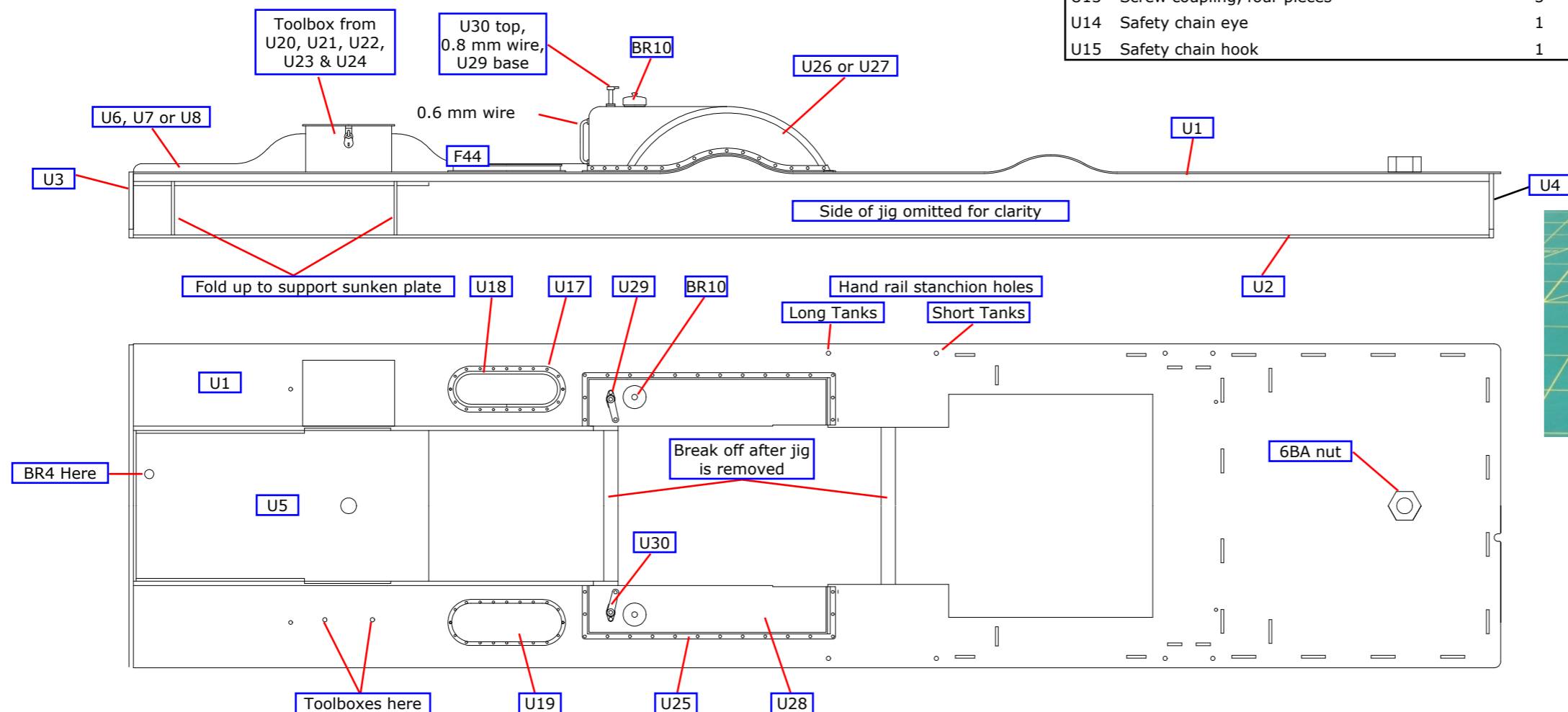


Fig 15. Footplate

BUNKER AND CAB REAR

For a model of a Beyer, Peacock built locomotive, all the rivets on the bunker will need embossing. Form the corners of the bunker sides (U41) over a 4 mm rod. Solder the bunker top (U42) in place in the slots inside the bunker sides before soldering the bunker in place in the footplate slots. It might be easier to attach the water filler at this stage. You need to decide which height of water filler is needed. Cut the piece of 13/32" tube to the required length as shown in the drawing below. The tube fits in a cut out in the bunker top. Solder in place. Attach the water filler lid (U44) and the water filler lid handle (U45).

There are two types of cab rear - one with large windows (C2) and one with small windows (C4). If appropriate, drill out the holes for the window bars and add the window steel bars from 0.45 mm wire or use the wooden window bars (C6). There is a choice of window frames, either large (C3) or small (C5), and they each have a recess to accommodate the glazing, so fitting of these should be delayed until after painting. Form the fire iron bracket (C8) to shape and solder in place. Now solder the cab rear in place in the footplate slots taking care to ensure it is vertical.

If you are fitting coal rails open out the slots (indicated by etched lines) in the bunker beading (U43) to accommodate the coal rail stanchions as shown below. For a Neilson built engine similarly make a slot to fit the lower edge of the cab side. Solder the bunker beading in place. For other than a Neilson engine, solder the beading on the cab rear edge (C7) in place.

Solder a short length of 0.45 mm wire for the handle for the coal door. Solder the bunker top, inside the cab (C10) to the bunker front (C9). Detail bunker top, as shown below, by adding the brake handle (BR17), the cab toolbox knob (BR18), the cab sandbox lids (BR19), and the rear sanding rod and cranks (C11) which is held in place with the help of wire as shown below. The water valve handles (NS12) with 0.45 mm wire for the operating rods are fitted after the cab floor is in place. Solder the bunker front and tank top in place in the slots in the cab rear and in the footplate. Emboss the rivets on the coal rails, open or sheeted in (U46 or U47) and fold over the stanchions through 180° and solder to the back of the coal rails. Form the corners and solder the stanchions in place inside the bunker.

This would be a good time to add the lamp irons to the bunker rear. The table below lists the available parts. The position of the irons can be picked from the four GAs, as can items such as steam heating pipes, couplings and safety chains.

No.	Description	Sheet	No.	Description	Sheet
C1	Cab cut out beading (2)	5	C11	Rear sanding rods and cranks	3
C2	Cab rear large window	5	U41	Bunker sides	5
C3	Rear window frame large (2)	3	U42	Bunker top	3
C4	Cab rear small windows	5	U43	Bunker beading	3
C5	Rear window frame, small (2)	3	U44	Water filler lid	5
C6	Rear window wooden bar (4)	5	U45	Water filler lid handle	4
C7	Cab rear edge beading, Beyer Peacock, Stephenson & Dubs (2)	5	U46	Coal rails	3
C8	Fire iron bracket	4	U47	Coal rails, sheeted in	3
C9	Bunker front	3	U63	Lamp bracket, Adams, rear (4)	4
C10	Bunker top, inside cab	5	U64	Lamp bracket, Drummond, footplate (4)	4
			U65	Lamp bracket, SR, footplate (5)	4

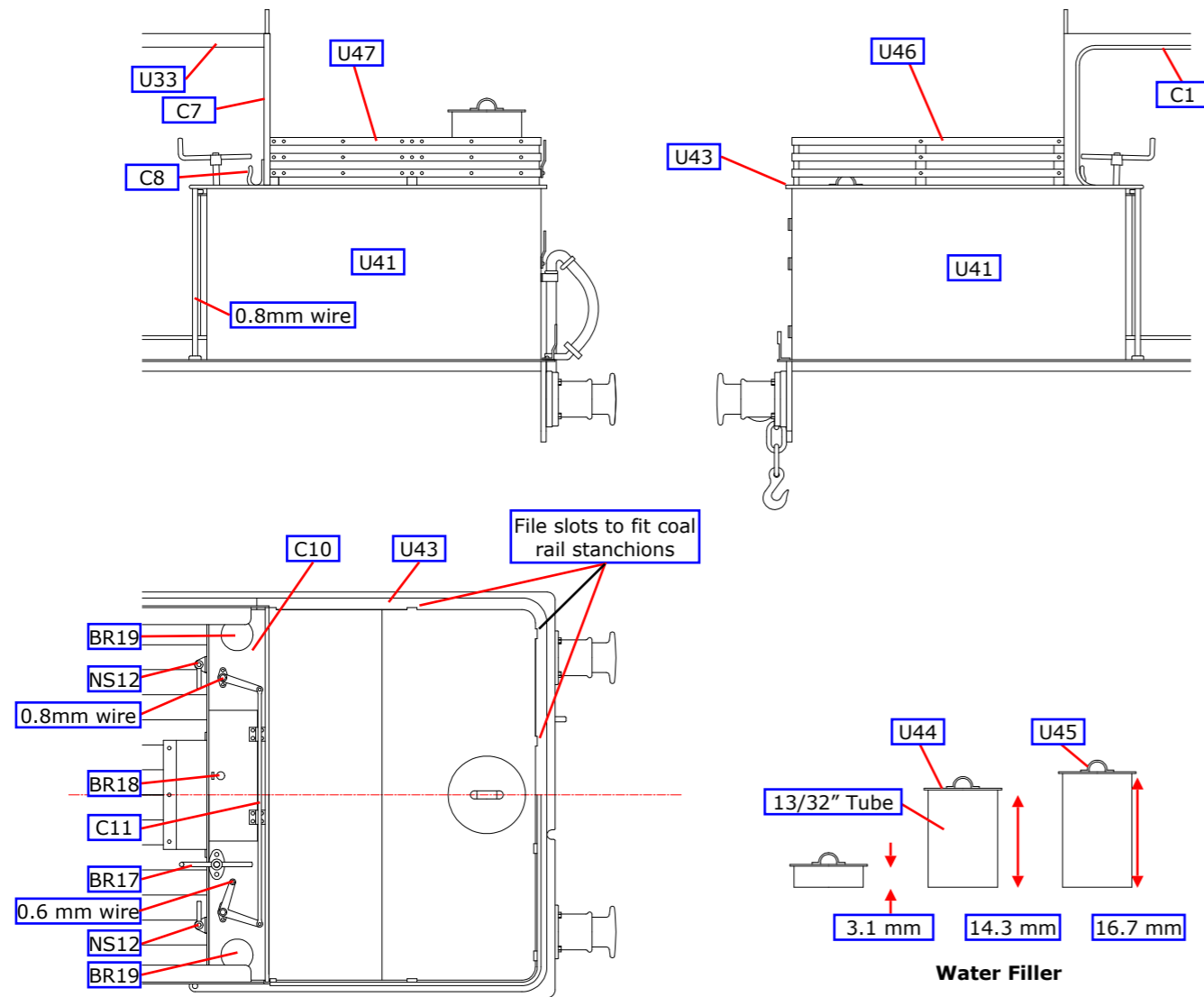
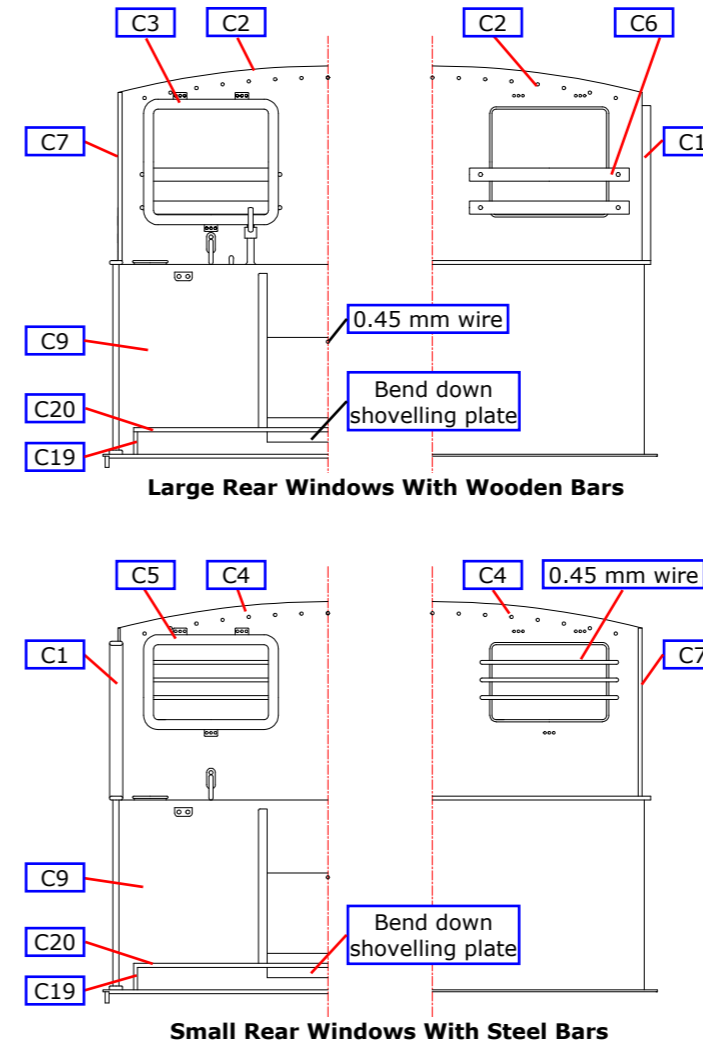


Fig 16. Cab Rear and Bunker



SMOKEBOX AND BOILER

If appropriate emboss the rivets on the smokebox base, sides, front and back (U48) before folding up and soldering a 6 BA nut over the fixing hole.

There is a choice of two smokebox wrappers - riveted (U50) or unriveted (U49). Drill any additional holes required in the smokebox wrapper using the template in Fig. 20. Roll the smokebox wrapper to shape and solder in place on the folded up base, sides front and back. Solder the smokebox rear plate (U51) to the rear of the smokebox.

Drill all the additional holes required in the boiler wrapper (U57) using the template in Fig. 20. Roll the wrapper and form the firebox sides to shape. Solder the wrapper ends together using the boiler joining strip (U58) and solder in the front former (U53). Pin the boiler rear former (U54) and the

firebox front former (U55) together using 0.8mm wire before soldering in place. Solder the firebox rear former (U56) in place. Represent the bolts in the joining brackets using 0.45 mm wire.

Round the rear edge of the smokebox/boiler ring (U52) as per the drawing. Tap the hole in the boiler front former 6BA so that the smokebox, ring and the boiler can be screwed together.

Add the inside of the dome (WM6), the Beyer Peacock and Stephenson dome (WM4) or the Neilson and Dubs dome (WM5) and the chimney (WM2). It is a matter of personal choice as to how much small detail shown below is added now and how much is added as final assembly of the locomotive.

No.	Description	Sheet	No.	Description	Sheet
U16	Steam pipe valve handle (2)	4	U58	Boiler joining strip	3
U48	Smokebox base, sides, front and back	3	U60	Lamp bracket, Adams, front footplate	4
U49	Smokebox wrapper, no rivets	3	U61	Lamp bracket, Adams, smokebox side (2)	4
U50	Smokebox wrapper, riveted	3	U62	Lamp bracket, Adams, smokebox top (2)	4
U51	Smokebox rear plate	3	U64	Lamp bracket, Drummond, footplate (4)	4
U52	Smokebox boiler ring	1	U65	Lamp bracket, SR, footplate (5)	4
U53	Boiler front former	1	U66	Lamp bracket, SR, footplate centre front	4
U54	Boiler rear former	1	U67	Lamp bracket, SR, smokebox side (2)	4
U55	Firebox front former	1	U68	Lamp bracket, SR, smokebox top and bunker rear	4
U56	Firebox rear former	1	U69	Boiler handrail bracket lamination, Beyer Peacock (12)	5
U57	Boiler and firebox wrapper	3			

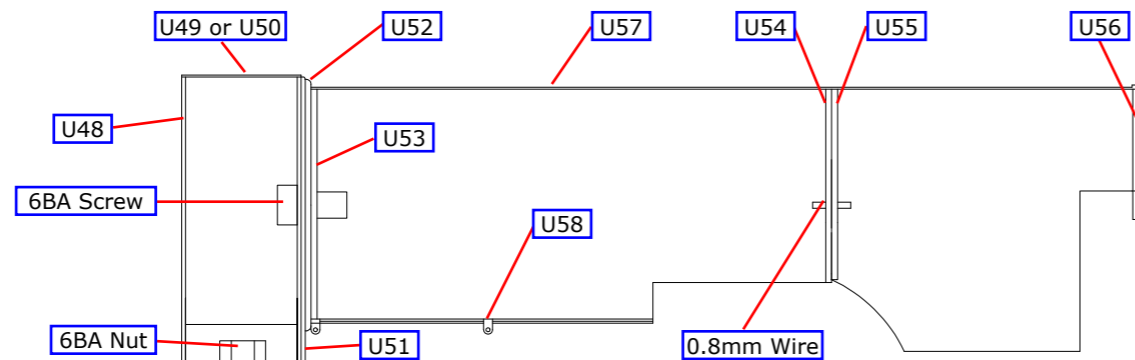


Fig 17. Boiler and Smokebox Construction

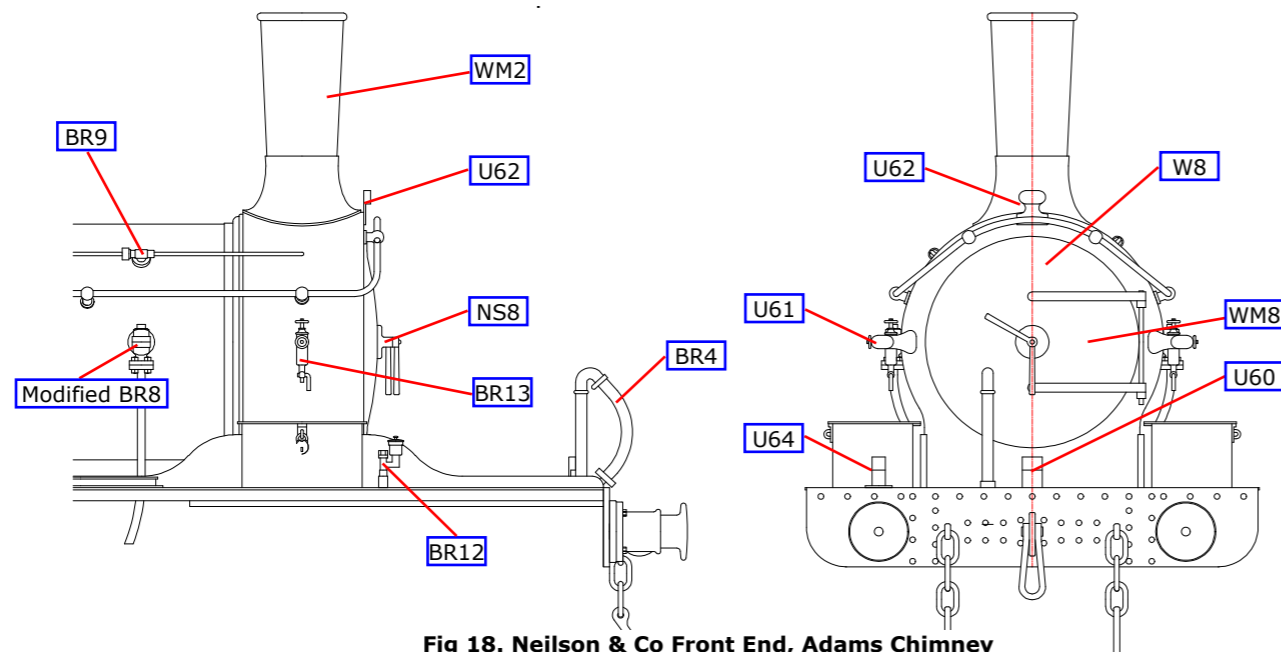


Fig 18. Neilson & Co Front End, Adams Chimney

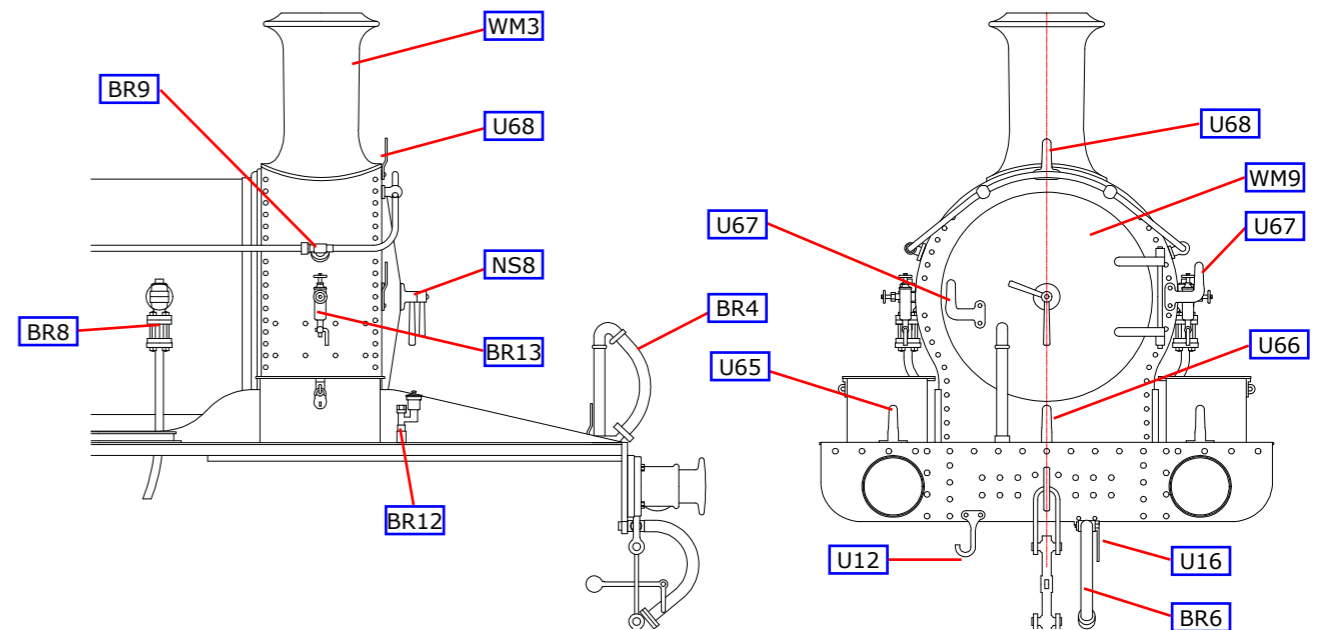


Fig 19. SR Post 1930 Front End, Drummond Chimney

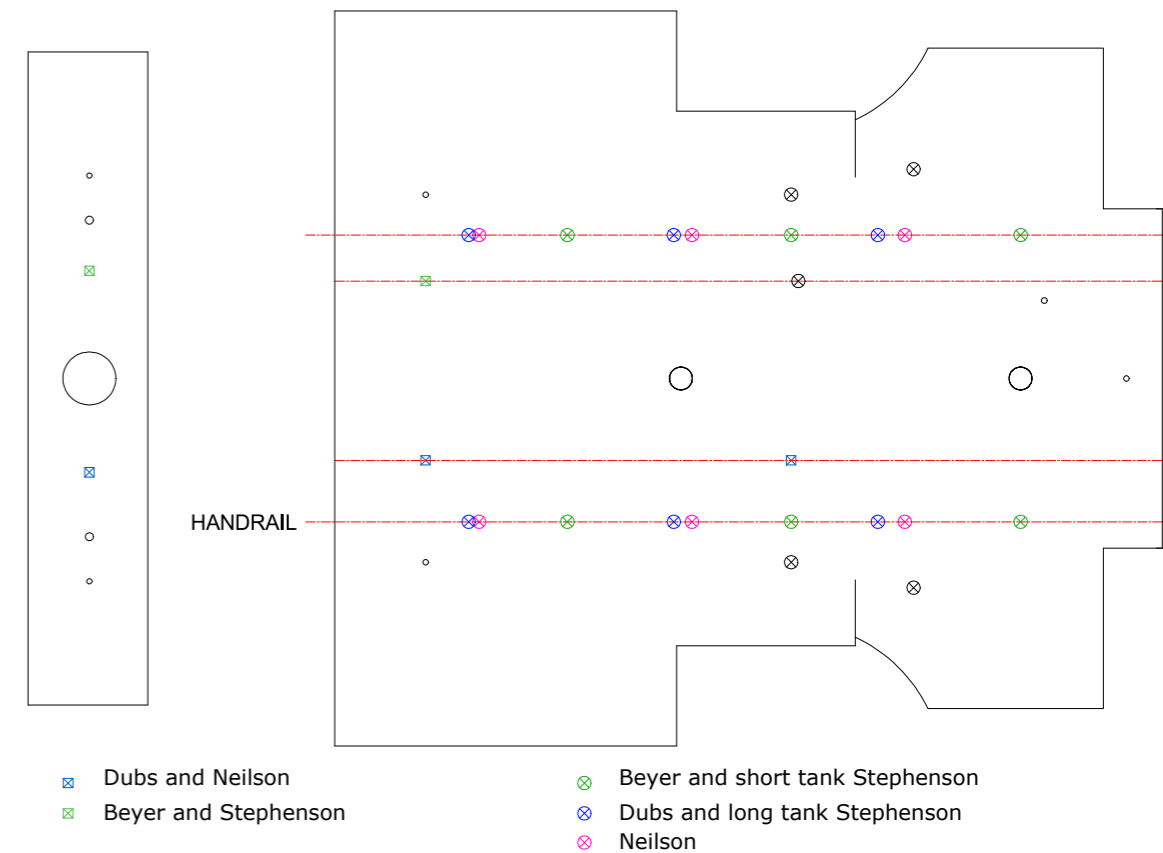


Fig 20. Smokebox & Boiler Wrapper Hole Locations

CAB FRONT, SIDES AND TANKS

Referring to the drawings below, drill through all the appropriate holes in the cab front (C12). Solder the cab front angle overlay (C13) in place on the cab front locating it with a piece of 0.8mm wire which also locates the boiler. Locate the cab front in the footplate slots and check the fit of the smokebox and boiler with the cab front. The boiler can be rotated on the dowel in the cab front until it is aligned correctly.

Before the tanks fronts and tops are fitted the boiler smokebox assembly must be permanently fixed in place. This is best done after as much of the detailing work on these assemblies is complete including the handrails and lamp brackets.

For other than a Neilson engine, modify the tank & cab side (U33) as shown below by removing the shaded rear face and fillet. For short tanks, the front of the tank & cab sides need modifying. Do not break off along the half etched line; this will leave the tank side too short. Cut with a saw alongside the front edge of the half etched line and file back to leave a rebate which fits the tank front. Solder tank and cab sides in place in the footplate slots and to the cab front.

If appropriate modify the tank fronts (U36) as shown below and shorten the tank tops (U35) to fit. The shortening must be done the same way as for the tank sides. Now solder them in place and add the appropriate beading, long or short (U37 or U38). Fit the tank lifting brackets (U40) if modelling in the SR period. Modify the cab cut-out beading (C1) and solder in place as shown below

Using a carborundum disc in a mini-drill cut through the unwanted parts of the valence jig and snap off the redundant parts along the half etched lines. The edges of the valences will now need cleaning up.

Detail cab splashers side, left (C16) with the drain cock lever (C38), the drain cock lever guide (C39) and the damper controls (C35).

Likewise detail the cab splashers side, right (C17) with the lever reverse assembly. This comprises the reversing lever (C28), the ratchet release (C30) attached with 0.45 mm wire, the quadrant plate (C29) and foot rest (C31).

The cab splashers are available in three widths (C15). Rivet as appropriate and assemble with the cab splashers sides, left and right (C16 & C17), and the cab splashers top (C18), again in three widths.

Solder the cab floor supports (C19) in place. The cab floor (C20) is in three widths; select the correct one and solder into place on top of the supports.

Add the handrail stanchions from 0.8 mm wire and the handrail stanchion bases (U9).

The cab side reinforcing strip (U34) needs to be soldered in place once all the internal detail has been added. The position of the strip can interfere with the fit of the cab roof and may need to be adjusted once the roof is available.

Finally add the tank balance pipes (WM1) as shown in the appropriate GA.

No.	Description	Sheet			
C1	Cab cut out beading (2)	5	C38	Drain cock lever	3
C12	Cab front	5	C39	Drain cock lever guide	4
C13	Cab front angle overlay	5	U9	Handrail stanchion base (6)	4
C14	Front window frame	5	U33	Tank and cab side (2)	3
C15	Cab splashers back, three widths (2)	3	U34	Cab side reinforcing strip (2)	2
C16	Cab splashers side, left	5	U35	Tank top (2)	4
C17	Cab splashers side, right	5	U36	Tank front (2)	3
C18	Cab splashers top, three widths (2)	3	U37	Tank beading long (2)	3
C19	Cab floor support (2)	4	U38	Tank beading short (2)	3
C20	Cab floor, three widths	3	U39	Tank/boiler stay (2)	5
C28	Reversing lever	2	U40	Tank lifting bracket (2)	3
C29	Reversing lever, quadrant plate	1	U31	Sanding rod bracket, short tanks (2)	5
C30	Reversing lever, ratchet release	4	U32	Buffer washer (4)	4
C35	Damper controls	5	U59	Safety valve lever	3

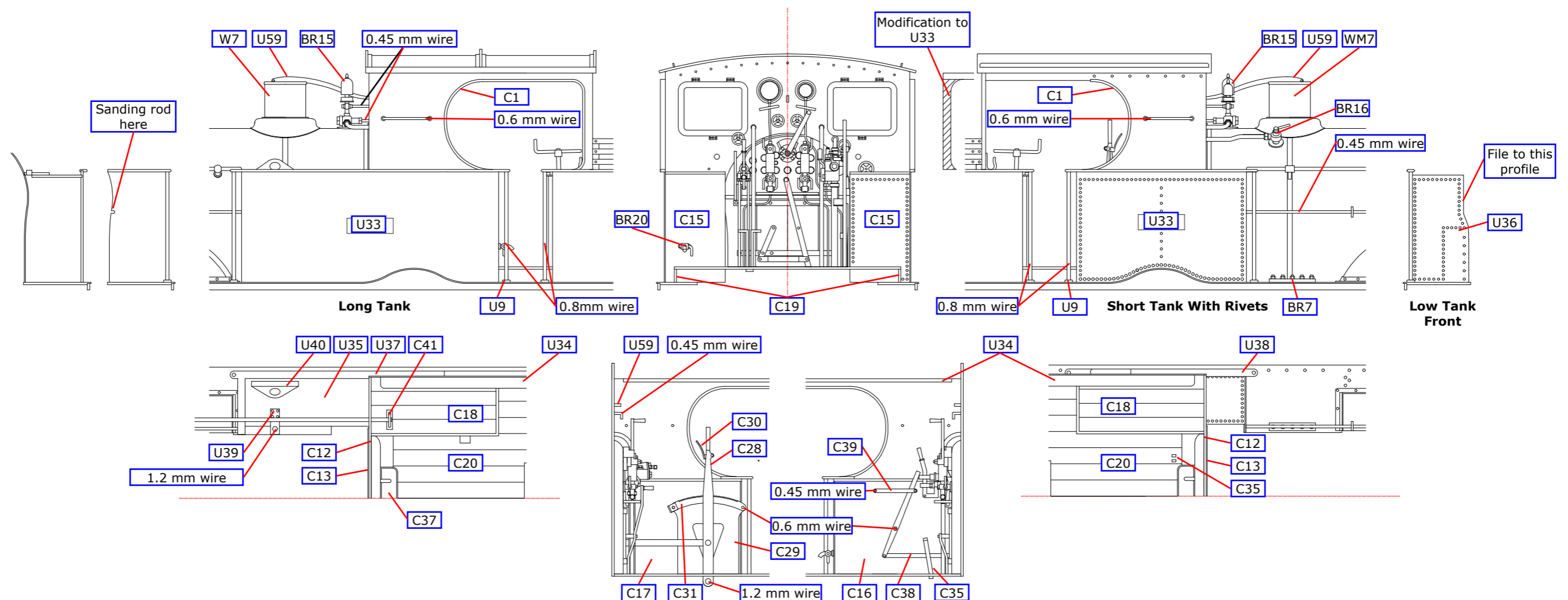


Fig 21. Cab Front & Tank

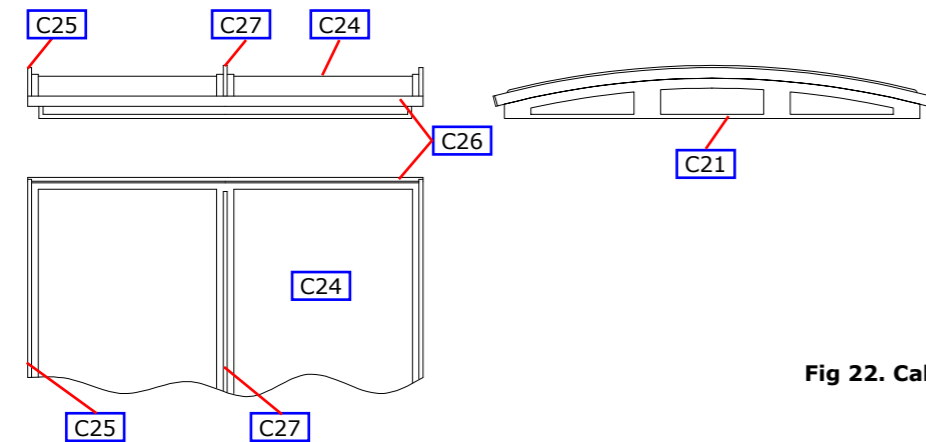
CAB & FINAL DETAILING

CAB ROOF

Fold up the back and front of the cab roof building jig (C21) which gives a solid base upon which to build the removable cab roof.

STEEL ROOF

Roll the cab roof (C24) to shape and solder in place on the jig with equal overhang back and front. Add the rain strips angle pieces (C25, C26 & C27). Now using a carborundum disc in a mini-drill cut through the unwanted part of the former and snap off the redundant parts along the half etched lines. The edges of the formers will now need cleaning up.



WOODEN ROOF

Roll the cab roof (C22) to shape and solder in place on the jig with equal overhang back and front. Add the rain strips (C23). Now using a Carborundum disc in a mini-drill cut through the unwanted part of the former and snap off the redundant parts along the half etched lines. The edges of the formers will now need cleaning up.

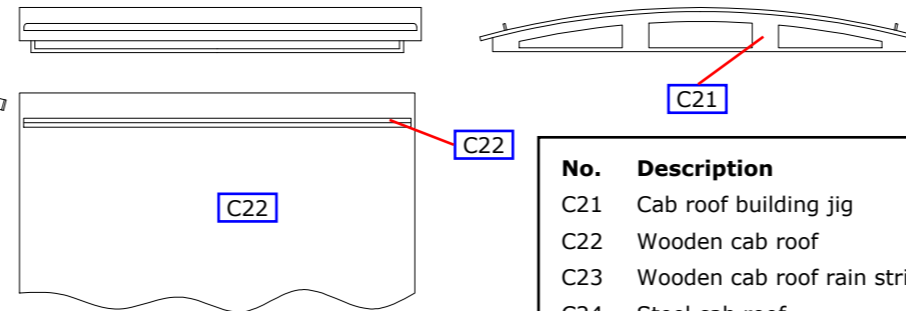
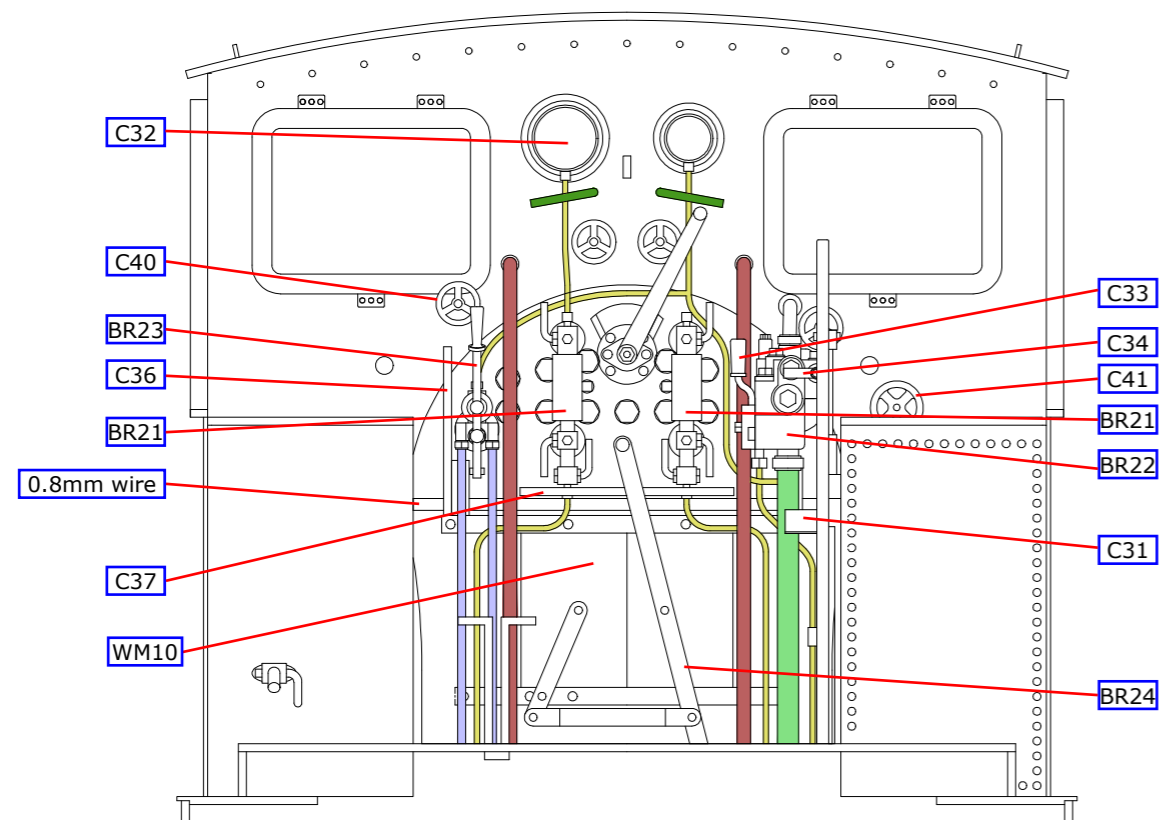


Fig 22. Cab Roof

No.	Description	Sheet
C21	Cab roof building jig	3
C22	Wooden cab roof	5
C23	Wooden cab roof rain strip (2)	5
C24	Steel cab roof	5
C25	Steel cab roof, front and rear angle (2)	3
C26	Steel cab roof, side angle (2)	5
C27	Steel cab roof centre angle	3

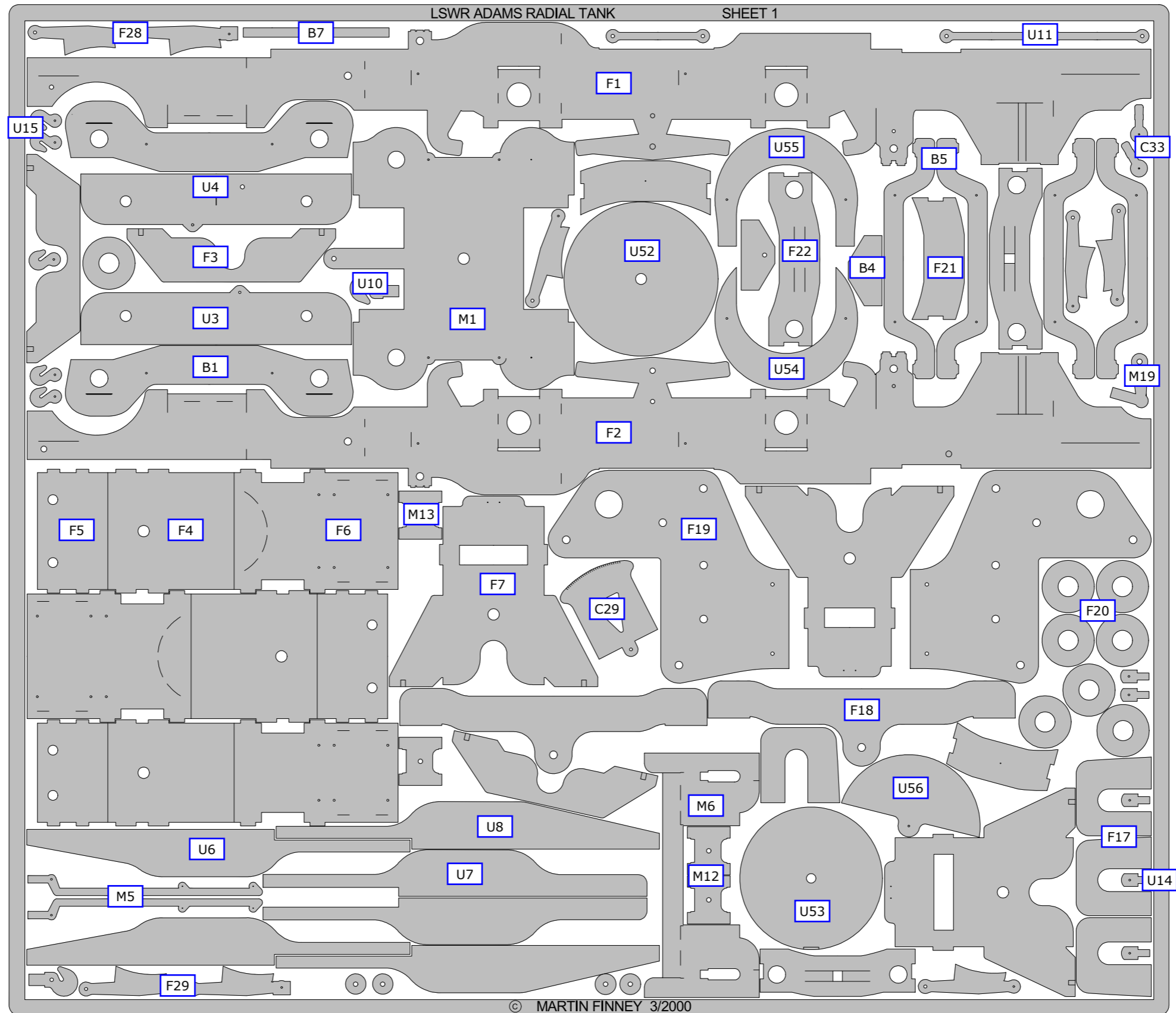


- 0.35mm copper wire
- 0.45mm copper wire
- 0.6mm copper wire
- 0.9mm copper wire
- 1.2mm copper wire

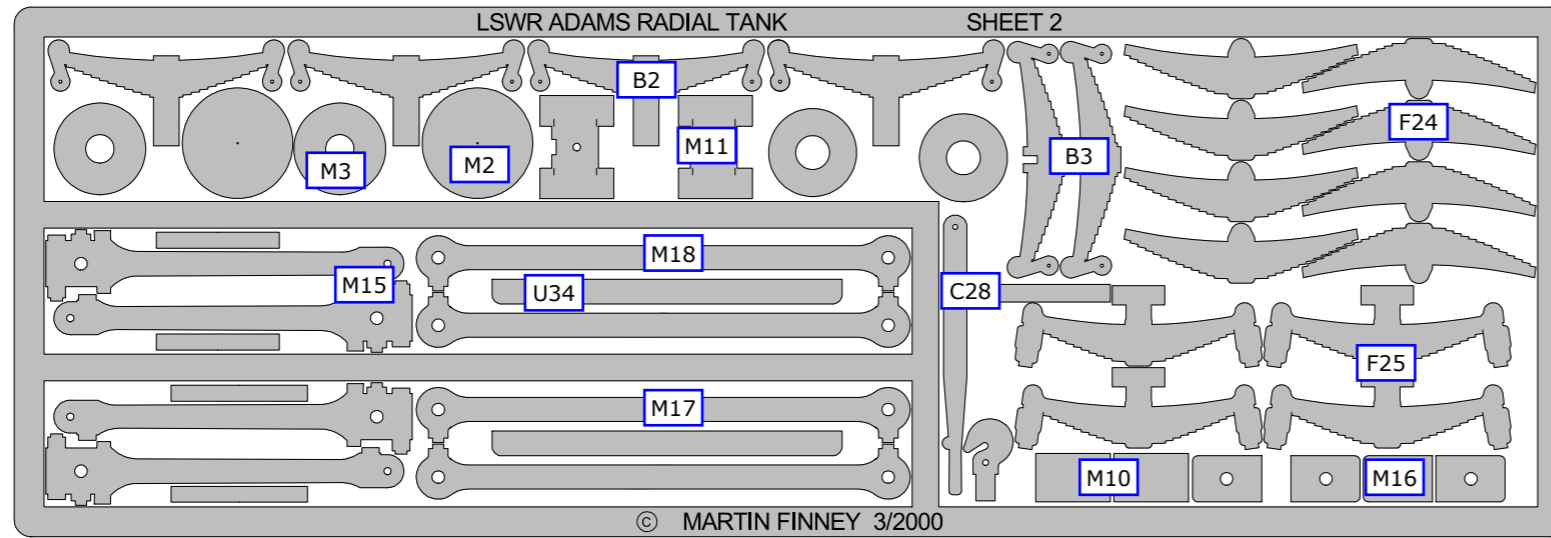
Fig. 23. Backplate

No.	Description	Sheet
C15	Cab splasher back, three widths (2)	3
C31	Reversing lever foot rest	4
C32	Cab pressure gauges	4
C33	Vacuum ejector handle	1
C34	Vacuum ejector lever	4
C36	Sanding lever	4
C37	Backplate shelf	5
C40	Handwheel, small (3)	4
C41	Handwheel, large	4

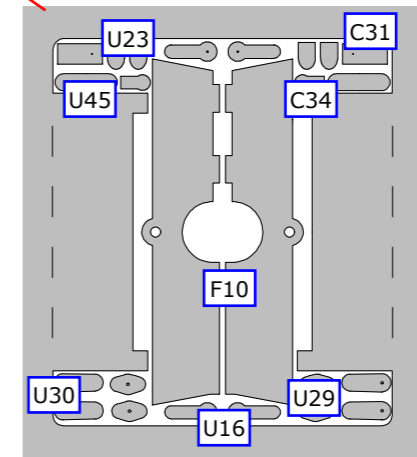
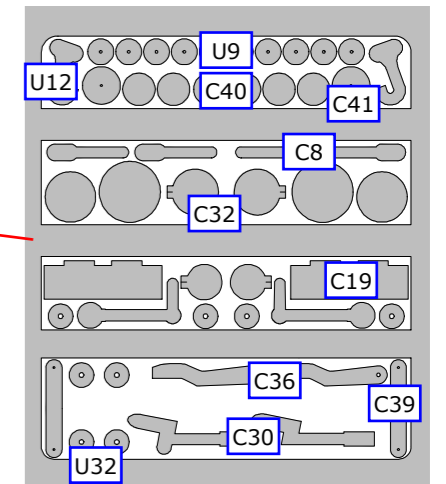
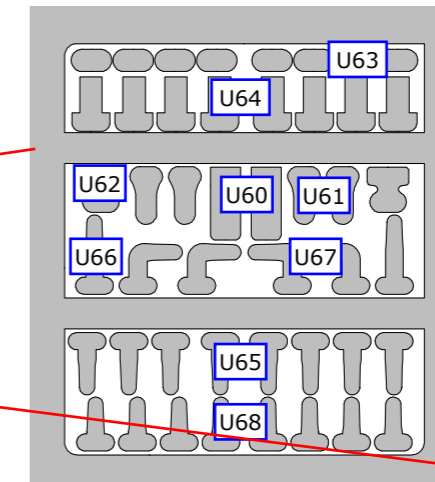
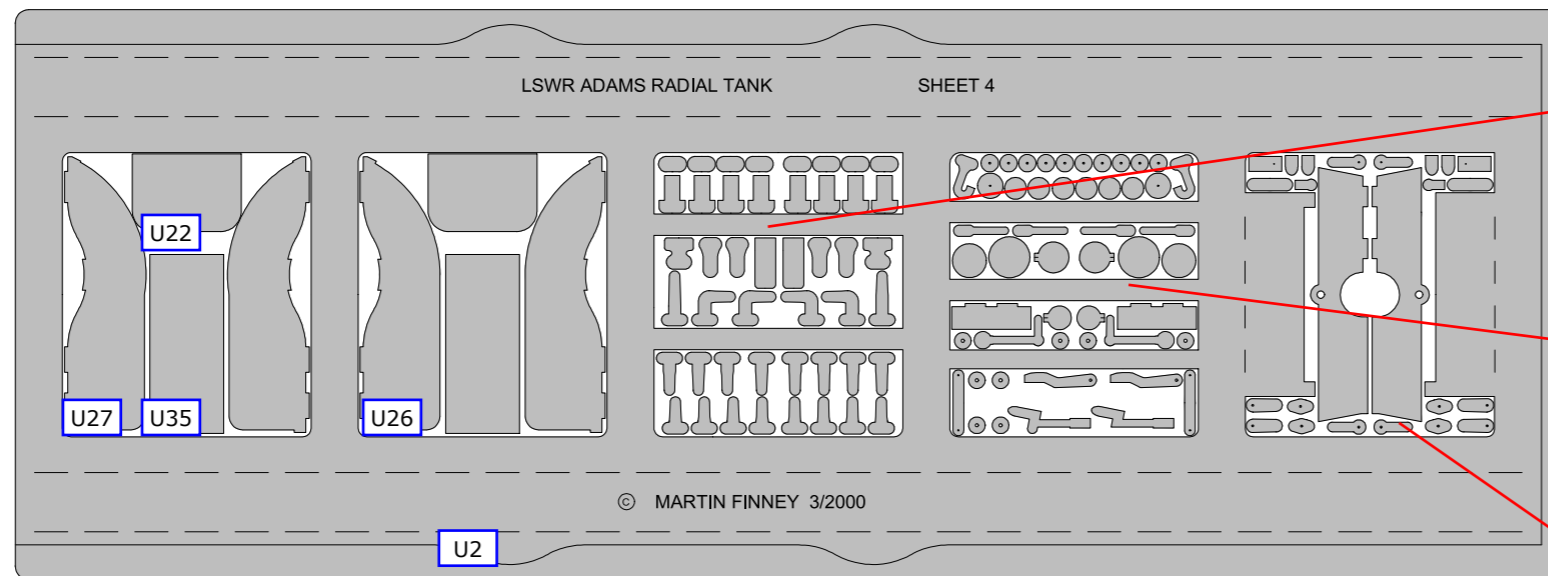
ADAMS O415 ETCH SHEET 1



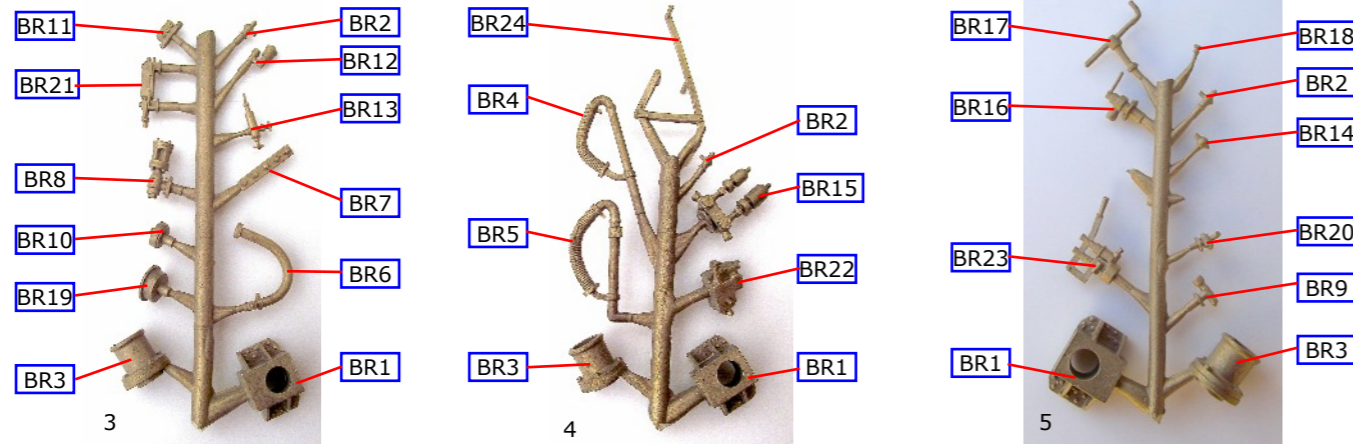
ADAMS O415 ETCH SHEET 2



ADAMS O415 ETCH SHEET 4



ADAMS 0415 CASTINGS AND OTHER COMPONENTS



BRASS CASTINGS

No.	Description	No. in kit
BR1.	Bogie axle box	4
BR2.	Cylinder drain cock	4
BR3.	Buffer housing	4
BR4.	Vacuum pipe, front	1
BR5.	Vacuum pipe, rear	1
BR6.	Steam heating pipe	2
BR7.	Firebox/frame bracket	2
BR8.	Clack box	2
BR9.	Blower valve	1
BR10.	Splasher sandbox lid	2
BR11.	Lubricator, over splasher	2
BR12.	Lubricator, in front of toolbox	2
BR13.	Lubricator, on side of smokebox	2
BR14.	Lubricator, on dome	1
BR15.	Whistles/steam manifold	1
BR16.	Vacuum ejector steam cock	1
BR17.	Brake handle	1
BR18.	Cab toolbox knob	1
BR19.	Cab sandbox lid	2
BR20.	Bucket cock	1
BR21.	Water gauge	2
BR22.	Vacuum ejector/brake	1
BR23.	Steam brake valve	1
BR24.	Firebox door handle	1

OTHER COMPONENTS

3/16" bearing (4)
5/32" top hat bearing (2)

6 BA screw (3)
6 BA nut (2)

Nickel silver wire - 1.6 mm - for double slidebar crosshead pins
Brass wire - 1/16" - for compensation beam pivots and bogie pivot pin & spring bolts
Brass tube - 3/32" outside diameter - for compensation beams
Brass tube - 5/32" outside diameter - for bogie screw
Brass tube - 13/32" outside diameter - for water filler

Brass wire - 0.3 mm - for tool box locks
Brass wire - 0.45 mm - for whistle valves and levers, blower valve rod, water feed valve handles & sand rods
Brass wire - 0.6 mm - for handrails & sanding lever handle

Brass wire - 0.8 mm - for brake hanger pivots, drain cock rods cross shaft, rear step stays, handrail, handrail stanchions & sand rod pivots

Brass wire - 1.0 mm - for sand pipes and steam heat pipe

Brass wire - 1.2 mm - for tank stay bolts

Brass wire - 1.4 mm - for vacuum pipe

Brass wire - 1.8 mm - for equalising beam pivot

Brass wire - 2.0 mm - for rear brake cross shaft and reverse weigh shaft

Spring wire - 0.5 mm - for bogie and rear truck side control

Copper wire - 0.35 mm - for back plate pipe work

Copper wire - 0.6 mm - for pipes from steam brake

Copper wire - 0.9 mm - for pipe work

Copper wire - 1.2 mm - for pipe from vacuum ejector

Handrail knob - short (4)

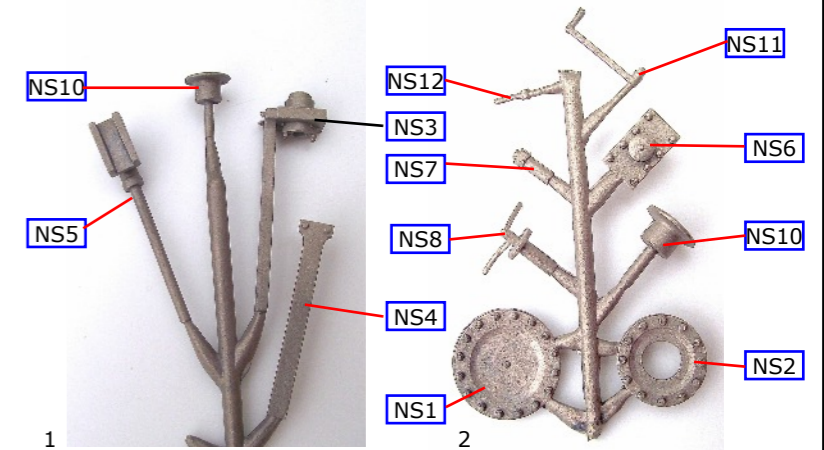
Handrail knob - long (6)

Blower valve rod stanchion

Buffer spring - (4)

NICKEL SILVER CASTINGS

No.	Description	No. in kit
NS1.	Cylinder cover front	2
NS2.	Cylinder cover rear	2
NS3.	Upper slidebar/piston rod gland	2
NS4.	Lower slidebar	2
NS5.	Crosshead/piston rod	2
NS6.	Crosshead top - single slidebar	2
NS7.	Crosshead/connecting rod pin	2
NS8.	Smokebox door handles	1
NS10.	Buffer	4
NS11.	Regulator handle	1
NS12.	Water valve handle	2



WHITEMETAL CASTINGS

No.	Description	No. in kit
WM1	Tank balance pipe	2
WM2	Chimney - Adams	1
WM3	Chimney - Drummond	1
WM4	Dome - Beyer Peacock & Stephenson	1
WM5	Dome - Neilson & Dubs	1
WM6	Inside of dome	1
WM7	Safety valves casing	1
WM8	Smokebox door - Adams	1
WM9	Smokebox door - Drummond	1
WM10	Back plate (Not shown)	1

