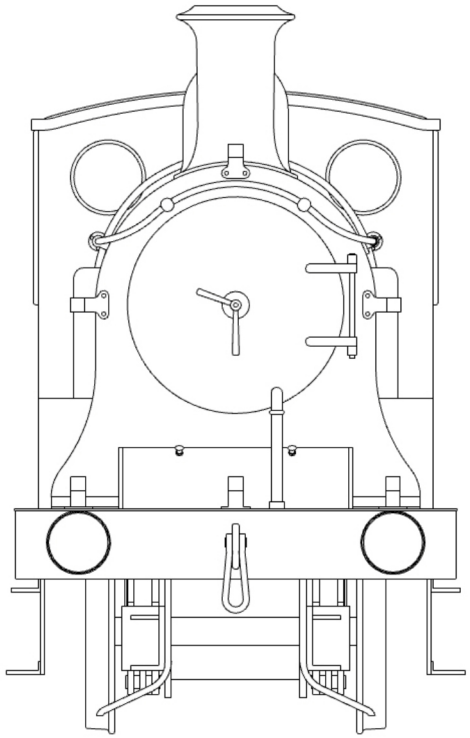
LSWR DRUMMOND L11



CAUTION.

This product contains etched parts with very sharp edges and castings that may contain lead. Neither the Manufacturer, Distributor or Retailer can accept any liability for illness, injury or consequential damage caused when handling or building this product.

Read any instructions before assembly. Do not eat or drink whilst handling. Wash hands after use.

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BRIEF HISTORICAL DETAILS

The locomotives which form the subject of this kit are Dugald Drummonds' L11 4-4-Os for the LSWR. A total of forty locomotives were built at Nine Elms Works under eight Order Numbers as follows:

Numbers	Built Order	Number
154-158	5/1903-6/1903	L11
159, 161, 163-5	9/1903-11/1903	O11
134,148,166-168	4/1901-5/1904	D12
169-173	8/1904-10/1904	F12
174,175,407-409	5/1906-6/1906	K13
410-414	6/1906-8/1906	M13
405,406,435-437	9/1906-12/1906	P13
438-442	3/1907-6/1907	S13

For a detailed history of this class refer to the following definitive books by the late DL Bradley:

Part two of 'The Locomotives of the LSWR.' published by the RCTS.

LSWR Locomotives - The Drummond Classes published by Wild Swan.

Other valuable sources of information and photographs are:

The Drummond Greyhounds of the LSWR - DL Bradley - David & Charles

A Pictorial Record of Southern Locomotives - J.H.Russell - OPC

Drummond Locomotives - Brian Haresnape & Peter Rowledge - Ian Allan

Locomotives Illustrated No. 44 - The Drummond 4-4-Os and Double singles of the LSWR - Ian Allan

Southern Steam Locomotive Survey - The Drummond Classes - Bradford Barton

VARIATIONS POSSIBLE WITH THE KIT.

Clackboxes. Initially the clackboxes were on the bottom of the smokebox tube plate. From 1913 Robert Urie placed the clackboxes conventionally on the boiler sides with the feed pipes following the original path from the injectors. From the mid 1920s the feed pipes were redirected, by a more accessible route, up through the platform and over the leading splasher.

Firebox cross water tubes. The engines were built with firebox cross water tubes which were removed by Urie from March 1916. The last so modified was No. 410 in February 1926.

Smokebox door. From circa 1920 four clamping 'dogs' were fitted to the lower rim of the smokebox door.

Brake gear. From the mid 1920s the brake hangers and pull rods were changed for a more robust design.

Sandboxes. From c1930 the engines were fitted with extensions to the sand box fillers.

Smokeboxes. When the smokeboxes were renewed or repaired the flush riveting was usually replaced by visible snap head rivets. Commencing with No. 166 in June 1939, the smokebox wing plates were removed; one engine, No. 174, escaped this modification.

Coupling rods. Many engines received new fluted coupling rods in later years.

Lamp brackets. The locomotives were built with Drummond's socket style brackets. The SR standardised on a design with the socket in the lamp. Many locomotives had the Drummond brackets adapted to accept the standard lamps but gradually the SR brackets were fitted.

Couplings. The engines, in their early years, had a single long coupling link. Later the locomotives were equipped with screw couplings together with a hook to carry the coupling when it was not required.

Washout plugs. In later years the fireboxes of some engines were fitted with four washout plugs.

VARIATIONS/MODIFICATIONS NOT INCORPORATED INTO THE KIT.

Engines 174/175,407-13 were built with 4000 gallon double bogie tenders fitted with exhaust steam heating and consequently were equipped with Duplex pumps instead of injectors. After Urie took office the pumps were removed.

TENDERS

Apart from the Duplex pump fitted engines all were built with six wheel 3500 gallon tenders. In 1925-7 those with the 3500 gallon tenders (apart from 440/441) had them replaced with double bogie tenders.

CHASSIS OVERVIEW

Note that many of the components for both chassis and body are handed left/right and care must be taken to ensure the correct component is used. Components are not always identified left/right separately but with care and common sense no problems should arise.

Gauge.

For Finescale, where little sideplay is required, the widest spacers can be used but they will need careful filing to make their width 26.0 mm. If you require your engine to negotiate sharp curves then the middle width spacers should be used. For Scaleseven use the widest frame spacers .

Suspension.

Rigid. The kit is supplied with top hat bearings to build a rigid chassis. Open out the main axle holes to accept top hat bushes and solder them in place.

Sprung. If you are going to fit sprung horn blocks, you should open out the frame slots by cutting up the half etched lines and follow the manufacturers instructions.

Compensated. The simplest and most reliable suspension system is beam compensation and the necessary compensation beams are provided in the kit. The hornblocks and bearings which are available as an extra item which includes instructions for aligning the hornblocks .

Pickups. No pickup material is provided. The options are:

Scrapers. Attached to the middle frame spacer using printed circuit board.

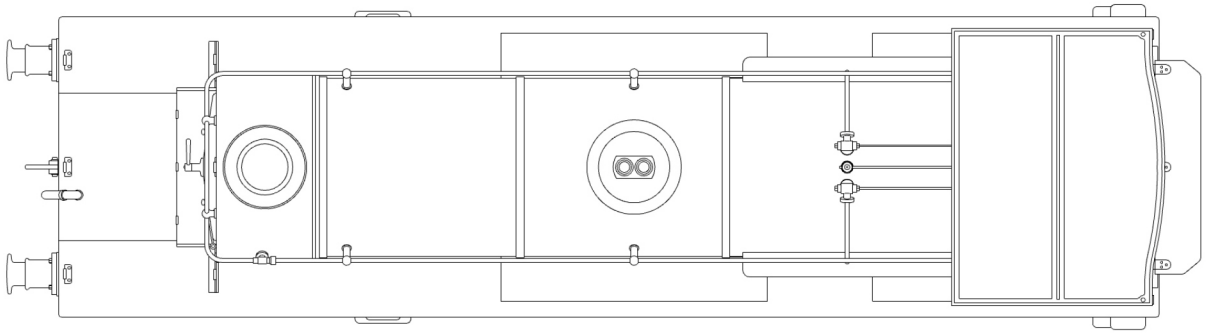
Plunger. Open out holes P and fit according to the manufacturers instructions. It may not be possible to use plunger pickups if you wish to fit the inside motion.

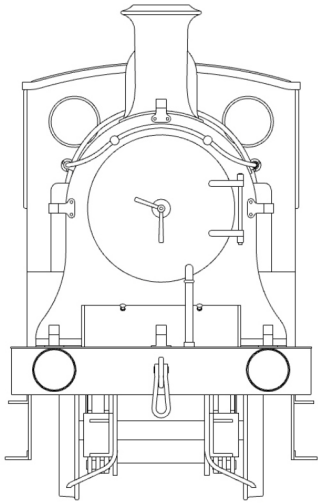
COMPONENTS NOT SUPPLIED

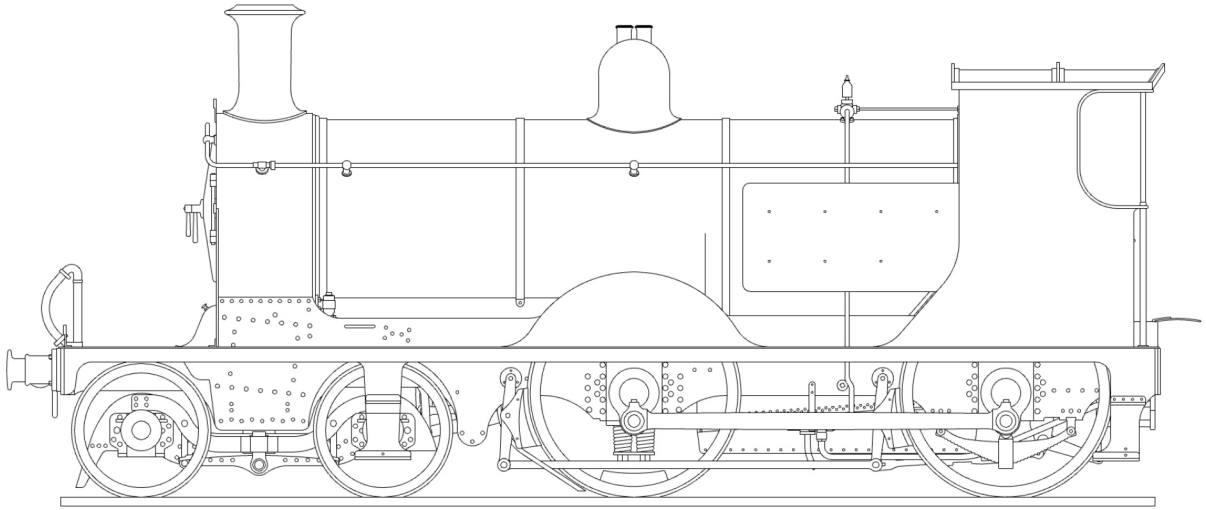
Wheels. Driving wheel - 5' 7", 18 spoke, 3/16" diameter axle (3) Slater's Ref.7867SW and bogie/trailing wheel - 3' 7" diameter, 10 spoke, 5/32" diameter axle Slater's Ref.7843SWMF

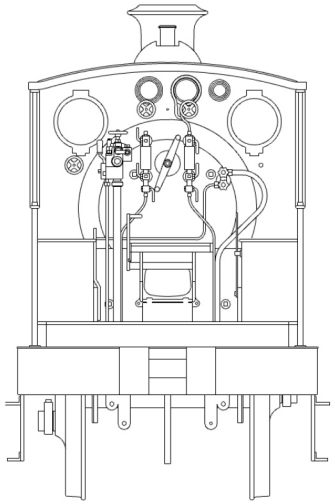
Motor/Gearbox. A Canon 1833 motor is recommended with a SDMP 40L/15 gearbox available from Finney 7.

Inside Motion. A separate kit is available from Finney7 to construct the working inside motion.









L11 GA Circa 1907. Firebox cross water tubes. Clackboxes on rear of smokebox. Plain coupling rods. Flush rivets on buffer beam, drag beam and hanging plates.

BOGIE

Part Numbers and Etch Numbers. These are all displayed in the text as part number/etch number as in (B1/1).

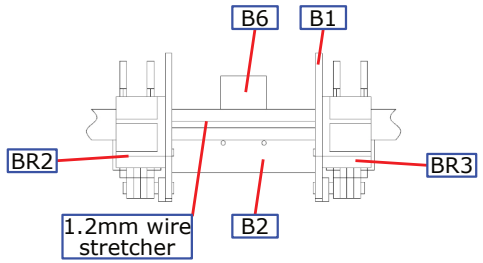
Bogie. The bogie carries the weight of the front of the locomotive and is the third balance point of the compensation system.

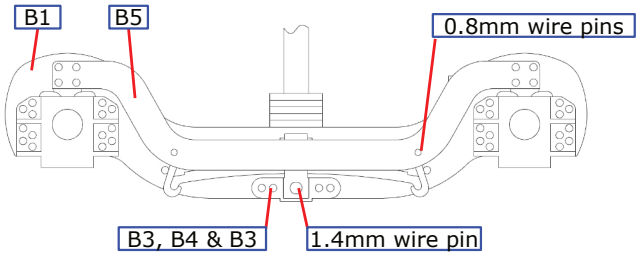
On the bogie frames (B1/1) emboss the rivets and form the guard irons to shape. Fold up the appropriate bogie stretcher (B2/5) (use the middle width for O Finescale or the widest for Scaleseven) and solder in place in the slots in the frames. Note the slot for B6/3 must be at the rear.

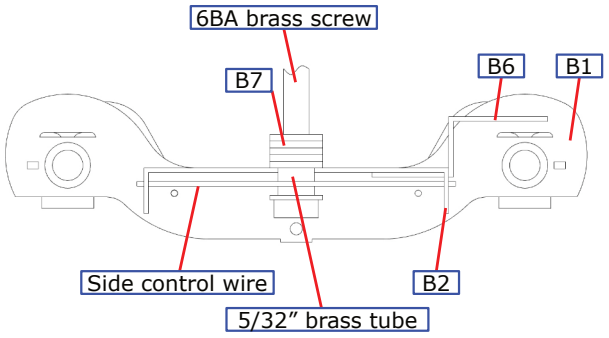
Solder the axle boxes, left and right (BR2 & BR3) in place and the wire stretchers from 1.2 mm wire. Carefully ream the axle holes to 5/32" diameter and temporally fit the wheels to check that the bogie is running true.

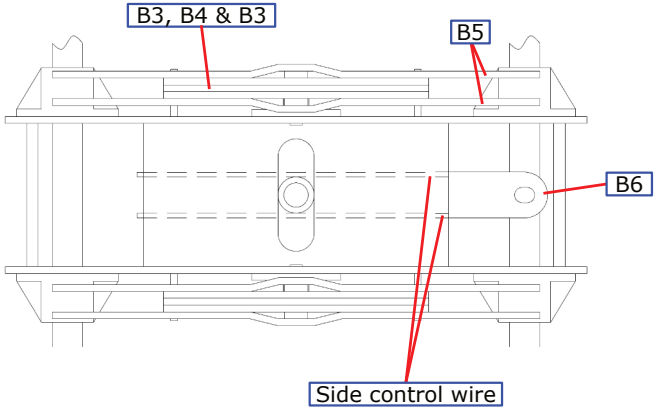
Using the bogie spring inner lamination (B4/2) as a guide, drill two 1.2 mm holes and a 1.6 mm hole into a block of wood or Tufnol. Insert 1.2 mm and 1.6 mm wire into the holes. These pieces of wire are used as a jig to accurately align the spring components (B3/2 & B4/2) and the equalising beams (B5/1). Note the equalising beams are asymmetric. On the spring outer lamination (B3/2) fold the outer strips through 180° before assembling all the components on the jig. Align carefully before soldering together. Trim the wire pins to length leaving the 1.6 mm wire long at the back to enable the assembly to be located on the bogie through the 1.6 mm hole in the frames. Repeat for the other side.

Fold up the bogie pivot bracket (B6/3) and solder in place. The side control springing can now be constructed as shown, soldering the spring wires at one end only. Make up the bogie mounting screw as shown. Make the 5/32" tubing for the bogie screw 3.15 mm long. Place a washer (B7/4) either side of the tube as shown.









FRAME PREPARATION

All components used on this page are on Etch 1.

Having decided which chassis to construct you can now start construction by preparing the frames (F1 & F2).

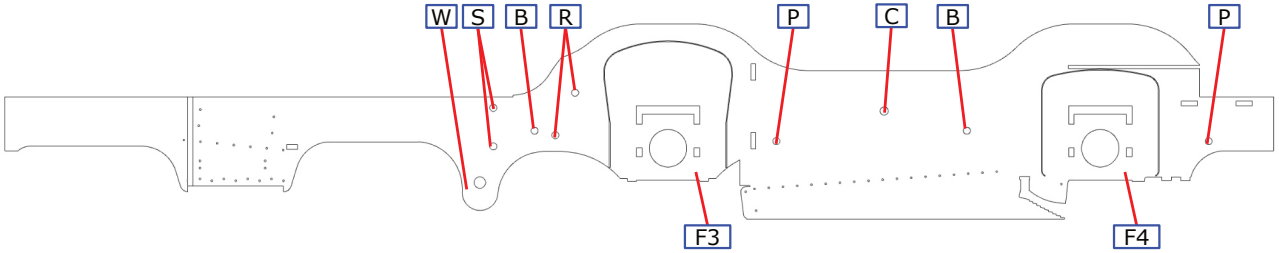
Rigid Chassis. Solder the top hat bearings in place. Solder the cosmetic hornblocks, front and rear (F3 & F4) in place aligned to the half etch lines and with the bottom of the frames.

Compensated Chassis. First open out the frame slots by cutting up to the half etch lines. Construct the hornblocks as described in the separate instructions. The rear hornblocks are smaller than the front; use the working rear hornblock (F5) instead of the component on the hornblock kit fret. Solder one of the rear hornblocks to the inside of the frame aligning it with the half etched lines and with the bottom of the frame.

Now open out the following holes in the frames:

- C For compensation beam pivot - 1/16"
- B For brake hanger pivots - 0.8 mm
- R For reversing cylinder (WM3)
- S For sandboxes (WM1)
- W For weigh shaft - 2.0 mm, only if fitting inside motion

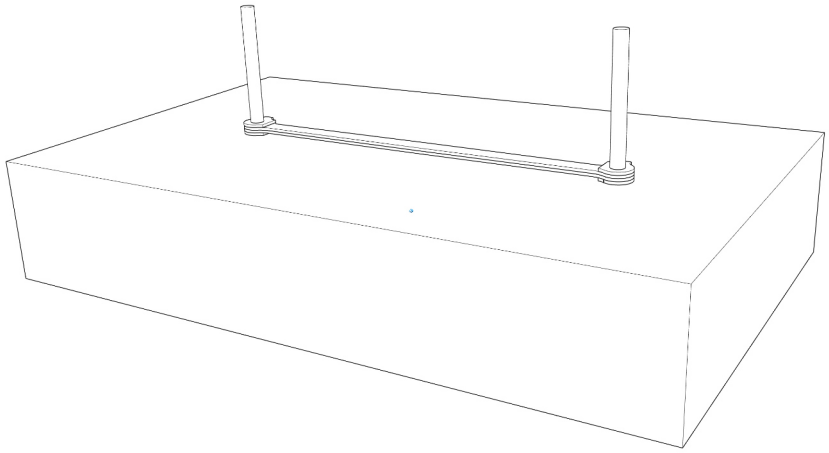
Emboss the appropriate frame rivets before bending the frames inward at the front along the etched line.



Coupling Rods. The coupling rods are on etch sheet 2. 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, fluted or plain (M1 or M3) and an outer lamination, fluted or plain (M2 or M3).

First drill out all the crankpin holes to a convenient size which is under size 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 laminates over the mandrel and using plenty of solder and flux solder the two laminates together. You should now have a rod with the bosses on each laminate 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 CONSTRUCTION

Unless stated, all parts on this page are on etch sheet 1.

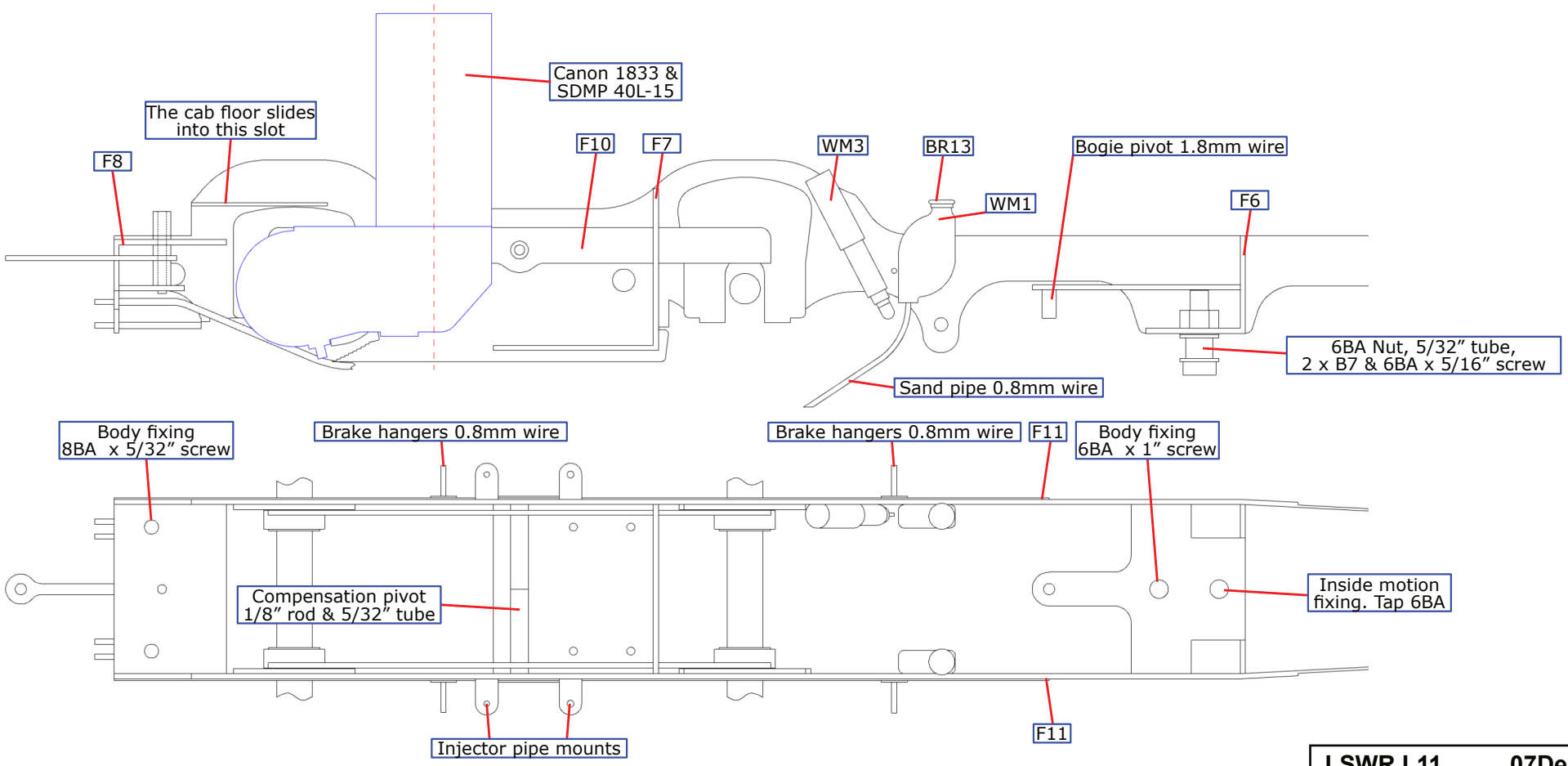
Select the three frame stretchers, front,middle and rear (F6, F7 & F8) to suit your chosen gauge. Solder the 6BA bogie fixing nut over the hole in the front stretcher and add the bogie pivot, from 1.8 mm wire, as shown. For inside motion tap the fixing hole. Fold up the stretchers making sure the half etched fold lines are on the inside and that each bend is a right angle.

Check that all tabs on the stretchers fit properly in their corresponding chassis slots so that the rest of the spacer is hard up against the inside of the frames. Now assemble the frames and stretchers. Start by tack soldering the middle stretcher to both sides. Check that everything is square and that the stretchers are hard against the frames. If all is well solder the remaining stretchers to the frames checking constantly that the chassis is square and the frames are straight.

Now solder the hornblocks into place using the coupling rods to jig the hornblocks into the correct spacing.

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 3/32" tube which together fit between the frames and solder the beams (F10) to them close to one end. Temporarily fit the beams. Temporarily fit all the 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 spacing washers (B7/4). One full thickness and one half thickness works. When correctly set up the top of the frames should be 27.8 mm above rail level.

Fit the sandboxes (WM1) and for the earlier configuration, fit the sandbox lids (BR13). The sand pipes are from 0.8 mm wire. Also fit the steam reverse cylinder (WM3).



DETAILING THE CHASSIS 1

Frame Overlays. Emboss all the rivets on the frame overlays (F11/5 & F12/5). Fold down the injector pipe brackets as appropriate. Those not required can be broken off. Solder in place lengths of 0.8 mm wire for the brake hanger pivots which also serve to accurately locate the overlays. Check that the hornblocks are free in the slots in the overlays which only need tack soldering around their edges.

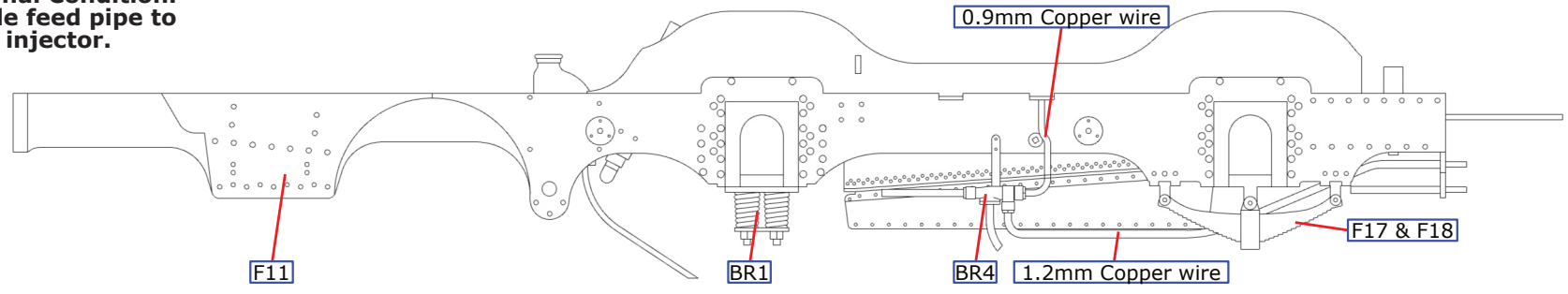
Inside Motion. If you are fitting working inside motion then build it next following the separate instructions.

Finishing the Chassis. Assemble the wheel sets, bearings and rods selecting 3/16" axle washers of appropriate thickness to control side play. The clearance between the crankpins and the inside of the splashers is very tight. Minimal side play on the coupled wheels is desirable especially in S7. It may be necessary to reduce the thickness of the crankpin nut to gain sufficient clearance. A thorough check of all clearances at this stage is important. You should now have a mechanically acceptable chassis. Now connect the motor to your pick-ups and test run.

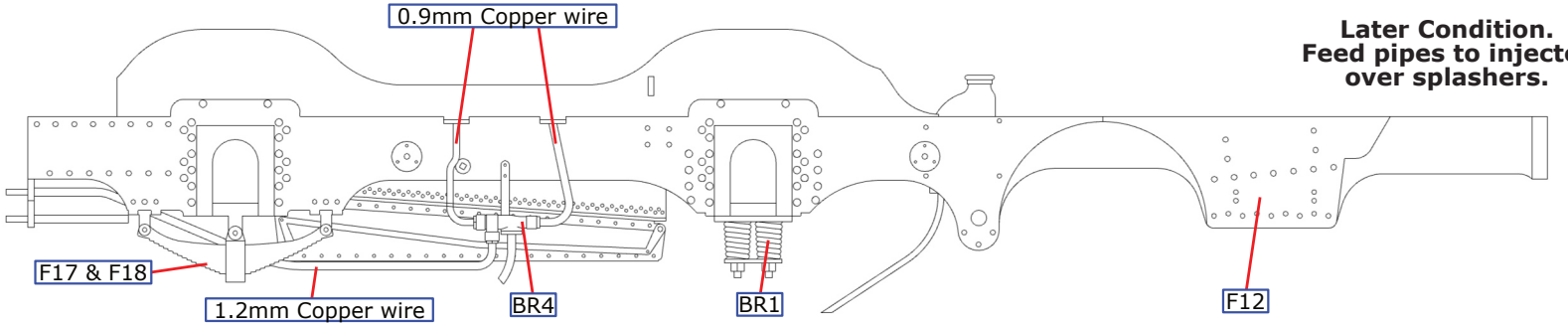
Solder together the rear spring laminations (F17/2 & F18/2) and clean up. Solder them in place as shown. Fit the front axle springs (BR1). The axles are now retained by the springs.

Complete the chassis detailing by fitting the injectors (BR4) using 1.2 mm and 0.9 mm copper wire;

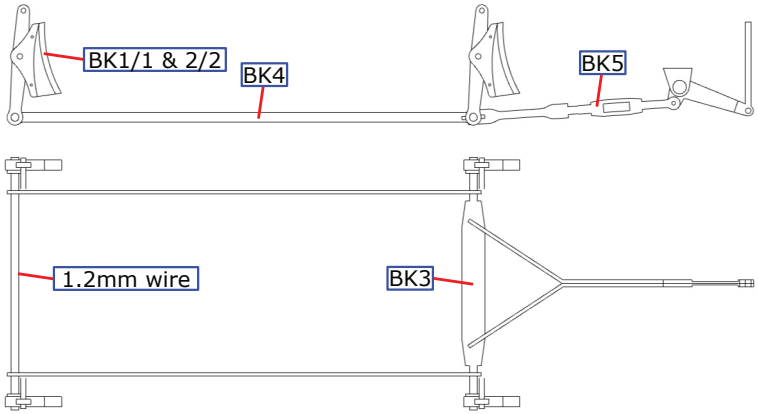
Original Condition.
Single feed pipe to injector.



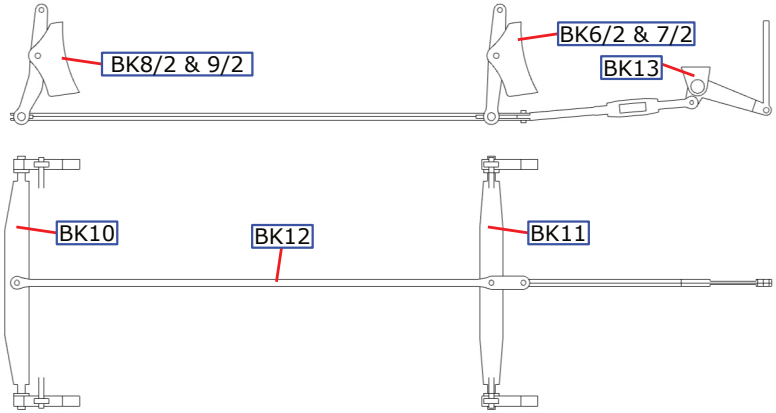
Later Condition.
Feed pipes to injector over splashers.



DETAILING THE CHASSIS 2



Original Brakes



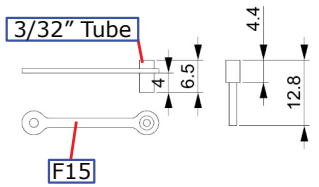
Rebuilt Brakes

Unless stated, all parts on this page are on etch sheet 3.

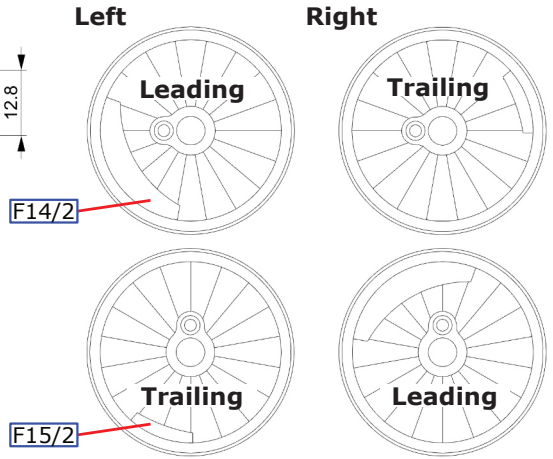
Assemble the brakes using the appropriate components for either the original or rebuilt brakes. The assembly is as shown.

Attach the balance weights to the wheels as shown and fit the crankpins.

Construct the drawbar and pin as shown.



Drawbar & Pin



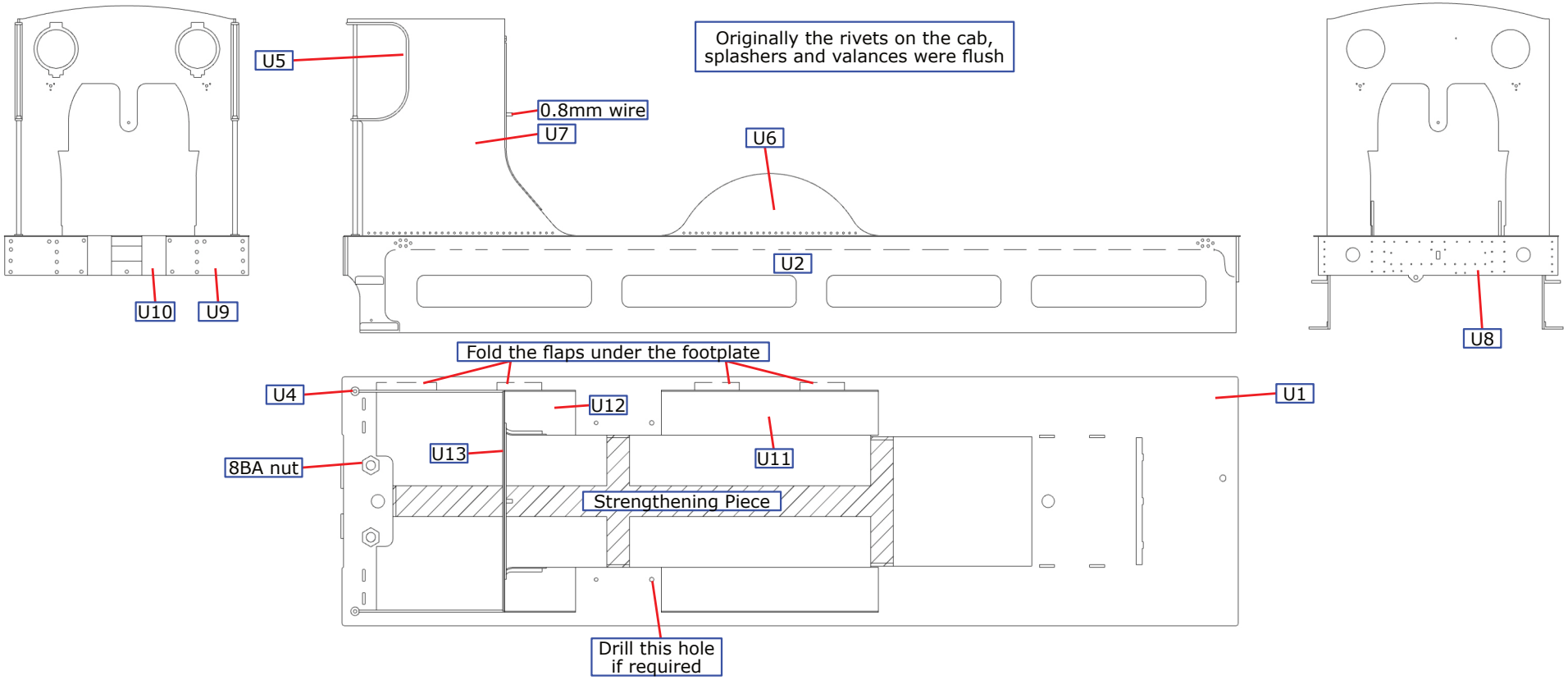
FOOTPLATE, CAB SIDES & SPLASHERS 1

This assembly is built on the valence jig (U2/4) to ensure that the footplate and upper works stay flat. If appropriate, emboss the rivets in the valences jig. Fold up the valences jig as shown and solder the corner fillets (U3/1) in the etched grooves to strengthen the jig and ensure it is square. Solder two 8BA nuts and the handrail stanchion bases (U4/3) over the appropriate holes in the footplate (U1/4).

Solder the cab cut-out beading (U5/3) in place. A tight fit is essential or it will appear to be too long. Fold the flaps along the lower edge of the splasher side (U6/3) and the cab side (U7/3) through 90° and solder in place with the flaps under the footplate. It is essential that they are tight against the edges of the openings in the footplate. Solder the footplate to the valence jig. If appropriate emboss the rivets in the buffer beam (U8/5) and the drag beam (U9/5) before soldering in place. Add the drag beam buffer rubbing plates (U10/3).

Carefully roll the splasher tops (U11/3) to shape by forming over suitable rods constantly checking the fit with the splasher sides. Note the splasher tops are handed – they have a very small step in the inside rear edge. Now solder the splasher tops in place ensuring that the splasher top is fits tightly into the rebate in the splasher side.

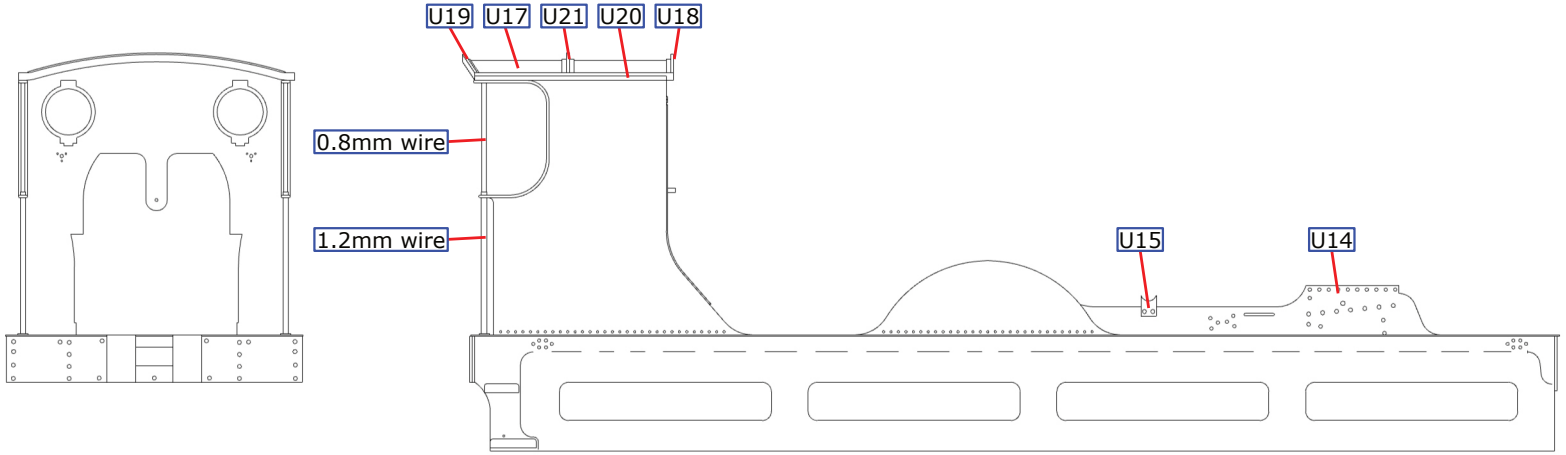
Form the lower extensions of the cab front outer lamination (U12/3) to match the cab sides. Now solder the two laminations of the cab front (U12/3 & U13/5) together using the handrail holes to ensure accurate alignment. Solder a short length of 0.8 mm wire into the hole in the cab front locate the boiler. Solder the cab front into the slot between the cab sides. Now remove the central strengthening piece (shown hatched) from the footplate.

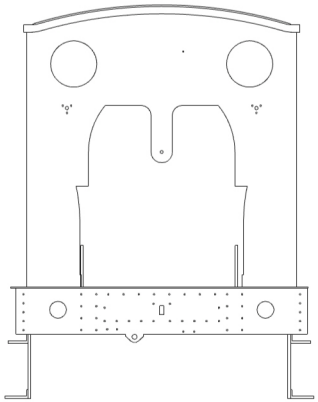


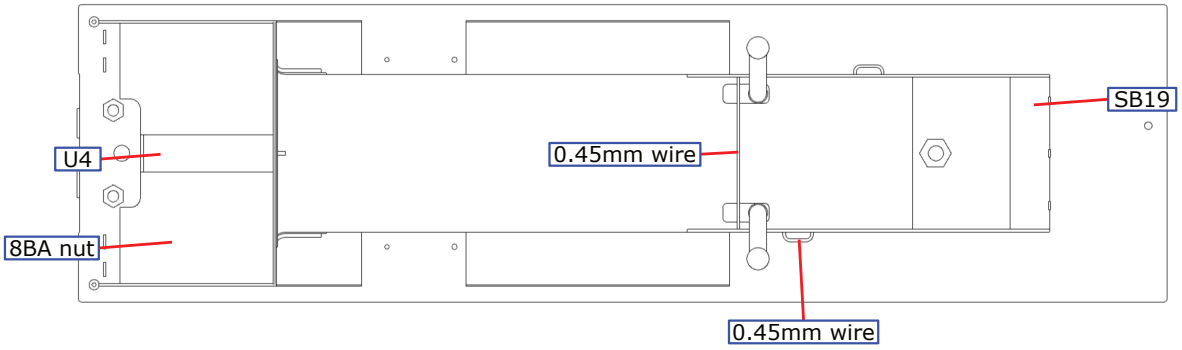
FOOTPLATE, CAB SIDES & SPLASHERS 2

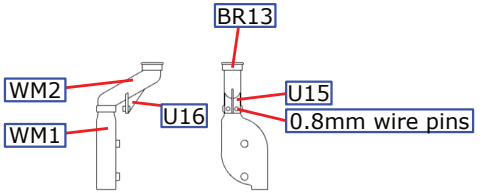
If appropriate, emboss the rivets in the frame extensions (U14/5) - note the two rearmost holes are not rivets but serve to locate the sanding rod. Add the small handrails from 0.45mm wire. For the extended sandbox fillers add the sandbox extension pipe bracket (U15/3) to the frame extensions and then add the extension pipe bracket fillet (U16/3). The brackets are located either over the rivets embossed in the frame extensions or by drilling through all the rivet holes and using 0.8 mm wire as locating pins. Solder the frame extensions in place in the footplate slots. Add the sandbox filler extension pipes (WM2).

Fit the cab handrails. Leave a small projection at the top to represent the prototype fixing nut. Form the cab roof (U17/5) to shape and add the angle pieces (U18/5, U19/5, U20/3 & U21/5). The cab roof is simply retained by the projections at the top of the handrails.









Sandbox Detail

SMOKEBOX & BOILER

Smokebox. Fold up the smokebox base and rear former (SB1/5) and solder a 6BA nut over the fixing hole. If appropriate, drill holes for the smokebox door dogs (BR11) in the smokebox front with no wing plates (SB3/5). Solder the smokebox front, with or without wing plates (SB2/1 or SB3/5) to the smokebox base. Roll the required smokebox wrapper (SB4/4, SB5/4, SB6/4 or SB7/4) to shape and solder in place. Emboss the rivets in the smokebox rear plate (SB8) and if appropriate, drill holes for the clackboxes (BR9); refer to page 12 for details. Modify the clackboxes and solder in place.

Boiler. Drill any additional holes required in the boiler wrapper, without bands or with bands (SB9/5 or SB10/5) using the templatebelow.

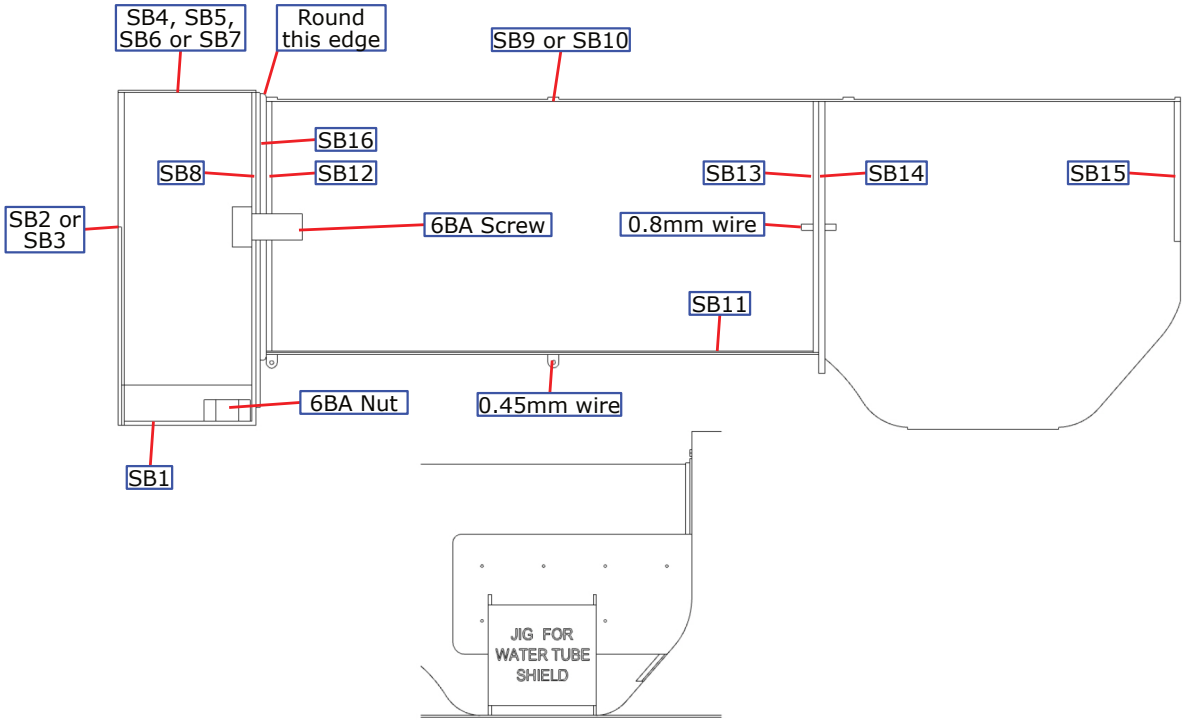
Roll the wrapper and form the firebox sides to shape. Roll the boiler joining strip (SB11/5) to fit inside the boiler, bend out the boiler band joining brackets and fit through the small slots from inside the boiler. Solder the wrapper ends together with the jointing strip and solder in the boiler front former (SB12/1). Represent the bolts in the joining brackets using 0.45 mm wire.

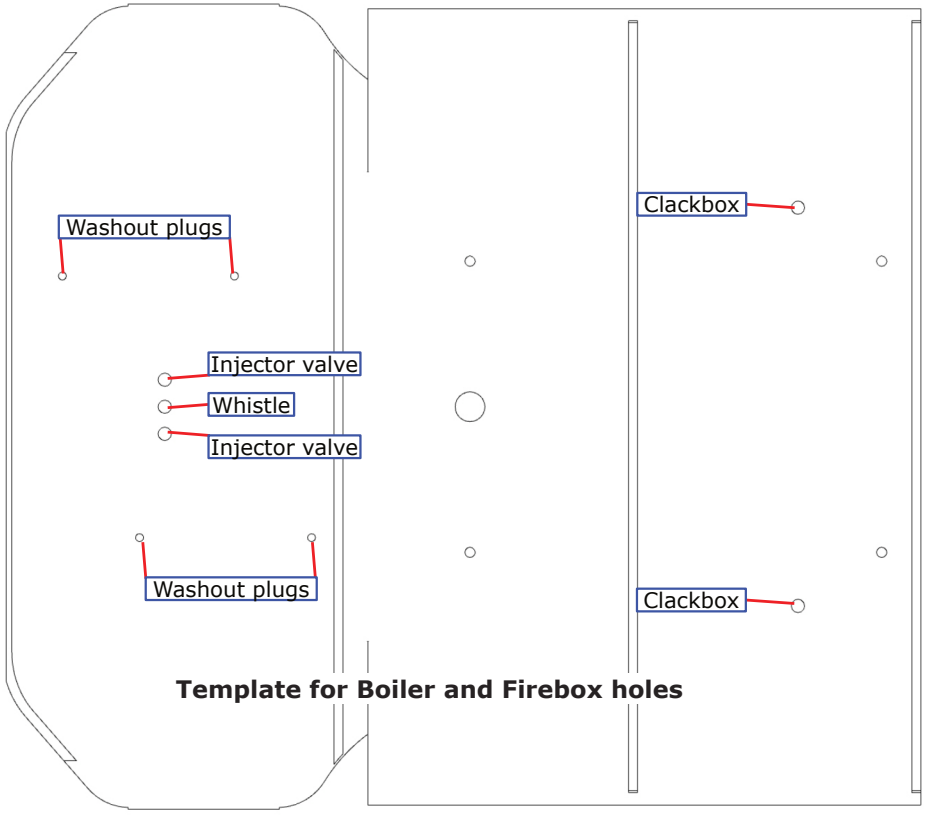
Remove metal from the lower corners of the firebox front former (SB14/1), as indicated by the etched lines, so that it fits between the frames. Solder the boiler rear former (SB13/1) and the firebox front former together aligning them with two 0.8 mm wire dowels. Ensure the small etched locating line on the firebox front former is at the front. Solder this assembly in place aligning the small etched line with the join along the underside of the boiler.

Now solder the firebox rear former (SB15/1) in place with the notch in the top of the rear former aligned with the notch in the wrapper.

Tap the hole in the boiler front former 6BA so that the smokebox, the smokebox and boiler ring (SB16/1) and the boiler can be screwed together. Now check the fit of the smokebox and boiler with the cab front and splashers. The boiler can be rotated on the dowel in the cab front so the splashers and the lower edge of the firebox align.

If appropriate fold up the water tube shields (SB17/5). Use a big fillet of solder in the corners so that they can be rounded to shape. Attach the shields using the jig (SB18/5).





Template for Boiler and Firebox holes

ORIGINAL CONDITION - UPPER WORKS DETAILING

Unless stated, all parts on this page are on etch sheet 3.

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. Clean up the edges of the valences. Fit the boiler and smokebox to the footplate and cab. Solder in place.

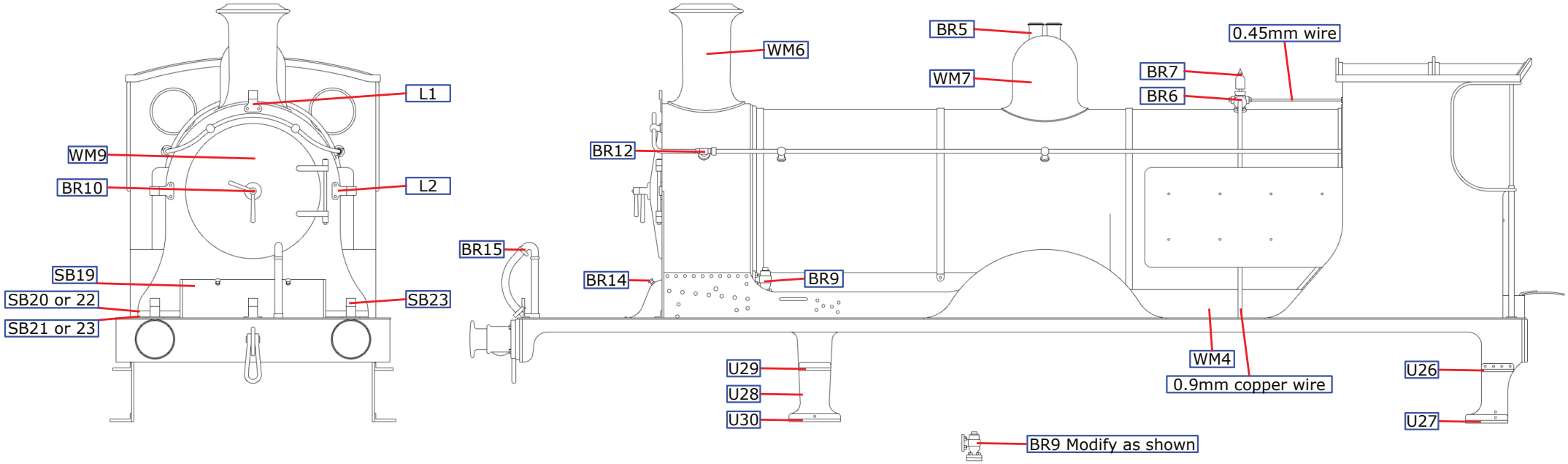
Form the cylinder cover (SB19/5) and add the cylinder cover knobs (BR14); solder the cover in place. Solder the wing plate & footplate vertical angles (SB20 or SB22) in place and then add the wing plate & footplate horizontal angles (SB21 or SB23). Fit the firebox side covers, left and right (WM4 &WM5).

Fold the rear step treads, upper and lower (U26 & U27) and fit to the step back. Fold the front step treads, upper and lower (U29 & U30) and solder to the front step back (U28). Solder this assembly to the footplate.

Modify the clackboxes (BR9) by removing the pipe tail and fit to the smokebox rear plate. Fit the smokebox door (WM9) and the smokebox door handles (BR10). Fit the chimney (WM6). Fit the inside of dome (WM8) and then the dome (WM7) as shown. Fit the safety valves (BR5) to the dome. Fit the two injector valves (BR6) and the whistle (BR7) to the firebox top. Use 0.45 mm wire for the injector valve operating rods.

Fit the buffer housings to the buffer beam. Solder the vacuum pipe (BR15) to the footplate. Bend 0.8 mm wire to make the handrails. The smokebox front knobs are short and the boiler sides knobs are medium length; attach the handrails and knobs. Fit the blower valve (BR12) to the left side of the smokebox.

Fit the LSWR smokebox top lamp bracket (L1/4) and the LSWR smokebox side lamp brackets (L2/4) to the smoke box front. Fit the LSWR footplate lamp bracket (SB23/4) to the footplate as shown. Complete the upper works detailing as shown below.



LATER CONDITION - UPPER WORKS DETAILING

Unless stated, all parts on this page are on etch sheet 3.

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. Clean up the edges of the valences. Fit the boiler and smokebox to the footplate and cab. Solder in place.

Form the cylinder cover (SB19/5) and add the cylinder cover knobs (BR14); solder the cover in place. Fit the firebox side covers, left and right (WM4 & WM5). Fit the washout plugs (BR8).

Fold the rear step treads, upper and lower (U26 & U27) and fit to the step back. Fold the front step treads, upper and lower (U29 & U30) and solder to the front step back (U28). Solder this assembly to the footplate.

Fit the clackboxes (BR9) to the boiler. Bend the feed pipes from 0.9 mm copper wire to match the drawing. Add the oil pipes from 0.3 mm copper wire and secure with the appropriate brackets (SB30 and SB31).

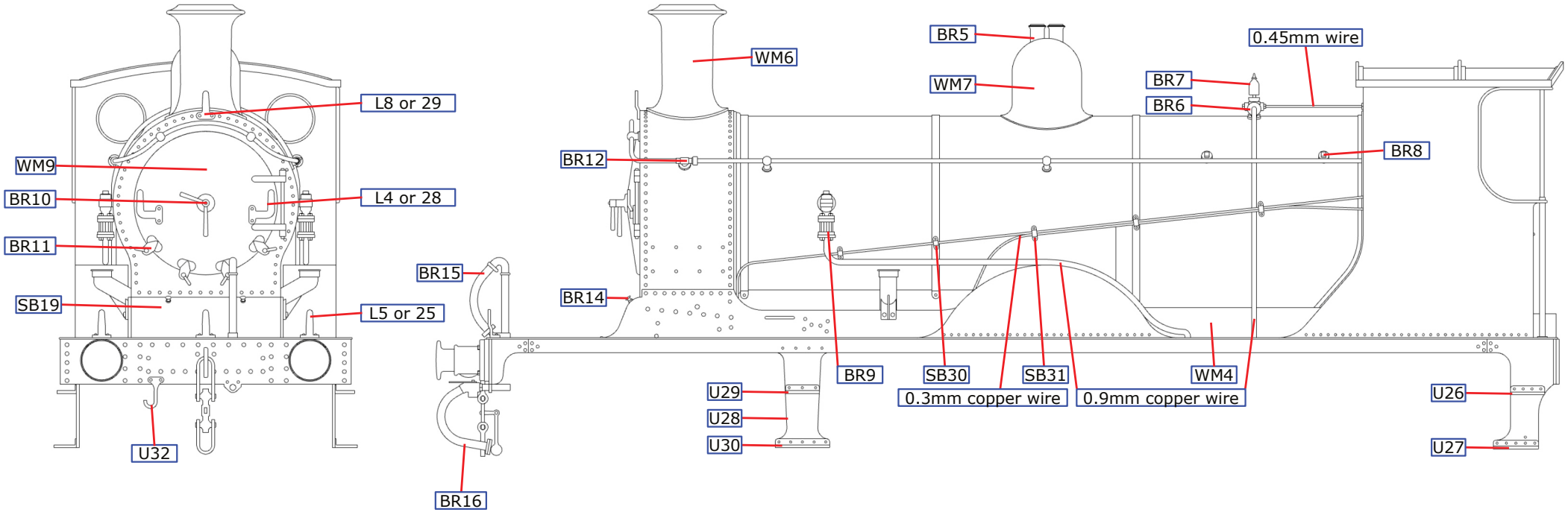
Fit the smokebox door (WM9) and the smokebox door handles (BR10). Fit the Smokebox door dogs (BR11).

Fit the LSWR/SR smokebox side lamp brackets (L4/4) or SR smokebox side lamp brackets (L6/4) to the smokebox door. Fit the LSWR/SR smokebox top lamp brackets (L8/4) or the SR smokebox top lamp bracket (SB29/4) to the smokebox. Fit the LSWR/SR footplate lamp brackets (L5/4) or the SR footplate brackets (U25/4) to the front footplate.

Fit the chimney (WM6). Fit the inside of dome (WM8) and then the dome (WM7). Fit the safety valves (BR5) to the dome. Fit the two injector valves (BR6) and the whistle (BR7) to the firebox top. Use 0.45 mm wire for the injector valve operating rods. Fit the washout plugs (BR8).

Fit the buffer housings to the buffer beam. Solder the vacuum pipe (BR15) to the footplate. Solder the steam heat pipe (BR16) in the bracket on the buffer beam. Add the steam heat pipe valve handle (U31). Add the hook for hanging the screw coupling (U32/3).

Bend 0.8 mm wire to make the handrails. The smokebox front knobs are short and the boiler sides knobs are medium length; attach the handrails and knobs. Fit the blower valve (BR12) to the left side of the smokebox.



CAB ROOF AND BACKHEAD

Unless stated, all parts on this page are on etch sheet 3.

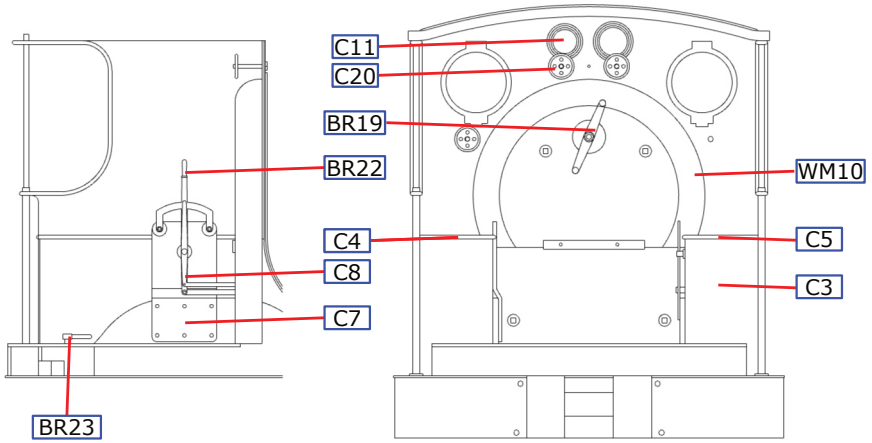
The cab floor is removable and slides into grooves in the frames; it is held in place by the hinges on the fall plate. The cab floor, the splasher back and top come in three widths to suit the chosen gauge. Select the appropriate width cab floor (C1), splasher back (C3), splasher top, left and right (C4 & C5) and the cab splasher sides (C2/5). Emboss the rivets for the fall plate in the floor. Solder the injector feed valve handles (BR23) to the floor.

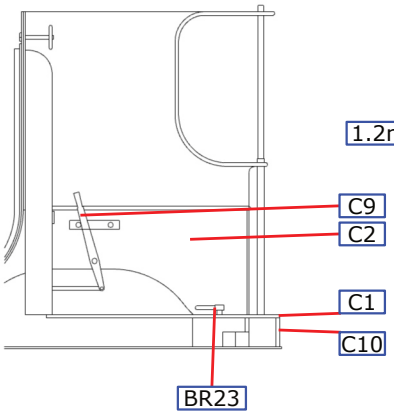
Form the curves in the splasher tops. Solder two short lengths of 0.8 mm wire to represent the sanding lever stops on the right splasher side. Solder the splasher sides in place in the etched groove under the splasher tops. Add splasher backs. Emboss the rivets in the steam reverse lever mounting plate (C7) and form the joggle to enable it to fit over the top of the left frame.

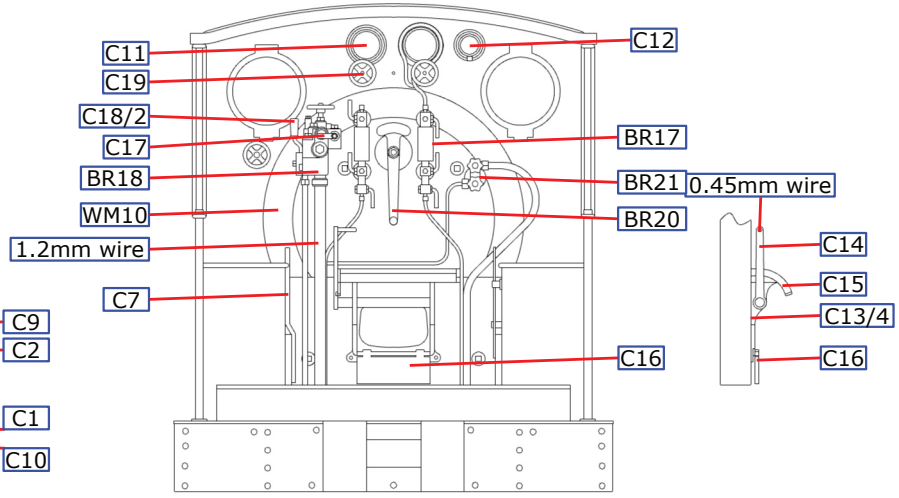
Solder the mounting plate and the reversing lever (BR22) in place in the holes in the left splasher side before adding the steam reverse indicator (C8). Solder the sanding lever (C9) in place on the right splasher side. Now solder the complete splasher assemblies in place in the grooves in the cab sides. Check that the body fits with the splasher sides outside the frames then solder the cab floor support (C10) in place.

Emboss the rivets in the fall plate hinges on the fall plate (C6/5). Fold over the fall plate hinge tabs. Check the fit of the cab floor and fall plate as described earlier.

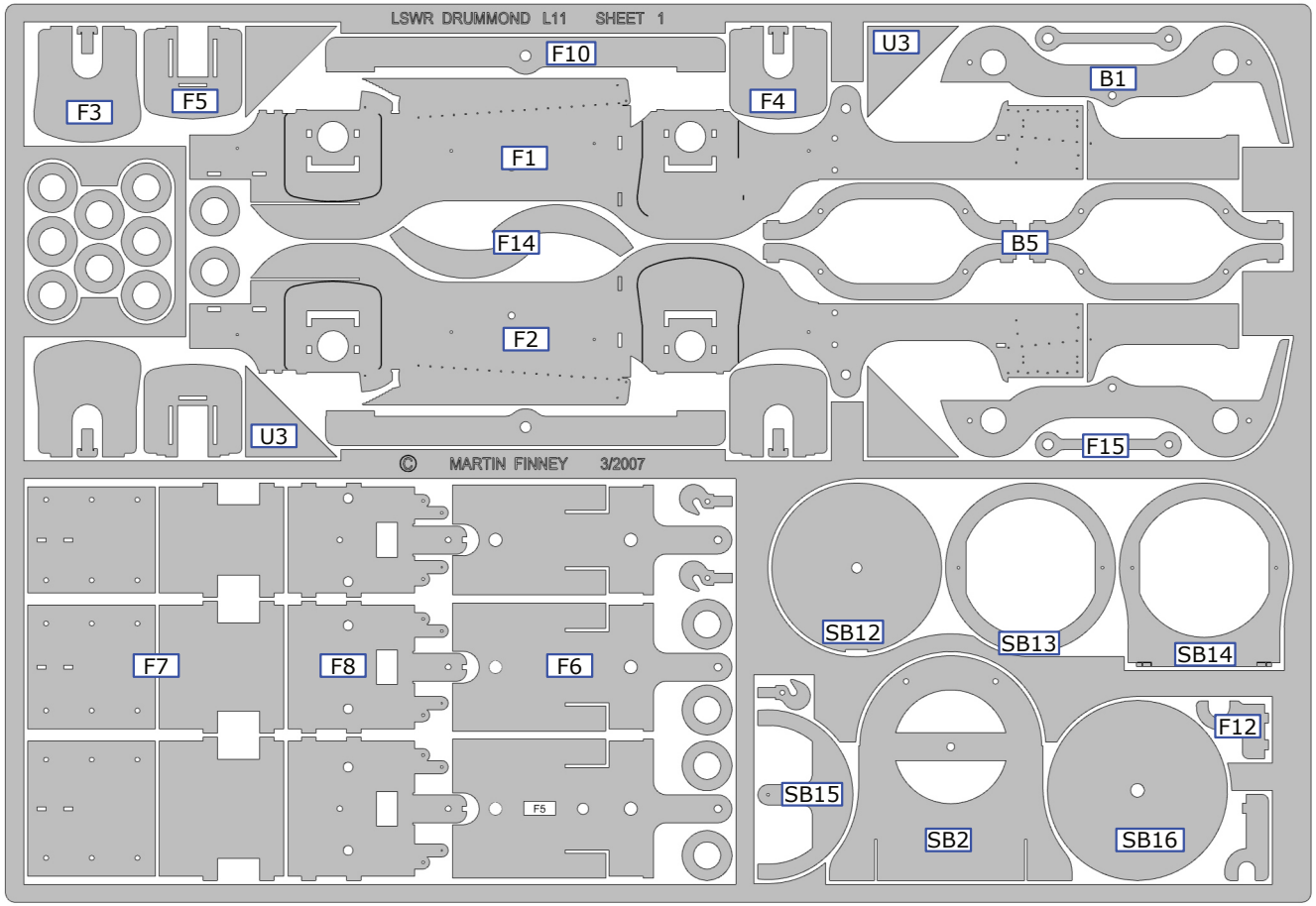
Attach all the remaining components referring to the drawings and to photographs. Remove metal from the lower edges of the backhead casting (WM10) until it fits at the correct height between the splashers. Use rhe drawing below as a guide to backhead assembly and the cab interior detail.



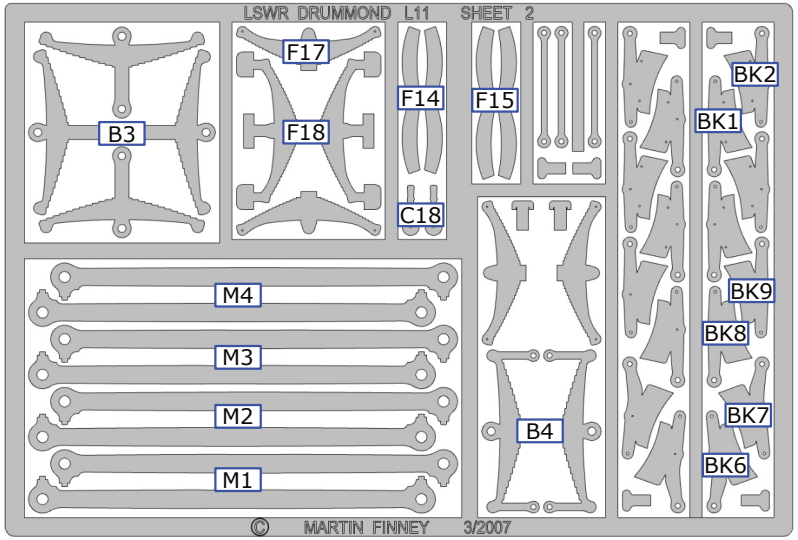


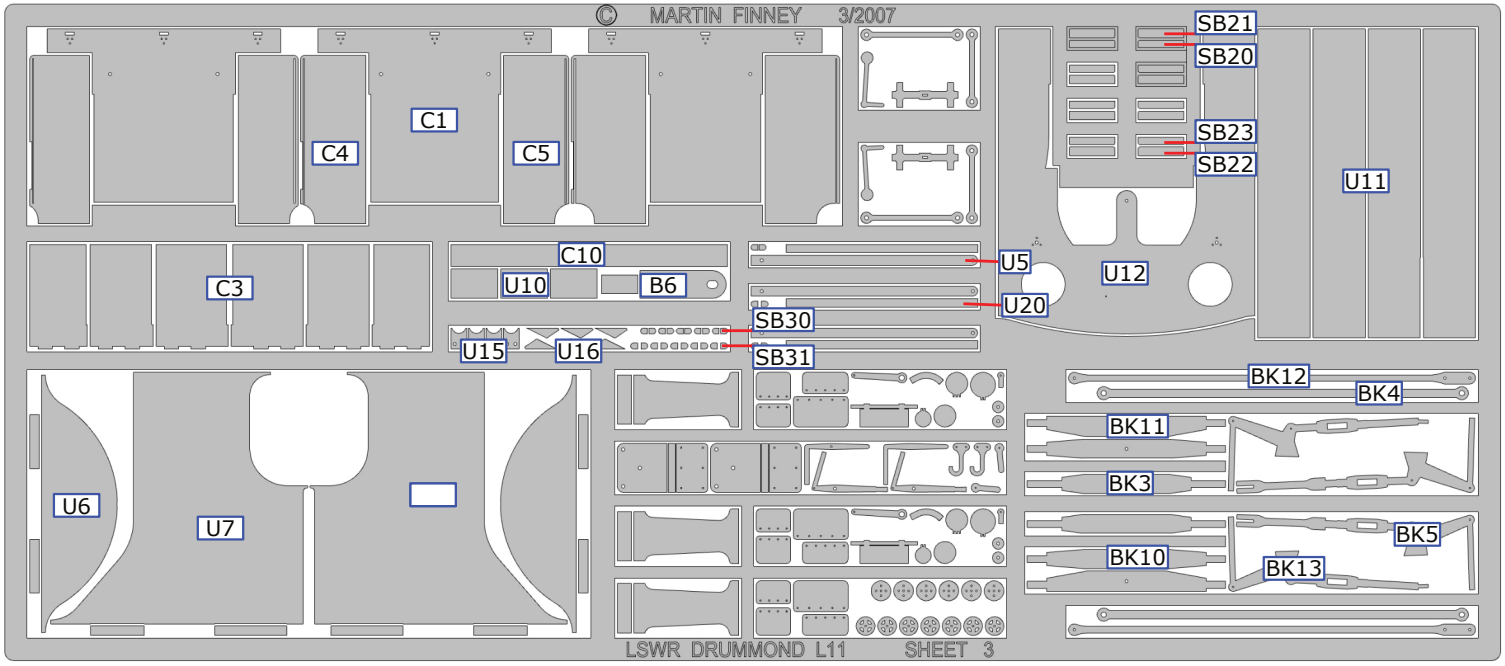


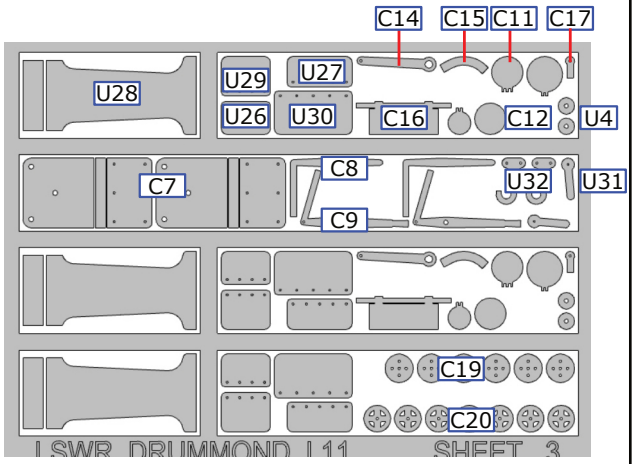
ETCH SHEET 1


LSWR DRUMMOND L11 SHEET 1
F10
F3
F5
F4
U3
B1
F1
F14
B5
F2
U3
F15
© MARTIN FINNEY 3/2007
F7
F8
F6
F5
SB12
SB13
SB14
F12
SB15
SB2
SB16

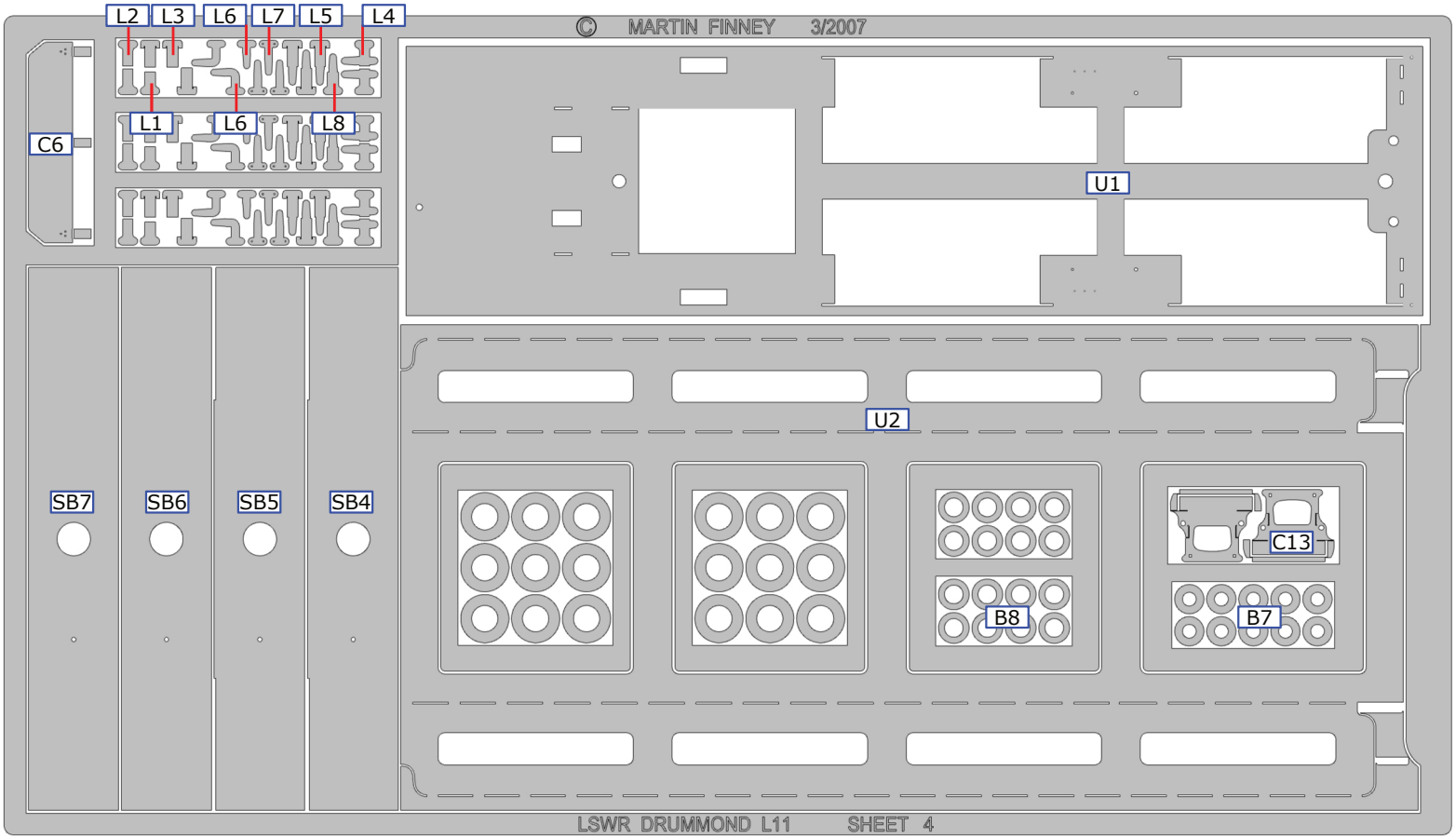
ETCH SHEET 2 & 3



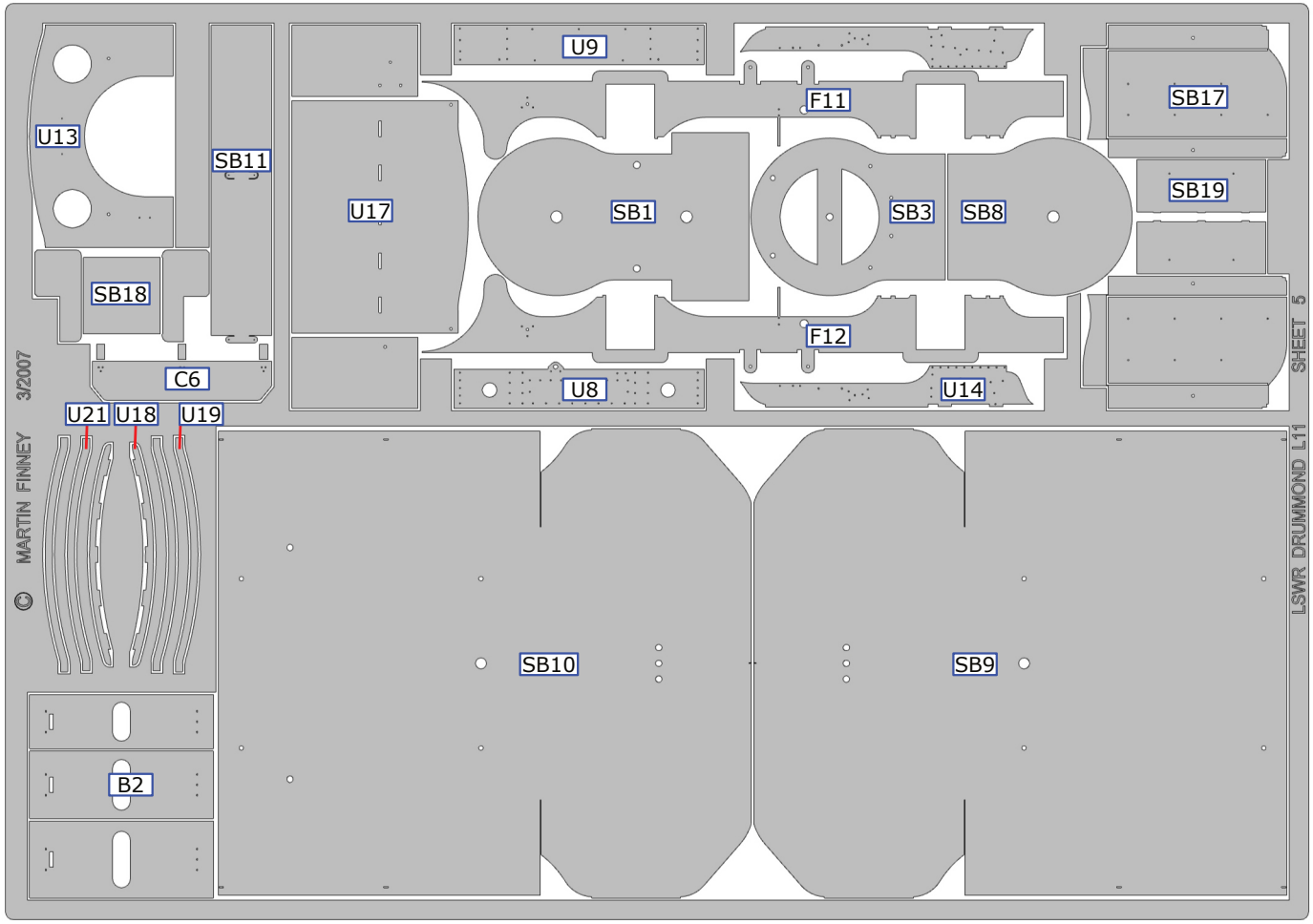




ETCH SHEET 4

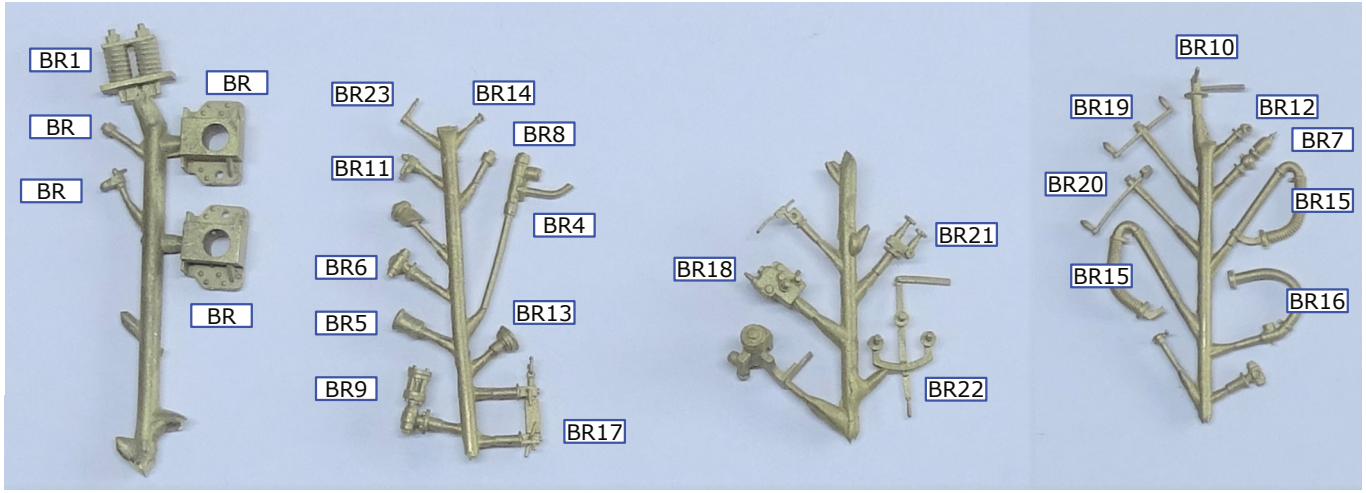

L2
L3
L6
L7
L5
L4
© MARTIN FINNEY 3/2007
L1
L6
L8
C6
U1
U2
SB7
SB6
SB5
SB4
C13
B8
B7
LSWR DRUMMOND L11 SHEET 4

ETCH SHEET 5


U9
F11
SB17
U13
SB11
U17
SB1
SB3
SB8
SB19
SB18
F12
C6
U8
U14
U21
U18
U19
SHEET 5
3/2007
MARTIN FINNEY
LSWR DRUMMOND L11
SB10
SB9
B2

BRASS/COPPER CASTINGS

BR1 Front axle springs (2)
BR2 Bogie axle box, left hole (2)
BR3 Bogie axlebox, right hole (2)
BR4 Injector (2)
BR5 Safety valve (2)
BR6 Injector valve (2)
BR7 Whistle
BR8 Washout plug (4)
BR9 Clackbox (2)
BR10 Smokebox door handles
BR11 Smokebox door dog (4)
BR12 Blower valve
BR13 Sandbox lid (2)
BR14 Cylinder cover knob (2)
BR15 Vacuum pipe
BR16 Steam heating pipe
BR17 Water gauge (2)
BR18 Ejector/brake
BR19 Original regulator handle
BR20 Later regulator handle
BR21 Steam heating valve
BR22 Reversing lever
BR23 Injector feed valve handle (2)



WHITE METAL CASTINGS

WM1 Sandbox (2)
WM2 Sandbox filler extension pipe (2)
WM3 Steam reverse cylinder
WM4 Firebox left side cover
WM5 Firebox right side cover
WM6 Chimney
WM7 Dome
WM8 Inside of dome
WM9 Smokebox door
WM10 Backplate



OTHER COMPONENTS

3/16" bearing (4)
6BA x 1 " screw
6BA x 5/16" screw (2)
6BA nut (2)
8BA x 5/32" screw (2)
8BA nut (2)
5/32" Brass tube for bogie screw
3/32" Brass tube for compensation beams and drawbar
0.45 mm Brass wire for injector/whistle valves & sand rod
0.8 mm Brass wire for brake hanger pivots, handrails & sand pipes
1.2 mm Brass wire for pipes, handrails,bogie & brake cross shaft
1.6 mm Brass wire for compensation beam pivots & bogie pin
1.8 mm Brass wire for bogie pivot
0.5 mm Spring wire for bogie side control
0.3 mm Copper wire for oil pipes
0.9 mm Copper wire for pipe work
1.2 mm Copper wire for pipe from vacuum ejector
Short handrail knob (2)
Medium handrail knob (4)
Buffer casing, buffer, spring and nut (2)