GWR 2000G TENDER

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.

Brief Historical Details

With the building of the Stella and the Duke classes, there came a need for a small 2000G Tender. The turntables in Cornwall were too small to allow a locomotive and any bigger tender to be turned, so the wheelbase of 5'6" + 5'6" was adopted for these new tenders. Eighty of these short wheel base tenders were built to Lots A24 (1895) & A25 (1896) with building completed by 1901. In 1914 Long Rock loco shed opened allowing the larger tenders to be used. We have two photographs of a Dean Goods fitted with a 2000G tender.

This kit can be built with either coal rails or coal fenders, narrow or wide footplates and the three arrangements of the coal space. Some tenders had a filler plate on the inside of the coal rails between the front bracket and the division plate. Some of the tenders received a bigger capacity 2400G tank but this variant is not covered by this kit. All these tenders kept their light springs. None were fitted with vacuum tanks. All these tenders were scrapped.

So far we have only found five photographs of these tenders. All these five tenders were fitted with coal fenders, a fire iron tunnel and lyre. None seem to have the water scoop but we have included the parts to build it in; there is no space between the axles to fit it and we are unsure how, or even if Swindon fitted the scoop. One photograph shows a low coal space bottom with a scoop standard and a coffin water filler. Most tenders have the high coal space bottom without casings although one might have the casings; one didn't have a scoop standard! They all seem to be fitted with tank vents and while we can see the water gauge on only one, fitting vents normally implies the fitting of a water gauge.

As always, we recommend the use of a photograph of the selected prototype.

Components not provided

Wheel 43' 7" diameter, 12 spoke (3) Slater's Ref 7843

Building Considerations.

1. Please do not use cyano-acrylate (superglue) to fit the resin parts. It makes the resin go brittle and more likely to snap. Either use epoxy or, as I do, use UHU or Canopy Glue.
2. The resin parts will have contact points and sacrificial edges that need to cleaned up to leave a smooth surface.
3. Tall resin items, such as the tank vent mouldings, have a 1.4mm hole in the underside that needs to be drilled out so that the moulding can fit over a short piece of 1.2mm wire that acts as the fixing. The wire need to soldered in place from the underside so that the moulding sits flush to the plate.
4. The location of etched parts is either described at the top of the page or they are referred in the text as (part number)[etch]. Each part has a part number on the etch and are grouped by association.
5. If the part has half etch dimples, these are for rivets and should be embossed.

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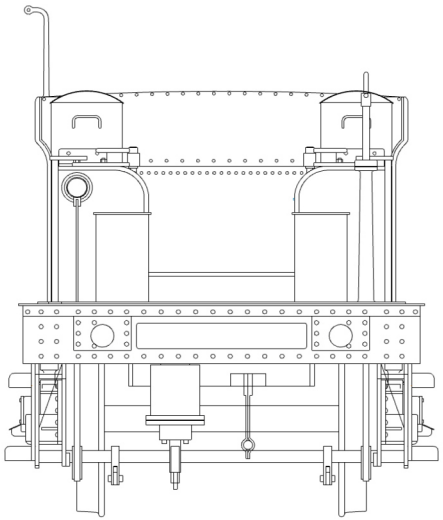
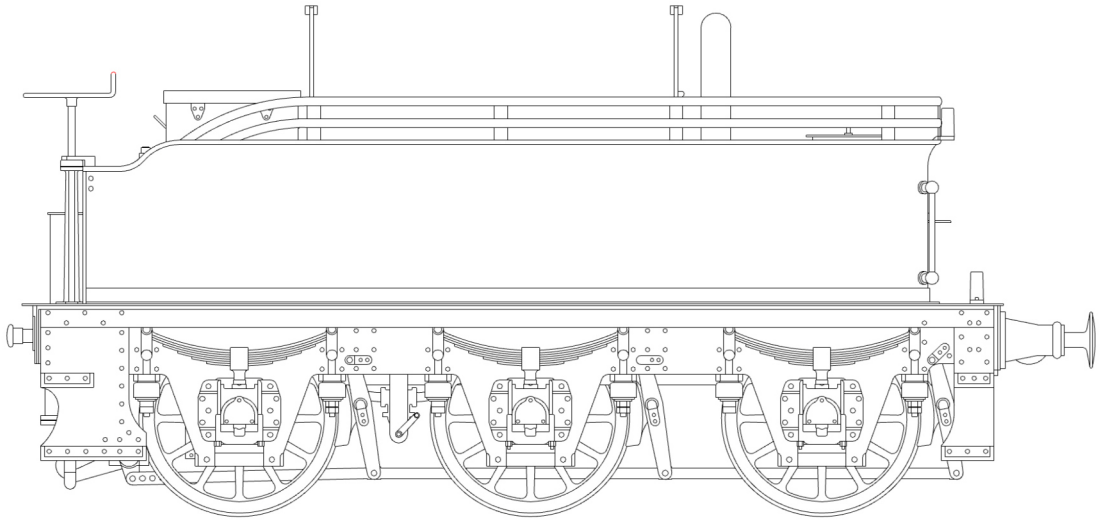
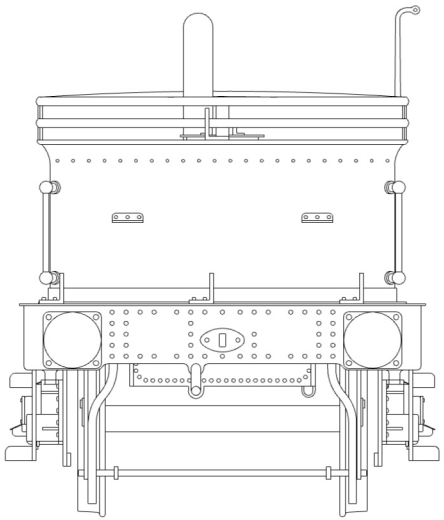
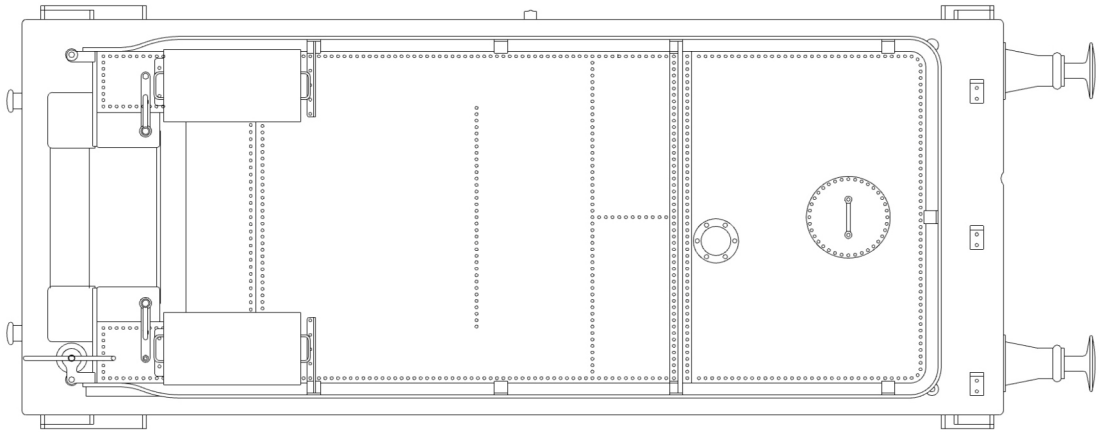
ORIGINAL CONDITION GA



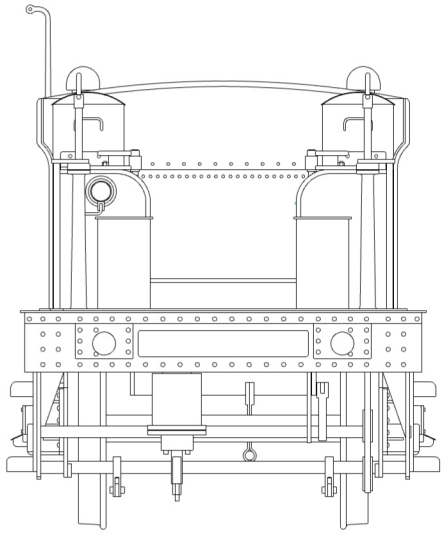


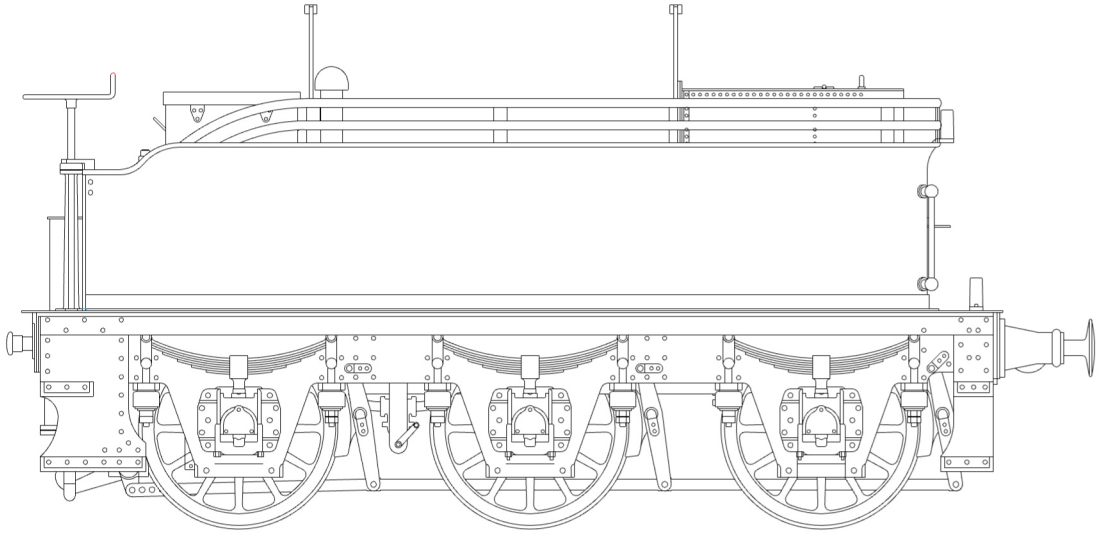


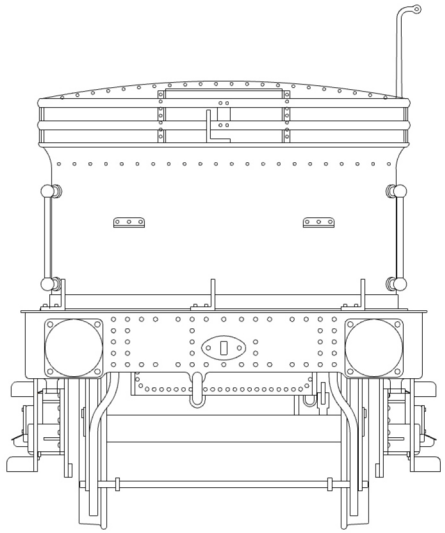


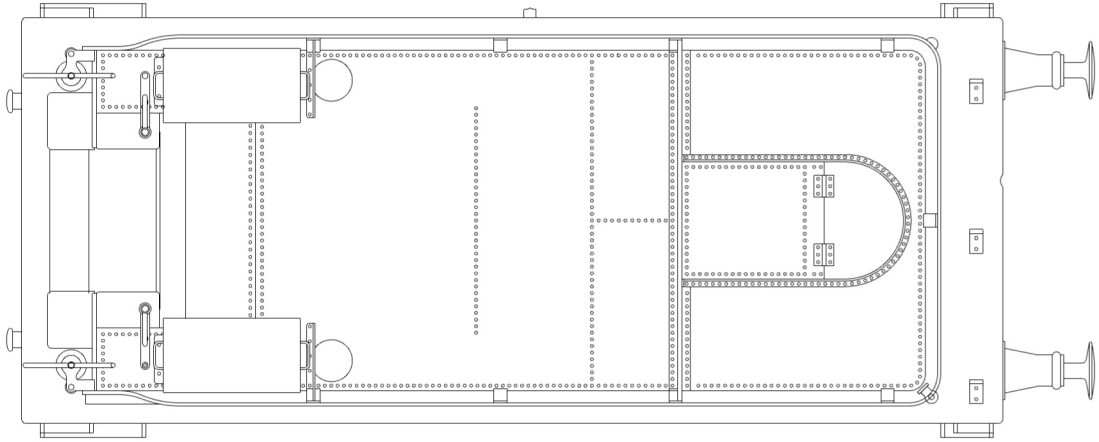
Coal rails, low coal plates, low division plate, overflow fountain, original water filler, hand brake.

COMBINED WATER FILLER AND SCOOP GA



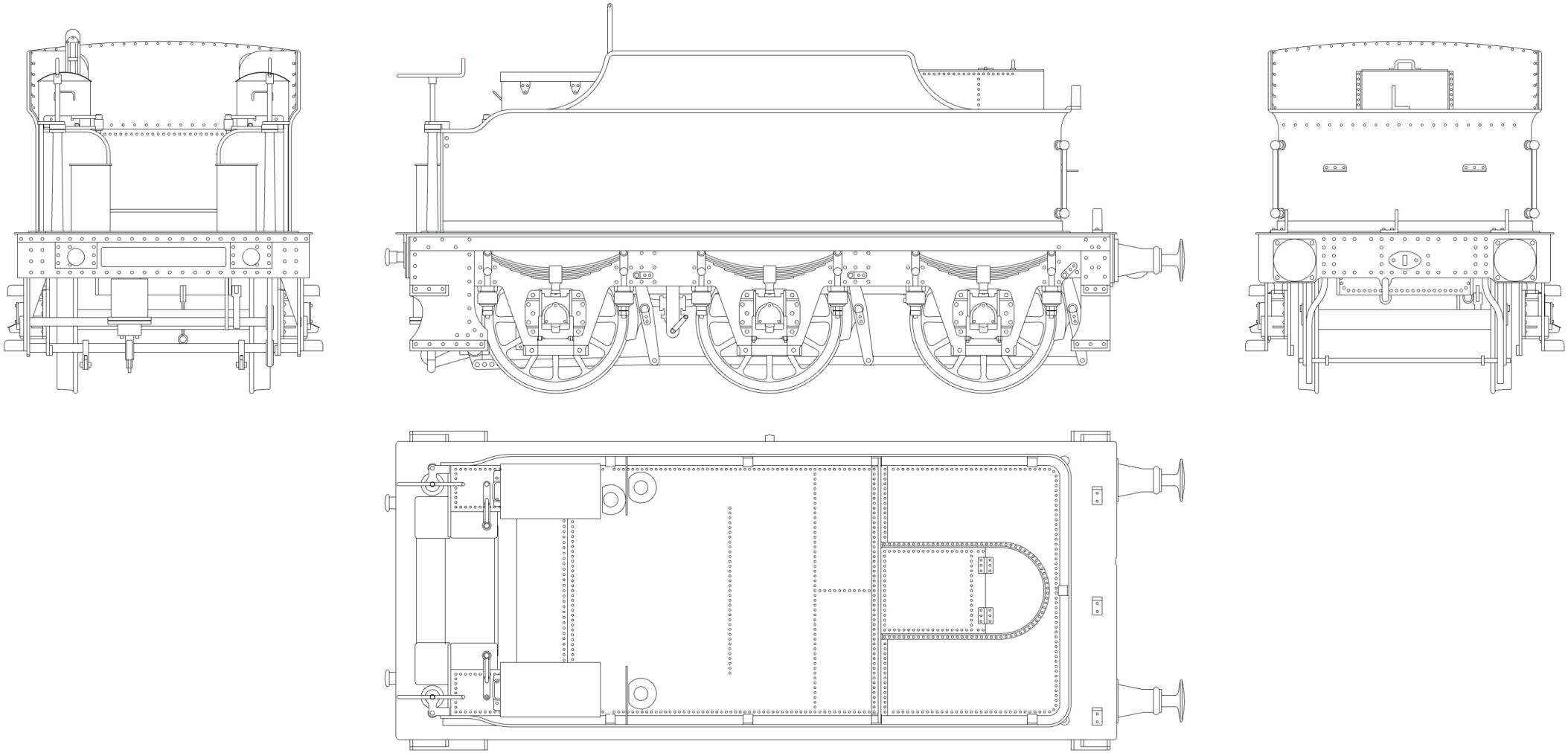






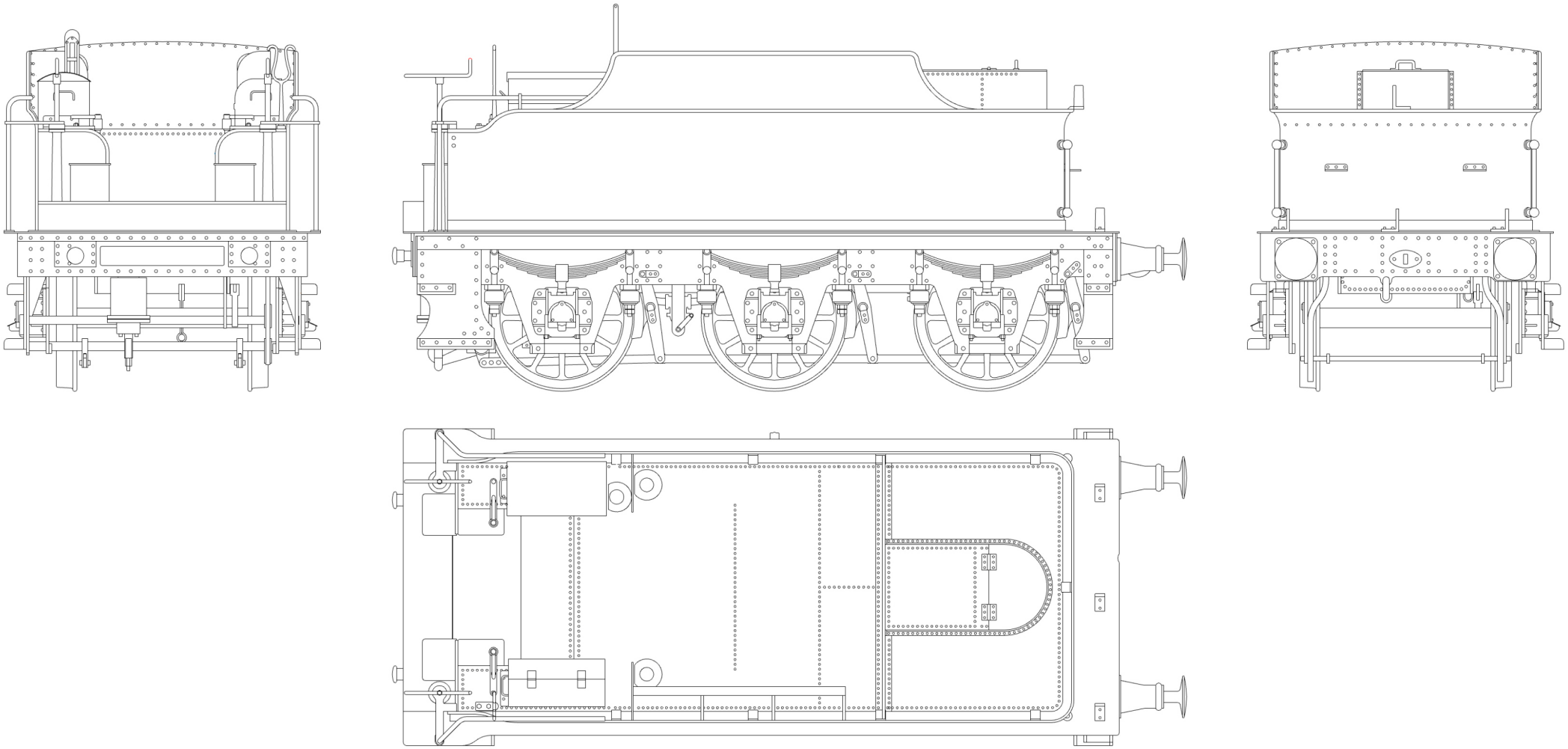
Coal rails, low coal plates, high division plate, water coffin, water scoop standard, tank vents.

COAL FENDER GA



Coal fenders, high coal plates, coal fender division plate, combined water filler and scoop (Coffin), water scoop and gear, water scoop stanchion, tank vents, water gauge.

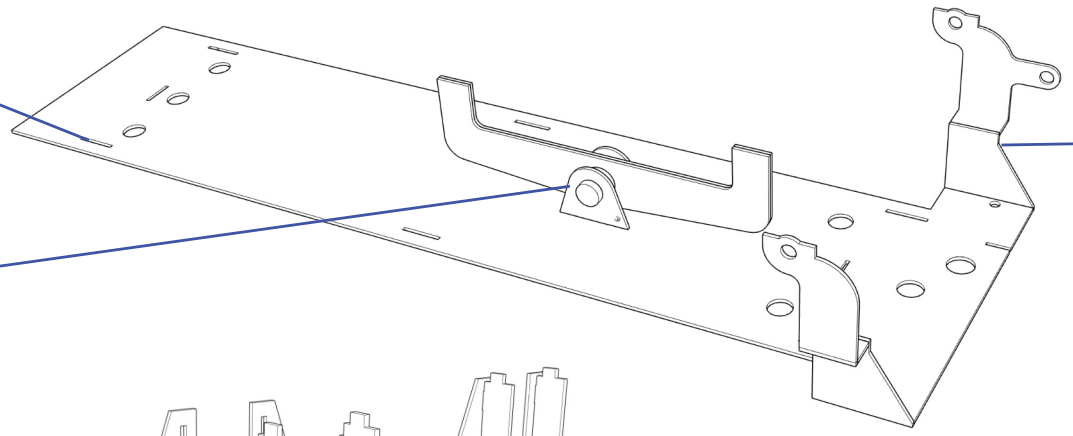
HIGH FOOTPLATE GA



Coal fenders, wide footplate, bigger bunker floor with casings, high coal plates (left with cut out for fire iron tunnel, coal fender division plate and water coffin, water scoop standard, tank vents, water gauge, wide front handrails, quadrant left tool box, fire lyre and fire iron tray.

CONSTRUCTING THE CHASSIS

All etched components on this page are on Etch 1 except C5, the hornguides, which are on Etch 2.

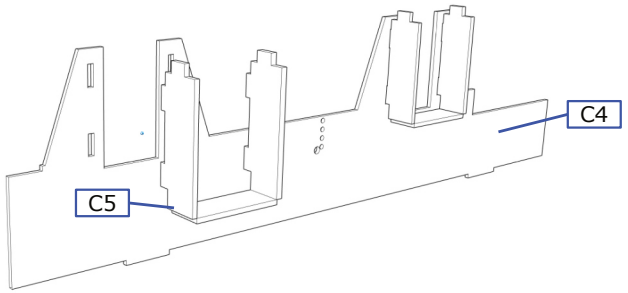


Compensation

2. Solder the two compensation beams (C3) together and then fit a 4mm length of 5/32" tube centrally in the beam.

3. Fit the compensation beam pivots (C2) into the slots on the underside of the tank top.

4. Trim the 5/32" tube to fit between the pivots and then slide a length of 1/8" rod through the pivots and the tube. Check the beam rocks smoothly and solder the rod to outside of the pivots



Hornguides

Remove the cusps from the well tank sides (C4) (not the slots) and the hornguides (C5).

Fold the hornguides and place the tabs into the well tank sides. Solder in place from the outside of the frame with a minimum of solder. Finish flat on the outside.

Well Tank Construction

Fit the well tank front and rear faces (C7 & C8) into place.

Solder the well tank sides in place on the underside of the well tank top.

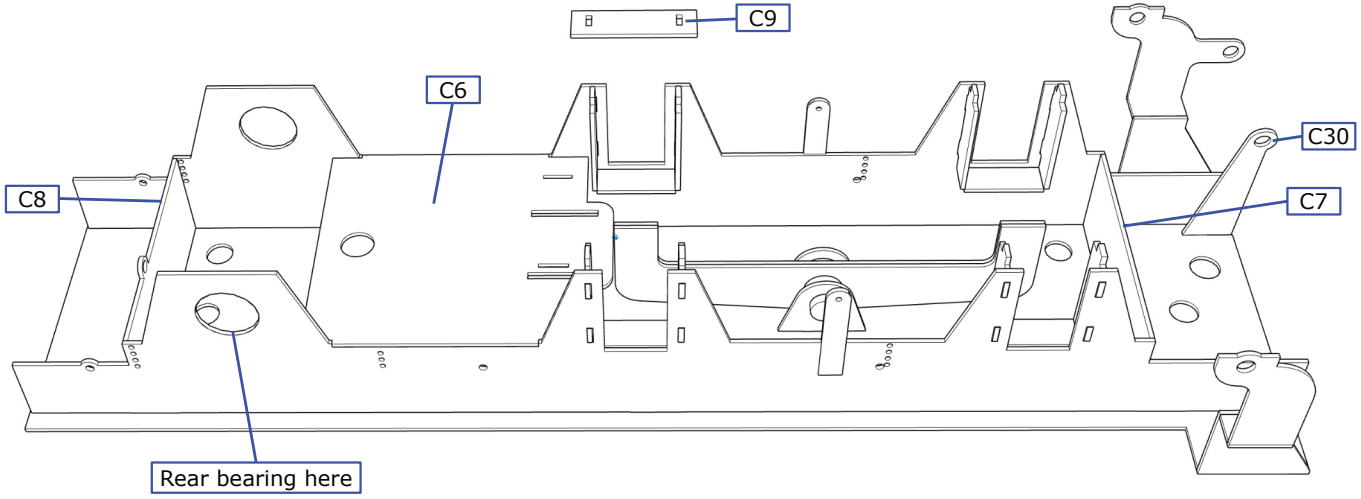
Solder the well tank bottom face (C6) into place.

If required, fit the scoop front shaft support (C30).

Ensure that the outside face of the well tank is smooth and flat. Use 0.8mm wire through the brake hanger holes to align the well tank side overlays (C10) and tack into place.

Check that the axleboxes move smoothly. The hornguide keeps (C9) can be attached either now with the axleboxes in place or after painting is complete.

Solder the two rear fixed bearings in place



BRAKES

All etched components on this page are on Etch 1

Brake Operating Mechanism.

The brake shaft is made from 1.6mm wire and should be cut to be just longer than the width over the cross shaft supports.

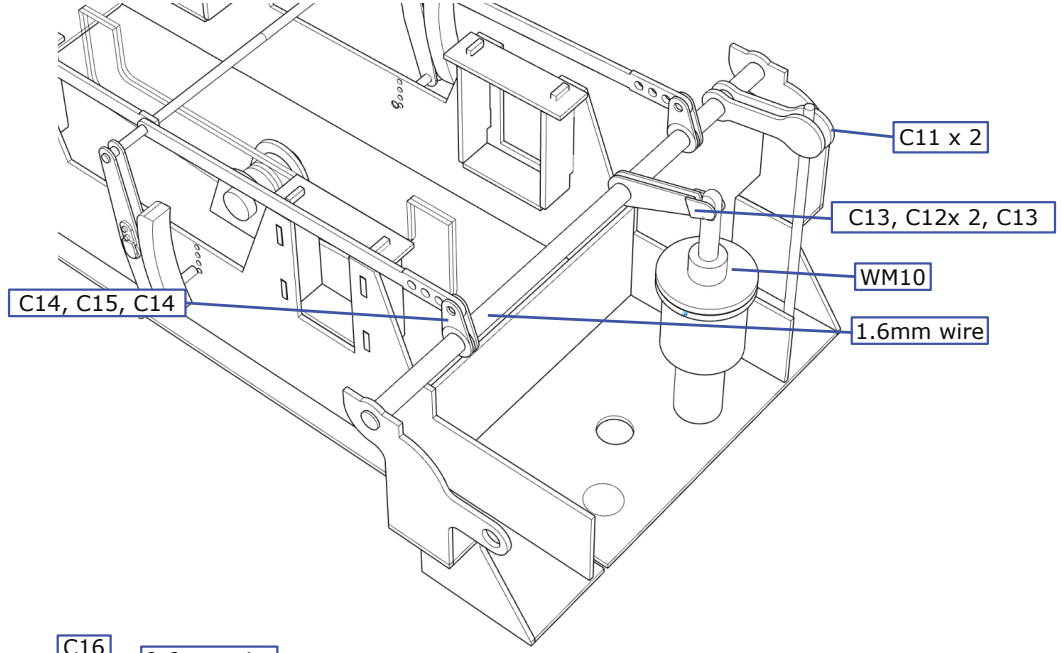
As shown in the illustration,

thread a pull rod lever (C14, C15, C14),
a brake cylinder to cross shaft lever (C13, C12 x 2, C13),
a pull rod lever (C14, C15, C14) and
a standard to brake shaft lever (C11 x 2) onto the 1.6mm wire.

Place the wire into the mounts and solder in place.

The bottom of the standard is a piece of 0.8mm wire that should be soldered into the hole in the chassis. Solder the brake standard to cross shaft levers to the wire and to the shaft.

Fit the steam brake cylinder (WM1) in place. Solder the brake cylinder to cross shaft levers to the brake shaft while holding in place on the brake cylinder.

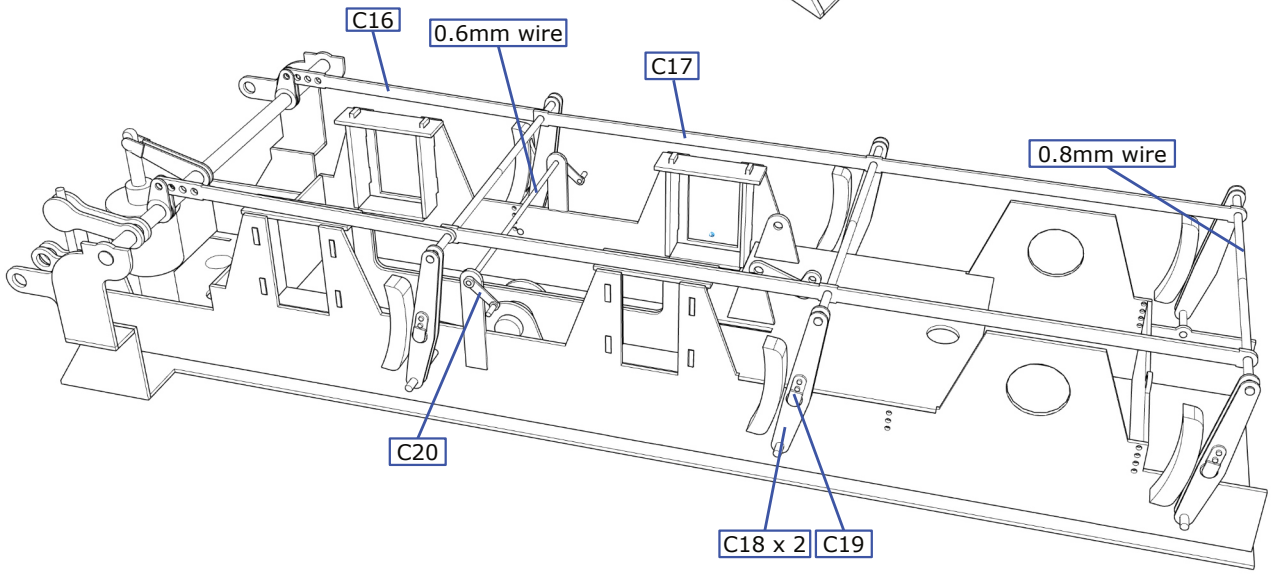


Brake Rigging.

Solder short lengths of 0.8mm wire into the inside brake hangers (C18). Thread a brake block (R1) onto the wire and place the outside brake hanger over the wire. Align and solder in place quickly; the resin can take some heat but not lot.

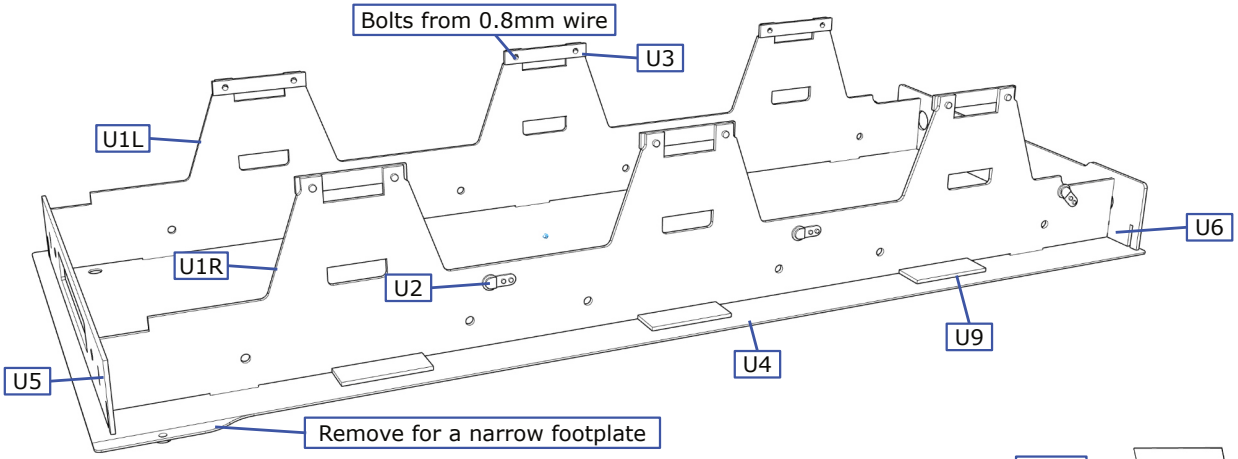
Solder the hangers in place suspending them from pieces of 0.8mm wire. Check the clearance between the brake shoes and the wheels making any necessary adjustments. Using 0.8mm wire as cross shafts, fit the main pull rods (C17) and the front pull rods (C16). Attach them to the brake pull rod levers using pieces of 0.8mm wire as pins. When the brakes are set correctly, solder the brake shaft pull rods to the brake shafts.

Put a length of 0.6mm rod across the chassis through the vacuum pipe drain trap mountings and fit the drain tap levers (C20) onto the rod.



CONSTRUCTING THE BODY 1

All etched components on this page are on Etch 2



Footplate and Outer Frames

If required, remove the wide footplate extensions to the footplate (U4). Prepare the frames (U1L & R) by first punching the rivets, then solder the brake retainers (U2) onto the frames . Solder the outside frame keeps (U3) in place on the inside of the frames. The holes in the frames and keeps are for short lengths of 0.8mm wire to represent the bolts heads on the outside.

Place the frame tabs into the slots in the footplate and tack solder in place ensuring that they are square to the footplate. Fit the front buffer beam packer (U5) onto the front tabs on the frames and tack in place. Repeat for the rear buffer beam packer (U6). When content that the assembly is flat and square solder the assembly up.

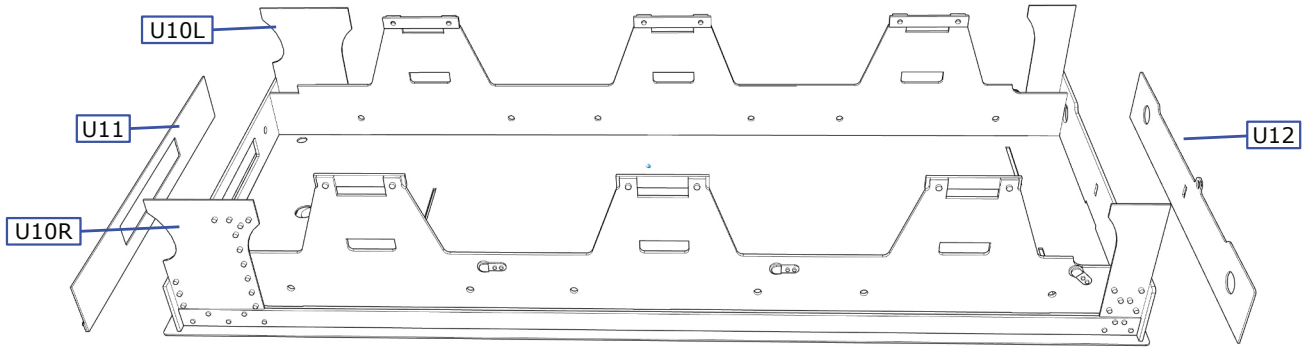
Solder the hanging bar spacers (U9) on the underside of the footplate between the slots for the tank former, hard against the outside frames.

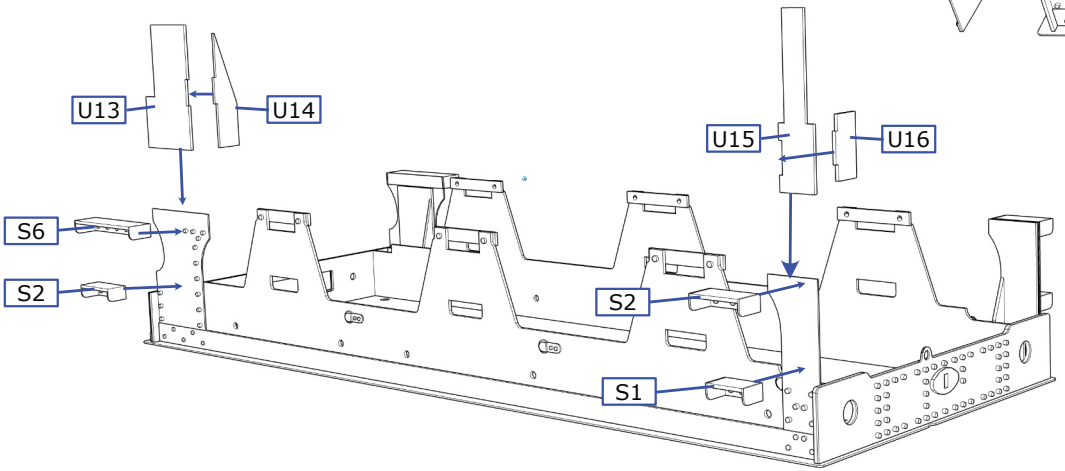
Hanging Plates & Buffer Planks

Insert the handed hanging plates (U10L & R) into the slots in the buffer packers and solder in place. Finish the outer face of the packers flush.

Fit the front buffer beam (U11) ensuring that the edge of beam and packer is finished so that it looks like one piece of thick metal.

Repeat for the rear buffer beam (U12). Fit the buffer housings.





Steps.

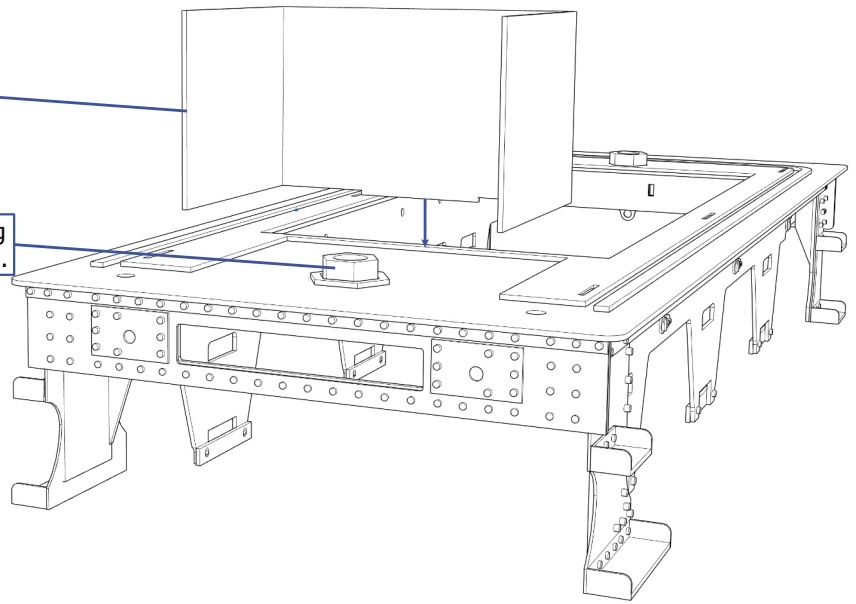
Solder the front step brace (U14) into the slot in the front step back (U13). Solder this assembly in behind the step on the hanging plate. Form the steps (S2 & S6) as shown and solder into position. Repeat for the other side.

Repeat for the rear steps using the parts shown in the illustration.

When ready, fit the springs and mountings (R2) and the axleboxes (R3).

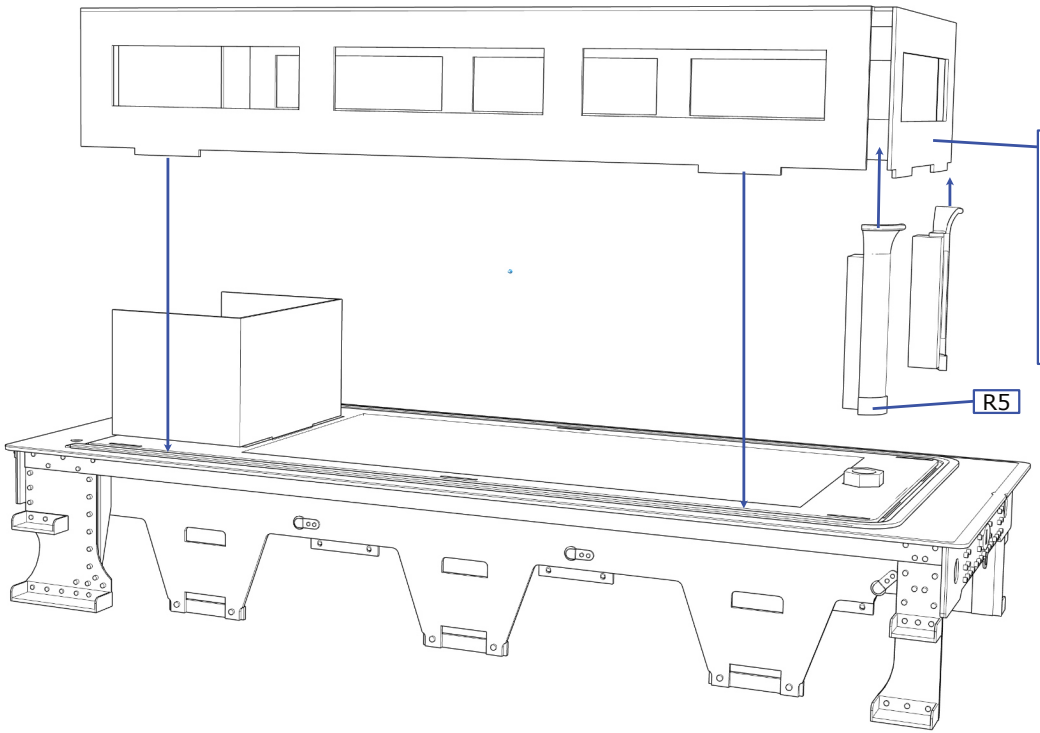
TANK SUPPORT

All etched components on this page are on Etch 2



2. Fit the coal space (U7) to the footplate with the tab in the slot.

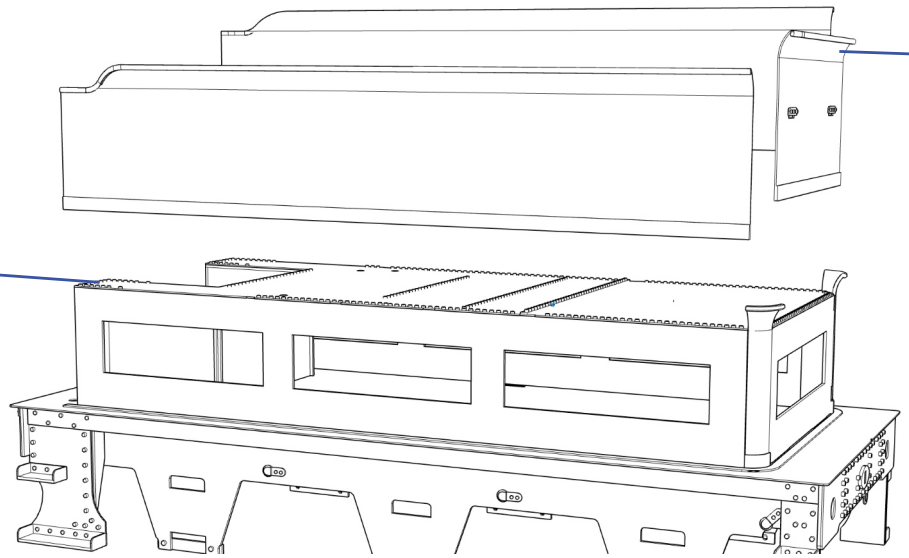
1. Solder a 6BA nut above the body fixing holes at the front and rear of the footplate.



3. Fold up the tank support (U8) as shown. When the support is square, slide the corner mouldings (R5) into the tank support. Insert the tank support into the slot in the footplate with the six tabs pocking through the holes in the footplate. Solder in place from below with the solder on the inner face of the tabs; the tank wrapper has to fit into the same slot in the top of the footplate.

COAL RAIL TENDER - TANK AND RAILS

Etched components location is shown as [3] or [4].



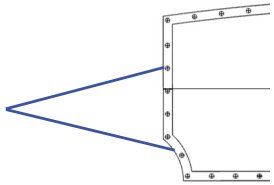
1. Solder the coal rail tank top (U40)[4] to the tank support and then file it flush with the sides of the support.

2. Form the top flare of the tank rear skin (U18)[3] by bending around a rod of suitable diameter (5mm), checking with the tank side flare gauge (U19[3]. Insert the bottom of the skin into the slot in the footplate. Then solder the wrapper to the tank former from the inside.

Repeat for the tank skins (U17L & R)[3].

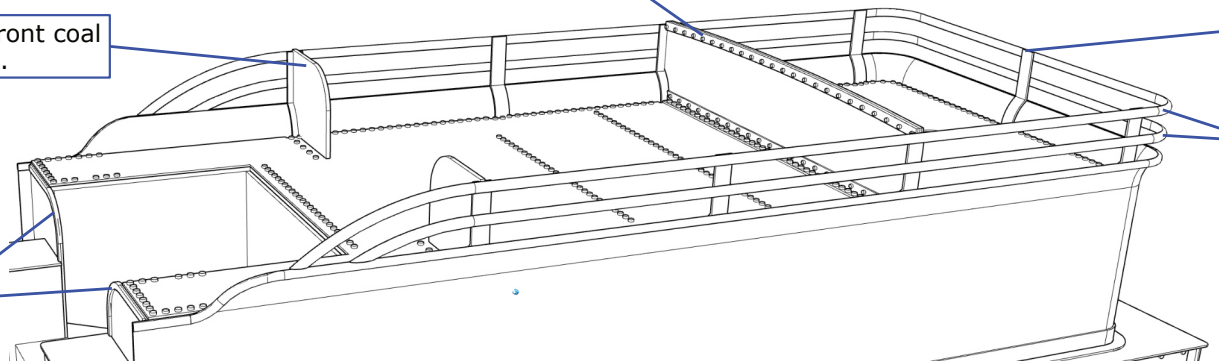
3. Fit the tank rear steps (U20)[3] by soldering from the inside.

The division plates and front coal plates will need to be fettled along this edge to fit your top flare and coal rails.



7. Emboss the rivets and then laminate the original low division plate (U43)[4] or the coffin division plate (U44)[4] together. The division plate sits to the rear of the riveted strip on the top of the tank; solder in place.

6. Fit the original low front coal plates (U42)[4] .



5. Curve the bottom of the coal rail brackets (U41)[4] to match the tender sides, the rivets are on the top end. Solder in place in the housings in the edge of the tank top.

8. Curve the lower coal rail (U45)[4] to match to match the tender sides. The rail is 1mm overlong and needs be trimmed to fit to the centre of the rear support. Solder in place.

Repeat for the other lower rail and for the upper rails (U46)[4] .

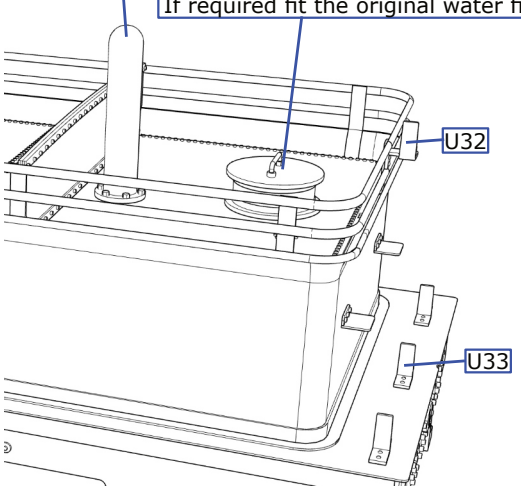
4. Fit the front quadrant plates (U21L & R)[3].

COAL RAIL TENDER - FINAL DETAILS

All etched components on this page are on Etch 3

If required, fit the overflow fountain (R17)

If required fit the original water filler (R16)

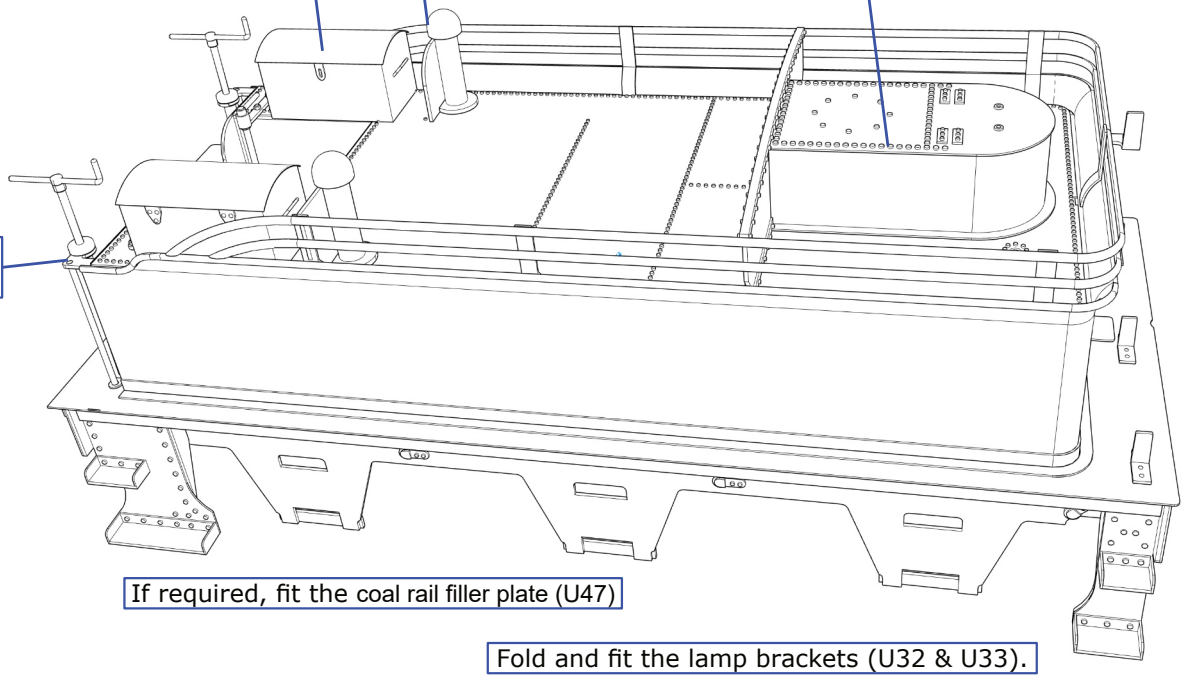


Fit the tank vents (R13) on the 1.4mm wire.

Fit the symmetric tool boxes (R9)

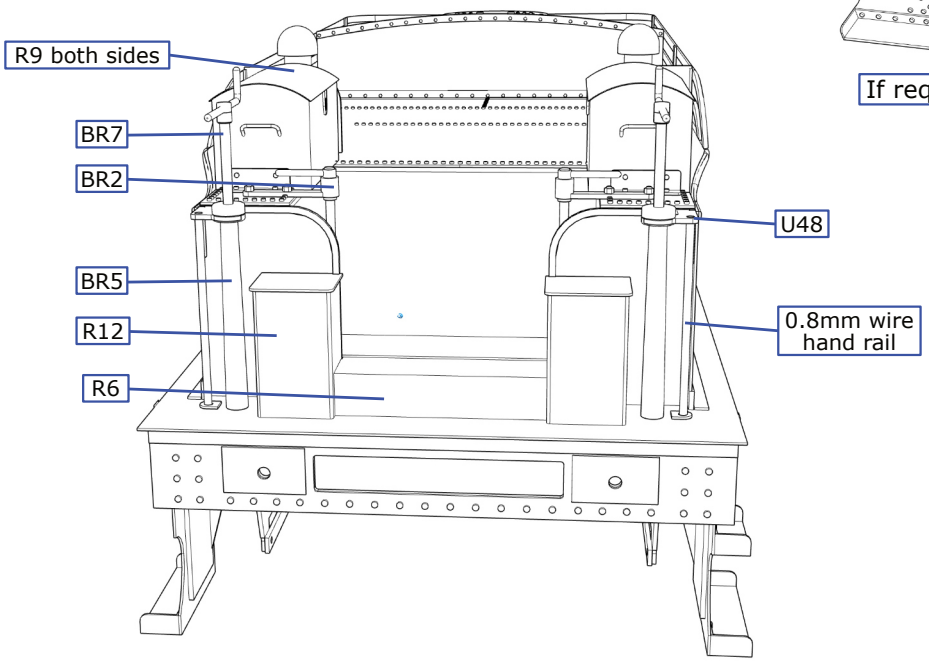
If required, fit the coffin water filler (R15)

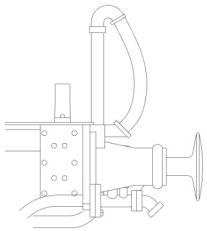
Fit the front handrail brackets (U48 L & R).

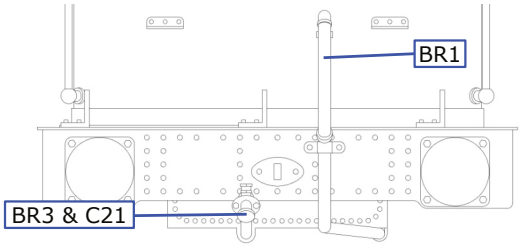


If required, fit the coal rail filler plate (U47)

Fold and fit the lamp brackets (U32 & U33).

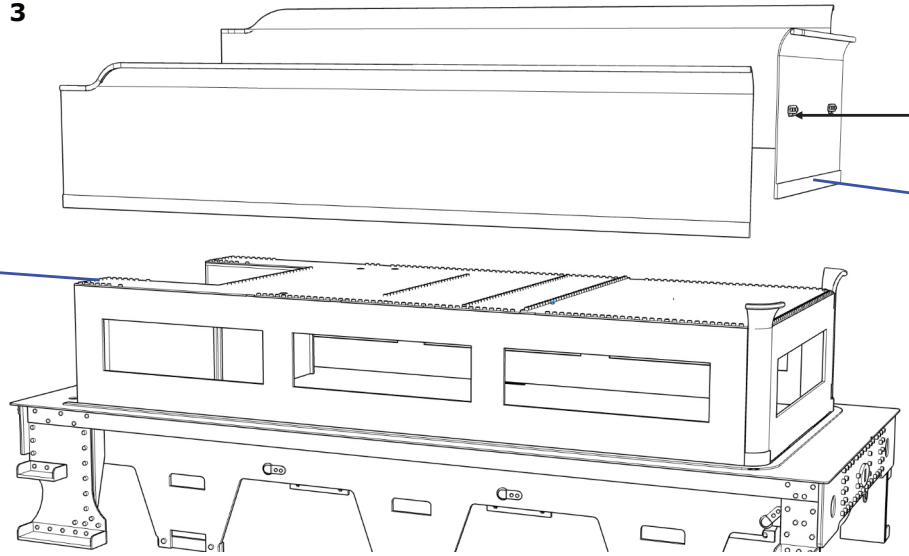






COAL FENDER TENDER - TANK AND FENDERS

All etched components on this page are on Etch 3



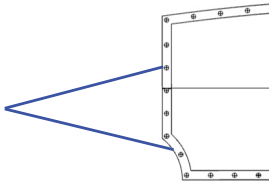
1. Solder the tank top (U22) to the tank support and then file it flush with the sides of the support.

2. Form the top flare of the tank rear skin (U17) by bending around a rod of suitable diameter (5mm), checking with the tank side flare gauge (U19). Insert the bottom of the skin into the slot in the footplate. Then solder the wrapper to the tank former from the inside.

Repeat for the tank skins (U17L & R)

3. Fit the tank rear steps (U20) by soldering from the inside.

The division plates and front coal plates will need to be fettled along this edge to fit your top flare and coal rails.

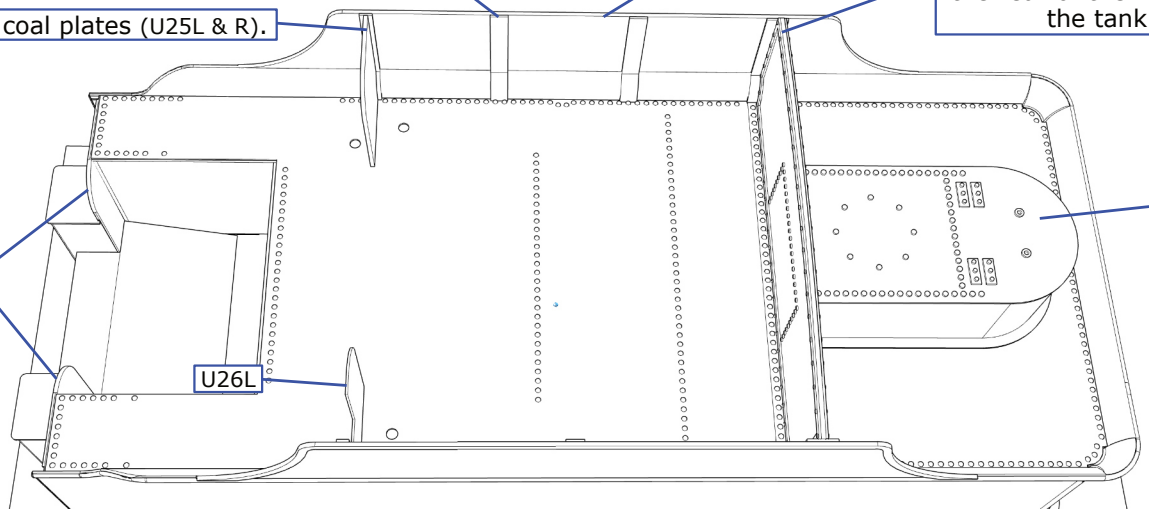


5. Curve the bottom of the coal fender brackets (U23) to match the tender sides, the rivets are on the top end. Solder in place in the housings in the edge of the tank top.

6. Fit the coal fenders (U24).

7. Fit the high coal plates (U25L & R).

8. Laminate the coal fender division plate (U26) together. The division plate sits to the rear of the riveted strip on the top of the tank; solder in place.

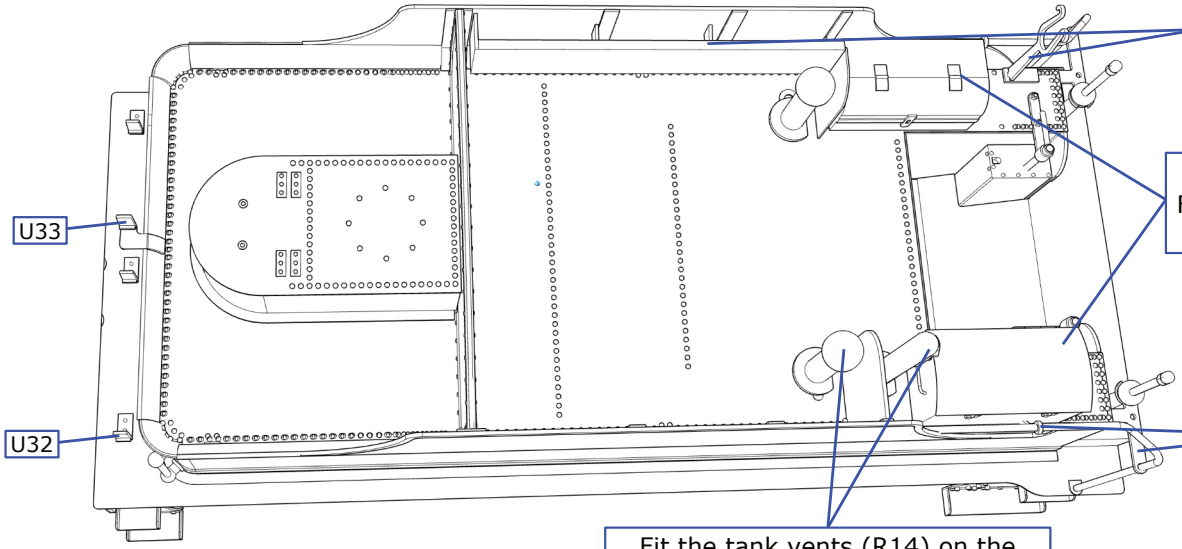


4. Fit the front quadrant plates (U21L & R).

9. Fit the Coffin water filler (R15). Make the handle from 0.45mm wire.

COAL FENDER TENDER - FINAL DETAILS

All etched components on this page are on Etch 3

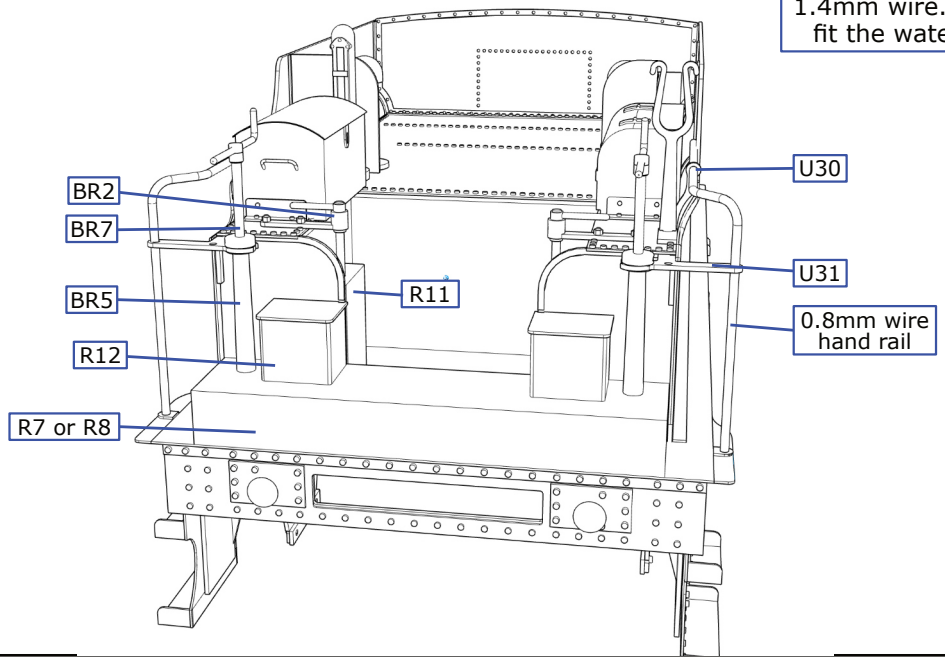


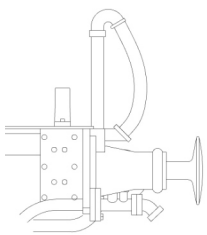
Fold the fire iron tunnel (U27) and fit it and the two ribs (U28). Detach the base from the fire lyre (U31) and insert the lyre through the base and into the hole on the left side of the tank. Secure in place.

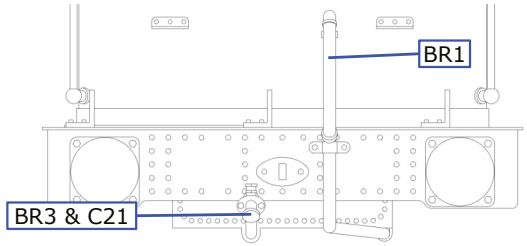
For a narrow footplate fit two symmetric toolboxes (R9).
For a wide footplate fit the quadrant toolbox (R10) to the left and a symmetric toolbox (R9) to the right.

Handrails. For a narrow footplate build as per p12. For a wide footplate bend the front handrails from 0.8mm NS wire. Fit with a front handrail brace (U29) and bracket (U30).

Fit the tank vents (R14) on the 1.4mm wire. For a Wide Footplate fit the water level gauge (R13).

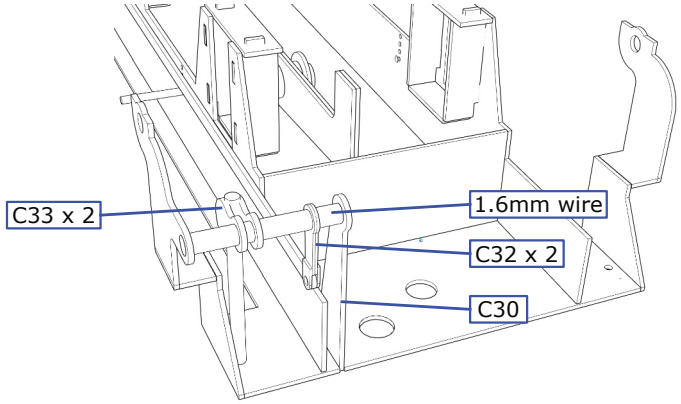






WATER SCOOP

All etched components on this page are on Etch 1



Scoop Operating Mechanism.

Fit the scoop front shaft support(C30) in place in the slot in the front of the well tank top.

The front cross shaft is a 15mm piece of 1.6mm nickel silver wire. Assemble the standard to front shaft levers (C33) and the front shaft to rod lever (C32) onto the shaft and solder the shaft in place, leaving the levers loose.

The bottom of the standard is a piece of 0.8mm wire that should be soldered into the hole in the chassis. Solder the standard to front shaft lever (C15) to the wire and shaft.

Water Scoop.

Fit the two Scoop rear shaft supports (C31).

Add the scoop cross shaft from a 18mm length of 1.2mm wire and fit the rear shaft to scoop lever (C37).

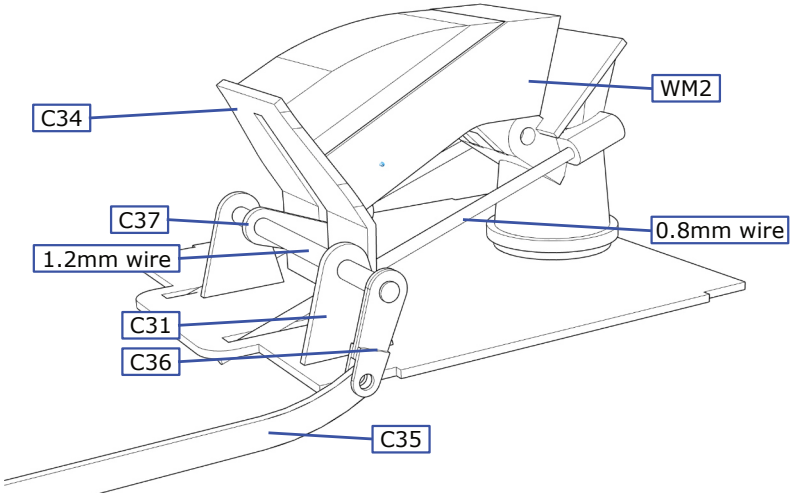
Drill out the 0.8mm holes for the stays in the scoop base (WM2). With the same drill, clear the holes for the scoop hinge. Assemble the two parts of the scoop with a 0.8mm piece of wire. Attach the scoop front plate (C34) to the front of the water scoop casting, first bending it through approximately 5° along the half etched line.

Now attach the water scoop to the well tank. Add the stays from 0.8mm wire passing them through the holes in the slots in the well tank bottom, then the front plate and into the holes in the scoop at the rear; solder in place to the tank bottom.

Use a short length of 0.8mm wire to pin the rear shaft to scoop lever (C37) to the scoop casting lugs. Solder the lever in place on the shaft.

Fit the scoop rod to rear shaft lever (C36) as shown on the outside of the well tank, just clearing the well tank sides.

Pin the scoop rod (C354) to the rod levers on the front and rear shafts. When this is assembly is aligned and square, solder it solid.



CASTINGS AND MOULDINGS

Brass

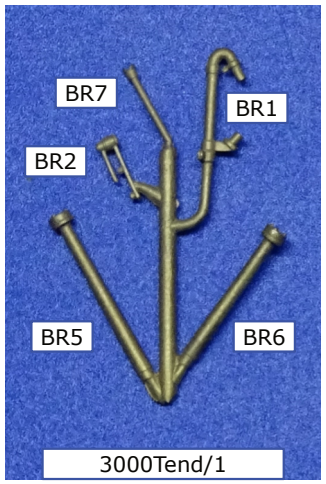
BR1	Vacuum pipe	3000Tend/1
BR2	Water feed valve lever (2)	3000Tend/1
BR3	Steam heating pipe	3000Tend/2
BR4	Steam heating pipe end piece	3000Tend/2
BR5	Tall brake and water standard (2)	3000Tend/1&2
BR6	Short brake and water standard (2)	3000Tend/1&2
BR7	Brake and scoop standard, top piece (2)	3000Tend/1&2

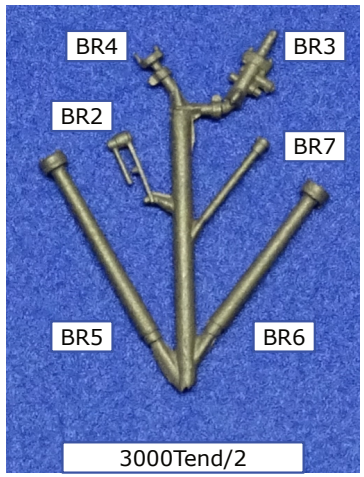
White Metal

WM1 Steam brake cylinder (1)
WM2 Water scoop

Resin

R1 Brake shoes (7)
R2 Springs and mountings (6)
R3 Axleboxes (6)
R4 Dean taper buffer stocks (2)
R5 Tank corner mouldings
R6 Narrow footplate (10
R7 Wide footplate with sandboxes (1)
R8 Wide footplate without sandboxes (1)
R9 Symmetric toolbox (2)
R10 Quadrant shaped toolbox (1)
R11 Casings (1ea L & R)
R12 Sandboxes(2)
R13 Water level gauge (1)
R14 Tank vents (2)
R15 Water coffin (1)
R16 Overflow fountain (1)
R17 Water filler





OTHER COMPONENTS

2 mm bore small top hat bearing (4)
2 mm bore large top hat bearing (2)
6BA X 5/16” Brass screw (4)
6BA nut (4)
Short handrail knob (4)
Buffer, bush, washer & spring (2)
Vacuum & steam pipe hose (2)
1/8" Brass wire for compensation beam pivot
5/32" OD Brass tube for compensation beam
0.6mm Brass wire for brake & scoop standard handles
0.8mm Brass wire for brake hanger pivots, handrails & scoop stays
1.2mm Brass wire vacuum pipe, steam heating pipe & rear scoop shaft
1.6mm Brass wire for front brake and scoop shafts

Note. Screws may be supplied over-length and may require cutting to length.

2000G TENDER PACKING LIST

Etches		
2000G Tender Sheet 1,2, 3 & 4		1
GWR Tender Steps		1
Sprues		
MF7/3000Tend/1		1
MF7/3000Tend/2		1
White Metal		
WM1	Steam brake cylinder	1
WM2	Water scoop	1
Resin		
R1	Brake shoes strip	1
R2	Springs and mountings	6
R3	Axleboxes	6
R4	Dean taper buffer stocks	2
R5	Tank corner mouldings	2
R6	Narrow footplate	1
R7	Wide footplate with sandboxes	1
R8	Wide footplate without sandboxes	1
R9	Symmetric toolbox	2
R10	Quadrant shaped toolbox	1
R11	Casings	1ea L & R
R12	Sandboxes	2
R13	Water level gauge	1
R14	Tank vents	2
R15	Water Coffin	1
R16	Overflow Fountain.	1
R17	Water Filler	1
Other Components		
4	3/16” Sliding bearings	4
2	3/16” top hat bearing	2
2	6BA X 5/16” Brass screw	4
2	6BA nut	4
4	Short handrail knob	4
2	Buffer, bush, washer & spring	2
2	Vacuum & steam pipe hose	1ea
Wire		
28mm	1/8" Brass wire	
28mm	5/32" OD brass tube	
50mm	0.45mm wire	
60mm	0.6mm Brass wire	
300mm	0.8mm Brass wire	
80mm	1.2mm Brass wire	
70mm	1.6mm Brass wire	
Instructions		

2000G TENDER PARTS LIST

C1	Well tank top face (1)	1
C2	Compensation beam pivot (2)	1
C3	Compensation beams (2)	1
C4	Well tank sides (1ea L/R)	1
C5	Hornguides (4)	2
C6	Well tank bottom face (1)	1
C7	Well tank front face (1)	1
C8	Well tank rear face (1)	1
C9	Hornguide Keeps (4)	1
C10	Well tank sides overlay (1ea L/R)	1
C11	Standard to brake shaft lever (2)	1
C12	Cylinder to brake shaft lever inner (2)	1
C13	Cylinder to brake shaft lever outer (2)	1
C14	Pull rod levers (4)	1
C15	Pull rod lever spacers (2)	1
C16	Front Pull Rods (2)	1
C17	Main Pull Rods (2)	1
C18	Brake Hangers (12)	1
C19	Brake pin retainer (12)	1
C20	Vacuum Pipe Drain Trap Lever (2)	1
C21	Steam Heating Tap Handle (1)	1
U1	Outer Frames (1 ea L & R)	2
U2	Brake Retainers (6)	2
U3	Outside Frame Keeps (6)	2
U4	Footplate (1)	2
U5	Front Buffer Beam Packer	3
U6	Rear Buffer Beam Packer (1)	3
U7	Coal Space (1)	2
U8	Tank Support (1)	2
U9	Hanging Plate Spacer (2)	2
U10	Hanging Plates (1 ea L & R)	2
U11	Front Buffer Beam (1)	3
U12	Rear Buffer Beam (1)	3
U13	Front Step Back (1 ea L & R)	2
U14	Front step brace (2)	2
U15	Rear Step Back (1 ea L & R)	2
U16	Rear Step Brace (2)	2
U17	Tank Skin (1 ea L & R)	3
U18	Tank Rear Skin (1)	3
U19	Tank Side Flare Gauge (1)	3
U20	Tank Rear Steps (1)	3
U21	Front Quadrant Plate (1 ea L & R)	3
U22	Coal Fender Tank Top (1)	3
U23	Coal Fender Brackets (6)	3
U24	Coal Fenders (1 ea L & R)	3
U25	High Coal Plates (1 ea L & R)	3
U26	Coal Fender Division Plate (2)	3
U27	Fire iron tunnel (1)	3
U28	Fire Iron Tunnel Ribs (2)	3
U29	Front Handrail Brace (2)	3
U30	Front Handrail Bracket (1ea L & R)	3
U31	Fire iron Lyre & Base (1)	3
U32	Footplate Lamp Irons (3)	3
U33	Bunker Lamp Irons (2)	3

Steps

S2	Front Top Step (2)	2
S6	Front Bottom Step(2)	2
S1	Rear Top Step (2)	2
S2	Rear Bottom Step (2)	2

Scoop Components

C30	Brake front shaft support (1)	1
C31	Scoop rear shaft support (2)	
C32	Front shaft to scoop rod lever (2)	1
C33	Standard to scoop shaft lever (2)	1
C34	Scoop front plate (1)	1
C35	Scoop rod (1)	1
C36	Scoop rod to rear shaft lever(2)	1
C37	Rear shaft to scoop lever (1)	1

Coal Rail Tender Etch

U40	Coal Rail Tank Top (1)	4
U41	Coal Rail Brackets (7)	4
U42	Low Coal Plates (1 ea L & R)	4
U43.	Low Division Plate Laminations (1)	4
U44.	Coffin Division Plate Laminations (1)	4
U45	Lower Coal Rail (1 ea L&R)	4
U46	Upper Coal Rail (1 ea L&R)	4
U47	Coal Rail Filler Plate (2)	4
U48	Front handrail brackets (1 ea L&R)	4

Metal Castings

BR1	Vacuum pipe	3000Tend/1
BR2	Water feed valve lever (2)	3000Tend/1
BR3	Steam heating pipe	3000Tend/2
BR4	Steam heating pipe end piece	3000Tend/2
BR5	Tall brake and water standard (2)	3000Tend/1&2
BR6	Short brake and water standard (2)	3000Tend/1&2
BR7	Brake and scoop standard, top piece (2)	3000Tend/1&2
WM1	Steam brake cylinder	1
WM2	Water scoop	1

Resin

R1	Brake Shoes	7
R2	Springs and mountings	6
R3	Axleboxes	6
R4	Dean taper buffer stocks	2
R5	Tank corner mouldings	1ea L & R
R6	Narrow coal space bottom	1
R7	Wide coal space bottom with sandboxes	1
R8	Wide coal space bottom without sandboxes	1
R9	Symmetric toolbox	2
R10	Quadrant toolbox	1
R11	Casings	1ea L & R
R12	Sandboxes	2
R13	Water level gauge	1
R14	Tank vents	2
R15	Coffin Water Filler	1
R16	Overflow Fountain.	1
R17	Water Filler	1

ETCH ALLOWANCES

		.25mm	.4mm	.45mm	.55mm
Cusp	0.2T	0.04mm	0.08mm	0.09mm	.0.11mm
Slot increase	.15T each side	0.04mm	0.06mm	0.07mm	0.83mm
Min rivet	1.4T	0.31mm	0.56mm	0.63mm	0.8mm
Min fold	T	0.25mm	.4mm	.45mm	.55mm
Min line width	0.8T	0.2mm	0.32mm	0.36mm	0.44mm
Min hole	1.5T	0.38mm	0.6mm	0.67mm	.825mm
Min slot	1.5T	0.38mm	0.6mm	0.67mm	.825mm
Min bar width	1.5T	0.38mm	0.6mm	0.67mm	.825mm
Half etch tab		1mm	1mm	1mm	1mm

Objects get smaller
Holes get bigger

2mm Tab Slot	0.4mm	0.46 x 2	(0.23)
	0.45mm	0.59 x 2	(0.295)
	0.55mm	0.71 x 2	(O.355)

	FS	**S7**	
Back to Back	29.2	31.33	2.1/1.05
Wheel width	3.2	3.17	
Over Rims	33.82	33.82	

MF Between/Over Frames (FS) 24.3 / 26.1
ST Between/Over Frames (FS) 26.2 / 27.4

Box Sizes. 300 x 210, 360 x 160,