

CONSTRUCTING THE CHASSIS

Start by embossing the rivets on the side frames then fold the side frames (F1 & F2) at 90° along the half etched lines. Check that the bearings fit in the appropriate slots carefully opening the slots with a file if necessary and solder the rear bearings in place. Construct the appropriate horn guide ties, rod horn guide ties in Fig 7 or plate horn guide ties in Fig 9 and fold up the brackets for the front brake cross shaft, strengthening the folds with a fillet of solder.

Emboss the rivets on the well tank (F3), fold up along the half etched lines as shown in Fig 1 and solder the seams. Fold down the brackets for the vacuum pipe and the rear scoop cross shaft. Construct the compensation beam by soldering the two halves (F5) together. Cut the piece of 5/32" brass tubing to fit between the sides of the well tank and solder the beam on it, centrally. Fit the beam inside the well tank using the piece of 1/8" brass wire as the pivot.

Water Scoop. Attach the water scoop front plate (F6) to the front of the water scoop casting (WM6), first bending it through approximately 10° along the half etched line. Now attach the water scoop to the well tank and add the stays from 0.8mm wire passing them through the holes in the front plate and the slots in the well tank bottom before attaching them to the scoop at the rear. Add the scoop cross shaft from 1.2mm wire and fit the scoop rear cross shaft to scoop lever (F12) at the same time.

Assemble the side frames and well tank bolting them together with 6BA bolts & nuts through the holes at the front and back. Check that the assembly is square and that the top surface of the assembly is flat. Remove one of the front bolts, pivot the frames apart, fit the wheel sets and refit the bolt. Now check that the compensation works properly and that the chassis is level. The height can be adjusted by filing the ends of the compensation beam or by adding a further extra 'foot' and the side play can be limited by using the side play washers (F7).

When you are satisfied with the mechanical performance of the chassis carefully solder the side frames to the well tank, avoiding soldering the bolts, then remove the bolts and complete the soldering. Fold up the scoop cross shaft bracket on the front plate (F4) before soldering the plate in position on the side frames.

Scoop Operating Mechanism. Refer to Fig 3. The front cross shaft is a 14mm piece of 1.6mm nickel silver wire. Assemble the scoop standard to cross shaft levers (F8) and the front cross shaft actuating rod lever (F9) onto the shaft and solder the shaft 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 standard to cross shaft levers to the wire and shaft. Solder the actuating rod lever to the cross shaft as shown in Fig 3.

The rear cross shaft is a piece of 1.2mm wire; thread the wire through the supports and the rear cross shaft to scoop lever (F12) as shown and solder the shaft in place. Make 0.8mm pin joints between the scoop actuating rod (F10) and the scoop actuating rod lever on the front shaft and the scoop rear cross shaft lever (F11). When everything fits as shown, solder all in place.

Before proceeding any further with the chassis the basic body shell must be constructed.

Brake Operating Mechanism. Refer to Fig 2. The brake shaft is made from 1.6mm wire and should be cut to be just longer than the width over the frames. Thread the two sets of brake pull rod lever laminations (F13), the brake cylinder to cross shaft lever laminations (F14) and the brake standard to cross shaft lever laminations (F15) onto the shaft and solder the shaft 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. Place the steam brake cylinder (WM10) in place. Solder the two brake cylinder to cross shaft levers either side of the piston rod and then solder them to the shaft. Don't solder the pull rod levers (F13) to the cross shaft yet.

Solder the brake shoes (F16) together, back to back, (or use the castings WM9) and solder them between the brake hangers (F17) using 0.8mm wire as pins. 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 pull rods (F18) and attach them to the brake pull rod levers using pieces of 0.8mm wire as pins.

Form the sand pipes from 1.2mm wire and attach them through the hole in the front plate. Attach the axlebox castings (WM1).

Solder together the 3 pieces (F19) to make the vacuum pipe drip trap and drill out the small holes on either side to fit 1.2mm wire. Construct the vacuum pipe as shown in Fig 4, soldering the rear bracket (F20) inside the well tank and bending the pipe to align with the vacuum pipe on the rear buffer beam. Similarly make the steam heating pipe, as shown in Fig 4, soldering it to the bottom of the well tank on the opposite side to the vacuum pipe.

F1	Left frame	2	F12	Rear cross shaft to scoop lever	1
F2	Right frame	2	F13	Brake pull rod lever laminations (4)	1
F3	Well tank	2	F14	Brake cylinder to cross shaft lever lamination (2)	1
F4	Front plate	2	F15	Brake standard to cross shaft lever laminations (2)	1
F5	Compensation beams (2)	1	F16	Brake shoes (12)	1
F6	Water scoop front plate	2	F17	Brake hangers (12)	1
F7	Wheel side play washer	1 & 2	F18	Brake pull rods (2)	1
F8	Scoop standard to front cross shaft lever (2)	1	F19	Vacuum pipe drip trap (3 pieces)	2
F9	Front cross shaft to actuating rod lever	1	F20	Vacuum pipe rear bracket	2
F10	Water scoop actuating rod	1	F21	6BA Washer	2
F11	Actuating rod to rear cross shaft lever	1			

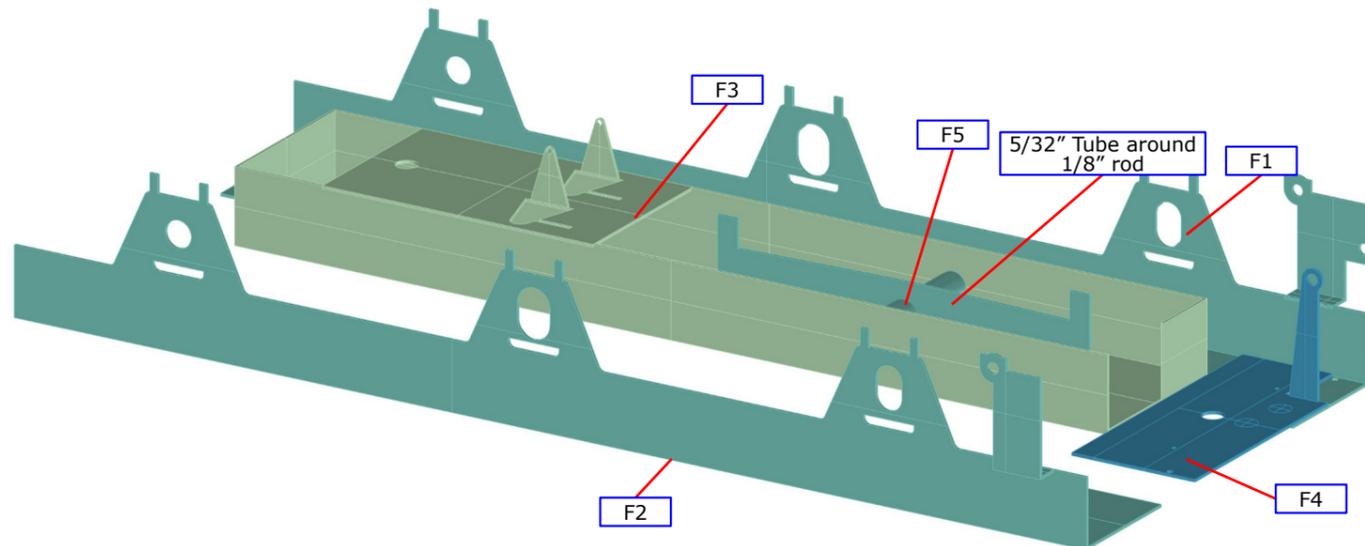


Fig 1. Chassis Construction

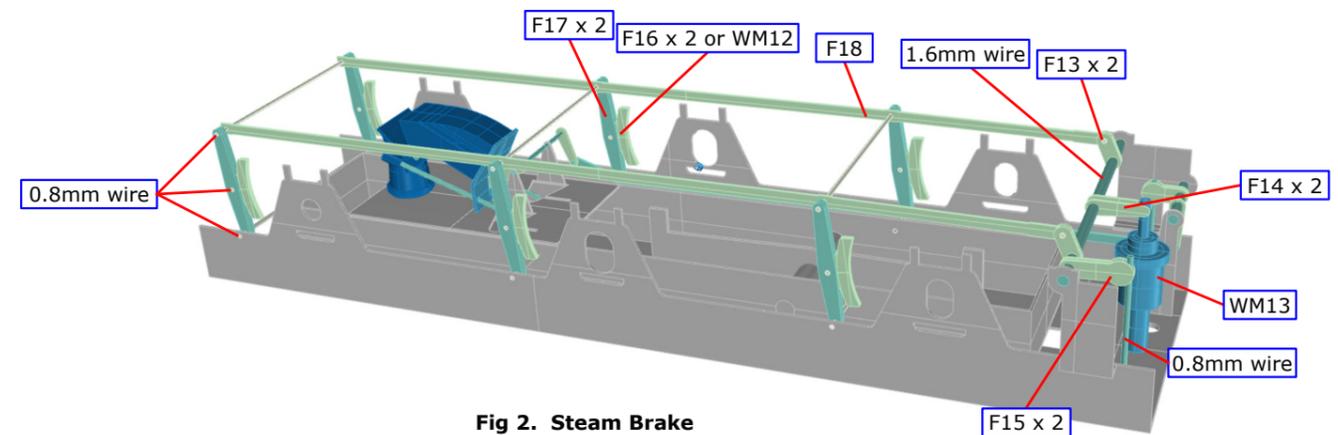


Fig 2. Steam Brake

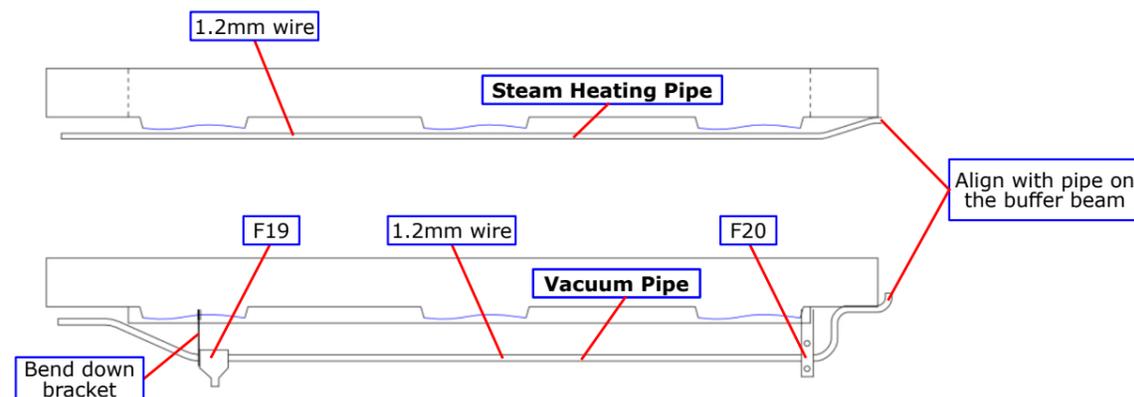


Fig 4. Steam Heat & Vacuum Pipes

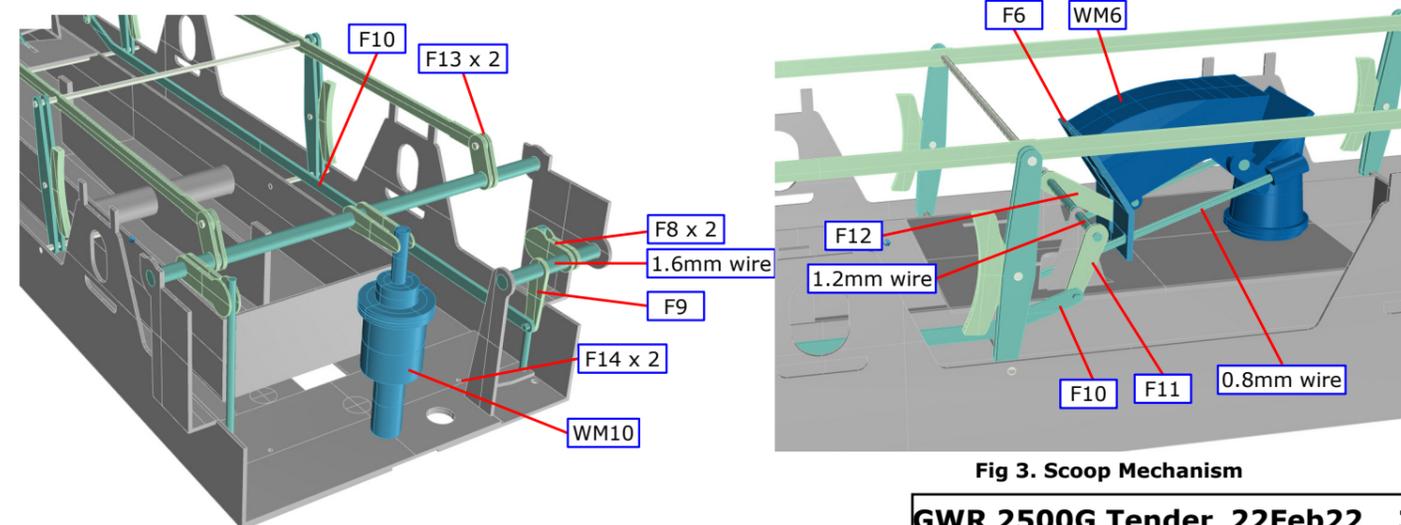


Fig 3. Scoop Mechanism

CONSTRUCTING THE BODY

Emboss the rivets on the footplate (U1) around the brake standard and water pick-up standard bases. If required, remove the footplate extension along the blue line shown below in Fig 5. Now fold the coal space rear through 90° and then fold the small tabs on each side through 90°. Solder a 6BA nut above the body fixing holes at the front and rear of the footplate.

If the tender is to have coal rails, remove the coal plate brackets from the tank former (U2). Fold up the tank former taking care that the coal plate brackets, if not removed, are not bent. Solder the front of the tanks around the outside of the former top; the joint is shown as a green line in Fig 5.

Solder the tank top overlay (U3) to the tank former and then file it flush with the sides of the former. Determine from the GAs which of the holes for the water filler, water dome, overflow pipe fountain, vents, water level gauge and fire iron bracket are required and then drill out the holes from inside the tank using the holes in the tank former as a guide.

Fit the tank former to the footplate, fitting the tabs through the appropriate slots. Fold over the tabs outwards at 90°. Check that the assembly is square and that the footplate is flat before soldering it together.

Fold the coal hole overlay (U5) along the slots and solder in place. If required, modify the tank sides and back overlay (U4) as shown in Fig 6 using the modification overlays (U6 & U7). Emboss the rivets for the rear step brackets. Carefully form the flare by bending around a rod of suitable diameter (5mm), checking with the jig (U8). Form the rear corners in the wrapper; the holes for the handrails are on the centre of the bend. Then solder the wrapper to the tank former. This requires plenty of heat and flux. Carefully curve to shape the small 'fingers' at the corners, fill the gaps with solder and then file to shape. Low melt solder seems to work best after first tinning the area with ordinary solder. This should be left until all other soldering is complete to avoid the possibility of a meltdown.

If coal plates are to be fitted shape the coal plate brackets and solder them to the flare. Now fit the coal plates (U9).

Emboss the two rivets on the coupling hook base on the rear buffer beam overlay (U10) and then solder it to the rear buffer beam (U11). Solder the rear bufferbeam in place allowing the footplate to overhang very slightly.

Solder the valences (U13 & U14) in place against the edge of the tank former tabs. Note the valences are handed. Emboss the rivets on the front bufferbeam overlay (U15) and then solder it to the front buffer beam (U16) before soldering the complete front bufferbeam in place.

No.	Description
U1	Footplate
U2	Tank former
U3	Tank top overlay
U4	Tank side & back overlay
U5	Coal hole overlay
U6	Right side modification overlay
U7	Left side modification overlay
U8	Jig for side flare
U9	Coal plates (2)
U10	Rear buffer beam overlay
U11	Rear buffer beam
U12	Coupling hook lamination (2)
U13	Left footplate valence
U14	Right footplate valence
U15	Front buffer beam overlay

Sheet No.	Description	Sheet No.
3	U16 Front buffer beam	3
1	U17 Left front step back	1
2	U18 Right front step back	1
2	U19 Left front step overlay, curved front	3
1	U20 Right front step overlay, curved front	3
2	U21 Left front step overlay, straight front	3
2	U22 Right front step overlay, straight front	3
2	U23 Left rear step back	3
1 & 2	U24 Right rear step back	3
3	U25 Left rear step overlay	3
3	U26 Right rear step overlay	3
1	U27 Front step lower tread (2)	2
2	U28 Front step upper tread (2)	2
2	U29 Rear rear lower step tread (2)	2
3	U30 Rear rear step upper tread (2)	2

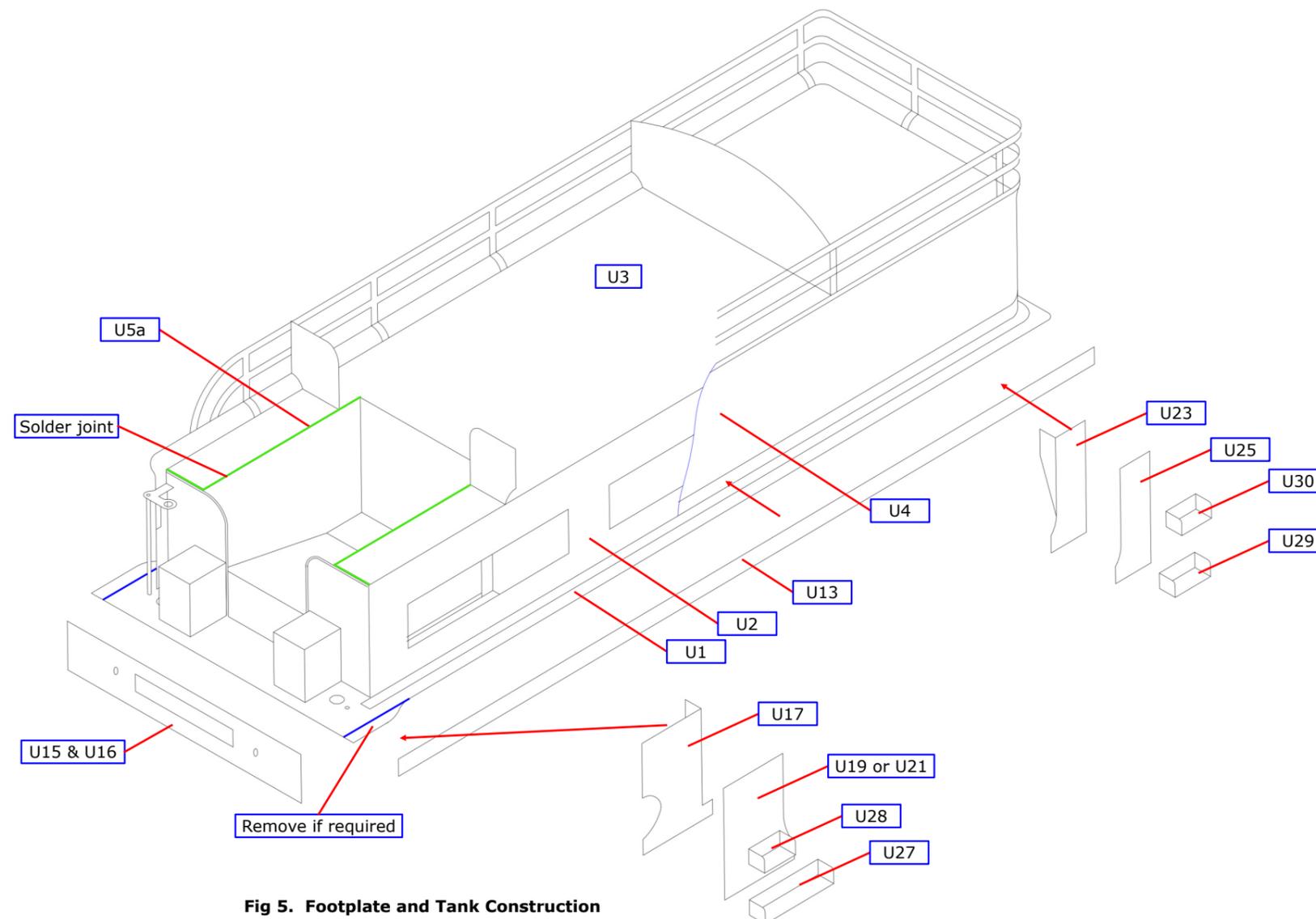


Fig 5. Footplate and Tank Construction

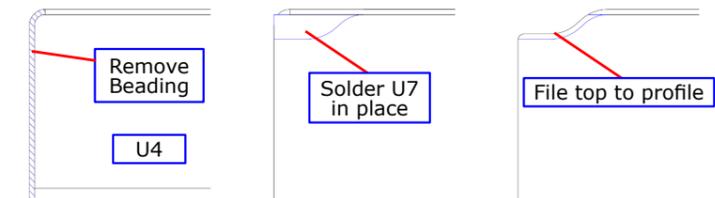


Fig 6. Pre Lot A38 Tender Modification

DETAIL 1

Coal rails, no water scoop, cylindrical water filler, original sandboxes on footplate, no water level gauge, vents in forward position, identical toolboxes, overflow pipe, curved front step, rod hornguide ties.

Solder the quadrant plates (U32 & U33) against the front of the tank. Attach the rear steps (U31)

Original Sandboxes. Fold up the original sandboxes (U34) and solder together with the sandbox lid (U35). Attach them to the footplate against the quadrant plates.

Division & Coal Plates. Laminate the original division plate (U36) together. The alternate positions of the division plate and the front coal plates are marked on the tank top overlay by small 'nicks' in the sides. Using these marks fit the division plate. Fit the original front coal plates (U37). Attach the coal rails (U39).

Toolboxes. Fit the symmetric toolbox (WM3) as shown below. Fold and fit the toolbox to tank top brackets (U38) to the front face of the toolbox. The toolbox padlocks (U45) can be fitted now or glued on after painting to keep the brass finish.

Standards and Handrails. Drill out the top of the short brake and water scoop standards (BR6) to accept the brake standard top (BR7). Fix the assembled standards in place. Fold the handrail brackets (U40), note they are handed, along the half etched line and strengthen the fold with a fillet of solder. Modify the brackets as in Fig 3. if required. Fix the brackets over the standards and attach inside the sides. Fit the front handrails using 0.8mm wire.

Water Filler. Fit the water filler casting (WM4). Make the handle from 0.6mm wire. Fit the Overflow pipe fountain (WM11). If required, fit the tank vents (WM8).

Lamp Brackets. Emboss the rivets on lamp brackets (U41, U42 & U43) before folding to shape. The lower brackets are attached to the bufferbeam.

Final Details. Fit the water feed valve levers (BR2) to the tank top as shown below. Align the vacuum pipe (BR1) with the notch in the rear of the footplate. Solder in place. The steam heating pipe (BR3) fits in the bracket under the buffer beam. The steam heating pipe tap handle (U44) fits on the lower spigot on the casting. Plastic pipe is supplied for both hoses and the steam heating pipe end piece (BR4) goes on the end of the pipe.

Buffers. Build the buffers as shown below and then fit to the buffer beam. Fit the front buffers (BR9).

No.	Description	Sheet	No.	Description	Sheet
U31	Tank rear step (2)	2	U39	Coal rail	2
U32	Front left quadrant plate	3	U40	Front handrail bracket to side (2)	1
U33	Front right quadrant plate	3	U41	Upper lamp bracket	1
U34	Original sand box (2)	1	U42	Lower outer lamp bracket (2)	1
U35	Original sand box lid (2)	2	U43	Lower centre lamp bracket	1
U36	Original division plate (2)	3	U44	Steam heating pipe tap handle	1
U37	Original coal plate (2)	2	U45	Toolbox padlock	1
U38	Toolbox to tank top bracket (2)	2			

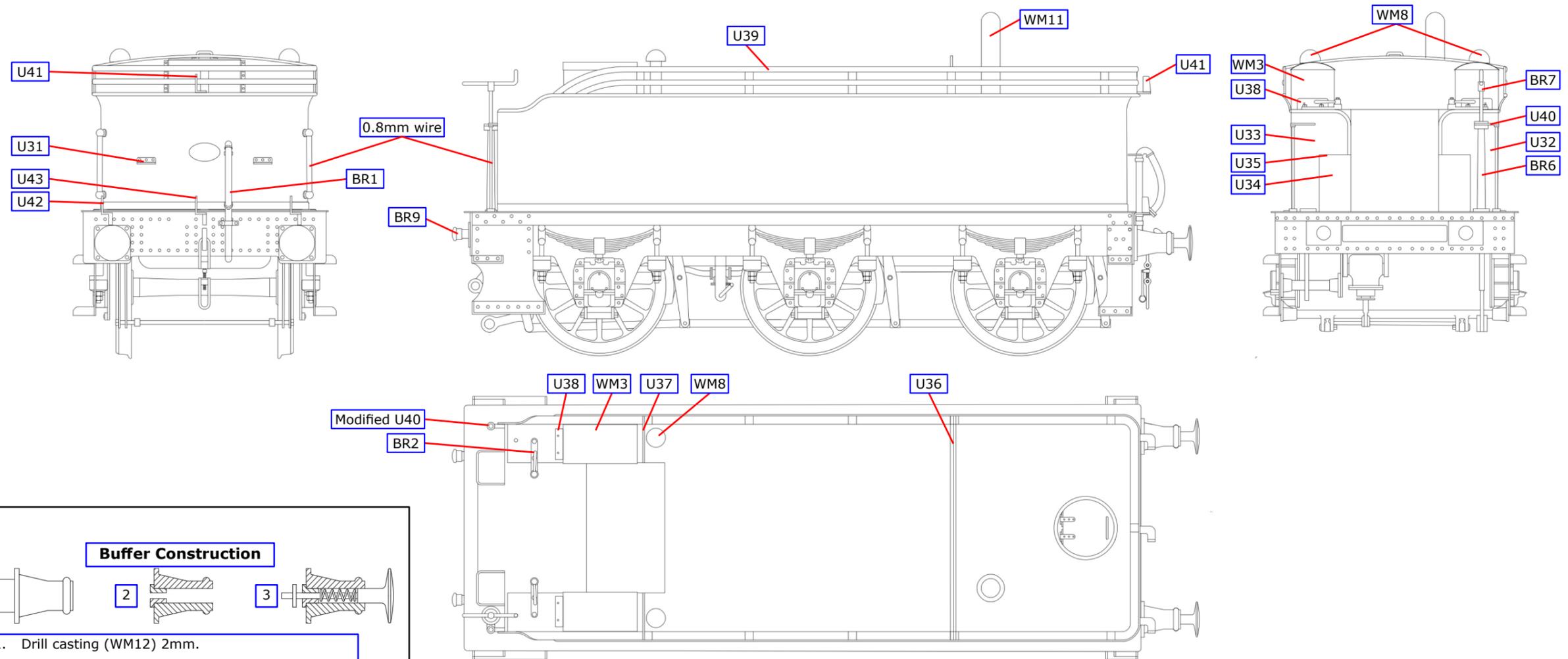


Fig 7. 2500G Tender in Original Condition

DETAIL 2

Coal rails, sandboxes in original position, both tool boxes original type, no water level gauge, vents in forward position, combined water filler & scoop fountain, rod hornguide ties.

Solder the quadrant plates (U32 & U33) against the front of the tank. Attach the rear steps (U31)

Original Sandboxes. Fold up the original sandboxes (U34) and solder together with the sandbox lid (U35). Attach them to the footplate against the quadrant plates.

Division & Coal Plates. Laminate the original division plate (U36) together. The alternate positions of the division plate and the front coal plates are marked on the tank top overlay by small 'nicks' in the sides. Using these marks fit the division plate. Fit the original front coal plates (U37). Attach the coal rails (U39).

Toolboxes. Fit the symmetric toolbox (WM3 as shown below. Fold and fit the toolbox to tank top brackets (U38) to the front face of the toolbox. The toolbox padlocks (U45) can be fitted now or glued on after painting to keep the brass finish.

Coal Rails. Attach the coal rails (U39) if appropriate. The coal rails extensions (U46 & U47) are used for the later tenders without the drop in the sides at the front. Modify the coal rails by removing the rails in front of the end stanchion and replace with the extensions.

Standards and Handrails. Drill out the top of the short brake and water scoop standards (BR6) to accept the brake standard top (BR7). Fix the assembled standards in place. Modify the handrail brackets (U40) as in Fig 4, note they are handed. Fold along the half etched line and strengthen the fold with a fillet of solder. Fix the brackets over the standards and attach inside the sides. Fit the front handrails using 0.8mm wire. If the coal rail extensions have been fitted the handrail is fixed to the extension on the small half etched recess.

Combined Water Filler and Scoop Fountain. Emboss the rivets on the combined water filler and scoop fountain sides (U48) and form to shape. Solder to the base (U49). Emboss the rivets on the top (U50). Make the handle from 0.6mm wire. Attach the top to the sides and then solder in place on the tank top. If required, fit the tank vents (WM8).

Lamp Brackets. Emboss the rivets on lamp brackets (U41, U42 & U43) before folding to shape. The lower brackets are attached to the buffer beam.

Final Details. Fit the water feed valve levers (BR2) to the tank top as shown below. Align the vacuum pipe (BR1) with the notch in the rear of the footplate. Solder in place. The steam heating pipe (BR3) fits in the bracket under the buffer beam. The steam heating pipe tap handle (U44) fits on the lower spigot on the casting. Plastic pipe is supplied for both hoses and the steam heating pipe end piece (BR4) goes on the end of the pipe.

Buffers. Build the buffers as shown below and then fit to the buffer beam. Fit the front buffers (BR9).

No.	Description	Sheet	No.	Description	Sheet
U31	Tank rear step (2)	2	U41	Upper lamp bracket	1
U32	Front left quadrant plate	3	U42	Lower outer lamp bracket (2)	1
U33	Front right quadrant plate	3	U43	Lower centre lamp bracket	1
U34	Original sand box (2)	1	U44	Steam heating pipe tap handle	1
U35	Original sand box lid (2)	2	U45	Toolbox padlock	1
U36	Original division plate (2)	3	U46	Left coal rail extension	2
U37	Original coal plate (2)	2	U47	Right coal rail extension	2
U38	Toolbox to tank top bracket (2)	2	U48	Combined water filler/scoop fountain sides	1
U39	Coal rail	2	U49	Combined water filler/scoop fountain base	2
U40	Front handrail bracket to side (2)	1	U50	Combined water filler/scoop fountain top	1

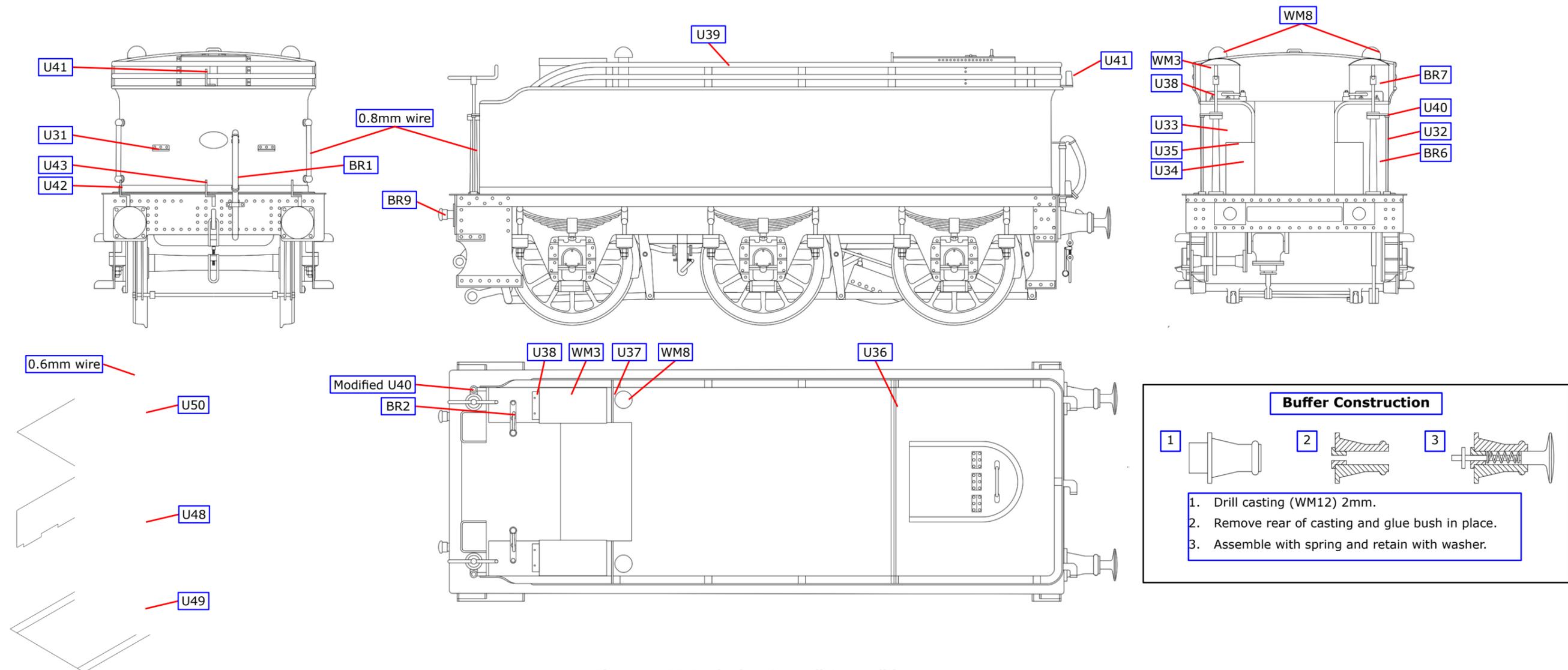


Fig 8. 2500G Tender in Intermediate Condition

DETAIL 3

Coal plates, wide footplate, wide front handrails, sandboxes repositioned, original toolbox on right, quadrant toolbox on left, water level gauge, separate scoop dome and water filler, fire iron tray and bracket, vents moved back behind coal plates.

Solder the quadrant plates (U32 & U33) against the front of the tank. Attach the rear steps (U31)

Rebuilt Sandboxes. For the later sandboxes, first emboss all the rivets in the sandbox side and top (U51 & U52). Form the sandbox side to match the top, solder together and attach to the footplate on the left side behind the quadrant plate. Emboss the rivets in the casing side (U53), fold to shape and solder to the casing top (U54). Fit the casing to the right side of the coal hole behind the quadrant plate.

Raised Footplate. The raised footplate (U55) can be modified to accommodate the various sandbox and footplate height options using the half etched lines on the underside as a guide. Modify the footplate and fit using the footplate supports (U56 & U57) as appropriate.

Division & Coal Plates. Laminate the rebuilt division plate (U58) together. Shape an opening in the division plate so that it fits over the dome. The alternate positions of the division plate and the front coal plates are marked on the tank top overlay by small 'nicks' in the sides. Using these marks fit the division plate. Fit the rebuilt front coal plates left and right (U59 & U60).

Toolboxes. Fit the symmetric toolbox (WM3) to the right and the quadrant shaped toolbox (WM2) to the left as shown below. Fold and fit the toolbox to tank top brackets (U38) to the front face of the toolbox. The toolbox padlocks (U45) can be fitted now or glued on after painting to keep the brass finish.

Fire Iron Tray & Bracket. Emboss the rivets on the fire iron bracket base (U65) and solder in place as shown below. Drill the hole in the base through the tank and then solder the fire iron bracket (U63) in place from inside. Form the fire iron tray (U61) into a shallow 'U' section and fold the rear plate to 90°. Solder the spacers (U62) into the half etched slots and attach the complete tray as below.

Standards and Handrails. Drill out the top of the long brake and water scoop standards (BR5) to accept the brake standard top (BR7). Fix the assembled standards in place. On the handrail brackets (U40), drill the 0.8 mm holes for the handrail wire at the half etched dimple; note the brackets are handed. Fold along the half etched line and strengthen the fold with a fillet of solder. Fix the brackets over the standard and attach inside the sides. Fit the front handrails using 0.8 mm wire. On the rebuilt tenders the wide mounted handrails use the brackets (U65) and attach them behind the coal plates. Fit the rear handrails from 0.8 mm wire with two handrail knobs as shown

Water Pick-up Dome. The water dome base (U66) should be soldered to the tank top centred over the pre-drilled hole. Fit the cast

dome (WM5) through the hole. Fit the water filler casting (WM4). Make the handle from 0.6mm wire. Fit the tank vents (WM8).

Lamp Brackets. Emboss the rivets on lamp brackets (U41, U42 & U43) before folding to shape. The lower brackets are attached to the buffer beam.

Final Details. Fit the sand box lid (BR8) to the top of the sandbox. Fit the water feed valve levers (BR2) to the tank top as shown below. Align the vacuum pipe (BR1) with the notch in the rear of the footplate. Solder in place. The steam heating pipe (BR3) fits in the bracket under the buffer beam. The steam heating pipe tap handle (U44) fits on the lower spigot on the casting. Plastic pipe is supplied for both hoses and the steam heating pipe end piece (BR4) goes on the end of the pipe. The weather sheet supports (U67) are fixed inside the coal plates, at the front, on the rebuilt tenders

Buffers. Build the buffers as shown below and then fit to the buffer beam. Fit the front buffers (BR9).

No.	Description	Sheet	No.	Description	Sheet
U31	Tank rear step (2)	2	U54	Rebuilt right hand casing top	2
U32	Front left quadrant plate	3	U55	Raised footplate	2
U33	Front right quadrant plate	3	U56	Raised footplate rear support	2
U38	Toolbox to tank top bracket (2)	2	U57	Raised footplate support sides & front	3
U39	Coal rail	2	U58	Rebuilt division plate (2)	1
U40	Front handrail bracket to side (2)	1	U59	Rebuilt left coal plate	2
U41	Upper lamp bracket	1	U60	Rebuilt right coal plate	2
U42	Lower outer lamp bracket (2)	1	U61	Fire iron tray	2
U43	Lower centre lamp bracket	1	U62	Fire iron tray spacers (2)	2
U44	Steam heating pipe tap handle	1	U63	Fire iron bracket	1
U45	Toolbox padlock	1	U64	Fire iron bracket base	1
U51	Rebuilt left hand sand box	1	U65	Front handrail bracket to the top of the side (2)	1
U52	Rebuilt left hand sand box top	2	U66	Water pickup dome base	2
U53	Rebuilt right hand casing	1	U67	Weather sheet support (2)	2

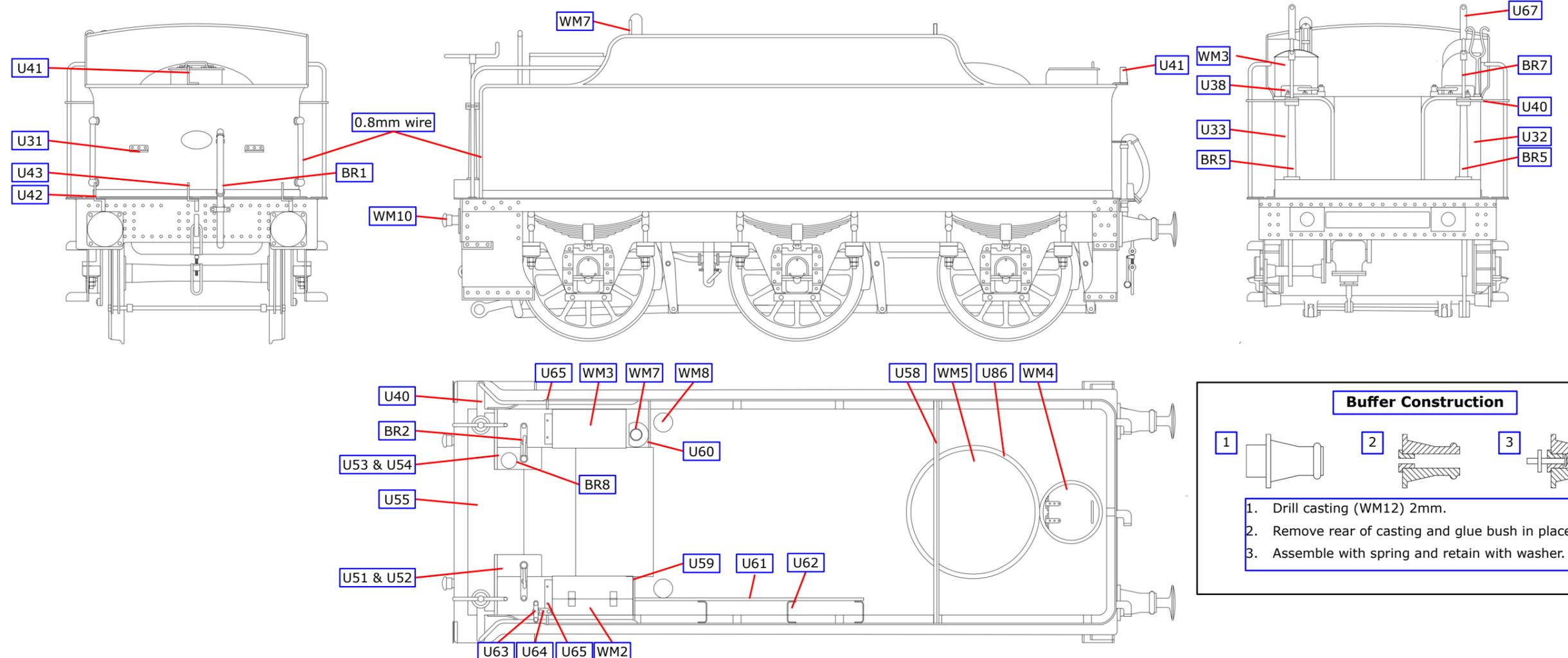
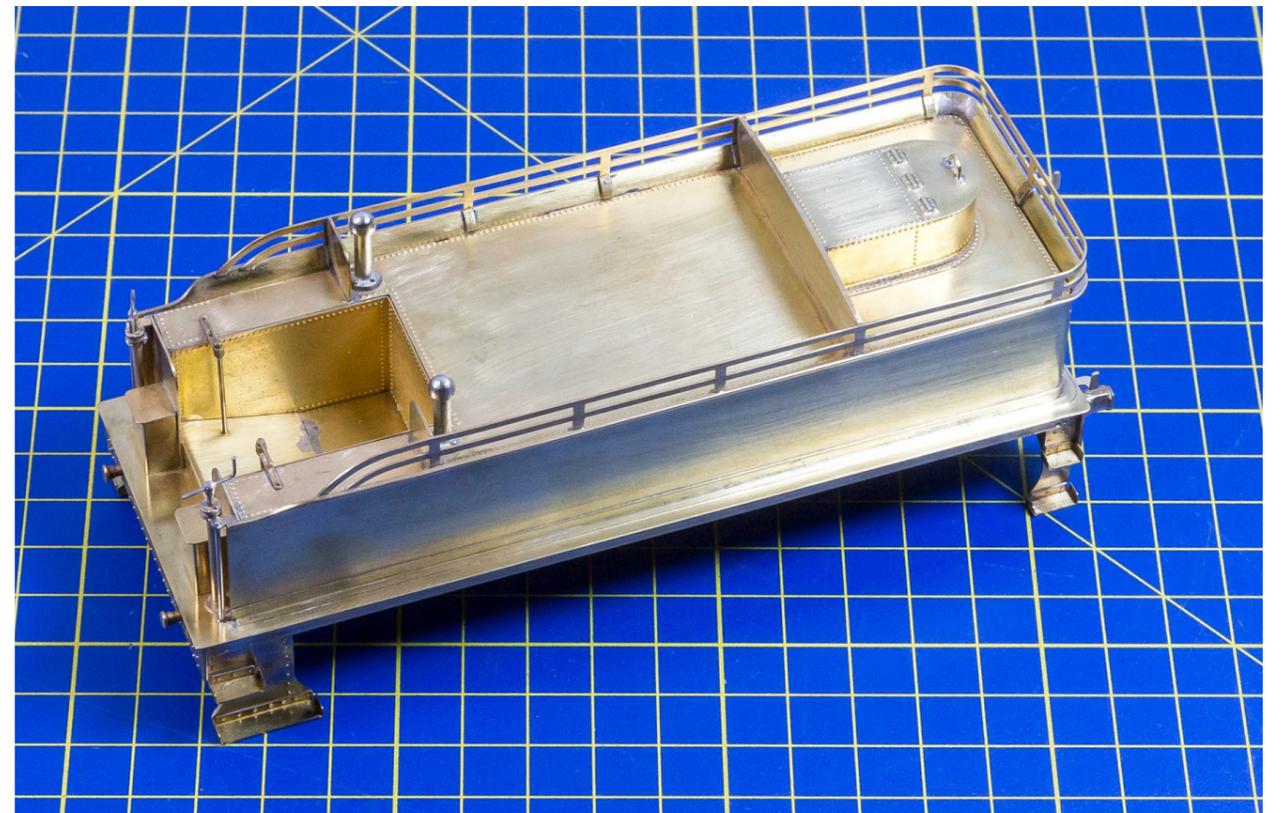
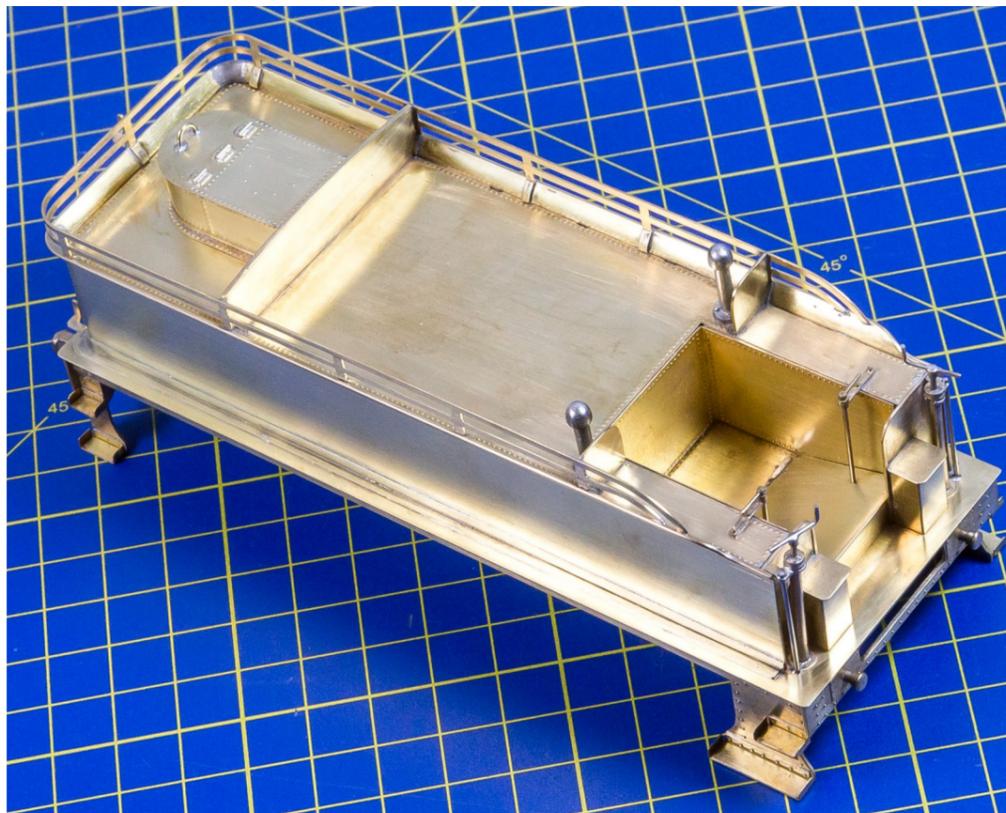
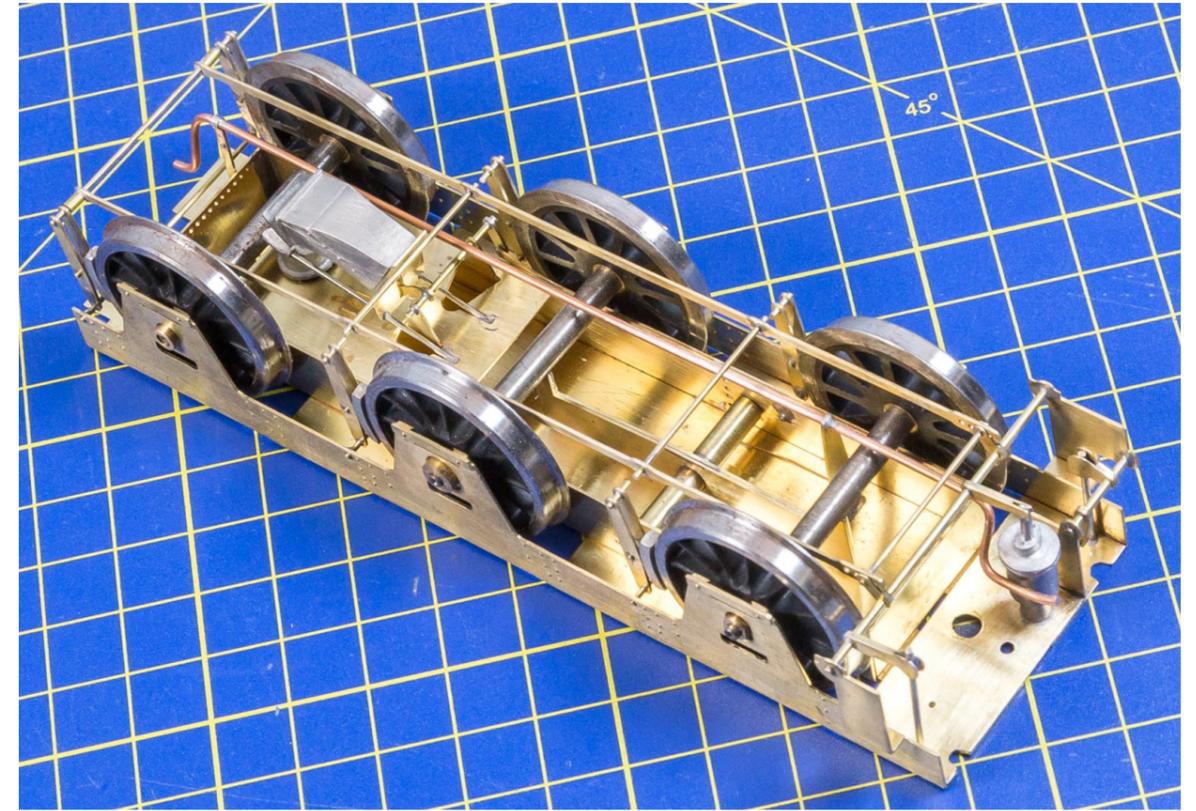
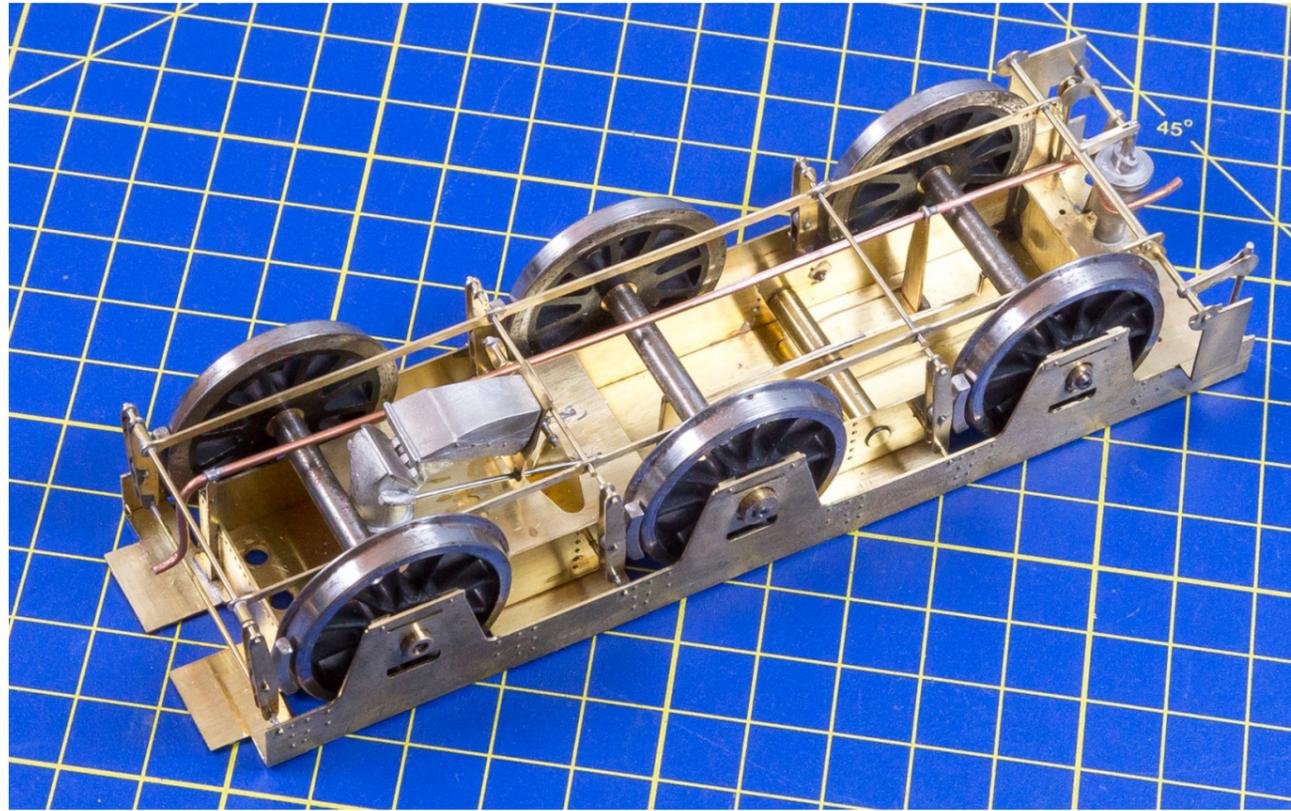
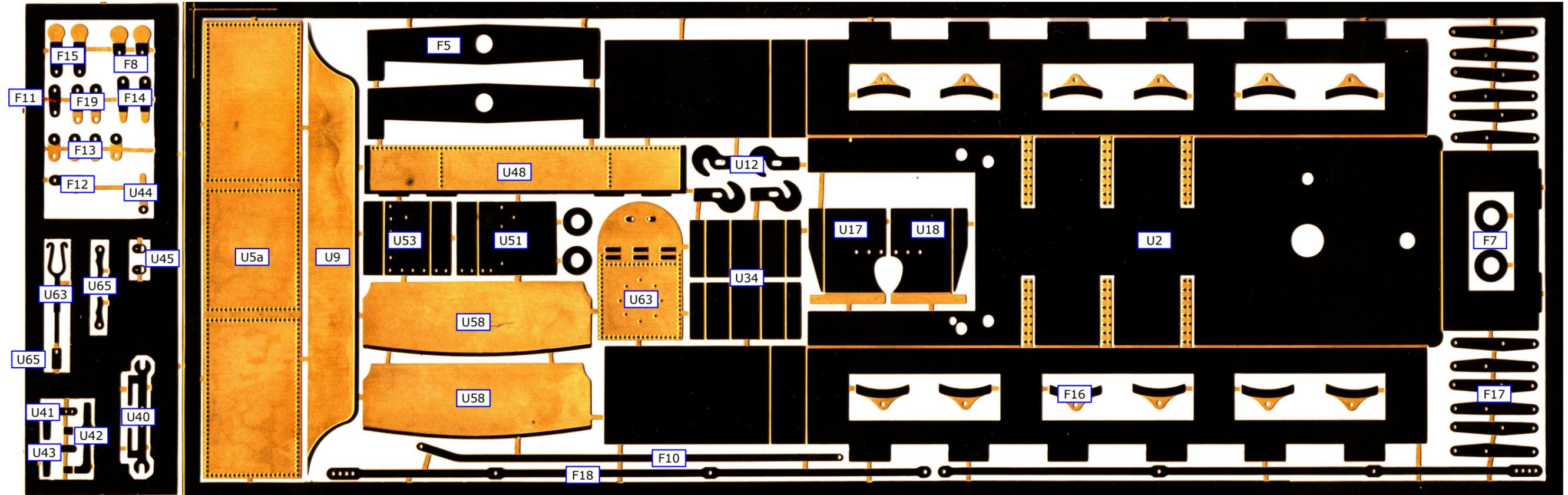


Fig 9 2500G Tender in Rebuilt Condition



ETCH SHEET 1



CASTINGS

WHITEMETAL CASTINGS

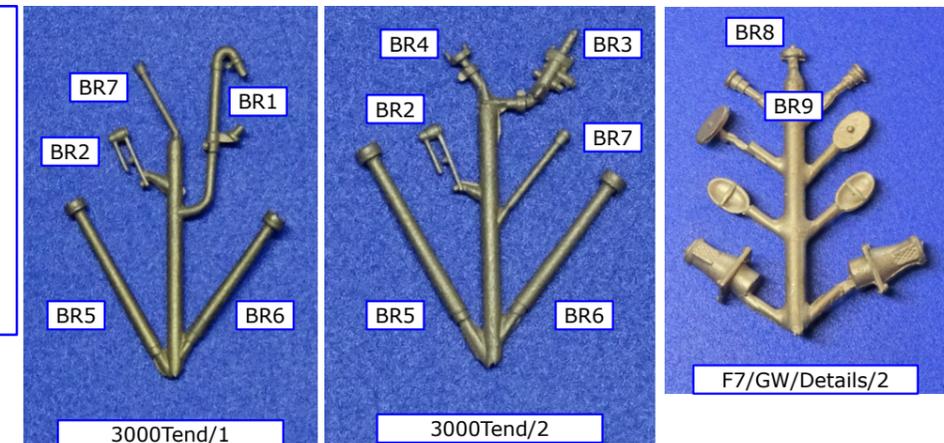
- WM1 Axlebox & spring (6)
- WM2 Quadrant shaped toolbox
- WM3 Symmetric toolbox (2)
- WM4 Water filler
- WM5 Water pickup dome
- WM6 Water pickup scoop, two parts
- WM7 Water level gauge
- WM8 Tank vent (2)
- WM9 Brake shoe (6)
- WM10 Steam brake cylinder
- WM11 Overflow pipe fountain
- WM12 Dean taper buffers (2)



BRASS 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 |
| BR8 Sandbox lid | Details/2 |
| BR9 Front buffer (2) | Details/2 |

**DUE TO SUPPLY ISSUES, SOME PARTS
MIGHT BE SUPPLIED AS WHITE METAL**



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.

ETCH SHEET 2



ETCH SHEET 3

