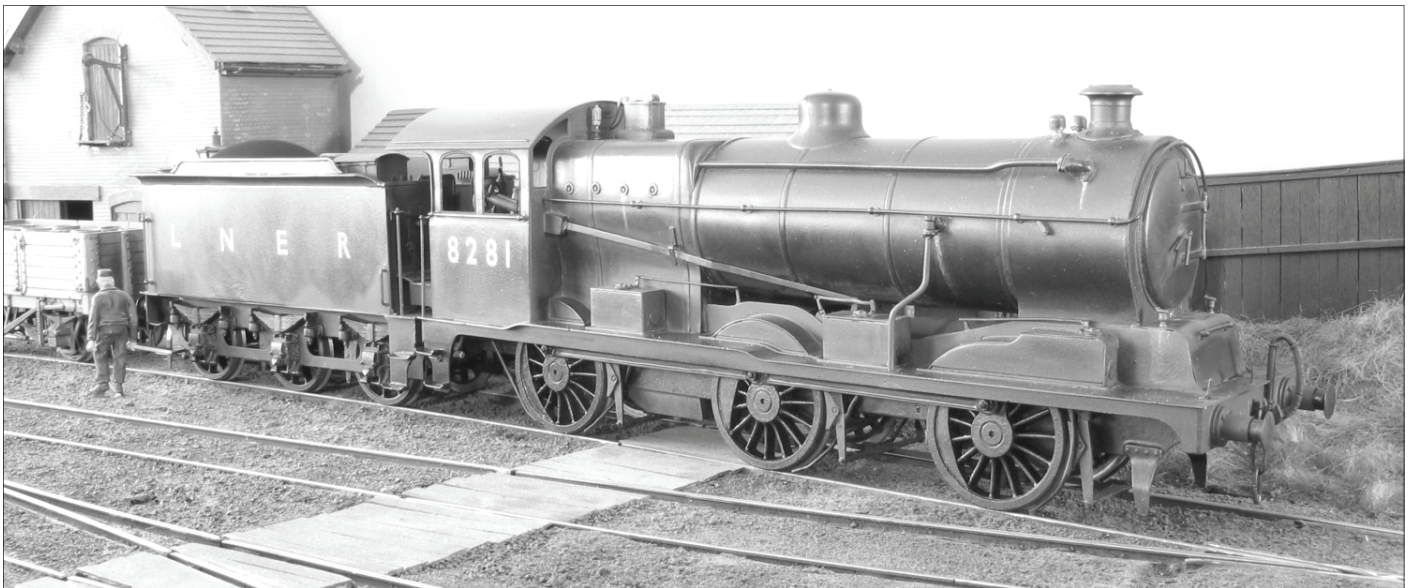




**CONNOISSEUR MODELS 0 GAUGE
GER CLASS D81, LNER CLASS J 20**



Parts Required To Complete

Mashima 1833 Motor and 40/1 Gear Set (Connoisseur)
3 Sets 4' 10", 15 Spoke Driving Wheel (Slater's No 7858E)
3 Sets 4', 10 Spoke Tender Wheels (Slater's No 7848GE)
Plunger Pickups if desired (Slater's No 7157)

Handrail Knobs if desired as a replacement for split pins (Slater's Catalogue No 7951-Long, 7952-Short). Available From Slater's, Temple Road, Matlock Bath, Matlock, Derbyshire, DE4 3PG, Tel 01629 583993.

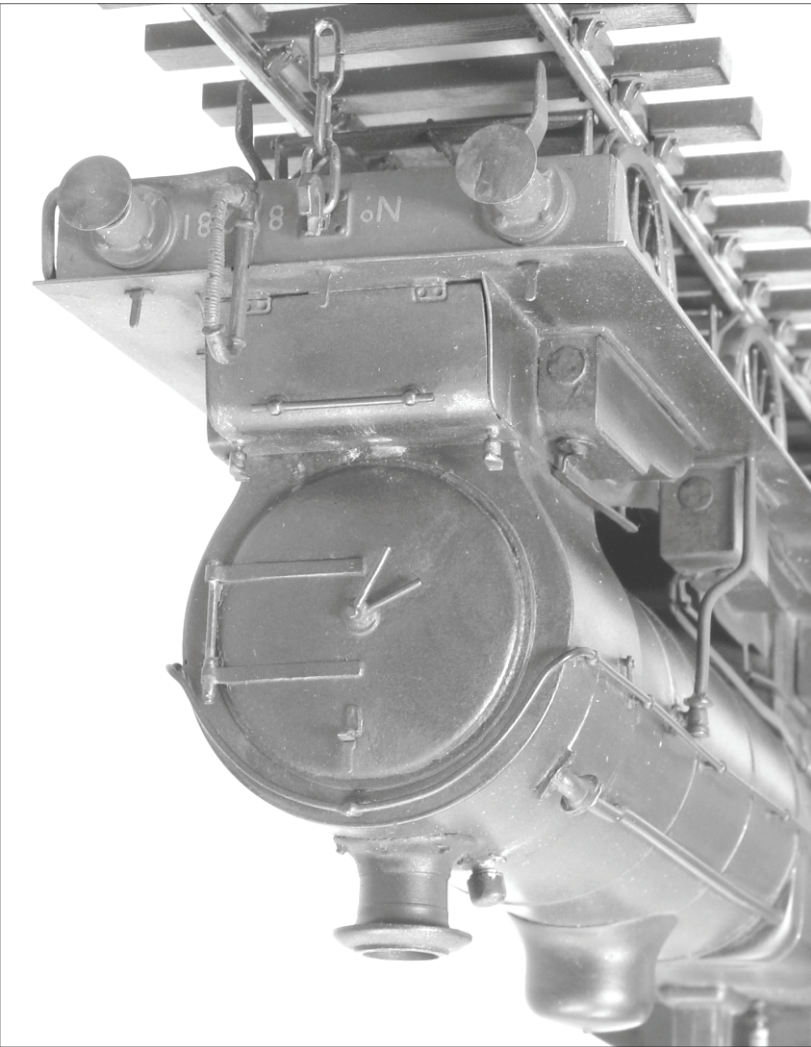
CONNOISSEUR MODELS, 33 Grampian Rd, Penfields, Stourbridge, DY8 4UE, Tel 01384 371418

History of This Kit

George Dawson of Majestic Models originally produced this kit. In 2001 George reached the age at which he got his senior citizens railcard and started reminiscing about Churchill's speeches. He decided that it was time to sell his range of loco kits and concentrate on the more gentle pursuit of producing wagon kits. Knowing that George's range of North British loco kits had a very good reputation and a selection of NBR locos would complement my range nicely I was very keen to purchase and produce them. Included in the range was this solitary Great Eastern Loco. George produced this J20 kit because many years ago it was the first loco prototype that he scratch built in 4mm scale.

I put the NBR loco kits into production but the tooling for this J20 lay at the bottom of a draw for three years waiting for me to get around to building one to see how it went together. Then Master Craftsman and Suffolk modeller Jon Gardner wanted one for his layout so he very kindly offered to build one and provide notes of any shortcomings and how to get around them. I have made very few changes to this kit (its not really practical to add additional parts to existing photo tooling) and have reproduced George's instructions mainly without alteration but with the insertion of some additional notes provided by Jon. The finished loco built by Jon looks very good. As the J20 is a bit of a specialist prototype I have assumed that anybody who wants to build one will be an experienced modeller and probably knows Jon or myself personally. Hopefully you will have no problems with any aspect of this kit and it will produce a very satisfactory finished loco to a standard that you are happy with. If you do hit any problems then please contact me, even though I have not built one I should be able to help you out.

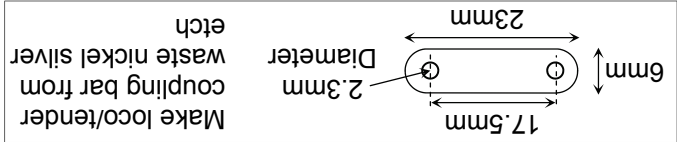
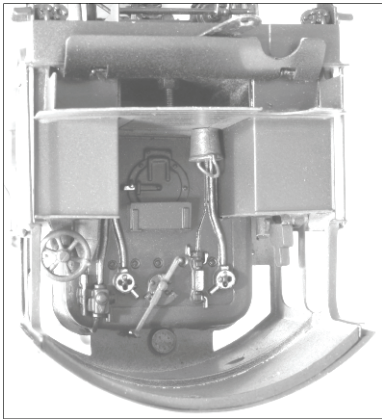
PAGE 2

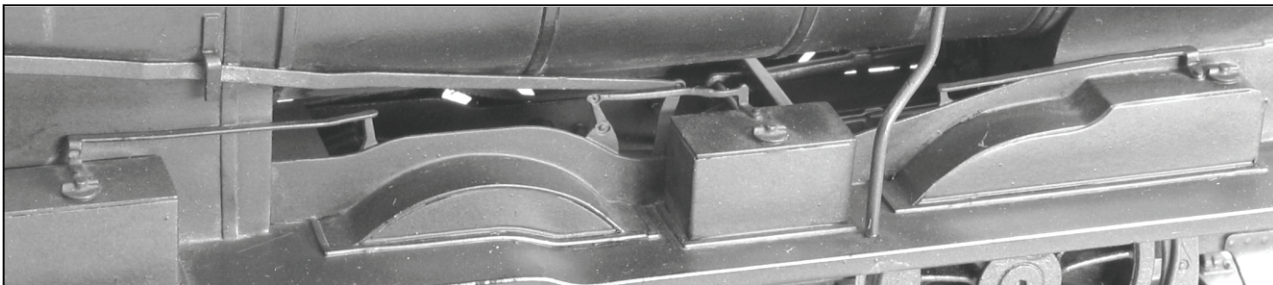


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GER CLASS D81, LNER CLASS J20 (Belpaire Boiler)

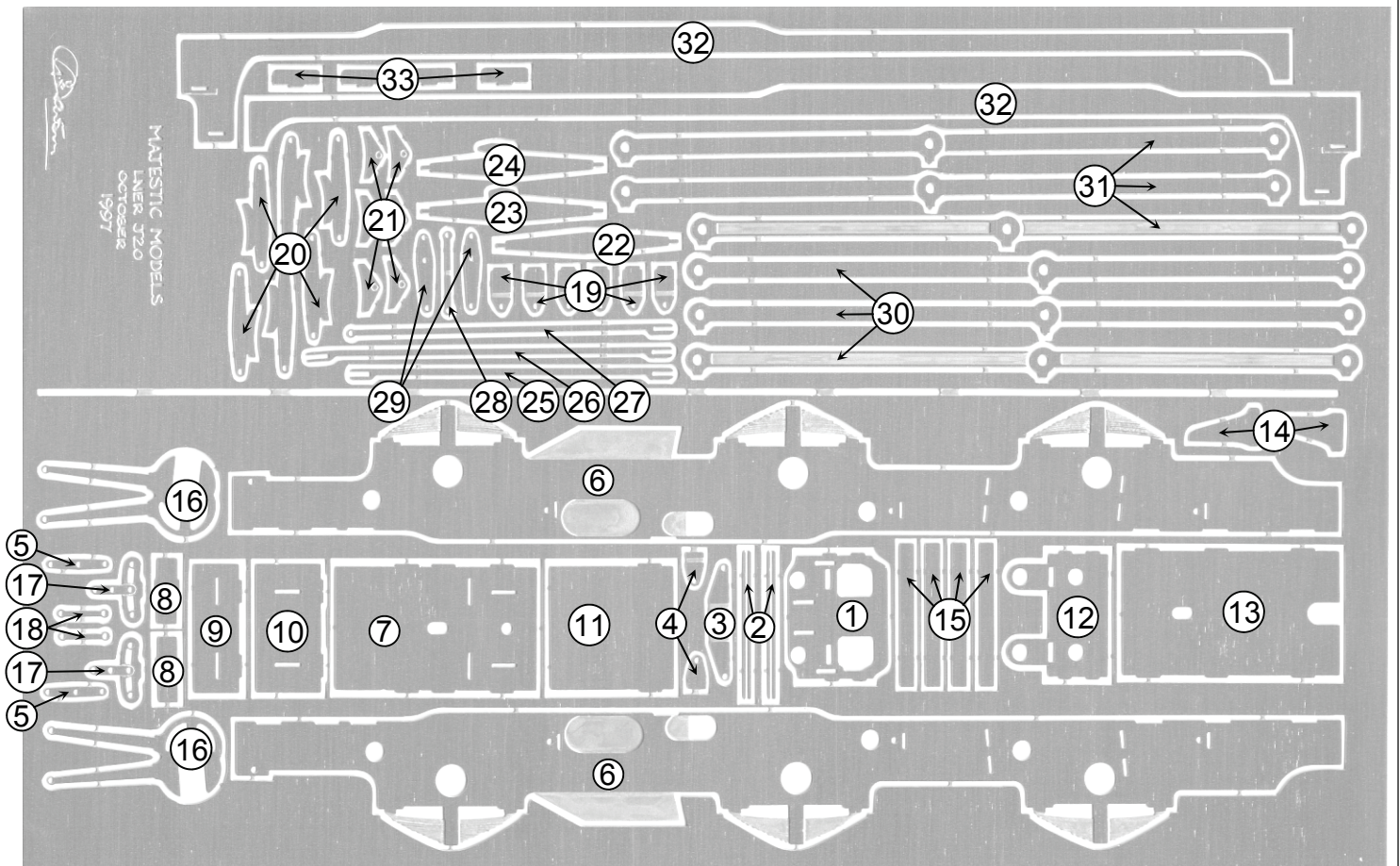
A short history. Building commenced for these engines in 1920 and between then and 1922 a total of 25 engines were supplied to the G.E.R. As was normal practice with the G.E.R. they were built with interchangeable parts, which could be used on other locos. In this case the Holden "1500" Class (later LNER B12). When built, these engines were the most powerful 0-6-0's in the land and remained so until 1942 when Mr. Bullied produced his Q1. After grouping, in 1923, the four column Ramsbottom safety valves were gradually removed and replaced with Ross pops. During the years 1927 - 30 the tenders were fitted with coal rails. In 1943, it was decided that these engines should conform to normal LNER practice and rebuilding began with new boilers, these had round tops instead of the Belpaire firebox. The first to get this treatment was No. 8292 in October 1943 but when British Railways took over 8 of the class were still not rebuilt, in fact rebuilding wasn't completed until January 1956 (B.R. No. 64676). The entire class was renumbered into the 60,000. Full information about the class can be found in part 5, "Locomotives of the LNER", RCTS.

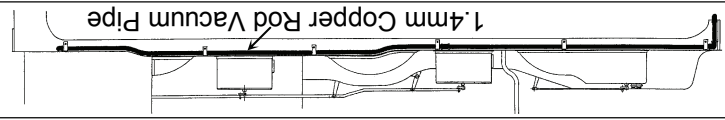
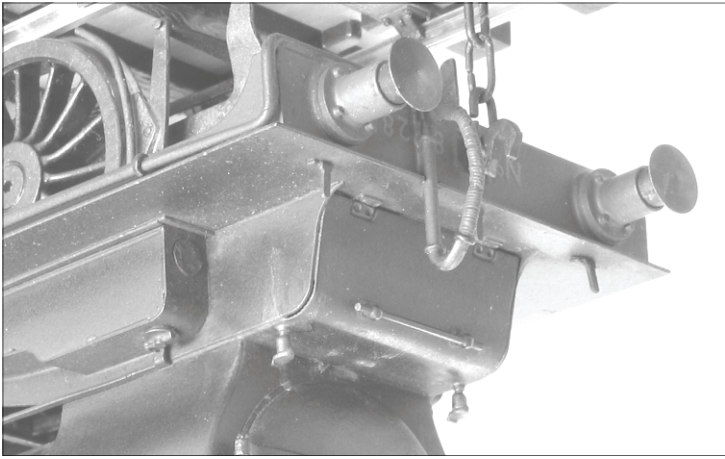




Detail View of
Sandbox
Operating Rods.
Reverser Rod
and its Support
Bracket on Fire
Box Side.

LNER Class J20 Locomotive Nickel Silver Etched Parts Identification

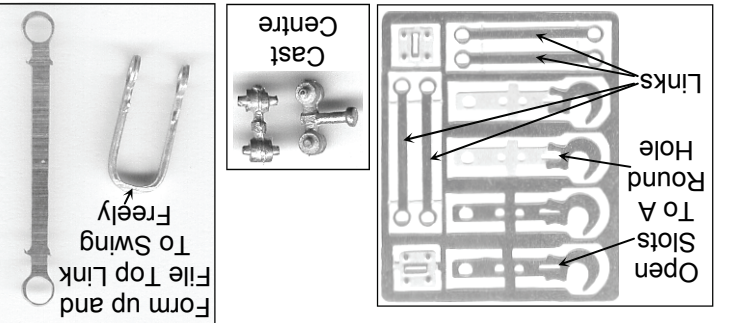




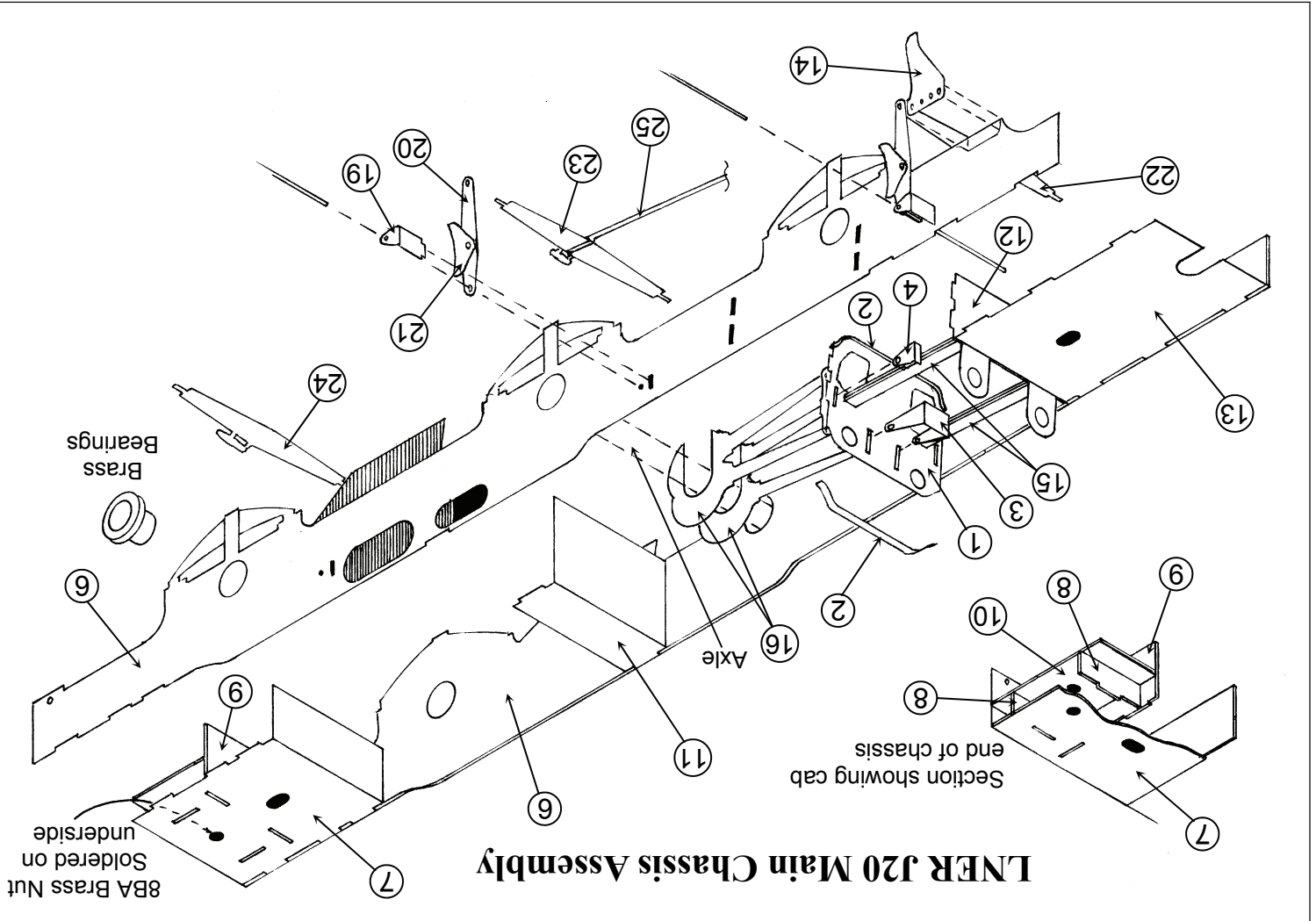
Fit cast vacuum pipe to front buffer beam positioned 5mm to the right of the coupling hook. You may need to file a slight notch into the front footplate with a round file to allow it to sit square against the buffer beam. On the prototype loco the vacuum pipe then ran below the buffer beam and along the valance to the cab. Represent this with 1.4mm copper rod. I terminate this rod behind the front of the valance as I find that running it below the buffer beam makes it difficult to remove the chassis. You can represent the pipe clips using strips of waste etch (I don't bother with these).



Fit the whistle into a hole drilled into the firebox top. Then fit the cup lubricators into holes drilled in the front cylinder cover. Then fit the sandbox filler lids (possibly glued into place).



Later photos of J20's show screw couplings fitted and I have included my standard etch for a cosmetic coupling. Solder both halves of each hook together and if necessary round the slot so that the link will swing freely and then using round-nosed pliers form the four links into U shapes. Dress the tops of two links with a file so that they will pivot freely in the slot in the hooks. Thread one of these links through the hook and spring the ends over the pegs on the cast centre. Then fit the bottom link. Pass the coupling hook through the slot in the buffer beam and solder into place.



LNER J20 Main Chassis Assembly

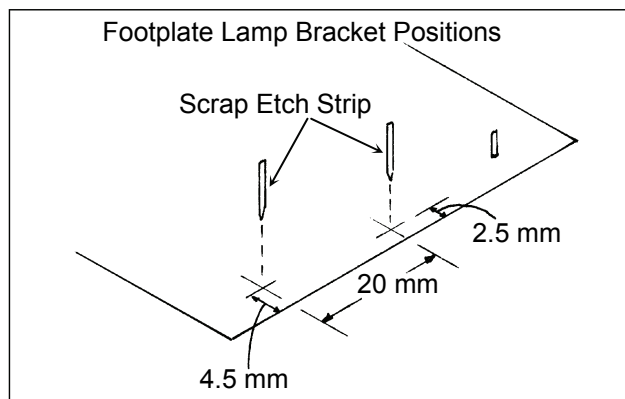
8BA Brass Nut Soldered on underside

Section showing cab end of chassis

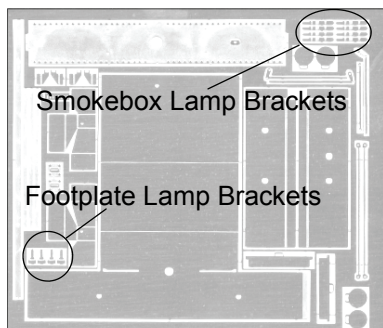
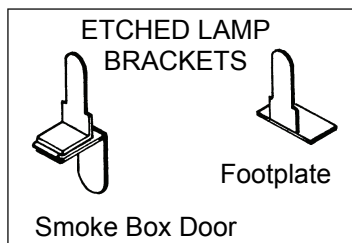
Axle

Brass Bearings

Fit lamp brackets. George forgot to include lamp brackets on the kit and suggested using strips of waste etch fitted into holes drilled in the front of the footplate. This was to be soldered into place and then sniped to length.

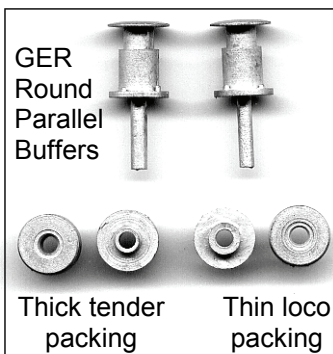


Fortunately I have a draw full of etched sections from an abandoned project that contains GE lamp brackets and I would suggest that you use these. The rest of the etch can go into the scrap box but there are some head code discs that may be useful. A central lamp bracket is also fitted to the smoke box door 4.5mm from the top edge.



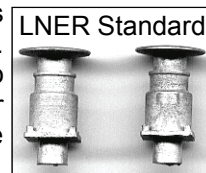
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Then fit cast smoke box door handle into a hole drilled in the door and then fit door to smoke box front.

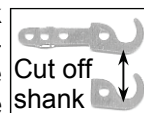


Fit Buffers. When built the locos were fitted with GER round parallel buffers. These had a wooden packing ring fitted between the buffer casting and the buffer beam. A thin packing ring was fitted to the front loco buffers and a thicker ring to the tender buffers. Fit with low melt solder the packing ring to the back of the buffer and then cut back the tail of the buffer casting

flush with the raised boss of the packing ring. Then fit buffers to buffer beam using the raised boss to locate in the buffer beam holes. With the tender buffers this boss will have to be filed back to the buffer beam thickness as the tender frames are behind the hole. LNER group standard buffers were fitted to many engines during the second world war so check photos of your chosen prototype (64698 for example).



Fit the couplings. Again George did not include them as part of the kit etch but I also have a surplus of these from other kit etches and so I have included them. When built the locos were fitted with three link couplings. I have included four hooks and would suggest that you cut the shank from one hook and laminate the head onto a second hook to give it some thickness, profiling the hook with a flat file if you wish. Shape and close up the brass links with long nosed pliers.



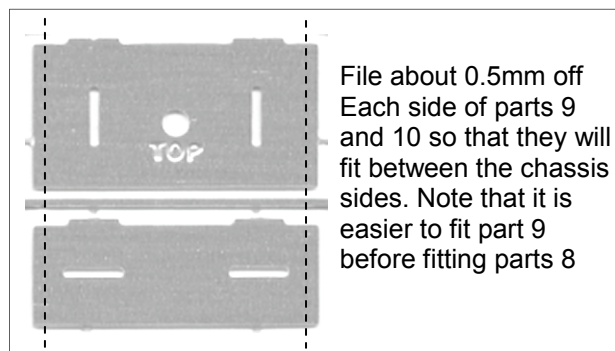
GER CLASS D81. LNER CLASS J20. Chassis Assembly

The first section of instructions covers the assembly of a complete chassis. In practice it is best to build up a basic chassis to a point where the wheels are fitted and then start on the body construction. In this way the chassis can be used to check clearances as body construction progresses and vice versa. Consider the following sequence of assembly to be a guide only and not to be followed slavishly!

1. Motion Bracket.
2. Motion Bracket Top & Bottom Angles. Solder to top and bottom edges of bracket.
3. Eccentric Rod Link Carrier. Bend to a "U" shape at the lines and insert the central slots in the motion bracket (1) and make solid, note the angled edge points downward.
4. Piston Brackets. Bend to right angle and secure into the outer slots in the bracket.
5. Piston Links. Cut a piece of 0.9mm wire long enough to pass between the two piston brackets (4) and thread the links onto this through the centre holes each side of carrier (3). Secure the wire into the brackets but leave the links swinging free. Put the motion bracket aside for a while.
6. Chassis Frames. Open out holes to take brass bearings. Note that the centre axle is slightly raised off the track. This is to help eliminate the tendency for long wheelbase 0-6-0's to rock on the centre axle and pop the front wheels off the track on curves.
7. Rear Spacer. Bend to a right angle. Solder an 8BA nut over the round hole on the underside, this will eventually take the screw to hold the tender drawbar. Solder the rear spacer between the frames into the cutouts in the frame tops. I find it best to tack solder the spacers first and then check that the chassis is square and true before soldering all the spacers solid. Obviously, because of the rise in the chassis, this

cannot be done on the usual flat surface so I did it between two tiles and let the awkward section hang down between them.

8. (Note, it was found to be easier to fit part 9 before fitting parts 8) Drawbar Spacers. Secure into the slots each side of the nut.
9. Drawbar Box End. Solder into the other slots up to the drawbar spacers.
10. Drawbar Box Base. Note "Top". Open out the hole to take an 8BA screw. Fit into the slots in the box end (9) and over the tabs on the spacers (8) so the two marks are showing below, these show the position of the brake cylinder.



11. Central Spacer. Bend to right angle and secure into the raised section cutouts, the angle down between the frames and level with the half etched section denoting the front of the firebox.

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You can now recover the motion bracket (1) and fit between the frames into the slots towards the rear, the brackets and links pointing back. You may find it easier to solder one side only then fit.....

12. Front Motion Carrier. Secure between the frames in the forward slots.

13. Front Spacer. Using the two tiles (or similar), solder into the cutouts. Make certain all is square.

14. Guard Irons. Push out the rivets from the back and solder to the front end at the base of the forward curve. Now might be a good time to insert your bearings (unsoldered) and temporarily fit wheels and then start body construction. I have included alternative thin-shouldered bearings for use on the centre and front wheels to give additional side play if your layout has tight curves.

15. Slide Bars. Laminate two together. Slide and secure into the horizontal slots in (1) and (12).

Find the two cast white metal pistons and note one piston is shorter than the other. Fit the "cylinder" of the shorter piston into the right hand top hole of carrier (12) with the rear end of the connecting rod through the top hole of the motion bracket (1), the hole in the rod facing across the chassis. Fit the second piston. Next cut a length of 0.9mm wire about 1" long, thread through one of the piston ends into the top holes of the two links (5) and into the second piston, you may find this a little tight across the link carrier (3) but it will go with some minor "weaking". Now might be a good time to have that cup of tea you've been thinking about!

16. Eccentric Rods.

17. Eccentric Rod Brackets.

18. Eccentric Rod Links.

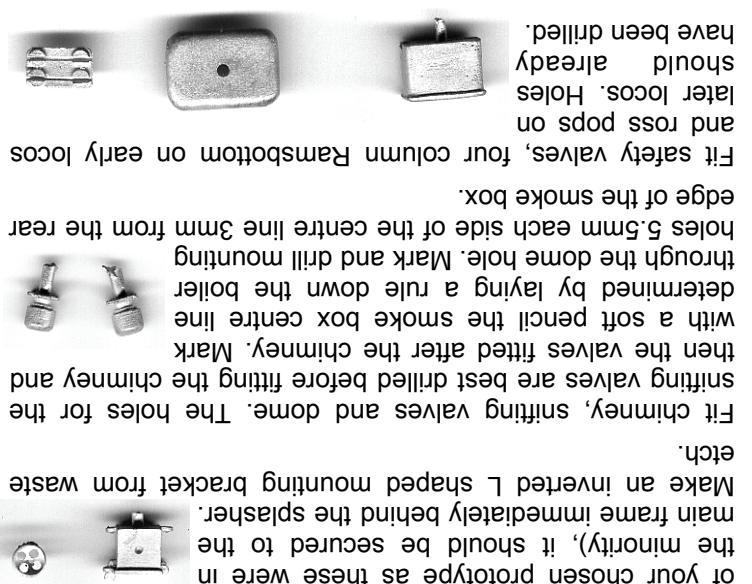
Fit clack pipes. Drill out a shallow hole in the clack valve casting to locate the 1.2mm copper rod. Mount clack valves into boiler and then form sets in copper rod to route it from the valve casting into the hole in the footplate. Low melt solder the rod into the valve and hard solder the other end into the footplate hole.

If your chosen loco has a Wakefield Lubricator (check photos of your chosen prototype as these were in the minority), it should be secured to the main frame immediately behind the splashers.

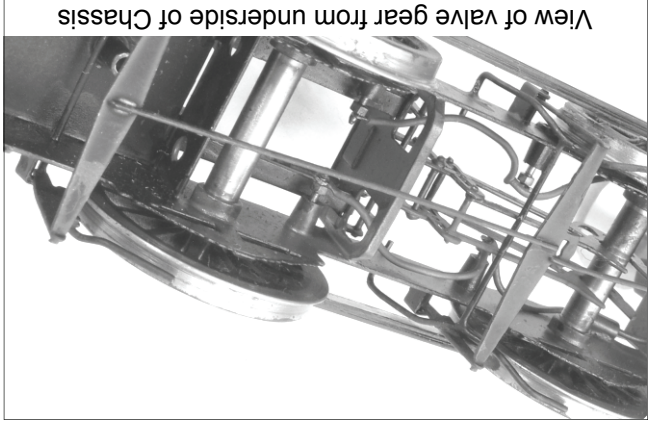
Make an inverted L shaped mounting bracket from waste etch.

Fit chimney, snifting valves and dome. The holes for the snifting valves are best drilled before fitting the chimney and then the valves fitted after the chimney. Mark with a soft pencil the smoke box centre line determined by laying a rule down the boiler through the dome hole. Mark and drill mounting holes 5.5mm each side of the centre line 3mm from the rear edge of the smoke box.

Fit safety valves, four column Ramsbottom on early locos and Ross pops on later locos. Holes should already have been drilled.



Temporarily insert the centre axle. Cut four short lengths of 0.9mm wire about 15mm long, thread one through and secure into the top/end holes of the two eccentric rods (16) so the rods are 6mm apart (a 6mm length of 1/16" tube makes a perfect spacer). Drop the rear ends over the axle to make sure they are level, then insert another wire into the bottom holes, lift from the axle and secure an eccentric rod bracket over the ends of the wires but about a millimetre away from the rods and pointing forward. Take a third piece of wire, thread and secure evenly through the ends of the link carrier (3), now hang a link (18) on each end. Drop the rear ends of the eccentric rods back over the axle and see that the links hang between the rod brackets (17). Then the fourth wire is positioned through one forward hole of one bracket, through the two links and into the other bracket. Make every-thing solid and the axle can be removed but the motion should stay where it is. Want another cup of tea?

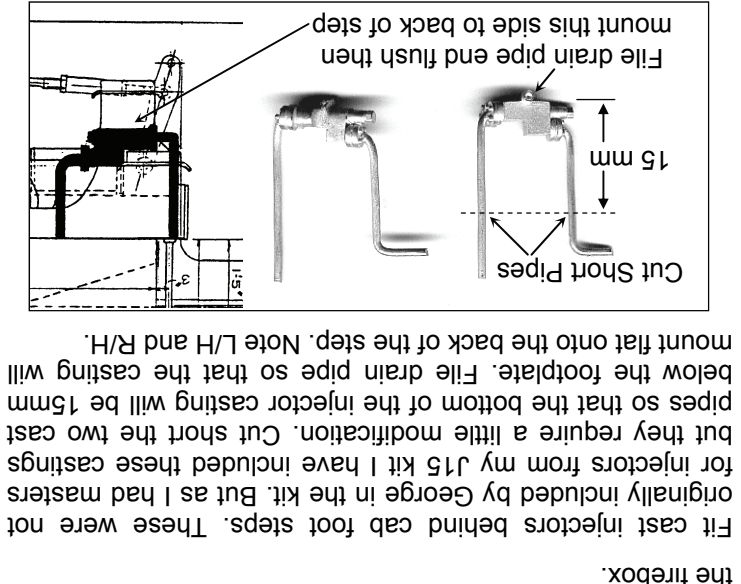


98. Ramsbottom Valve Levers. Laminate these together to form two levers and fit into slots on cast safety valve.

Ross pop safety valves

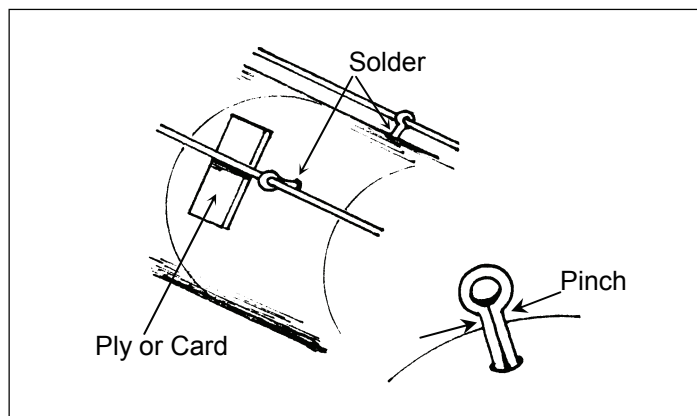
Fit cast wash out plugs into firebox. The original holes for these were a little large and the plugs tended to drop through. I have reduced the diameter of the holes by scraping on the photo tool but these are now a little ragged. Carefully open up the holes by rotating the blunt end of a round (or triangular) file in each hole until the plugs are a tight push fit. The plugs are then fitted (possibly glued) with the rims slightly proud of the firebox.

Fit cast injectors behind cab foot steps. These were not originally included by George in the kit. But as I had masters for injectors from my J15 kit I have included these castings but they require a little modification. Cut short the two cast pipes so that the bottom of the injector casting will be 15mm below the footplate. File drain pipe so that the casting will mount flat onto the back of the step. Note L/H and R/H.



That's more or less the main construction completed and we are down to the detail work and fittings. You can do these in pretty much the order that suits you but where a number of parts are fitted close together I would recommend doing the high temperature brass soldering first and then the fitting of the castings with low melt solder and any parts that you elect to glue should be fitted once all the soldering has been completed and after the model has had a good wash. Keep referring to the drawings and illustrations and photos of your chosen prototype loco as fittings varied between different locos and different time periods.

Handrails. In common with the other kits in my range I have included split pins to support the handrails. These are fairly easy to use and their appearance can give a better representation of the prototype handrail supports than some of the turned brass alternatives. Some of the etched holes that George has provided are a little large and it may be a good idea to close them up with a dab of solder before inserting the split pin.



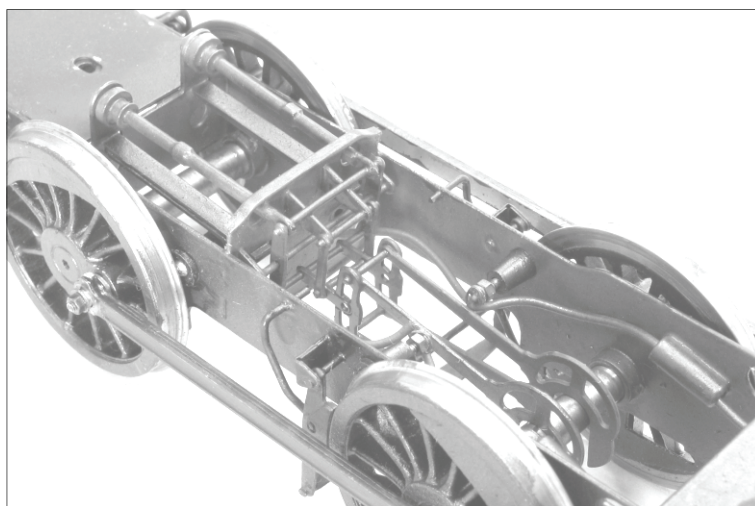
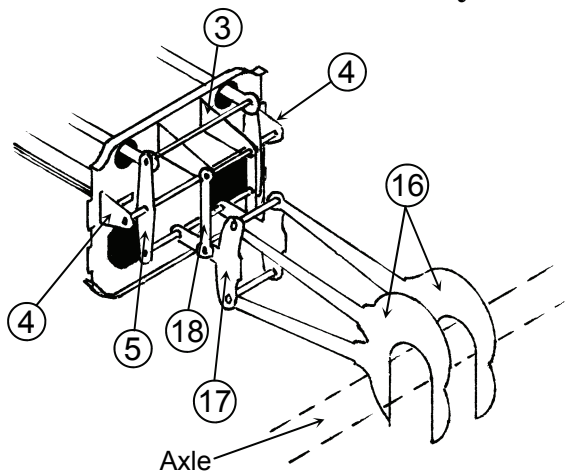
If you would prefer to replace these with turned brass handrail knobs (I cant buy them in for much less than you can buy them direct and to include them tends to raise a kit price disproportionately) then I would recommend the ones produced by Romford. Short Knobs (M7HRK7S), Medium length knobs (M7HRK7M), Long knobs (M7HRK7L). Available from, Markits, P.O. Box 40, Watford, Herts, WD2 5TH, Tel 01923 249711.

Boiler Handrails. Two holes each side need to be drilled in the boiler barrel to correspond with the holes in firebox and smoke box. Hold a rule along the boiler lining up the holes in fire and smoke boxes, draw a pencil line along the boiler. Mark this line at 35 1/2mm from the hole in the firebox and the rear one in the smoke box, drill for split pins to represent the handrail knobs. Now turn to the smoke box front, there needs to be a handrail knob at the top, dead centre. Drill 1 1/2mm from the edge. This should have been already cut in the original etch but George missed it - Sorry!

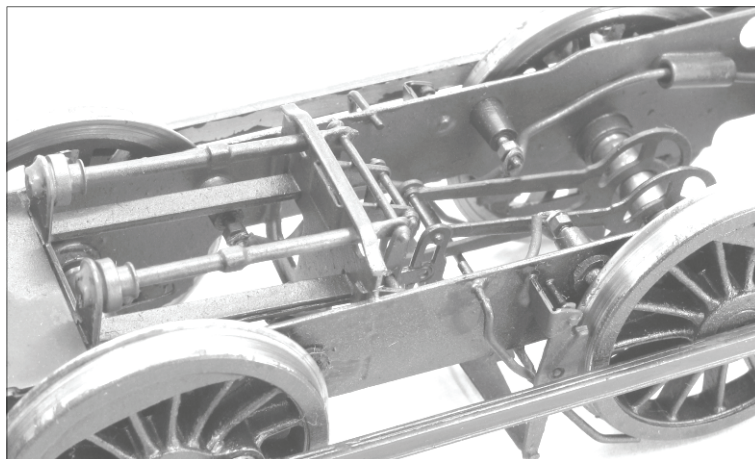
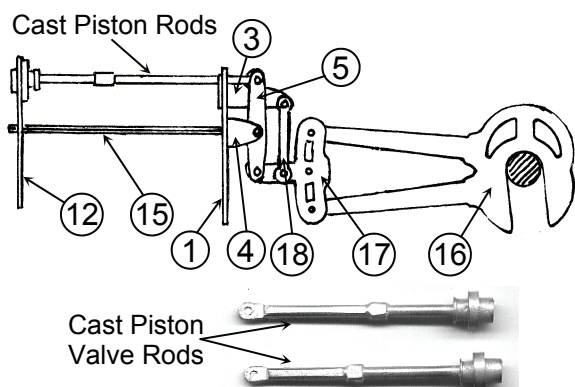
I prefer to make the boiler handrail in two halves for R/H and L/H and join them at the handrail knob on the top of the smoke box front. In this way I find it easier to make the curved front sections symmetrical. If not already fitted there are also handrails on the cab sides, cab opening and front cylinder cover.

The vacuum brake ejector pipe is made from 1.6mm brass rod and one end fits into a hole drilled in the cast firebox front and the other end into the hole in the smoke box or alternatively into the cast elbow. A set needs to be formed into the brass rod to step it up from boiler to the smoke box. Spot solder the brass rod at the boiler bands.

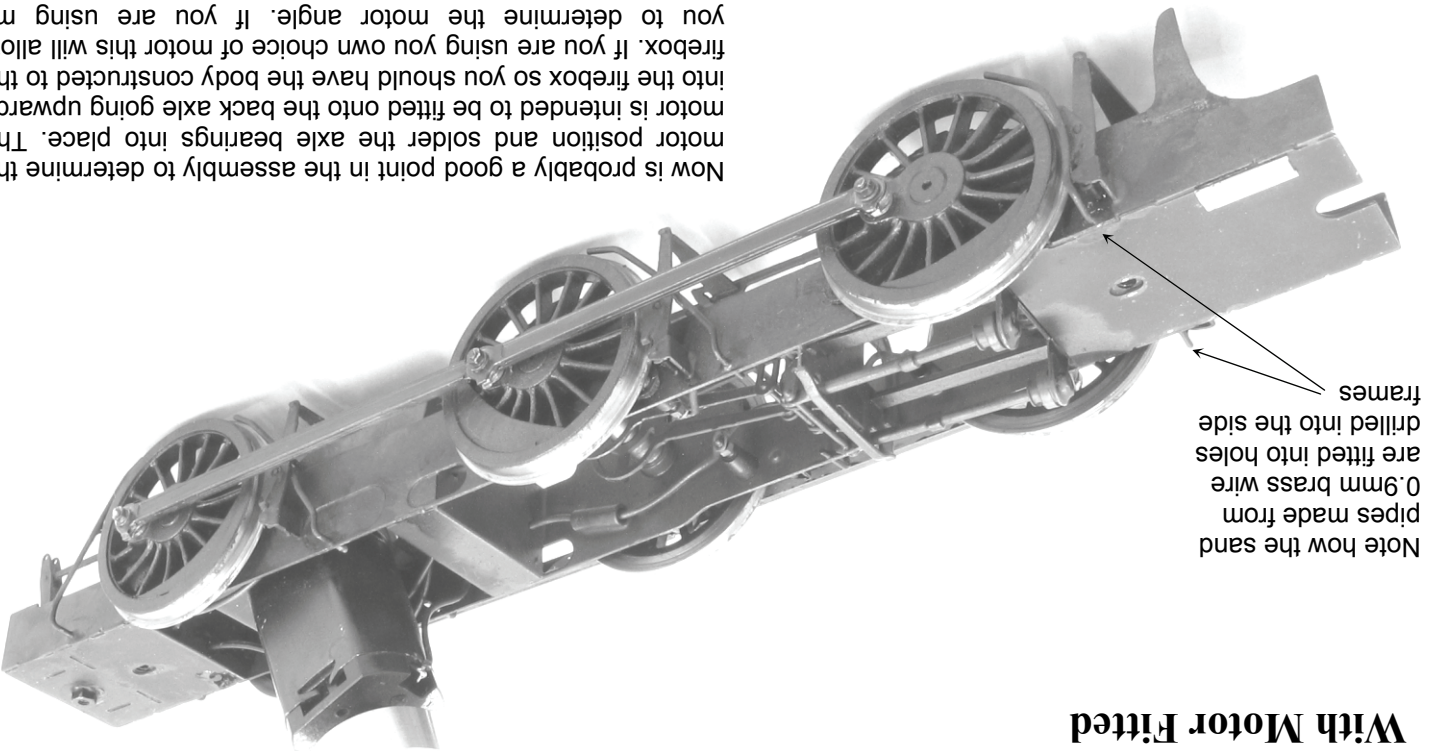
Valve Gear Assembly



Side Elevation of Valve Gear



Top Views of Chassis With Motor Fitted



Now is probably a good point in the assembly to determine the motor's position and solder the axle bearings into place. The motor is intended to be fitted onto the back axle going upwards into the firebox so you should have the body constructed to the firebox. If you are using your own choice of motor this will allow you to determine the motor angle. If you are using my recommended 1833 and motor mounting plate full installation instructions are included with the motor. Solder the bearings into place using a lightly oiled axle to help align the bearings. Move the back bearings out on the axle to reduce side play on the gear wheel and solder the centre and front axles hard against the chassis to give maximum side play.

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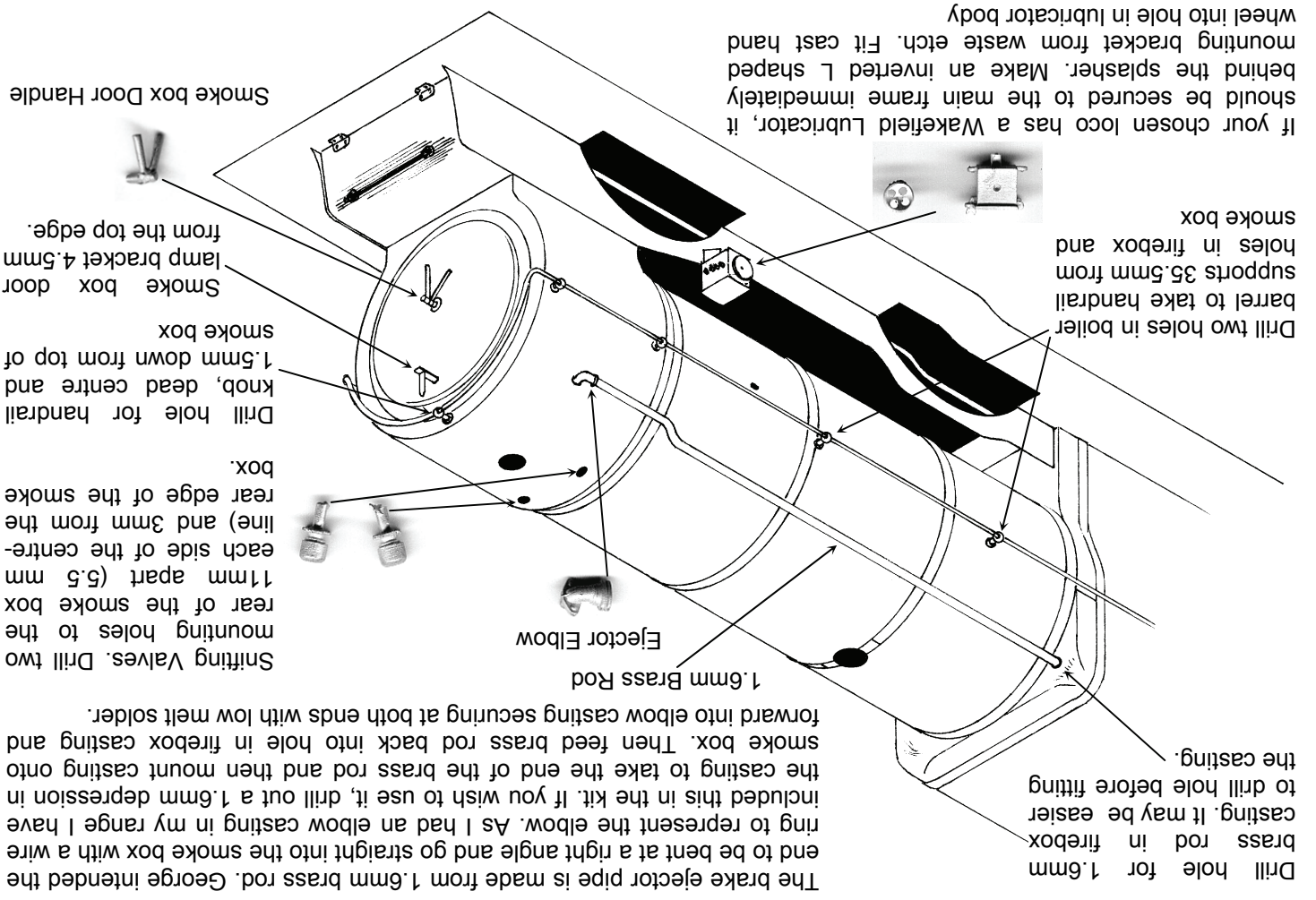
The brake ejector pipe is made from 1.6mm brass rod. George intended the end to be bent at a right angle and go straight into the smoke box with a wire ring to represent the elbow. As I had an elbow casting in my range I have included this in the kit. If you wish to use it, drill out a 1.6mm depression in the casting to take the end of the brass rod and then mount casting onto the smoke box. Then feed brass rod back into hole in firebox casting and forward into elbow casting securing at both ends with low melt solder.

Snifting Valves. Drill two mounting holes to the rear of the smoke box 11mm apart (5.5 mm each side of the centre-line) and 3mm from the rear edge of the smoke box.

Drill hole for handrail knob, dead centre and 1.5mm down from top of smoke box

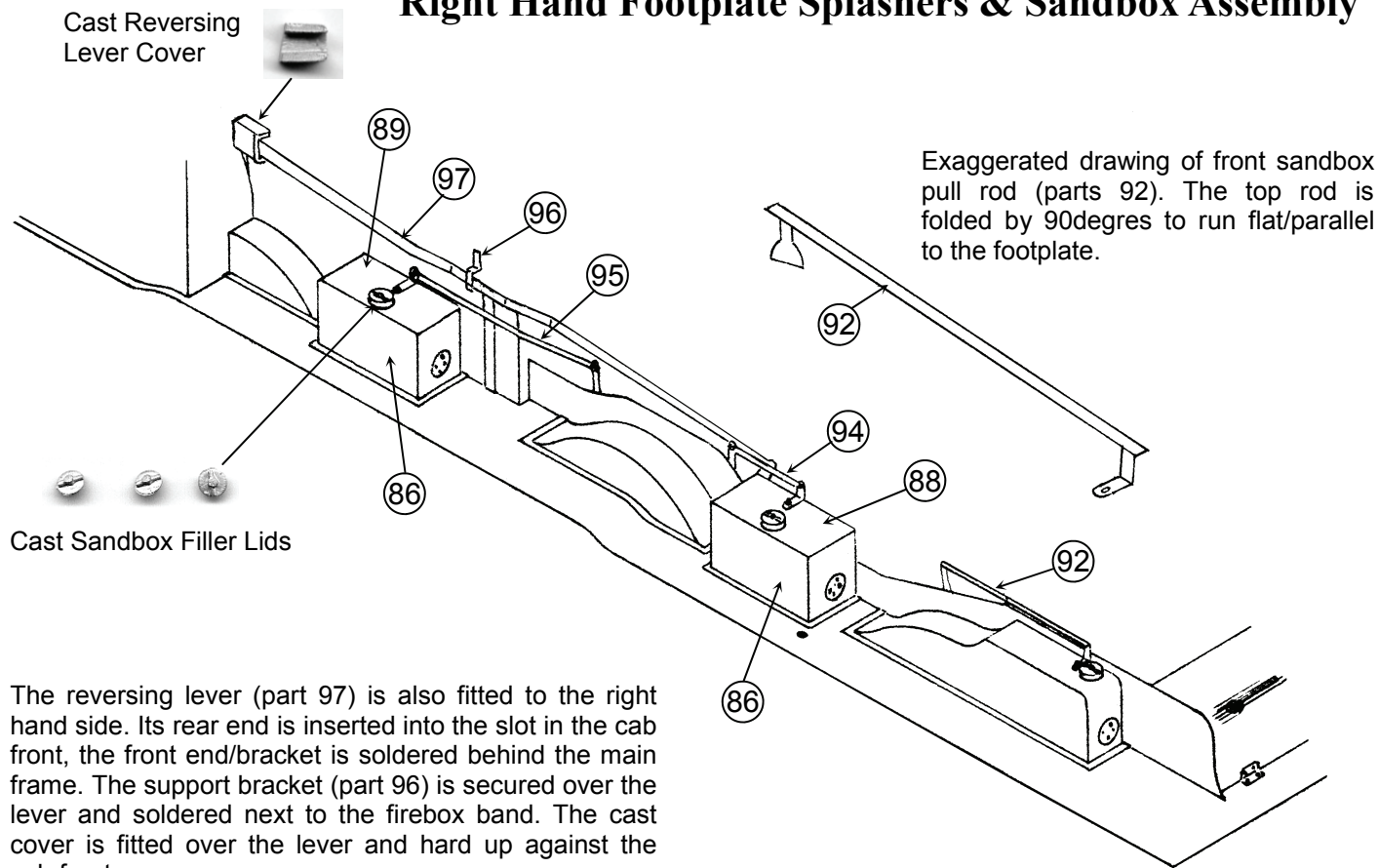
Smoke box door lamp bracket 4.5mm from the top edge.

Smoke box Door Handle



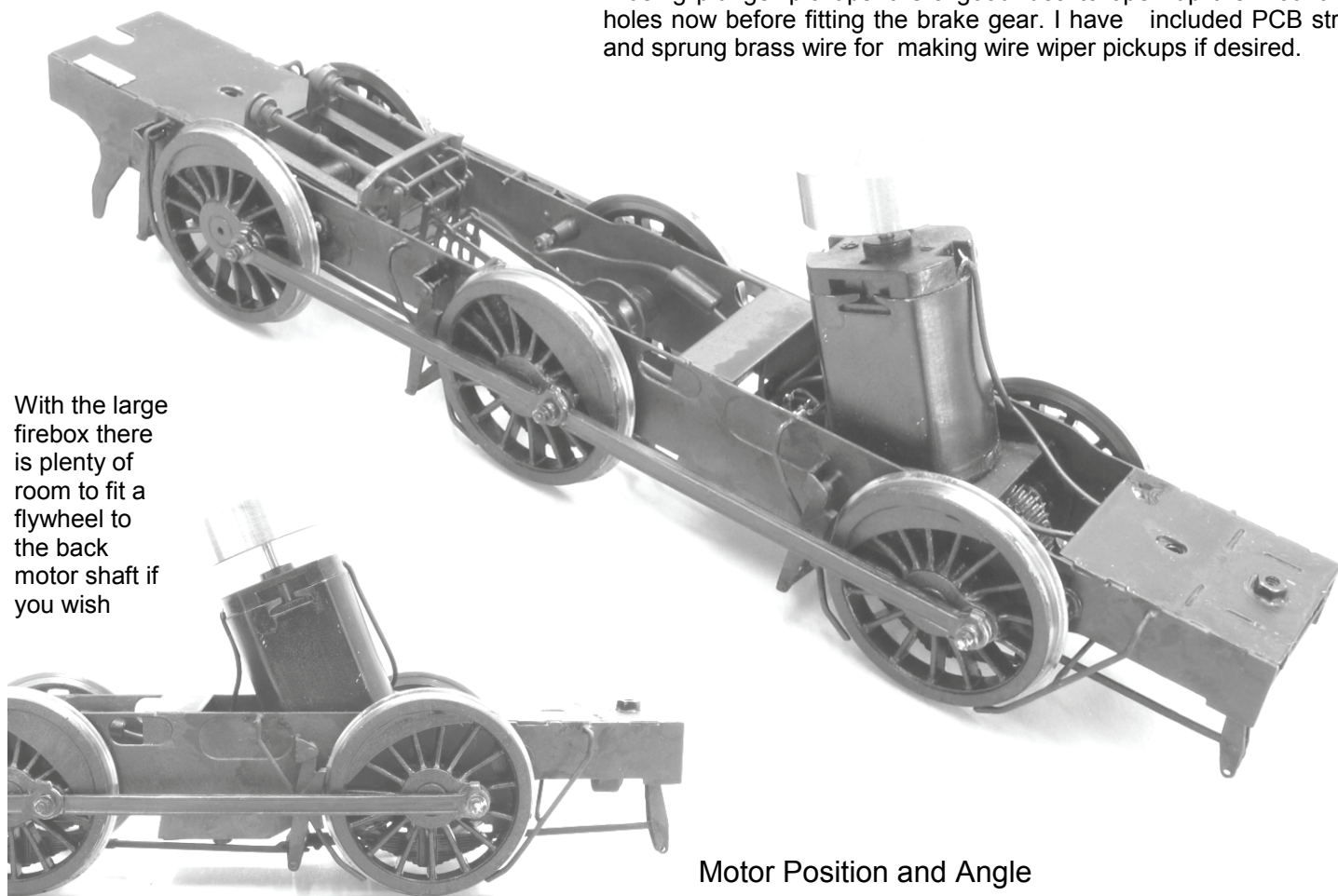
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Right Hand Footplate Splashers & Sandbox Assembly



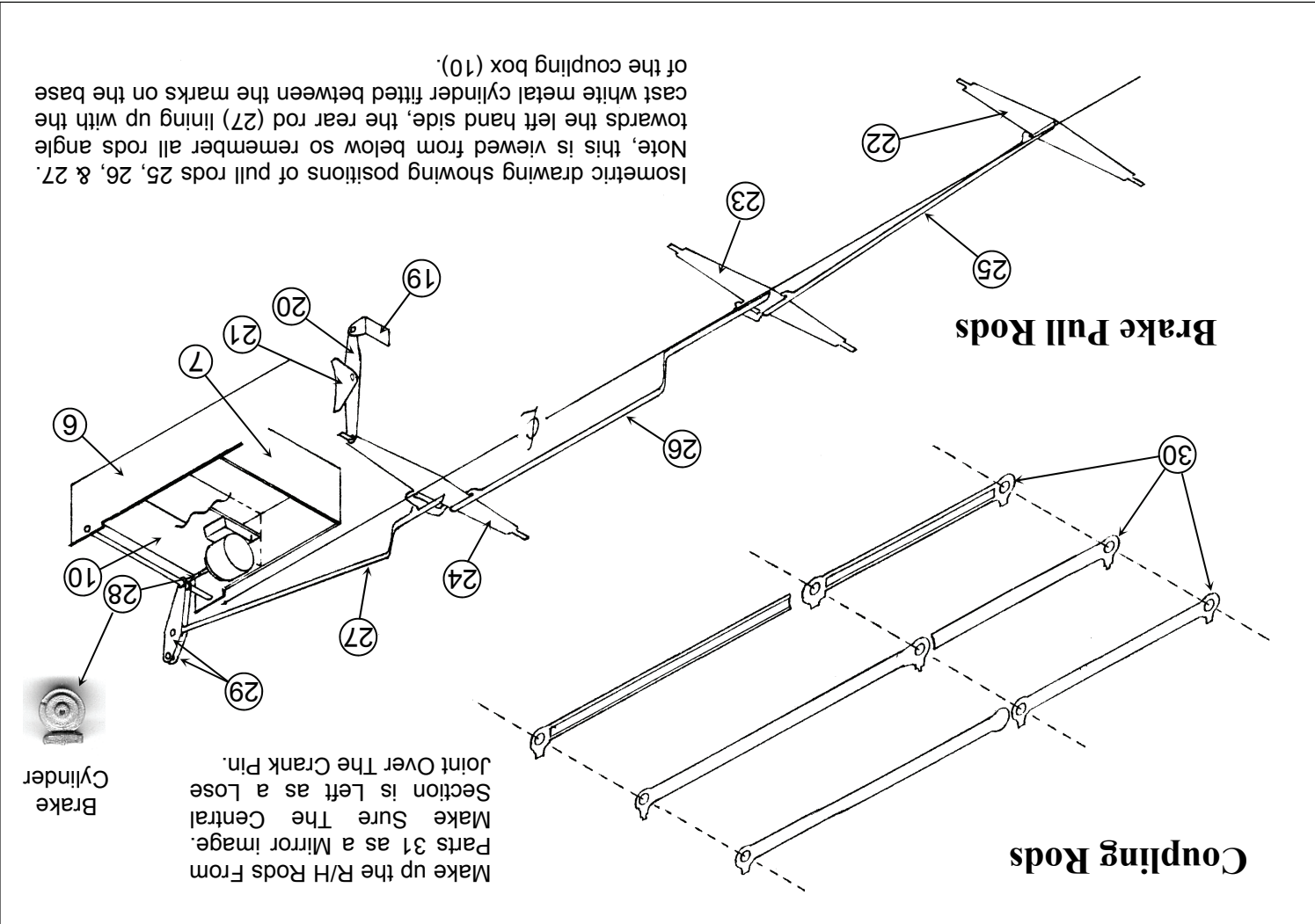
The reversing lever (part 97) is also fitted to the right hand side. Its rear end is inserted into the slot in the cab front, the front end/bracket is soldered behind the main frame. The support bracket (part 96) is secured over the lever and soldered next to the firebox band. The cast cover is fitted over the lever and hard up against the cab front.

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If using plunger pickups it is a good idea to open up the mounting holes now before fitting the brake gear. I have included PCB strip and sprung brass wire for making wire wiper pickups if desired.

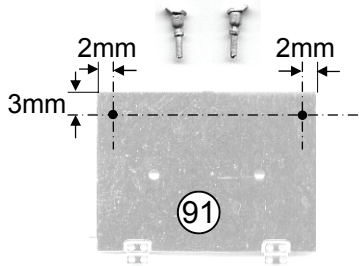
PAGE 9



75. Main Frames. Secure into the footplate from the firebox forward and each side of the smoke box.
76. Rear Splasher Sides. Note left and right - half etched lines to show on outside face.
77. Rear Splasher Tops. Curve to fit around sides (76), plain end to rear. Fit into footplate up to cab.
78. Rear Splasher Surrounds. Fit around the rear splasher to represent the angle.
79. Centre Splasher Sides.
80. Centre Splasher Tops. Curve and fit to splasher sides then into footplate, up to mainframe side.
81. Front Splasher Sides.
82. Front Splasher Tops. Note left and right - the smaller hole is closer to one edge, this edge fits toward the main frame. Curve to shape using the side as a template and solder to the top edge of the side. Fit into the footplate up to the main frames.
83. Sandbox Access Handhold Cover Plates. Remove two only and solder one into each of the half etched circles at the front of the front splashers.
84. Centre Splasher Surrounds. Shape and solder around centre splashers.
85. Front Splasher Surrounds. Solder around front splashers.
86. Right Hand Sandboxes. Solder one cover plate (83) into each circle. Bend to form a box.
87. Left Hand Sandboxes. Solder cover plates as 86. Bend to form a box.
88. Leading Sandbox Lids. Choose two sandboxes as the leading ones and solder the lids to them, the smaller hole to the inside. Secure into the footplate.
89. Trailing Sandbox Lids. Fit to the other two boxes and secure into footplate.
90. Sandbox Surrounds. Fit to footplate around the sandboxes.
91. Cylinder Cover. Curve to fit between frames in front of smoke box (drill holes for lubricator cups first) and carefully bend hinges up and then secure between frames. Fit the handrail/grab handle made from split pins and 0.7mm brass wire.
92. Front Sandbox Pull Rods. Bend at lines (see drawing) and secure to marks behind mainframe, use 0.7mm brass wire to line up the cranks and secure into sandbox top.
93. Left Hand Side Sandbox Pull Rod. Bend up only the sections at the sandboxes although slight curving will be needed to get around the firebox. Insert the rear end into the slot in the spectacle plate, secure at the sandboxes with wire and solder the two brackets behind the main frames.
94. Right Hand Side Front S/Box Rod. Bend up at sandbox and secure with wire, solder bracket to mark behind mainframe.
95. Right Side Rear S/Box Rod. Secure at rear sandbox with wire and solder behind frame. Again the top of the rod is to be folded to run flat/parallel to the footplate.
96. Reversing Lever Bracket. Bend to "Z" shape but with right angles.
97. Reversing Lever. Bend slightly at the half etched lines to fit from cab around firebox. Note two of the half etched lines are reversed. When happy with the fit, a fillet of solder in these lines will strengthen the bends. Slide the rear end into the cab and secure the front bracket at the mark behind the frame, just behind the front sandbox. Now take the lever bracket (96), fit over the lever at the forward bend of the rear pair and solder to the firebox.

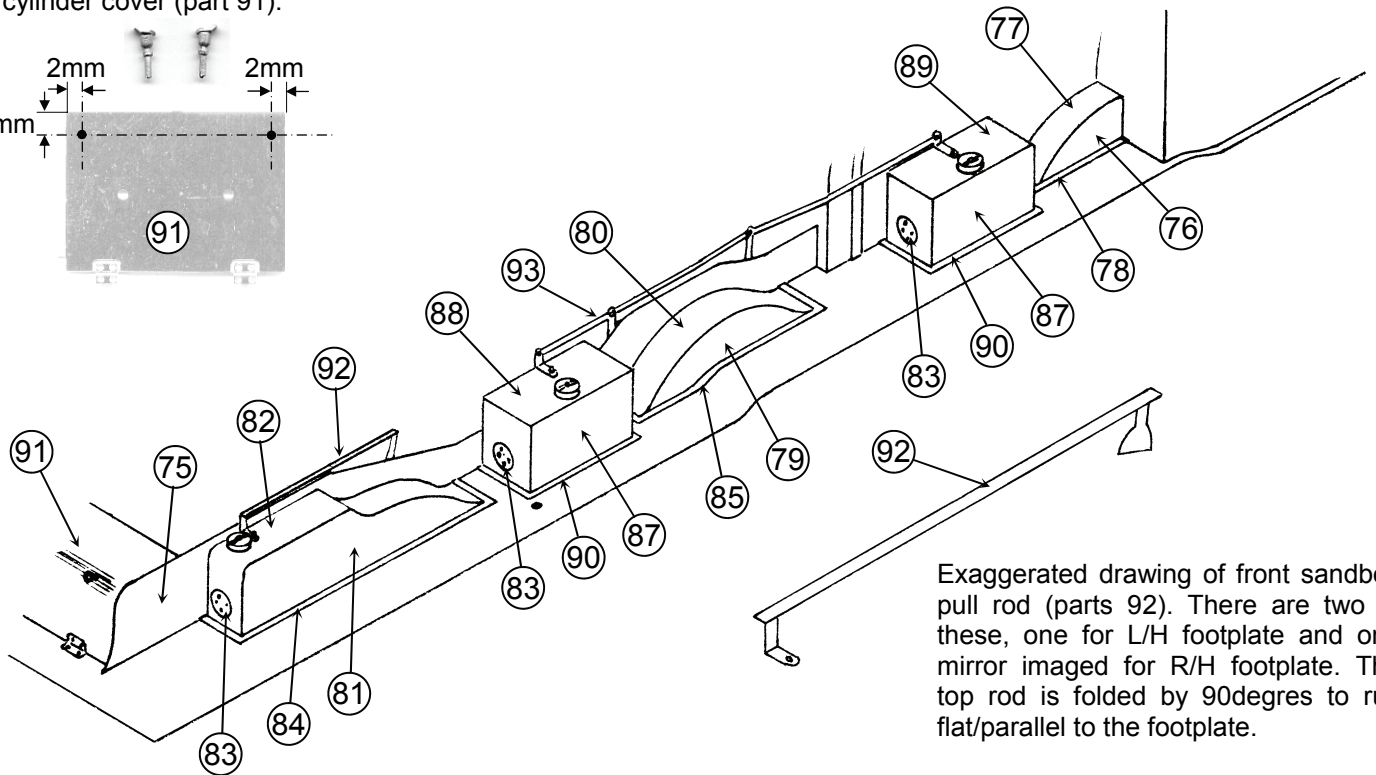
CUP LUBRICATORS

Although not on the original drawing most photographs show cup lubricators fitted to the cylinder cover below the smoke box door. If fitting these it is a good idea to drill the mounting holes before forming and fitting the cylinder cover (part 91).



Footplate Splashers & Sandbox Assembly

This drawing shows the left hand side of the footplate, in particular, the sanding gear pull rods. The ends of the pull rods are located into the sand box tops with lengths of 0.7mm brass wire.



Exaggerated drawing of front sandbox pull rod (parts 92). There are two of these, one for L/H footplate and one mirror imaged for R/H footplate. The top rod is folded by 90degrees to run flat/parallel to the footplate.

19. Brake Carriers. Bend to right angles and insert tabs into chassis sides at slots

20. Brake Hangers.

21. Brake Blocks. Solder to the hangers making sure they are left and right handed.

Cut three lengths of 0.9mm wire, 2" long, thread a brake carrier then a hanger (long end down) and then into the chassis, through the opposite side and opposing brake hanger. Secure the wire but not the brakes. Now fit the other four brakes likewise. N.B. it is essential to solder the rear brake wire at the inside of the chassis frame and the carrier, this is because this wire will need to be cut away for the motor.

Temporarily fit wheels to all axles.

22. Forward Brake Crossbeam. Secure between the hangers at the lower holes, make sure it is flat and parallel to the ground. You can now determine where you want the brakes in relation to the wheel flanges. This will, of course, set the width at the top.

23. Centre Brake Crossbeam. Fit as above with connecting plate towards the left hand side and pointing back.

24. Rear Brake Crossbeam. Fit as the other two.

25. Forward Pull Rod. Fit centrally at front crossbeam but towards the left at the centre crossbeam.

26. Centre Pull Rod. This needs to be bent into an elongated "Z" (see sketch) and fit as shown.

Before going further, find the cast w/m brake cylinder and drill the hole to about 1mm. Secure at the rear end of the chassis, between the two marks on the drawbar box base (10), hole pointing back.

27. Rear Pull Rod. Again requires bending but this time to

avoid crown wheel on motor.

28. Cylinder Piston Rod. Bend double and secure into hole in front of cylinder leaving hole to rear.

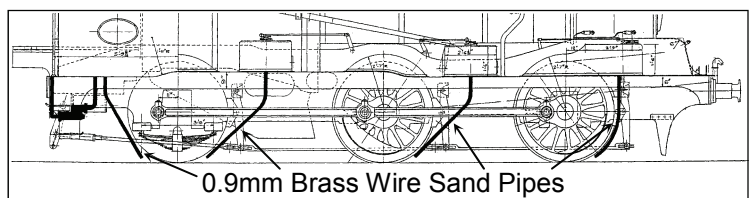
29. Cylinder Links. Cut a piece of 1.2mm wire about 2" long, thread through the hole at the rear end of the chassis, hang one link (short end at top), thread through the hole in the piston rod then hang the other link and on through second frame, secure the wire at the frames. Now thread another piece of wire through the centre holes of the links but taking the rear end of the pull rod between. Hold together and secure.

30. Left Hand Coupling Rods. Laminate together so they are jointed at the centre boss.

31. Right Hand Coupling Rods. Laminate as above.

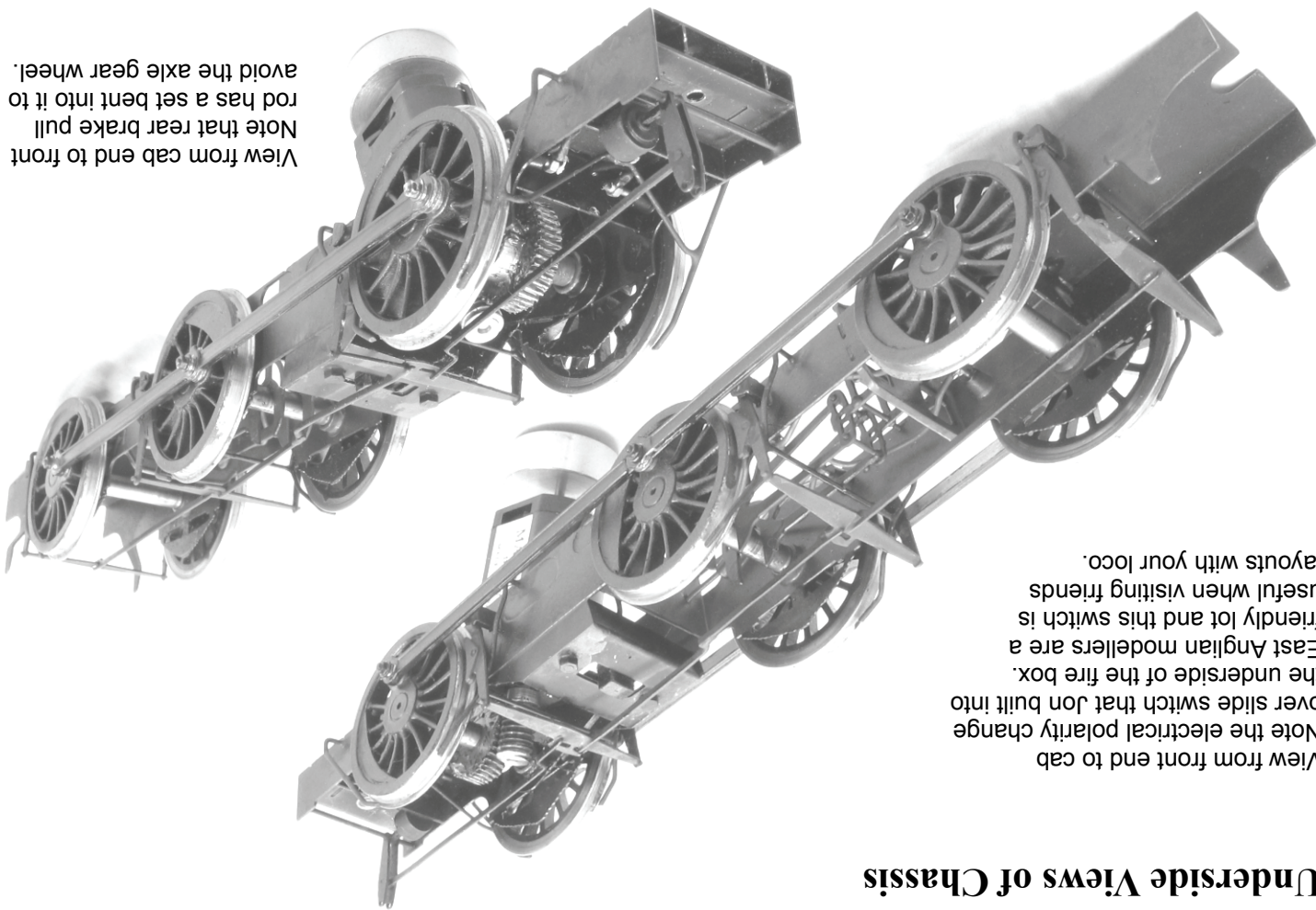
One of the things that George omitted from the kit is the wheel balance weights. If desired these can be made from some of the waste on the brass frets or from thin plasticard using the main drawing as a template to help you cut them out.

Fit sand pipes made from 0.9mm brass wire. These should come down from the footplate but this would make the chassis difficult to remove. I would suggest bending the top of the sand pipes by 90 degrees and fixing into holes drilled into the tops of the side frames. Once the body is on the valances should hide this subterfuge.



Underside Views of Chassis

View from front end to cab
 Note the electrical polarity change over slide switch that Jon built into the underside of the fire box. East Anglian modellers are a friendly lot and this switch is useful when visiting friends layouts with your loco.



View from cab end to front
 Note that rear brake pull rod has a set bent into it to avoid the axle gear wheel.

70. Outer Roof. You will find this is half etched on one side, the plain side represents a wooden roof, the other side, with curved side lines and central etching, represents the steel roof. Choose your roof and curve accordingly. Work with fingers and thumb over a piece of $\frac{3}{4}$ " tube. It may be helpful to slightly anneal the sides to aid finishing off the curve.

71. Inner Roof. Curve to fit inside the outer roof, central groove outermost, but note this will fit inside the cab walls.

Solder to the outer roof dead centre, the holes are a soldering aid. For a Wooden Roof. - Simply solder a length of 0.7mm wire 2.5mm from each side to represent the rainstrips. For a Steel Roof. - This requires curved rainstrips, cut three sided half etched lines are at the rear of the roof.

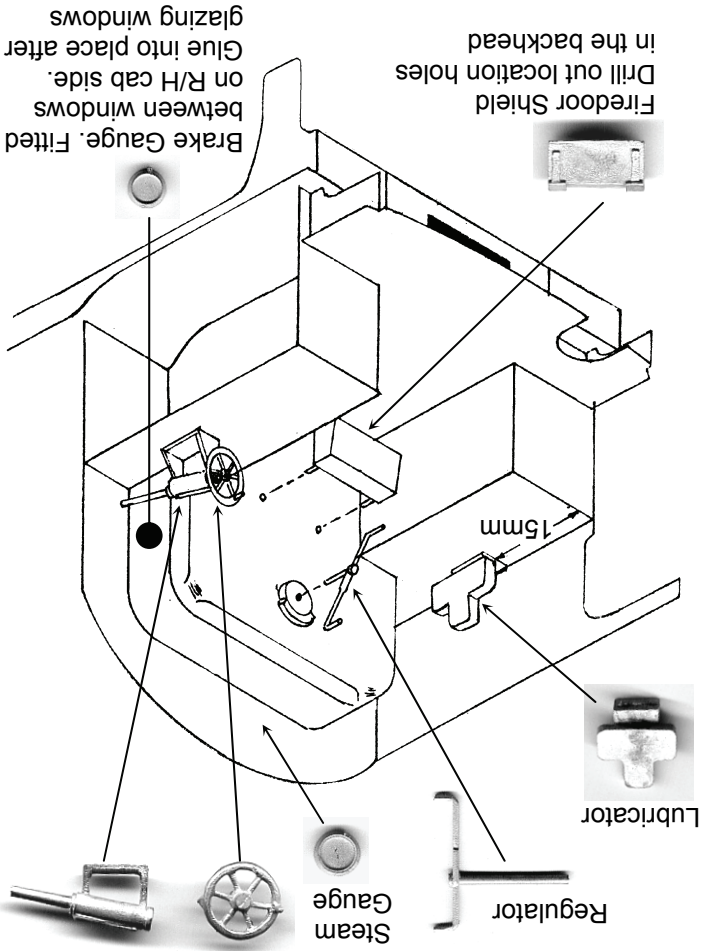
72. Roof Angles. Solder one into the groove in the underside and the other to the rear of the roof up to the back edge of 70.

73. Lifting Plate. Steel Roof Only. Solder between the lines at the rear of the roof, the end minus rivets to the extreme edge.

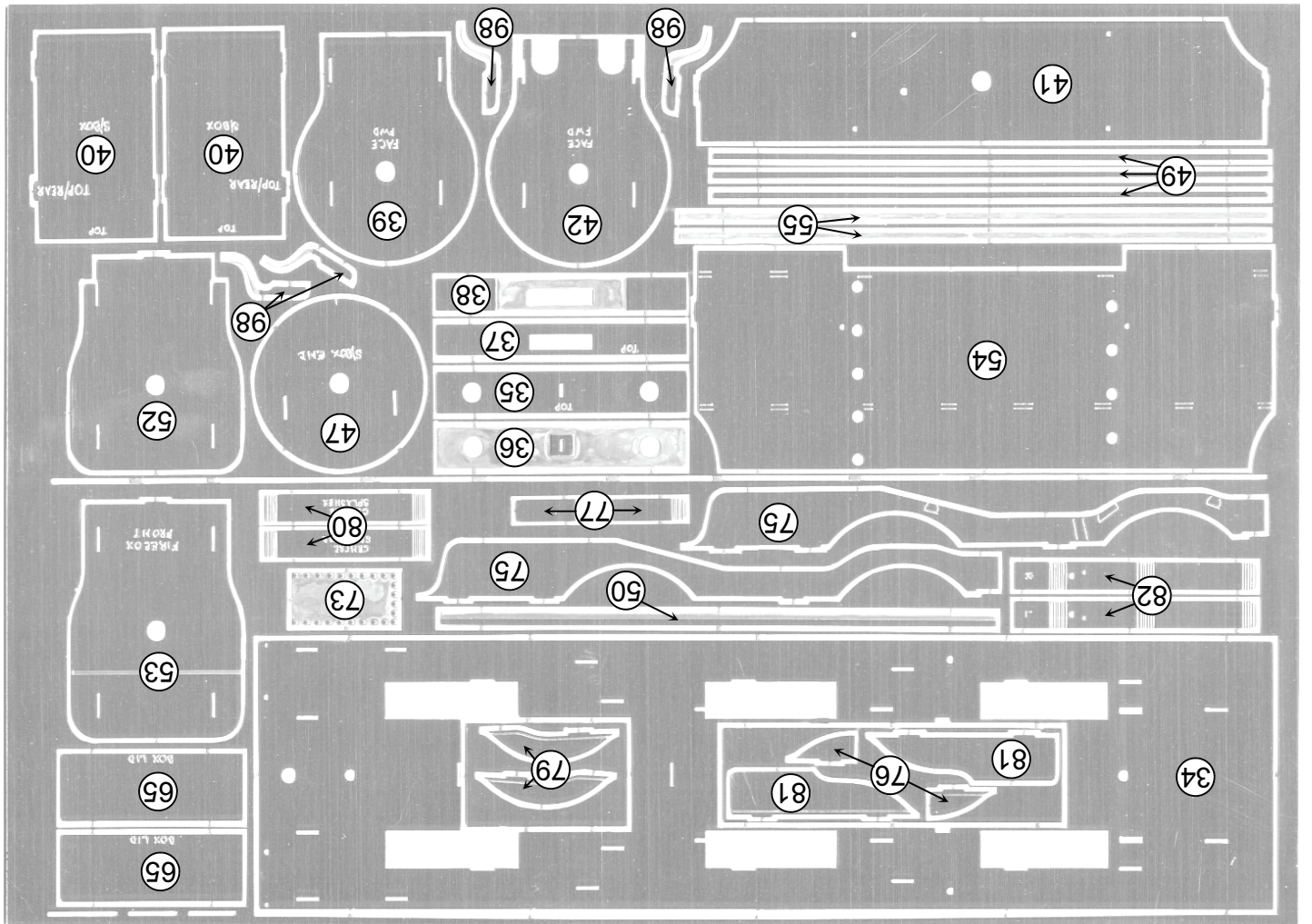
74. Air Vent. Steel Roof Only. Solder between the other

two lines runners pointing back. Fitting the cab roof now will give strength to a vulnerable area but will restrict access to the cab interior. I would suggest fitting reverser (fitted so that the back shaft aligns with the reversing rod slot in the cab front/spectacle plate), lubricator casting (the back of its stand against the cab side) and the steam pressure gauge (fitted to the front spectacle plate, just to the right of the left hand window). Then make up the backhead and check that it will fit easily before placing to one side to be glued into place after painting. Although you may wish to paint all fittings separately and glue into place. Then solder cab roof into place.

Cab Fittings

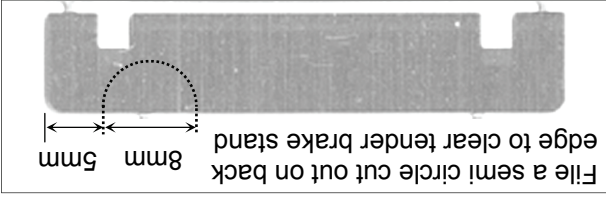


LNCR J20 Brass Etched Parts Identification



LNCR CLASS J20, Cab Assembly

64. Fall Plate (this will require modification). Curve slightly along its length. Solder a piece of 0.7mm wire along its front edge so it bridges the two cut outs, fit split pins over the wire at these points and insert the footplate at the two holes close to the rear edge.



65. Box Lids. Secure onto the cab boxes.

66. Floor (this is too wide to fit between the cab boxes and requires modification). Snap off sides and dress off any of the remaining fold line. File the bottom front edges of these sides to give clearance for wheels and then solder to cab boxes to support the floor. You can then reduce the width of the cab floor until it will slide between the cab boxes and sit down onto the snapped off sides.

67. Rear Backhead Extension Plate.
68. Backhead Extension Wrapper. Solder around the rear plate (67).
69. Front Extension Plate. Solder into the front edge of the wrapper. Fit the completed extension into the cab between the boxes and onto the floor, make sure it is up to the spectacle plate.

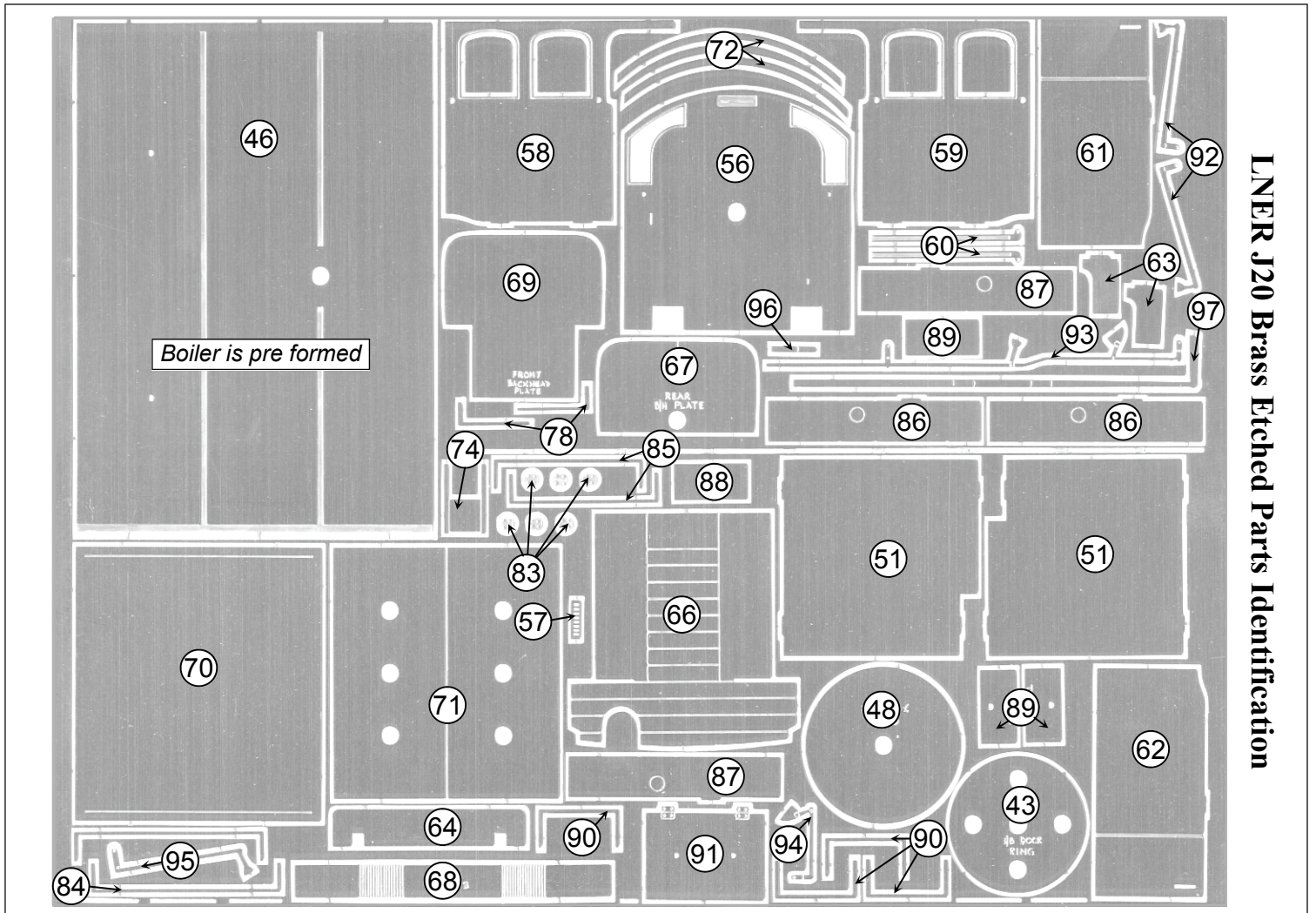
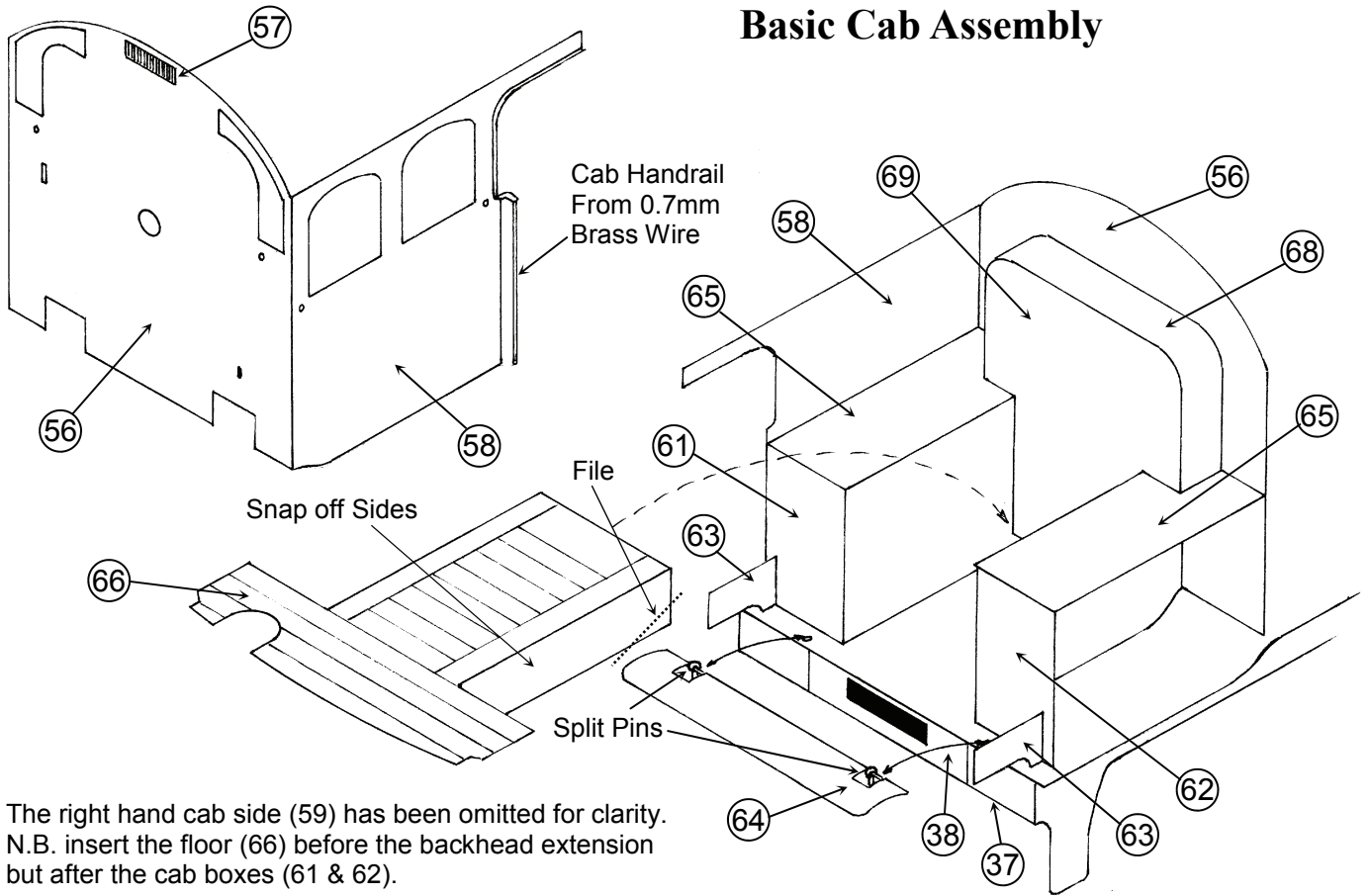
56. Cab Spectacle Plate.
57. Cab Front Vent. Secure into the half etched area in the spectacle plate (56).

58. L.H. Cab Side Plate. Insert split pins and fit 0.7mm handrail.

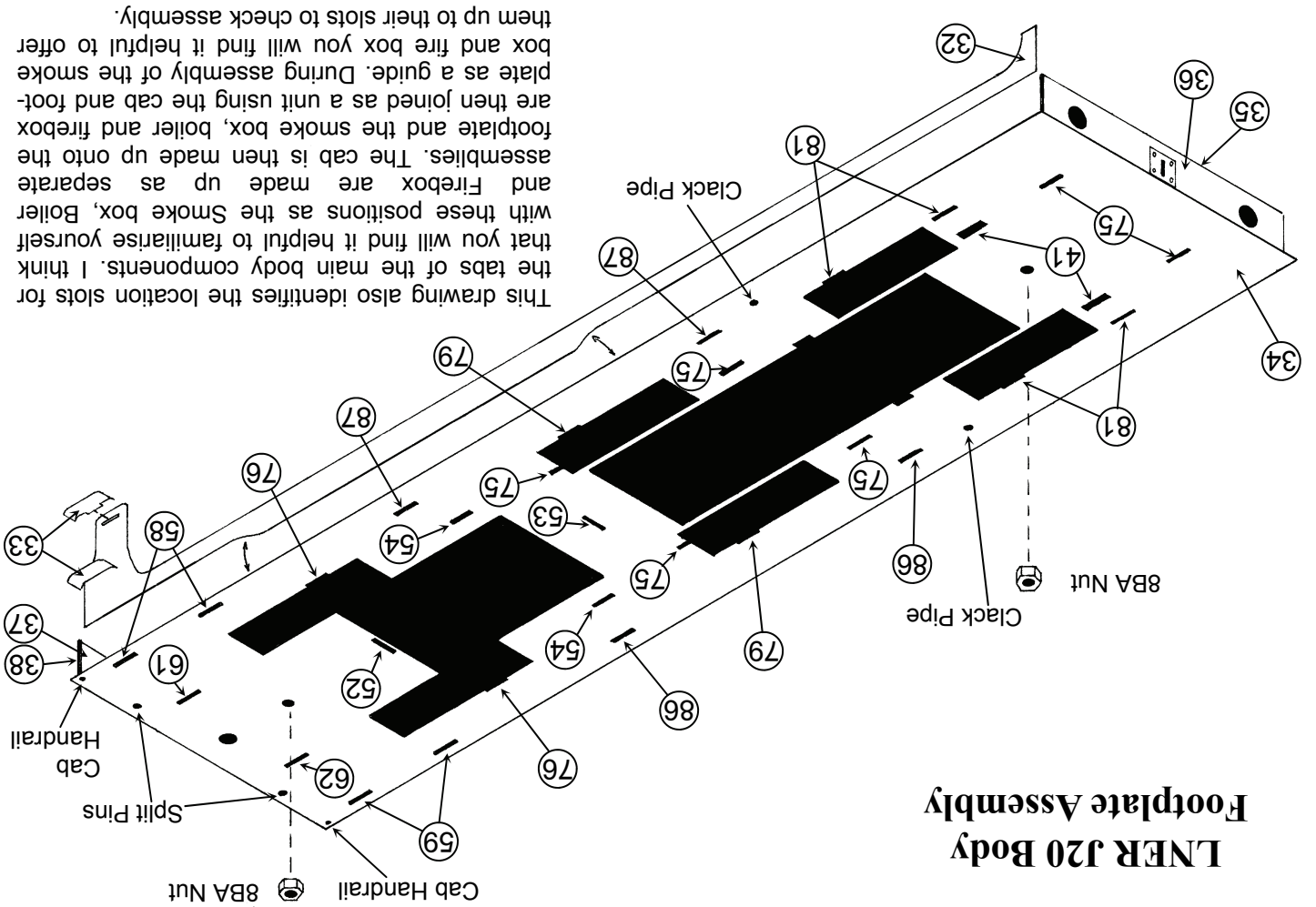
59. R.H. Cab Side Plate. Insert split pins and fit 0.7mm handrail. Then using the footplate slots as guides solder the spectacle plate between the two sides, be sure top and bottom corners are all level and the sides are at right angles to the front plate. Now is a good point to take all boiler sections and insert into their appropriate slots in the footplate, see that the cab front sits correctly on the footplate, boiler is central to smoke box and boiler rear is level with the firebox (allowing for the third boiler band) and they all meet closely, make any adjustments if necessary and make the whole solid. There is a central hole in all sections that a piece of tube or drill shanks will pass through and this may be helpful in centering the sections. You can now fit the third boiler band (49) between boiler and firebox, just make sure it is level at the rear edge/top, then the front boiler band (50) between smoke box and boiler. This may be a suitable point to return to chassis construction.

60. Cab Edging. Note these are left & right, the foot will point outward. Bend them into the rear edge of the cab, line through the middle and the foot exactly over the corner hole in the footplate. Now fit a handrail (0.7mm wire) from the foot into the corner of the footplate.
61. L.H. Cab Box. Bend to right angle at line.
62. R.H. Cab Box. Bend to right angle at line.
63. Platform Brackets. Fit one into each slot of the cab

Basic Cab Assembly

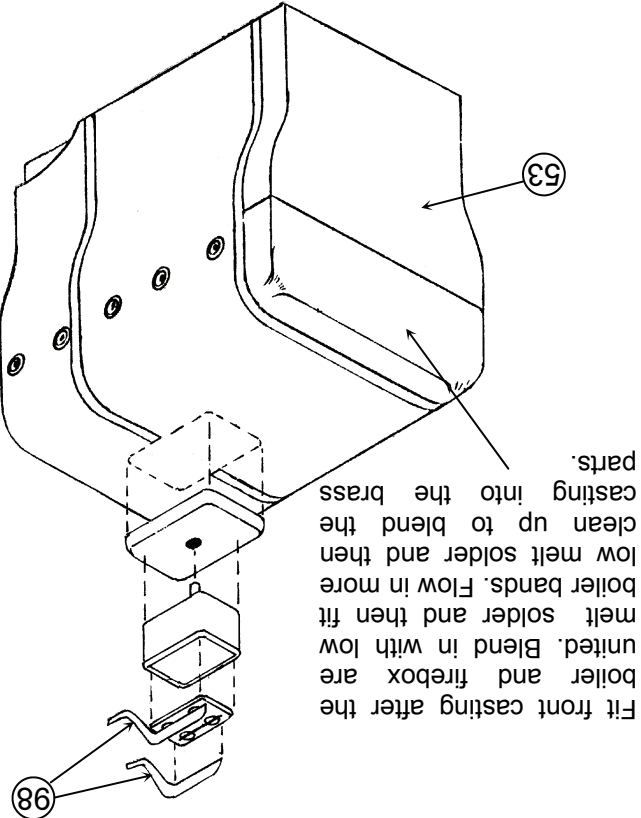


LNER J20 Body Footplate Assembly



This drawing also identifies the location slots for the tabs of the main body components. I think that you will find it helpful to familiarise yourself with these positions as the Smoke box, Boiler and Firebox are made up as separate assemblies. The cab is then made up onto the footplate and the smoke box, boiler and firebox are then joined as a unit using the cab and foot-plate as a guide. During assembly of the smoke box and fire box you will find it helpful to offer them up to their slots to check assembly.

Four Column Ramsbottom Safety Valve

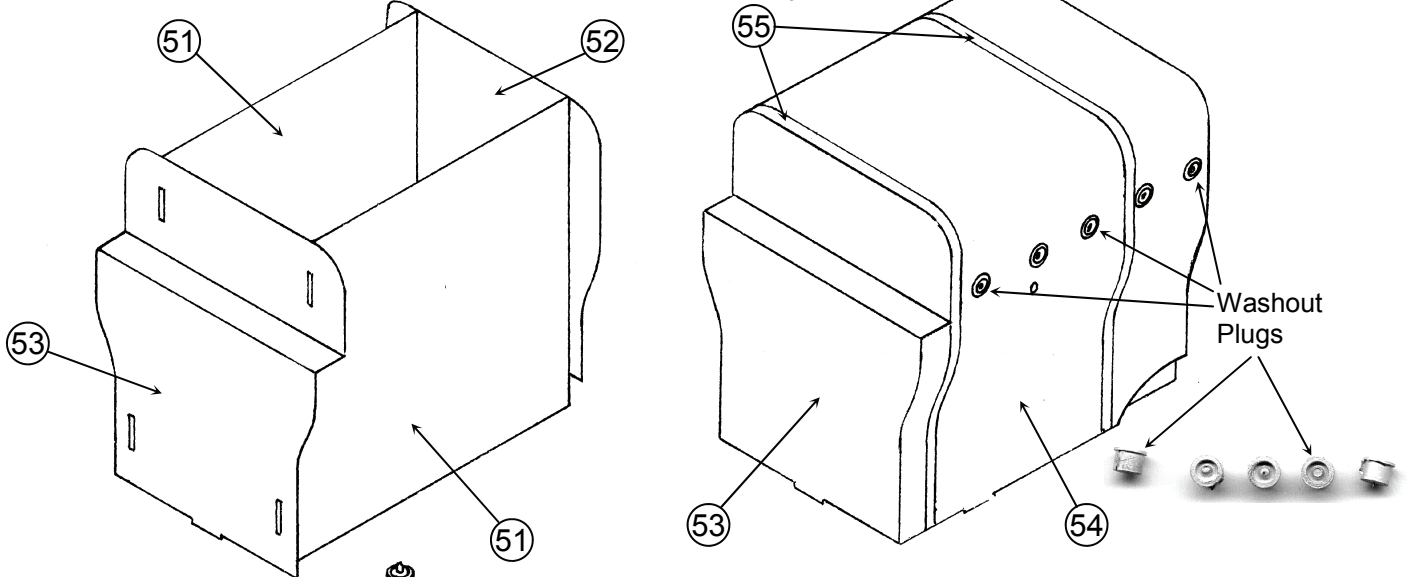


Fit front casting after the boiler and firebox are united. Blend in with low melt solder and then fit boiler bands. Flow in more low melt solder and then clean up to blend the casting into the brass parts.

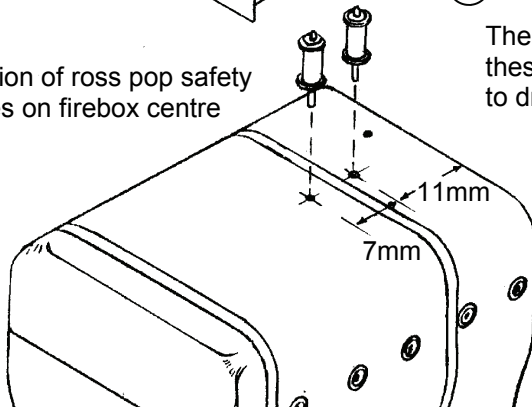
Ramsbottom Safety valve castings

51. Firebox Spacers.
52. Firebox Rear Former.
53. Firebox Front Former. Bend at lines to "Z" shape but with right angles.
54. Firebox Wrapper. The firebox is made up in the same way as the smoke box but this time you may do better to form the wrapper first (note the etched centreline marks on the underside of the wrapper and formers, **all forming should be from the centreline outwards**, don't start from one edge) this should not require annealing because of the half etched lines but you may feel some is required at the "waist", if so try to anneal only that area, i.e. avoid the etched lines, a Micro Torch makes this easier as it concentrates the heat in a smaller area. When shaping some care is needed at the front where it fits the angle to make the ends level. Secure the spacers (51) at the front, again check they are parallel, this time though fit the other former (52). It is essential these are square and parallel, try them in the footplate slots. If you are happy fit the wrapper. During his building of the kit Jon found that the firebox wrapper was slightly short (about 1mm at the bottom of each side). I have tried scraping the photo tool to try and lengthen it but this is a bit of an imprecise and desperate measure. You may find that the bottom edges are a little ragged and out of square and you may have to dress back with a flat file so that the firebox sits down square onto the footplate. We have also lost the tabs that fit into the slots on the footplate.
55. Firebox Bands. Solder into the grooves in the firebox. Note that the front band is best fitted after uniting boiler and firebox and fitting firebox casting. This will help to hide the casting to brass joint.

Firebox Assembly

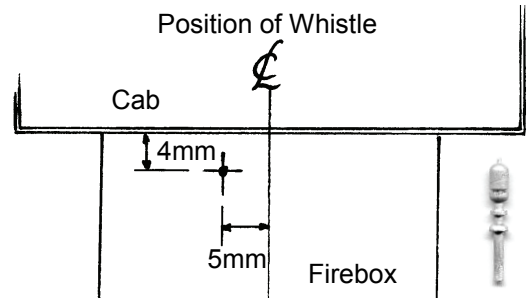


Position of ross pop safety valves on firebox centre line



The drawings below show the positioning of firebox castings. In practice these should be fitted after the main construction but now is a good time to drill the location holes

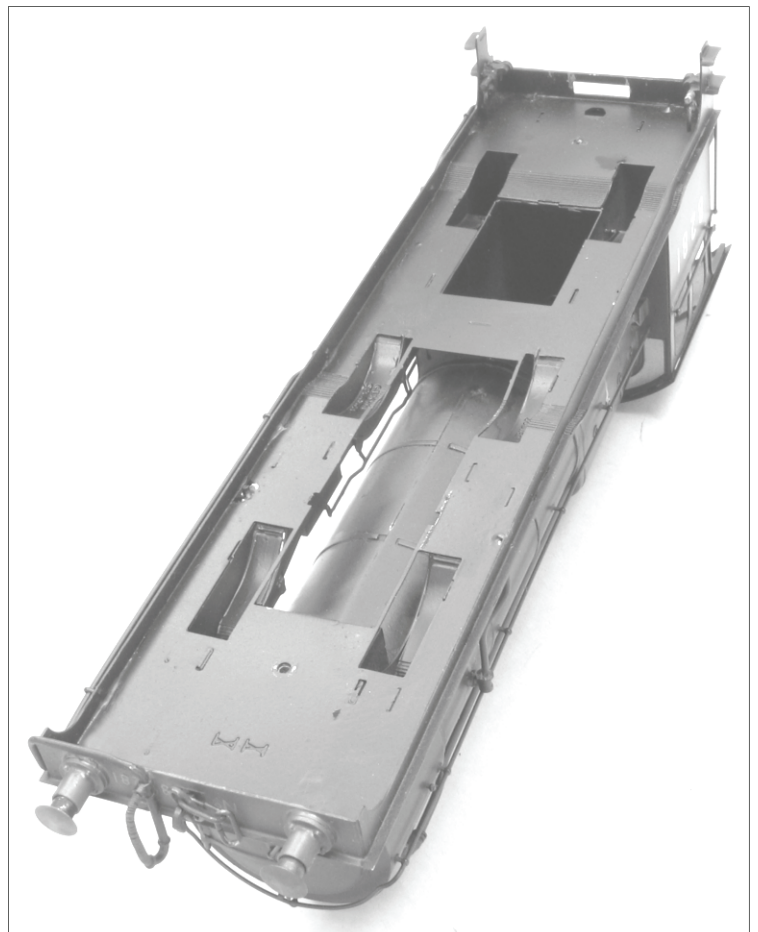
Ross Pop Safety Valve Castings



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LNER CLASS J20. Main Body Assembly.

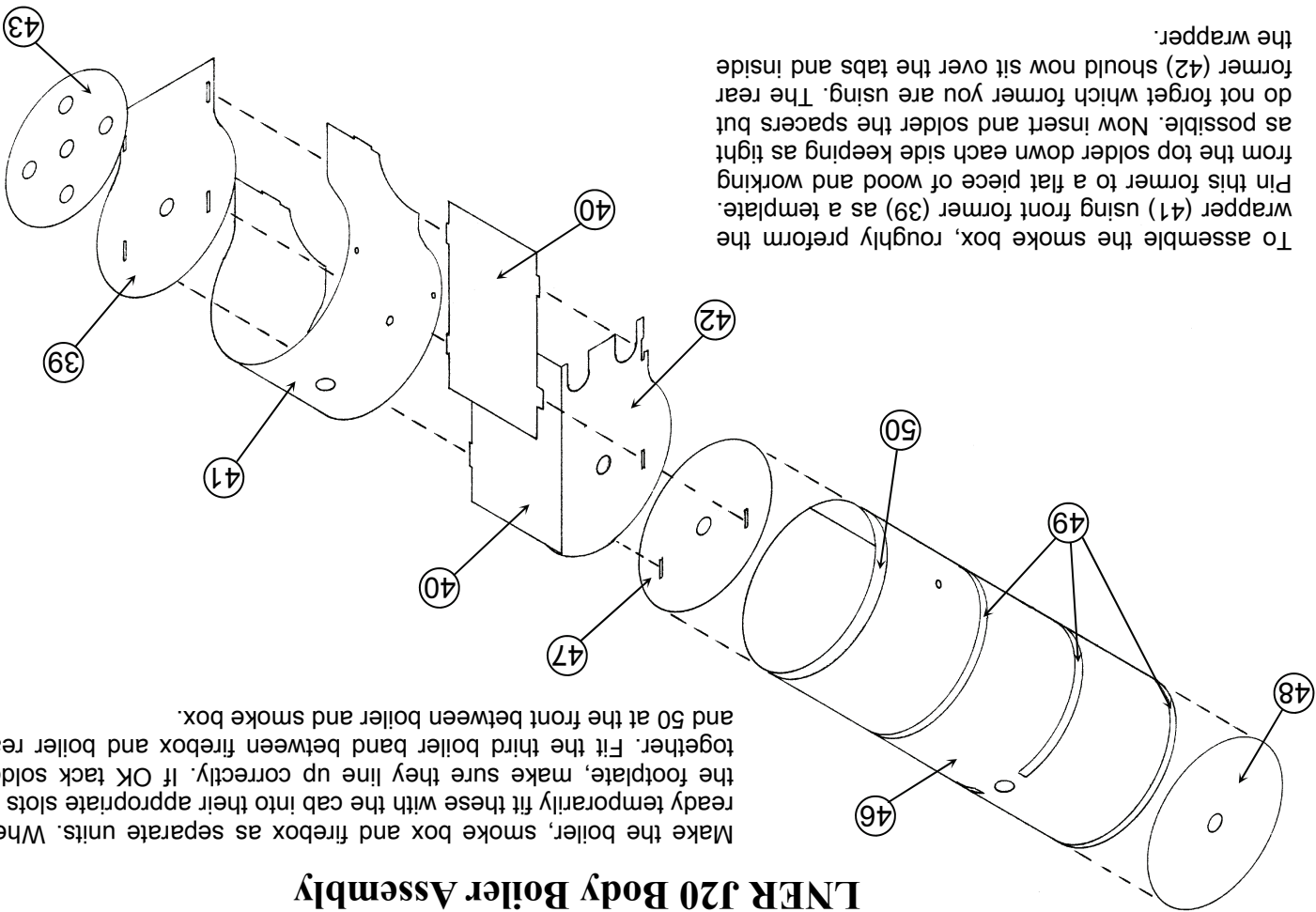
32. Valances. You will find these in the nickel silver etch.
33. Steps. Carefully turn up the side edges and secure into the slots in the valances.
34. Footplate. Solder 8BA nuts over the two smaller holes.
35. Front Buffer Beam Back.
36. Front Buffer Beam Face. Push out the rivets at the coupling plate. Laminate to back (35) so the word "TOP" is showing, this way you shouldn't go wrong. Secure into the half etched line at the front of the footplate making sure it is square and upright. The valances are next, to fit these you will need to shape the footplate, this is not as difficult as at first glance because it will only bend at the half etched transverse lines, just make sure it is tight down to the valance, especially in the corners fore & aft of the raised section. Check it is up to the front buffer beam.
37. Dragbeam Back.
38. Dragbeam Face. Laminate to back (37), again note top. Secure to rear of footplate up to valance.



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LNER J20 Body Boiler Assembly

Make the boiler, smoke box and firebox as separate units. When ready temporarily fit these with the cab into their appropriate slots in the footplate, make sure they line up correctly. If OK tack solder together. Fit the third boiler band between firebox and boiler rear and 50 at the front between boiler and smoke box.



To assemble the smoke box, roughly perform the wrapper (41) using front former (39) as a template. Pin this former to a flat piece of wood and working from the top solder down each side keeping as tight as possible. Now insert and solder the spacers but do not forget which former you are using. The rear former (42) should now sit over the tabs and inside the wrapper.

39. Smoke box Front Plate. Note, "FACE FORWARD".
 40. Smoke box Spacers. Note "TOP" and "TOP/REAR". Solder the unmarked tabs into the slots in the plates (40) making certain they are upright and parallel.
 41. Smoke box Wrapper. Note the longer edge is forward and the extra hole (for the vacuum ejector pipe) will be on the right hand side. Form around front plate (39), you may prefer to anneal this first, if so, hold over the gas until a dull red and leave to cool (do not aid cooling). When you are happy with the fit, solder to the plate.
 42. Smoke box Rear Plate. Fit over the remaining tabs of the spacers, the top tabs should be proud. Be certain all is level.
 43. Smoke box Door Plate. Solder to front plate (39), levelling the two central holes. The other four holes are only an aid to soldering. Test the completed smoke box in the footplate but do not secure yet.
 44. & 45. I threw these in to fool you - they fooled me, anyway! They do not exist.
 46. Boiler.
 47. Boiler Front Former.
 48. Boiler Rear Former. The boiler has been pre-rolled but check it has not been missshaped in the box. Make sure the boiler can be wrapped tightly around the two end formers (47) & (48) then solder the bottom edges. Now, take the smoke box and lay it down on its front, slot former (47) over the two tab extensions and slide the boiler front (the two small holes forward) over it. The boiler should be central to the smoke box rear but be sure the bottom join is exactly at the bottom otherwise the dome will list. Solder 47 into the boiler at this position. This is easier said than done but if you place a piece of thin paper between the smoke box rear and the front boiler former, then as long as your soldering iron is not too thick and clumsy, you should be able to reach down inside the boiler tube to get about three tack joints between the inside of the boiler tube and the front boiler former. You should then be able to remove the boiler from the smoke box and make a proper seam joint from the outside. In this way the slots and tabs should align the boiler upright when they are again reunited. The paper is to prevent any solder creeping through onto the smoke box rear when you make the tack joints. The rear former (48) can be soldered straight in at the back. Obviously you can't get your soldering iron down the inside of the boiler but if you place the former and boiler onto a block of wood so that it is slightly overhanging one edge. You should be able to dab three solder tacks from below.
 49. Boiler Bands. Solder two of these into the grooves in the boiler, the third will go on later.
 50. Front Boiler Band. Leave in the etch for now, this will fit between smoke box and boiler later.

46. Boiler.
 47. Boiler Front Former.
 48. Boiler Rear Former. The boiler has been pre-rolled but check it has not been missshaped in the box. Make sure the boiler can be wrapped tightly around the two end formers (47) & (48) then solder the bottom edges. Now, take the smoke box and lay it down on its front, slot former (47) over the two tab extensions and slide the boiler front (the two small holes forward) over it. The boiler should be central to the smoke box rear but be sure the bottom join is exactly at the bottom otherwise the dome will list. Solder 47 into the boiler at this position. This is easier said than done but if you place a piece of thin paper between the smoke box rear and the front boiler former, then as long as your soldering iron is