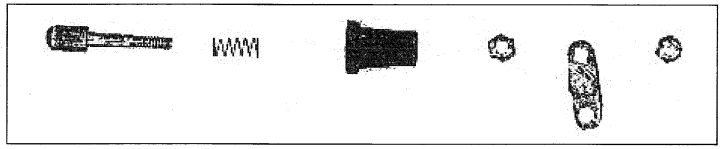
solder the electrical wire direct to the plunger you will melt the threaded end into the plastic housing. This will cause the plunger to jamb in use even if it feels free before fitting (this is probably what the people who don't like plungers have done). I tin one end of the etched tag with electrical solder before locking between the nuts. In this way I can solder the tinned end of an electrical wire very quickly onto the tag with no risk of heat getting to the plunger. If you are a little unsure you can solder the wire to the tag. Then lock it between the nuts and thread the wire and plunger through the hole in the chassis. Once the plunger is fitted into the chassis I run a ring of Araldite around the housing on the inside face of the chassis side. Now fit wheels and rods and Check for smooth running.



Fibreglass Scratch Brush

The use of this tool is mentioned in the instructions. It is like a propelling pencil holder into which a fibreglass refill is fitted to give a vigorous abrasive action. I find this tool indispensable for cleaning up and removing solder. One very useful tip is to soak the refills in dilute PVA glue (Evostick resin W wood glue let down 50/50 with water and a spot of washing up liquid) and then drill holes in a block of wood and stick the ends of the refills in the holes to harden off. This will make the refills much more abrasive and longer lasting, and it also stops the fibres breaking off and ending up in your fingers. You will need to give the refill a good rub to get it started but if you use green label flux you will soon have plenty of rusty tools that need cleaning. These and most other general modelling tools can be obtained from Squires Model and Craft Tools, 100 London Rd, Bognor Regis, West Sussex, PO21 1DD, Tel 01243 842424. They do a free catalogue and a very good mail order service.

Can You Help Me?

If you have enjoyed building this kit and have been satisfied with the quality, I would be most grateful if you could recommend it to your friends and fellow modellers. Although my kits are not perfect, I try to put a lot of time and effort into producing them. If I can get extra sales of a kit through customer's personal recommendation, I find that word of mouth is the best form of advertising; this will help me to put extra time and money into developing the next kit. Hopefully this will give me more satisfied customer to recommend my kits to their friends.

If you are not happy with this kit then please tell me. Hopefully I will then be able to help and sort out any problem.

Jim McGeown

This kit has been designed to provide a set of quality components, that will allow the modeller who has basic kit building skills to build an 0 gauge model of the prototype, to a standard of detail that is suitable for operating models on most 0 gauge layouts.

It is not intended to be a state of the art kit, though those who wish to upgrade their model through the substitution of various fitting and by fabricating some of the smaller supper detail parts, can lift it into the showcase class. With the kit providing an accurate and economical base on which to work.

LNER Class J39/1 Sample Running Numbers

Original Number	1946 Number	BR Number	Built	Withdrawn
1484	4712	64712	11/1926	2/1960
2696	4749	64749	8/1928	11/1962
2710	4763	64763	9/1928	6/1959
2774	4800	64800	9/1929	1/1960
1584	4871	64871	12/1935	10/1962
1558	4943	64943	4/1938	12/1962

Livery and Painting

When first built these locomotives were painted in the standard LNER goods livery of black lined out with single red line. During the 1930's this was replaced by plain black and British Railways continued this livery.

Transfers for lettering are available from HMRS, 9 Park Place, Worksop, Notts, S80 1HL. These are press fix type and you will require the LNER black loco sheet. Or Fox Transfers, 138 Main St, Markfield, Leicestershire, LE67 9UX, Tel 01530 242801. These are water slide type.

Reference Books

Locomotives of the LNER, Part 6A, The Railway Correspondence and Travel Society, ISBN 0 901115 53 3. This series is the standard reference for all LNER locos and full details of lettering and lining position can be determined from the illustrations. Also comprehensive information about detail differences and modifications made to members of the class throughout their working lives. Get it from your local library via their book order system.

Yeadon's Register of LNER Locomotives, Volume 11, The J39 Class, Challenger UK/Booklaw/Railbus, ISBN 1 899624 16 3.

Other reference sources that I used in developing this kit were, Model Railway Journal No34 and LNER Locomotives To Scale, Ian Beattie, D Bradford Barton Ltd, ISBN 0 85153 398 1.

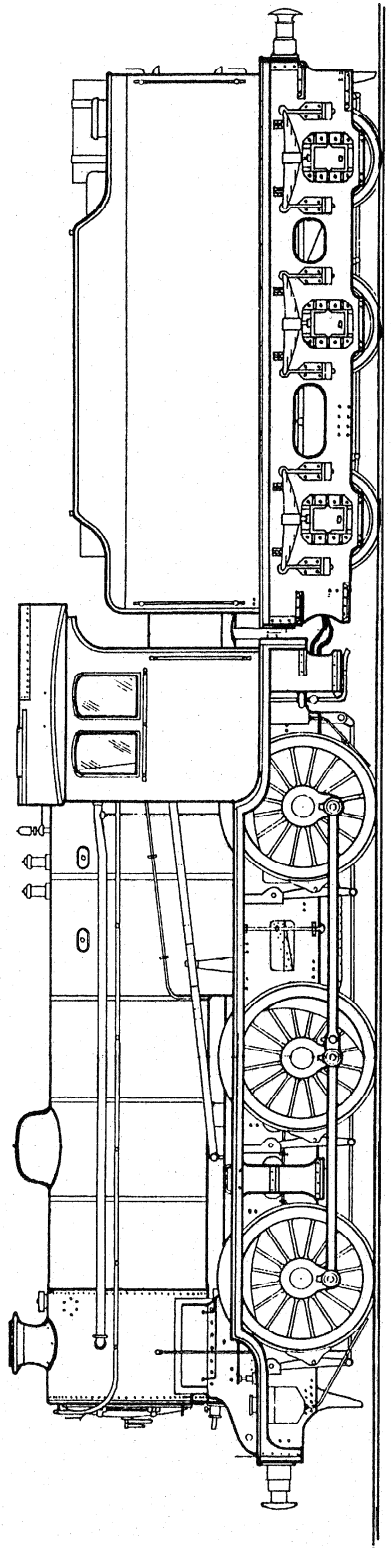
Painting

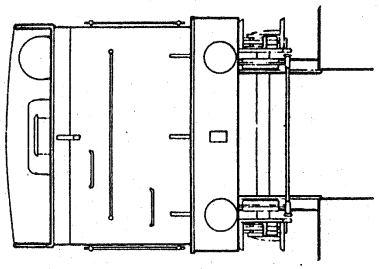
Painting is a vast subject that cannot be covered fully here. The important thing with a metal model is to get a good base coat of primer. Hopefully you have been cleaning up and washing the model at the end of each modelling session, but it will still need thoroughly cleaning before painting. I give my models a good scrub with a stiff-bristled paint brush in a sink full of hot (as hot as your hands can bear) water and cheap washing up liquid (the expensive stuff that's kind to your hands has an oil in it that will stop the paint keying to the metal). If you know somebody who works in catering and can scrounge you some industrial-strength liquid, this is better still. Then rinse the model a couple of times in clean warm water and place in a dust-free box to dry. I use car aerosol primer and Halfords grey primer is one of the best. For the best results you want to spray at room temperature (25°C) on a dry (avoid cold, damp or humid) day. I find it helps to warm the model to about 30°C (put it in the airing cupboard overnight) and I warm up the paint tin by putting it onto a radiator (about 40°C, but use your common sense as I don't want anybody blowing themselves up). I find it best to prime the model in two light coats, about 15 minutes apart and then leave for 48 hours to harden off (in the airing cupboard in a dust-free box). For a black locomotive I then spray the entire model with Halfords matt black car paint.

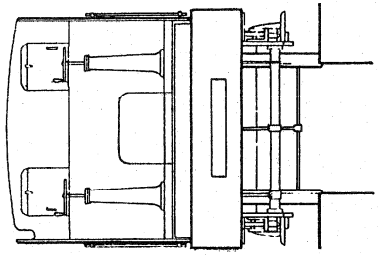
I then brush-paint the remaining colours with Humbrol enamel (give the buffer beams a thin coat of white as a undercoat and the red will cover better). For years I just stirred it up and painted straight from the tin but I was never completely happy with the results. Recently two things have transformed my painting. The first was a copy of Martyn Welch's book, The Art of Weathering, Wild Swan Publications, ISBN 1 874103 11 9. Martyh's basic techniques are very useful and almost foolproof. Martyn's method of blending different colours and mixing course talcum powder into the paint to give a textured weathered finish to the frames is particularly effective. The second thing is to mix the paint in the tin and then transfer it to a palette (a sheet of clean plasticard) with blobs of lighter and darker shades of paint surrounding the main colour. Then work the paint with the brush on the palette, slightly varying the tones of the paint. This seems to totally change the texture of the paint and the way it goes on and covers on the model.

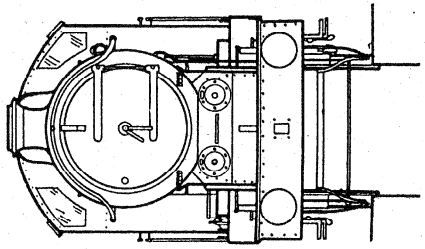
Slater's Plunger Pickups

Fitting Slater's plunger pick-ups. Some people don't like using these but I have found them very good and fit them to all my locos. First I drill out the back hole in the plastic housing 1.4mm. I then run a 2.4mm drill down the inside of the plastic housing twisting the drill between finger and thumb. This will deepen the hole slightly and also remove any wisps of plastic that may jamb the plunger. By twisting the drill between finger and thumb there is no risk of the drill binding and drilling right through the end. Then fit spring onto plunger and fit into housing running a nut onto the back end. When fully depressed the plunger should sit virtually flush with the end of the housing. It is important that you use the etched solder tag that is locked between two nuts on the end of the plunger. If you try to









GENERAL INSTRUCTIONS

Please read this section carefully, especially if this is your first etched brass kit. Many modellers fight shy of working in this medium, but the basic skills are relatively easy to acquire. Once you've learned how to form and solder brass, you'll find all kinds of modelling possibilities will open up for you.

Assembling an etched kit involves exactly the same skills that a scratchbuilder uses – the only difference is that the cutting out of the parts is already done for you. Some filing and trimming will, however, be necessary from time to time. Where this is the case, I have highlighted it in the instructions.

The main skill to master is soldering and I would recommend a Weller 40 Watt soldering iron. This has a 6mm diameter, removable copper bit. The bit is shaped like a screwdriver and has a bright coating of solder (tinned). This combination of iron and bit shape is ideal for running fillet joints and has a good reserve of heat, that is necessary for soldering small parts on to large components. Note the shape and condition of a new bit, as this won't last long and will need restoring back to this condition.

It is important to keep the bit clean and in good condition as you work. Get a soldering iron stand containing a damp sponge; old oxidized solder is wiped off on this before picking up fresh solder for each joint. If you haven't made a joint for some time you may find that a hard black crust has formed on the bit. Remove this with a brass wire brush (suede brush) and then feed some multicore solder onto each side of the bit to restore a bright surface (referred to as wetting or tinning the bit). After about 8 hours use you will find the bit is in poor condition, with holes and a ragged edge. File the bit back to its original shape using a hand bastard file and then polish the surfaces on emery cloth. Coat the bit with Fluxite Soldering Paste (traditionally used by plumbers) and this will prevent the bare copper oxidizing as the iron heats up. Then feed multicore solder onto the bit to form a generous coating and leave to bubble away for a couple of minutes before wiping excess off to give a bit almost as good as new.

A smaller Antex 25 Watt iron with a 3.2mm screwdriver bit is very useful for small assemblies and detail work such as handrails, but will have insufficient heat reserve for main assembly work. The Antex has a plated iron bit, after a little use with 145° solder a grey oxide appears on the bit that will prevent you from picking up the solder. Touch the bit to some multicore solder and it will flash over the bit, wetting it so that you can continue picking up 145° solder. I have found no problems with mixing the two solders in this way.

I use 145° solder for virtually all assembly work. I prefer it in wire form, available from Branchlines, but it is also produced in stick form by Carrs. I find that its lower working temperature helps to give a quick clean joint. Limiting the build up of heat in components, which may cause distortion. I find that I can hold parts together with my finger ends and make a joint before heat reaches my fingers or other etched parts drop off.

I use 60/40, tin/lead, fluxed multicore electrical solder (melting point about 190°) mainly to keep the iron bits in good condition. As it gives a slightly stronger joint than 145° I sometimes use it for small spot joints on handrail wire, lamp brackets etc, but still use extra liquid flux.

For all brass and nickel silver work I use Carrs green label liquid flux. You will soon get the feel for how much to use but more problems are caused by too little flux than too much.

Before soldering components together, thoroughly clean both surfaces along the join line with a glass fibre burnishing brush. Using your tweezers or a knife blade etc, hold the parts together in the correct position and, with an old paintbrush, run some flux along the area to be joined. Still keeping the parts correctly aligned, pick up a small quantity of solder on the tip of your iron and carry it to the joint (unlike electrical soldering, when you feed solder into the joint). Hold the iron against the joint just long enough for the solder to flash between the parts. Don't let go of the parts until the solder has cooled – this takes from five to ten seconds. To run a fillet of solder along a joint, wait until the solder flashes between the parts and then pull the molten solder along

the joint with the iron tip. Don't load the iron tip with a lot of extra solder, but work the joint in 1" lengths, bringing in small quantities of solder. Brass is a very forgiving material and if you get something out of alignment, use heat from the iron to desolder the joint before starting again. For complicated assemblies, it is a good idea to only tack solder parts together. You can then make adjustments by desoldering until you are happy with the location of parts and then solder solid.

When you need to laminate two or more layers of brass together, align the parts and carefully clamp them together, either in the vice or by holding them with miniature crocodile clips. Run flux around the edges, and then go around with the soldering iron. Clean up thoroughly afterwards.

To fit small parts and overlays on to a larger assembly, such as strapping to a wagon side, when you need to prevent finely detailed areas such as planking becoming clogged up with solder. Tin the back of the small component first, then hold in place on the model and apply flux. Carefully wipe the tip of your iron on a sponge to remove any solder from it (dry iron), and then touch it against the parts to be joined. After a few seconds you'll see molten solder bubbling from the edges. Remove the iron, still holding the parts in place, and allow the joint to cool. An alternative is to use solder paint (I would recommend Carrs 188 solder paste). As the name suggests, this is a flux and solder in one. Simply apply a thin coat of solder paint to the back of the component instead of tinning. Still apply a small amount of liquid flux before you solder the part into place.

Any surplus solder should be removed using a craft knife, I find No 10 curved scalpel blades ideal, then burnish clean with a glass fibre brush. With practice, you'll learn how to use the minimum amount of solder to do the job. Flux is corrosive so, after each soldering session, give your model a good scrub with washing up liquid or Jif. After a day or two, any remaining flux residues will show as a green film, which should be washed away.

To cut parts from the fret, use a sharp Stanley knife on a piece of hardboard or a pointed scalpel blade on a block of softwood. Remove tags and burrs with a fine file.

Three-dimensional parts are formed by folding. On an etched brass kit, the fold lines are normally half-etched on the inside of the fold. You'll be able to fold most parts using smooth-jawed pliers. For longer parts folding bars are desirable.

Other useful tools include a bench vice, a good pair of tweezers, a set of Swiss files (get a full set of cheap ones and then buy quality replacements for the three that you use the most), a pin vice with a selection of drills from 0.5mm to 2.1mm plus a few larger sizes that you use regularly (2.6mm for axle bearings etc), some square-nosed pliers and some very pointed-nosed ones, preferably with smooth jaws. Buy cheap tools first and duplicate the most used ones with quality.

Try to complete all high-temperature soldering before attaching any of the cast whitemetal parts. These can be attached with two-part epoxy resin such as Devcon or Araldite Rapid. Ensure the surfaces to be glued are clean and free of grease.

A better alternative is to solder your white metal castings using Carrs 70 degree low melt solder and Carrs red label white metal flux. The iron should be run at a much lower heat so that you do not melt the castings. I have a domestic light dimmer switch and plug socket fixed to a piece of wood, wired up with a lead and 3 amp mains plug to the input side of the dimmer switch and the output of the dimmer switch into the plug socket (remember to continue the earth). Plug your 40 Watt iron (25 Watt iron won't work) with a clean and freshly tinned bit into this and experiment with adjusting the switch until you find the range of temperature at which the solder melts, but a scrap casting does not. **Note** as the iron is running at a lower voltage it will take longer to heat up, so when you think the adjustment is correct do check a few minutes later on another scrap casting to see that it doesn't melt. Then scribe a mark on the switch knob to indicate this position.

When attaching white metal fittings to brass the surface of the brass must be tinned with 145° solder, to allow the solder to grip. The surface of the casting at the joint should be burnished bright. The casting can then be soldered into place with 70° solder and fillets of solder run into any gaps with no risk of melting the casting.

14. REVERSING GEAR BALANCE WEIGHTS. Laminate together to make a pair. Then solder centrally onto a piece of brass rod 6mm apart. Fit this into the fold down brackets between the frames.

15. BRAKE HANGERS.

16. BRAKE BLOCKS. Solder to parts 15.

17. BRAKE HANGER BRACKETS. Fold up. Then fit 0.9mm wire across frames. Refit wheelsets, thread brackets and hangers over wire. Then solder bracket to frames. Line up brake blocks just clear of wheels and tack solder to wire.

18. BRAKE CROSS SHAFTS. Spring between brake hangers and tack soler Note cross shafts are marked F,C,R, for front, centre, rear.

19. PULL RODS. Fit between cross shafts by twisting into place.

20. VAC CYLINDER LINKS. Fix cast cylinders to brass rod. Then fold up links and fit over peg in cylinder. Now thread a piece of rod through brackets in frames, holes in links and part 19. Now fit pickups. Holes are provided in the frames for sprung plungers or parts are provided to make wire wiper ones.

21. LUBRICATOR DRIVE. This is a bit tricky but nice if you get it to work. two sets of parts are provided to give you a second chance. I think the diagram explains better than words how to make it. So good luck.

    Fit cast sandboxs to frames and make sandpipes from 0.9mm brass wire.

CHASSIS

1. FRAMES. Fold down sides.

2. FRAME SPACERS. Tack solder into slots. Note that spacers are letterd to correspond with the letters on the frames.

3. VALVE ROD BRACKET. Fit into slots in spacer C. Then fit brass rod. before fitting spacer into frames. Then open out holes to take bearing bushes. Fit bushes and wheelsets but do not solder bushes at this stage. You now have a basic chassis with which you can check clearances as you continue with body construction. Use packing washers to reduce sideplay of wheel sets if necessary.

4. FIREBOX SIDES. Solder onto inside of frames, with the top edge lineing up with the half etched line. The bottom edge will set the motor mount at its correct angle.

5. ASHPAN. Fold up and solder into half etched rebate on inside of frames

6. MOTOR MOUNT. Open out holes for bearing bushes. Then fit between frames and locate with bearing bushes, tack solder in place. Now refit wheelsets and place chassis onto a piece of plate glass. Ensure that outer wheels are level on the glass and the chassis is square. (centre wheels are raised slightly). Twist at corners or resolder spacers to achieve this. Now solder all joints and bearings with a fillet of solder.

7. BLANK PLATE. Solder behind ashpan, so that you canot see through frame cutouts.

8. LOCO/TENDER COUPLING MOUNTING. Solder 8 BA nut onto top side Then spring between frames to locate into slots. The tender coupling bar will be screwed to this with a cut down screw. Note different hole centres on bar. Select the ones to suit your curves.

9. VAC CYLINDER SUPPORT BOX? I think this was part of the drag beam. Fold up and solder into slots in frames.

10. VAC CYLINDER SUPPORT BRACKETS. Fold up and fit through slots in part 9. Then solder a piece of 1.5mm brass rod through holes to support vac cylinders.

11. COUPLING RODS AND BOSSES. Laminate together. Fit onto crankpins and check chassis runs. Eliminate any binding by fileing holes slightly oval. But go steady. You can now fit the motor. dont forget a spot of oil. When happy remove wheels

12. SLIDEBARS. Fold together useing tabs and solder. Fit into slots in frame spacers, see diagram.

13. VALVE RODS AND PIVOT JOINT. Laminate rods together and make pivot joint. see diagram. Then fit a piece of 0.9mm wire into hole in end of pivot. Drill hole in castings and fit into holes in frame spacer B. Now thread wire through hole and valve rod onto brass rod. see diagram.

SPECIFIC INSTRUCTIONS FOR LOCOMOTIVE KITS

HOLE SIZES.

Because of the etching process holes will normally be found undersize, for example the turned brass bearings will not fit holes in chassis sides, and a simple fitting operation is required. The best tool for opening up holes of this size is a cheap tapered reamer available at most model railway shows from tool suppliers. By rotating this gently in the hole you quickly open holes to correct size, without risk of tearing the metal. By trial and error on the first hole you will soon establish how much material requires removal. For smaller holes, such as those for the location of casting's etc these are best opened up using a set of cheap tapered broaches, or by twisting a small round file in the hole.

FORMING PARTS.

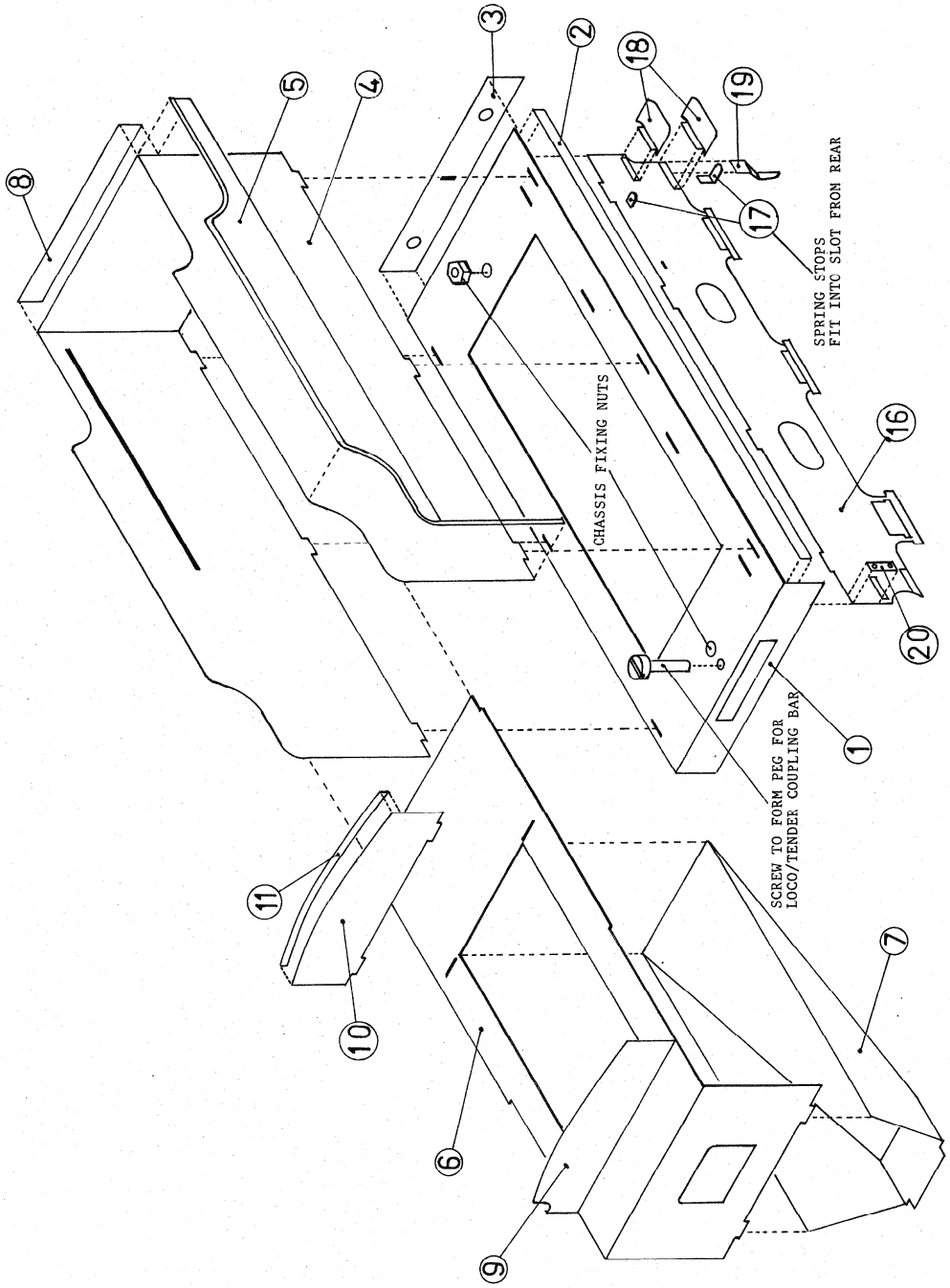
While the boiler in this kit is pre-formed, other forming is best achieved as construction progresses; this enables the parts to be adjusted to each other. To make a tight curve at full metal thickness, such as tank front, bunker rear etc; take a piece of rod slightly under size of the curve required (a drill shank is ideal). Place roughly on centre line of bend, holding in place with thumbs, pull upwards with fingers, forming approximately 30 degrees of the bend. Check with eye; adjust if necessary before forming 60 degree of bend, offer part to model. Final adjustment of fit is easily made on last stage of bending.

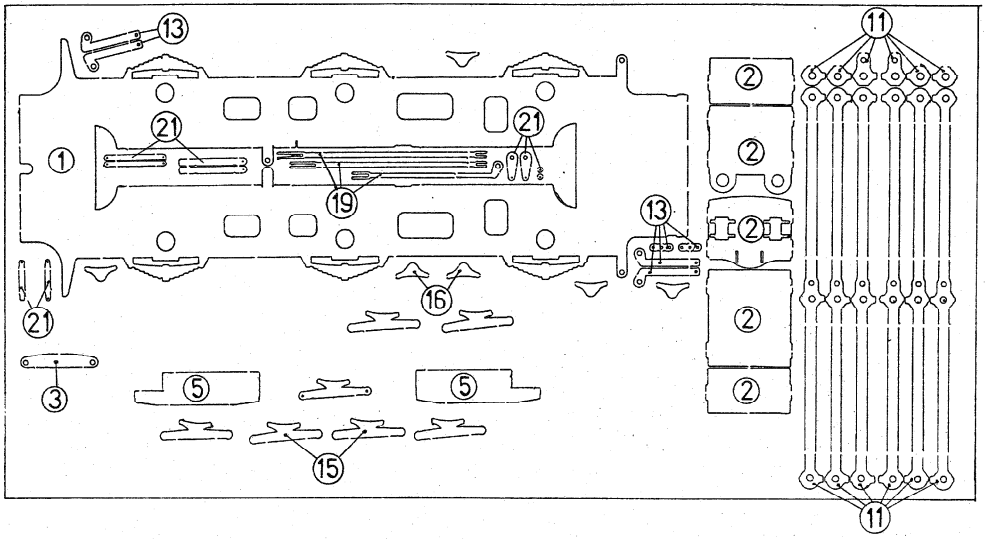
To form shallow curves, splasher tops, smoke box wrappers etc use a piece of pipe, broom handle etc. Diameter is not crucial, a piece of one-inch water pipe covers cab roof to smoke box wrapper. Place part over tube, hold in place with finger and thumb of one hand. Work the metal in stages over tube with finger and thumb of the other hand, until correct radius is formed.

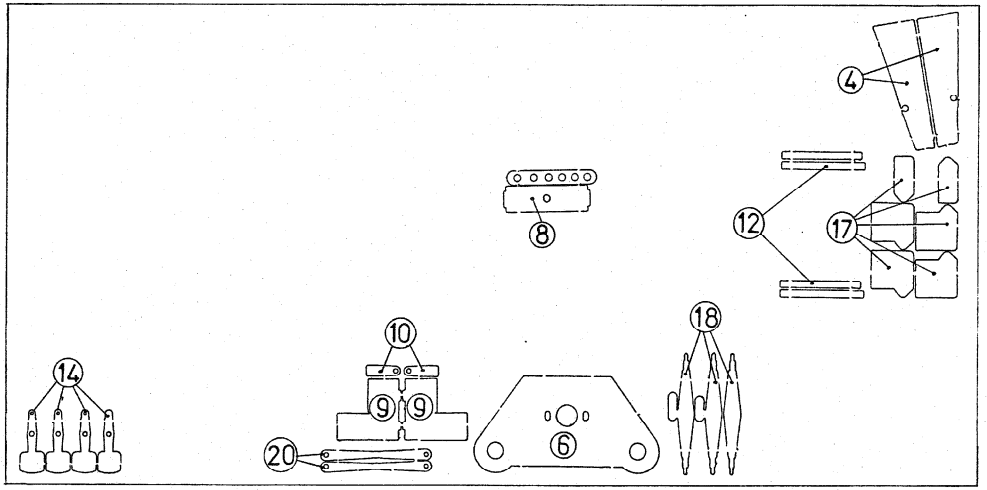
A technique you may find useful in working metal is to soften and remove the spring from the metal by heating (called annealing). The part is held with pliers and heated in a gas flame. (The gas cooker is ideal). Alternatively use a pencil torch that runs off lighter fuel. Heat part until a purple band appears close to the edges and then remove from heat. Do not overheat part, as it will then become too soft and unworkable. Remember you can reheat if not workable. Allow part to cool naturally in the air.

DAMAGED PARTS AND SHORTAGES.

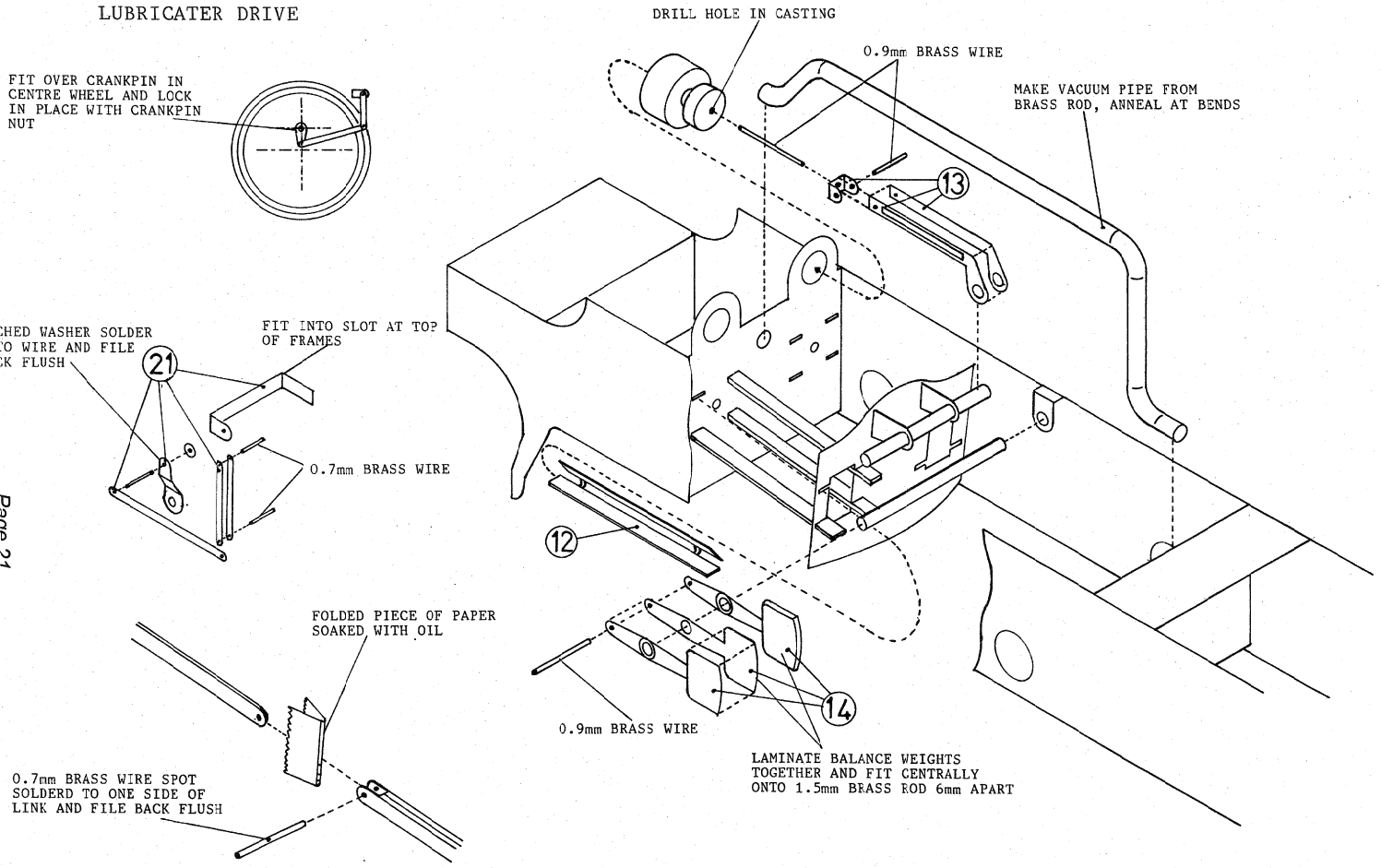
If you damage an etching during construction, it is not possible to replace individual pieces, but I am quite flexible in providing at minimum cost, replacement frets (this will contain all the brass or N/S parts). Where a casting is damaged, as I have full control of production, individual items can be replaced. Because of the complexity of the product, combined with the low volume way it is produced, while I try to exercise a high degree of quality control in production and packing, if you find you are short of an item or find a sub standard part, please approach me for a replacement.

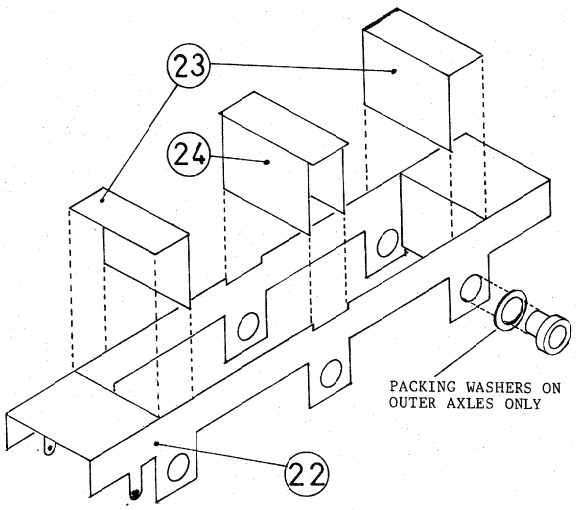

CHASSIS FIKING NUTS
SPRING STOPS
FIT INTO SLOT FROM REAR
SCREW TO FORM PEG FOR
LOCO/TENDER COUPLING BAR

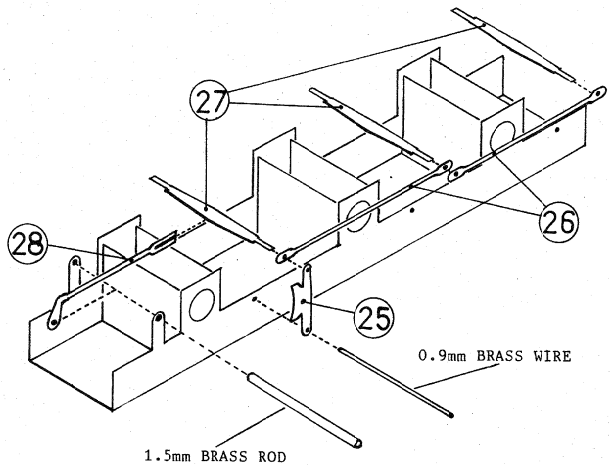


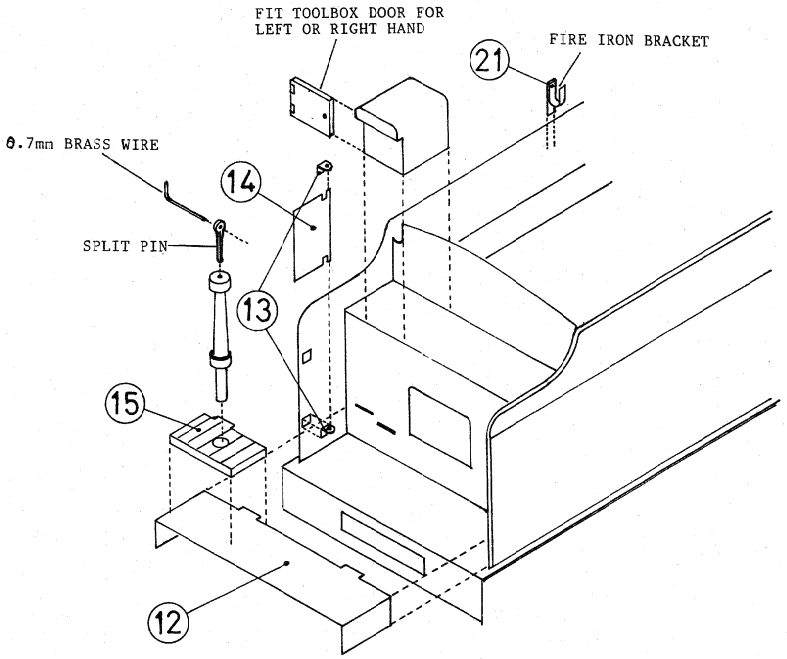


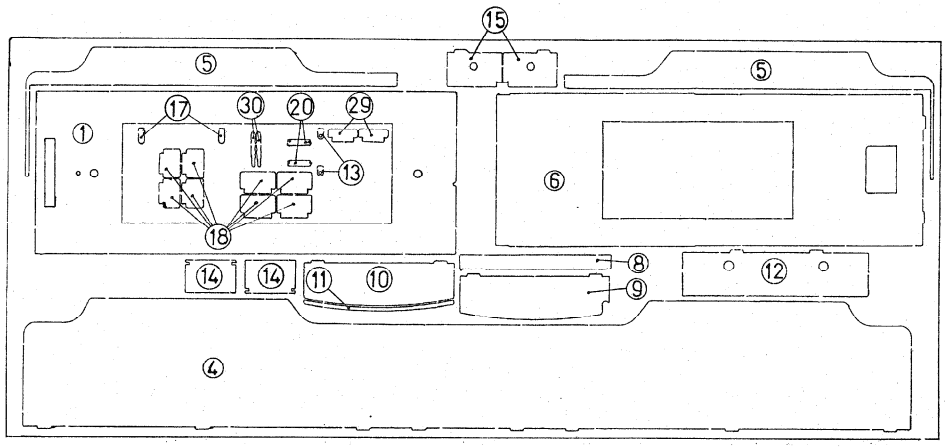
LUBRICATER DRIVE







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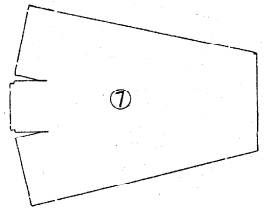
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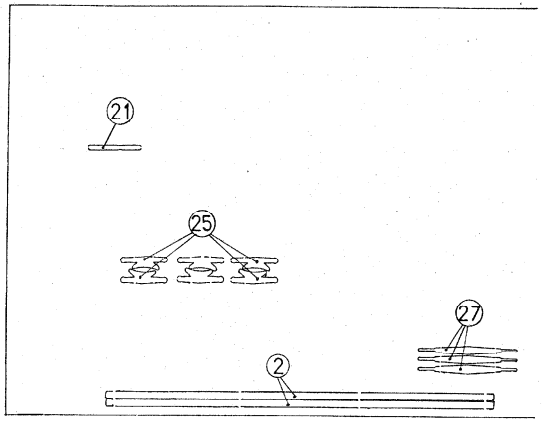
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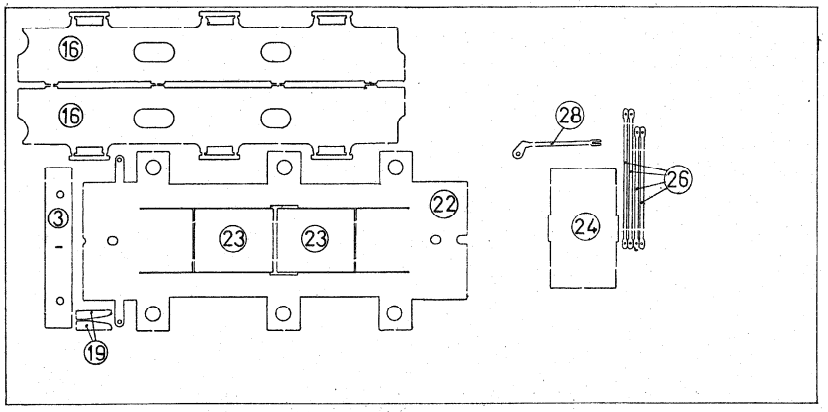
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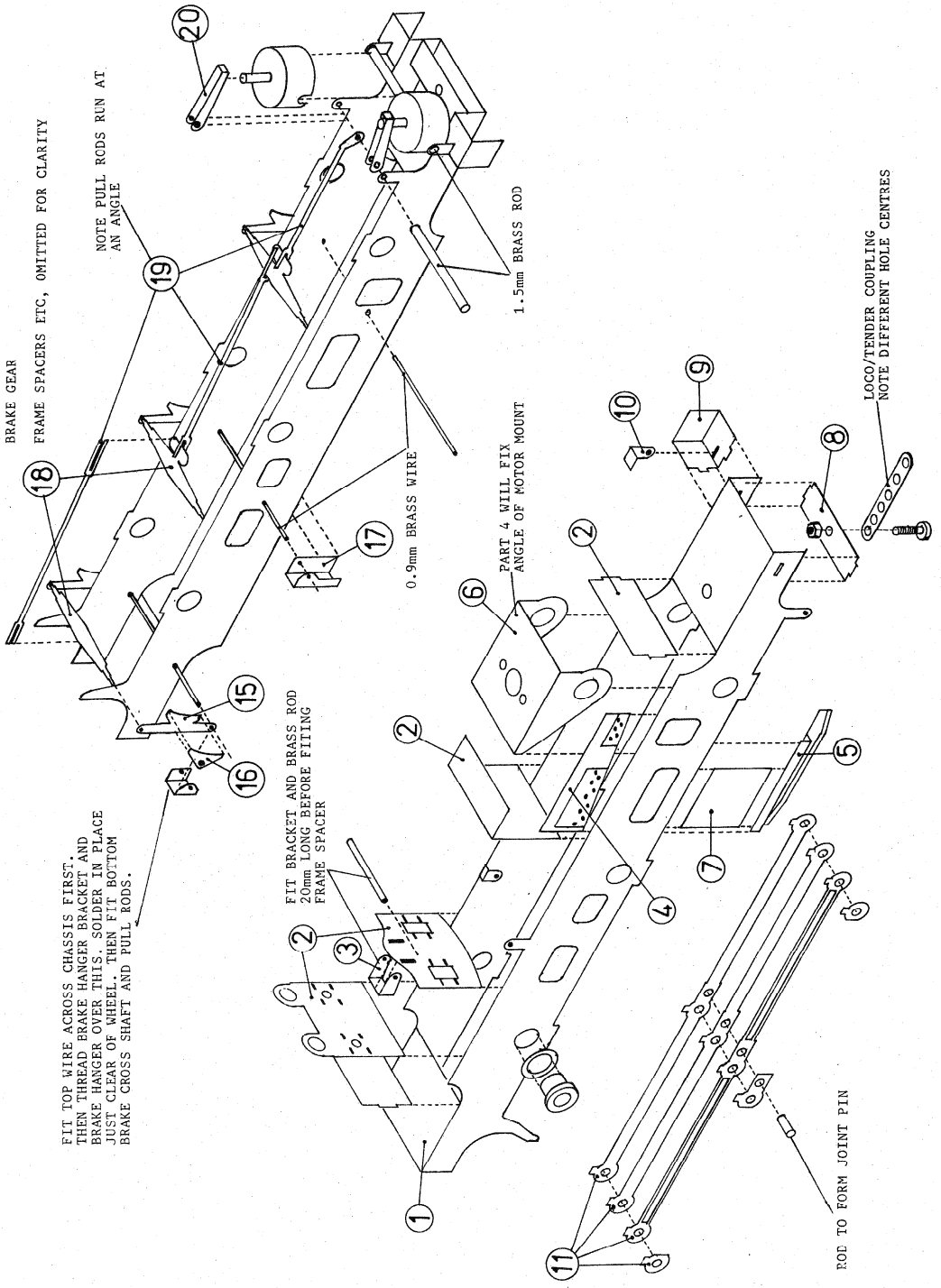

20
BRAKE GEAR
FRAME SPACERS ETC, OMITTED FOR CLARITY
NOTE PULL RODS RUN AT AN ANGLE
19
1.5mm BRASS ROD
18
0.9mm BRASS WIRE
17
PART 4 WILL FIX ANGLE OF MOTOR MOUNT
LOCO/TENDER COUPLING NOTE DIFFERENT HOLE CENTRES
10
9
8
2
6
15
16
FIT BRACKET AND BRASS ROD 20mm LONG BEFORE FITING FRAME SPACER
2
5
7
4
2
3
1
11
FIT TOP WIRE ACROSS CHASSIS FIRST. THEN THREAD BRAKE HANGER BRACKET AND BRAKE HANGER OVER THIS. SOLDER IN PLACE JUST CLEAR OF WHEEL. THEN FIT BOTTOM BRAKE CROSS SHAFT AND PULL RODS.
ROD TO FORM JOINT PIN

45. CAB STEPS. Bend the top and solder to the underside of the footplate, locating against the drag beam.

46. FOOTPLATE STEPS. Fold the top and solder to the underside of the footplate using the half etched lines to help in location.

47. STEP TREADS. Fold these up using a pair of pliers and solder into the half etched rebates on parts 45 & 46.

48. LAMP BRACKETS. Fit to front of footplate above buffer beam. Also fit a tender lamp bracket to top of smoke box.

49. COUPLINGS. Fit into slots in buffer beams. Cosmetic screw coupling or 3 links from brass wire.

CASTINGS

C1. SMOKEBOX DOOR. Drill hole in centre and fit door dart.

C2. VALVE COVERS. Fit into holes in steam chest front.

C3. SANDBOX FILLER CAP. Fit into holes in footplate

C4. LUBRICATER. Fit onto footplate in line with lubricater drive on right hand side.

C5. CHIMNEY. Fit into hole in smokebox

C6. SNIFTING VALVE. Fit into hole in smokebox behind chimney

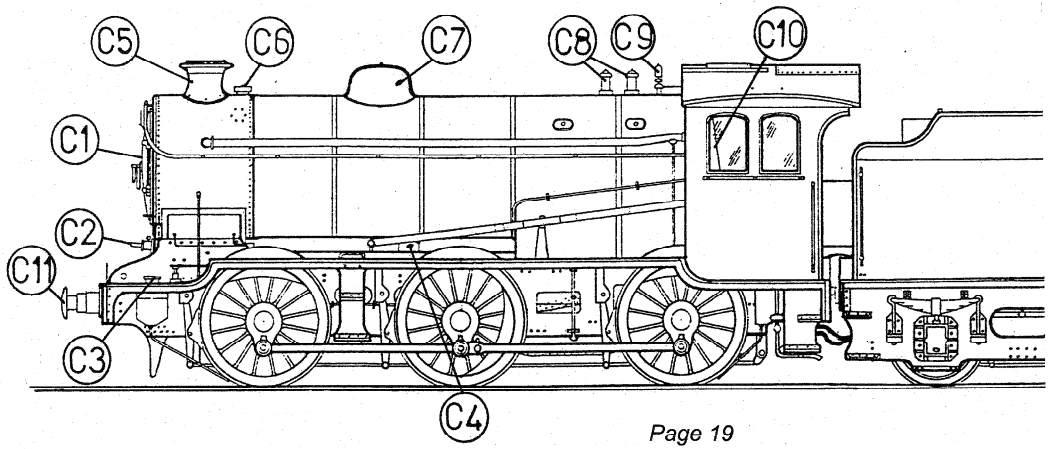
C7. DOME. Fit into hole in boiler

C8. ROSS POP VALVES. Drill out the two half etched holes in top of firebox. Then fit valves to boiler. Or drill out centre hole and fit raised seating then fit valves to this.

C9. WHISTLE. Fit into hole in firebox top.

C10. BACKHEAD. Fit vacuum injecter to left hand side. Then fit into cab.

C11. BUFFERS. Fit into holes in buffer beam.



L N E R 3500 GALLON GROUP STANDERED TENDER

PART NUMBERS AND SUGGESTED ASSEMBLY ORDER

1. FOOTPLATE. Fold down end and solder the fixing nuts ontop of holes (best achieved by locking in place with screws) Remember to put a smear of oil on screw thread to prevent soldering the screw solid.

2. FOOTPLATE VALANCE. Solder into half etched line on the underside of footplate.

3. BUFFER BEAM. Solder on under side of footplate locating against the ends of the valance.

4. TENDER SIDES.

5. TENDER SIDE BEADING OVERLAY. Solder this along the top edge of tender side, then fold tender side and fit to foot plate using the slots provided.

6. TENDER TOP/ FRONT PLATE. Fold down front plate.

7. COAL SPACE Fold up and solder into place on the under side of tender top, using the half etched lines to locate this part. Ensure tender front plate is square and 90° to the tender top. Now solder front plate between the tender sides using half etched grove to help support the rear of tender top plate. At this point ensure that assembly so far is square, as once tender top is soldered solid correction will not be possible by twisting the assembly.

8. TENDER BACK BEADING OVERLAY. Solder to the top of tender back. Fill corners with solder, file of any excess carefully to leave clean sharp invisible joints.

9. FRONT TENDER COAL PLATE. Solder onto the tender top using the slots for location.

10. REAR COAL PLATE.

11. BEADING. Solder into the half etched grove of the rear coal plate, solder the rear coal plate to the tender top, locating tabs into the slots.

12. TENDER FOOT PLATE. Fold down the sides and solder the foot plate between the tender sides locating the tabs into the slots in the front plate.

13. DOOR HINGES. Bend the bottom hinge and solder into the half etched rebate on the inside of the tender side.

14. DOOR. Fit into hole in door hinge,part 13, then fit second hinge in the same way as the first.

15. BRAKE COLUMN PLATFORM. Fold down the sides and then locate tab into slot in front plate, see diagram.

16. TENDER FRAMES.

17. SPRING STOPS. Bend and fit into the slots in the tender frames, solder in place from the rear.

18. STEPS. Fold up using pliers solder in place, into half etched rebates on tender frames see diagram.

19. GUARD IRONS. Bend up and solder to the inside face of the tender frames see diagram.

20. BUFFER BEAM REINFORCEING BRACKETS. Solder in place at the top corners of tender frame, now fit the frames into the slots on under side of foot plate.

21. FIRE IRON BRACKET. Bend up using round nosed pliers, and solder into place on the inside top edge of the tender side.

22. CHASSIS. Fold down the sides and spacers reinforcing the fold lines and joints with a fillet of solder.

23. END SPACERS. Fold the top and solder between the chassis sides see diagram.

24. CENTER SPACER. Fold into U section and solder between the chassis sides, locating the tabs into the cut out on top of the chassis side. Open out the holes on the chassis side to take bearing bushes. Using packing washers on outer axles only will allow side play on the center wheeles.

25. BRAKE BLOCKS. Fit three lengths of .9mm brass wire across chassis and locate brake blocks onto this, by using a wheel set to find correct position.

26. BRAKE PULL RODS. Thread over the ends of the brake cross shafts.

27. BRAKE CROSS SHAFTS. Spring between the brake blocks and solder into place working from the back to front.

28. FRONT BRAKE PULL ROD. First locate the forked end of the pull rod onto the center of the break cross shaft, then pass a 1.5mm rod through the holes in the chassis brackets and pull rod .

29. REAR TENDER STEPS. Fold up using pliers and locate into half etched rebates on the tender back.

30. LAMP BRACKETS. Fold up and fix to the tender back using the half etched marks for location.

28. FIRE BOX/ FOOTPLATE BEADING. Solder this into place at the joint between the fire box side and the footplate, this will help to disguise any creases or gaps which may have appeared.

29. SMOKE BOX SADDLE TOP. Pre-curve this and fit at the joint between the boiler and steam chest.

30. RAISED SECTION OF CAB FLOOR. Fold down the sides and solder into place on the cab floor.

31. REVERSING GEAR SUPPORT BOX. Fold this up and fit into the corner of the cab.

32. REVERSING WHEEL. Make the handles from a piece of wire and solder the wheel onto a cast spigot of reversing gear.

33. CAB SEATS. Fold up the top and brackets as shown in the diagram and fit them to the cab side.

34. DAMPER CONTROL HANDLE. Make the handles from a piece of wire and solder to a piece of .9mm brass wire, that runs at an angle through a hole in the cab front, and into a hole in the footplate.

35. CAB ROOF. Make the rain strips from a curved piece of copper wire, and solder these into the half etched groove on the cab roof.

36. CAB ROOF RIB. Fit this into the half etched groove on the underside of the cab roof.

37. CAB VENTILATER. Pre-curve this and fit to the cab roof.

38. REINFORCING PLATE. Pre-curve this and fit to the cab roof, now solder the cab roof into place.

39. SAND BOX OPERATING ROD. Fit the casting to the footplate then fit the operating rod over the spigot and into the slot in the footplate.

40. COUPLING PLATE. Solder this to the buffer beam also solder one onto the tender buffer beam.

41. REVERSING ROD.

42. ------- Solder this to the reversing rod to form a slot to take the reversing rod support.

43. REVERSING ROD CRANK. Fold this up and pass through the slot in the footplate, solder in place from the underside. Solder a piece of copper rod into the hole to form a peg for the reversing rod.

44. REVERSING ROD SUPPORT. Crank slightly and solder the rod support into the slot in the footplate, Now pass the reversing rod through the slot in the cab front, over the support and locate on the peg you made on part 43, now solder it into place.

20. BOILER. First straighten out the fire box sides, and roughly form the reverse curves, this is best achieved by annealing the brass to make it soft, so that it may be worked between finger and thumb and around a piece of tube. Use a gas stove to heat the metal or better still a gas torch that runs on lighter fuel, (the cheapest are usually the best for this purpose. Heat the brass until it starts to turn purple at the edges, try and keep the heat local to the area which is being worked. Allow the part to cool naturally in the air, REMEMBER you can always re-heat if it is not soft enough, but donot over heat so that the metal is glowing red, as it will then be too soft and not workable once it gets like this it is difficult to rectify. Use the fire box ends to help with forming the fire box side.

21. SMOKE BOX FRONT. Pin the smoke box front to a piece of wood using drawing pins, spring the boiler end around the smoke box front, so that it fits around the etched circle, this will allow the smoke box front to be used as a former. To ensure that the boiler is circular, NOTE the half etched mark on the boiler should be in line with the hole for the smoke box hand rail knob. Solder the boiler to the smoke box front, then solder the overlapping joint along the bottom of the boiler, slip a fire box end in place while doing this so that the boiler remains paralell. Now clean the smoke box front joint with a file.

22. FIRE BOX END. Pin the fire box end to a piece of wood using drawing pins, and solder the box around the fire box back, by using the fire box back as a former like this, it will help to prevent creases and maintain the correct radius.

23. FIRE BOX FRONT. Slip into place and solder in a similar manner to the fire box end.

24. SMOKE BOX RIVET DETAIL WRAPPER. Slip this over the end of the boiler and solder into place. NOTE this was a later addition to certain locos so for authenticity chck a photograph of your chosen prototype.

25. BOILER BANDS. The full metal strip fits into the half etched groove around the boiler, this will help to keep the boiler bands square as you solder them around. Start with the center of the boiler band at the top of the boiler, and work around to the underside.

26. HAND HOLE COVERS. Solder these to the side of the fire box NOTE the half etched crosses are to mark the center lines.

27. SMOKE BOX FRONT FOOT STEPS. Bend the foot steps up with pliers and solder into place. Now solder the boiler to the footplate assembly, tack solder at the fire box end, and check that the boiler is parallel and square to the assembly, file a little from the smoke box saddle radius, or the fire box sides to adjust the height until it is parallel to the footplate. Now fit the rear splashers in the same manner as parts 10 & 11

Once all the brass construction is complete, fit the hand rails using .7mm wire and 11 short hand rail knobs. It may be necessary to deburr the holes in the hand rail knobs with a fine drill to allow the wire to fit through.
Use the main drawing for positions

CASTINGS.

C1. BRAKE AND WATER SCOOP STANDARDS.
Drill out a hole in the top to take a split pin,then form a handle from .7mm wire fit into the holes in part 15.

C2 TOOL BOXES.
Fit a seperate door so that it can open left/right handed, and fit to the shelf infront of the tender coal plate.

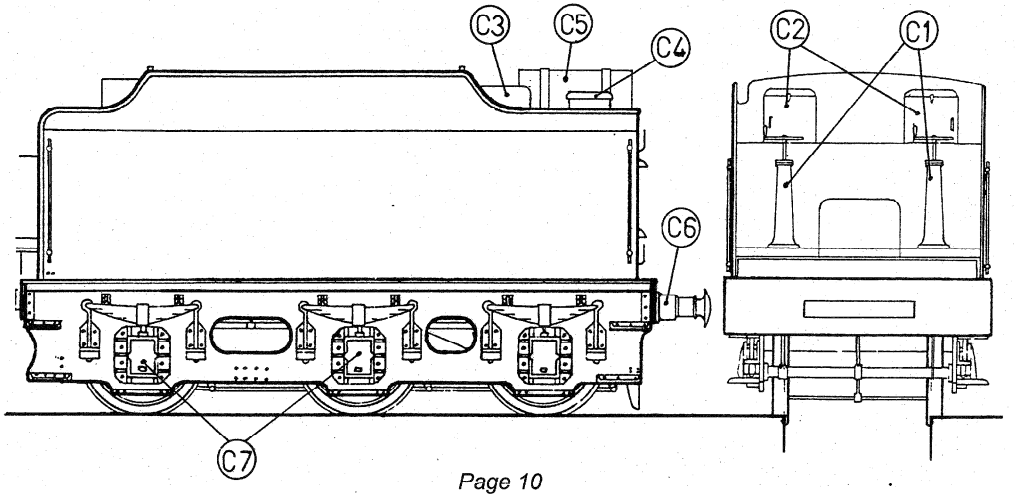
C3 WATER PICK UP DOME.
This fits into the hole in the tender top.

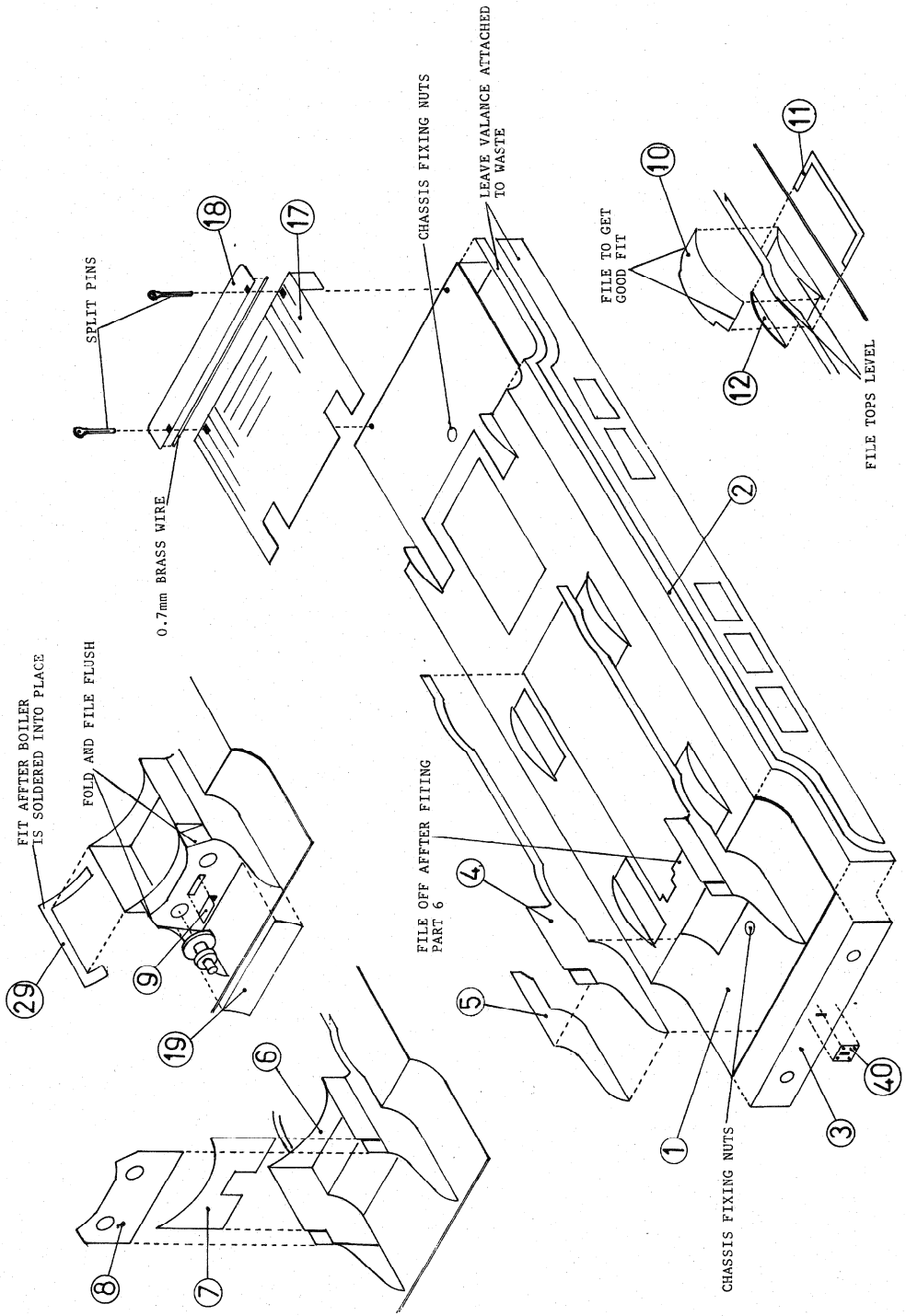
C4 TANK FILLER.
Fits into a hole in the tender top.

C5 AIR RESERVOIR TANK.
This fits onto the top of the tank. Note not all locos were fitted with these so for authenticity check a photograph of your chosen prototype.

C6 BUFFERS.
these fit into a hole in the the buffer beam.
(If you wish to replace these items with a turned brass sprung set, Slaters can provide some very nice ones, caterlogue number 7909)

C7 AXLE BOXES.
These fit to the tender frames, there are some half etched lines to help get them central, and the springs should be just clear of the spring stops.





8. STEAM CHEST FRONT. Slip this into the half etched groves which are on the inside face face of the frames, this will set the steam chest front at its correct angle. Fold the front sections of the staem chest sides against the angle of the steam chest front, solder in place and file flush with the front.

9. STEAM CHEST STEP. Bend this using pliers and solder it into a half etched rebate in the steam chest front.

10. SPLASHER TOPS. File the tops of the splashers front and back until they are level, this will allow the splasher tops to fit level and square, it may be necessary to file a little from each end of the splasher top.
Pre-curve the splasher top around a piece of tube etc and solder ontop of the splasher sides.Clean up and file the front face of the splasher.

11. SPLASHER/ FOOTPLATE BEADING. Slip this either side of the splasher and solder it to the footplate.

12. SPLASHER REAR COVER PLATE. Fit this from behind the frame to prevent seeing the backs of the wheels,(check clearences as they are tight at this point) Fit front and center splashers at this point, the rear splashers are fitted when the cab and boiler are in place.

13. CAB SIDES/FRONT.

14. SIDE WINDOW BEADING. Solder this into the half etched rebate.

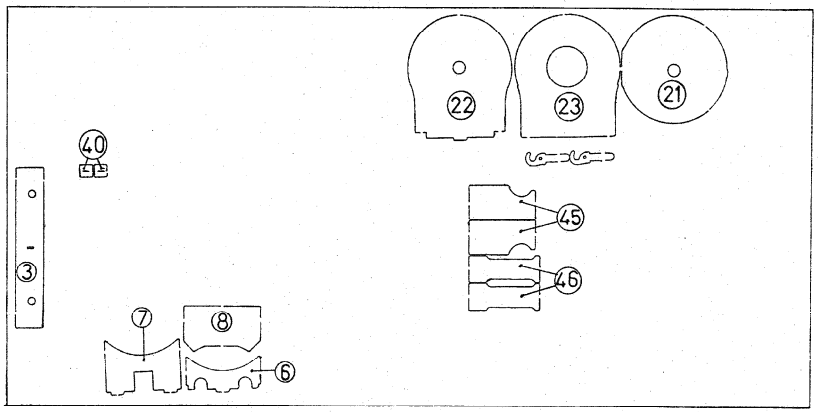
15. CAB DOOR BEADING. Solder this into the half etched rebate.

16. CAB FRONT WINDOW BEADING. Solder into the half etched rebate, then fold up the cab and fit it to the footplate locating the tabs into the slots.

17. CAB FLOOR. Fold down the back and sides and fit into the cab, the front edge will rest on the ledge formed by the top of footplate.

18. FALL PLATE Solder a piece of .7mm wire into the half etched rebate on the under side edge, pass two split pins over the wire through the slots in the cab floor, and through the holes in the footplate, solder from the under side this will form a hinge.

19. DUST COVER. slightly pre-curve around a piece of tube and solder againstthe steam chest front, so that the bottom edge locates into the half etched slot on the footplate.



L N E R J39/1 BODY ASSEMBLY.

1. FOOTPLATE. Curve the footplate by gently working with your fingers and thumb around a piece of tube or something similar, then fold down the rear drag beam.

2. VALANCES. Leave the waste strip attached until the boiler is soldered into place, this will give strength to the valances and allow them to be used as a former to help curve the foot plate. This in turn will aiso give strength to the foot plate. The waste can be snipped of with a pair of cutters, and the valance then cleaned up using a file. Solder the valance into the half etched on the under side of the footplate.

3. BUFFER BEAMS. Solder this to the underside of the footplate locating against the ends of the valances.
Now fold up the splasher sides using a pair of pliers.

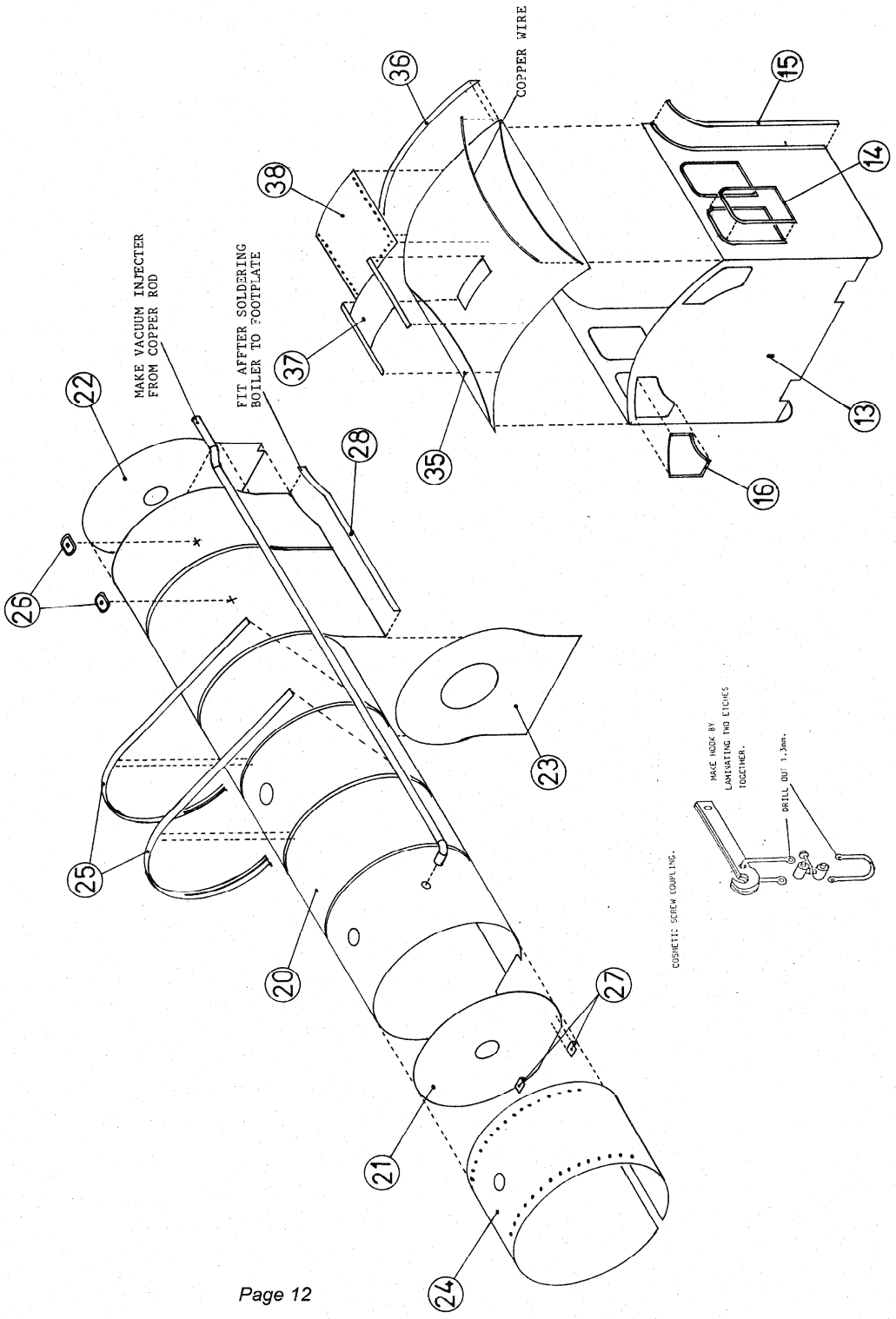
4. FRAMES/STEAM CHEST SIDES.

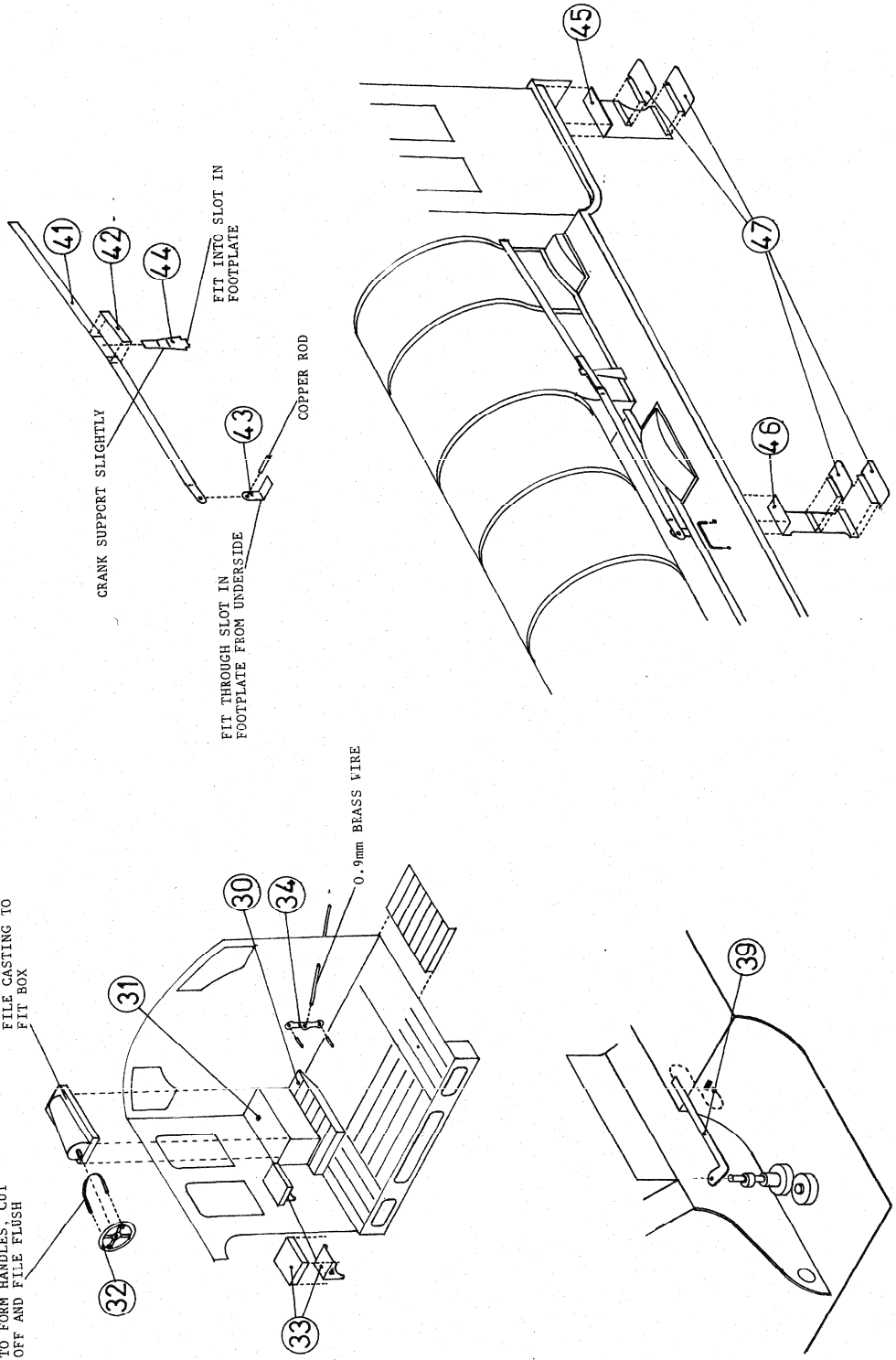
5. DETAIL OVERLAY. Solder the detail overlay to part 4 then solder part 4 into the slots in the footplate, now solder the chassis fixing nuts to the foot plate.

NOW ONTO THE CHASSIS.....
.....Now you have a basic chassis you can use this to check clearences for wheels, as the body construction progresses. First check that the wheels clearthe underside of the frame splasher cut out, relieve with a round file if necessary.

6. SMOKE BOX SADDLE REAR. Solder between the steam chest sides, locating the tab in the center slot, once soldered in place file flush the protruding piece of brass that contains the slot.

7.SMOKE BOX SADDLE FRONT. Solder this between the steam chest locating the tabs into the slots in the footplate.

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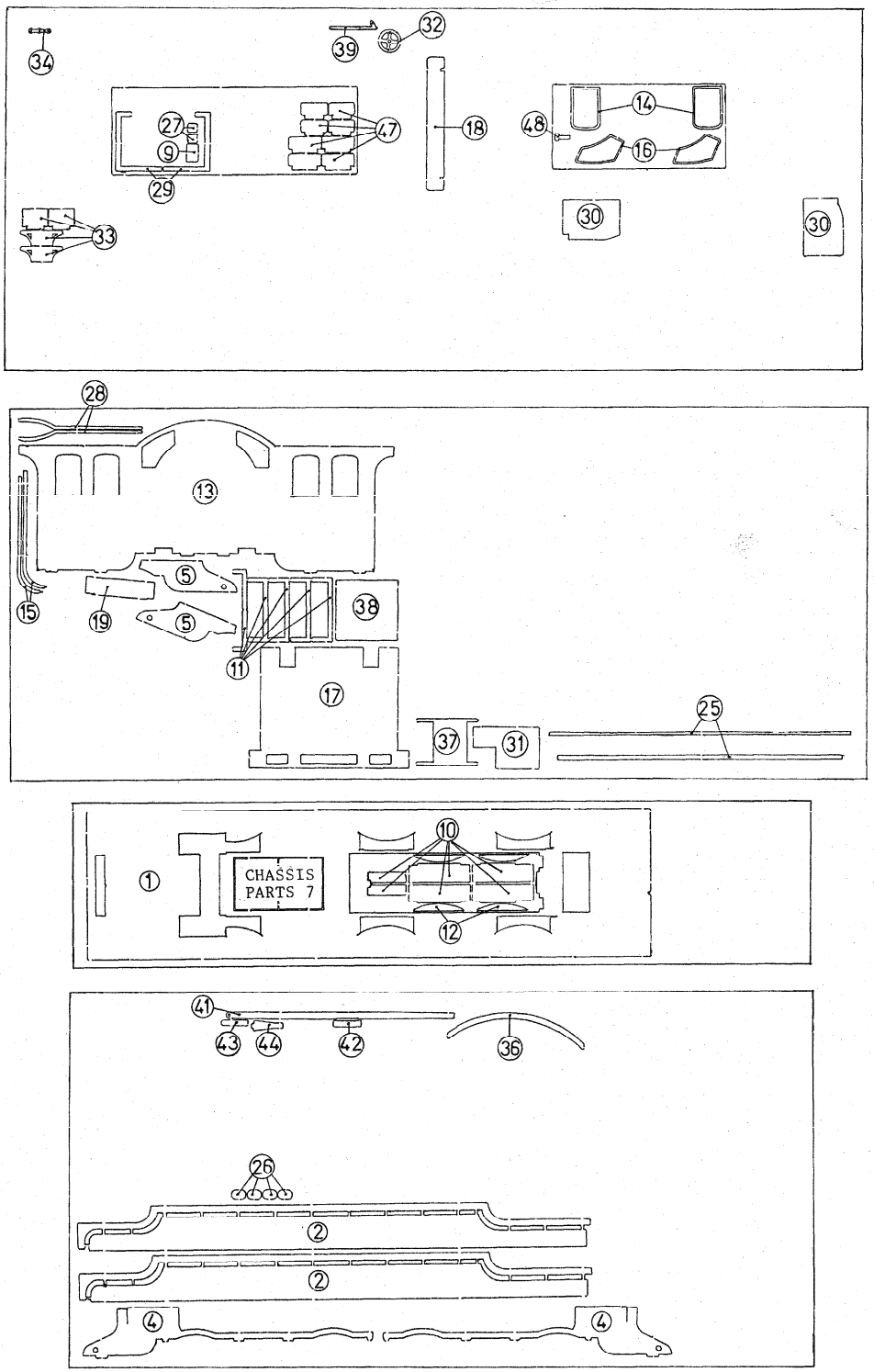
44
FIT INTO SLOT IN FOOTPLATE
CRANK SUPPORT SLIGHTLY
43
COPPER ROD
FIT THROUGH SLOT IN FOOTPLATE FROM UNDERSIDE
45
47
46
0.9mm BRASS WIRE
30
34
31
FILE CASTING TO FIT BOX
COPPER WIRE, MAKE INTO LOOP, SOLDER IN PLACE TO FORM HANDLES, CUT OFF AND FILE FLUSH
32
33
39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CHASSIS PARTS 7
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