CONNOISSEUR MODELS

London & North Eastern Railway
2-4-2 Radial Tank, Class F5

Prototype. This class was originally built by the GER from 1903. They were initially the mainstay of the London suburban service but later worked all over East Anglia, operating on many of the country branch lines. The class lasted until 1958.

Kit. The main body components are etched in brass. All of the chassis and some of the body components are in nickel silver. Provision is made for sprung radial trucks. The cab interior is well detailed and components are provided for the extensive pipework.

Parts Required To Complete

2 Sets 5'3", 16 Spoke Driving Wheels (Slater's Catalogue Numbers 7863)
2 Sets 3'9", 10 Spoke Bogie Wheels (Slater's Catalogue Numbers 7845)
Plunger Pickups if desired (Slater's Catalogue Number 7157)
Available From Slater's Plastikard, Old Road, Darley Dale, Matlock Derbyshire, DE4 2ER, Telephone 01629 734053.
Mashima 1833 Motor and 40/1 Gear Set.

Connoisseur Models, 1 Newton Cottages, Nr Weobley, Herefordshire, HR4 8QX, Telephone 01544 318263
Proprietor Jim McGeown

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 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 so necessary for soldering small parts onto 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 as 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 the 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 and 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 many tool merchants, but it is also produced in stick form by Carrs. I find that its lower working temperature helps to give a quick clean joint and limits the build up of heat which may cause distortion in components. 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 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 then 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. Still holding the parts in place remove the iron 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 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 standard mains plug fused at 3 amps 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.

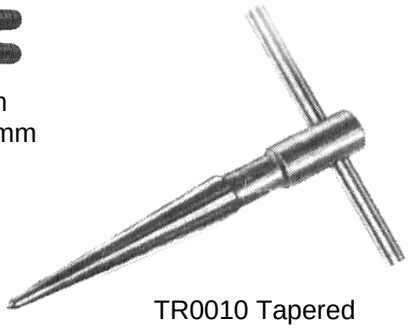
When attaching white metal fittings to brass the surface of the brass must be tinned with 145° solder to allow the solder to grip. The surface of the casting at the joint should be burnished bright. The casting can then be soldered into place with 70° solder and fillets of solder run into any gaps with no risk of melting the casting. Virtually all castings will be improved by a little extra fettling work. Flash can be cleaned out using a sharp pointed knife blade, part lines removed by scraping back with a curved blade and then blending in using a fibreglass brush. The casting moulds tend to distort when metal flows in so check castings for square and even thickness.

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.

BRC250 6 Piece Cutting Broach Set 0.7-2mm
BRC300 12 Piece Cutting Broach Set 0.65-4mm

TR0005 Micro Drill Reamer 1mm-5mm



TR0010 Tapered Reamer 3mm-12mm

Three very useful tools purchased from SQUIRES, 100 London Road, Bognor Regis, West Sussex, PO21 1DD, Telephone 01243 842424.

Forming Parts. While the boiler in this kit is pre-formed, other forming is best achieved as construction progresses as 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 and pull upwards with fingers, forming approximately 30 degrees of the bend. Check with eye and adjust if necessary before forming 60 degree of bend then 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 or broom handle. Diameter is not crucial, a piece of one-inch water pipe covers cab roof to smoke box wrapper. Place part over tube and 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 individual items can be replaced as I have full control of production. Because of the complexity of the product, combined with the low volume way it is produced, I try to exercise a high degree of quality control in production and packing but if you find you are short of an item or find a sub standard part please approach me for a replacement.

Fibreglass Scratch Brush. The scratch brush is like a propelling pencil holder into which a fibreglass refill is fitted and which will 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 while they harden off. This will make the refills much more abrasive and longer lasting and 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.

A fibreglass brush 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.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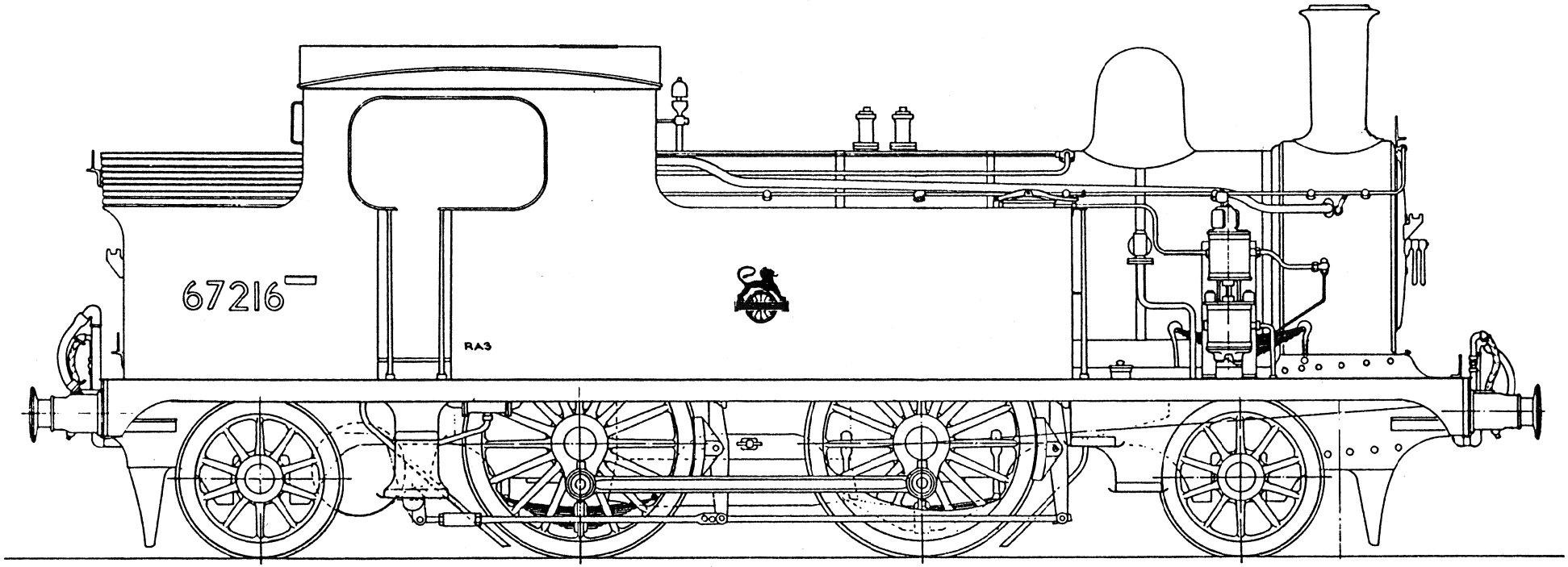
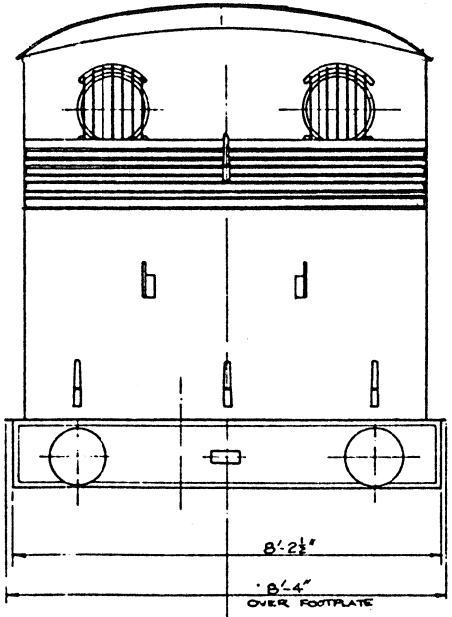
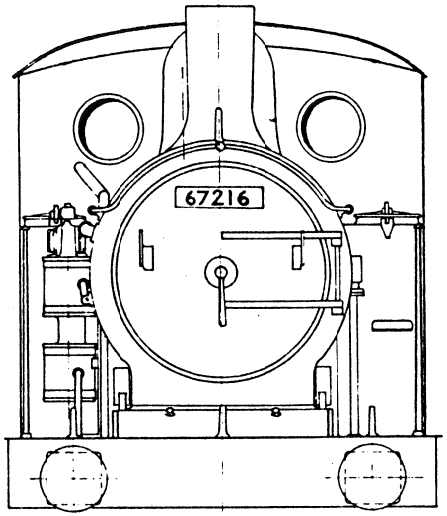




LNER CLASS F5 RADIAL TANK

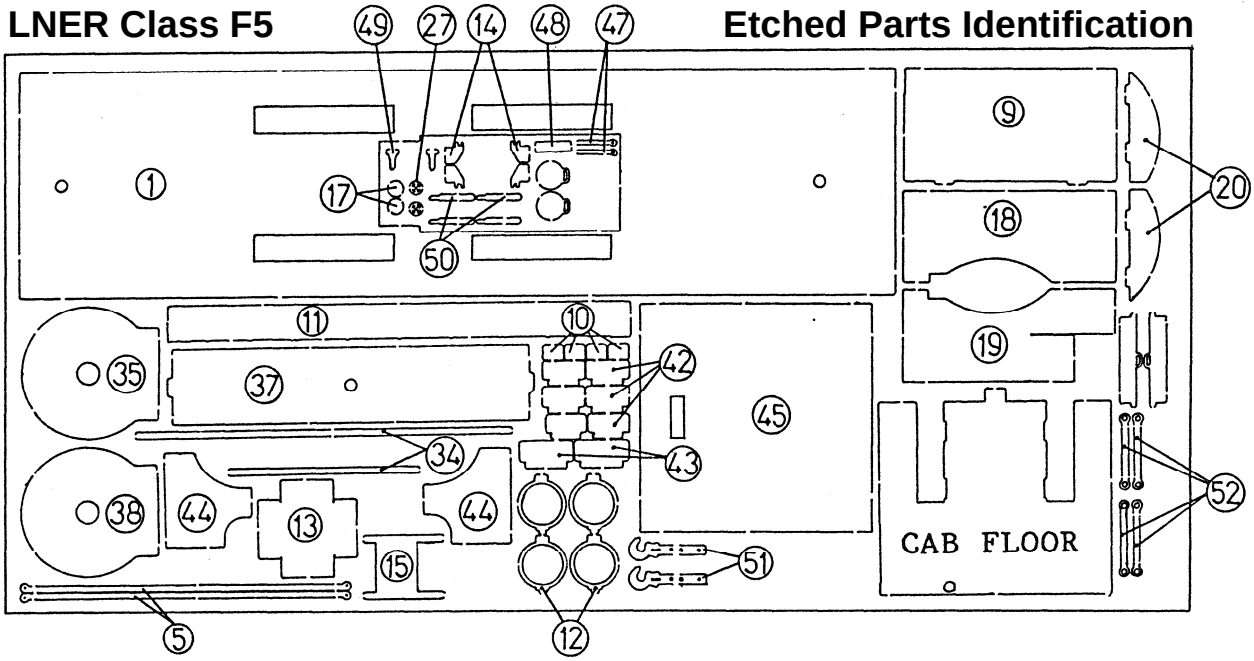


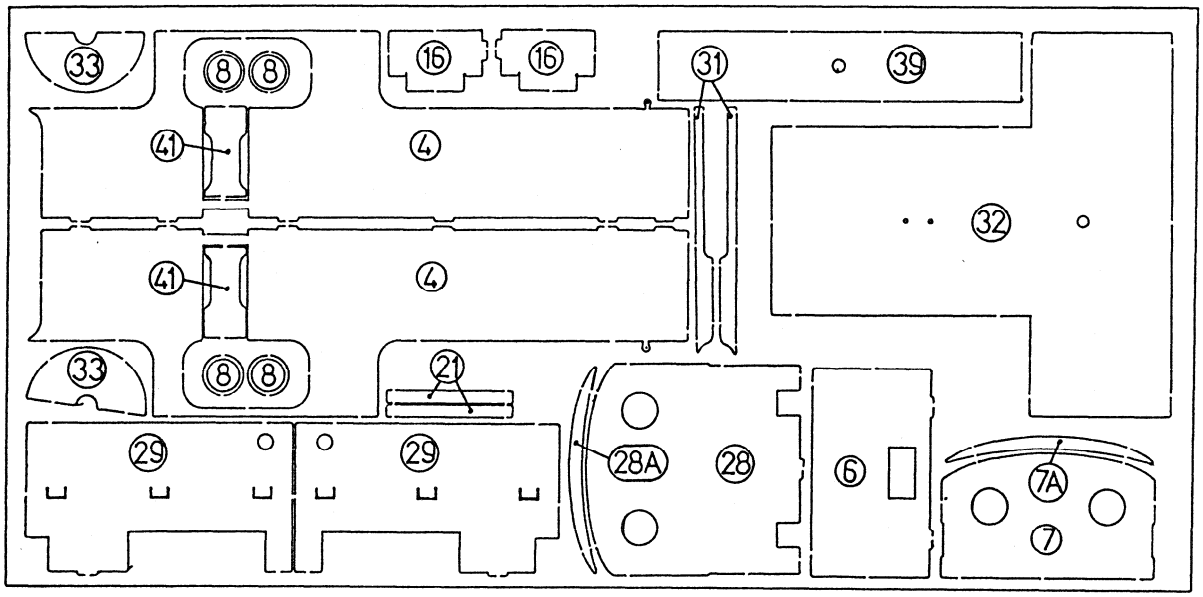
The main part of these instructions are scanned from the original paper masters used on a photocopier.

These were created before the existence of modern computer desk top publishing, using pen, ink and ribbon typewriter and physically cut out and pasted up.

DRAWINGS ONLY APPROXIMATELY TO SCALE

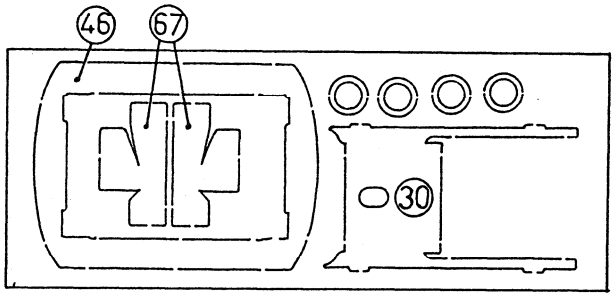
LNER Class F5 Etched Parts Identification

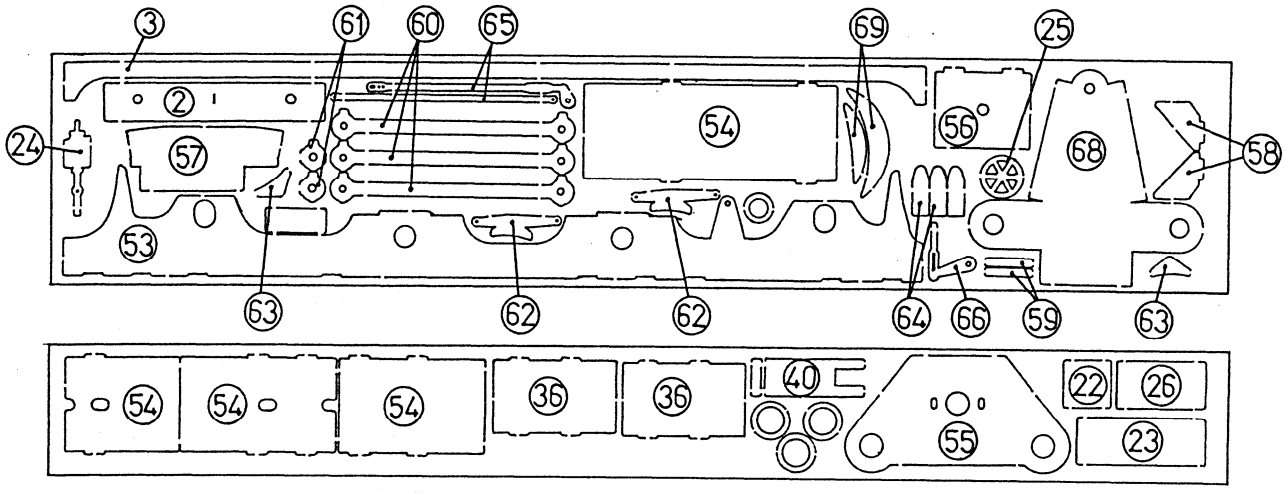




Above parts are etched in brass.
Part 32 is the boiler.
You will find this part removed, pre rolled & wrapped separately

Parts below are etched in Nickel Silver.
You will find a section repeated as mirror image to provide L/H & R/H chassis sides etc.





LNER Class F5

Main Body Component Construction

1. FOOTPLATE.

2. BUFFER BEAM.

3. FOOTPLATE VALANCE. Solder front bufferbeam to footplate. Then solder valances into half etched lines on the underside of the footplate. Work from front to back to stop them buckling. Dont block tank/cabside slots with solder. Then solder back bufferbeam against the ends of the valances. solder chassis fixing nuts ontop of holes in the footplate. best achieved by locking into place with the screws. remember to put a smear of oil on the screw thread to prevent soldering the screw solid.

4. TANK/CAB SIDE.

5. CAB BEADING. Roughly preform around drill shanks etc. Then tack solder into place, work from one end. Once satisfied flood with solder and then clean up with files. I find it easy to fit the beading in two parts, joining at the top. Then fold tank fronts 90° and fold down front handrail brackets. Reinforce fold with a spot of solder. Fit cab/tank sides into slots.

6. BUNKER FRONT. Fold top 90° and solder into slots in footplate.

7. CAB BACK.

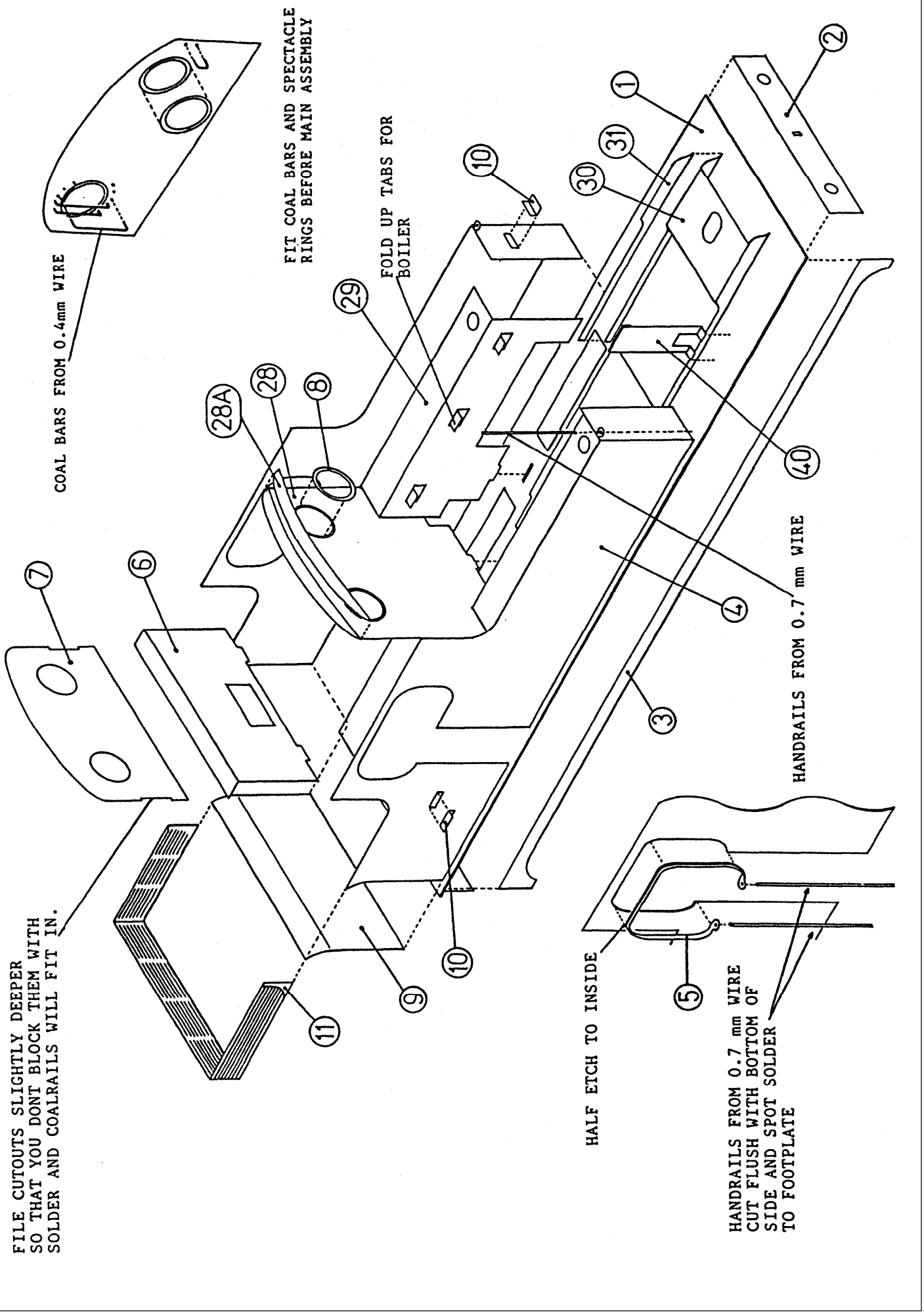
7A. ROOF EXTENSION. This part represents the plate fited by the LNER to raise the height of the cab roof. Solder this into half etch on part 7. For original roof profile cut out half etch.

8. SPECTACLE RINGS. Fit coal bars and rings before fiting part 7 between cab sides.

9. BUNKER BACK. Curve top around a piece of tube. Do not worry about getting the curve exactly right, as once the back is solderd between the bunker sides (half etch to inside) They can be filed with a half round file to match the curve of the back.

10. TANK/BUNKER STEP TREADS. Fold these up using pliers and solder into the half etched rebates. Fit cab and tank handrails from 0.7mm wire.

11. COALRAILS. Fold up and fit into slots in cab back. Then solder around bunker top.


COAL BARS FROM 0.4mm WIRE
FIT COAL BARS AND SPECTACLE RINGS BEFORE MAIN ASSEMBLY
FOLD UP TABS FOR BOILER
HANDRAILS FROM 0.7 mm WIRE
FILE CUTOUTS SLIGHTLY DEEPER SO THAT YOU DONT BLOCK THEM WITH SOLDER AND COALRAILS WILL FIT IN.
HALF ETCH TO INSIDE
HANDRAILS FROM 0.7 mm WIRE CUT FLUSH WITH BOTTOM OF SIDE AND SPOT SOLDER TO FOOTPLATE
1
2
3
4
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6
7
8
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11
28A
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31
40

CAB DETAIL

I now find it best to fit the cab detail before fiting the cab front, as it allows easy access. But keep fiting the cab front in place as you go, just to make sure it will still fit. Fold up and fit the cab floor.

12. SPECTACLE FRAME. Solder over spectacle hole. A circle of glazeing can be glued into this after painting.

13. TOOL CUPBOARD. Fold up, fill corners with solder and blend in with a file. Fit to cab back. Note etched marks to help with position.

14. DESTINATION BOARD BRACKETS. Solder into half etched rebates in cab back. You may find it easy to fit these parts before fiting cab back between cab sides.

15. COAL DOOR. Solder in place over hole in bunker front.

16. SAND BOX. Fold up, fill corners with solder, then radius corners with a file.

17. ACCESS COVER. Solder over etched circle. Fit operating handle and sandbox filler. Then fit sandbox to bunker front.

18. L/H TANK.

19. R/H TANK. Fold up and solder to floor. Ensure they will sit square and hard up to the cab front but will not prevent it from fitting.

20. SPLASHER SIDES. Pin to a piece of wood to act as a former for the splasher top.

21. SPLASHER TOP. Preform and then solder to splasher side. Then solder splasher to cab floor. You may have to do a bit of triming with a file to get a good fit.

22/23. WOOD TANK TOPS. Solder to tanks and cab sides. Fit operating handles.

24. REVERESER MOUNTAING. Laminate etches together. Then fit into etched rebate in tank side.

25. REVERSING WHEEL. Make the handle from wire. Then solder to mountain.

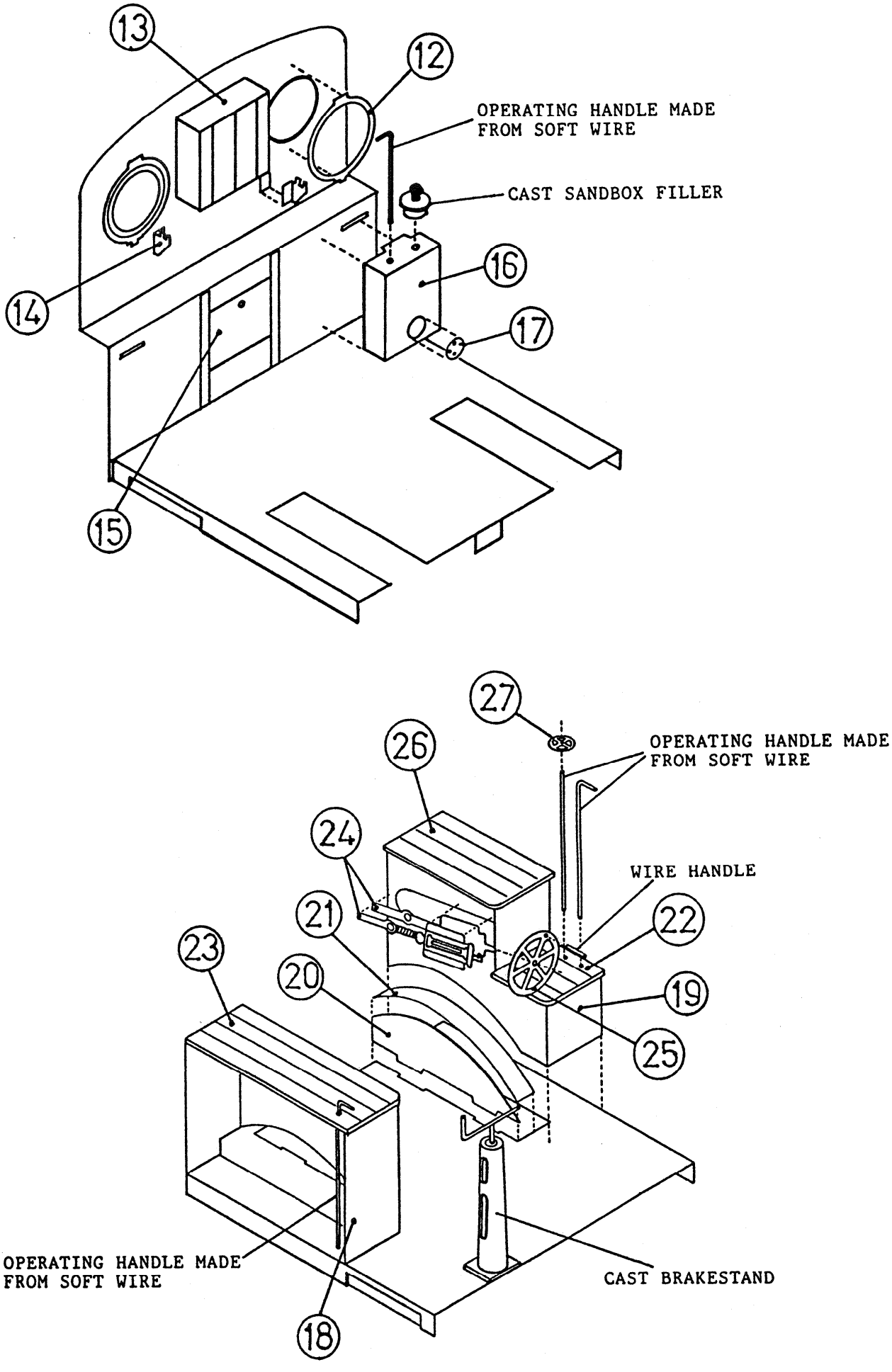
26. WOOD TANK TOP. Solder to tank and cab side.

Fit cast brake stand.

27. ETCHED HANDWHEEL. Solder to wire operating handle.

28. CAB FRONT. Fit spectacle rings part 8 and roof extension part 28A to front and spectacle frames part 12 to rear. Then fit between cab sides.

29. TANK INSIDE FACES. Fold out the three small tabs and reinforce with solder. The boiler will rest on these. Fold top, Then fit in place.


13
12
OPERATING HANDLE MADE
FROM SOFT WIRE
CAST SANDBOX FILLER
16
14
17
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27
26
OPERATING HANDLE MADE
FROM SOFT WIRE
24
WIRE HANDLE
21
22
23
20
19
25
OPERATING HANDLE MADE
FROM SOFT WIRE
CAST BRAKESTAND
18

30. FRAMES AND VALVE CHEST. Fold up.

31. DETAIL OVERLAYS. Laminate to frames. Then solder frames to footplate.

32. PRE ROLLED BOILER.(ROUGHLY).

33. BOILER FORMERS. Drawing pin former to a piece of wood. Place boiler end over this and squeez tight. Solder boiler to former. Then solder overlap joint at bottom. Finger and thumb out any egg shapedness. Solder second former to other end.

34. BOILER BANDS. Solder half etch band around smokebox end of boiler. Fit the three bands down the boiler. The full metal strip fits into the half etched grove around the boiler. This will help to keep the boiler bands square as you solder them around. Start with the centre of the boiler band at the top of the boiler and work around to the underside. Leave the last boiler band untill the boiler is fitted. This will hide any gap between cab and boiler.

35. SMOKEBOX FRONT. Drawing pin to a flat piece of wood.

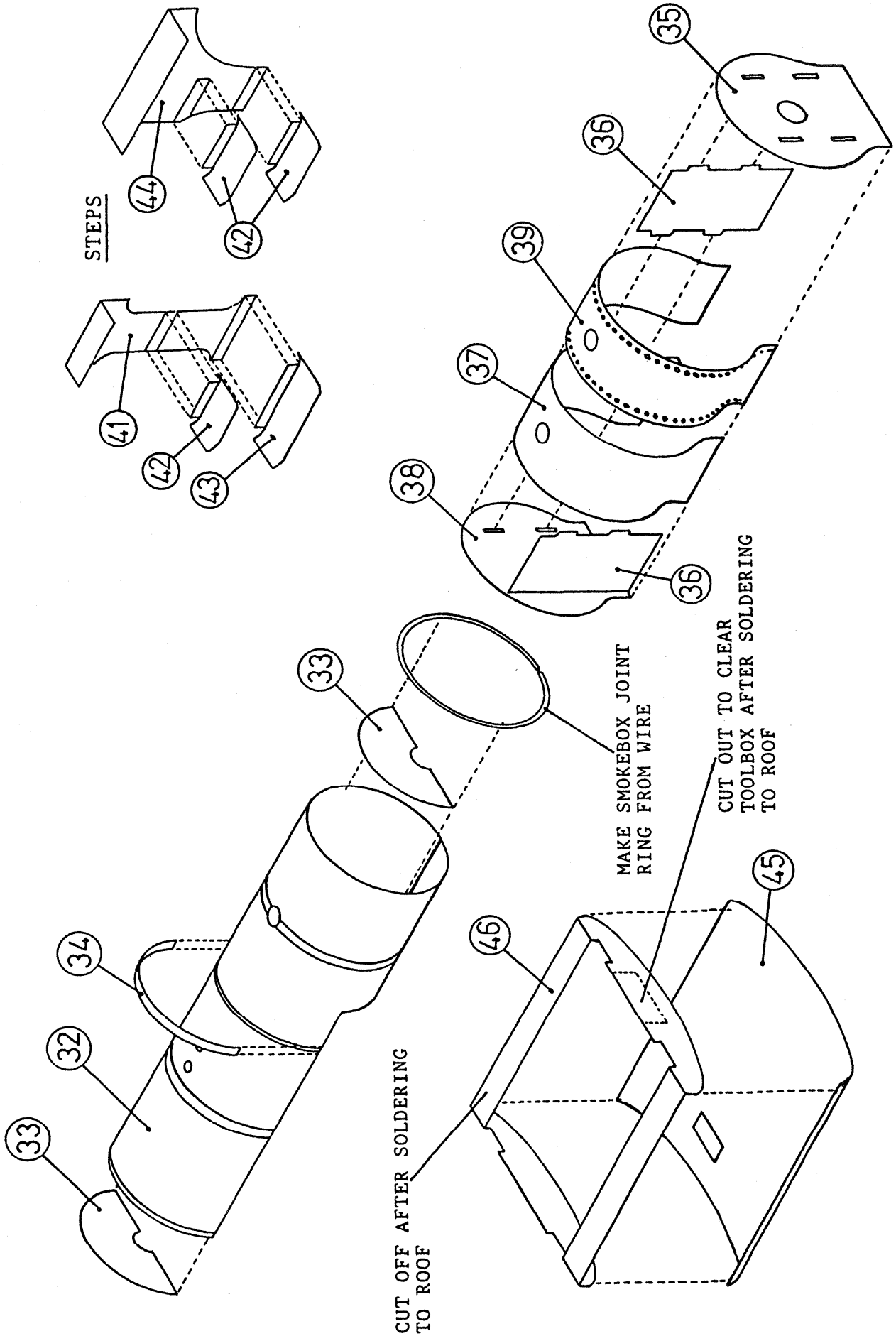
36. SMOKEBOX SPACERS. Solder these into slots in smokebox front. Ensure that they are square.

37. SMOKEBOX WRAPPER, Roughly pre form smokebox wrapper using a broom handle and drill shanks etc. You may wish to make the brass soft and workable by annealing. 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. Allow the part to cool naturally in the air. Remember you can always re-heat if it is not soft enough,But do not over heat so that the metal is glowing red. As it will then be to soft and not workable.

    Position the wrapper to the centre of the smokebox front top. Their being small etched centre marks to aid you. Starting from the top work your way round soldering to the front and using this as a former. The wrapper passing around the outside of the smokebox front.

38. SMOKEBOX REAR. Solder into place in the same way as the front Now file a radius around the edges.

39. RIVET DETAIL WRAPPER. Solder to smokebox, lineing up chimney hole. Now slip the boiler firmly between the tanks. Place the smokebox into the slots ontop of valve chest (part 30). View the entire assembly from all directions and when satisfied solder the boiler to the smokebox rear. A drill shank through the hole in the smokebox will help to get the front end central The assembly can then be withdrawn for the fitting of the smokebox joint ring. Make joint ring from copper wire, fill with solder and file to give a quarter round. Now solder assembly in place. Fit cast springs at this stage (see casting detail).


STEPS
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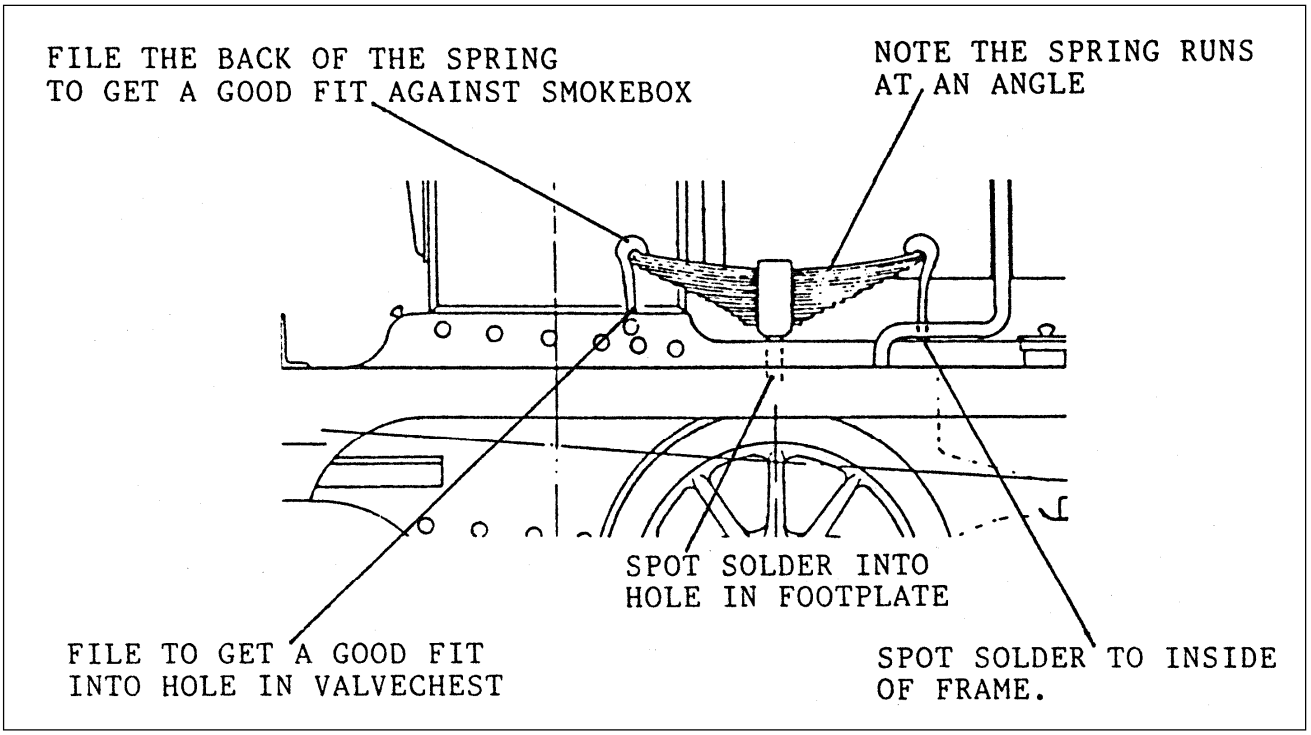
32
33
MAKE SMOKEBOX JOINT
RING FROM WIRE
CUT OUT TO CLEAR
TOOLBOX AFTER SOLDERING
TO ROOF
45
46
CUT OFF AFTER SOLDERING
TO ROOF



40. WESTINGHOUSE PUMP BRACKET. Fold over top section 180° (to space it from the boiler). Solder it to the footplate and boiler side. See drawings for position.

41. CAB STEPS.

42/43. STEP TREADS. Fold these up using a pair of pliers and solder into half etched rebates in steps. Fold the top of the step and solder to the underside of the footplate using the half etched lines to help in location.

44. FRONT FOOTPLATE STEPS.

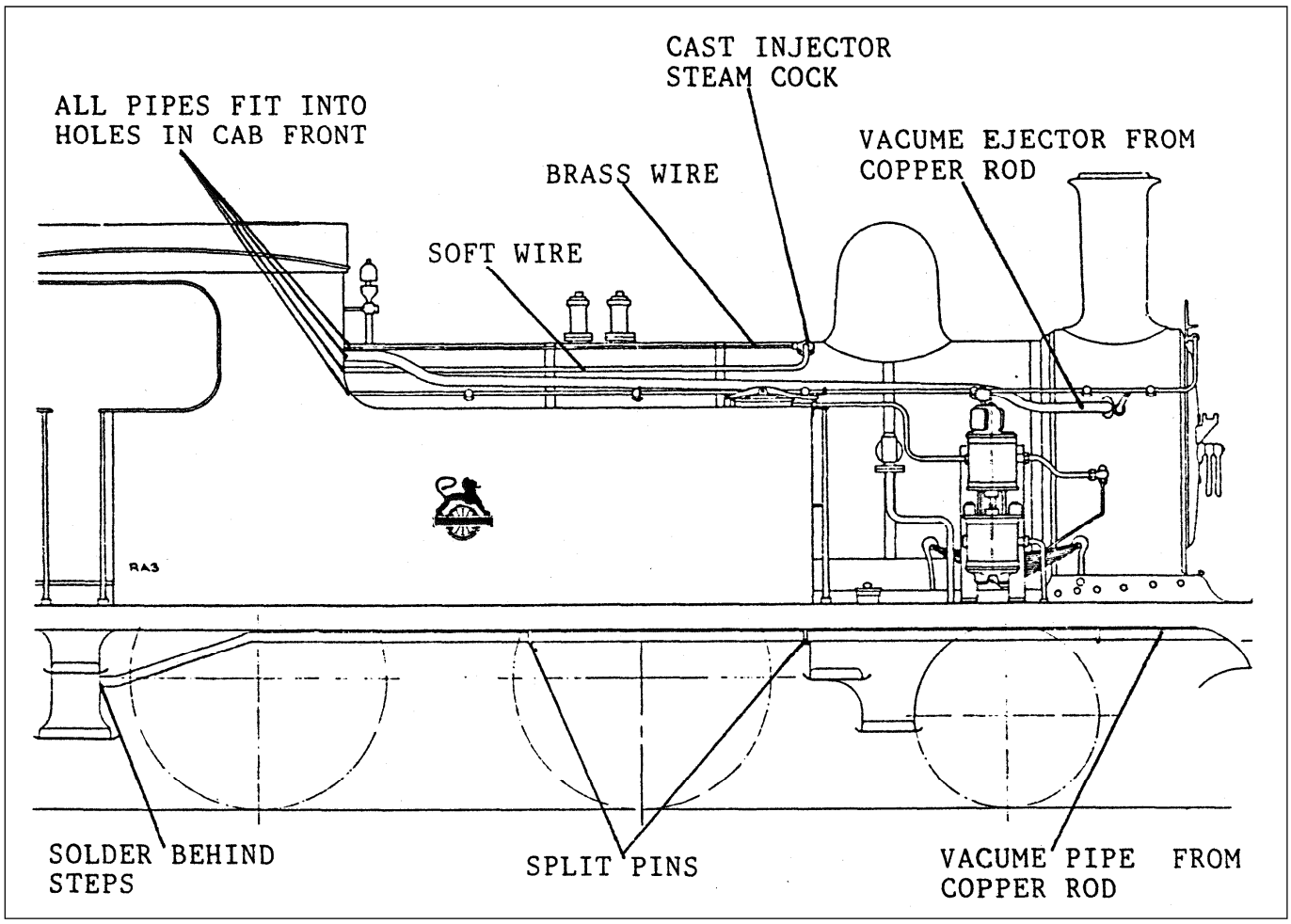
45. CAB ROOF. Pre form by using broom handle etc.

46. CAB ROOF FORMER. You may find this of use to make a removable cab roof. Mark centreline and length of cab onto the cab roof before forming up. This is to help you locate the former centrally.

DETAILS AND CASTINGS

Fit vacume ejector pipe made from copper rod. Fit into hole in smokebox and cab front. Tack solder to boiler.

Fit boiler handrails from 0.7mm brass wire. The three handrail knobs on the smokebox sides are long knobs with the base cot off. I find it best to make the handrail in two halves joining them at the handrail knob on the smokebox front.

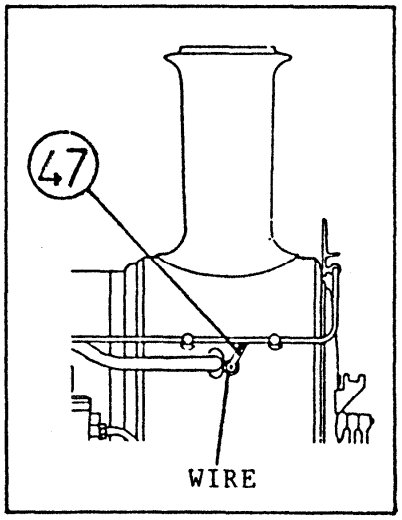


Fit westinghouse pump casting. Drill out holes for pipework. Fit bottom drain pipe. Then fit casting to bracket. Fit the two top pipes made from soft wire.

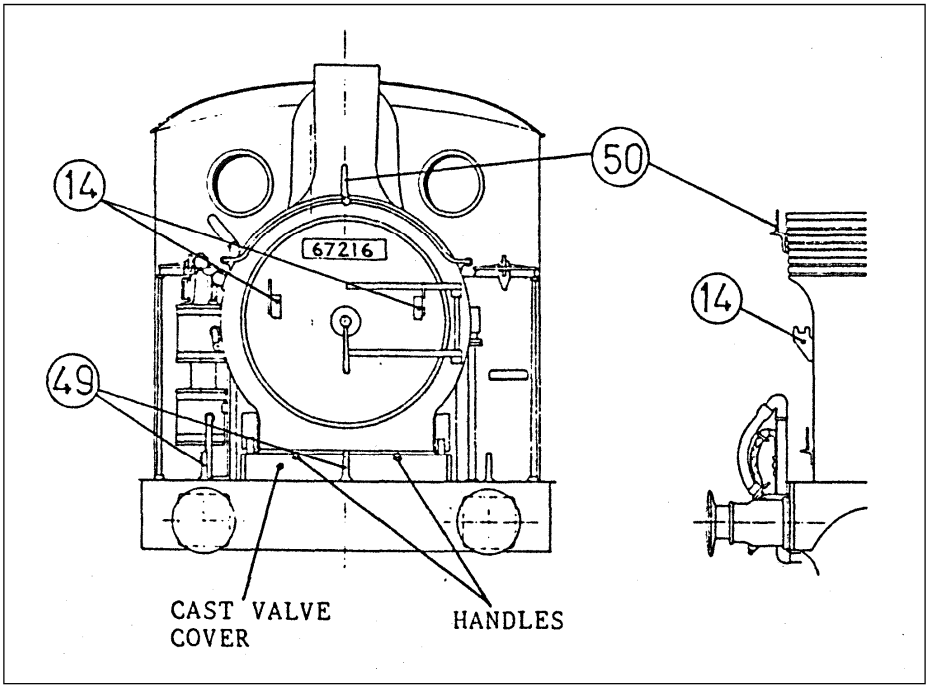
Injector steam cocks. Drill out castings to take wire then fit castings into boiler. Make operating rod from brass wire and pipework from soft wire.

Vacume pipe. Make from copper rod. Make support brackets by forceing split pins onto rod and pinching up with pliers. Solder to footplate valance and behind cab step.

47. BLOWER VALVE. Fit a short length of wire into the hole in the smokebox to form a peg. Fit the end of part 47 over this. Solder to peg and behind handrail. Cut off flush with handrail.



48. CAB FRONT VENTILATOR. Fit into etched rebate in cab front.

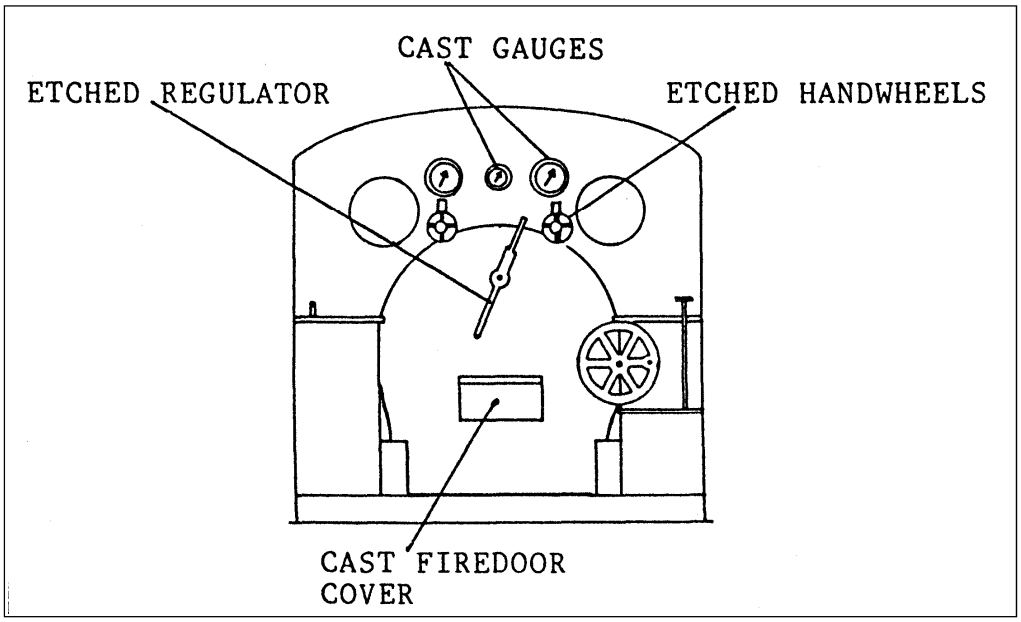


Fit smokebox door casting. Drill out hole in centre and fit door handles. Fit cast valve cover. Drill out holes in casting and fit handles made from track pins.

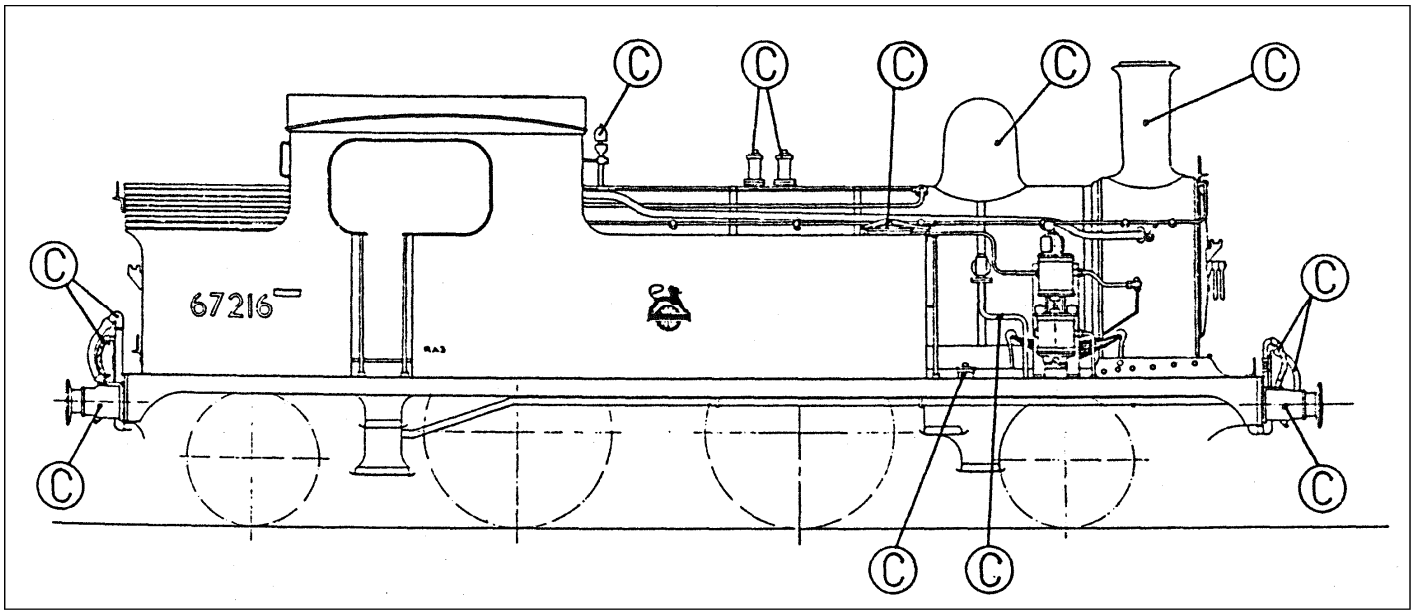
49. FRONT LAMP BRACKETS. Fold up and solder to front footplate (note etched marks).

50. BUNKER AND SMOKEBOX LAMP BRACKETS. Fold up and reinforce with solder (centre bend folds back onto itself). Solder onto bunker back (note etched marks for position) and smokebox front (trim lamp bracket to fit above handrail knob).

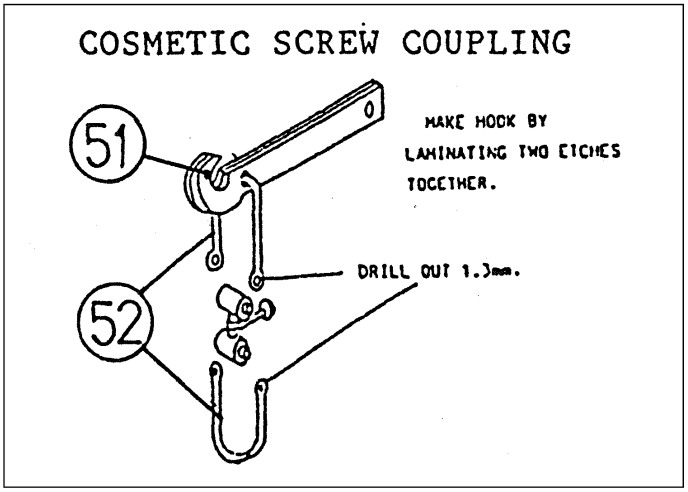
Fit destination board brackets parts 14 to bunker back (note etched marks) and smokebox door.



Fit backhead detail and cast gauges to cab front.



Fit remaining castings with reference to drawing



51. COUPLING HOOKS. Laminate two etches together.

52. LINKS. Form up using round nosed pliers. Fit through slot in coupling hook (you may have to twist a round file in the slot to get the link to swing). Solder coupling into slot in buffer beam and cut flush with back.

CHASSIS CONSTRUCTION

53. FRAMES. Open out holes for bearing bushes. (a tapered reamer from TANDY electrical shops is ideal.) Then drawing pin one frame to a flat piece of wood.

54. FRAME SPACERS. Fold up and solder to the frame. Then tack solder the second frame to the spacers. Start in the centre and work out. This will stop you geting a banana shaped chassis. Check that all is square. (fit wheelsets loose if you wish) Twist at corners or resolder spacers to achieve this. When happy solder all joints with a fillet of solder.

55. MOTOR MOUNT. Open out holes for bearing bushes. Fold up and reinforce bends with solder. Then fit motor mount between frames and locate with bearing bushes. (you will have to file the motor mount to keep the plunger pickup hole clear if you wish to fit them) Solder mount solid and fit rear bearing bushes. There are some packing washers to reduce side play on the wheels but this will also increase the minimum curve the loco will go round. So fit them to the gear axle only and you can space out the back axle later.

56. RADIAL TRUCK MOUNTINGS. Solder nuts to underside. Then fold up and fit into slots in chassis.

57. ASHPAN. Fold up and solder to inside of frames. Note etched lines to help with position.

58. BUFFER BEAM BRACKETS. Solder into slots in frames. You may have to file them to clear sprung buffers.

59. RIVETED FLANGE. Solder to frames below brackets.

60. COUPLING RODS.

61. COUPLING ROD BOSSES. Laminate rods and bosses together. Then fit wheelsets. Fit rods onto crankpins and check chassis runs Eliminate any binding by fileing holes slightly oval but go steady. Fit motor and mesh gearwheels. Conect two wires to the motor and give a test run. Dont forget a spot of oil.

62. BRAKE HANGERS.

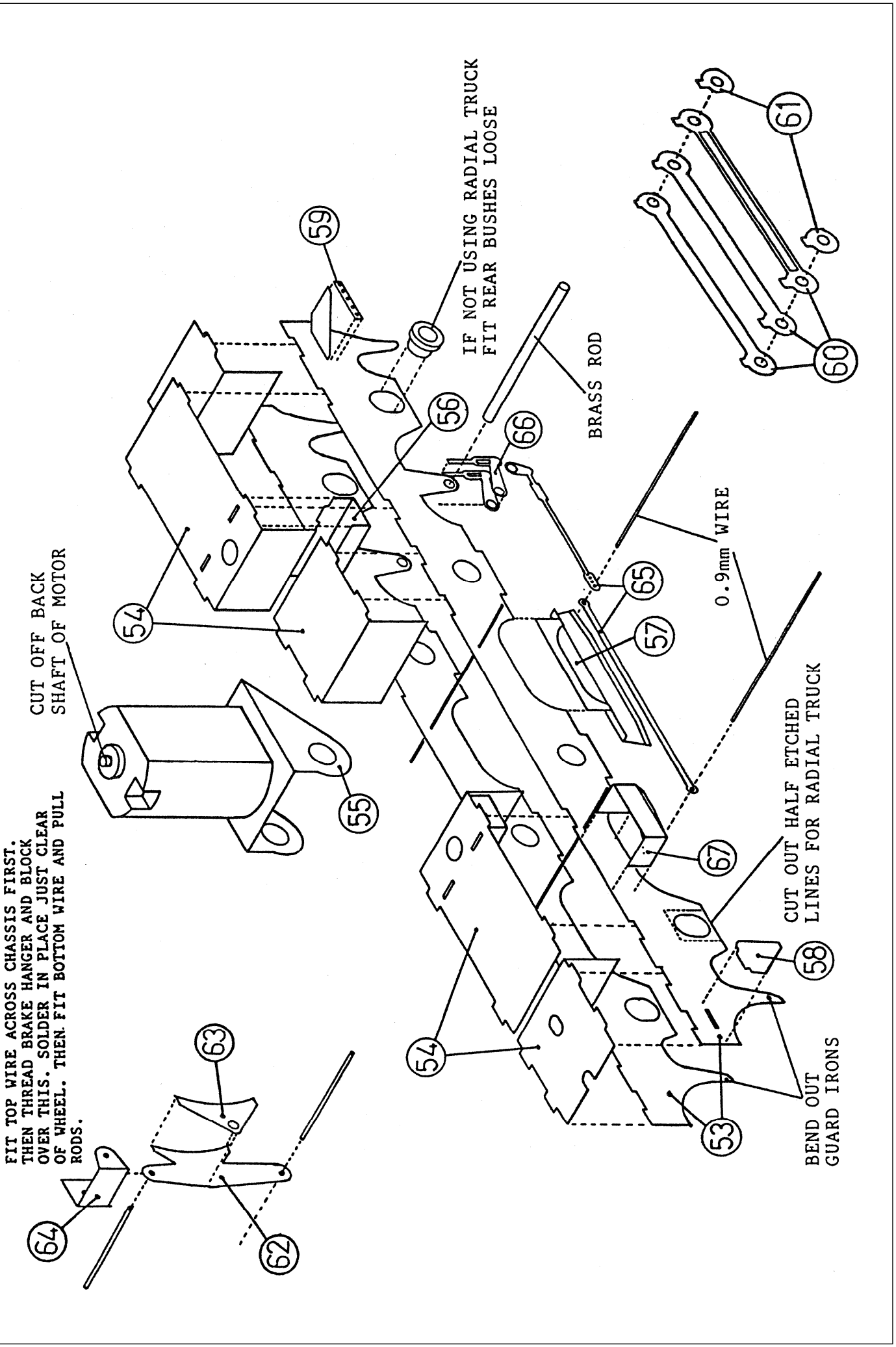
63. BRAKE BLOCKS. Solder to hangers.

64. BRAKE HANGER BRACKETS. Fold up and then fit 0.9mm wire across frames. Thread brackets and hangers over wire. Then solder bracket to frames. Line up brake blocks just clear of wheels and tack solder to wire. Then fit bottom wire.

65. PULL RODS.

66. HANDBRAKE LINKAGE. Solder two together. Pass rod through bracket in frames and hole in linkage. Solder in place and solder linkage to sideframe. Now fit pull rods just clear of wheels. Trim brass rod to length.

67. SANDBOXS. Fold up and gob solder into corners, radius corners with a file. Then fit to frames. Note etched marks for position.


FIT TOP WIRE ACROSS CHASSIS FIRST.
THEN THREAD BRAKE HANGER AND BLOCK
OVER THIS. SOLDER IN PLACE JUST CLEAR
OF WHEEL. THEN FIT BOTTOM WIRE AND PULL
RODS.
CUT OFF BACK
SHAFT OF MOTOR
IF NOT USING RADIAL TRUCK
FIT REAR BUSHES LOOSE
BRASS ROD
0.9mm WIRE
CUT OUT HALF ETCHED
LINES FOR RADIAL TRUCK
BEND OUT
GUARD IRONS
53
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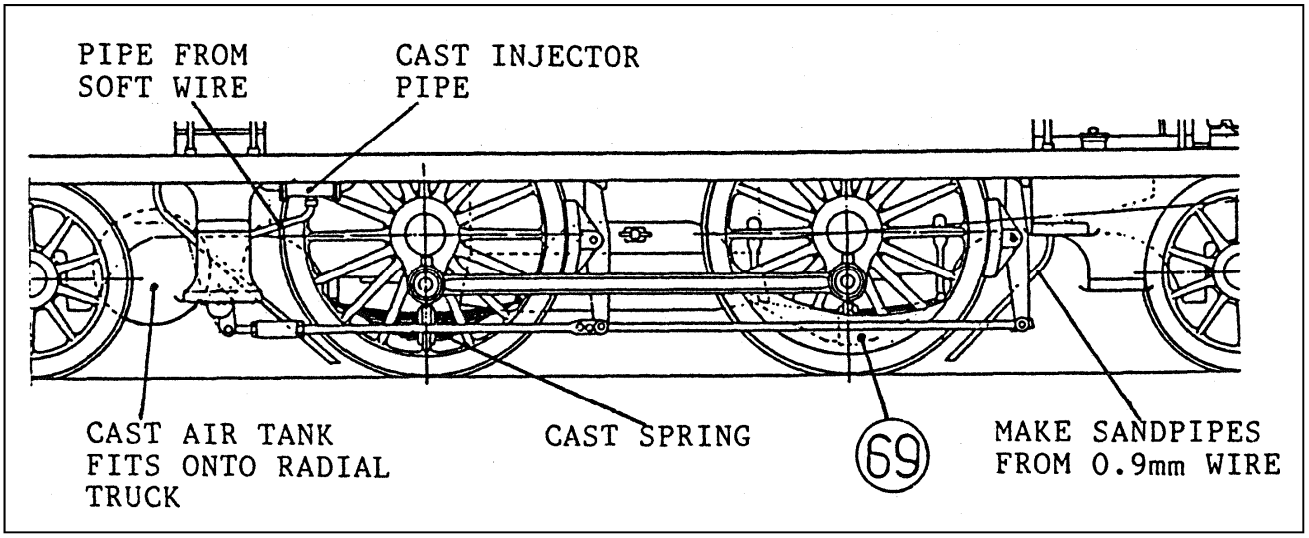
68. RADIAL TRUCKS. Fold up and reinforce folds and joints with solder. Fit bearing bushes. (inside out) Then fit wheelsets. Cut a length of spring and thread this between two washers onto the screw. Screw radial truck into place. This will now spring the truck onto the track. By slackening the screw you will reduce the spring of the truck. Great you now have a chassis! The only problem is that when I built the test one. It would not go round a curve less than 7' radius. If your layout has tight curves you can make the front radial truck into a pony truck by cuting a radius in the frames. The diagram shows this.



69. WHEEL BALANCE WEIGHTS. Glue to spokes. Now fit remaining castings and detail with reference to the drawings. Note the springs are a standard casting and will need to be choped a bit to fit to the frames

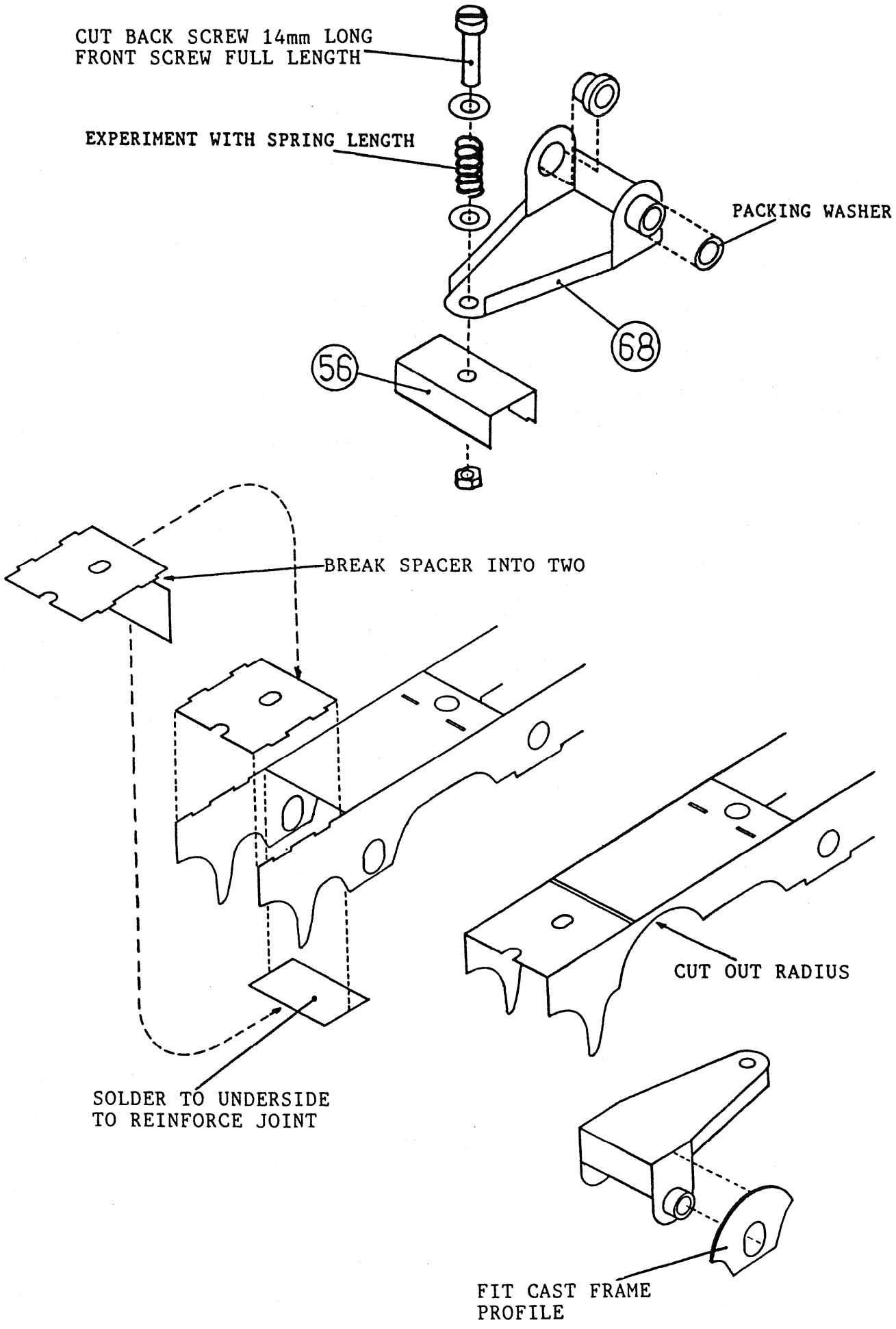
PICKUPS. Parts are provided to make wire wiper pickups but holes are provided in the chassis for plunger pickups if you wish to fit them.

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 customers 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 customers to recommend my kits to there 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 problems.

Best regards and happy modelling
Jim McGeown


CUT BACK SCREW 14mm LONG
FRONT SCREW FULL LENGTH
EXPERIMENT WITH SPRING LENGTH
PACKING WASHER
68
56
BREAK SPACER INTO TWO
CUT OUT RADIUS
SOLDER TO UNDERSIDE
TO REINFORCE JOINT
FIT CAST FRAME
PROFILE