CONNOISSEUR MODELS

0 Gauge Locomotive Kit

LNER Class J71

Prototype. The North Eastern Railway between 1886 and 1895 built this class of 120 locomotives. T W Worsdell designed them as a standard shunting and pilot engine and designated class E. Members of the class lasted until 1961, with number 68286 being one of the famous green liveried York pilots. A number of the class worked on the Easingwold Light Railway and also the North Sunderland Railway.

Kit. The main body components are etched in brass. All the chassis and some of the heavier body components are in nickel silver. Cast fittings are produced in white metal. Cab interior is detailed and a cast backhead is provided. The 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.

Parts Required to Complete

3 Sets 4' $7^1/_2$", 14 Spoke Driving Wheels (Slater's Catalogue Number 7855E)
Plunger Pickups if desired (Slater's Catalogue Number 7157)
Handrail Knobs if desired as a replacement for split pins (Slater's Catalogue Numbers, Long-7951, Short-7952)
Available From Slater's, 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

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.

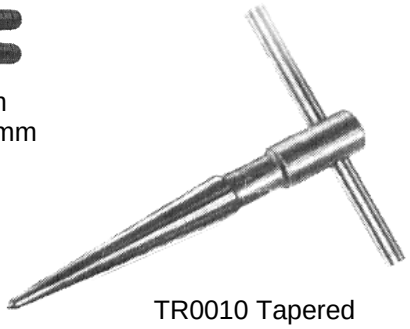
When attaching white metal fittings to brass the surface of the brass must be tinned with 145° solder to allow the solder to grip. The surface of the casting at the joint should be burnished bright. The casting can then be soldered into place with 70° solder and fillets of solder run into any gaps with 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.

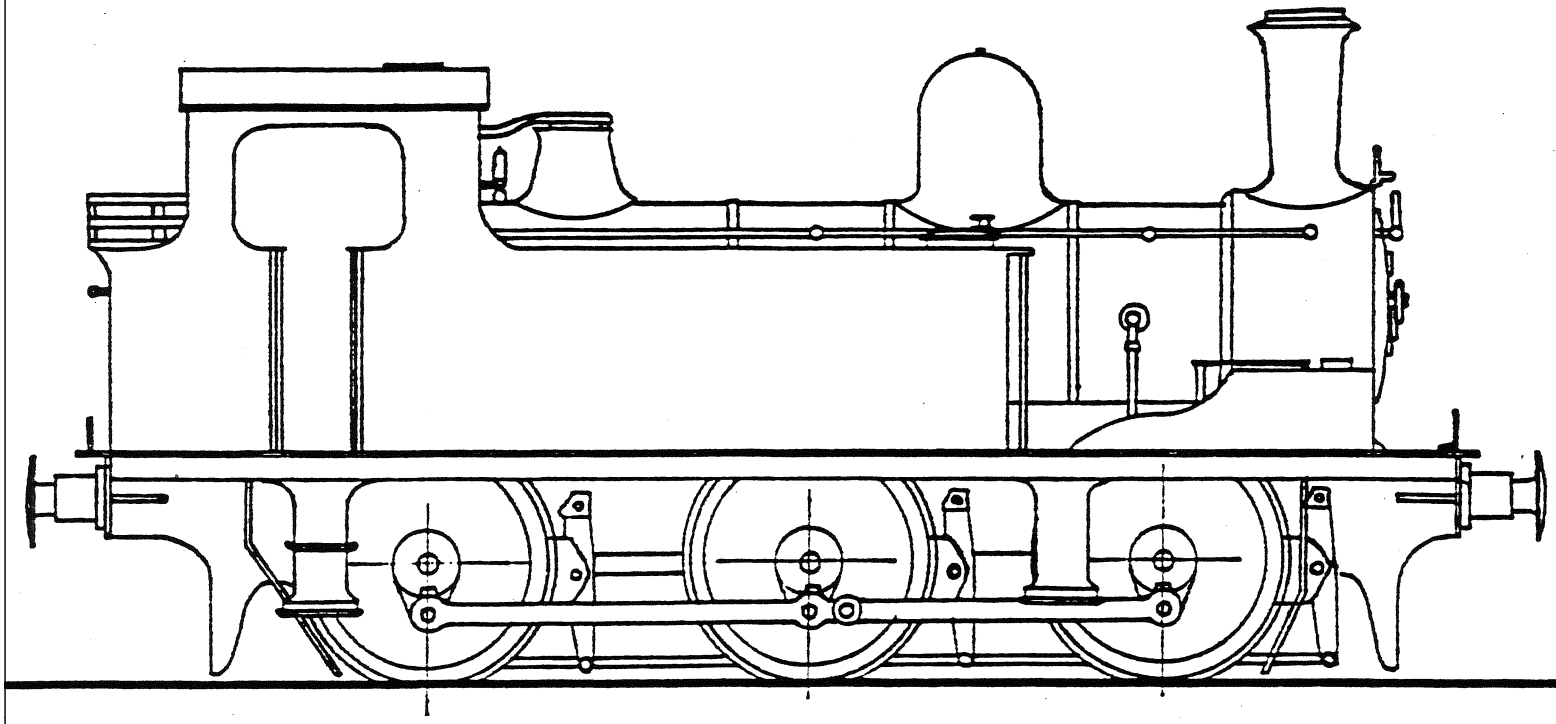
To form shallow curves, splasher tops, smoke box wrappers etc, use a piece of pipe or broom handle. Diameter is not crucial, a piece of one-inch water pipe covers cab roof to smoke box wrapper. Place part over tube and hold in place with finger and thumb of one hand. Work the metal in stages over tube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

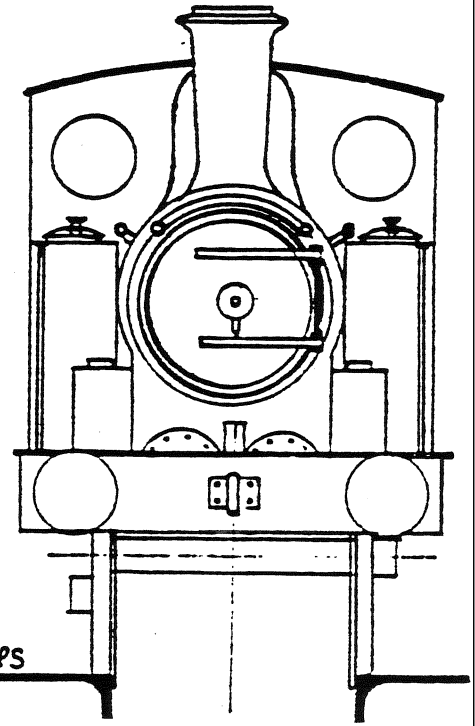
A technique you may find useful in working metal is to soften and remove the spring from the metal by heating (called annealing). The part is held with pliers and heated in a gas flame. (The gas cooker is ideal). Alternatively use a pencil torch that runs off lighter fuel. Heat part until a purple band 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.

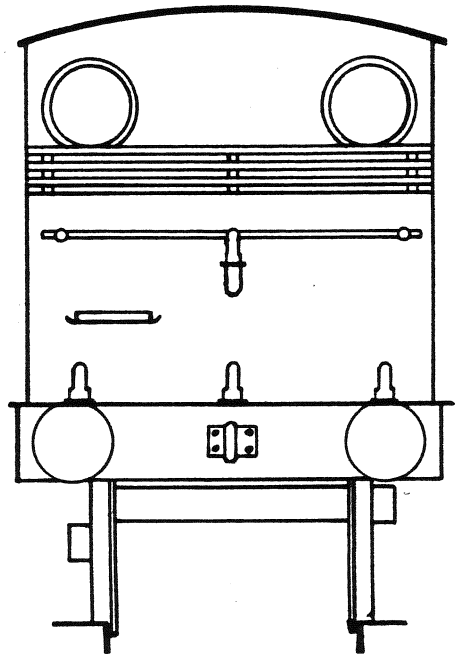
Damaged Parts and Shortages. If you damage an etching during construction it is not possible to replace individual pieces, but I am quite flexible in providing at minimum cost replacement frets (this will contain all the brass or N/S parts). Where a casting is damaged individual items can be replaced 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.

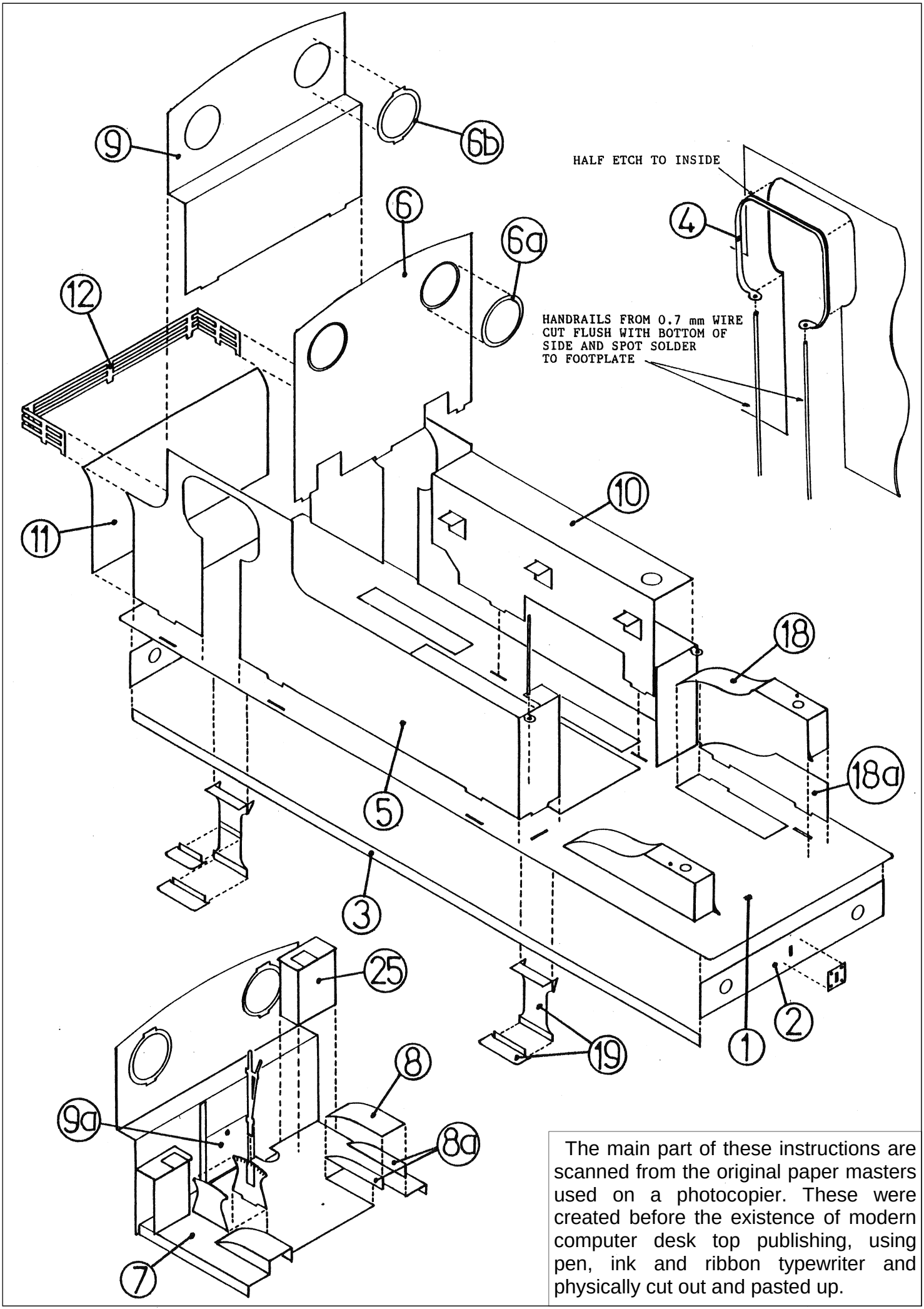






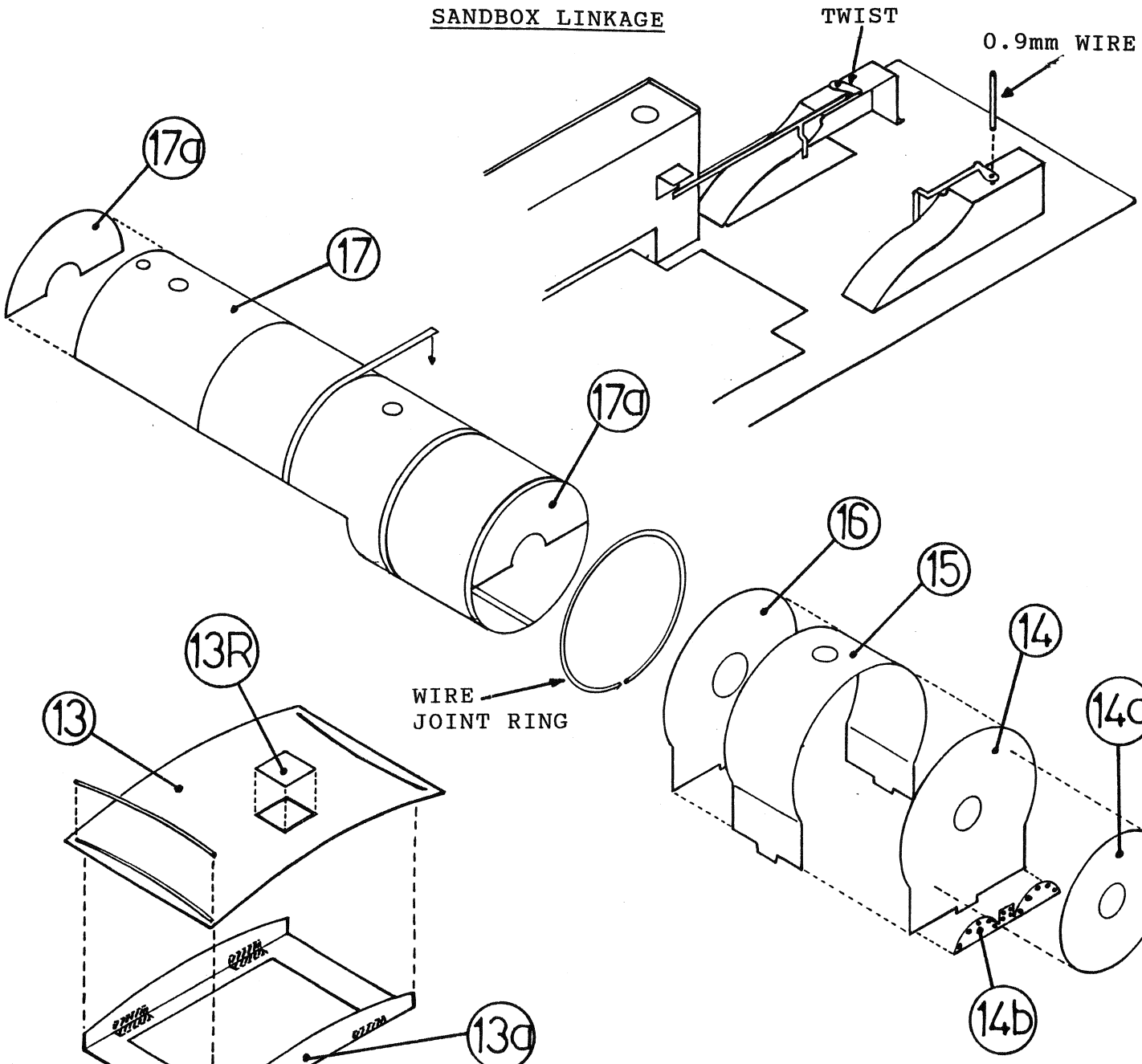
LIVERY. NER, lined green, with cream cab interior, wood floor, red buffer beams. green wheels. LNER, black with single red lineing later plain black, brown/teak cab interior, red buffer beams. BR, plain black, black cab interior, red buffer beams.

Sample numbers	NER/LNER	LNER 1946	BR	withdrawn
	400	8260	68260	3/1960
	978	8300	68300	3/1955
	50	8254	68254	11/1960
	165	8230	68230	1/1960
	533	8234	68234	8/1954
	181	8266	68266	2/1957

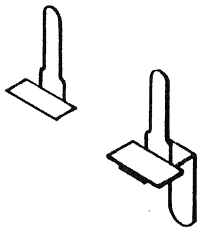


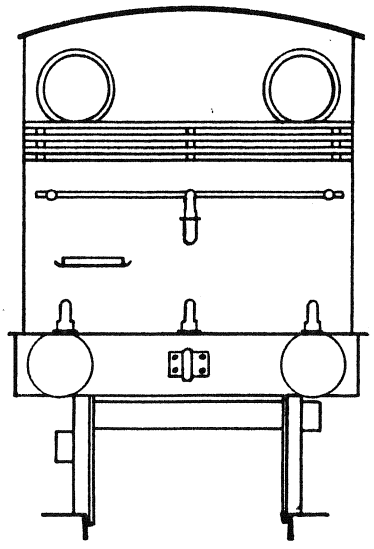
The main part of these instructions are scanned from the original paper masters used on a photocopier. These were created before the existence of modern computer desk top publishing, using pen, ink and ribbon typewriter and physically cut out and pasted up.

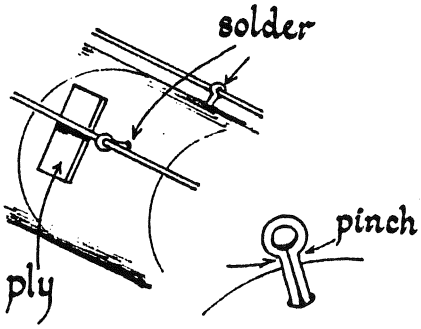
SANDBOX LINKAGE



LAMPIRONS







Handrails.

Not all locos had rear step and handrail, but on locos with these. The centre lamp Iron may have been mounted onto coalrails.

ASSEMBLY

I have covered the construction of the body first and then the chassis. In practice you may wish to build both at the same time, using the basic chassis, to check clearances as the body construction progresses.

1) First fit the buffer beams, parts 2, to the footplate, part 1. Solder the valences, parts 3, into the half etched slots. It may be found necessary to clear the slots for the tank sides slightly. Solder to the top of the footplate, the chassis securing nuts. Locking them in place with a bolt, remembering to put a smear of oil onto the thread to avoid soldering the lot up solid.

2) Fit the cab beading, parts 4, around the cab opening in the cab/tank sides, parts 5. You will notice that there are three different lengths of beading, you want the medium length one. Roughly pre form around a drill shank before fitting. Fit the cab handrails, soldering them into the holes in the beading, cut the bottom ends flush with the bottom of the cab. These will be spot soldered to the footplate later. Fold the tank fronts through 90deg and fold down the tank front handrail brackets, reinforcing with a spot of solder.

3) Fit the spectacle rings, parts 6a, into the cab front, part 6, and the cab back, part 9. Push out the bolt heads and then fit the inner spectacle rings, parts 6b, so that they cover the bolt heads. fold up the cab back, to form the inner shelf and solder in place the coal door, part 9a.

4) Fit the tank/cab sides to the footplate, followed by the cab back. NOTE: the slots and tabs give a rough guide to position and help to hold the parts while soldering, they do not form a totally accurate location.

5) Fabricate the reversing lever. Then make up the cab splashers from parts 8 and 8a. pin one curved side to a block of wood, then pre form the half etched splasher top, soldering this to the side. Then pin the other side to the block and solder the top to this. Fold up the cab floor, part 7, and solder splashers in place. fit the floor into the cab. Fold up the cab sand boxes, parts 25, then solder in place into the corners of the cab.

6) Anneal the bunker back, part 11, by holding the top edge over the flame of a gas cooker until the edges glow with a hint of red. This should enable the top curve to be formed around a drill shank or similar. Do not worry about getting the curve exactly right, as once the back is soldered between the bunker sides, they can be filed with a half round file to match the curve of the back. Fold up the coal rails, part 12, try to reinforce the fold with a little solder. Then fit the two ends into the slots in the cab back, solder in place here and at the three stanchions on the rear. Then fit the cab front. NOTE: if your chosen loco has a rear handrail, open out the three half etched holes on the inside of the bunker back before fitting.

7) Ensure that the tank sides are parallel to the footplate edges and that there is at least 28mm between the tank fronts. If you wish, cast up two small blocks of lead or scrap white metal to fit inside the tanks for additional weight. Fold up and fit the tank inside faces, parts 10, folding out the three small tabs, the boiler will rest on these. Make sure the top fold is made tight and sharp, the tank top should be slightly below the top of the tank side, file a bit off the bottom of part 10, if necessary.

8) Drawing pin the smokebox front, part 14, to a flat piece of wood and then roughly pre form the smoke box wrapper, part 15, use a piece of pipe, broom handle, etc. Position the wrapper at the centre of the smoke box front top, there 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. Make a packing piece from scrap wood, so that it fits inside the smokebox and comes within 15 thou of the edge. This will support the smokebox rear, part 16, as you solder it in place, the wood may now be withdrawn. Fill any gaps around the edges and file smooth, any slight creases can be filed out using a flat file. offer the assembly up to the four etched slots, to ensure that all is square.

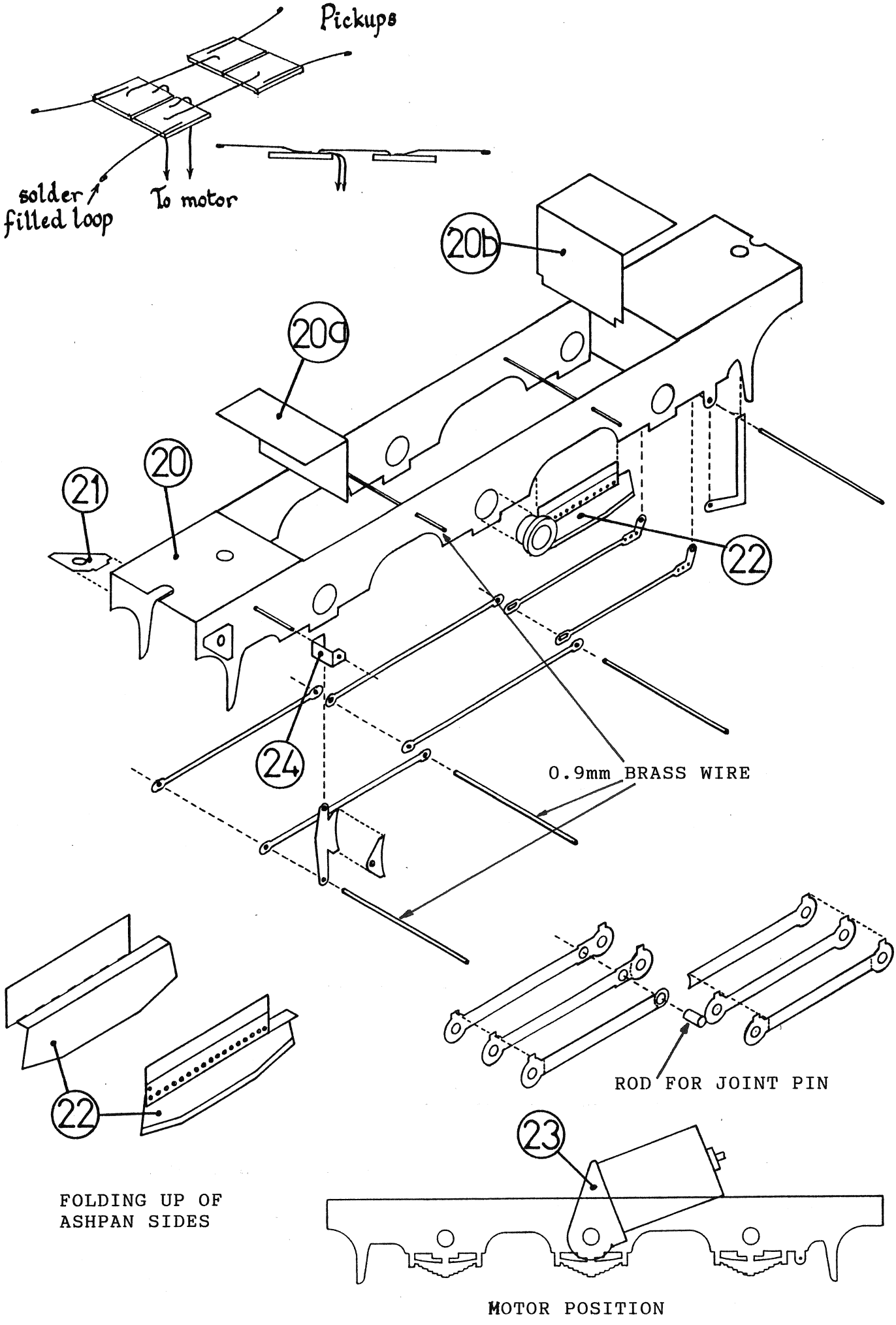
9) Fabricate the front sand boxes and splashers by pinning the sides, parts 18a, to a block of wood. Then pre form the splasher top, part 18, and solder this to the side. Offer the smokebox and splasher assemblies up to the footplate, make any adjustments necessary to allow everything to sit square. The slots may be enlarged slightly using a scalpel blade, or the inside faces of the sand boxes may need a little dressing with a file. Solder the splashers to the footplate, ensuring that the smoke box can be removed. Solder the front cylinder covers, part 14b, to the bottom of the smokebox front and the smokebox door ring to the smokebox front, part 14a. Fit the sandbox operating linkages, parts 18b.

10) Solder boiler, part 17, around boiler formers, parts 17a, solder one at either end, then solder overlap joint. Slip the boiler firmly between the tanks, in its correct position. Place the smokebox assembly into the four slots, view the entire assembly from all directions and when satisfied, solder the boiler to the smokebox rear. The assembly can then be withdrawn for the fitting of the boiler bands. Fit the boiler bands, using the half etched marks to guide you, the bands fitting to the cab side of these. Fit a wire ring at the joint of the boiler/smokebox, running a fillet of solder along it and cleaning up to form a ¼ round section. Solder this entire assembly firmly into place, ensuring that all is square and that the footplate does not droop at the ends.

11) Fold up and fit the rear steps, the ones in the cab doorway, and the front steps, parts 19. These fit behind the valencing, you will find some half etched marks to guide you. Fit the coupling hooks and plates, I prefer to solder the hooks in place.

12) Solder two pieces of wire into the half etched slots on the cab roof, part 13, to form the rain strips, pre form the roof to match the cab front radius. Fit the roof ventilator, part 13b. I have included an inner cab roof, part 13a, to which the cab roof is soldered. this will enable the roof to be left loose until the cab interior has been detailed and painted. Fit the lamp brackets, using the half etched marks on the footplate and bunker rear, to help with position. Note that there are two different sets of brackets, for NER and LNER period. Some prototypes had a foot step on the rear of the bunker, you will find a spare foot step for this.

13) Fit the handrails, made from 0.7mm brass wire. Use split pins to support handrails, the rear of the boiler handrails, fit against the cab, to which they are spot soldered.


Pickups
solder filled loop
To motor
20b
20c
20
21
22
24
0.9mm BRASS WIRE
22
ROD FOR JOINT PIN
23
FOLDING UP OF ASHPAN SIDES
MOTOR POSITION

CHASSIS ASSEMBLY

I have designed the chassis to accept a Mashima 1833 motor and 40/1 gears and Slaters driving wheels.
PICKUPS: I have included the materials with which to fabricate a wire wiper pick up system, which many people prefer. I personally prefer to use Slaters sprung plunger pick ups. Note: you may find that it is necessary to slightly file the holes oval to allow the pick ups to function properly, so offer a wheelset and pickup up to the chassis to check.

14) Fold down the chassis sides, part 20, also fold down the end frame spacers. Fit the loose spacer with the oval hole, part 20a, to the end with the oval slot in it and the plain spacer, part 20b, to the other end. Solder all this up on a flat surface and ensure that it is not twisted. Fit the buffer beam reinforcing gussets, parts 21, into the slots. Then offer the chassis to the body to make sure that it still fits. Fold up the fire box ash pan sides, parts 22, then solder into the half etched rebates on the inside of the chassis side.

15) Fold up the gear box, part 23, running fillets of solder into the half etched fold lines. Fit the worm gear to the motor shaft using Cyanoacrylate glue, so that the worm comes flush with the end of the shaft. Cut off the back shaft of the motor, as close to the rear bearing as you dare go. This is best done with a cutting disc in a minidrill. Screw the motor in place on the gearbox cradle and slip the cradle between the frames, locate it with two axle bushes. Solder the bushes into the frames and also the gearbox, so that it acts like a spacer. You now have a rigid 0-6-0, the centre axle is raised off the track a fraction, this is an old scratch builders trick.

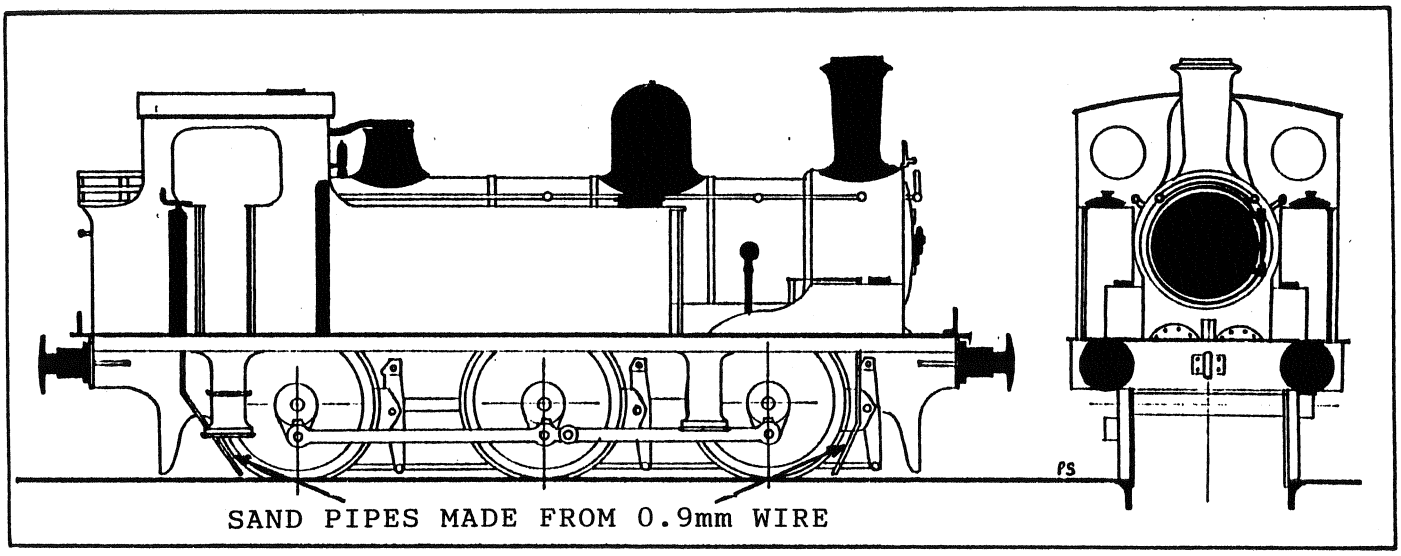
16) I now prefer to introduce what I call, Sloppy axle compensation. This would give the Scale 7 boys a fit, but it works well, so if you fancy it, read on! Solder a length of 2mm brass tube, through the two oval holes in the front spacers. Solder the tube in place so that it bears down on the axle. Remove the axle and ream out the axle holes 10-15 thou oversize. Use an engineers tapered reamer, these are expensive but will last you a lifetime, you can get them from an engineers tool merchant. Take an axle bearing with you, and get one that will start at least 20 thou undersize and go 40 thou oversize. They are also not the same as clockmakers reamers, used to open out holes in etchings. Refit the axle and you will have a rock of about 5 thou on each side, which does wonders for pick up. Fit the axles and wheels, gluing your plunger pick ups in place, if you are using them.

17) Solder the three connecting rod pieces together for each rod, best achieved by using solder paint, passing two drills through the crank pin holes, to keep everything in line, clamping together with crocodile clips, etc. Use a piece of copper rod to represent the joint pin. Open out holes for crankpin bushes, the bushes are fitted loose. Wire up the chassis and see if it runs.

18) Solder lengths of 0.9mm dia wire across the chassis to support the brake hangers. Fold up the brake hanger brackets, part 24. Solder the brake blocks to brake hangers, noting that you will require three left and three right handed ones. Now thread the brake hanger brackets over the wire, with the hangers between them, solder the brackets to the chassis sides. Solder the brakes, just clear of the wheels. Thread 0.9mm wire through the holes in the bottom of the hangers, fitting the brake pull rods, solder all the joints. Check that all runs well and that there are no shorts. Then offer the chassis up to the body, after ensuring that all the tabs protruding from the body have been removed.

19) Now fit castings. Fit the handwheel to the smokebox door, countersink the hole, so that the wheel and dart do not stick out to far. Fit the cab handbrake and the tank fillers, both best glued into place, note alternative tank fillers. A small amount will need to be removed from the bottom of the backhead, to enable it to fit between the cab splashers. Leave the backhead loose until painting is completed and then glue into place.

CASTINGS



Spectacle plate glazing, if this is desired, on the fret in one corner will be found a round hole, to be used as a template for cutting the glazing.

I have provided some cheap and cheerful number plates, although you may be able to obtain superior plates and alternative numbers from the specialist number plate manufactures.

REFERENCES

Locomotives of the LNER, part 8B, RCTS.
An Illustrated History of NER Locomotives, Ken Hoole, OPC.

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