SUMMARY OF TENDER VARIATIONS FOR LOCO KITS

LNER B12/3.

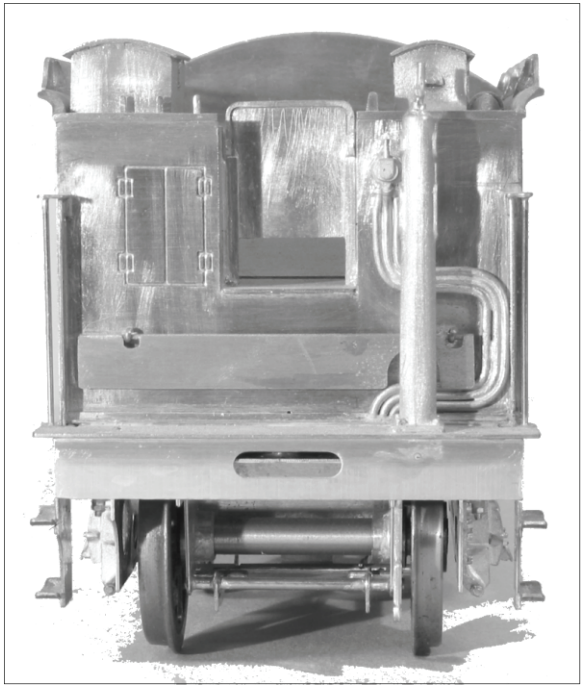
ETCHINGS. Unmodified footplate, inclined coal space, alternative front footsteps, side sheets to front handrails, angled handrail supports at wide position, part 19 with holes for balance pipes, coal rails, scoop mounting plate.

CASTINGS. LNER fronted axle boxes, 15 leaf springs, group standard buffers, balance pipes, scoop dome, scoop valve, scoop, air, vacuum & steam heat pipes.

LNER J20

ETCHINGS. Unmodified footplate, inclined coal space, alternative front footsteps, no side sheets to front handrails, angled handrail supports at wide position, plain part 19, coal rails from 1927 onwards, plain centre brake cross shaft, extra grab handrails at front.

CASTINGS. 15 leaf springs, GER or LNER buffers, Vacuum pipe, no water pickup gear.



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

CONNOISSEUR MODELS
GER LARGE TENDER

This kit has been designed to provide a range of parts to cover most variations of Great Eastern large tender. To achieve this some parts are designed to be cut and modified. A copy of John Gardners composite tender drawing is included and by studying this the variation you require should become obvious. The tender is not suitable for a Beyer Peacock built B12 or LNER B17.

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.

Wheels, 3 Sets 4’1”, 10 Spoke (Slater’s Cat No 7848GE)
Are Required To Complete

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.

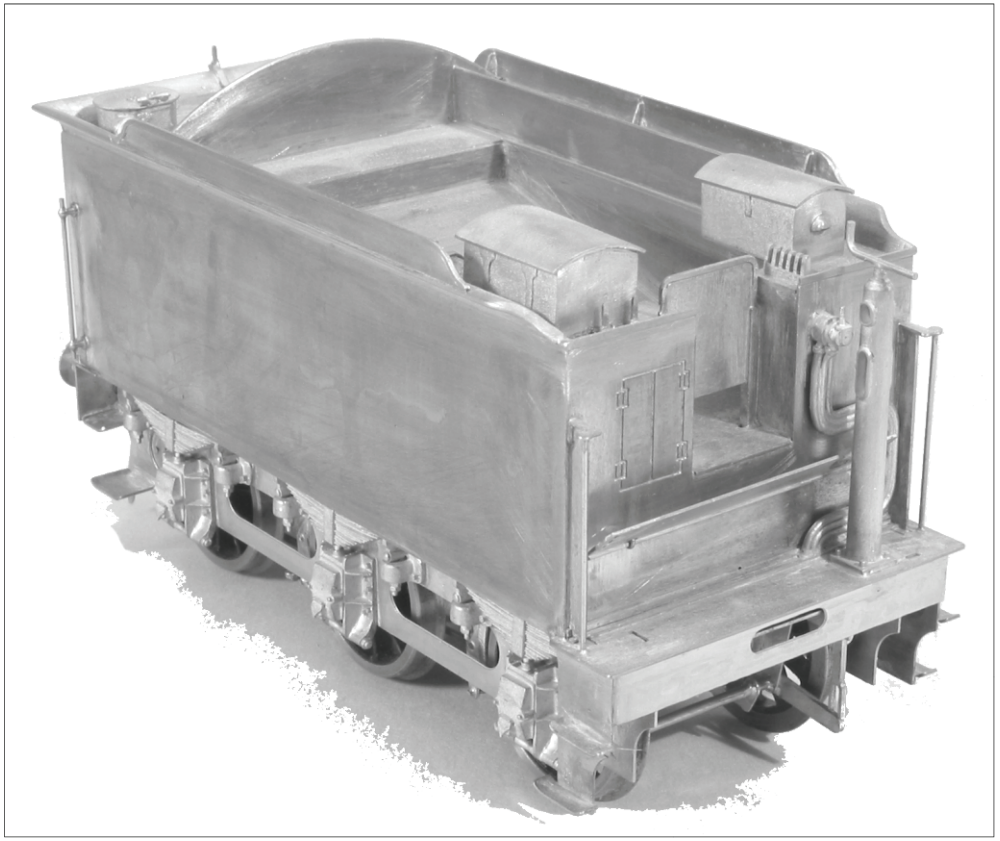
Assembling an etched kit involves exactly the same skills that a scratchbuilder uses – the only difference is that the cutting out of the parts is already done for you. Some filing and trimming will, however, be necessary from time to time. Where this is the case, I have highlighted it in the instructions.

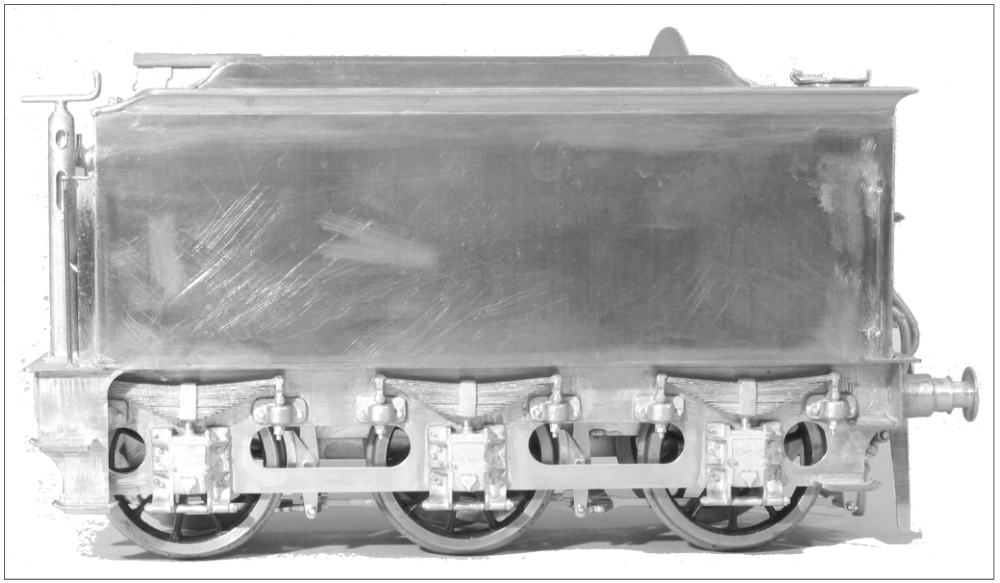
The main skill to master is soldering and I would recommend a Weller 40 Watt soldering iron. This has a 6mm diameter, removable copper bit. The bit is shaped like a screwdriver and has a bright coating of solder (tinned). This combination of iron and bit shape is ideal for running fillet joints and has 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.

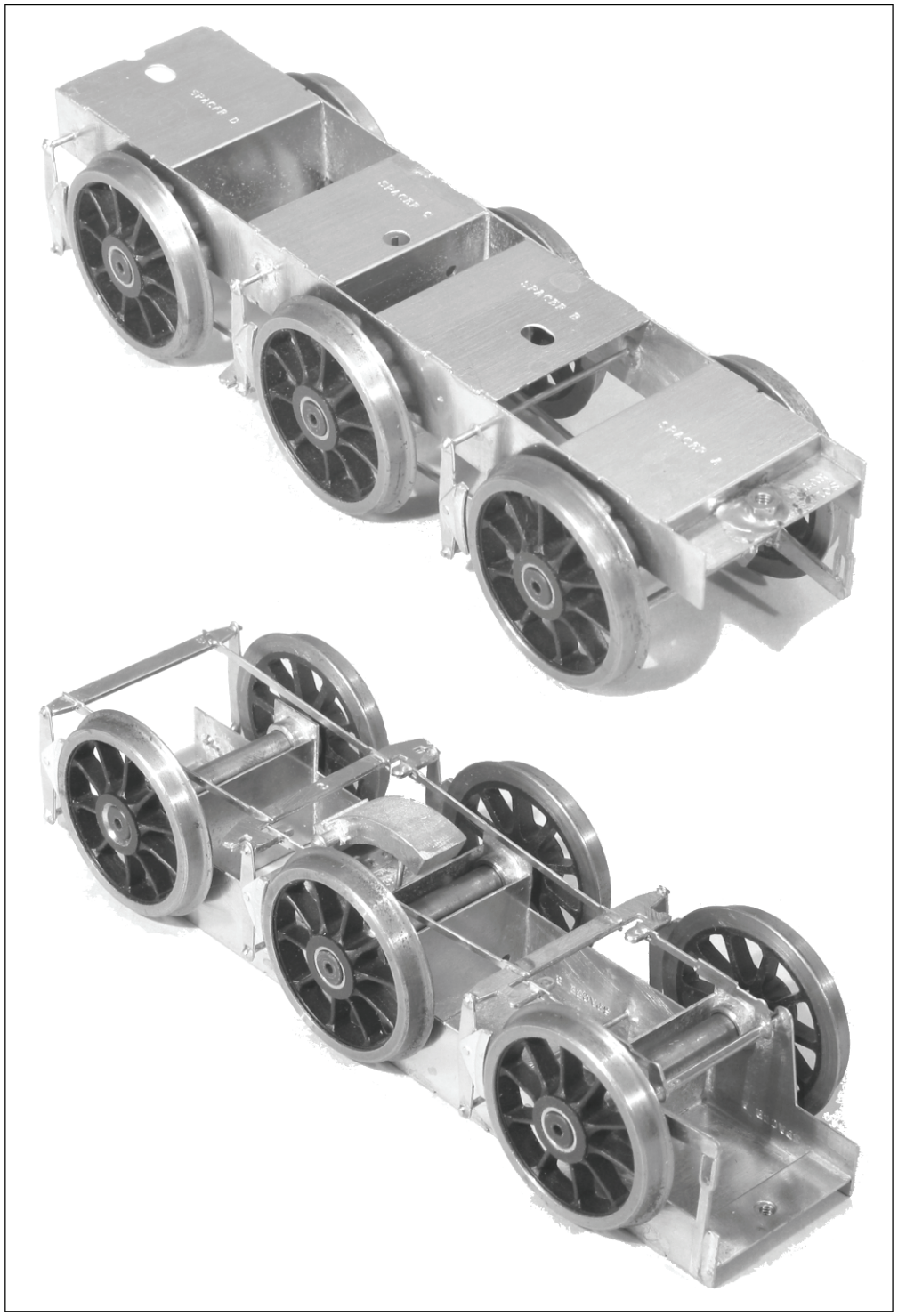
It is important to keep the bit clean and in good condition as you work. Get a soldering iron stand containing a damp sponge; old oxidized solder is wiped off on this before picking up fresh solder for each joint. If you haven't made a joint for some time you may find that a hard black crust has formed 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.

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.

14. Take the chassis sides (parts 28), open out the holes to take the axle bearings and then fold up the chassis spacers (parts 29). I then lightly pin with drawing pins one side frame to a flat block of softwood positioned so that the top edge just overhangs the block. I then solder the spacers to this side frame checking that they sit down square. The second side frame is then tack soldered to the spacers, starting at the centre and working out. The chassis is then removed from the wood and checked for square, before soldering all joints solid.

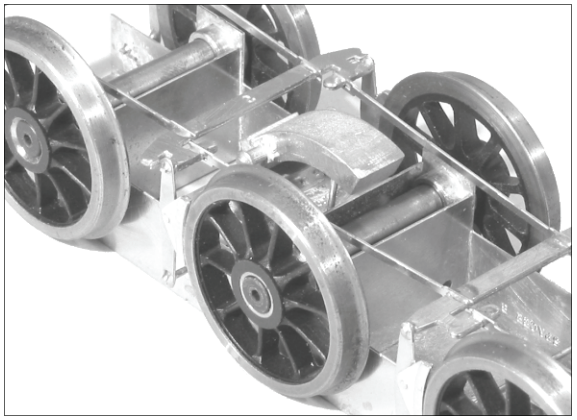
Bearings are now soldered in, using an axle to get them square in the frames. The centre bearings are fitted hard against the chassis to give the centre wheels a little side play. The outer bearings are slid out on the axle and soldered slightly away from the frames to reduce side play and prevent the tender from crabbing.

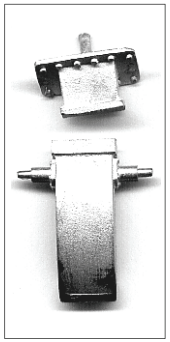
Solder a 8BA nut to the top of the front spacer. This is to give a mounting for a loco to tender coupling bar. Fold up and fit the water scoop mounting plate (part 30) Fit lengths of 0.9mm brass wire across the chassis to form a mounting for the brake hangers. Temporarily fit wheel sets.

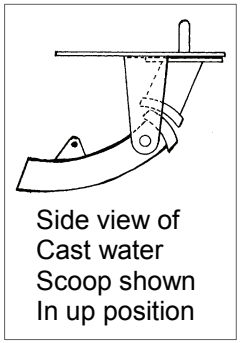
15. Solder brake blocks (parts 31) to the brake hangers (parts 32). Then fit top of hangers over wire and solder so that the brake blocks are just clear of the wheels. Laminate the two parts of the cross shafts (parts 33) together so that the half etch is on the outside. Solder cross shafts between brake hangers. You may have to round off the ends of the cross shafts to fit into the bottom holes of the brake hangers. Note the alternative centre cross shafts marked P for plain and S for scoop fitted tenders.

Fit pull rods (parts 34) by twisting into place. The ends fitting into the half etch on the cross shafts. Fit a length of brass rod through the holes in the chassis side frames to support the end pull rods. Laminate the two parts of the handbrake linkage (parts 35) together. Then fit over brass rod and solder to side frame.

16. Fit cast water scoop to the mounting plate. The bottom part can be sprung between the etched brackets.

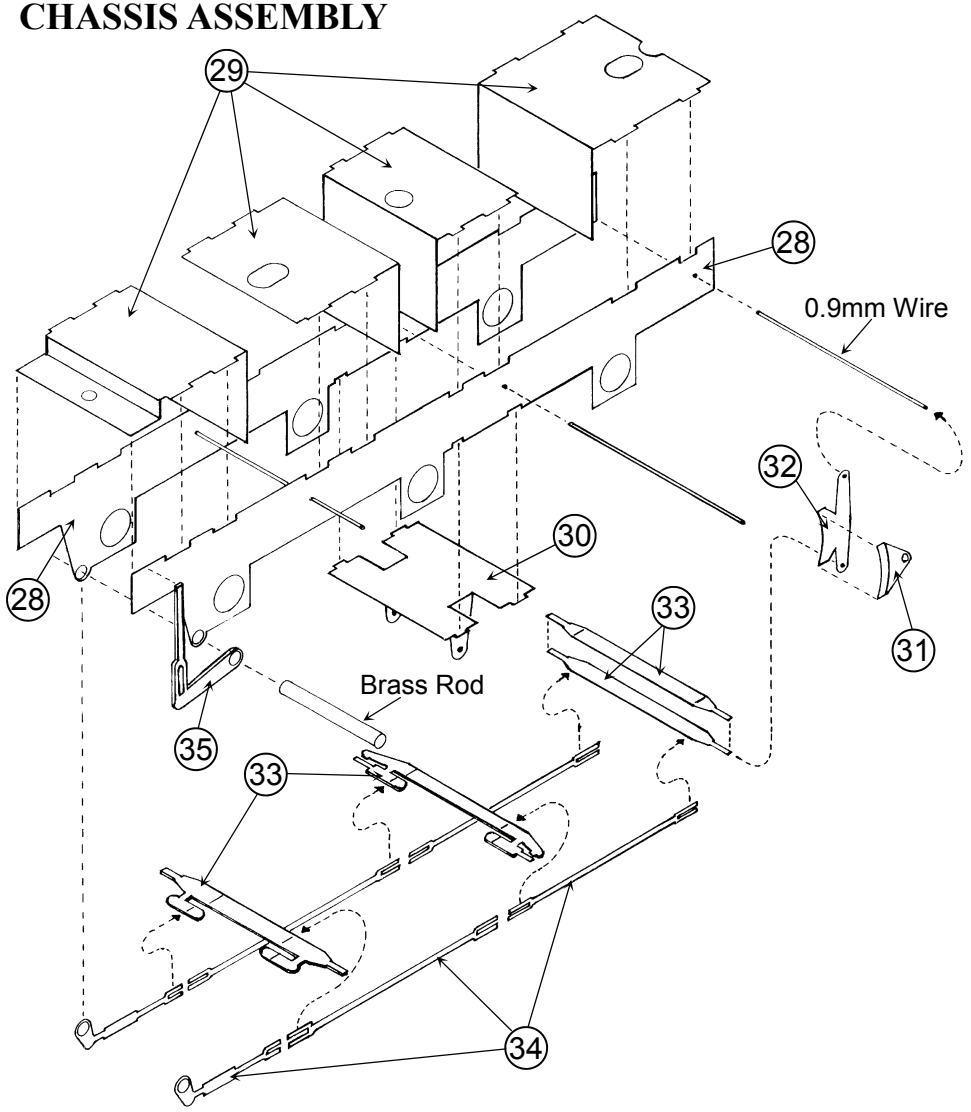




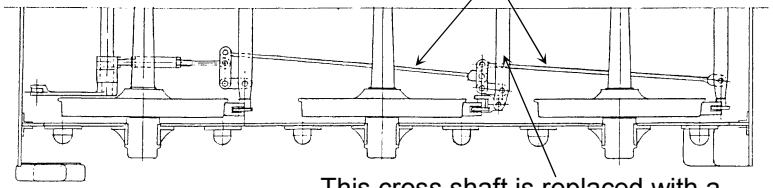


Side view of
Cast water
Scoop shown
In up position

CHASSIS ASSEMBLY



Half Plan of Brakegear



While the boiler's in my kits are 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.

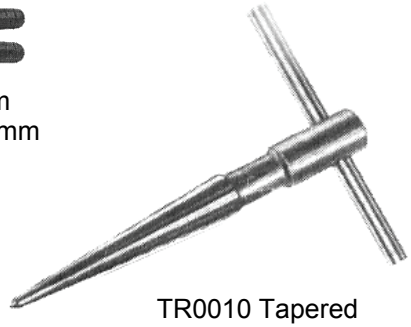
To form shallow curves, splasher tops, smoke box wrappers etc use a piece of pipe, broom handle etc. Diameter is not crucial, a piece of one-inch water pipe covers cab roof to smoke box wrapper. Place part over tube, hold in place with finger and thumb of one hand. Work the metal in stages over tube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

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.

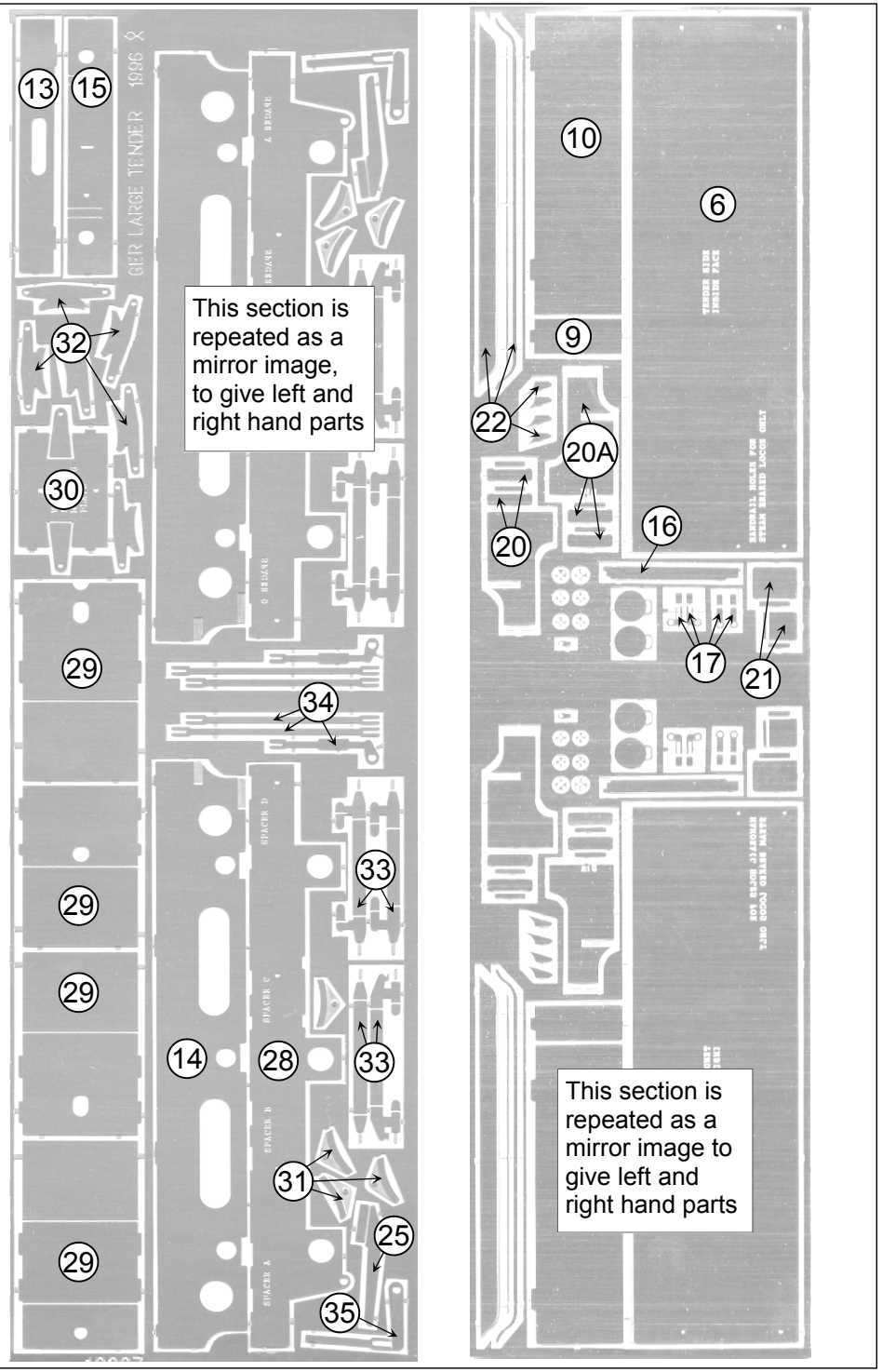
BRC250 6 Piece Cutting Broach Set 0.7-2mm
BRC300 12 Piece Cutting Broach Set 0.65-4mm

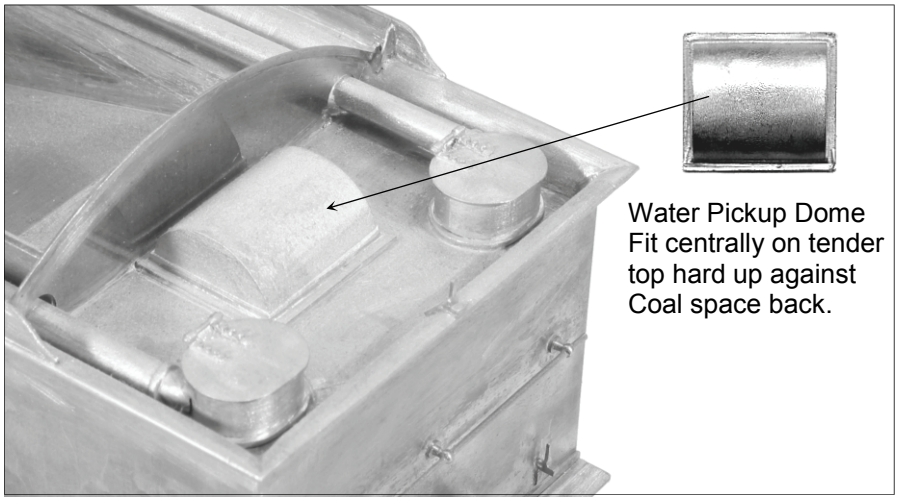
TR0005 Micro Drill Reamer 1mm-5mm



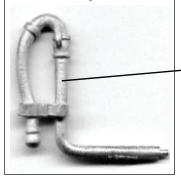
TR0010 Tapered
Reamer 3mm-12mm

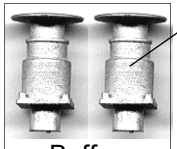
Three very useful tools purchased from SQUIRES,
100 London Road, Bognor Regis, West Sussex,
PO21 1DD, Telephone 01243 842424.



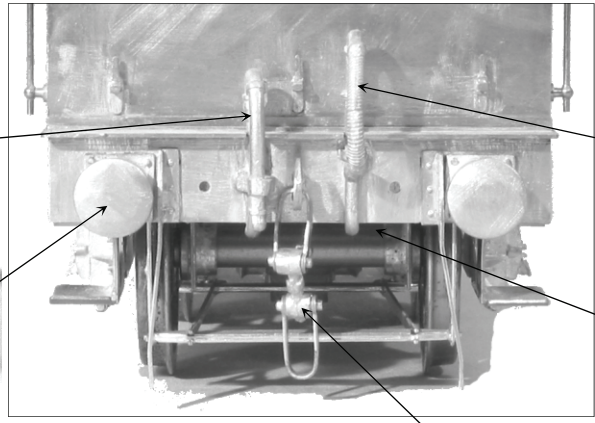


Air Brake Pipe

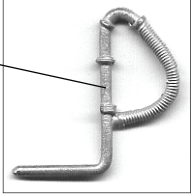


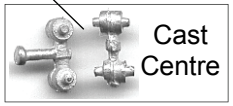


Buffers



Vacuum Brake Pipe

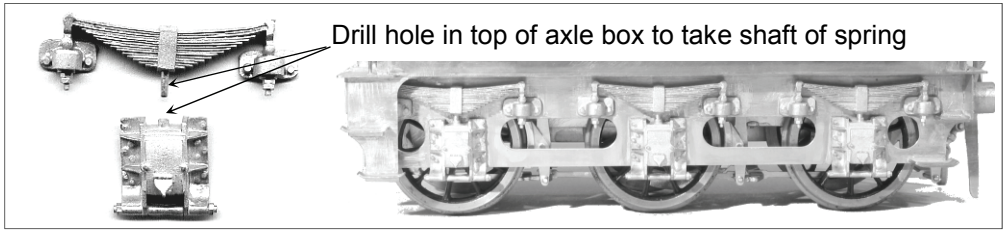


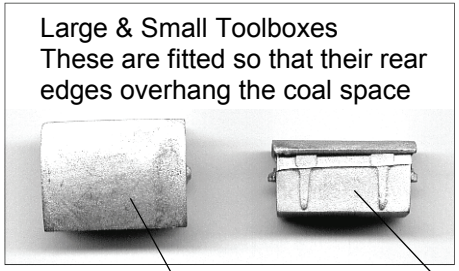


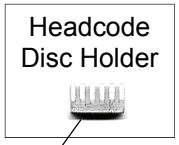
Cast Centre

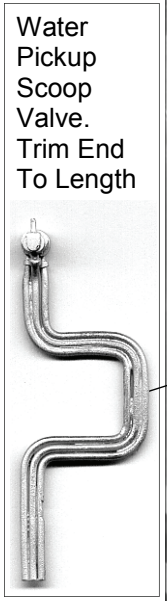
Cosmetic screw coupling. Solder both halves of each hook together and if necessary round the slot so that the link will swing freely and then using round-nosed pliers form the four links into U shapes. Dress the tops of two links with a file so that they will pivot freely in the slot in the hooks. Thread one of these links through the hook and spring the ends over the pegs on the cast centre. Then fit the bottom link. Pass the coupling hook through the slot in the buffer beam and solder into place.

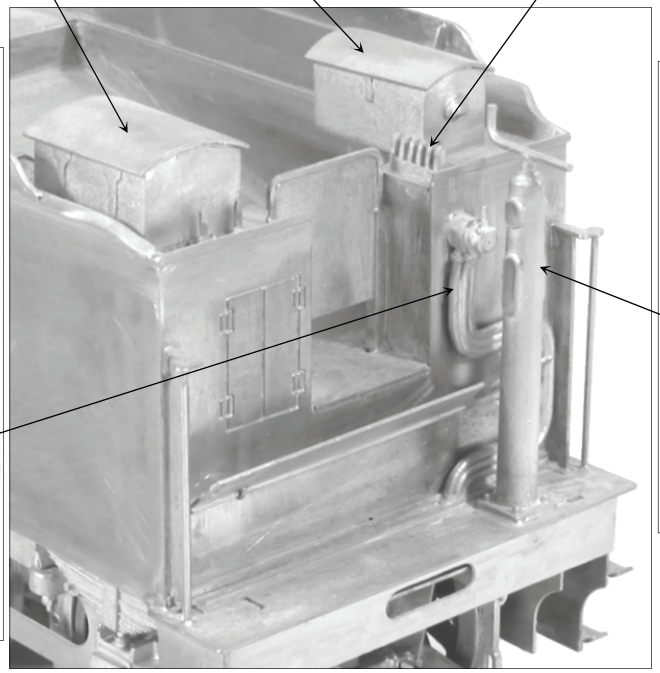
13. You can now fit the castings in any order using the photographs and drawings for reference of positioning. After fitting file the location peg on the axle boxes flush with the back of the side frame to allow clearance for the wheels. Trim the scoop valve pipe work to fit. Two notches will have to be filed into the back footplate to mount the air and vacuum pipes. Make up and fit the coupling. You will also find etched fire irons and destination discs.

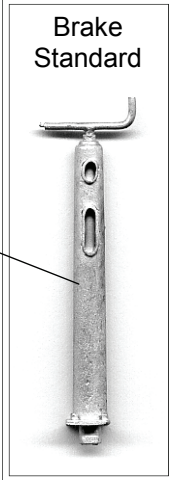


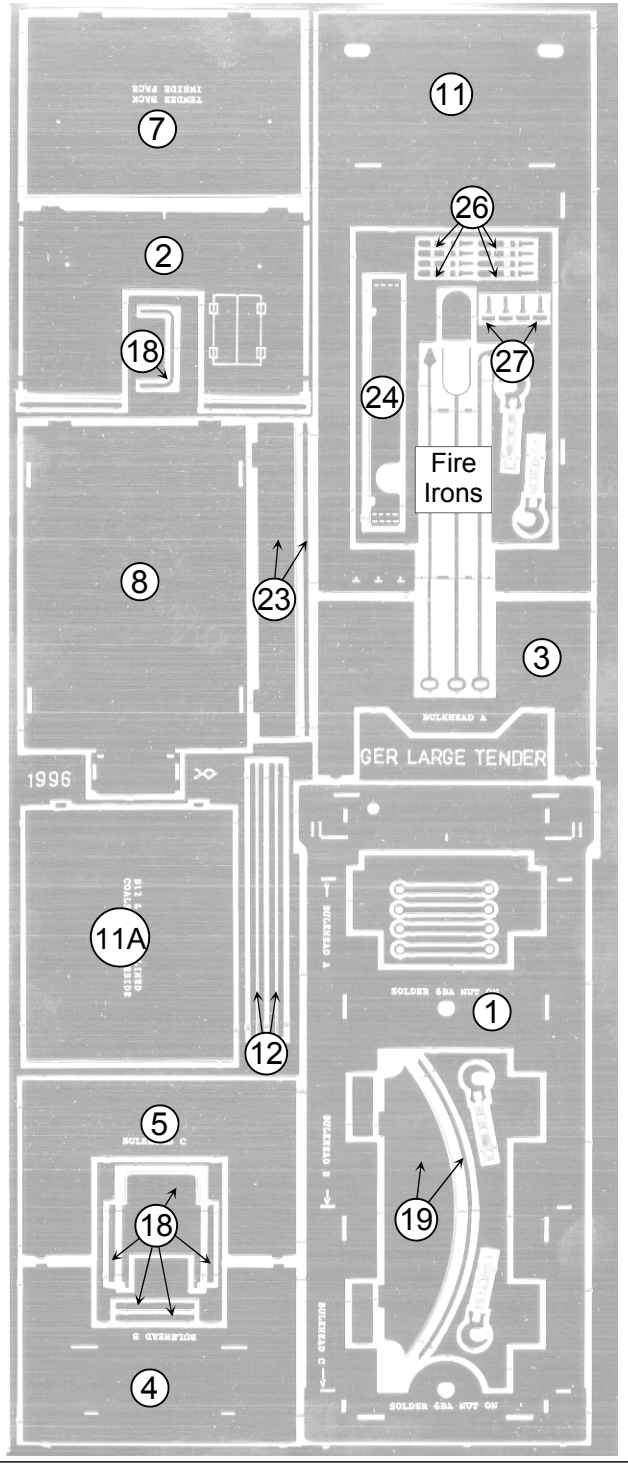


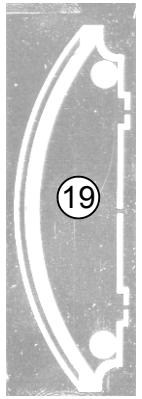






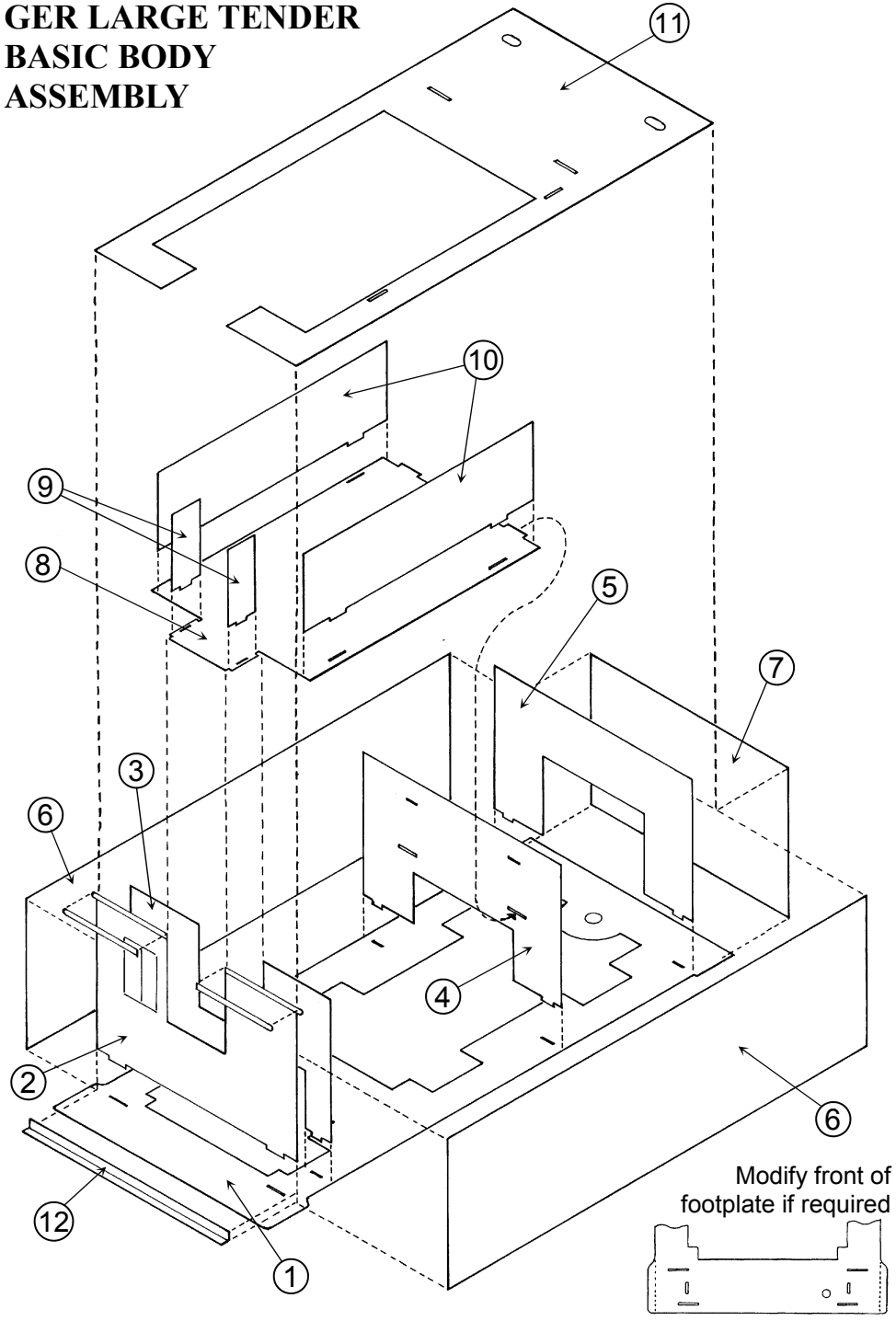




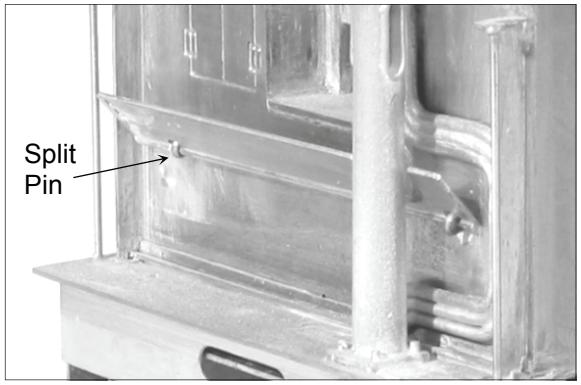


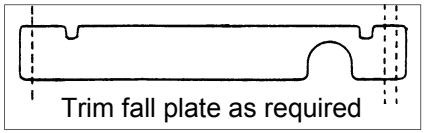
Alternative part 19 for use on tenders with scoop gear and water balance pipes

GER LARGE TENDER BASIC BODY ASSEMBLY

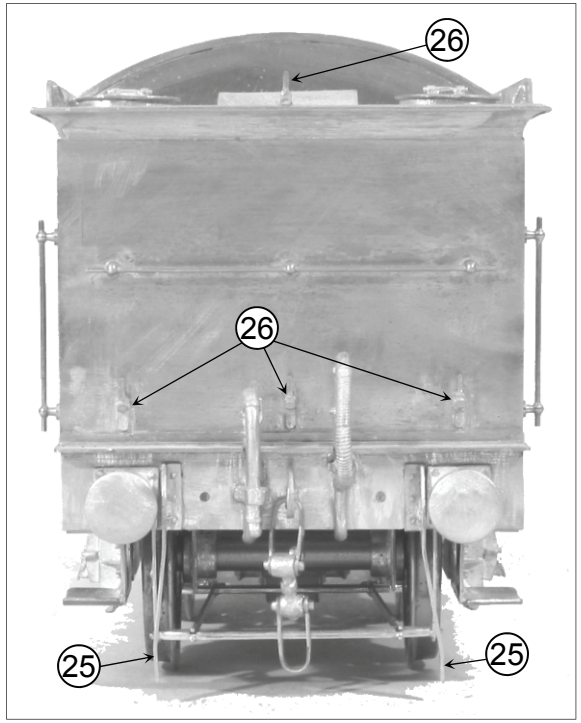


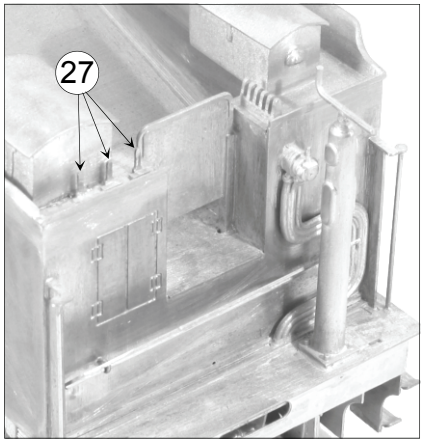
11. Fit front fall plate (part 24). Solder a length of 0.7mm brass wire to the back edge of the fall plate. Then trim the fall plate to fit between the handrails. If fitting the cast water scoop valve pipe work, you will have to trim the right hand side of the fall plate, to clear this. By passing split pins over the wire and into the holes in the tender front you can form an hinged joint for the fall plate. You should be able to get a soldering iron through the underside of the footplate to solder the shank of the split pin.

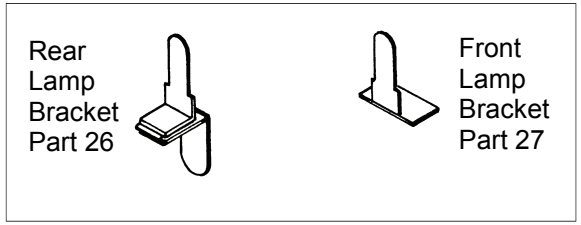




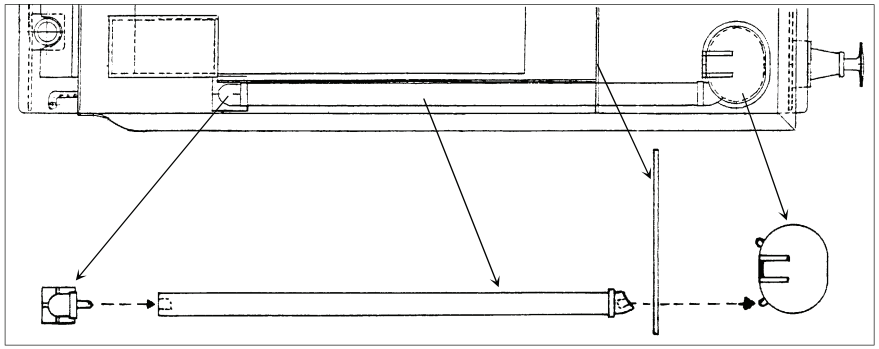
12. Fit guard irons (parts 25) to buffer beam, note etched marks to help with location. Fit rear lamp brackets (parts 26) to tender back, note etched marks to help with location. The centre bend on the lamp bracket bends back onto itself. The bottom of the top lamp bracket is bent to match the radius of the cast flair. Fit front lamp brackets (parts 27) these are for storing spare lamps. Fit handrails, use split pins for support or replace with handrail knobs.



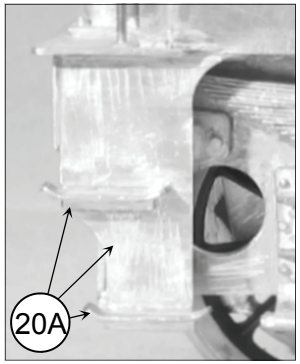




8. Fit water filler castings. For plain tenders file off both of the cast pegs. For scoop fitted tender, file one peg off, to make a L/H and R/H filler. Then pass balance pipe casting through the hole in part 19 and locate the end onto the peg on the water filler. Then fit bend casting onto the other end of the balance pipe. You may have to clear the holes in the balance pipe with a drill. All other castings can be fitted after main assembly is completed.



9. Fit footsteps (parts 20 & 21) fold a radius onto the sides of the footstep treads with a pair of pliers. Note alternative front footsteps (parts 20A) for B12 and J20.



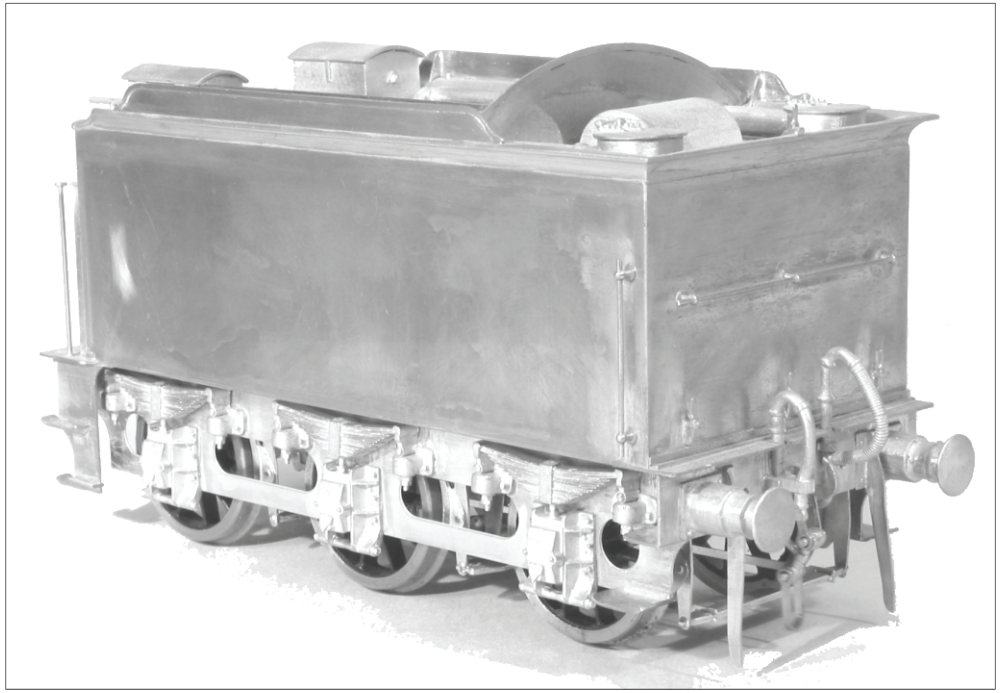
10. If required, fit coal rail plate (parts 22). I found it better to fit the three brackets to the coal rail before fitting to the cast flair. I have provided a couple of spare brackets because these are not easy to fit. Fit fire iron space side (part 23). If you have fitted the cast balance pipe, you will have to file a notch at the front, to clear the casting.

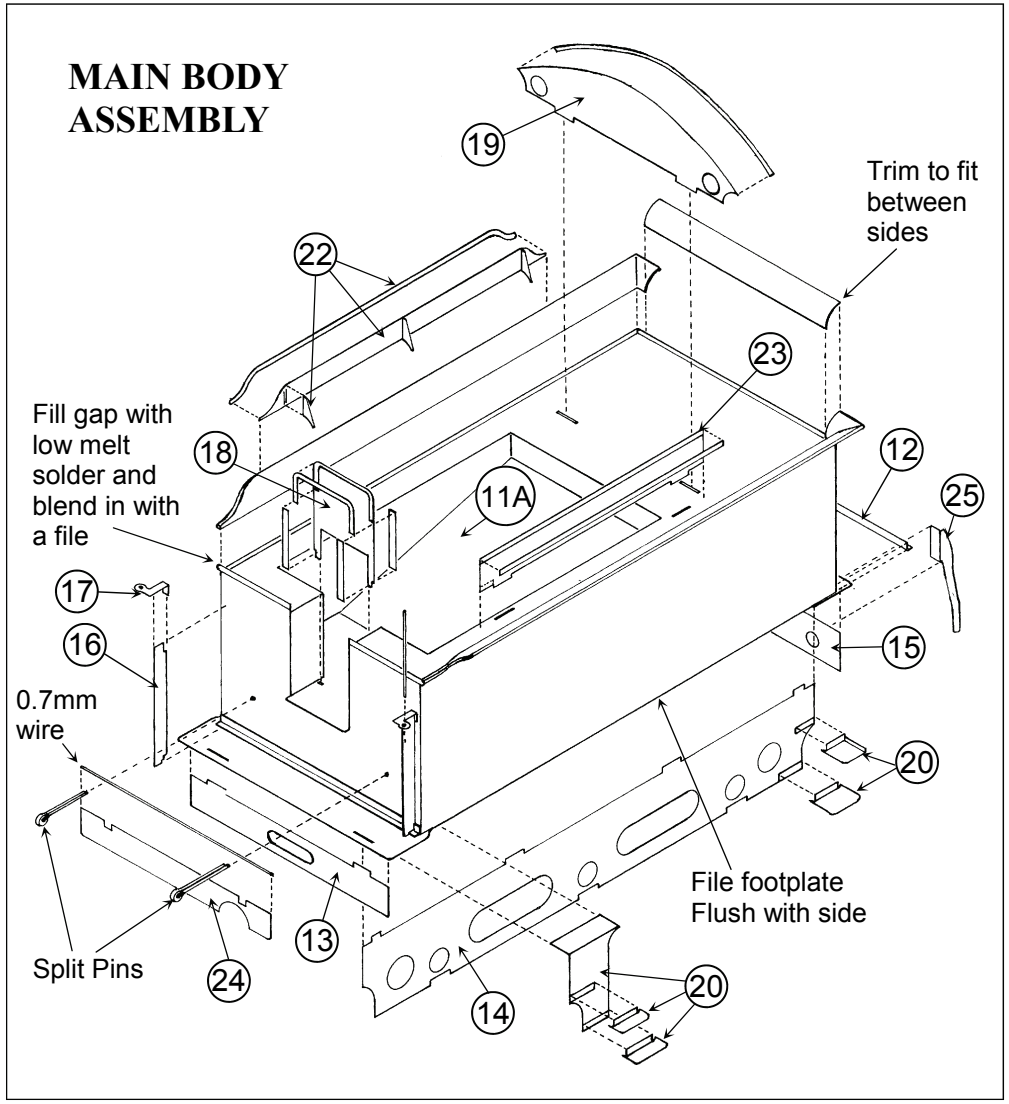
TENDER SUPERSTRUCTUR ASSEMBLY

Parts are numbered in a logical assembly order. The slots and tabs don't give accurate location, they are only there to help position parts. Tack solder a part into place, then adjust the next part to match. Solder solid only when happy with the assembly.

1. Solder 6BA nuts to the top of the footplate (part 1). This is best achieved by locking the nuts in place with the screw, remember to put a spot of oil onto the thread to prevent soldering everything solid. Solder beading into half etch at the top of the tender front (part 2) and then fit to the footplate. Fit bulkheads (parts 3,4 & 5). Make sure that they are all in line or the tender sides wont be straight. Fit sides (parts 6) hard against the bulkheads and into the half etch of the front (open out front handrail holes on steam braked tender before fitting side). This front corner can then be blended into the side with a file to give a clean sharp corner. Fit back (part 7) in the same way.

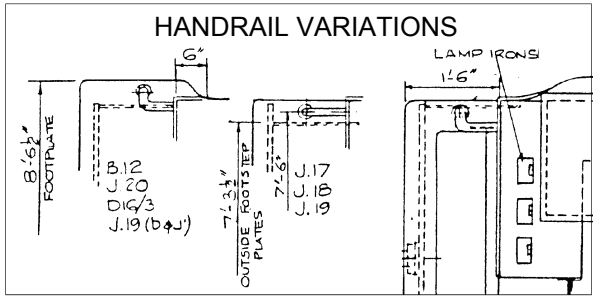
2. Fit coal space floor (part 8) and then the sides (parts 9 & 10). Fill any gaps with solder and make sure that the sides don't come above the height of the bulkheads. Fit tender top (part 11) this fits hard down onto the bulkheads. The half etch around the inside of the tender sides and back, is to locate the cast flares and not the tender top. For B12 and J20 fit the inclined coal space (part 11A). Fit angle (parts 12) to front and rear.

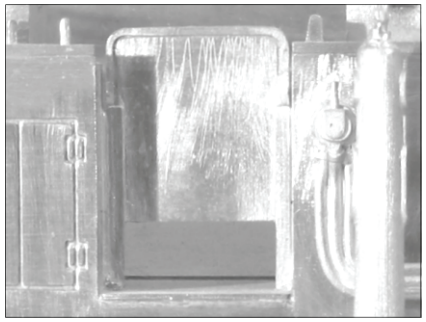


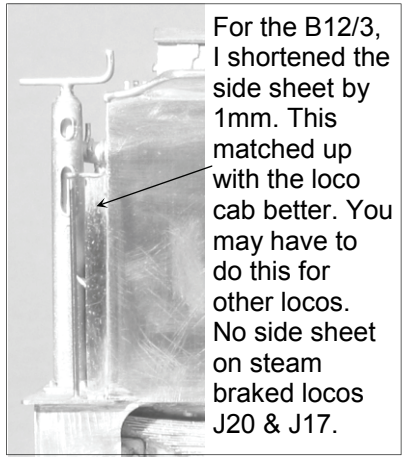


1. Fit front drawbeam (part 13), side frames (parts 14) and rear buffer beam (part 15). The buffer holes are towards the bottom so don't fit it upside down.

2. Fit front handrails and side sheets (parts 16 & 17). I bent part 17 at 90 deg and then soldered the end of part 16 into it, before removing part 17 from the etched fret. This seemed better than trying to solder a small part square onto part 16. The handrails are made from 0.7mm wire and spot soldered to the footplate. There are half etched marks on the footplate to help position the bottom of part 16. Make sure you get the right position and variation of handrail to suit your loco.



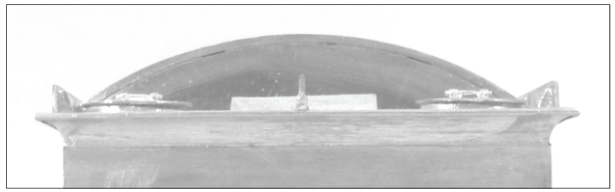




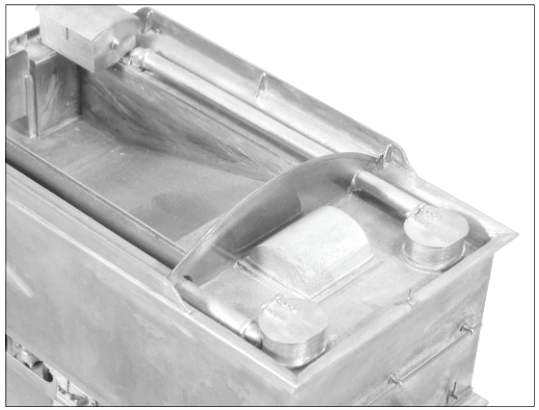
For the B12/3, I shortened the side sheet by 1mm. This matched up with the loco cab better. You may have to do this for other locos. No side sheet on steam braked locos J20 & J17.

5. Fit the four strips and beading to the coal space shutter (parts 18) and then locate into slots in the coal space floor.

6. Fit cast flares. These I fitted by tinning well all the brass parts that they fitted too with 145 deg solder. I then used a large soldering iron (Weller 40 watt) run through a dimmer switch, to reduce the heat. To flow 70 deg solder into all the gaps. Particularly between the outside top of the brass tender side and the casting. I then scraped back this fillet of solder, with a curved scalpel blade and cleaned up with a fibreglass brush. This made the joint virtually invisible. If you look at photographs of the prototype tenders, you can just see the joint. So a slight step is OK but you don't want a gap.



Fit the two side castings first and then trim the back casting to fit between these. Put a good fillet of solder into the joint and then blend this into the castings with an old round file. A few minutes work should give you an invisible joint. If you don't want to use low melt solder. You will have to use Miliput etc, to fill the gaps.



7. Fit coal space rear (part 19) into tender top. You may have to file the radius at the ends to get a good fit between the cast side flares. For scoop fitted tender you will require the alternative part 19 with the two holes for the balance pipes.